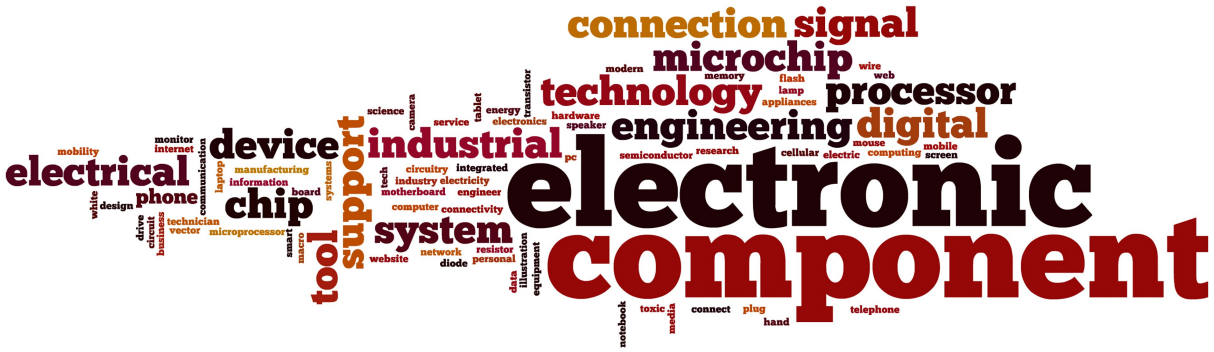
# A RIGHT CAPACITOR SOLUTION




JINPEI

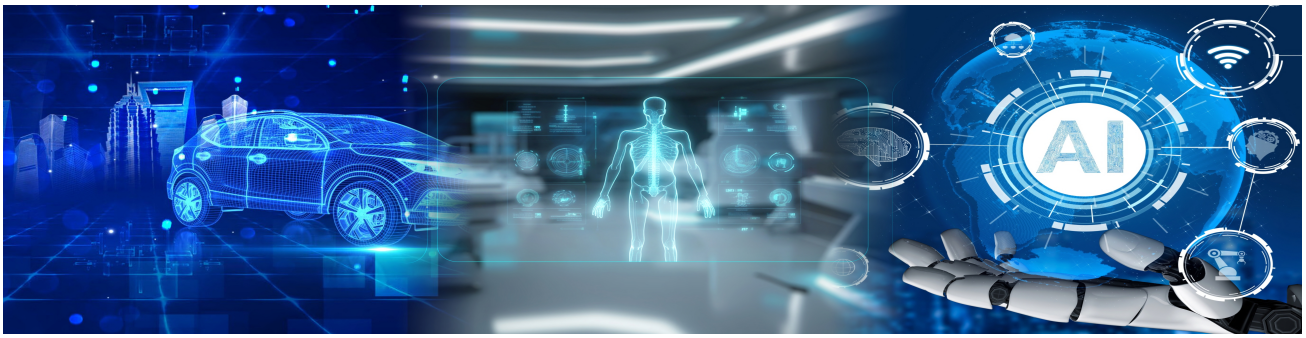
MILITARY
QUALITY TRUST
JINPEI

version: BWCI01

JINPEI since 2005

# WHO WE ARE

Specializing in powder metallurgy, new materials and electronic components. Our core team members have years of experience in research and development at defense enterprises and were previously visiting scholars at the Debye Laboratory.
mastering cutting-edge industry technologies and a deep understanding of **capacitor** application scenarios.




Jinpei 's valued for its ability to meet unique innovation and develop and custom products complying with the specific needs.
Since 2005, we had been striving to become a long-term contract contractor for several enterprises with tens of thousands of employees.

# CERTIFICATE




## Mission

Making our customers no related problems from capacitor application .

## Vision

Become the most trusted partner of customers

## Value

Honesty | Positive | Inclusion | Achievement for others

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| | CKAA 60140 | 15/18/20 Ah | 2.5~4.2V | -40℃~+65℃+85℃ | high power than lithium battery | 440 |

## CAYC SERIES: Radial, 125°C




AI.E.CAP.

### FEATURES

- 125°C, 2,000 hours assured.
- Ultra Low ESR, solid capacitors with large permissible ripplecurrent

### SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Temperature Range | -55C ~ +125°C |
| Capacitance Tolerance | +20% (at 120Hz, 20°C) |
| Leakage Current (at 20°C) | Less than 0.2CV (μA) after 2 minutes,<br>Where, C=rated capacitance in μF. V=rated DC working voltage in V. |
| Dissipation Factor (Tan ä at 120Hz, 20°C) | See the Dimension & Permissible Ripple Current |
| ESR (at 100K ~ 300K Hz, M¿, 20°C MAX) | See the Dimension & Permissible Ripple Current |
| Load Life Test<br>(125°C with rated voltage applied) | Test Time: 2.5V~4V: 1,000 Hrs; 6.3V~16V: 2,000Hrs<br>Capacitance Change: Within ±20% of initial value<br>Dissipation Factor: Less than 200% of specified value<br>ESR: Less than 200% of specified value<br>Leakage Current: Within specified value<br>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hrs at 125°C |
| Moisture Resistance<br>(Stored at 60°C 90 to 95% R.H) | Test Time: 1,000 Hrs<br>Capacitance Change: Within +20% of initial value<br>Dissipation Factor: Less than 150% of specified value<br>ESR: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* Leakage current should be tested after voltage treatment. |
| Standards | JIS C 5101-1 |

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

| W.V.(V) | Capacitance (μF) | Size ØDxL (mm) | Tanä | L.C. | E.S.R. (100k~300kHz, m¿, 20°C MAX) | Rated R.C. (mArms at100kHz) T<105°C | Rated R.C. (mArms at100kHz) 105°C<T<125°C |
|---|---|---|---|---|---|---|---|
| 2.5V(0E) | 680 | 6.3 x 6.5 | 0.18 | 340 | 13 | 4,520 | 1,721 |
| | 1,500 | 8 x 11.5 | 0.18 | 750 | 13 | 5,440 | 1,430 |
| 4V(0G) | 560 | 6.3 x 5.5 | 0.18 | 448 | 13 | 4,520 | 1,721 |
| | 1,200 | 6.3 x 11 | 0.18 | 960 | 12 | 5,440 | 1,430 |
| 6.3V(0J) | 470 | 6.3 x 5.5 | 0.15 | 592 | 15 | 4,210 | 1,721 |
| | 820 | 6.3 x 11 | 0.15 | 1,033 | 12 | 5,440 | 1,430 |
| 10V(1A) | 330 | 8 x 11.5 | 0.12 | 660 | 16 | 3,950 | 1,250 |
| | 560 | 10 x 12.5 | 0.12 | 1,360 | 13 | 5,230 | 1,655 |
| 16V(1C) | 180 | 6.3 x 5.5 | 0.12 | 576 | 18 | 3,640 | 1,151 |
| | 330 | 6.3 x 11 | 0.12 | 1,056 | 16 | 4,720 | 1,493 |
| 20V(1D) | 100 | 8 x 11.5 | 0.15 | 400 | 24 | 3,320 | 1,050 |
| | 150 | 10 x 12.5 | 0.15 | 600 | 20 | 4,320 | 1,367 |

| Code | Lead Forming Type |
|---|---|
| O | Bulk |
| T | 5mm Chip tape |
| A | (Φ4~Φ6.3)2.5mm tape |
| F | (Φ4~Φ8)5mm tape |
| P | Φ≥Φ8mm original(vertical)tape |
| M | 5mm Lead forming |
| C | C Lead forming |
| B | B Lead forming |
| D | (Φ4~Φ8)2.5mm Lead forming |

### PAD SPACING AND DIAMETER

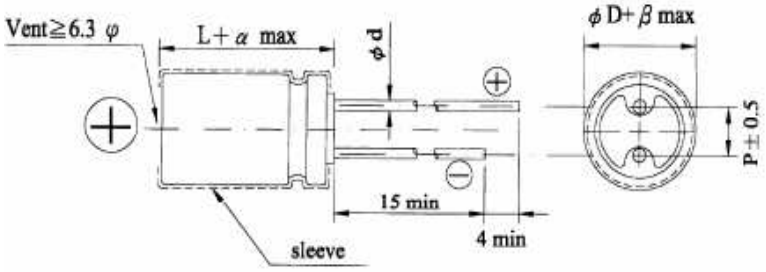
Unit: mm

| øD | 8 | 10 |
|---|---|---|
| L | 11.5 | 12.5 |
| P/F | 3.5 | 5.0 |
| ød | 0.6 | |
| a | 1.0 / 1.5 | |
| ß | 0.5 | |

### PART NUMBER EXAMPLE

CAYC 227 M 1A B 063100 F

- Series
- Capacitance Code
- Tolerance Code
- Rated Voltage
- Package
- Case Size
- Flat Rubber



## CAYA SERIES: 105°C, 2000 Hours

## Al. E. CAP.




### FEATURES

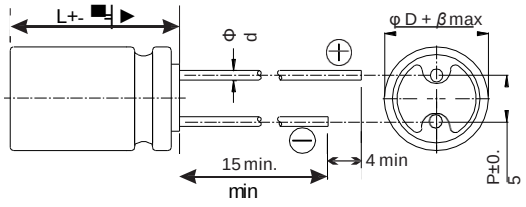
- 105°C, 2,000 hours assured.
- Ultra Low ESR with large permissible ripple current
- RoHS Compliance

### SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Temperature | - 55°C ~ + 105°C |
| Capacitance Tolerance | ±20% (at 120Hz, 20°C) |
| Leakage Current (at 20°C) | Rated voltage applied, after 2 minutes at 20°C<br>See Standard Ratings |
| Tan ∂ (at 120Hz, 20°C) | See Standard Ratings |
| Load Life Test | Test Time: 2,000 hours<br>Capacitance Change: Within 20% of initial value<br>Tan ∂: Less than 150% of specified value<br>ESR: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* The above specification shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hours at 85°C |
| Moisture Resistance | Test Time: 1,000 hours<br>Capacitance Change: Within 20% of initial value<br>Tan: Less than 150% of specified value<br>ESR: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* The above specification shall be satisfied when the capacitors are restored to 20°C after subjecting them at 60°C 90 to 95% RH for 1,000 hours. Leakage current should be tested after voltage treatment.(note) |

| Ripple Current & Frequency Multipliers | Frequency (Hz) | 120 ≤ f < 1K | 1K ≤ f < 10K | 10K ≤ f < 100K | 100K ≤ f < 500K |
|---|---|---|---|---|---|
| | Multiplier | 0.05 | 0.3 | 0.7 | 1.0 |

### DIAGRAM OF DIMENSIONS (mm)




Lead Spacing and Diameter Unit : mm

| φD | 6.3 | 6.3 | 6.3 | 8 | 10 | 10 |
|---|---|---|---|---|---|---|
| L | 5.5 | 6.5 | 11.0 | 11.5 | 10 | 12.0 |
| P | 2.5 | | | 3.5 | 5.0 | |
| φd | 0.45 | | 0.5 | 0.6 | | |
| α | 1.0 | | | | | |
| β | 0.5 | | | | | |

### PART NUMBER EXAMPLE

CAYA 227 M 1A B 063100 F

- CAYA — Series
- 227 — Capacitance Code
- M — Tolerance Code
- 1A — Rated Voltage
- B — Package
- 063100 — Case Size
- F — Flat Rubber

| Code | Lead Forming Type |
|---|---|
| O | Bulk |
| T | 5mm Chip tape |
| A | (Φ4~Φ6.3)2.5mm tape |
| F | (Φ4~Φ8)5mm tape |
| P | Φ≥Φ8mm original(vertical)tape |
| M | 5mm Lead forming |
| C | C Lead forming |
| B | B Lead forming |
| D | (Φ4~Φ8)2.5mm Lead forming |


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## CAYA SERIES: 105°C, 2000 Hours

### CASE SIZE & ELECTRICAL RATING

| W.V. (V) | Surge Voltage (V) | Capacitance (μF) | Code | Size φD x L (mm) | Tan ∂ (120Hz, 20°C) | L.C. (μA) | E S R (mΩ/at 100K~300KHz, 20°C max) | Rate R.C. (mA/rms at 100KHz, 105°C) |
|---|---|---|---|---|---|---|---|---|
| 2.5V (0E) | 2.9 | 220 | 227 | 6.3 x 5.5 | 0.12 | 110 | 28 | 2,390 |
| | | 390 | 397 | 6.3 x 11 | 0.12 | 195 | 18 | 3,160 |
| | | 680 | 687 | 8 x 11.5 | 0.18 | 340 | 10 | 5,230 |
| | | 1,000 | 108 | 10 x 10 | 0.18 | 500 | 14 | 4,700 |
| | | 1,500 | 158 | 10 x 12 | 0.18 | 750 | 12 | 5,500 |
| 4V (0E) | 4.6 | 150 | 157 | 6.3 x 5.5 | 0.12 | 120 | 40 | 1,810 |
| | | 270 | 277 | 6.3 x 11 | 0.12 | 216 | 15 | 3,200 |
| | | 560 | 567 | 8 x 11.5 | 0.18 | 448 | 10 | 5,230 |
| | | 1,200 | 128 | 10 x 12 | 0.18 | 960 | 12 | 5,500 |
| 6.3V (0J) | 7.2 | 100 | 107 | 6.3 x 5.5 | 0.12 | 126 | 40 | 1,810 |
| | | 220 | 227 | 6.3 x 11 | 0.12 | 277 | 18 | 3,160 |
| | | 330 | 337 | 6.3 x 6.5 | 0.12 | 416 | 28 | 2,390 |
| | | 390 | 397 | 8 x 11.5 | 0.15 | 491 | 12 | 4,770 |
| | | 470 | 477 | 8 x 11.5 | 0.15 | 592 | 12 | 4,770 |
| | | 820 | 827 | 10 x 12 | 0.15 | 1033 | 12 | 5,500 |
| 10V (1A) | 12.0 | 100 | 107 | 6.3 x 6.5 | 0.12 | 200 | 45 | 1,700 |
| | | 220 | 227 | 6.3 x 10 | 0.08 | 440 | 30 | 2,500 |
| | | | | 10 x 10 | 0.15 | 440 | 17 | 3,950 |
| | | 330 | 337 | | | | | |
| | | 560 | 567 | 10 x 12 | 0.12 | 1360 | 12 | 5,300 |
| 16V (1C) | 18.0 | 47 | 477 | 6.3 x 5.5 | 0.10 | 150 | 50 | 1,650 |
| | | 100 | 107 | 6.3 x 11 | 0.10 | 320 | 22 | 2,820 |
| | | 180 | 187 | 8 x 11.5 | 0.12 | 576 | 16 | 4,360 |
| | | 330 | 337 | 10 x 10 | 0.12 | 1056 | 16 | 4,360 |
| | | 330 | 337 | 10 x 12 | 0.12 | 1056 | 14 | 5,050 |
| 20V (1D) | 23.0 | 22 | 226 | 6.3 x 5.5 | 0.10 | 88 | 60 | 1,450 |
| | | 56 | 566 | 6.3 x 11 | 0.10 | 224 | 25 | 2,650 |
| | | 100 | 107 | 8 x 11.5 | 0.15 | 400 | 24 | 3,320 |
| | | 100 | 107 | 10 x 10 | 0.15 | 400 | 24 | 3,320 |
| | | 150 | 157 | 10 x 12 | 0.15 | 600 | 20 | 4,320 |
| | | 330 | 337 | 10 x 12 | 0.12 | 1320 | 24 | 2,800 |
| 25V (1E) | 29.0 | 6.8 | 685 | 6.3 x 5.5 | 0.10 | 170 | 80 | 1,200 |
| | | 33 | 336 | 8 x 11.5 | 0.12 | 165 | 24 | 3,320 |
| | | 56 | 566 | 8 x 11.5 | 0.12 | 280 | 24 | 3,320 |
| | | | | 10 x 12.5 | 0.12 | 280 | 20 | 4,320 |
| | | 68 | 686 | | | | | |
| | | 100 | 107 | 10 x 12 | 0.12 | 500 | 20 | 4,320 |
| | | 270 | 277 | 10 x 12 | 0.12 | 1350 | 25 | 2,800 |
| 35V (1V) | 40.0 | 22 | 226 | 8 x 11.5 | 0.12 | 154 | 31 | 2,300 |
| | | 39 | 396 | 8 x 11.5 | 0.12 | 273 | 31 | 2,300 |
| | | 47 | 476 | 10 x 12 | 0.12 | 329 | 30 | 3,650 |
| | | 68 | 686 | 10 x 12 | 0.12 | 476 | 28 | 2,700 |
| | | 150 | 157 | 10 x 12 | 0.12 | 1050 | 26 | 2,700 |
| 50V (1H) | 58.0 | 27 | 276 | 8 x 11.5 | 0.12 | 390 | 29 | 2,200 |
| | | 47 | 476 | 10 x 12 | 0.12 | 680 | 28 | 2,600 |
| 63V (1J) | 73.0 | 27 | 276 | 8 x 11.5 | 0.12 | 340 | 33 | 2,100 |
| | | 47 | 476 | 10 x 12 | 0.12 | 592 | 29 | 2,600 |

## CAYE SERIES: Radial, 105°C, Higher Ripple Current

### Al.E.CAP.




### FEATURES

- 105°C, 2,000 hours assured.
- Ultra Low ESR, solid capacitors with large permissible ripple current
- RoHS Compliance

| Items | Performance |
|---|---|
| Operating Temperature Range | -55 ℃~+105℃ |
| Capacitance Tolerance | +20% (at 120Hz, 20℃) |
| Leakage Current (at 20°C) | Less than 0.2CV (μA) after 2 min, where,C = rated capacitance in F. V = rated DC working voltage in V. |
| Dissipation Factor (at 120Hz, 20°C) | Less or equal to the value at dimension & permissible ripple current |
| ESR (at 100K ~ 300KHz, m¿•,20℃ MAX) | Less or equal to the value at dimension & permissible ripple current |
| Load Life Test | Test Time: 2,000 Hrs<br>Capacitance Change: Within +20% of initial value<br>Dissipation Factor: Less than 150% of specified value<br>ESR: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* The above specifications shall be staisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hrs at 125° |
| Moisture Resistance | Store at 60°C, 90 to 95% R.H. Test time: 1,000Hrs, other items are the same as those for the load life test<br>Test Time: 1,000 Hrs<br>Capacitance Change: Within +20% of initial value<br>Dissipation Factor: Less than 150% of specified value<br>ESR: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* Leakage current should be tested after voltage treatment. |
| Standards | JIS C 5101-1 |

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

| W.V. (V) | Capacitance ( uF) | Size | Tan | L.C. | E.S.R. (100k-300kHz, m20 CMAX) | Rated R.C. (mA/rms at 100kHz, 10)5 |
|---|---|---|---|---|---|---|
| | 470 | 8 x 8 | 0.10 | 235 | 9 | 5,000 |
| | 560 | 8 x 8 | 0.12 | 280 | 8 | 5,000 |
| | 820 | 8 x 8 | 0.10 | 410 | 7 | 6,200 |
| 2.5V (0E) | | 8 x 12 | 0.12 | 410 | 7 | 6,200 |
| | 1,000 | 8 x 8 | 0.12 | 500 | 7 | 6,200 |
| | 1,500 | 10 x 12.5 | 0.12 | 750 | 7 | 6,500 |
| | 2,700 | 10 x 12.5 | 0.12 | 1,350 | 7 | 7,200 |
| | 560 | 8 x 8 | 0.10 | 448 | 7 | 6,200 |
| | | 8 x 12 | 0.12 | 448 | 7 | 6,200 |
| | 820 | 8 x 8 | 0.10 | 656 | 7 | 6,200 |
| 4V (0G) | 1,000 | 8 x 8 | 0.10 | 800 | 7 | 6,200 |
| | 1,200 | 10 x 12.5 | 0.12 | 960 | 7 | 6,200 |
| | 1,500 | 10 x 12.5 | 0.12 | 1,200 | 7 | 6,500 |
| | 2,200 | 10 x 12.5 | 0.12 | 1,760 | 8 | 7,200 |
| | 220 | 8 x 8 | 0.10 | 277 | 10 | 5,000 |
| | 470 | 8 x 12 | 0.12 | 592 | 7 | 6,200 |
| | | 8 x 8 | 0.12 | 592 | 7 | 6,200 |
| 6.3V (0J) | 560 | 8 x 8 | 0.10 | 706 | 7 | 6,200 |
| | | 8 x 12 | 0.12 | 706 | 7 | 6,200 |
| | 820 | 8 x 8 | 0.10 | 1,033 | 7 | 6,200 |
| | | 8 x 12 | 0.10 | 1,033 | 8 | 5,500 |
| | 1,500 | 10 x 12 | 0.12 | 1,890 | 7 | 6,200 |
| 10V (1A) | 470 | 10 x 12.5 | 0.12 | 940 | 8 | 6,000 |
| | 560 | 10 x 12.5 | 0.12 | 1,120 | 8 | 6,000 |
| | 270 | 8 x 12 | 0.12 | 864 | 8 | 5,000 |
| 16V (1C) | 330 | 10 x 12.5 | 0.12 | 1,056 | 8 | 6,000 |
| | 470 | 10 x 12.5 | 0.12 | 1,504 | 8 | 6,000 |

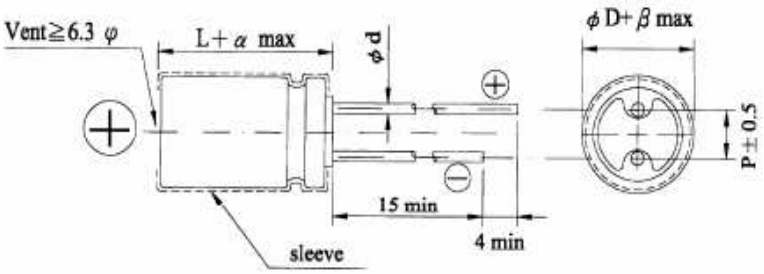

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## PAD SPACING AND DIAMETER

Unit: mm

| øD | 8 | | 10 |
|---|---|---|---|
| L | 8.0 | 12.0 | 12.5 |
| P | 3.5 | | 5.0 |
| ød | 0.6 | | |
| a | 1.0 | | 1.5 |
| ß | 0.5 | | |

| Code | Lead Forming Type |
|---|---|
| O | Bulk |
| T | 5mm Chip tape |
| A | (Φ4~Φ6.3)2.5mm tape |
| F | (Φ4~Φ8)5mm tape |
| P | Φ≥Φ8mm original(vertical)tape |
| M | 5mm Lead forming |
| C | C Lead forming |
| B | B Lead forming |
| D | (Φ4~Φ8)2.5mm Lead forming |




## PART NUMBER EXAMPLE

**CAYE 227 M 1A B 063100 F**

- Series
- Capacitance Code
- Tolerance Code
- Rated Voltage
- Package
- Case Size
- Flat Rubber

## CAYB SERIES: Surface Mount, 105°C

E.CAP.



### FEATURES

- •105°C, 2000 hours assured.
- •Ultra Low ESR, solid capacitors of SMD type
- RoHS Compliance

### SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Temperature Range | -55C ~ +105°C |
| Capacitance Tolerance | +20% (at 120Hz, 20°C) |
| Leakage Current (at 20 C) | Leakage current is not more than 0.2 CV (µA, after 2 minutes) Where, C=rated capacitance in F. V = rated DC working voltage in V. |
| Dissipation Factor (Tanä at 120Hz, 20°C) | See the Dimension & Permissible Ripple Current |
| ESR (at 100K ~ 300K Hz, 20°C) | See the Dimension & Permissible Ripple Current |
| Load Life Test | Test Time: 2,000 Hrs<br>Capacitance Change: Within ±20% of initial value<br>Dissipation Factor: Less than 150% of specified value<br>ESR: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hrs at 105°C. |
| Moisture Resistance | Store at 60°C, 90 to 95% R.H. Test time: 1,000 hrs, other items are the same as those for the load life test.<br>Test Time: 1,000 Hrs<br>Capacitance Change: Within +20% of initial value<br>Dissipation Factor: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* Leakage current should be tested after voltage treatment. |
| Standards | JIS C 5101-1 |

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

| W.V. (V) | Capacitance (µF) | Size DxL(mm) | Tan (120Hz, 20°C) | L.C. (µA) | E.S.R. (mΩ/at 100K ~ 300K Hz, 20°C MAX) | Rated R.C. (mA/rms at 100KHz, 105°C) |
|---|---|---|---|---|---|---|
| 2.5V (0E) | 220 | 6.3 x 6 | 0.12 | 110 | 25 | 2,500 |
| | 560 | 8 x 7 | 0.12 | 280 | 23 | 3,100 |
| | 680 | 8 x 12 | 0.18 | 340 | 12 | 4,770 |
| | 1,000 | 10 x 8 | 0.12 | 500 | 19 | 4,240 |
| | 1,200 | 10 x 10 | 0.18 | 750 | 13 | 5,200 |
| | 1,500 | 10 x 13 | 0.18 | 500 | 10 | 5,500 |
| 4V (0G) | 150 | 6.3 x 6 | 0.12 | 120 | 26 | 2,450 |
| | 220 | 8 x 7 | 0.12 | 176 | 25 | 3,020 |
| | 330 | 8 x 7 | 0.12 | 264 | 25 | 3,020 |
| | 470 | 10 x 8 | 0.12 | 376 | 20 | 4,130 |
| | 560 | 8 x 12 | 0.18 | 448 | 12 | 4,770 |
| | 680 | 10 x 8 | 0.12 | 544 | 20 | 4,130 |
| | 820 | 10 x 10 | 0.18 | 656 | 13 | 5,200 |
| | 1,200 | 10 x 13 | 0.18 | 960 | 10 | 5,500 |
| 6.3V (0J) | 82 | 6.3 x 6 | 0.12 | 103 | 27 | 2,400 |
| | 100 | 6.3 x 6 | 0.12 | 126 | 27 | 2,400 |
| | 120 | 6.3 x 7 | 0.12 | 151 | 30 | 2,010 |
| | 150 | 6.3 x 7 | 0.12 | 189 | 30 | 2,250 |
| | | 8 x 7 | 0.12 | 189 | 25 | 3,020 |
| | 220 | 6.3 x 7 | 0.12 | 277 | 45 | 2,320 |
| | | 8 x 7 | 0.12 | 277 | 25 | 3,020 |
| | 330 | 10 x 8 | 0.12 | 416 | 20 | 4,130 |
| | 470 | 8 x 12 | 0.15 | 592 | 12 | 4,770 |
| | | 10 x 8 | 0.12 | 592 | 20 | 4,130 |
| | 560 | 10 x 10 | 0.15 | 706 | 16 | 4,700 |
| | 820 | 10 x 13 | 0.15 | 1,033 | 10 | 5,500 |



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## CAYB SERIES: Surface Mount, 105°C

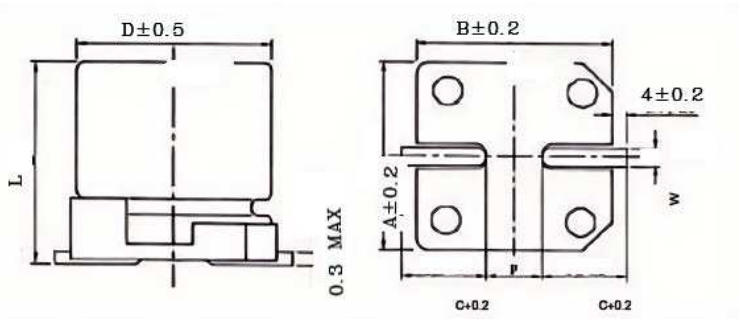
## E. CAP.

### DIMENSION & PERMISSIBLE RIPPLE CURRENT Cont'd

| W.V. (V) | Capacitance (μF) | Size DxL(mm) | Tan (120Hz, 20°C) | L.C. (μA) | E.S.R. (mΩ/at 100K~300K Hz, 20°C MAX) | Rated R.C. (mA/rms at 100KHz, 105°C) |
|---|---|---|---|---|---|---|
| 10V (1A) | 56 | 6.3 x 6 | 0.10 | 112 | 31 | 2,250 |
| | 150 | 8 x 7 | 0.10 | 300 | 27 | 2,800 |
| | 330 | 10 x 8 | 0.10 | 660 | 24 | 3,770 |
| | 330 | 8 x 12 | 0.15 | 660 | 14 | 4,420 |
| | 470 | 10 x 10 | 0.15 | 940 | 18 | 4,400 |
| | 560 | 10 x 13 | 0.15 | 1,120 | 12 | 5,300 |
| 16V (1C) | 47 | 6.3 x 6 | 0.10 | 150 | 50 | 1,650 |
| | 82 | 8 x 7 | 0.10 | 262 | 30 | 2,700 |
| | 180 | 8 x 12 | 0.15 | 576 | 16 | 4,360 |
| | | 10 x 8 | 0.10 | 576 | 26 | 3,430 |
| | 220 | 10 x 10 | 0.15 | 704 | 20 | 4,200 |
| | 330 | 10 x 13 | 0.15 | 1,056 | 14 | 5,050 |
| 20V (1D) | 22 | 6.3 x 6 | 0.10 | 88 | 50 | 1,650 |
| | 47 | 8 x 7 | 0.10 | 188 | 45 | 2,000 |
| | 82 | 10 x 8 | 0.10 | 328 | 40 | 2,500 |
| | 100 | 8 x 12 | 0.15 | 400 | 24 | 3,320 |
| | | 10 x 10 | 0.15 | 400 | 25 | 3,700 |
| | 150 | 10 x 13 | 0.15 | 608 | 20 | 4,320 |
| 25V (1E) | 7 | 6.3 x 6 | 0.10 | 170 | 80 | 1,200 |
| | 33 | 8 x 12 | 0.12 | 413 | 30 | 2,980 |
| | 56 | 10 x 13 | 0.12 | 700 | 28 | 3,800 |

### PAD SPACING AND DIAMETER

| ÖD | L | A | B | C | W | P+0.2 |
|---|---|---|---|---|---|---|
| 6.3 | 6.0 + 0.2 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |
| 6.3 | 7.0 + 0.2 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |
| 8 | 7.0 + 0.2 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 2.3 |
| 8 | 11.8 + 0.5 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 3.1 |
| 10 | 8.0 + 0.2 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |
| 10 | 10.0 + 0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |
| 10 | 12.7 + 0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |




### PART NUMBER EXAMPLE

CAYB 107 M 0J T 100100

series | capacitor code | tolerance code | voltage code | package | demension code

## CAYD SERIES: Surface Mount,125°C

E. CAP.



### FEATURES

- •125°C,2,000hoursassured.
- •Ultra LowESR
- RoHS Compliance

### SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Temperature Range | -55C ~ +125°C |
| Capacitance Tolerance | +20% (at 120Hz, 20°C) |
| Leakage Current (at 20°C) | I=0.2CV (μA) whichever is greater (after 2 minutes)<br>Where, C=rated capacitance in μF. V=rated DC working voltage in V. |
| Dissipation Factor (Tan ä at 120Hz, 20°C) | See the Dimension & Permissible Ripple Current |
| ESR (at 100K ~ 300K Hz, 20°C) | See the Dimension & Permissible Ripple Current |
| Load Life Test | Test Time: 2.5V-4V: 1,000 Hrs; 6.3V-16V: 2,000Hrs<br>Capacitance Change: Within ±20% of initial value<br>Dissipation Factor: Less than 200% of specified value<br>ESR: Less than 200% of specified value<br>Leakage Current: Within specified value<br>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hrs at 125°C |
| Moisture Resistance | Store at 60°C, 90 to 95% R.H. Test time: 1,000 hrs, other items are the same as those for the load life test.<br>Test Time: 1,000 Hrs<br>Capacitance Change: Within +20% of initial value<br>Dissipation Factor: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* Leakage current should be tested after voltage treatment. |
| Standards | JIS C 5101-1 |

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

| W.V.(V) | Capacitance (μF) | Size ÖDxL (mm) | Tan (120Hz, 20 C) | L.C. (μA) | E.S. R. (mΣ/at 100k~300k Hz, 20°C MAX) | Rated R.C. (mA/rms at 100KHz, 125°C) |
|---|---|---|---|---|---|---|
| | 680 | 8 x 12 | 0.18 | 340 | 13 | 1,430 |
| 2.5V(0E) | 1000 | 10 x 10 | 0.18 | 500 | 13 | 1,645 |
| | 1500 | 10 x 13 | 0.18 | 750 | 13 | 1,721 |
| | 560 | 8 x 12 | 0.18 | 448 | 13 | 1,430 |
| 4V(0G) | 820 | 10 x 10 | 0.18 | 656 | 13 | 1,645 |
| | 1200 | 10 x 13 | 0.18 | 960 | 12 | 1,721 |
| | 470 | 8 x 12 | 0.15 | 592 | 15 | 1,332 |
| 6.3V(0J) | 560 | 10 x 10 | 0.15 | 706 | 16 | 1,487 |
| | 820 | 10 x 13 | 0.15 | 1,033 | 12 | 1,721 |
| | 330 | 8 x 12 | 0.15 | 660 | 17 | 1,250 |
| 10V(1A) | 470 | 10 x 10 | 0.15 | 940 | 18 | 1,392 |
| | 560 | 10 x 13 | 0.15 | 1,360 | 13 | 1,655 |
| | 180 | 8 x 12 | 0.15 | 576 | 20 | 1,151 |
| 16V(1C) | 220 | 10 x 10 | 0.15 | 704 | 20 | 1,400 |
| | 330 | 10 x 13 | 0.15 | 1,056 | 16 | 1,493 |


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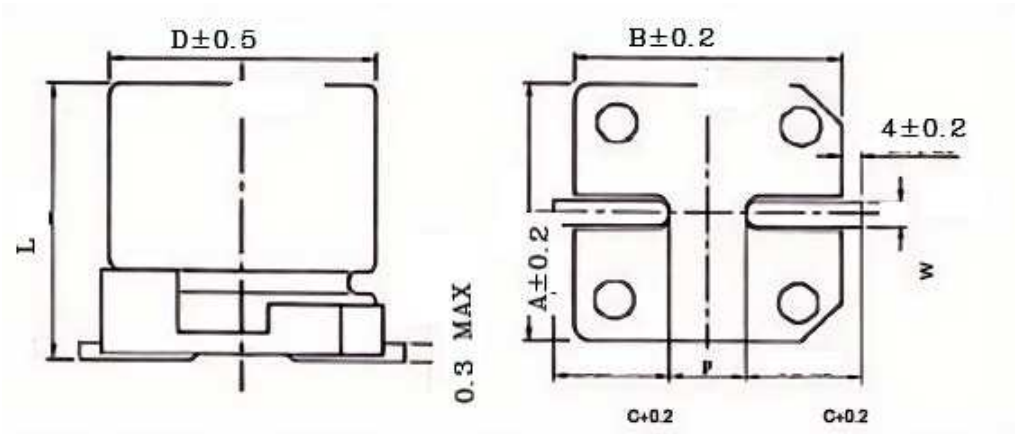
## CAYD SERIES: Surface Mount,125°C

E. CAP.

### PAD SPACING AND DIAMETER

Unit: mm

| D | L | A | B | C | W | P+0.2 |
|---|---|---|---|---|---|---|
| 8 | 11.8+0.5 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 3.1 |
| 10 | 10.0+0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |
| 10 | 12.7+0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |




### PART NUMBER EXAMPLE

| CAYD | 107 | M | 0J | T | 100100 |
|---|---|---|---|---|---|
| series | capacitor code | tolerance code | voltage code | package | demension code |

## CAYF SERIES: SMT,105°C, Higher Ripple Current




### FEATURES

- •105°C, 2,000 hours assured.
- •Ultra Low ESR with large permissible ripple current
- RoHS Compliance

### SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Temperature Range | -55C ~ +105°C |
| Capacitance Tolerance | +20% (at 120Hz, 20°C) |
| Leakage Current (at 20°C) | I=0.2CV (μA) whichever is greater (after 2 minutes)<br>Where, C=rated capacitance in μF. V=rated DC working voltage in V. |
| Dissipation Factor (Tan ä at 120Hz, 20°C) | See the Dimension & Permissible Ripple Current |
| ESR (at 100K ~ 300K Hz, 20°C) | See the Dimension & Permissible Ripple Current |
| Load Life Test | Test Time: 2,000Hrs<br>Capacitance Change: Within ±20% of initial value<br>Dissipation Factor: Less than 200% of specified value<br>ESR: Less than 200% of specified value<br>Leakage Current: Within specified value<br>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hrs at 105°C |
| Moisture Resistance | Store at 60°C, 90 to 95% R.H. Test time: 1,000 hrs, other items are the same as those for the load life test.<br>Test Time: 1,000 Hrs<br>Capacitance Change: Within +20% of initial value<br>Dissipation Factor: Less than 150% of specified value<br>Leakage Current: Within specified value<br>* Leakage current should be tested after voltage treatment. |
| Standards | JIS C 5101-1 |

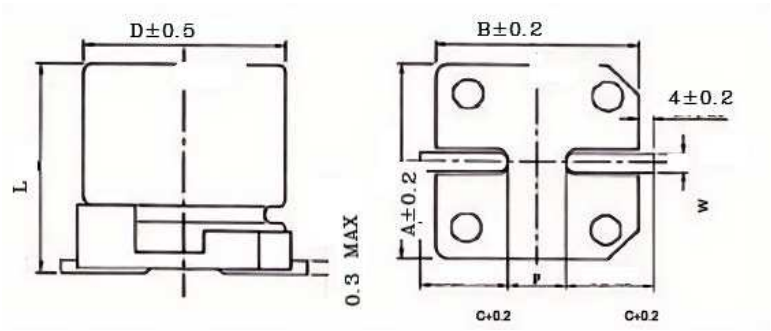
### DIMENSION & PERMISSIBLE RIPPLE CURRENT

| W.V. (V) | Capacitance (μF) | Size ö DxL(mm) | Tan (120Hz, 20°C) | L.C. (μA) | E.S.R. (mί/at 100k ~ 300k Hz, 20°C MAX) | Rated R.C. (mA/rms at 100kHz, 105°C) |
|---|---|---|---|---|---|---|
| | 1,500 | 8 x 12 | 0.15 | 750 | 12 | 5,150 |
| 2.5V (0E) | 1,500 | 10 x 13 | 0.15 | 750 | 7 | 7,200 |
| | 2,700 | 10 x 13 | 0.15 | 1,350 | 11 | 5,600 |
| | 1,200 | 8 x 12 | 0.15 | 960 | 12 | 4,700 |
| 4V (0G) | 1,200 | 10 x 13 | 0.15 | 960 | 7 | 7,200 |
| | 2,200 | 10 x 13 | 0.15 | 1,760 | 11 | 7,200 |
| | 820 | 8 x 12 | 0.15 | 1,033 | 13 | 4,700 |
| 6.3V (0J) | 820 | 10 x 13 | 0.15 | 1,890 | 7 | 5,600 |
| | 1,500 | 10 x 13 | 0.15 | 1,890 | 12 | 5,560 |

### PAD SPACING AND DIAMETER

Unit: mm

| D | L | A | B | C | W | P+0.2 |
|---|---|---|---|---|---|---|
| 8 | 11.8 + 0.5 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 3.1 |
| 10 | 12.7 + 0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |




### PART NUMBER EXAMPLE

CAYD 107 M 0J T 100100

series | capacitor code | tolerance code | voltage code | package | demension code

**SMD**

# CAYG

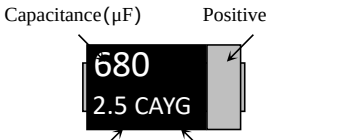



- ◆ 105°C 2000 Hours
- ◆ High Voltage（50Vmax）High Capacitance（820uF max）
- ◆ Low ESR And High Ripple Current
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 2~50V |
| **Capacitance Range** | 15~820μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Below the standard value（under frequency 120Hz/20C） |
| **Leakage Current** | I<0.1CV under 20C charging 2mins with rated voltage |
| **ESR** | Below the standard value（under frequency 100KHz/20C） |
| **Surge Voltage (V)** | 1.15times than rated voltage |
| **Endurance** | After load rated voltage for 2000hours at 105°C, the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>Dissipation Factor: 200%or less than the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60°C under the condition of 90%~95%R.H with no load for 1000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.——<br>Capacitance change: -20%+50%of the initial value<br>Dissipation Factor: 200%or less than the initial specified value<br>Leakage current: Within the initial value |

## ■ Marks




Manufacturing Code Standard：

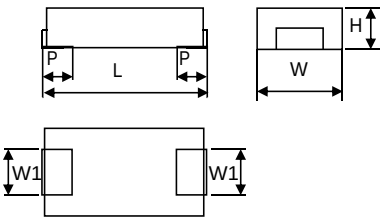
The 1st letter: Producing Month

| Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | A | B | C | D | E | F | G | H | J | K | L | M |

Two number in the middle:Year

The last letter:Last letter in its series

## ■ Dimension




Unit:mm

| L±0.2 | W±0.2 | H±0.1 | W1±0.1 | P±0.2 |
|---|---|---|---|---|
| 7.3 | 4.3 | 2.8 | 2.4 | 1.3 |

## ■ Rated Ripple Current Temperature Correction Factor

| Frequency（Hz） | T≤45°C | 45°C<T≤85°C | 85°C<T≤105°C |
|---|---|---|---|
| **Correction factor** | 1.0 | 0.7 | 0.25 |

The surface temperature of MLPC should be less than its Max.operating temperature.

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100-300KHz |
|---|---|---|---|---|
| **Correction factor** | 0.10 | 0.45 | 0.50 | 1.00 |

# CAYG

## ■ Standard Size ESR(mΩ100kHz) Ripple current (mA/r.m.s) 45°C100kHz

| Rated Voltage (V) | Capacitance (μF) | Size D×L(mm) | | | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|---|---|
| | | L | W | H | | | | | |
| 2 | 560 | 7.3 | 4.3 | 2.8 | 112 | 0.06 | 6 | 7500 | CAYG567M0DD060T |
| | | 7.3 | 4.3 | 2.8 | 112 | 0.06 | 4.5 | 8500 | CAYG567M0DD045T |
| | 680 | 7.3 | 4.3 | 2.8 | 136 | 0.06 | 6 | 7500 | CAYG687M0DD060T |
| | | 7.3 | 4.3 | 2.8 | 136 | 0.06 | 4.5 | 8500 | CAYG687M0DD045T |
| | 820 | 7.3 | 4.3 | 2.8 | 164 | 0.06 | 6 | 7500 | CAYG827M0DD060T |
| | | 7.3 | 4.3 | 2.8 | 164 | 0.06 | 4.5 | 8500 | CAYG827M0DD045T |
| 2.5 | 470 | 7.3 | 4.3 | 2.8 | 118 | 0.06 | 6 | 7500 | CAYG477M0ED060T |
| | | 7.3 | 4.3 | 2.8 | 118 | 0.06 | 4.5 | 8500 | CAYG477M0ED045T |
| | 560 | 7.3 | 4.3 | 2.8 | 140 | 0.06 | 6 | 7500 | CAYG567M0ED060T |
| | | 7.3 | 4.3 | 2.8 | 140 | 0.06 | 4.5 | 8500 | CAYG567M0ED045T |
| | 680 | 7.3 | 4.3 | 2.8 | 170 | 0.06 | 6 | 7500 | CAYG687M0ED060T |
| | | 7.3 | 4.3 | 2.8 | 170 | 0.06 | 4.5 | 8500 | CAYG687M0ED045T |
| 4 | 330 | 7.3 | 4.3 | 2.8 | 132 | 0.06 | 9 | 6300 | CAYG337M0GD090T |
| | 390 | 7.3 | 4.3 | 2.8 | 156 | 0.06 | 9 | 6300 | CAYG397M0GD090T |
| | 470 | 7.3 | 4.3 | 2.8 | 188 | 0.06 | 7 | 7000 | CAYG477M0GD070T |
| 6.3 | 270 | 7.3 | 4.3 | 2.8 | 170 | 0.06 | 9 | 6300 | CAYG277M0JD090T |
| | 330 | 7.3 | 4.3 | 2.8 | 208 | 0.06 | 7 | 7000 | CAYG337M0JD070T |
| | 390 | 7.3 | 4.3 | 2.8 | 246 | 0.06 | 7 | 7000 | CAYG397M0JD070T |
| 10 | 150 | 7.3 | 4.3 | 2.8 | 150 | 0.06 | 10 | 6800 | CAYG157M1AD100T |
| | 220 | 7.3 | 4.3 | 2.8 | 220 | 0.06 | 10 | 6800 | CAYG227M1AD100T |
| 16 | 120 | 7.3 | 4.3 | 2.8 | 192 | 0.06 | 20 | 5600 | CAYG127M1CD200T |
| | 150 | 7.3 | 4.3 | 2.8 | 240 | 0.06 | 15 | 5900 | CAYG157M1CD150T |
| 20 | 82 | 7.3 | 4.3 | 2.8 | 164 | 0.06 | 20 | 5600 | CAYG826M1DD200T |
| | 100 | 7.3 | 4.3 | 2.8 | 200 | 0.06 | 20 | 5600 | CAYG107M1DD200T |
| 25 | 82 | 7.3 | 4.3 | 2.8 | 205 | 0.06 | 25 | 3900 | CAYG826M1ED250T |
| | 100 | 7.3 | 4.3 | 2.8 | 250 | 0.06 | 25 | 3900 | CAYG107M1ED250T |
| 35 | 39 | 7.3 | 4.3 | 2.8 | 137 | 0.06 | 30 | 4300 | CAYG396M1VD300T |
| | 47 | 7.3 | 4.3 | 2.8 | 165 | 0.06 | 30 | 4300 | CAYG476M1VD300T |
| 50 | 15 | 7.3 | 4.3 | 2.8 | 53 | 0.06 | 45 | 3600 | CAYG156M1HD450T |


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**SMD**

# CAYH

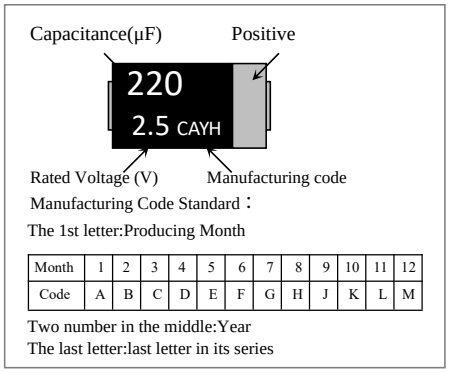



- ◆ 105°C 2000 Hours
- ◆ Flat Type (Height 1.0mm)
- ◆ High Voltage ( 50Vmax )
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 2~50V |
| **Capacitance Range** | 5.6~220μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Below the standard value（under frequency 120Hz/20°C） |
| **Leakage Current** | I<0.1CV under 20°C charging 2mins with rated voltage |
| **ESR** | Below the standard value（under frequency 100KHz/20°C） |
| **Surge Voltage (V)** | 1.15times than rated voltage |
| **Endurance** | After load rated voltage for 2000hours at 105°C, the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>Dissipation Factor: 200%or less than the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60°C under the condition of 90%~95%R.H with no load for 1000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.——<br>Capacitance change: -20%+50%of the initial value<br>Dissipation Factor: 200%or less than the initial specified value<br>Leakage current: Within the initial value |

## ■ Marks




Manufacturing Code Standard：

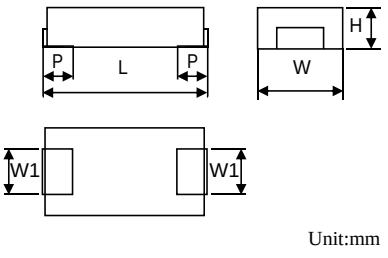
The 1st letter:Producing Month

| Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | A | B | C | D | E | F | G | H | J | K | L | M |

Two number in the middle:Year

The last letter:last letter in its series

## ■ Dimension




Unit:mm

| L±0.2 | W±0.2 | H±0.1 | W1±0.1 | P±0.2 |
|---|---|---|---|---|
| 7.3 | 4.3 | 1.0 | 2.4 | 1.3 |

## ■ Rated Ripple Current Temperature Correction Factor

| Frequency（Hz） | T≤45°C | 45°C<T≤85°C | 85°C<T≤105°C |
|---|---|---|---|
| Correction factor | 1.0 | 0.7 | 0.25 |

The surface temperature of MLPC should be less than its Max.operating temperature.

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100-300KHz |
|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 |

# CAYH

## ■ Standard Size ESR(mΩ100kHz) Ripple current (mA/r.m.s) 45°C100kHz

| Rated Voltage (V) | Capacitance (μF) | Size D×L(mm) | | | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|---|---|
| | | L | W | H | | | | | |
| 2 | 82 | 7.3 | 4.3 | 1.0 | 16.4 | 0.06 | 15 | 5100 | CAYH826M0DD10150T |
| | 180 | 7.3 | 4.3 | 1.0 | 36 | 0.06 | 12 | 5600 | CAYH187M0DD10120T |
| | 220 | 7.3 | 4.3 | 1.0 | 44 | 0.06 | 9 | 6300 | CAYH227M0DD10090T |
| 2.5 | 68 | 7.3 | 4.3 | 1.0 | 17 | 0.06 | 15 | 5100 | CAYH686M0ED10150T |
| | 180 | 7.3 | 4.3 | 1.0 | 38 | 0.06 | 12 | 5600 | CAYH187M0ED10120T |
| 4 | 47 | 7.3 | 4.3 | 1.0 | 9.4 | 0.06 | 20 | 4200 | CAYH476M0GD10200T |
| | 100 | 7.3 | 4.3 | 1.0 | 40 | 0.06 | 12 | 5600 | CAYH107M0GD10120T |
| | 150 | 7.3 | 4.3 | 1.0 | 60 | 0.06 | 9 | 6300 | CAYH157M0GD10090T |
| | | 7.3 | 4.3 | 1.0 | 60 | 0.06 | 7 | 7000 | CAYH157M0GD10070T |
| 6.3 | 33 | 7.3 | 4.3 | 1.0 | 21 | 0.06 | 20 | 4200 | CAYH336M0JD10200T |
| | 68 | 7.3 | 4.3 | 1.0 | 43 | 0.06 | 15 | 5100 | CAYH686M0JD10150T |
| | 100 | 7.3 | 4.3 | 1.0 | 63 | 0.06 | 12 | 5600 | CAYH107M0JD10120T |
| 10 | 18 | 7.3 | 4.3 | 1.0 | 14 | 0.06 | 20 | 4200 | CAYH186M1AD10200T |
| | 39 | 7.3 | 4.3 | 1.0 | 39 | 0.06 | 18 | 4600 | CAYH396M1AD10180T |
| | 56 | 7.3 | 4.3 | 1.0 | 68 | 0.06 | 15 | 5100 | CAYH566M1AD10150T |
| 16 | 15 | 7.3 | 4.3 | 1.0 | 24 | 0.06 | 70 | 2400 | CAYH156M1CD10700T |
| | 33 | 7.3 | 4.3 | 1.0 | 53 | 0.06 | 50 | 2850 | CAYH336M1CD10500T |
| | 47 | 7.3 | 4.3 | 1.0 | 75 | 0.06 | 30 | 3500 | CAYH476M1CD10300T |
| 20 | 10 | 7.3 | 4.3 | 1.0 | 20 | 0.06 | 80 | 2200 | CAYH106M1DD10800T |
| | 22 | 7.3 | 4.3 | 1.0 | 44 | 0.06 | 65 | 2500 | CAYH226M1DD10650T |
| | 33 | 7.3 | 4.3 | 1.0 | 66 | 0.06 | 45 | 3000 | CAYH336M1DD10450T |
| 25 | 10 | 7.3 | 4.3 | 1.0 | 25 | 0.06 | 80 | 2200 | CAYH106M1ED10800T |
| | 22 | 7.3 | 4.3 | 1.0 | 55 | 0.06 | 65 | 2500 | CAYH226M1ED10650T |
| | 33 | 7.3 | 4.3 | 1.0 | 83 | 0.06 | 45 | 3000 | CAYH336M1ED10450T |
| 35 | 15 | 7.3 | 4.3 | 1.0 | 53 | 0.06 | 50 | 2850 | CAYH156M1VD10500T |
| 50 | 5.6 | 7.3 | 4.3 | 1.0 | 41 | 0.06 | 55 | 2700 | CAYH565M1HD10550T |

**SMD**

# CAYI

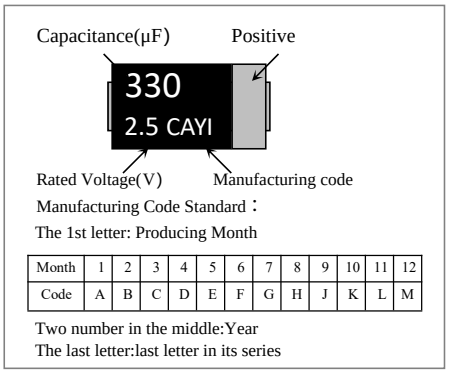



- ◆ 105°C 2000 Hours
- ◆ High Voltage ( 50Vmax )
- ◆ Low ESR And High Ripple Current
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 2~50V |
| **Capacitance Range** | 8.2~470μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Below the standard value（under frequency 120Hz/20°C） |
| **Leakage Current** | I<0.1CV under 20°C charging 2mins with rated voltage |
| **ESR** | Below the standard value（under frequency 100KHz/20°C） |
| **Surge Voltage (V)** | 1.15times than rated voltage |
| **Endurance** | After load rated voltage for 2000hours at 105°C, the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>Dissipation Factor: 200%or less than the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60°C under the condition of 90%~95%R.H with no load for 1000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.——<br>Capacitance change: -20%+50%of the initial value<br>Dissipation Factor: 200%or less than the initial specified value<br>Leakage current: Within the initial value |

## ■ Marks




Manufacturing Code Standard：

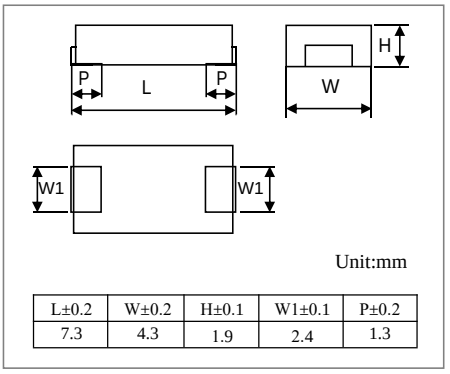
The 1st letter: Producing Month

| Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | A | B | C | D | E | F | G | H | J | K | L | M |

Two number in the middle:Year

The last letter:last letter in its series

## ■ Dimension




Unit:mm

| L±0.2 | W±0.2 | H±0.1 | W1±0.1 | P±0.2 |
|---|---|---|---|---|
| 7.3 | 4.3 | 1.9 | 2.4 | 1.3 |

## ■ Rated Ripple Current Temperature Correction Factor

| Frequency（Hz） | T≤45°C | 45°C<T≤85°C | 85°C<T≤105°C |
|---|---|---|---|
| Correction factor | 1.0 | 0.7 | 0.25 |

The surface temperature of MLPC should be less than its Max.operating temperature.

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100-300KHz |
|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 |

# CAYI

## ■ Standard Size ESR(mΩ100kHz) Ripple current (mA/r.m.s) 45°C100kHz

| Rated Voltage (V) | Capacitance (μF) | Size D×L(mm) | | | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|---|---|
| | | L | W | H | | | | | |
| 2 | 82 | 7.3 | 4.3 | 1.9 | 16.4 | 0.06 | 15 | 5100 | CAYI826M0DD19150T |
| | 180 | 7.3 | 4.3 | 1.9 | 36 | 0.06 | 12 | 5600 | CAYI187M0DD19120T |
| | 220 | 7.3 | 4.3 | 1.9 | 44 | 0.06 | 9 | 6300 | CAYI227M0DD19090T |
| | 270 | 7.3 | 4.3 | 1.9 | 54 | 0.06 | 9 | 6300 | CAYI227M0DD19090T |
| | 330 | 7.3 | 4.3 | 1.9 | 66 | 0.06 | 9 | 6300 | CAYI337M0DD19090T |
| | | 7.3 | 4.3 | 1.9 | 66 | 0.06 | 6 | 7500 | CAYI337M0DD19060T |
| | | 7.3 | 4.3 | 1.9 | 66 | 0.06 | 4.5 | 8500 | CAYI337M0DD19045T |
| | 390 | 7.3 | 4.3 | 1.9 | 78 | 0.06 | 9 | 6300 | CAYI397M0DD19090T |
| | | 7.3 | 4.3 | 1.9 | 78 | 0.06 | 6 | 7500 | CAYI397M0DD19060T |
| | | 7.3 | 4.3 | 1.9 | 78 | 0.06 | 4.5 | 8500 | CAYI397M0DD19045T |
| | 470 | 7.3 | 4.3 | 1.9 | 94 | 0.06 | 9 | 6300 | CAYI477M0DD19090T |
| | | 7.3 | 4.3 | 1.9 | 94 | 0.06 | 6 | 7500 | CAYI477M0DD19060T |
| | | 7.3 | 4.3 | 1.9 | 94 | 0.06 | 4.5 | 8500 | CAYI477M0DD19045T |
| 2.5 | 68 | 7.3 | 4.3 | 1.9 | 17 | 0.06 | 15 | 5100 | CAYI686M0ED19150T |
| | 150 | 7.3 | 4.3 | 1.9 | 38 | 0.06 | 12 | 5600 | CAYI157M0ED19120T |
| | 220 | 7.3 | 4.3 | 1.9 | 55 | 0.06 | 9 | 6300 | CAYI227M0ED19090T |
| | 330 | 7.3 | 4.3 | 1.9 | 83 | 0.06 | 9 | 6300 | CAYI337M0ED19090T |
| | | 7.3 | 4.3 | 1.9 | 83 | 0.06 | 6 | 7500 | CAYI337M0ED19060T |
| | | 7.3 | 4.3 | 1.9 | 83 | 0.06 | 4.5 | 8500 | CAYI337M0ED19045T |
| | 390 | 7.3 | 4.3 | 1.9 | 98 | 0.06 | 9 | 6300 | CAYI397M0ED19090T |
| | | 7.3 | 4.3 | 1.9 | 98 | 0.06 | 6 | 7500 | CAYI397M0ED19060T |
| | | 7.3 | 4.3 | 1.9 | 98 | 0.06 | 4.5 | 8500 | CAYI397M0ED19045T |
| 4 | 47 | 7.3 | 4.3 | 1.9 | 18.8 | 0.06 | 20 | 4200 | CAYI476M0GD19200T |
| | 100 | 7.3 | 4.3 | 1.9 | 40 | 0.06 | 12 | 5600 | CAYI107M0GD19120T |
| | 150 | 7.3 | 4.3 | 1.9 | 60 | 0.06 | 9 | 6300 | CAYI157M0GD19090T |
| | | 7.3 | 4.3 | 1.9 | 60 | 0.06 | 7 | 7000 | CAYI157M0GD19070T |
| | 220 | 7.3 | 4.3 | 1.9 | 88 | 0.06 | 9 | 6300 | CAYI227M0GD19090T |
| | | 7.3 | 4.3 | 1.9 | 88 | 0.06 | 7 | 7000 | CAYI227M0GD19070T |
| | 270 | 7.3 | 4.3 | 1.9 | 108 | 0.06 | 9 | 6300 | CAYI277M0GD19090T |
| | | 7.3 | 4.3 | 1.9 | 108 | 0.06 | 7 | 7000 | CAYI277M0GD19070T |
| 6.3 | 33 | 7.3 | 4.3 | 1.9 | 21 | 0.06 | 20 | 4200 | CAYI336M0JD19200T |
| | 68 | 7.3 | 4.3 | 1.9 | 43 | 0.06 | 15 | 5100 | CAYI686M0JD19150T |
| | 100 | 7.3 | 4.3 | 1.9 | 63 | 0.06 | 12 | 5600 | CAYI107M0JD19120T |
| | 150 | 7.3 | 4.3 | 1.9 | 95 | 0.06 | 9 | 6300 | CAYI157M0JD19090T |
| | 180 | 7.3 | 4.3 | 1.9 | 113 | 0.06 | 9 | 6300 | CAYI187M0JD19090T |
| | 220 | 7.3 | 4.3 | 1.9 | 139 | 0.06 | 9 | 6300 | CAYI227M0JD19090T |
| 10 | 22 | 7.3 | 4.3 | 1.9 | 22 | 0.06 | 20 | 4200 | CAYI226M1AD19200T |
| | 39 | 7.3 | 4.3 | 1.9 | 39 | 0.06 | 18 | 4600 | CAYI396M1AD19180T |
| | 68 | 7.3 | 4.3 | 1.9 | 68 | 0.06 | 15 | 5100 | CAYI686M1AD19150T |
| | 82 | 7.3 | 4.3 | 1.9 | 82 | 0.06 | 12 | 5600 | CAYI826M1AD19120T |
| | 100 | 7.3 | 4.3 | 1.9 | 100 | 0.06 | 10 | 5900 | CAYI107M1AD19100T |

# CAYI

## ■ Standard Size ESR(mΩ100kHz) Ripple current (mA/r.m.s) 45°C100kHz

| Rated Voltage (V) | Capacitance (μF) | Size D×L(mm) | | | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|---|---|
| | | L | W | H | | | | | |
| 16 | 15 | 7.3 | 4.3 | 1.9 | 24 | 0.06 | 70 | 2400 | CAYI156M1CD19700T |
| | 33 | 7.3 | 4.3 | 1.9 | 53 | 0.06 | 50 | 2850 | CAYI336M1CD19500T |
| | 47 | 7.3 | 4.3 | 1.9 | 75 | 0.06 | 40 | 3200 | CAYI476M1CD19400T |
| | 68 | 7.3 | 4.3 | 1.9 | 109 | 0.06 | 30 | 3500 | CAYI686M1CD19300T |
| | 82 | 7.3 | 4.3 | 1.9 | 131 | 0.06 | 25 | 3800 | CAYI826M1CD19250T |
| | 100 | 7.3 | 4.3 | 1.9 | 160 | 0.06 | 20 | 4200 | CAYI107M1CD19200T |
| 20 | 10 | 7.3 | 4.3 | 1.9 | 20 | 0.06 | 80 | 2200 | CAYI106M1DD19800T |
| | 22 | 7.3 | 4.3 | 1.9 | 44 | 0.06 | 65 | 2500 | CAYI226M1DD19650T |
| | 33 | 7.3 | 4.3 | 1.9 | 66 | 0.06 | 45 | 3000 | CAYI336M1DD19450T |
| | 47 | 7.3 | 4.3 | 1.9 | 94 | 0.06 | 35 | 3300 | CAYI476M1DD19350T |
| | 56 | 7.3 | 4.3 | 1.9 | 112 | 0.06 | 30 | 3500 | CAYI566M1DD19300T |
| | 68 | 7.3 | 4.3 | 1.9 | 136 | 0.06 | 25 | 3800 | CAYI686M1DD19250T |
| 25 | 10 | 7.3 | 4.3 | 1.9 | 25 | 0.06 | 80 | 2200 | CAYI106M1ED19800T |
| | 22 | 7.3 | 4.3 | 1.9 | 55 | 0.06 | 65 | 2500 | CAYI226M1ED19650T |
| | 33 | 7.3 | 4.3 | 1.9 | 83 | 0.06 | 45 | 3000 | CAYI336M1ED19450T |
| | 39 | 7.3 | 4.3 | 1.9 | 98 | 0.06 | 35 | 3300 | CAYI396M1ED19350T |
| | 47 | 7.3 | 4.3 | 1.9 | 117.5 | 0.06 | 30 | 3500 | CAYI476M1ED19300T |
| | 56 | 7.3 | 4.3 | 1.9 | 140 | 0.06 | 25 | 3800 | CAYI566M1ED19250T |
| | 68 | 7.3 | 4.3 | 1.9 | 170 | 0.06 | 20 | 4200 | CAYI686M1ED19200T |
| 35 | 15 | 7.3 | 4.3 | 1.9 | 53 | 0.06 | 60 | 2700 | CAYI156M1VD19600T |
| | 22 | 7.3 | 4.3 | 1.9 | 77 | 0.06 | 50 | 2850 | CAYI226M1VD19500T |
| | 33 | 7.3 | 4.3 | 1.9 | 115.5 | 0.06 | 30 | 3200 | CAYI336M1VD19300T |
| 50 | 8.2 | 7.3 | 4.3 | 1.9 | 41 | 0.06 | 55 | 2700 | CAYI825M1HD19550T |
| | 10 | 7.3 | 4.3 | 1.9 | 50 | 0.06 | 45 | 3000 | CAYI106M1HD19450T |

# CAYJ

**SMD**

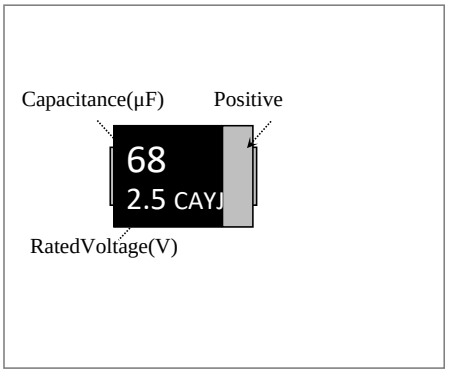



- ◆ 105°C 2000 Hours
- ◆ High Voltage ( 50Vmax )
- ◆ Miniature Size Series (3.5x2.8x 1.9mm)
- ◆ Low ESR And High Ripple Current
- ◆ RoHS Compliant (2011/65/EU)

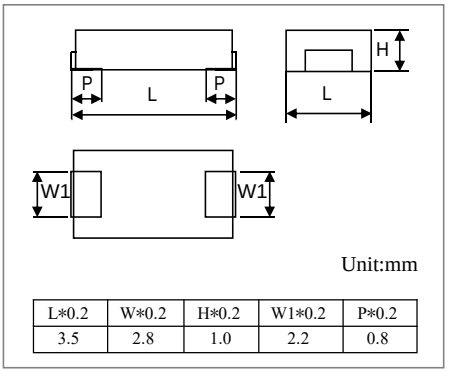
## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 2~50V |
| **Capacitance Range** | 18~82μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Below the standard value（under frequency 120Hz/20°C） |
| **Leakage Current** | I<0.1CV under 20°C charging 2mins with rated voltage |
| **ESR** | Below the standard value（under frequency 100KHz/20°C） |
| **Surge Voltage (V)** | 1.15times than rated voltage |
| **Endurance** | After load rated voltage for 2000hours at 105°C, the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>Dissipation Factor: 200%or less than the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60°C under the condition of 90%~95%R.H with no load for 1000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.<br>Capacitance change: -20%+50%of the initial value<br>Dissipation Factor: 200%or less than the initial specified value<br>Leakage current: Within the initial value |

## ■ Marks




## ■ Dimension




| L*0.2 | W*0.2 | H*0.2 | W1*0.2 | P*0.2 |
|---|---|---|---|---|
| 3.5 | 2.8 | 1.0 | 2.2 | 0.8 |

## ■ Rated Ripple Current Temperature Correction Factor

| Frequency（Hz） | T≤45°C | 45°C<T≤85°C | 85°C<T≤105°C |
|---|---|---|---|
| **Correction factor** | 1.0 | 0.7 | 0.25 |

The surface temperature of MLPC should be less than its Max.operating temperature.

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100-300KHz |
|---|---|---|---|---|
| **Correction factor** | 0.10 | 0.45 | 0.50 | 1.00 |

# CAYJ

## ■ Standard Size ESR(mΩ100kHz) Ripple current (mA/r.m.s) 45°C100kHz

| Rated Voltage (V) | Capacitance (μF) | Size D×L(mm) | | | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|---|---|
| | | L | W | H | | | | | |
| 2 | 15 | 3.5 | 2.8 | 1.9 | 3 | 0.06 | 15 | 2000 | CAYJ156M0DB150T |
| | 27 | 3.5 | 2.8 | 1.9 | 5 | 0.06 | 12 | 2200 | CAYJ276M0DB120T |
| | 39 | 3.5 | 2.8 | 1.9 | 8 | 0.06 | 9 | 2400 | CAYJ396M0DB090T |
| | 47 | 3.5 | 2.8 | 1.9 | 9 | 0.06 | 9 | 2400 | CAYJ476M0DB090T |
| | 56 | 3.5 | 2.8 | 1.9 | 11 | 0.06 | 7 | 2800 | CAYJ566M0DB070T |
| | 68 | 3.5 | 2.8 | 1.9 | 14 | 0.06 | 6 | 3000 | CAYJ686M0DB060T |
| | 82 | 3.5 | 2.8 | 1.9 | 16 | 0.06 | 6 | 3000 | CAYJ826M0DB060T |
| 2.5 | 15 | 3.5 | 2.8 | 1.9 | 4 | 0.06 | 15 | 2000 | CAYJ156M0EB150T |
| | 27 | 3.5 | 2.8 | 1.9 | 7 | 0.06 | 12 | 2200 | CAYJ276M0EB120T |
| | 39 | 3.5 | 2.8 | 1.9 | 10 | 0.06 | 9 | 2400 | CAYJ396M0EB090T |
| | 47 | 3.5 | 2.8 | 1.9 | 12 | 0.06 | 9 | 2400 | CAYJ476M0EB090T |
| | 56 | 3.5 | 2.8 | 1.9 | 14 | 0.06 | 6 | 3000 | CAYJ566M0EB060T |
| | 68 | 3.5 | 2.8 | 1.9 | 17 | 0.06 | 6 | 3000 | CAYJ686M0EB060T |
| 4 | 8.2 | 3.5 | 2.8 | 1.9 | 3 | 0.06 | 20 | 1700 | CAYJ825M0GB200T |
| | 18 | 3.5 | 2.8 | 1.9 | 7 | 0.06 | 12 | 2200 | CAYJ186M0GB120T |
| | 27 | 3.5 | 2.8 | 1.9 | 11 | 0.06 | 9 | 2400 | CAYJ276M0GB090T |
| | 39 | 3.5 | 2.8 | 1.9 | 16 | 0.06 | 7 | 2800 | CAYJ396M0GB070T |
| | 47 | 3.5 | 2.8 | 1.9 | 19 | 0.06 | 7 | 2800 | CAYJ476M0GB070T |
| 6.3 | 5.6 | 3.5 | 2.8 | 1.9 | 4 | 0.06 | 20 | 1700 | CAYJ565M0JB200T |
| | 15 | 3.5 | 2.8 | 1.9 | 9 | 0.06 | 15 | 2000 | CAYJ156M0JB150T |
| | 18 | 3.5 | 2.8 | 1.9 | 11 | 0.06 | 12 | 2200 | CAYJ186M0JB120T |
| | 27 | 3.5 | 2.8 | 1.9 | 17 | 0.06 | 9 | 2400 | CAYJ276M0JB090T |
| | 33 | 3.5 | 2.8 | 1.9 | 21 | 0.06 | 9 | 2400 | CAYJ336M0JB090T |
| | 39 | 3.5 | 2.8 | 1.9 | 25 | 0.06 | 9 | 2400 | CAYJ396M0JB090T |
| 10 | 4.7 | 3.5 | 2.8 | 1.9 | 5 | 0.06 | 20 | 1700 | CAYJ475M1AB200T |
| | 6.8 | 3.5 | 2.8 | 1.9 | 7 | 0.06 | 18 | 1800 | CAYJ685M1AB180T |
| | 10 | 3.5 | 2.8 | 1.9 | 10 | 0.06 | 15 | 2000 | CAYJ106M1AB150T |
| | 15 | 3.5 | 2.8 | 1.9 | 15 | 0.06 | 12 | 2200 | CAYJ156M1AB120T |
| | 18 | 3.5 | 2.8 | 1.9 | 18 | 0.06 | 10 | 2300 | CAYJ186M1AB100T |
| 16 | 2.7 | 3.5 | 2.8 | 1.9 | 4 | 0.06 | 70 | 1000 | CAYJ275M1CB700T |
| | 5.6 | 3.5 | 2.8 | 1.9 | 9 | 0.06 | 50 | 1200 | CAYJ565M1CB500T |
| | 10 | 3.5 | 2.8 | 1.9 | 16 | 0.06 | 30 | 1400 | CAYJ106M1CB300T |
| | 15 | 3.5 | 2.8 | 1.9 | 24 | 0.06 | 20 | 1700 | CAYJ156M1CB200T |
| 20 | 1.8 | 3.5 | 2.8 | 1.9 | 4 | 0.06 | 80 | 900 | CAYJ185M1DB800T |
| | 3.9 | 3.5 | 2.8 | 1.9 | 8 | 0.06 | 70 | 1000 | CAYJ395M1DB700T |
| | 5.6 | 3.5 | 2.8 | 1.9 | 11 | 0.06 | 45 | 1250 | CAYJ565M1DB450T |
| | 8.2 | 3.5 | 2.8 | 1.9 | 16 | 0.06 | 35 | 1400 | CAYJ825M1DB350T |
| | 12 | 3.5 | 2.8 | 1.9 | 24 | 0.06 | 25 | 1600 | CAYJ126M1DB250T |
| 25 | 1.8 | 3.5 | 2.8 | 1.9 | 5 | 0.06 | 80 | 900 | CAYJ185M1EB800T |
| | 3.9 | 3.5 | 2.8 | 1.9 | 10 | 0.06 | 65 | 1000 | CAYJ395M1EB650T |
| | 5.6 | 3.5 | 2.8 | 1.9 | 14 | 0.06 | 45 | 1250 | CAYJ565M1EB450T |
| | 8.2 | 3.5 | 2.8 | 1.9 | 21 | 0.06 | 35 | 1400 | CAYJ825M1EB350T |

# CAYJ

## ■ Standard Size ESR(mΩ100kHz) Ripple current (mA/r.m.s) 45°C100kHz

| Rated Voltage (V) | Capacitance (μF) | Size D×L(mm) | | | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|---|---|
| | | L | W | H | | | | | |
| 35 | 2.7 | 3.5 | 2.8 | 1.9 | 9 | 0.06 | 50 | 1200 | CAYJ275M1VB500T |
| | 4.7 | 3.5 | 2.8 | 1.9 | 16 | 0.06 | 40 | 1300 | CAYJ475M1VB400T |
| 50 | 1.8 | 3.5 | 2.8 | 1.9 | 9 | 0.06 | 55 | 1150 | CAYJ185M1HB550T |
| | 2.7 | 3.5 | 2.8 | 1.9 | 14 | 0.06 | 40 | 1300 | CAYJ275M1HB400T |

# CAYAA




- ◆ 105°C 2000 Hours
- ◆ Miniature Size Series
- ◆ High Stability, Low ESR, High Frequency
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 6.3~100V |
| **Capacitance Range** | 2.2~10000μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Endurance** | After load rated voltage for 2000hours at105°C,the following specification shall be satisfied after placing capacitor for 16 hours at 20°C |
| **Humidity** | Store the capacitor at 60 °C under the condition of 90%R.H with no load for l000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C. |

Endurance:

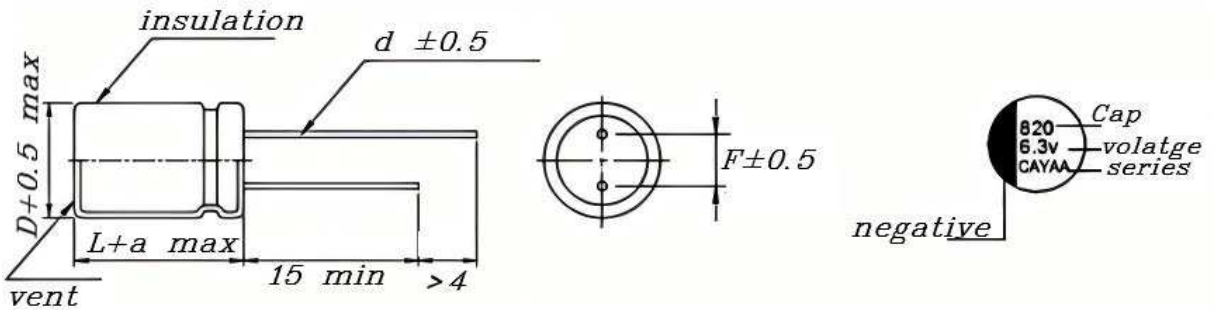
| | |
|---|---|
| Capacitance change | Within±20% of the initial value |
| ESR | Not more than 150% of the specified value |
| Dissipation Factor | Not more than 150% of the specified value |
| Leakage current | Not more than the specified value |

Humidity:

| | |
|---|---|
| Capacitance change | Within±20% of the initial value |
| ESR | Not more than 150% of the specified value |
| Dissipation Factor | Not more than 150% of the specified value |
| Leakage current | Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| D(±0.5) | 5 | 5.5 | 6.3 | 8 | 10 | 12.5 |
|---|---|---|---|---|---|---|
| d(±0.05) | 0.45/0.50 | 0.45/0.50 | 0.45/0.50 | 0.6 | 0.6 | 0.6 |
| F(±0.5) | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 | 5.0 |
| α | +1 | | | | | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 100 | 5×5.7 | 280 | 0.08 | 20 | 2400 | CAYAA107M0JO050057 |
| 6.3(7.2) | 100 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAA107M0JO063042 |
| 6.3(7.2) | 150 | 5×5.7 | 280 | 0.08 | 20 | 2400 | CAYAA157M0JO050057 |
| 6.3(7.2) | 150 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAA157M0JO063042 |
| 6.3(7.2) | 180 | 5×5.7 | 280 | 0.08 | 18 | 2600 | CAYAA187M0JO050057 |
| 6.3(7.2) | 180 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAA187M0JO063042 |
| 6.3(7.2) | 220 | 5×5.7 | 280 | 0.08 | 18 | 2600 | CAYAA227M0JO050057 |
| 6.3(7.2) | 220 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAA227M0JO063042 |
| 6.3(7.2) | 270 | 5×7 | 340 | 0.08 | 12 | 3400 | CAYAA277M0JO050070 |
| 6.3(7.2) | 270 | 6.3×5.7 | 340 | 0.08 | 18 | 2800 | CAYAA277M0JO063057 |
| 6.3(7.2) | 330 | 5×7 | 416 | 0.08 | 12 | 3400 | CAYAA337M0JO050070 |
| 6.3(7.2) | 330 | 6.3×5.7 | 416 | 0.08 | 18 | 2800 | CAYAA337M0JO063057 |
| 6.3(7.2) | 390 | 5×7 | 491 | 0.08 | 12 | 3400 | CAYAA397M0JO050057 |
| 6.3(7.2) | 390 | 6.3×5.7 | 491 | 0.08 | 8 | 4800 | CAYAA397M0JO063057 |
| 6.3(7.2) | 470 | 5×8 | 592 | 0.08 | 12 | 3650 | CAYAA477M0JO050080 |
| 6.3(7.2) | 470 | 6.3×7 | 592 | 0.08 | 8 | 4800 | CAYAA477M0JO063070 |
| 6.3(7.2) | 470 | 8×6 | 592 | 0.08 | 18 | 3000 | CAYAA477M0JO080060 |
| 6.3(7.2) | 560 | 5.5×7 | 706 | 0.08 | 12 | 3800 | CAYAA567M0JO055070 |
| 6.3(7.2) | 560 | 6.3×7 | 706 | 0.08 | 8 | 4800 | CAYAA567M0JO063070 |
| 6.3(7.2) | 560 | 8×6 | 706 | 0.08 | 16 | 3450 | CAYAA567M0JO080060 |
| 6.3(7.2) | 680 | 6.3×8 | 857 | 0.08 | 8 | 5000 | CAYAA687M0JO063080 |
| 6.3(7.2) | 680 | 8×7 | 857 | 0.08 | 12 | 4200 | CAYAA687M0JO080070 |
| 6.3(7.2) | 820 | 5.5×9 | 1033 | 0.08 | 8 | 4900 | CAYAA827M0JO055090 |
| 6.3(7.2) | 820 | 6.3×7.5 | 1033 | 0.08 | 8 | 4900 | CAYAA827M0JO063075 |
| 6.3(7.2) | 820 | 6.3×9 | 1033 | 0.08 | 8 | 5250 | CAYAA827M0JO063090 |
| 6.3(7.2) | 820 | 8×7 | 1033 | 0.08 | 12 | 4200 | CAYAA827M0JO080070 |
| 6.3(7.2) | 1000 | 6.3×10 | 1260 | 0.08 | 8 | 5500 | CAYAA108M0JO063100 |
| 6.3(7.2) | 1000 | 8×8 | 1260 | 0.08 | 8 | 5600 | CAYAA108M0JO080080 |
| 6.3(7.2) | 1000 | 10×7 | 1260 | 0.08 | 12 | 4500 | CAYAA108M0JO100070 |
| 6.3(7.2) | 1200 | 6.3×11 | 1512 | 0.08 | 8 | 5700 | CAYAA128M0JO063110 |
| 6.3(7.2) | 1200 | 8×9 | 1512 | 0.08 | 8 | 5800 | CAYAA128M0JO080090 |
| 6.3(7.2) | 1200 | 10×8 | 1512 | 0.08 | 8 | 5800 | CAYAA128M0JO100080 |
| 6.3(7.2) | 1500 | 8×11 | 1890 | 0.09 | 8 | 6150 | CAYAA158M0JO080110 |
| 6.3(7.2) | 1500 | 10×9 | 1890 | 0.09 | 8 | 6050 | CAYAA158M0JO100090 |
| 6.3(7.2) | 2000 | 8×14 | 2520 | 0.10 | 7 | 7250 | CAYAA208M0JO080140 |
| 6.3(7.2) | 2000 | 10×10 | 2520 | 0.10 | 8 | 6300 | CAYAA208M0JO100100 |
| 6.3(7.2) | 2200 | 8×14 | 2772 | 0.10 | 7 | 7500 | CAYAA228M0JO080140 |
| 6.3(7.2) | 2200 | 10×10 | 2772 | 0.10 | 8 | 6300 | CAYAA228M0JO100100 |
| 6.3(7.2) | 2500 | 10×11 | 3150 | 0.11 | 8 | 6500 | CAYAA258M0JO100110 |
| 6.3(7.2) | 2700 | 10×11 | 3402 | 0.11 | 8 | 6500 | CAYAA278M0JO100110 |
| 6.3(7.2) | 3300 | 10×12 | 4158 | 0.13 | 8 | 6640 | CAYAA338M0JO100120 |
| 6.3(7.2) | 3900 | 10×14 | 4914 | 0.14 | 7 | 7600 | CAYAA398M0JO100140 |
| 6.3(7.2) | 4700 | 10×16 | 5922 | 0.15 | 7 | 8100 | CAYAA478M0JO100160 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 4700 | 12.5×12.5 | 5922 | 0.15 | 8 | 7600 | CAYAA478M0JO125125 |
| 6.3(7.2) | 5600 | 10×18 | 7056 | 0.17 | 7 | 8500 | CAYAA568M0JO100180 |
| 6.3(7.2) | 5600 | 12.5×14 | 7056 | 0.17 | 8 | 7900 | CAYAA568M0JO125140 |
| 6.3(7.2) | 6800 | 10×21 | 7500 | 0.20 | 7 | 9100 | CAYAA688M0JO100210 |
| 6.3(7.2) | 6800 | 12.5×16 | 7500 | 0.20 | 7 | 8950 | CAYAA688M0JO125160 |
| 6.3(7.2) | 8200 | 12.5×18 | 7500 | 0.22 | 7 | 9450 | CAYAA828M0JO125180 |
| 6.3(7.2) | 10000 | 12.5×20 | 7500 | 0.26 | 7 | 9850 | CAYAA109M0JO125200 |
| 7.5(8.6) | 270 | 5×7 | 405 | 0.08 | 12 | 3400 | CAYAA277M0MO050070 |
| 7.5(8.6) | 270 | 6.3×5.7 | 405 | 0.08 | 18 | 2800 | CAYAA277M0MO063057 |
| 7.5(8.6) | 330 | 5×9 | 495 | 0.08 | 12 | 3800 | CAYAA337M0MO050090 |
| 7.5(8.6) | 330 | 6.3×5.7 | 495 | 0.08 | 12 | 3700 | CAYAA337M0MO063057 |
| 7.5(8.6) | 390 | 5×10 | 585 | 0.08 | 10 | 4350 | CAYAA397M0MO050100 |
| 7.5(8.6) | 390 | 6.3×7 | 585 | 0.08 | 12 | 3900 | CAYAA397M0MO063070 |
| 7.5(8.6) | 390 | 8×6 | 585 | 0.08 | 18 | 3250 | CAYAA397M0MO080060 |
| 7.5(8.6) | 470 | 5×9 | 705 | 0.08 | 12 | 3850 | CAYAA477M0MO050090 |
| 7.5(8.6) | 470 | 5×11 | 705 | 0.08 | 10 | 4500 | CAYAA477M0MO050110 |
| 7.5(8.6) | 470 | 6.3×8 | 705 | 0.08 | 12 | 4100 | CAYAA477M0MO063080 |
| 7.5(8.6) | 470 | 8×6 | 705 | 0.08 | 18 | 3000 | CAYAA477M0MO080690 |
| 7.5(8.6) | 560 | 6.3×9 | 840 | 0.08 | 9 | 5000 | CAYAA567M0MO063090 |
| 7.5(8.6) | 560 | 8×6 | 840 | 0.08 | 18 | 3250 | CAYAA567M0MO080060 |
| 7.5(8.6) | 680 | 6.3×10 | 1020 | 0.08 | 8 | 5500 | CAYAA687M0MO063100 |
| 7.5(8.6) | 680 | 8×7 | 1020 | 0.08 | 12 | 4200 | CAYAA687M0MO080070 |
| 7.5(8.6) | 820 | 6.3×11 | 1230 | 0.08 | 8 | 5700 | CAYAA827M0MO063110 |
| 7.5(8.6) | 820 | 8×8 | 1230 | 0.08 | 8 | 5600 | CAYAA827M0MO080080 |
| 7.5(8.6) | 1000 | 6.3×11 | 1500 | 0.08 | 8 | 5900 | CAYAA108M0MO063110 |
| 7.5(8.6) | 1000 | 8×9 | 1500 | 0.08 | 8 | 5800 | CAYAA108M0MO080090 |
| 10(11.5) | 47 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA476M1AO050057 |
| 10(11.5) | 47 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA476M1AO063042 |
| 10(11.5) | 68 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA686M1AO050057 |
| 10(11.5) | 68 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA686M1AO063042 |
| 10(11.5) | 82 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA826M1AO050057 |
| 10(11.5) | 82 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA826M1AO063042 |
| 10(11.5) | 100 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA107M1AO050057 |
| 10(11.5) | 100 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA107M1AO063042 |
| 10(11.5) | 150 | 5×7 | 300 | 0.08 | 15 | 3050 | CAYAA157M1AO050057 |
| 10(11.5) | 150 | 6.3×5.7 | 300 | 0.08 | 30 | 2200 | CAYAA157M1AO063057 |
| 10(11.5) | 180 | 5×7 | 360 | 0.08 | 15 | 3050 | CAYAA187M1AO050057 |
| 10(11.5) | 180 | 6.3×5.7 | 360 | 0.08 | 30 | 2200 | CAYAA187M1AO063057 |
| 10(11.5) | 220 | 5×7 | 440 | 0.08 | 15 | 3050 | CAYAA227M1AO050057 |
| 10(11.5) | 220 | 6.3×5.7 | 440 | 0.08 | 30 | 2200 | CAYAA227M1AO063057 |
| 10(11.5) | 270 | 5×10 | 540 | 0.08 | 12 | 3950 | CAYAA277M1AO050100 |
| 10(11.5) | 270 | 6.3×5.7 | 540 | 0.08 | 16 | 3200 | CAYAA277M1AO063057 |
| 10(11.5) | 330 | 5×11 | 660 | 0.08 | 12 | 4100 | CAYAA337M1AO050110 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 10(11.5) | 330 | 6.3×7 | 660 | 0.08 | 16 | 3200 | CAYAA337M1AO063070 |
| 10(11.5) | 390 | 6.3×7 | 780 | 0.08 | 12 | 3900 | CAYAA397M1AO063070 |
| 10(11.5) | 390 | 8×6 | 780 | 0.08 | 30 | 2550 | CAYAA397M1AO080060 |
| 10(11.5) | 470 | 6.3×8 | 940 | 0.08 | 12 | 4300 | CAYAA477M1AO063080 |
| 10(11.5) | 470 | 8×7 | 940 | 0.08 | 30 | 2550 | CAYAA477M1AO080070 |
| 10(11.5) | 560 | 6.3×10 | 1120 | 0.08 | 10 | 4900 | CAYAA567M1AO06310 |
| 10(11.5) | 560 | 8×7 | 1120 | 0.08 | 14 | 2550 | CAYAA567M1AO080070 |
| 10(11.5) | 680 | 6.3×11 | 1360 | 0.08 | 9 | 5400 | CAYAA687M1AO063110 |
| 10(11.5) | 680 | 8×8 | 1360 | 0.08 | 10 | 5100 | CAYAA687M1AO080080 |
| 10(11.5) | 820 | 8×9 | 1640 | 0.08 | 9 | 5500 | CAYAA827M1AO080090 |
| 10(11.5) | 820 | 10×7 | 1640 | 0.08 | 14 | 4500 | CAYAA827M1AO100070 |
| 10(11.5) | 1000 | 8×11 | 2000 | 0.08 | 9 | 5800 | CAYAA108M1AO080110 |
| 10(11.5) | 1000 | 10×8 | 2000 | 0.08 | 9 | 5500 | CAYAA108M1AO100080 |
| 10(11.5) | 1500 | 8×14 | 3000 | 0.09 | 8 | 6800 | CAYAA158M1AO080140 |
| 10(11.5) | 1500 | 10×12 | 3000 | 0.09 | 9 | 6300 | CAYAA158M1AO100120 |
| 10(11.5) | 2200 | 10×14 | 4400 | 0.10 | 8 | 7000 | CAYAA228M1AO100140 |
| 10(11.5) | 2500 | 10×14 | 5000 | 0.11 | 8 | 7000 | CAYAA258M1AO100140 |
| 10(11.5) | 2700 | 10×16 | 5400 | 0.11 | 8 | 7500 | CAYAA278M1AO100160 |
| 10(11.5) | 3300 | 10×18 | 6600 | 0.13 | 8 | 7900 | CAYAA338M1AO100180 |
| 10(11.5) | 3300 | 12.5×14 | 6600 | 0.13 | 9 | 7500 | CAYAA338M1AO125140 |
| 10(11.5) | 3900 | 10×21 | 7500 | 0.13 | 8 | 8400 | CAYAA398M1AO100210 |
| 10(11.5) | 3900 | 12.5×16 | 7500 | 0.13 | 8 | 8400 | CAYAA398M1AO125160 |
| 10(11.5) | 4700 | 12.5×18 | 7500 | 0.15 | 8 | 8400 | CAYAA478M1AO125180 |
| 10(11.5) | 5600 | 12.5×18 | 7500 | 0.17 | 8 | 8800 | CAYAA568M1AO125180 |
| 10(11.5) | 6800 | 12.5×20 | 7500 | 0.20 | 8 | 9200 | CAYAA688M1AO125200 |
| 12(13.8) | 180 | 5×7 | 432 | 0.08 | 15 | 3050 | CAYAA187M1BO050070 |
| 12(13.8) | 180 | 6.3×5.7 | 432 | 0.08 | 30 | 2200 | CAYAA187M1BO063057 |
| 12(13.8) | 220 | 5×9 | 528 | 0.08 | 15 | 3400 | CAYAA227M1BO050090 |
| 12(13.8) | 220 | 6.3×5.7 | 528 | 0.08 | 16 | 3200 | CAYAA227M1BO063057 |
| 12(13.8) | 270 | 5×10 | 648 | 0.08 | 12 | 3950 | CAYAA277M1BO050100 |
| 12(13.8) | 270 | 6.3×7 | 648 | 0.08 | 16 | 3200 | CAYAA277M1BO063070 |
| 12(13.8) | 330 | 5×10 | 792 | 0.08 | 12 | 3950 | CAYAA337M1BO050100 |
| 12(13.8) | 330 | 6.3×7 | 792 | 0.08 | 12 | 3900 | CAYAA337M1BO063070 |
| 12(13.8) | 330 | 8×6 | 792 | 0.08 | 30 | 2550 | CAYAA337M1BO080060 |
| 12(13.8) | 390 | 5.5×9 | 936 | 0.08 | 15 | 3450 | CAYAA397M1BO055090 |
| 12(13.8) | 390 | 5×11 | 936 | 0.08 | 12 | 4100 | CAYAA397M1BO050110 |
| 12(13.8) | 390 | 6.3×8 | 936 | 0.08 | 12 | 4100 | CAYAA397M1BO063080 |
| 12(13.8) | 470 | 6.3×9 | 1128 | 0.08 | 12 | 4300 | CAYAA477M1BO063090 |
| 12(13.8) | 470 | 8×7 | 1128 | 0.08 | 14 | 2550 | CAYAA477M1BO080070 |
| 12(13.8) | 560 | 6.3×10 | 1344 | 0.08 | 10 | 4900 | CAYAA567M1BO063100 |
| 12(13.8) | 560 | 8×7 | 1344 | 0.08 | 14 | 2550 | CAYAA567M1BO080070 |
| 12(13.8) | 680 | 6.3×11 | 1632 | 0.08 | 9 | 5400 | CAYAA687M1BO063110 |
| 12(13.8) | 680 | 8×8 | 1632 | 0.08 | 10 | 5100 | CAYAA687M1BO080080 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 12(13.8) | 1000 | 8×9 | 2400 | 0.08 | 10 | 5200 | CAYAA108M1BO080090 |
| 16(18.4) | 22 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA226M1CO050057 |
| 16(18.4) | 22 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA226M1CO063042 |
| 16(18.4) | 33 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA336M1CO050057 |
| 16(18.4) | 33 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA336M1CO063042 |
| 16(18.4) | 47 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA476M1CO050057 |
| 16(18.4) | 47 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA476M1CO063042 |
| 16(18.4) | 68 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA686M1CO050057 |
| 16(18.4) | 68 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA686M1CO063042 |
| 16(18.4) | 82 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAA686M1CO050057 |
| 16(18.4) | 82 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAA826M1CO063042 |
| 16(18.4) | 100 | 5×5.7 | 320 | 0.08 | 30 | 2000 | CAYAA107M1CO050057 |
| 16(18.4) | 100 | 5×7 | 320 | 0.08 | 30 | 2200 | CAYAA107M1CO050070 |
| 16(18.4) | 100 | 6.3×5.7 | 320 | 0.08 | 30 | 2100 | CAYAA107M1CO063057 |
| 16(18.4) | 150 | 5×7 | 480 | 0.08 | 30 | 2200 | CAYAA157M1CO050070 |
| 16(18.4) | 150 | 6.3×5.7 | 480 | 0.08 | 30 | 2200 | CAYAA157M1CO063057 |
| 16(18.4) | 220 | 5×9 | 704 | 0.08 | 12 | 3950 | CAYAA227M1CO050090 |
| 16(18.4) | 220 | 5×10 | 704 | 0.08 | 12 | 3950 | CAYAA227M1CO050100 |
| 16(18.4) | 220 | 6.3×5.7 | 704 | 0.08 | 20 | 2850 | CAYAA227M1CO063057 |
| 16(18.4) | 270 | 6.3×7 | 864 | 0.08 | 15 | 3500 | CAYAA277M1CO063070 |
| 16(18.4) | 270 | 8×6 | 864 | 0.08 | 30 | 2550 | CAYAA277M1CO080060 |
| 16(18.4) | 330 | 6.3×8 | 1056 | 0.08 | 12 | 4300 | CAYAA337M1CO063080 |
| 16(18.4) | 330 | 8×6 | 1056 | 0.08 | 30 | 2550 | CAYAA337M1CO080060 |
| 16(18.4) | 390 | 6.3×8 | 1248 | 0.08 | 12 | 4300 | CAYAA397M1CO063080 |
| 16(18.4) | 470 | 5.5×10 | 1504 | 0.08 | 12 | 4200 | CAYAA477M1CO055100 |
| 16(18.4) | 470 | 6.3×10 | 1504 | 0.08 | 10 | 4900 | CAYAA477M1CO063100 |
| 16(18.4) | 470 | 8×7 | 1504 | 0.08 | 20 | 3300 | CAYAA477M1CO080070 |
| 16(18.4) | 560 | 6.3×10 | 1792 | 0.08 | 10 | 4900 | CAYAA567M1CO063100 |
| 16(18.4) | 560 | 8×9 | 1792 | 0.08 | 12 | 4700 | CAYAA567M1CO080090 |
| 16(18.4) | 560 | 10×8 | 1792 | 0.08 | 12 | 4700 | CAYAA567M1CO100080 |
| 16(18.4) | 680 | 6.3×11 | 2176 | 0.08 | 10 | 5350 | CAYAA687M1CO063110 |
| 16(18.4) | 680 | 8×10 | 2176 | 0.08 | 10 | 5350 | CAYAA687M1CO080100 |
| 16(18.4) | 680 | 10×8 | 2176 | 0.08 | 12 | 4700 | CAYAA687M1CO100080 |
| 16(18.4) | 820 | 8×11 | 2624 | 0.08 | 10 | 5500 | CAYAA827M1CO080110 |
| 16(18.4) | 820 | 10×9 | 2624 | 0.08 | 12 | 4950 | CAYAA827M1CO100090 |
| 16(18.4) | 1000 | 8×11 | 3200 | 0.08 | 10 | 5800 | CAYAA108M1CO100090 |
| 16(18.4) | 1000 | 8×14 | 3200 | 0.08 | 8 | 6800 | CAYAA108M1CO080140 |
| 16(18.4) | 1000 | 10×10 | 3200 | 0.08 | 12 | 5200 | CAYAA108M1CO100100 |
| 16(18.4) | 1500 | 8×14 | 3200 | 0.09 | 12 | 8400 | CAYAA158M1CO080140 |
| 16(18.4) | 1500 | 10×12 | 4800 | 0.09 | 8 | 8400 | CAYAA158M1CO100120 |
| 16(18.4) | 1800 | 10×13 | 5760 | 0.10 | 8 | 7000 | CAYAA188M1CO100130 |
| 16(18.4) | 2200 | 10×15 | 7040 | 0.0 | 8 | 7500 | CAYAA228M1CO100150 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 16(18.4) | 2200 | 10×18 | 7040 | 0.10 | 8 | 7900 | CAYAA228M1CO100180 |
| 16(18.4) | 2200 | 12.5×14 | 7040 | 0.10 | 10 | 7100 | CAYAA228M1CO125140 |
| 16(18.4) | 2700 | 10×16 | 7500 | 0.11 | 8 | 7800 | CAYAA278M1CO100160 |
| 16(18.4) | 2700 | 10×21 | 7500 | 0.11 | 8 | 8400 | CAYAA278M1CO100210 |
| 16(18.4) | 2700 | 12.5×14 | 7500 | 0.11 | 10 | 7100 | CAYAA278M1CO125140 |
| 16(18.4) | 3300 | 10×18 | 7500 | 0.13 | 8 | 8400 | CAYAA338M1CO100180 |
| 16(18.4) | 3300 | 12.5×16 | 7500 | 0.13 | 8 | 8400 | CAYAA338M1CO125160 |
| 16(18.4) | 3900 | 12.5×18 | 7500 | 0.14 | 8 | 8800 | CAYAA398M1CO125180 |
| 16(18.4) | 4700 | 12.5×20 | 7500 | 0.15 | 8 | 9200 | CAYAA478M1CO125200 |
| 25(28.8) | 10 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAA106M1EO050057 |
| 25(28.8) | 10 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAA106M1EO063042 |
| 25(28.8) | 15 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAA156M1EO050057 |
| 25(28.8) | 15 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAA156M1EO063042 |
| 25(28.8) | 22 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAA226M1EO050057 |
| 25(28.8) | 22 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAA226M1EO063042 |
| 25(28.8) | 33 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAA336M1EO050057 |
| 25(28.8) | 33 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAA336M1EO063042 |
| 25(28.8) | 39 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAA396M1EO050057 |
| 25(28.8) | 39 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAA396M1EO063042 |
| 25(28.8) | 47 | 5×5.7 | 280 | 0.08 | 30 | 2050 | CAYAA476M1EO050057 |
| 25(28.8) | 47 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAA476M1EO063042 |
| 25(28.8) | 68 | 5×7 | 340 | 0.08 | 30 | 2200 | CAYAA686M1EO050070 |
| 25(28.8) | 68 | 6.3×5.7 | 340 | 0.08 | 40 | 1900 | CAYAA686M1EO063057 |
| 25(28.8) | 100 | 5×9 | 500 | 0.08 | 30 | 2400 | CAYAA107M1EO050090 |
| 25(28.8) | 100 | 6.3×5.7 | 500 | 0.08 | 30 | 2350 | CAYAA107M1EO063057 |
| 25(28.8) | 150 | 6.3×8 | 750 | 0.08 | 16 | 3550 | CAYAA157M1EO063080 |
| 25(28.8) | 150 | 8×6 | 750 | 0.08 | 30 | 2550 | CAYAA157M1EO080060 |
| 25(28.8) | 180 | 6.3×8 | 900 | 0.08 | 16 | 3550 | CAYAA187M1EO063080 |
| 25(28.8) | 180 | 8×7 | 900 | 0.08 | 30 | 2550 | CAYAA187M1EO080070 |
| 25(28.8) | 220 | 6.3×9 | 1100 | 0.08 | 20 | 3500 | CAYAA227M1EO063090 |
| 25(28.8) | 220 | 8×7 | 1100 | 0.08 | 30 | 2700 | CAYAA227M1EO080070 |
| 25(28.8) | 220 | 10×6 | 1100 | 0.08 | 30 | 2700 | CAYAA227M1EO100060 |
| 25(28.8) | 330 | 8×9 | 1650 | 0.08 | 16 | 4000 | CAYAA337M1EO080090 |
| 25(28.8) | 330 | 10×8 | 1650 | 0.08 | 16 | 4100 | CAYAA337M1EO100080 |
| 25(28.8) | 470 | 8×11 | 2350 | 0.08 | 16 | 4200 | CAYAA477M1EO080110 |
| 25(28.8) | 470 | 8×14 | 2350 | 0.08 | 16 | 4800 | CAYAA477M1EO080140 |
| 25(28.8) | 470 | 10×9 | 2350 | 0.08 | 16 | 4300 | CAYAA477M1EO100090 |
| 25(28.8) | 560 | 8×11 | 2800 | 0.08 | 16 | 4400 | CAYAA567M1EO080110 |
| 25(28.8) | 560 | 8×14 | 2800 | 0.08 | 16 | 4800 | CAYAA567M1EO100140 |
| 25(28.8) | 560 | 10×10 | 2800 | 0.08 | 16 | 4500 | CAYAA567M1EO100100 |
| 25(28.8) | 680 | 8×14 | 3400 | 0.08 | 16 | 4800 | CAYAA687M1EO080140 |
| 25(28.8) | 680 | 10×12 | 3400 | 0.08 | 16 | 4700 | CAYAA687M1EO100120 |
| 25(28.8) | 820 | 8×16 | 4100 | 0.08 | 16 | 5050 | CAYAA827M1EO080160 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 25(28.8) | 820 | 8×14 | 4100 | 0.08 | 16 | 4900 | CAYAA827M1EO080140 |
| 25(28.8) | 820 | 10×13 | 4100 | 0.08 | 16 | 4800 | CAYAA827M1EO080130 |
| 25(28.8) | 1000 | 10×16 | 5000 | 0.08 | 16 | 5300 | CAYAA108M1EO100160 |
| 25(28.8) | 1000 | 12.5×12.5 | 5000 | 0.08 | 16 | 5300 | CAYAA108M1EO125125 |
| 25(28.8) | 1500 | 10×18 | 7500 | 0.09 | 16 | 5600 | CAYAA158M1EO100180 |
| 25(28.8) | 1500 | 12.5×14 | 7500 | 0.09 | 16 | 5600 | CAYAA158M1EO125140 |
| 25(28.8) | 1800 | 10×21 | 7500 | 0.10 | 16 | 6000 | CAYAA188M1EO100210 |
| 25(28.8) | 1800 | 12.5×16 | 7500 | 0.10 | 16 | 5900 | CAYAA188M1EO125160 |
| 25(28.8) | 2200 | 12.5×18 | 7500 | 0.10 | 16 | 6200 | CAYAA228M1EO125180 |
| 25(28.8) | 2700 | 12.5×20 | 7500 | 0.11 | 16 | 6500 | CAYAA278M1EO125200 |
| 35(41) | 10 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAA106M1VO050057 |
| 35(41) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA106M1VO063042 |
| 35(41) | 15 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAA156M1VO050057 |
| 35(41) | 15 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA106M1VO063042 |
| 35(41) | 22 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAA226M1VO050057 |
| 35(41) | 22 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA226M1VO063042 |
| 35(41) | 33 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAA336M1VO050057 |
| 35(41) | 33 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA336M1VO063042 |
| 35(41) | 39 | 5×7 | 300 | 0.12 | 50 | 1700 | CAYAA396M1VO050070 |
| 35(41) | 39 | 6.3×5.7 | 300 | 0.12 | 60 | 1550 | CAYAA396M1VO063057 |
| 35(41) | 47 | 5×7 | 329 | 0.12 | 50 | 1700 | CAYAA476M1VO050070 |
| 35(41) | 47 | 6.3×5.7 | 329 | 0.12 | 60 | 1550 | CAYAA476M1VO063057 |
| 35(41) | 56 | 5×7 | 392 | 0.12 | 50 | 1700 | CAYAA566M1VO050070 |
| 35(41) | 56 | 6.3×5.7 | 392 | 0.12 | 60 | 1650 | CAYAA566M1VO063057 |
| 35(41) | 68 | 5×8 | 476 | 0.12 | 50 | 1800 | CAYAA686M1VO050080 |
| 35(41) | 68 | 6.3×5.7 | 476 | 0.12 | 60 | 1650 | CAYAA686M1VO063057 |
| 35(41) | 68 | 8×6 | 476 | 0.12 | 60 | 1650 | CAYAA686M1VO080060 |
| 35(41) | 82 | 5×9 | 574 | 0.12 | 50 | 1900 | CAYAA826M1VO050090 |
| 35(41) | 82 | 6.3×7 | 574 | 0.12 | 50 | 1900 | CAYAA826M1VO063070 |
| 35(41) | 100 | 6.3×7 | 700 | 0.12 | 50 | 1900 | CAYAA107M1VO063070 |
| 35(41) | 100 | 8×6 | 700 | 0.12 | 60 | 1800 | CAYAA107M1VO080060 |
| 35(41) | 120 | 6.3×8 | 840 | 0.12 | 50 | 2050 | CAYAA127M1VO063080 |
| 35(41) | 120 | 8×7 | 840 | 0.12 | 60 | 1900 | CAYAA127M1VO080070 |
| 35(41) | 150 | 6.3×9 | 1050 | 0.12 | 50 | 2150 | CAYAA157M1VO063090 |
| 35(41) | 150 | 8×7 | 1050 | 0.12 | 60 | 1900 | CAYAA157M1VO080070 |
| 35(41) | 180 | 6.3×10 | 1260 | 0.12 | 40 | 2500 | CAYAA187M1VO063100 |
| 35(41) | 180 | 8×7 | 1260 | 0.12 | 60 | 1900 | CAYAA187M1VO080070 |
| 35(41) | 220 | 6.3×11 | 1540 | 0.12 | 40 | 2600 | CAYAA227M1VO063110 |
| 35(41) | 220 | 8×8 | 1540 | 0.12 | 50 | 2200 | CAYAA227M1VO080080 |
| 35(41) | 220 | 10×7 | 1540 | 0.12 | 60 | 2050 | CAYAA227M1VO100070 |
| 35(41) | 330 | 8×10 | 2310 | 0.12 | 30 | 3100 | CAYAA337M1VO080100 |
| 35(41) | 330 | 10×8 | 2310 | 0.12 | 50 | 2350 | CAYAA337M1VO100080 |
| 35(41) | 390 | 8×11 | 2730 | 0.12 | 30 | 3200 | CAYAA397M1VO080110 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 35(41) | 390 | 10×10 | 2730 | 0.12 | 50 | 2550 | CAYAA397M1VO100100 |
| 35(41) | 470 | 8×14 | 3290 | 0.12 | 20 | 4250 | CAYAA477M1VO080140 |
| 35(41) | 470 | 10×11 | 3290 | 0.12 | 30 | 3400 | CAYAA477M1VO100110 |
| 35(41) | 560 | 8×16 | 3920 | 0.12 | 20 | 4550 | CAYAA567M1VO080160 |
| 35(41) | 560 | 10×12 | 3920 | 0.12 | 30 | 3450 | CAYAA567M1VO100120 |
| 35(41) | 680 | 10×14 | 4760 | 0.12 | 20 | 4450 | CAYAA687M1VO100140 |
| 35(41) | 820 | 10×16 | 5000 | 0.12 | 20 | 4700 | CAYAA827M1VO100160 |
| 35(41) | 820 | 12.5×12.5 | 5000 | 0.12 | 30 | 3900 | CAYAA827M1VO125125 |
| 35(41) | 1000 | 10×18 | 5000 | 0.12 | 20 | 5000 | CAYAA108M1VO100180 |
| 35(41) | 1000 | 12.5×14 | 5000 | 0.12 | 30 | 4100 | CAYAA108M1VO125140 |
| 35(41) | 1200 | 10×21 | 5000 | 0.12 | 20 | 5300 | CAYAA128M1VO100210 |
| 35(41) | 1200 | 12.5×16 | 5000 | 0.12 | 20 | 5300 | CAYAA128M1VO125160 |
| 35(41) | 1500 | 12.5×18 | 5000 | 0.13 | 20 | 5600 | CAYAA158M1VO125180 |
| 35(41) | 1800 | 12.5×20 | 5000 | 0.14 | 20 | 5850 | CAYAA188M1VO125200 |
| 50(58) | 10 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAA106M1HO050057 |
| 50(58) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA106M1HO063042 |
| 50(58) | 12 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAA126M1HO050057 |
| 50(58) | 12 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA126M1HO063042 |
| 50(58) | 15 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAA156M1HO050057 |
| 50(58) | 15 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA156M1HO063042 |
| 50(58) | 18 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAA186M1HO050057 |
| 50(58) | 18 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA186M1HO063042 |
| 50(58) | 22 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAA226M1HO050057 |
| 50(58) | 22 | 6.3×5.7 | 300 | 0.12 | 60 | 1550 | CAYAA226M1HO063057 |
| 50(58) | 33 | 5×8 | 330 | 0.12 | 50 | 1800 | CAYAA336M1HO050080 |
| 50(58) | 33 | 6.3×5.7 | 330 | 0.12 | 60 | 1650 | CAYAA336M1HO063057 |
| 50(58) | 39 | 5×10 | 390 | 0.12 | 40 | 2200 | CAYAA396M1HO050100 |
| 50(58) | 39 | 6.3×7 | 390 | 0.12 | 60 | 1650 | CAYAA396M1HO063070 |
| 50(58) | 47 | 6.3×7 | 470 | 0.12 | 50 | 1900 | CAYAA476M1HO063070 |
| 50(58) | 47 | 8×6 | 470 | 0.12 | 60 | 1650 | CAYAA476M1HO080060 |
| 50(58) | 56 | 6.3×8 | 560 | 0.12 | 50 | 1900 | CAYAA566M1HO063080 |
| 50(58) | 56 | 8×7 | 560 | 0.12 | 60 | 1800 | CAYAA566M1HO080070 |
| 50(58) | 68 | 6.3×9 | 680 | 0.12 | 50 | 2150 | CAYAA686M1HO063090 |
| 50(58) | 68 | 8×7 | 680 | 0.12 | 60 | 1800 | CAYAA686M1HO080070 |
| 50(58) | 82 | 6.3×10 | 820 | 0.12 | 40 | 2500 | CAYAA826M1HO080070 |
| 50(58) | 82 | 8×7 | 820 | 0.12 | 60 | 1900 | CAYAA826M1HO080070 |
| 50(58) | 100 | 8×8 | 1000 | 0.12 | 50 | 2200 | CAYAA107M1HO080080 |
| 50(58) | 100 | 10×6.5 | 1000 | 0.12 | 60 | 2000 | CAYAA107M1HO100650 |
| 50(58) | 120 | 8×9 | 1200 | 0.12 | 50 | 2300 | CAYAA127M1HO080090 |
| 50(58) | 120 | 10×7 | 1200 | 0.12 | 60 | 2050 | CAYAA127M1HO100070 |
| 50(58) | 150 | 8×9 | 1500 | 0.12 | 50 | 2300 | CAYAA157M1HO080090 |
| 50(58) | 150 | 10×8 | 1500 | 0.12 | 50 | 2350 | CAYAA157M1HO100080 |
| 50(58) | 180 | 8×11 | 1800 | 0.12 | 40 | 2800 | CAYAA187M1HO080110 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 50(58) | 180 | 10×9 | 1800 | 0.12 | 50 | 2450 | CAYAA187M1HO100090 |
| 50(58) | 220 | 8×14 | 2200 | 0.12 | 30 | 3500 | CAYAA227M1HO080140 |
| 50(58) | 220 | 10×9 | 2200 | 0.12 | 50 | 2450 | CAYAA227M1HO100090 |
| 50(58) | 220 | 10×11 | 2200 | 0.12 | 40 | 2900 | CAYAA227M1HO100110 |
| 50(58) | 270 | 8×16 | 2700 | 0.12 | 30 | 3700 | CAYAA277M1HO080160 |
| 50(58) | 270 | 10×13 | 2700 | 0.12 | 40 | 3000 | CAYAA277M1HO100130 |
| 50(58) | 330 | 10×16 | 3300 | 0.12 | 30 | 3800 | CAYAA337M1HO100160 |
| 50(58) | 390 | 10×16 | 3900 | 0.12 | 30 | 3800 | CAYAA397M1HO100160 |
| 50(58) | 390 | 12.5×12.5 | 3900 | 0.12 | 40 | 3350 | CAYAA397M1HO125125 |
| 50(58) | 470 | 10×18 | 4700 | 0.12 | 30 | 4050 | CAYAA477M1HO100180 |
| 50(58) | 470 | 12.5×14 | 4700 | 0.12 | 40 | 3500 | CAYAA477M1HO125140 |
| 50(58) | 560 | 10×21 | 5000 | 0.12 | 30 | 4350 | CAYAA567M1HO100210 |
| 50(58) | 560 | 12.5×16 | 5000 | 0.12 | 30 | 4300 | CAYAA567M1HO125160 |
| 50(58) | 680 | 12.5×18 | 5000 | 0.12 | 30 | 4550 | CAYAA687M1HO125180 |
| 50(58) | 820 | 12.5×20 | 5000 | 0.12 | 30 | 4750 | CAYAA827M1HO125200 |
| 63(73) | 6.8 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAA685M1JO050057 |
| 63(73) | 6.8 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA685M1JO063042 |
| 63(73) | 8.2 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAA825M1JO050057 |
| 63(73) | 8.2 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA825M1JO063042 |
| 63(73) | 10 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAA106M1JO050057 |
| 63(73) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA106M1JO063042 |
| 63(73) | 15 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAA156M1JO050070 |
| 63(73) | 15 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA156M1JO063042 |
| 63(73) | 22 | 5×9 | 300 | 0.12 | 50 | 1900 | CAYAA226M1JO050090 |
| 63(73) | 22 | 6.3×7 | 300 | 0.12 | 50 | 1900 | CAYAA226M1JO063070 |
| 63(73) | 33 | 6.3×7 | 416 | 0.12 | 50 | 1900 | CAYAA336M1JO063070 |
| 63(73) | 33 | 8×7 | 416 | 0.12 | 60 | 1800 | CAYAA336M1JO080070 |
| 63(73) | 39 | 6.3×9 | 491 | 0.12 | 50 | 2150 | CAYAA396M1JO063090 |
| 63(73) | 39 | 8×7 | 491 | 0.12 | 60 | 1800 | CAYAA396M1JO080070 |
| 63(73) | 47 | 6.3×10 | 592 | 0.12 | 40 | 2500 | CAYAA476M1JO063100 |
| 63(73) | 47 | 8×7 | 592 | 0.12 | 60 | 1900 | CAYAA476M1JO080070 |
| 63(73) | 56 | 8×8 | 706 | 0.12 | 50 | 2200 | CAYAA566M1JO080080 |
| 63(73) | 56 | 10×6 | 706 | 0.12 | 60 | 1950 | CAYAA566M1JO100060 |
| 63(73) | 68 | 8×9 | 857 | 0.12 | 50 | 2300 | CAYAA686M1JO080090 |
| 63(73) | 68 | 10×7 | 857 | 0.12 | 60 | 2050 | CAYAA686M1JO100070 |
| 63(73) | 82 | 8×9 | 1033 | 0.12 | 50 | 2300 | CAYAA826M1JO080090 |
| 63(73) | 82 | 10×7 | 1033 | 0.12 | 60 | 2050 | CAYAA826M1JO100070 |
| 63(73) | 100 | 8×10 | 1260 | 0.12 | 40 | 2700 | CAYAA107M1JO080100 |
| 63(73) | 100 | 10×8 | 1260 | 0.12 | 50 | 2350 | CAYAA107M1JO100080 |
| 63(73) | 120 | 8×13 | 1512 | 0.12 | 40 | 3000 | CAYAA127M1JO100090 |
| 63(73) | 120 | 10×9 | 1512 | 0.12 | 50 | 2450 | CAYAA127M1JO100090 |
| 63(73) | 150 | 8×16 | 1890 | 0.12 | 30 | 3700 | CAYAA157M1JO080160 |
| 63(73) | 150 | 10×13 | 1890 | 0.12 | 40 | 3000 | CAYAA157M1JO100130 |

# CAYAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 63(73) | 180 | 10×14 | 2268 | 0.12 | 30 | 3600 | CAYAA187M1JO100140 |
| 63(73) | 220 | 10×16 | 2772 | 0.12 | 30 | 3800 | CAYAA227M1JO100160 |
| 63(73) | 220 | 12.5×12.5 | 2772 | 0.12 | 40 | 3350 | CAYAA227M1JO125125 |
| 63(73) | 270 | 10×18 | 3402 | 0.12 | 30 | 4050 | CAYAA277M1JO100180 |
| 63(73) | 270 | 12.5×14 | 3402 | 0.12 | 40 | 3500 | CAYAA277M1JO125140 |
| 63(73) | 330 | 10×21 | 4158 | 0.12 | 30 | 4350 | CAYAA337M1JO100210 |
| 63(73) | 330 | 12.5×16 | 4158 | 0.12 | 30 | 4300 | CAYAA337M1JO125160 |
| 63(73) | 390 | 12.5×18 | 4914 | 0.12 | 30 | 4550 | CAYAA397M1JO125180 |
| 63(73) | 470 | 12.5×20 | 5000 | 0.12 | 30 | 4750 | CAYAA477M1JO125200 |
| 80(92) | 4.7 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAA475M1KO050057 |
| 80(92) | 4.7 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA475M1KO063042 |
| 80(92) | 6.8 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAA685M1KO050057 |
| 80(92) | 6.8 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA685M1KO063042 |
| 80(92) | 8.2 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAA825M1KO050057 |
| 80(92) | 8.2 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA825M1KO063042 |
| 80(92) | 10 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAA106M1KO050057 |
| 80(92) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAA106M1KO063042 |
| 80(92) | 15 | 5×9 | 300 | 0.12 | 50 | 1900 | CAYAA156M1KO050090 |
| 80(92) | 15 | 6.3×7 | 300 | 0.12 | 50 | 1900 | CAYAA156M1KO063070 |
| 80(92) | 22 | 6.3×7 | 352 | 0.12 | 50 | 1900 | CAYAA226M1KO063070 |
| 80(92) | 22 | 8×7 | 352 | 0.12 | 60 | 1800 | CAYAA226M1KO080070 |
| 80(92) | 33 | 6.3×10 | 528 | 0.12 | 40 | 2500 | CAYAA336M1KO063100 |
| 80(92) | 33 | 8×7 | 528 | 0.12 | 60 | 1800 | CAYAA336M1KO080070 |
| 80(92) | 39 | 6.3×11 | 624 | 0.12 | 40 | 2600 | CAYAA396M1KO063110 |
| 80(92) | 39 | 8×8 | 624 | 0.12 | 50 | 2200 | CAYAA396M1KO080080 |
| 80(92) | 47 | 8×8 | 752 | 0.12 | 50 | 2200 | CAYAA476M1KO080080 |
| 80(92) | 47 | 10×7 | 752 | 0.12 | 60 | 2050 | CAYAA476M1KO100070 |
| 80(92) | 56 | 8×9 | 896 | 0.12 | 50 | 2300 | CAYAA566M1KO080090 |
| 80(92) | 56 | 10×9 | 896 | 0.12 | 50 | 2450 | CAYAA566M1KO100090 |
| 80(92) | 68 | 8×10 | 1088 | 0.12 | 40 | 2700 | CAYAA686M1KO080100 |
| 80(92) | 68 | 10×9 | 1088 | 0.12 | 50 | 2450 | CAYAA686M1KO100090 |
| 80(92) | 82 | 8×12 | 1312 | 0.12 | 40 | 2900 | CAYAA826M1KO080120 |
| 80(92) | 82 | 10×10 | 1312 | 0.12 | 50 | 2550 | CAYAA826M1KO100100 |
| 80(92) | 100 | 8×14 | 1600 | 0.12 | 30 | 3500 | CAYAA107M1KO080140 |
| 80(92) | 100 | 10×12 | 1600 | 0.12 | 40 | 2950 | CAYAA107M1KO100120 |
| 80(92) | 120 | 8×16 | 1920 | 0.12 | 30 | 3700 | CAYAA127M1KO080160 |
| 80(92) | 120 | 10×13 | 1920 | 0.12 | 40 | 3000 | CAYAA127M1KO100130 |
| 80(92) | 150 | 10×16 | 2400 | 0.12 | 30 | 3800 | CAYAA157M1KO100160 |
| 80(92) | 150 | 12.5×12.5 | 2400 | 0.12 | 40 | 3350 | CAYAA157M1KO125125 |
| 80(92) | 180 | 10×18 | 2880 | 0.12 | 30 | 4050 | CAYAA187M1KO100180 |
| 80(92) | 180 | 12.5×14 | 2880 | 0.12 | 40 | 3500 | CAYAA187M1KO125140 |
| 80(92) | 220 | 10×21 | 3520 | 0.12 | 30 | 4350 | CAYAA227M1KO100210 |
| 80(92) | 220 | 12.5×16 | 3520 | 0.12 | 30 | 4300 | CAYAA227M1KO125160 |

# CAYAB



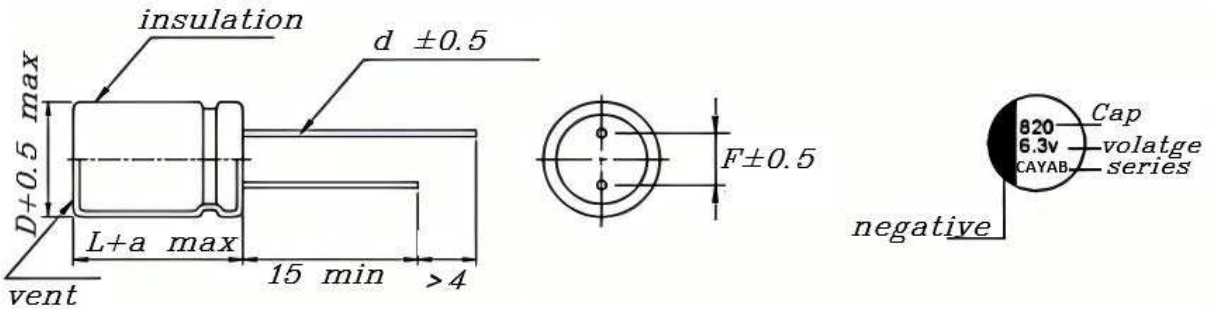

- ◆ 105°C 5000 Hours
- ◆ Long Life
- ◆ High Stability, Low ESR, High Frequency
- ◆ RoHS Compliant (2011/65/EU) , AEC-Q200

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 6.3~100V |
| **Capacitance Range** | 2.2~10000μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Endurance** | After load rated voltage for 5000hours at105°C,the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 150% of the specified value<br>Dissipation Factor: Not more than 150% of the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60 °C under the condition of 90%~95 %R.H with no load for 100 hours, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 150% of the specified value<br>Dissipation Factor: Not more than 150% of the specified value<br>Leakage current: Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| D(±0.5) | 5 | 5.5 | 6.3 | 8 | 10 | 12.5 |
|---|---|---|---|---|---|---|
| d(±0.05) | 0.45/0.50 | 0.45/0.50 | 0.45/0.50 | 0.6 | 0.6 | 0.6 |
| F(±0.5) | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 | 5.0 |
| α | +1 | | | | | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 100 | 5×5.7 | 280 | 0.08 | 20 | 2400 | CAYAB107M0JO050057 |
| 6.3(7.2) | 100 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAB107M0JO063042 |
| 6.3(7.2) | 150 | 5×5.7 | 280 | 0.08 | 20 | 2400 | CAYAB157M0JO050057 |
| 6.3(7.2) | 150 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAB157M0JO063042 |
| 6.3(7.2) | 180 | 5×5.7 | 280 | 0.08 | 18 | 2600 | CAYAB187M0JO050057 |
| 6.3(7.2) | 180 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAB187M0JO063042 |
| 6.3(7.2) | 220 | 5×5.7 | 280 | 0.08 | 18 | 2600 | CAYAB227M0JO050057 |
| 6.3(7.2) | 220 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAB227M0JO063042 |
| 6.3(7.2) | 270 | 5×7 | 340 | 0.08 | 12 | 3400 | CAYAB227M0JO050070 |
| 6.3(7.2) | 270 | 6.3×5.7 | 340 | 0.08 | 18 | 2800 | CAYAB277M0JO063057 |
| 6.3(7.2) | 330 | 5×7 | 416 | 0.08 | 12 | 3400 | CAYAB337M0JO050070 |
| 6.3(7.2) | 330 | 6.3×5.7 | 416 | 0.08 | 18 | 2800 | CAYAB337M0JO063057 |
| 6.3(7.2) | 390 | 5×7 | 491 | 0.08 | 12 | 3400 | CAYAB337M0JO050070 |
| 6.3(7.2) | 390 | 6.3×5.7 | 491 | 0.08 | 8 | 4800 | CAYAB397M0JO063057 |
| 6.3(7.2) | 470 | 5×8 | 592 | 0.08 | 12 | 3650 | CAYAB487M0JO080050 |
| 6.3(7.2) | 470 | 6.3×7 | 592 | 0.08 | 8 | 4800 | CAYAB477M0JO063070 |
| 6.3(7.2) | 470 | 8×6 | 592 | 0.08 | 18 | 3000 | CAYAB477M0JO080060 |
| 6.3(7.2) | 560 | 5.5×7 | 706 | 0.08 | 12 | 3800 | CAYAB567M0JO055070 |
| 6.3(7.2) | 560 | 6.3×7 | 706 | 0.08 | 8 | 4800 | CAYAB567M0JO063070 |
| 6.3(7.2) | 560 | 8×6 | 706 | 0.08 | 16 | 3450 | CAYAB567M0JO080060 |
| 6.3(7.2) | 680 | 6.3×8 | 857 | 0.08 | 8 | 5000 | CAYAB687M0JO063080 |
| 6.3(7.2) | 680 | 8×7 | 857 | 0.08 | 12 | 4200 | CAYAB687M0JO080070 |
| 6.3(7.2) | 820 | 5.5×9 | 1033 | 0.08 | 8 | 4900 | CAYAB827M0JO055090 |
| 6.3(7.2) | 820 | 6.3×7.5 | 1033 | 0.08 | 8 | 4900 | CAYAB827M0JO063075 |
| 6.3(7.2) | 820 | 6.3×9 | 1033 | 0.08 | 8 | 5250 | CAYAB827M0JO063090 |
| 6.3(7.2) | 820 | 8×7 | 1033 | 0.08 | 12 | 4200 | CAYAB827M0JO080070 |
| 6.3(7.2) | 1000 | 6.3×10 | 1260 | 0.08 | 8 | 5500 | CAYAB108M0JO063100 |
| 6.3(7.2) | 1000 | 8×8 | 1260 | 0.08 | 8 | 5600 | CAYAB108M0JO080080 |
| 6.3(7.2) | 1000 | 10×7 | 1260 | 0.08 | 12 | 4500 | CAYAB108M0JO100070 |
| 6.3(7.2) | 1200 | 6.3×11 | 1512 | 0.08 | 8 | 5700 | CAYAB128M0JO063110 |
| 6.3(7.2) | 1200 | 8×9 | 1512 | 0.08 | 8 | 5800 | CAYAB128M0JO080090 |
| 6.3(7.2) | 1200 | 10×8 | 1512 | 0.08 | 8 | 5800 | CAYAB128M0JO100080 |
| 6.3(7.2) | 1500 | 8×11 | 1890 | 0.09 | 8 | 6150 | CAYAB158M0JO080110 |
| 6.3(7.2) | 1500 | 10×9 | 1890 | 0.09 | 8 | 6050 | CAYAB158M0JO100090 |
| 6.3(7.2) | 2000 | 8×14 | 2520 | 0.10 | 7 | 7250 | CAYAB208M0JO080140 |
| 6.3(7.2) | 2000 | 10×10 | 2520 | 0.10 | 8 | 6300 | CAYAB208M0JO100100 |
| 6.3(7.2) | 2200 | 8×14 | 2772 | 0.10 | 7 | 7500 | CAYAB228M0JO080140 |
| 6.3(7.2) | 2200 | 10×10 | 2772 | 0.10 | 8 | 6300 | CAYAB228M0JO100100 |
| 6.3(7.2) | 2500 | 10×11 | 3150 | 0.11 | 8 | 6500 | CAYAB258M0JO100110 |
| 6.3(7.2) | 2700 | 10×11 | 3402 | 0.11 | 8 | 6500 | CAYAB278M0JO100110 |
| 6.3(7.2) | 3300 | 10×12 | 4158 | 0.13 | 8 | 6640 | CAYAB338M0JO100120 |
| 6.3(7.2) | 3900 | 10×14 | 4914 | 0.14 | 7 | 7600 | CAYAB398M0JO100140 |
| 6.3(7.2) | 4700 | 10×16 | 5922 | 0.15 | 7 | 8100 | CAYAB478M0JO100160 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | Ł.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 4700 | 12.5×12.5 | 5922 | 0.15 | 8 | 7600 | CAYAB478M0JO125125 |
| 6.3(7.2) | 5600 | 10×18 | 7056 | 0.17 | 7 | 8500 | CAYAB568M0JO100180 |
| 6.3(7.2) | 5600 | 12.5×14 | 7056 | 0.17 | 8 | 7900 | CAYAB568M0JO125140 |
| 6.3(7.2) | 6800 | 10×21 | 7500 | 0.20 | 7 | 9100 | CAYAB688M0JO100210 |
| 6.3(7.2) | 6800 | 12.5×16 | 7500 | 0.20 | 7 | 8950 | CAYAB688M0JO125160 |
| 6.3(7.2) | 8200 | 12.5×18 | 7500 | 0.22 | 7 | 9450 | CAYAB828M0JO125180 |
| 6.3(7.2) | 10000 | 12.5×20 | 7500 | 0.26 | 7 | 9850 | CAYAB109M0JO125200 |
| 7.5(8.6) | 270 | 5×7 | 405 | 0.08 | 12 | 3400 | CAYAB277M0MO050070 |
| 7.5(8.6) | 270 | 6.3×5.7 | 405 | 0.08 | 18 | 2800 | CAYAB277M0MO063057 |
| 7.5(8.6) | 330 | 5×9 | 495 | 0.08 | 12 | 3800 | CAYAB337M0MO050090 |
| 7.5(8.6) | 330 | 6.3×5.7 | 495 | 0.08 | 12 | 3700 | CAYAB337M0MO063057 |
| 7.5(8.6) | 390 | 5×10 | 585 | 0.08 | 10 | 4350 | CAYAB397M0MO050100 |
| 7.5(8.6) | 390 | 6.3×7 | 585 | 0.08 | 12 | 3900 | CAYAB397M0MO063070 |
| 7.5(8.6) | 390 | 8×6 | 585 | 0.08 | 18 | 3250 | CAYAB397M0MO080060 |
| 7.5(8.6) | 470 | 5×11 | 705 | 0.08 | 10 | 3850 | CAYAB477M0MO050110 |
| 7.5(8.6) | 470 | 5×9 | 705 | 0.08 | 12 | 4500 | CAYAB477M0MO050090 |
| 7.5(8.6) | 470 | 6.3×8 | 705 | 0.08 | 12 | 4100 | CAYAB477M0MO063080 |
| 7.5(8.6) | 470 | 8×6 | 705 | 0.08 | 18 | 3000 | CAYAB47M0MO080060 |
| 7.5(8.6) | 560 | 6.3×9 | 840 | 0.08 | 9 | 5000 | CAYAB567M0MO063090 |
| 7.5(8.6) | 560 | 8×6 | 840 | 0.08 | 18 | 3250 | CAYAB567M0MO080060 |
| 7.5(8.6) | 680 | 6.3×10 | 1020 | 0.08 | 8 | 5500 | CAYAB687M0MO063100 |
| 7.5(8.6) | 680 | 8×7 | 1020 | 0.08 | 12 | 4200 | CAYAB687M0MO080070 |
| 7.5(8.6) | 820 | 6.3×11 | 1230 | 0.08 | 8 | 5700 | CAYAB827M0MO063110 |
| 7.5(8.6) | 820 | 8×8 | 1230 | 0.08 | 8 | 5600 | CAYAB827M0MO080080 |
| 7.5(8.6) | 1000 | 6.3×11 | 1500 | 0.08 | 8 | 5900 | CAYAB108M0MO063110 |
| 7.5(8.6) | 1000 | 8×9 | 1500 | 0.08 | 8 | 5800 | CAYAB108M0MO080090 |
| 10(11.5) | 47 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB476M1AO050070 |
| 10(11.5) | 47 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB476M1AO063042 |
| 10(11.5) | 68 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB686M1AO050070 |
| 10(11.5) | 68 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB686M1AO063042 |
| 10(11.5) | 82 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB826M1AO050057 |
| 10(11.5) | 82 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB826M1AO063042 |
| 10(11.5) | 100 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB107M1AO050057 |
| 10(11.5) | 100 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB107M1AO063042 |
| 10(11.5) | 150 | 5×7 | 300 | 0.08 | 15 | 3050 | CAYAB157M1AO050070 |
| 10(11.5) | 150 | 6.3×5.7 | 300 | 0.08 | 30 | 2200 | CAYAB157M1AO063057 |
| 10(11.5) | 180 | 5×7 | 360 | 0.08 | 15 | 3050 | CAYAB187M1AO050070 |
| 10(11.5) | 180 | 6.3×5.7 | 360 | 0.08 | 30 | 2200 | CAYAB187M1AO063057 |
| 10(11.5) | 220 | 5×7 | 440 | 0.08 | 15 | 3050 | CAYAB227M1AO050070 |
| 10(11.5) | 220 | 6.3×5.7 | 440 | 0.08 | 30 | 2200 | CAYAB227M1AO063057 |
| 10(11.5) | 270 | 5×10 | 540 | 0.08 | 12 | 3950 | CAYAB277M1AO050100 |
| 10(11.5) | 270 | 6.3×5.7 | 540 | 0.08 | 16 | 3200 | CAYAB277M1AO063057 |
| 10(11.5) | 330 | 5×11 | 660 | 0.08 | 12 | 4100 | CAYAA337M1AO050110 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 10(11.5) | 330 | 6.3×7 | 660 | 0.08 | 16 | 3200 | CAYAB337M1AO063070 |
| 10(11.5) | 390 | 6.3×7 | 780 | 0.08 | 12 | 3900 | CAYAB397M1AO063070 |
| 10(11.5) | 390 | 8×6 | 780 | 0.08 | 30 | 2550 | CAYAB397M1AO060080 |
| 10(11.5) | 470 | 6.3×8 | 940 | 0.08 | 12 | 4300 | CAYAB477M1AO063080 |
| 10(11.5) | 470 | 8×7 | 940 | 0.08 | 30 | 2550 | CAYAB477M1AO080070 |
| 10(11.5) | 560 | 6.3×10 | 1120 | 0.08 | 10 | 4900 | CAYAB567M1AO063100 |
| 10(11.5) | 560 | 8×7 | 1120 | 0.08 | 14 | 2550 | CAYAB567M1AO080070 |
| 10(11.5) | 680 | 6.3×11 | 1360 | 0.08 | 9 | 5400 | CAYAB687M1AO063110 |
| 10(11.5) | 680 | 8×8 | 1360 | 0.08 | 10 | 5100 | CAYAB687M1AO080080 |
| 10(11.5) | 820 | 8×9 | 1640 | 0.08 | 9 | 5500 | CAYAB827M1AO080090 |
| 10(11.5) | 820 | 10×7 | 1640 | 0.08 | 14 | 2850 | CAYAB827M1AO100070 |
| 10(11.5) | 1000 | 8×11 | 2000 | 0.08 | 9 | 5800 | CAYAB108M1AO080110 |
| 10(11.5) | 1000 | 10×8 | 2000 | 0.08 | 9 | 5500 | CAYAB108M1AO100080 |
| 10(11.5) | 1500 | 8×14 | 3000 | 0.09 | 8 | 6800 | CAYAB158M1AO080140 |
| 10(11.5) | 1500 | 10×12 | 3000 | 0.09 | 9 | 6300 | CAYAB158M1AO100120 |
| 10(11.5) | 2200 | 10×14 | 4400 | 0.10 | 8 | 7000 | CAYAB228M1AO100140 |
| 10(11.5) | 2500 | 10×14 | 5000 | 0.11 | 8 | 7000 | CAYAB258M1AO100140 |
| 10(11.5) | 2700 | 10×16 | 5400 | 0.11 | 8 | 7500 | CAYAB278M1AO100160 |
| 10(11.5) | 3300 | 10×18 | 6600 | 0.13 | 8 | 7900 | CAYAB338M1AO100180 |
| 10(11.5) | 3300 | 12.5×14 | 6600 | 0.13 | 9 | 7500 | CAYAB338M1AO125140 |
| 10(11.5) | 3900 | 10×21 | 7500 | 0.14 | 8 | 8400 | CAYAB398M1AO100210 |
| 10(11.5) | 3900 | 12.5×16 | 7500 | 0.14 | 8 | 8400 | CAYAB398M1AO125160 |
| 10(11.5) | 4700 | 12.5×18 | 7500 | 0.15 | 8 | 8400 | CAYAB478M1AO125180 |
| 10(11.5) | 5600 | 12.5×18 | 7500 | 0.17 | 8 | 8800 | CAYAB568M1AO125180 |
| 10(11.5) | 6800 | 12.5×20 | 7500 | 0.20 | 8 | 9200 | CAYAB688M1AO125200 |
| 12(13.8) | 180 | 5×7 | 432 | 0.08 | 15 | 3050 | CAYAB187M1BO050070 |
| 12(13.8) | 180 | 6.3×5.7 | 432 | 0.08 | 30 | 2200 | CAYAB187M1BO063057 |
| 12(13.8) | 220 | 5×9 | 528 | 0.08 | 15 | 3400 | CAYAB227M1BO050090 |
| 12(13.8) | 220 | 6.3×5.7 | 528 | 0.08 | 16 | 3200 | CAYAB227M1BO063057 |
| 12(13.8) | 270 | 5×10 | 648 | 0.08 | 12 | 3950 | CAYAB277M1BO050100 |
| 12(13.8) | 270 | 6.3×7 | 648 | 0.08 | 16 | 3200 | CAYAB277M1BO063070 |
| 12(13.8) | 330 | 5×10 | 792 | 0.08 | 12 | 3950 | CAYAB337M1BO050100 |
| 12(13.8) | 330 | 6.3×7 | 792 | 0.08 | 12 | 3900 | CAYAB337M1BO063070 |
| 12(13.8) | 330 | 8×6 | 792 | 0.08 | 30 | 2550 | CAYAB337M1BO080060 |
| 12(13.8) | 390 | 5×11 | 936 | 0.08 | 12 | 4100 | CAYAB397M1BO050110 |
| 12(13.8) | 390 | 5.5×9 | 936 | 0.08 | 15 | 3450 | CAYAB397M1BO055090 |
| 12(13.8) | 390 | 6.3×8 | 936 | 0.08 | 12 | 4100 | CAYAB397M1BO063080 |
| 12(13.8) | 470 | 6.3×9 | 1128 | 0.08 | 12 | 4300 | CAYAB477M1BO063090 |
| 12(13.8) | 470 | 8×7 | 1128 | 0.08 | 14 | 2550 | CAYAB477M1BO080070 |
| 12(13.8) | 560 | 6.3×10 | 1344 | 0.08 | 10 | 4900 | CAYAB567M1BO063100 |
| 12(13.8) | 560 | 8×7 | 1344 | 0.08 | 14 | 2550 | CAYAB567M1BO080070 |
| 12(13.8) | 680 | 6.3×11 | 1632 | 0.08 | 9 | 5400 | CAYAB687M1BO063110 |
| 12(13.8) | 680 | 8×8 | 1632 | 0.08 | 10 | 5100 | CAYAB687M1BO080080 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 12(13.8) | 1000 | 8×10 | 2400 | 0.08 | 10 | 5200 | CAYAB108M1BO080100 |
| 16(18.4) | 22 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB226M1CO050057 |
| 16(18.4) | 22 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB226M1CO063042 |
| 16(18.4) | 33 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB336M1CO050057 |
| 16(18.4) | 33 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB226M1CO063042 |
| 16(18.4) | 47 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB476M1CO050057 |
| 16(18.4) | 47 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB476M1CO063042 |
| 16(18.4) | 68 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB686M1CO050057 |
| 16(18.4) | 68 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB686M1CO063042 |
| 16(18.4) | 82 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB826M1CO050057 |
| 16(18.4) | 82 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB826M1CO063042 |
| 16(18.4) | 100 | 5×7 | 320 | 0.08 | 30 | 2000 | CAYAB107M1CO050070 |
| 16(18.4) | 100 | 5×7 | 320 | 0.08 | 30 | 2200 | CAYAB107M1CO050070 |
| 16(18.4) | 100 | 6.3×5.7 | 320 | 0.08 | 30 | 2100 | CAYAB107M1CO063057 |
| 16(18.4) | 150 | 5×8 | 480 | 0.08 | 30 | 2200 | CAYAB157M1CO050080 |
| 16(18.4) | 150 | 6.3×5.7 | 480 | 0.08 | 30 | 2200 | CAYAB157M1CO063057 |
| 16(18.4) | 220 | 5×10 | 704 | 0.08 | 12 | 3950 | CAYAB227M1CO050100 |
| 16(18.4) | 220 | 5.5×9 | 704 | 0.08 | 12 | 3950 | CAYAB227M1CO055090 |
| 16(18.4) | 220 | 6.3×7 | 704 | 0.08 | 20 | 2850 | CAYAB227M1CO063070 |
| 16(18.4) | 270 | 6.3×8 | 864 | 0.08 | 15 | 3500 | CAYAB277M1CO063080 |
| 16(18.4) | 270 | 8×7 | 864 | 0.08 | 30 | 2550 | CAYAB277M1CO080070 |
| 16(18.4) | 330 | 6.3×9 | 1056 | 0.08 | 12 | 4300 | CAYAB337M1CO006309 |
| 16(18.4) | 330 | 8×7 | 1056 | 0.08 | 30 | 2550 | CAYAB337M1CO080070 |
| 16(18.4) | 390 | 6.3×9 | 1248 | 0.08 | 12 | 4300 | CAYAB397M1CO063090 |
| 16(18.4) | 470 | 6.3×11 | 1504 | 0.08 | 10 | 4900 | CAYAB477M1CO063110 |
| 16(18.4) | 470 | 8×8 | 1504 | 0.08 | 20 | 3300 | CAYAB477M1CO080080 |
| 16(18.4) | 560 | 8×9 | 1792 | 0.08 | 12 | 4700 | CAYAB567M1CO080090 |
| 16(18.4) | 560 | 10×8 | 1792 | 0.08 | 12 | 4700 | CAYAB567M1CO100080 |
| 16(18.4) | 680 | 8×10 | 2176 | 0.08 | 10 | 5350 | CAYAB687M1CO080100 |
| 16(18.4) | 680 | 10×8 | 2176 | 0.08 | 12 | 4700 | CAYAB687M1CO100080 |
| 16(18.4) | 820 | 8×12 | 2624 | 0.08 | 10 | 5500 | CAYAB827M1CO080120 |
| 16(18.4) | 820 | 10×9 | 2624 | 0.08 | 12 | 4950 | CAYAB827M1CO100090 |
| 16(18.4) | 1000 | 8×14 | 3200 | 0.08 | 8 | 6800 | CAYAB108M1CO080140 |
| 16(18.4) | 1000 | 8×16 | 3200 | 0.08 | 10 | 5800 | CAYAB108M1CO080160 |
| 16(18.4) | 1000 | 10×9 | 3200 | 0.08 | 12 | 5200 | CAYAB108M1CO100090 |
| 16(18.4) | 1500 | 10×12 | 4800 | 0.09 | 8 | 8400 | CAYAB158M1CO100120 |
| 16(18.4) | 1800 | 10×16 | 5760 | 0.10 | 8 | 7000 | CAYAB188M1CO100160 |
| 16(18.4) | 2200 | 10×18 | 7040 | 0.10 | 8 | 7900 | CAYAB228M1CO100180 |
| 16(18.4) | 2200 | 10×20 | 7040 | 0.10 | 8 | 7500 | CAYAB228M1CO100200 |
| 16(18.4) | 2200 | 12.5×14 | 7040 | 0.10 | 10 | 7100 | CAYAB228M1CO125140 |
| 16(18.4) | 2700 | 10×21 | 7500 | 0.11 | 8 | 8400 | CAYAB278M1CO100210 |
| 16(18.4) | 2700 | 12.5×16 | 7500 | 0.11 | 10 | 7100 | CAYAB278M1CO125160 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 16(18.4) | 3300 | 12.5×18 | 7500 | 0.13 | 8 | 8400 | CAYAB338M1CO125180 |
| 16(18.4) | 3900 | 12.5×20 | 7500 | 0.14 | 8 | 8800 | CAYAB398M1CO125200 |
| 25(28.8) | 10 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB106M1EO050057 |
| 25(28.8) | 10 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB106M1EO063042 |
| 25(28.8) | 15 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB156M1EO050057 |
| 25(28.8) | 15 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB156M1EO063042 |
| 25(28.8) | 22 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB226M1EO050057 |
| 25(28.8) | 22 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB226M1EO063042 |
| 25(28.8) | 33 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB336M1EO050057 |
| 25(28.8) | 33 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB336M1EO063042 |
| 25(28.8) | 39 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB396M1EO050057 |
| 25(28.8) | 39 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB396M1EO063042 |
| 25(28.8) | 47 | 5×5.7 | 280 | 0.08 | 30 | 2050 | CAYAB476M1EO050057 |
| 25(28.8) | 47 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB476M1EO063042 |
| 25(28.8) | 68 | 5×7 | 340 | 0.08 | 30 | 2200 | CAYAB686M1EO050070 |
| 25(28.8) | 68 | 6.3×5.7 | 340 | 0.08 | 40 | 1900 | CAYAB686M1EO063057 |
| 25(28.8) | 100 | 5×9 | 500 | 0.08 | 30 | 2400 | CAYAB107M1EO050090 |
| 25(28.8) | 100 | 6.3×5.7 | 500 | 0.08 | 30 | 2350 | CAYAB107M1EO063057 |
| 25(28.8) | 150 | 6.3×8 | 750 | 0.08 | 16 | 3550 | CAYAB157M1EO063080 |
| 25(28.8) | 150 | 8×6 | 750 | 0.08 | 30 | 2550 | CAYAB157M1EO080060 |
| 25(28.8) | 180 | 6.3×8 | 900 | 0.08 | 16 | 3550 | CAYAB187M1EO063080 |
| 25(28.8) | 180 | 8×7 | 900 | 0.08 | 30 | 2550 | CAYAB187M1EO080070 |
| 25(28.8) | 220 | 6.3×9 | 1100 | 0.08 | 20 | 3500 | CAYAB227M1EO063090 |
| 25(28.8) | 220 | 8×7 | 1100 | 0.08 | 30 | 2700 | CAYAB227M1EO080070 |
| 25(28.8) | 220 | 10×6 | 1100 | 0.08 | 30 | 2700 | CAYAB227M1EO100060 |
| 25(28.8) | 330 | 8×9 | 1650 | 0.08 | 16 | 4000 | CAYAB337M1EO080090 |
| 25(28.8) | 330 | 10×8 | 1650 | 0.08 | 16 | 4100 | CAYAB337M1EO100080 |
| 25(28.8) | 470 | 8×14 | 2350 | 0.08 | 16 | 4800 | CAYAB477M1EO080140 |
| 25(28.8) | 470 | 8×11 | 2350 | 0.08 | 16 | 4200 | CAYAB477M1EO080110 |
| 25(28.8) | 470 | 10×9 | 2350 | 0.08 | 16 | 4300 | CAYAB477M1EO100090 |
| 25(28.8) | 560 | 8×14 | 2800 | 0.08 | 16 | 4800 | CAYAB567M1EO080140 |
| 25(28.8) | 560 | 8×11 | 2800 | 0.08 | 16 | 4400 | CAYAB567M1EO080110 |
| 25(28.8) | 560 | 10×10 | 2800 | 0.08 | 16 | 4500 | CAYAB567M1EO100100 |
| 25(28.8) | 680 | 8×14 | 3400 | 0.08 | 16 | 4800 | CAYAB687M1EO080140 |
| 25(28.8) | 680 | 10×12 | 3400 | 0.08 | 16 | 4700 | CAYAB687M1EO100120 |
| 25(28.8) | 820 | 8×16 | 4100 | 0.08 | 16 | 5050 | CAYAB827M1EO080160 |
| 25(28.8) | 820 | 8×17 | 4100 | 0.08 | 16 | 4900 | CAYAB827M1EO080170 |
| 25(28.8) | 820 | 10×13 | 4100 | 0.08 | 16 | 4800 | CAYAB827M1EO100130 |
| 25(28.8) | 1000 | 10×16 | 5000 | 0.08 | 16 | 5300 | CAYAB108M1EO100160 |
| 25(28.8) | 1000 | 12.5×12.5 | 5000 | 0.08 | 16 | 5300 | CAYAB108M1EO125125 |
| 25(28.8) | 1500 | 10×18 | 7500 | 0.09 | 16 | 5600 | CAYAB158M1EO100180 |
| 25(28.8) | 1500 | 12.5×14 | 7500 | 0.09 | 16 | 5600 | CAYAB158M1EO125140 |
| 25(28.8) | 1800 | 10×21 | 7500 | 0.10 | 16 | 6000 | CAYAB188M1EO100210 |


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## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 25(28.8) | 1800 | 12.5×16 | 7500 | 0.10 | 16 | 5900 | CAYAB188M1EO125160 |
| 25(28.8) | 2200 | 12.5×18 | 7500 | 0.10 | 16 | 6200 | CAYAB228M1EO125180 |
| 25(28.8) | 2700 | 12.5×20 | 7500 | 0.11 | 16 | 6500 | CAYAB278M1EO125200 |
| 35(41) | 10 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB106M1VO050070 |
| 35(41) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB106M1VO063042 |
| 35(41) | 15 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB156M1VO050057 |
| 35(41) | 15 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB156M1VO063042 |
| 35(41) | 22 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB226M1VO050057 |
| 35(41) | 22 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB226M1VO063042 |
| 35(41) | 33 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB336M1VO050057 |
| 35(41) | 33 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB336M1VO063042 |
| 35(41) | 39 | 5×7 | 300 | 0.12 | 50 | 1700 | CAYAB396M1VO050070 |
| 35(41) | 39 | 6.3×5.7 | 300 | 0.12 | 60 | 1550 | CAYAB396M1VO063057 |
| 35(41) | 47 | 5×7 | 329 | 0.12 | 50 | 1700 | CAYAB476M1VO050070 |
| 35(41) | 47 | 6.3×5.7 | 329 | 0.12 | 60 | 1550 | CAYAB476M1VO063057 |
| 35(41) | 56 | 5×7 | 392 | 0.12 | 50 | 1700 | CAYAB566M1VO050070 |
| 35(41) | 56 | 6.3×5.7 | 392 | 0.12 | 60 | 1650 | CAYAB566M1VO063057 |
| 35(41) | 68 | 5×8 | 476 | 0.12 | 50 | 1800 | CAYAB686M1VO050080 |
| 35(41) | 68 | 6.3×5.7 | 476 | 0.12 | 60 | 1650 | CAYAB686M1VO063057 |
| 35(41) | 68 | 8×6 | 476 | 0.12 | 60 | 1650 | CAYAB686M1VO080060 |
| 35(41) | 82 | 5×9 | 574 | 0.12 | 50 | 1900 | CAYAB826M1VO050090 |
| 35(41) | 82 | 6.3×7 | 574 | 0.12 | 50 | 1900 | CAYAB826M1VO063070 |
| 35(41) | 100 | 6.3×7 | 700 | 0.12 | 50 | 1900 | CAYAB107M1VO063070 |
| 35(41) | 100 | 8×6 | 700 | 0.12 | 60 | 1800 | CAYAB107M1VO080060 |
| 35(41) | 120 | 6.3×8 | 840 | 0.12 | 50 | 2050 | CAYAB127M1VO063080 |
| 35(41) | 120 | 8×7 | 840 | 0.12 | 60 | 1900 | CAYAB127M1VO080070 |
| 35(41) | 150 | 6.3×9 | 1050 | 0.12 | 50 | 2150 | CAYAB157M1VO063090 |
| 35(41) | 150 | 8×7 | 1050 | 0.12 | 60 | 1900 | CAYAB157M1VO080070 |
| 35(41) | 180 | 6.3×10 | 1260 | 0.12 | 40 | 2500 | CAYAB187M1VO063100 |
| 35(41) | 180 | 8×7 | 1260 | 0.12 | 60 | 1900 | CAYAB187M1VO080070 |
| 35(41) | 220 | 6.3×11 | 1540 | 0.12 | 40 | 2600 | CAYAB227M1VO063110 |
| 35(41) | 220 | 8×8 | 1540 | 0.12 | 50 | 2200 | CAYAB227M1VO080080 |
| 35(41) | 220 | 10×7 | 1540 | 0.12 | 60 | 2050 | CAYAB227M1VO100070 |
| 35(41) | 330 | 8×10 | 2310 | 0.12 | 30 | 3100 | CAYAB337M1VO080100 |
| 35(41) | 330 | 10×8 | 2310 | 0.12 | 50 | 2350 | CAYAB337M1VO100080 |
| 35(41) | 390 | 8×12 | 2730 | 0.12 | 30 | 3200 | CAYAB397M1VO080120 |
| 35(41) | 390 | 10×10 | 2730 | 0.12 | 50 | 2550 | CAYAB397M1VO100100 |
| 35(41) | 470 | 8×14 | 3290 | 0.12 | 20 | 4250 | CAYAB477M1VO080140 |
| 35(41) | 470 | 10×12 | 3290 | 0.12 | 30 | 3400 | CAYAB477M1VO100120 |
| 35(41) | 560 | 8×16 | 3920 | 0.12 | 20 | 4550 | CAYAB567M1VO080160 |
| 35(41) | 560 | 10×12 | 3920 | 0.12 | 30 | 3450 | CAYAB567M1VO100120 |
| 35(41) | 680 | 10×14 | 4760 | 0.12 | 20 | 4450 | CAYAB687M1VO100140 |
| 35(41) | 820 | 10×16 | 5000 | 0.12 | 20 | 4700 | CAYAB827M1VO100160 |

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## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 35(41) | 820 | 12.5×12.5 | 5000 | 0.12 | 30 | 3900 | CAYAB827M1VO125125 |
| 35(41) | 1000 | 10×18 | 5000 | 0.08 | 20 | 5000 | CAYAB108M1VO100180 |
| 35(41) | 1000 | 12.5×14 | 5000 | 0.08 | 30 | 4100 | CAYAB108M1VO125140 |
| 35(41) | 1200 | 10×21 | 5000 | 0.08 | 20 | 5300 | CAYAB128M1VO100210 |
| 35(41) | 1200 | 12.5×16 | 5000 | 0.08 | 20 | 5300 | CAYAB128M1VO125160 |
| 35(41) | 1500 | 12.5×18 | 5000 | 0.09 | 20 | 5600 | CAYAB158M1VO125180 |
| 35(41) | 1800 | 12.5×20 | 5000 | 0.10 | 20 | 5850 | CAYAB188M1VO125200 |
| 50(58) | 10 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB106M1HO050057 |
| 50(58) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB106M1HO063042 |
| 50(58) | 12 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB126M1HO050057 |
| 50(58) | 12 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB106M1HO063042 |
| 50(58) | 15 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB156M1HO050057 |
| 50(58) | 15 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB156M1HO063042 |
| 50(58) | 18 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB186M1HO050070 |
| 50(58) | 18 | 6.3×5.7 | 300 | 0.12 | 60 | 1400 | CAYAB186M1HO063057 |
| 50(58) | 22 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB226M1HO050070 |
| 50(58) | 22 | 6.3×5.7 | 300 | 0.12 | 60 | 1550 | CAYAB226M1HO063057 |
| 50(58) | 33 | 5×9 | 300 | 0.12 | 50 | 1800 | CAYAB336M1HO050090 |
| 50(58) | 33 | 6.3×7 | 300 | 0.12 | 60 | 1650 | CAYAB336M1HO063070 |
| 50(58) | 39 | 5×10 | 390 | 0.12 | 40 | 2200 | CAYAB396M1HO050100 |
| 50(58) | 39 | 6.3×7 | 390 | 0.12 | 60 | 1650 | CAYAB396M1HO063070 |
| 50(58) | 47 | 6.3×8 | 470 | 0.12 | 50 | 1900 | CAYAB476M1HO063080 |
| 50(58) | 47 | 8×7 | 470 | 0.12 | 60 | 1650 | CAYAB476M1HO080070 |
| 50(58) | 56 | 6.3×9 | 560 | 0.12 | 50 | 1900 | CAYAB566M1HO063090 |
| 50(58) | 56 | 8×7 | 560 | 0.12 | 60 | 1800 | CAYAB566M1HO080070 |
| 50(58) | 68 | 6.3×10 | 680 | 0.12 | 50 | 2150 | CAYAB686M1HO063100 |
| 50(58) | 68 | 8×7 | 680 | 0.12 | 60 | 1800 | CAYAB686M1HO080070 |
| 50(58) | 82 | 6.3×11 | 820 | 0.12 | 40 | 2500 | CAYAB826M1HO063110 |
| 50(58) | 82 | 8×8 | 820 | 0.12 | 60 | 1900 | CAYAB826M1HO080080 |
| 50(58) | 100 | 8×9 | 1000 | 0.12 | 50 | 2200 | CAYAB107M1HO080090 |
| 50(58) | 100 | 10×7 | 1000 | 0.12 | 60 | 2000 | CAYAB107M1HO100070 |
| 50(58) | 120 | 8×10 | 1200 | 0.12 | 50 | 2300 | CAYAB127M1HO080100 |
| 50(58) | 120 | 10×7 | 1200 | 0.12 | 60 | 2050 | CAYAB127M1HO100070 |
| 50(58) | 150 | 8×12 | 1500 | 0.12 | 50 | 2300 | CAYAB157M1HO080120 |
| 50(58) | 150 | 10×8 | 1500 | 0.12 | 50 | 2350 | CAYAB157M1HO100080 |
| 50(58) | 180 | 8×14 | 1800 | 0.12 | 40 | 2800 | CAYAB187M1HO080140 |
| 50(58) | 180 | 10×9 | 1800 | 0.12 | 50 | 2450 | CAYAB187M1HO100090 |
| 50(58) | 220 | 8×16 | 2200 | 0.12 | 30 | 3500 | CAYAB227M1HO080160 |
| 50(58) | 220 | 10×12 | 2200 | 0.12 | 40 | 2900 | CAYAB227M1HO100120 |
| 50(58) | 270 | 10×13 | 2700 | 0.12 | 40 | 3000 | CAYAB277M1HO100130 |
| 50(58) | 330 | 10×16 | 3300 | 0.12 | 30 | 3800 | CAYAB337M1HO100160 |
| 50(58) | 390 | 10×18 | 3900 | 0.12 | 30 | 3800 | CAYAB397M1HO100180 |


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## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 50(58) | 390 | 12.5×14 | 3900 | 0.12 | 40 | 3350 | CAYAB397M1HO125140 |
| 50(58) | 470 | 10×21 | 4700 | 0.12 | 30 | 4050 | CAYAB477M1HO100210 |
| 50(58) | 470 | 12.5×14 | 4700 | 0.12 | 40 | 3500 | CAYAB477M1HO125140 |
| 50(58) | 560 | 12.5×16 | 5000 | 0.12 | 30 | 4300 | CAYAB567M1HO125160 |
| 50(58) | 680 | 12.5×20 | 5000 | 0.12 | 30 | 4550 | CAYAB687M1HO125200 |
| 50(58) | 820 | 12.5×20 | 5000 | 0.12 | 30 | 4750 | CAYAB827M1HO125200 |
| 63(73) | 6.8 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB685M1JO050057 |
| 63(73) | 6.8 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB685M1JO063042 |
| 63(73) | 8.2 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB825M1JO050057 |
| 63(73) | 8.2 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB825M1JO063042 |
| 63(73) | 10 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB106M1JO050070 |
| 63(73) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB106M1JO063042 |
| 63(73) | 15 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB156M1JO050070 |
| 63(73) | 15 | 6.3×5.7 | 300 | 0.12 | 60 | 1400 | CAYAB156M1JO063057 |
| 63(73) | 22 | 5×9 | 300 | 0.12 | 50 | 1900 | CAYAB226M1JO050090 |
| 63(73) | 22 | 6.3×7 | 300 | 0.12 | 50 | 1900 | CAYAB226M1JO063070 |
| 63(73) | 33 | 6.3×8 | 416 | 0.12 | 50 | 1900 | CAYAB336M1JO063008 |
| 63(73) | 33 | 8×7 | 416 | 0.12 | 60 | 1800 | CAYAB336M1JO080070 |
| 63(73) | 39 | 6.3×9 | 491 | 0.12 | 50 | 2150 | CAYAB396M1JO0630900 |
| 63(73) | 39 | 8×7 | 491 | 0.12 | 60 | 1800 | CAYAB396M1JO080070 |
| 63(73) | 47 | 6.3×10 | 592 | 0.12 | 40 | 2500 | CAYAB476M1JO063100 |
| 63(73) | 47 | 8×8 | 592 | 0.12 | 60 | 1900 | CAYAB476M1JO080080 |
| 63(73) | 56 | 8×8 | 706 | 0.12 | 50 | 2200 | CAYAB566M1JO080080 |
| 63(73) | 56 | 10×8 | 706 | 0.12 | 60 | 1950 | CAYAB566M1JO100080 |
| 63(73) | 68 | 8×9 | 857 | 0.12 | 50 | 2300 | CAYAB686M1JO080090 |
| 63(73) | 68 | 10×7 | 857 | 0.12 | 60 | 2050 | CAYAB686M1JO100070 |
| 63(73) | 82 | 8×10 | 1033 | 0.12 | 50 | 2300 | CAYAB106M1JO050070 |
| 63(73) | 82 | 10×9 | 1033 | 0.12 | 60 | 2050 | CAYAB826M1JO080100 |
| 63(73) | 100 | 8×12 | 1260 | 0.12 | 40 | 2700 | CAYAB107M1JO080120 |
| 63(73) | 100 | 10×10 | 1260 | 0.12 | 50 | 2350 | CAYAB107M1JO100100 |
| 63(73) | 120 | 10×12 | 1512 | 0.12 | 50 | 2450 | CAYAB127M1JO100120 |
| 63(73) | 150 | 10×13 | 1890 | 0.12 | 40 | 3000 | CAYAB157M1JO100130 |
| 63(73) | 180 | 10×14 | 2268 | 0.12 | 30 | 3600 | CAYAB187M1JO100140 |
| 63(73) | 220 | 10×16 | 2772 | 0.12 | 30 | 3800 | CAYAB227M1JO100160 |
| 63(73) | 220 | 12.5×12.5 | 2772 | 0.12 | 40 | 3350 | CAYAB227M1JO125125 |
| 63(73) | 270 | 10×21 | 3402 | 0.12 | 30 | 4050 | CAYAB277M1JO100210 |
| 63(73) | 270 | 12.5×14 | 3402 | 0.12 | 40 | 3500 | CAYAB277M1JO125140 |
| 63(73) | 330 | 10×21 | 4158 | 0.12 | 30 | 4350 | CAYAB337M1JO100210 |
| 63(73) | 330 | 12.5×16 | 4158 | 0.12 | 30 | 4300 | CAYAB337M1JO125160 |
| 63(73) | 390 | 12.5×18 | 4914 | 0.12 | 30 | 4550 | CAYAB397M1JO125180 |
| 63(73) | 470 | 12.5×20 | 5000 | 0.12 | 30 | 4750 | CAYAB477M1JO125200 |
| 80(92) | 4.7 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB475M1KO050057 |
| 80(92) | 4.7 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB475M1KO063042 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 80(92) | 6.8 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB685M1KO050057 |
| 80(92) | 6.8 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB685M1KO063042 |
| 80(92) | 8.2 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB825M1KO050070 |
| 80(92) | 8.2 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB825M1KO063042 |
| 80(92) | 10 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB106M1KO050070 |
| 80(92) | 10 | 6.3×5.7 | 300 | 0.12 | 60 | 1400 | CAYAB106M1KO063057 |
| 80(92) | 15 | 5×9 | 300 | 0.12 | 50 | 1900 | CAYAB156M1KO050090 |
| 80(92) | 15 | 6.3×7 | 300 | 0.12 | 50 | 1900 | CAYAB156M1KO063070 |
| 80(92) | 22 | 6.3×8 | 352 | 0.12 | 50 | 1900 | CAYAB226M1KO063080 |
| 80(92) | 22 | 8×7 | 352 | 0.12 | 60 | 1800 | CAYAB26M1KO080070 |
| 80(92) | 33 | 6.3×10 | 528 | 0.12 | 40 | 2500 | CAYAB336M1KO063100 |
| 80(92) | 33 | 8×7 | 528 | 0.12 | 60 | 1800 | CAYAB336M1KO080070 |
| 80(92) | 39 | 6.3×11 | 624 | 0.12 | 40 | 2600 | CAYAB396M1KO063110 |
| 80(92) | 39 | 8×8 | 624 | 0.12 | 50 | 2200 | CAYAB396M1KO080080 |
| 80(92) | 47 | 8×9 | 752 | 0.12 | 50 | 2200 | CAYAB476M1KO080090 |
| 80(92) | 47 | 10×7 | 752 | 0.12 | 60 | 2050 | CAYAB476M1KO100070 |
| 80(92) | 56 | 8×10 | 896 | 0.12 | 50 | 2300 | CAYAB566M1KO080100 |
| 80(92) | 56 | 10×9 | 896 | 0.12 | 50 | 2450 | CAYAB566M1KO100090 |
| 80(92) | 68 | 8×11 | 1088 | 0.12 | 40 | 2700 | CAYAB686M1KO080110 |
| 80(92) | 68 | 10×9 | 1088 | 0.12 | 50 | 2450 | CAYAB686M1KO100090 |
| 80(92) | 82 | 8×14 | 1312 | 0.12 | 40 | 2900 | CAYAB826M1KO080140 |
| 80(92) | 82 | 10×10 | 1312 | 0.12 | 50 | 2550 | CAYAB826M1KO100100 |
| 80(92) | 100 | 8×16 | 1600 | 0.12 | 30 | 3500 | CAYAB107M1KO080160 |
| 80(92) | 100 | 10×12 | 1600 | 0.12 | 40 | 2950 | CAYAB107M1KO100120 |
| 80(92) | 120 | 10×13 | 1920 | 0.12 | 40 | 3000 | CAYAB127M1KO100130 |
| 80(92) | 150 | 10×16 | 2400 | 0.12 | 30 | 3800 | CAYAB157M1KO100160 |
| 80(92) | 150 | 12.5×12.5 | 2400 | 0.12 | 40 | 3350 | CAYAB157M1KO125125 |
| 80(92) | 180 | 10×18 | 2880 | 0.12 | 30 | 4050 | CAYAB187M1KO100180 |
| 80(92) | 180 | 12.5×14 | 2880 | 0.12 | 40 | 3500 | CAYAB187M1KO125140 |
| 80(92) | 220 | 10×21 | 3520 | 0.12 | 30 | 4350 | CAYAB227M1KO100210 |
| 80(92) | 220 | 12.5×16 | 3520 | 0.12 | 30 | 4300 | CAYAB227M1KO125160 |
| 80(92) | 270 | 12.5×18 | 4320 | 0.12 | 30 | 4550 | CAYAB277M1KO125180 |
| 80(92) | 330 | 12.5×20 | 5000 | 0.12 | 30 | 4750 | CAYAB337M1KO125200 |
| 100(115) | 2.2 | 5×5.7 | 300 | 0.12 | 80 | 1200 | CAYAB225M2AO050057 |
| 100(115) | 2.2 | 6.3×4.2 | 300 | 0.12 | 80 | 1250 | CAYAB225M2AO063042 |
| 100(115) | 3.3 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB335M2AO050057 |
| 100(115) | 3.3 | 6.3×4.2 | 300 | 0.12 | 80 | 1250 | CAYAB335M2AO063042 |
| 100(115) | 4.7 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB475M2AO050070 |
| 100(115) | 4.7 | 6.3×5.7 | 300 | 0.12 | 80 | 1350 | CAYAB475M2AO063057 |
| 100(115) | 5.6 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB565M2AO050070 |
| 100(115) | 5.6 | 6.3×5.7 | 300 | 0.12 | 80 | 1350 | CAYAB565M2AO063057 |
| 100(115) | 6.8 | 5×8 | 300 | 0.12 | 60 | 1550 | CAYAB685M2AO050080 |
| 100(115) | 6.8 | 6.3×5.7 | 300 | 0.12 | 60 | 1650 | CAYAB685M2AO063057 |

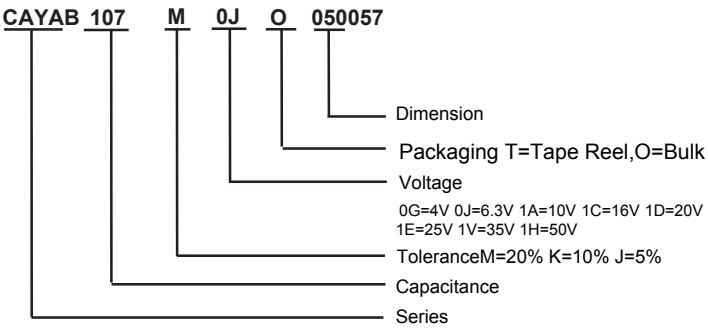

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## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 100(115) | 8.2 | 5×9 | 300 | 0.12 | 60 | 1700 | CAYAB825M2AO050090 |
| 100(115) | 8.2 | 6.3×7 | 300 | 0.12 | 60 | 1650 | CAYAB825M2AO063070 |
| 100(115) | 10 | 6.3×7 | 300 | 0.12 | 60 | 1650 | CAYAB106M2AO063070 |
| 100(115) | 12 | 6.3×8 | 300 | 0.12 | 50 | 1900 | CAYAB126M2AO063080 |
| 100(115) | 15 | 6.3×9 | 300 | 0.12 | 50 | 2150 | CAYAB156M2AO063090 |
| 100(115) | 15 | 8×7 | 300 | 0.12 | 60 | 1800 | CAYAB156M2AO080070 |
| 100(115) | 18 | 6.3×10 | 360 | 0.12 | 50 | 2250 | CAYAB186M2AO063100 |
| 100(115) | 18 | 8×8 | 360 | 0.12 | 60 | 1900 | CAYAB186M2AO080080 |
| 100(115) | 22 | 6.3×12 | 440 | 0.12 | 50 | 2300 | CAYAB226M2AO063120 |
| 100(115) | 22 | 8×8 | 440 | 0.12 | 50 | 2200 | CAYAB226M2AO080080 |
| 100(115) | 27 | 8×11 | 540 | 0.12 | 50 | 2200 | CAYAB276M2AO080110 |
| 100(115) | 27 | 10×7 | 540 | 0.12 | 60 | 2050 | CAYAB276M2AO100070 |
| 100(115) | 33 | 8×11 | 660 | 0.12 | 50 | 2300 | CAYAB336M2AO080110 |
| 100(115) | 33 | 10×9 | 660 | 0.12 | 50 | 2450 | CAYAB336M2AO100090 |
| 100(115) | 39 | 8×14 | 780 | 0.12 | 50 | 2400 | CAYAB396M2AO080140 |
| 100(115) | 39 | 10×9 | 780 | 0.12 | 50 | 2450 | CAYAB396M2AO100090 |
| 100(115) | 47 | 10×10 | 940 | 0.12 | 50 | 2550 | CAYAB476M2AO100100 |
| 100(115) | 56 | 10×12 | 1120 | 0.12 | 50 | 2650 | CAYAB566M2AO100120 |
| 100(115) | 68 | 10×16 | 1360 | 0.12 | 50 | 2700 | CAYAB686M2AO100160 |
| 100(115) | 82 | 10×18 | 1640 | 0.12 | 40 | 3100 | CAYAB826M2AO100180 |
| 100(115) | 82 | 12.5×12.5 | 1640 | 0.12 | 50 | 3000 | CAYAB826M2AO125125 |
| 100(115) | 100 | 10×21 | 2000 | 0.12 | 40 | 3500 | CAYAB107M2AO100210 |
| 100(115) | 100 | 12.5×14 | 2000 | 0.12 | 50 | 3150 | CAYAB107M2AO125140 |
| 100(115) | 120 | 10×21 | 2400 | 0.12 | 40 | 3750 | CAYAB127M2AO100210 |
| 100(115) | 120 | 12.5×16 | 2400 | 0.12 | 40 | 3700 | CAYAB127M2AO125160 |
| 100(115) | 150 | 12.5×18 | 3000 | 0.12 | 40 | 3900 | CAYAB157M2AO125180 |
| 100(115) | 180 | 12.5×20 | 3600 | 0.12 | 40 | 4100 | CAYAB187M2AO125200 |

**PART NUMBER EXAMPLE**



# CAYAB



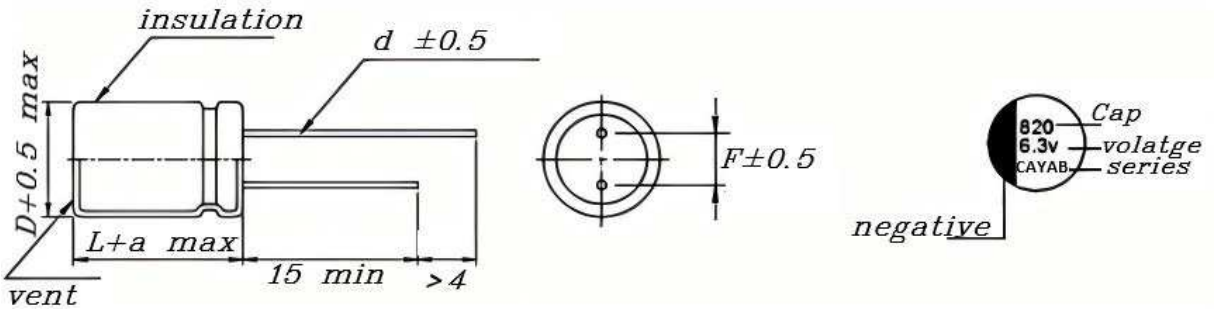

- ◆ 105°C 5000 Hours
- ◆ Long Life
- ◆ High Stability, Low ESR, High Frequency
- ◆ RoHS Compliant (2011/65/EU) , AEC-Q200

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 6.3~100V |
| **Capacitance Range** | 2.2~10000μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Endurance** | After load rated voltage for 5000hours at105°C,the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 150% of the specified value<br>Dissipation Factor: Not more than 150% of the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60 °C under the condition of 90%~95 %R.H with no load for 100 hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 150% of the specified value<br>Dissipation Factor: Not more than 150% of the specified value<br>Leakage current: Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| D(±0.5) | 5 | 5.5 | 6.3 | 8 | 10 | 12.5 |
|---|---|---|---|---|---|---|
| d(±0.05) | 0.45/0.50 | 0.45/0.50 | 0.45/0.50 | 0.6 | 0.6 | 0.6 |
| F(±0.5) | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 | 5.0 |
| α | +1 | | | | | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |


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# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 100 | 5×5.7 | 280 | 0.08 | 20 | 2400 | CAYAB107M0JO050057 |
| 6.3(7.2) | 100 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAB107M0JO063042 |
| 6.3(7.2) | 150 | 5×5.7 | 280 | 0.08 | 20 | 2400 | CAYAB157M0JO050057 |
| 6.3(7.2) | 150 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAB157M0JO063042 |
| 6.3(7.2) | 180 | 5×5.7 | 280 | 0.08 | 18 | 2600 | CAYAB187M0JO050057 |
| 6.3(7.2) | 180 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAB187M0JO063042 |
| 6.3(7.2) | 220 | 5×5.7 | 280 | 0.08 | 18 | 2600 | CAYAB227M0JO050057 |
| 6.3(7.2) | 220 | 6.3×4.2 | 280 | 0.08 | 20 | 2500 | CAYAB227M0JO063042 |
| 6.3(7.2) | 270 | 5×7 | 340 | 0.08 | 12 | 3400 | CAYAB227M0JO050070 |
| 6.3(7.2) | 270 | 6.3×5.7 | 340 | 0.08 | 18 | 2800 | CAYAB277M0JO063057 |
| 6.3(7.2) | 330 | 5×7 | 416 | 0.08 | 12 | 3400 | CAYAB337M0JO050070 |
| 6.3(7.2) | 330 | 6.3×5.7 | 416 | 0.08 | 18 | 2800 | CAYAB337M0JO063057 |
| 6.3(7.2) | 390 | 5×7 | 491 | 0.08 | 12 | 3400 | CAYAB337M0JO050070 |
| 6.3(7.2) | 390 | 6.3×5.7 | 491 | 0.08 | 8 | 4800 | CAYAB397M0JO063057 |
| 6.3(7.2) | 470 | 5×8 | 592 | 0.08 | 12 | 3650 | CAYAB487M0JO080050 |
| 6.3(7.2) | 470 | 6.3×7 | 592 | 0.08 | 8 | 4800 | CAYAB477M0JO063070 |
| 6.3(7.2) | 470 | 8×6 | 592 | 0.08 | 18 | 3000 | CAYAB477M0JO080060 |
| 6.3(7.2) | 560 | 5.5×7 | 706 | 0.08 | 12 | 3800 | CAYAB567M0JO055070 |
| 6.3(7.2) | 560 | 6.3×7 | 706 | 0.08 | 8 | 4800 | CAYAB567M0JO063070 |
| 6.3(7.2) | 560 | 8×6 | 706 | 0.08 | 16 | 3450 | CAYAB567M0JO080060 |
| 6.3(7.2) | 680 | 6.3×8 | 857 | 0.08 | 8 | 5000 | CAYAB687M0JO063080 |
| 6.3(7.2) | 680 | 8×7 | 857 | 0.08 | 12 | 4200 | CAYAB687M0JO080070 |
| 6.3(7.2) | 820 | 5.5×9 | 1033 | 0.08 | 8 | 4900 | CAYAB827M0JO055090 |
| 6.3(7.2) | 820 | 6.3×7.5 | 1033 | 0.08 | 8 | 4900 | CAYAB827M0JO063075 |
| 6.3(7.2) | 820 | 6.3×9 | 1033 | 0.08 | 8 | 5250 | CAYAB827M0JO063090 |
| 6.3(7.2) | 820 | 8×7 | 1033 | 0.08 | 12 | 4200 | CAYAB827M0JO080070 |
| 6.3(7.2) | 1000 | 6.3×10 | 1260 | 0.08 | 8 | 5500 | CAYAB108M0JO063100 |
| 6.3(7.2) | 1000 | 8×8 | 1260 | 0.08 | 8 | 5600 | CAYAB108M0JO080080 |
| 6.3(7.2) | 1000 | 10×7 | 1260 | 0.08 | 12 | 4500 | CAYAB108M0JO100070 |
| 6.3(7.2) | 1200 | 6.3×11 | 1512 | 0.08 | 8 | 5700 | CAYAB128M0JO063110 |
| 6.3(7.2) | 1200 | 8×9 | 1512 | 0.08 | 8 | 5800 | CAYAB128M0JO080090 |
| 6.3(7.2) | 1200 | 10×8 | 1512 | 0.08 | 8 | 5800 | CAYAB128M0JO100080 |
| 6.3(7.2) | 1500 | 8×11 | 1890 | 0.09 | 8 | 6150 | CAYAB158M0JO080110 |
| 6.3(7.2) | 1500 | 10×9 | 1890 | 0.09 | 8 | 6050 | CAYAB158M0JO100090 |
| 6.3(7.2) | 2000 | 8×14 | 2520 | 0.10 | 7 | 7250 | CAYAB208M0JO080140 |
| 6.3(7.2) | 2000 | 10×10 | 2520 | 0.10 | 8 | 6300 | CAYAB208M0JO100100 |
| 6.3(7.2) | 2200 | 8×14 | 2772 | 0.10 | 7 | 7500 | CAYAB228M0JO080140 |
| 6.3(7.2) | 2200 | 10×10 | 2772 | 0.10 | 8 | 6300 | CAYAB228M0JO100100 |
| 6.3(7.2) | 2500 | 10×11 | 3150 | 0.11 | 8 | 6500 | CAYAB258M0JO100110 |
| 6.3(7.2) | 2700 | 10×11 | 3402 | 0.11 | 8 | 6500 | CAYAB278M0JO100110 |
| 6.3(7.2) | 3300 | 10×12 | 4158 | 0.13 | 8 | 6640 | CAYAB338M0JO100120 |
| 6.3(7.2) | 3900 | 10×14 | 4914 | 0.14 | 7 | 7600 | CAYAB398M0JO100140 |
| 6.3(7.2) | 4700 | 10×16 | 5922 | 0.15 | 7 | 8100 | CAYAB478M0JO100160 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | Ł.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 4700 | 12.5×12.5 | 5922 | 0.15 | 8 | 7600 | CAYAB478M0JO125125 |
| 6.3(7.2) | 5600 | 10×18 | 7056 | 0.17 | 7 | 8500 | CAYAB568M0JO100180 |
| 6.3(7.2) | 5600 | 12.5×14 | 7056 | 0.17 | 8 | 7900 | CAYAB568M0JO125140 |
| 6.3(7.2) | 6800 | 10×21 | 7500 | 0.20 | 7 | 9100 | CAYAB688M0JO100210 |
| 6.3(7.2) | 6800 | 12.5×16 | 7500 | 0.20 | 7 | 8950 | CAYAB688M0JO125160 |
| 6.3(7.2) | 8200 | 12.5×18 | 7500 | 0.22 | 7 | 9450 | CAYAB828M0JO125180 |
| 6.3(7.2) | 10000 | 12.5×20 | 7500 | 0.26 | 7 | 9850 | CAYAB109M0JO125200 |
| 7.5(8.6) | 270 | 5×7 | 405 | 0.08 | 12 | 3400 | CAYAB277M0MO050070 |
| 7.5(8.6) | 270 | 6.3×5.7 | 405 | 0.08 | 18 | 2800 | CAYAB277M0MO063057 |
| 7.5(8.6) | 330 | 5×9 | 495 | 0.08 | 12 | 3800 | CAYAB337M0MO050090 |
| 7.5(8.6) | 330 | 6.3×5.7 | 495 | 0.08 | 12 | 3700 | CAYAB337M0MO063057 |
| 7.5(8.6) | 390 | 5×10 | 585 | 0.08 | 10 | 4350 | CAYAB397M0MO050100 |
| 7.5(8.6) | 390 | 6.3×7 | 585 | 0.08 | 12 | 3900 | CAYAB397M0MO063070 |
| 7.5(8.6) | 390 | 8×6 | 585 | 0.08 | 18 | 3250 | CAYAB397M0MO080060 |
| 7.5(8.6) | 470 | 5×11 | 705 | 0.08 | 10 | 3850 | CAYAB477M0MO050110 |
| 7.5(8.6) | 470 | 5×9 | 705 | 0.08 | 12 | 4500 | CAYAB477M0MO050090 |
| 7.5(8.6) | 470 | 6.3×8 | 705 | 0.08 | 12 | 4100 | CAYAB477M0MO063080 |
| 7.5(8.6) | 470 | 8×6 | 705 | 0.08 | 18 | 3000 | CAYAB47M0MO080060 |
| 7.5(8.6) | 560 | 6.3×9 | 840 | 0.08 | 9 | 5000 | CAYAB567M0MO063090 |
| 7.5(8.6) | 560 | 8×6 | 840 | 0.08 | 18 | 3250 | CAYAB567M0MO080060 |
| 7.5(8.6) | 680 | 6.3×10 | 1020 | 0.08 | 8 | 5500 | CAYAB687M0MO063100 |
| 7.5(8.6) | 680 | 8×7 | 1020 | 0.08 | 12 | 4200 | CAYAB687M0MO080070 |
| 7.5(8.6) | 820 | 6.3×11 | 1230 | 0.08 | 8 | 5700 | CAYAB827M0MO063110 |
| 7.5(8.6) | 820 | 8×8 | 1230 | 0.08 | 8 | 5600 | CAYAB827M0MO080080 |
| 7.5(8.6) | 1000 | 6.3×11 | 1500 | 0.08 | 8 | 5900 | CAYAB108M0MO063110 |
| 7.5(8.6) | 1000 | 8×9 | 1500 | 0.08 | 8 | 5800 | CAYAB108M0MO080090 |
| 10(11.5) | 47 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB476M1AO050070 |
| 10(11.5) | 47 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB476M1AO063042 |
| 10(11.5) | 68 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB686M1AO050070 |
| 10(11.5) | 68 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB686M1AO063042 |
| 10(11.5) | 82 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB826M1AO050057 |
| 10(11.5) | 82 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB826M1AO063042 |
| 10(11.5) | 100 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB107M1AO050057 |
| 10(11.5) | 100 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB107M1AO063042 |
| 10(11.5) | 150 | 5×7 | 300 | 0.08 | 15 | 3050 | CAYAB157M1AO050070 |
| 10(11.5) | 150 | 6.3×5.7 | 300 | 0.08 | 30 | 2200 | CAYAB157M1AO063057 |
| 10(11.5) | 180 | 5×7 | 360 | 0.08 | 15 | 3050 | CAYAB187M1AO050070 |
| 10(11.5) | 180 | 6.3×5.7 | 360 | 0.08 | 30 | 2200 | CAYAB187M1AO063057 |
| 10(11.5) | 220 | 5×7 | 440 | 0.08 | 15 | 3050 | CAYAB227M1AO050070 |
| 10(11.5) | 220 | 6.3×5.7 | 440 | 0.08 | 30 | 2200 | CAYAB227M1AO063057 |
| 10(11.5) | 270 | 5×10 | 540 | 0.08 | 12 | 3950 | CAYAB277M1AO050100 |
| 10(11.5) | 270 | 6.3×5.7 | 540 | 0.08 | 16 | 3200 | CAYAB277M1AO063057 |
| 10(11.5) | 330 | 5×11 | 660 | 0.08 | 12 | 4100 | CAYAA337M1AO050110 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 10(11.5) | 330 | 6.3×7 | 660 | 0.08 | 16 | 3200 | CAYAB337M1AO063070 |
| 10(11.5) | 390 | 6.3×7 | 780 | 0.08 | 12 | 3900 | CAYAB397M1AO063070 |
| 10(11.5) | 390 | 8×6 | 780 | 0.08 | 30 | 2550 | CAYAB397M1AO060080 |
| 10(11.5) | 470 | 6.3×8 | 940 | 0.08 | 12 | 4300 | CAYAB477M1AO063080 |
| 10(11.5) | 470 | 8×7 | 940 | 0.08 | 30 | 2550 | CAYAB477M1AO080070 |
| 10(11.5) | 560 | 6.3×10 | 1120 | 0.08 | 10 | 4900 | CAYAB567M1AO063100 |
| 10(11.5) | 560 | 8×7 | 1120 | 0.08 | 14 | 2550 | CAYAB567M1AO080070 |
| 10(11.5) | 680 | 6.3×11 | 1360 | 0.08 | 9 | 5400 | CAYAB687M1AO063110 |
| 10(11.5) | 680 | 8×8 | 1360 | 0.08 | 10 | 5100 | CAYAB687M1AO080080 |
| 10(11.5) | 820 | 8×9 | 1640 | 0.08 | 9 | 5500 | CAYAB827M1AO080090 |
| 10(11.5) | 820 | 10×7 | 1640 | 0.08 | 14 | 2850 | CAYAB827M1AO100070 |
| 10(11.5) | 1000 | 8×11 | 2000 | 0.08 | 9 | 5800 | CAYAB108M1AO080110 |
| 10(11.5) | 1000 | 10×8 | 2000 | 0.08 | 9 | 5500 | CAYAB108M1AO100080 |
| 10(11.5) | 1500 | 8×14 | 3000 | 0.09 | 8 | 6800 | CAYAB158M1AO080140 |
| 10(11.5) | 1500 | 10×12 | 3000 | 0.09 | 9 | 6300 | CAYAB158M1AO100120 |
| 10(11.5) | 2200 | 10×14 | 4400 | 0.10 | 8 | 7000 | CAYAB228M1AO100140 |
| 10(11.5) | 2500 | 10×14 | 5000 | 0.11 | 8 | 7000 | CAYAB258M1AO100140 |
| 10(11.5) | 2700 | 10×16 | 5400 | 0.11 | 8 | 7500 | CAYAB278M1AO100160 |
| 10(11.5) | 3300 | 10×18 | 6600 | 0.13 | 8 | 7900 | CAYAB338M1AO100180 |
| 10(11.5) | 3300 | 12.5×14 | 6600 | 0.13 | 9 | 7500 | CAYAB338M1AO125140 |
| 10(11.5) | 3900 | 10×21 | 7500 | 0.14 | 8 | 8400 | CAYAB398M1AO100210 |
| 10(11.5) | 3900 | 12.5×16 | 7500 | 0.14 | 8 | 8400 | CAYAB398M1AO125160 |
| 10(11.5) | 4700 | 12.5×18 | 7500 | 0.15 | 8 | 8400 | CAYAB478M1AO125180 |
| 10(11.5) | 5600 | 12.5×18 | 7500 | 0.17 | 8 | 8800 | CAYAB568M1AO125180 |
| 10(11.5) | 6800 | 12.5×20 | 7500 | 0.20 | 8 | 9200 | CAYAB688M1AO125200 |
| 12(13.8) | 180 | 5×7 | 432 | 0.08 | 15 | 3050 | CAYAB187M1BO050070 |
| 12(13.8) | 180 | 6.3×5.7 | 432 | 0.08 | 30 | 2200 | CAYAB187M1BO063057 |
| 12(13.8) | 220 | 5×9 | 528 | 0.08 | 15 | 3400 | CAYAB227M1BO050090 |
| 12(13.8) | 220 | 6.3×5.7 | 528 | 0.08 | 16 | 3200 | CAYAB227M1BO063057 |
| 12(13.8) | 270 | 5×10 | 648 | 0.08 | 12 | 3950 | CAYAB277M1BO050100 |
| 12(13.8) | 270 | 6.3×7 | 648 | 0.08 | 16 | 3200 | CAYAB277M1BO063070 |
| 12(13.8) | 330 | 5×10 | 792 | 0.08 | 12 | 3950 | CAYAB337M1BO050100 |
| 12(13.8) | 330 | 6.3×7 | 792 | 0.08 | 12 | 3900 | CAYAB337M1BO063070 |
| 12(13.8) | 330 | 8×6 | 792 | 0.08 | 30 | 2550 | CAYAB337M1BO080060 |
| 12(13.8) | 390 | 5×11 | 936 | 0.08 | 12 | 4100 | CAYAB397M1BO050110 |
| 12(13.8) | 390 | 5.5×9 | 936 | 0.08 | 15 | 3450 | CAYAB397M1BO055090 |
| 12(13.8) | 390 | 6.3×8 | 936 | 0.08 | 12 | 4100 | CAYAB397M1BO063080 |
| 12(13.8) | 470 | 6.3×9 | 1128 | 0.08 | 12 | 4300 | CAYAB477M1BO063090 |
| 12(13.8) | 470 | 8×7 | 1128 | 0.08 | 14 | 2550 | CAYAB477M1BO080070 |
| 12(13.8) | 560 | 6.3×10 | 1344 | 0.08 | 10 | 4900 | CAYAB567M1BO063100 |
| 12(13.8) | 560 | 8×7 | 1344 | 0.08 | 14 | 2550 | CAYAB567M1BO080070 |
| 12(13.8) | 680 | 6.3×11 | 1632 | 0.08 | 9 | 5400 | CAYAB687M1BO063110 |
| 12(13.8) | 680 | 8×8 | 1632 | 0.08 | 10 | 5100 | CAYAB687M1BO080080 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 12(13.8) | 1000 | 8×10 | 2400 | 0.08 | 10 | 5200 | CAYAB108M1BO080100 |
| 16(18.4) | 22 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB226M1CO050057 |
| 16(18.4) | 22 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB226M1CO063042 |
| 16(18.4) | 33 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB336M1CO050057 |
| 16(18.4) | 33 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB226M1CO063042 |
| 16(18.4) | 47 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB476M1CO050057 |
| 16(18.4) | 47 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB476M1CO063042 |
| 16(18.4) | 68 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB686M1CO050057 |
| 16(18.4) | 68 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB686M1CO063042 |
| 16(18.4) | 82 | 5×5.7 | 280 | 0.08 | 30 | 1900 | CAYAB826M1CO050057 |
| 16(18.4) | 82 | 6.3×4.2 | 280 | 0.08 | 30 | 2100 | CAYAB826M1CO063042 |
| 16(18.4) | 100 | 5×7 | 320 | 0.08 | 30 | 2000 | CAYAB107M1CO050070 |
| 16(18.4) | 100 | 5×7 | 320 | 0.08 | 30 | 2200 | CAYAB107M1CO050070 |
| 16(18.4) | 100 | 6.3×5.7 | 320 | 0.08 | 30 | 2100 | CAYAB107M1CO063057 |
| 16(18.4) | 150 | 5×8 | 480 | 0.08 | 30 | 2200 | CAYAB157M1CO050080 |
| 16(18.4) | 150 | 6.3×5.7 | 480 | 0.08 | 30 | 2200 | CAYAB157M1CO063057 |
| 16(18.4) | 220 | 5×10 | 704 | 0.08 | 12 | 3950 | CAYAB227M1CO050100 |
| 16(18.4) | 220 | 5.5×9 | 704 | 0.08 | 12 | 3950 | CAYAB227M1CO055090 |
| 16(18.4) | 220 | 6.3×7 | 704 | 0.08 | 20 | 2850 | CAYAB227M1CO063070 |
| 16(18.4) | 270 | 6.3×8 | 864 | 0.08 | 15 | 3500 | CAYAB277M1CO063080 |
| 16(18.4) | 270 | 8×7 | 864 | 0.08 | 30 | 2550 | CAYAB277M1CO080070 |
| 16(18.4) | 330 | 6.3×9 | 1056 | 0.08 | 12 | 4300 | CAYAB337M1CO006309 |
| 16(18.4) | 330 | 8×7 | 1056 | 0.08 | 30 | 2550 | CAYAB337M1CO080070 |
| 16(18.4) | 390 | 6.3×9 | 1248 | 0.08 | 12 | 4300 | CAYAB397M1CO063090 |
| 16(18.4) | 470 | 6.3×11 | 1504 | 0.08 | 10 | 4900 | CAYAB477M1CO063110 |
| 16(18.4) | 470 | 8×8 | 1504 | 0.08 | 20 | 3300 | CAYAB477M1CO080080 |
| 16(18.4) | 560 | 8×9 | 1792 | 0.08 | 12 | 4700 | CAYAB567M1CO080090 |
| 16(18.4) | 560 | 10×8 | 1792 | 0.08 | 12 | 4700 | CAYAB567M1CO100080 |
| 16(18.4) | 680 | 8×10 | 2176 | 0.08 | 10 | 5350 | CAYAB687M1CO080100 |
| 16(18.4) | 680 | 10×8 | 2176 | 0.08 | 12 | 4700 | CAYAB687M1CO100080 |
| 16(18.4) | 820 | 8×12 | 2624 | 0.08 | 10 | 5500 | CAYAB827M1CO080120 |
| 16(18.4) | 820 | 10×9 | 2624 | 0.08 | 12 | 4950 | CAYAB827M1CO100090 |
| 16(18.4) | 1000 | 8×14 | 3200 | 0.08 | 8 | 6800 | CAYAB108M1CO080140 |
| 16(18.4) | 1000 | 8×16 | 3200 | 0.08 | 10 | 5800 | CAYAB108M1CO080160 |
| 16(18.4) | 1000 | 10×9 | 3200 | 0.08 | 12 | 5200 | CAYAB108M1CO100090 |
| 16(18.4) | 1500 | 10×12 | 4800 | 0.09 | 8 | 8400 | CAYAB158M1CO100120 |
| 16(18.4) | 1800 | 10×16 | 5760 | 0.10 | 8 | 7000 | CAYAB188M1CO100160 |
| 16(18.4) | 2200 | 10×18 | 7040 | 0.10 | 8 | 7900 | CAYAB228M1CO100180 |
| 16(18.4) | 2200 | 10×20 | 7040 | 0.10 | 8 | 7500 | CAYAB228M1CO100200 |
| 16(18.4) | 2200 | 12.5×14 | 7040 | 0.10 | 10 | 7100 | CAYAB228M1CO125140 |
| 16(18.4) | 2700 | 10×21 | 7500 | 0.11 | 8 | 8400 | CAYAB278M1CO100210 |
| 16(18.4) | 2700 | 12.5×16 | 7500 | 0.11 | 10 | 7100 | CAYAB278M1CO125160 |


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# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 16(18.4) | 3300 | 12.5×18 | 7500 | 0.13 | 8 | 8400 | CAYAB338M1CO125180 |
| 16(18.4) | 3900 | 12.5×20 | 7500 | 0.14 | 8 | 8800 | CAYAB398M1CO125200 |
| 25(28.8) | 10 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB106M1EO050057 |
| 25(28.8) | 10 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB106M1EO063042 |
| 25(28.8) | 15 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB156M1EO050057 |
| 25(28.8) | 15 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB156M1EO063042 |
| 25(28.8) | 22 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB226M1EO050057 |
| 25(28.8) | 22 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB226M1EO063042 |
| 25(28.8) | 33 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB336M1EO050057 |
| 25(28.8) | 33 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB336M1EO063042 |
| 25(28.8) | 39 | 5×5.7 | 280 | 0.08 | 40 | 1650 | CAYAB396M1EO050057 |
| 25(28.8) | 39 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB396M1EO063042 |
| 25(28.8) | 47 | 5×5.7 | 280 | 0.08 | 30 | 2050 | CAYAB476M1EO050057 |
| 25(28.8) | 47 | 6.3×4.2 | 280 | 0.08 | 40 | 1800 | CAYAB476M1EO063042 |
| 25(28.8) | 68 | 5×7 | 340 | 0.08 | 30 | 2200 | CAYAB686M1EO050070 |
| 25(28.8) | 68 | 6.3×5.7 | 340 | 0.08 | 40 | 1900 | CAYAB686M1EO063057 |
| 25(28.8) | 100 | 5×9 | 500 | 0.08 | 30 | 2400 | CAYAB107M1EO050090 |
| 25(28.8) | 100 | 6.3×5.7 | 500 | 0.08 | 30 | 2350 | CAYAB107M1EO063057 |
| 25(28.8) | 150 | 6.3×8 | 750 | 0.08 | 16 | 3550 | CAYAB157M1EO063080 |
| 25(28.8) | 150 | 8×6 | 750 | 0.08 | 30 | 2550 | CAYAB157M1EO080060 |
| 25(28.8) | 180 | 6.3×8 | 900 | 0.08 | 16 | 3550 | CAYAB187M1EO063080 |
| 25(28.8) | 180 | 8×7 | 900 | 0.08 | 30 | 2550 | CAYAB187M1EO080070 |
| 25(28.8) | 220 | 6.3×9 | 1100 | 0.08 | 20 | 3500 | CAYAB227M1EO063090 |
| 25(28.8) | 220 | 8×7 | 1100 | 0.08 | 30 | 2700 | CAYAB227M1EO080070 |
| 25(28.8) | 220 | 10×6 | 1100 | 0.08 | 30 | 2700 | CAYAB227M1EO100060 |
| 25(28.8) | 330 | 8×9 | 1650 | 0.08 | 16 | 4000 | CAYAB337M1EO080090 |
| 25(28.8) | 330 | 10×8 | 1650 | 0.08 | 16 | 4100 | CAYAB337M1EO100080 |
| 25(28.8) | 470 | 8×14 | 2350 | 0.08 | 16 | 4800 | CAYAB477M1EO080140 |
| 25(28.8) | 470 | 8×11 | 2350 | 0.08 | 16 | 4200 | CAYAB477M1EO080110 |
| 25(28.8) | 470 | 10×9 | 2350 | 0.08 | 16 | 4300 | CAYAB477M1EO100090 |
| 25(28.8) | 560 | 8×14 | 2800 | 0.08 | 16 | 4800 | CAYAB567M1EO080140 |
| 25(28.8) | 560 | 8×11 | 2800 | 0.08 | 16 | 4400 | CAYAB567M1EO080110 |
| 25(28.8) | 560 | 10×10 | 2800 | 0.08 | 16 | 4500 | CAYAB567M1EO100100 |
| 25(28.8) | 680 | 8×14 | 3400 | 0.08 | 16 | 4800 | CAYAB687M1EO080140 |
| 25(28.8) | 680 | 10×12 | 3400 | 0.08 | 16 | 4700 | CAYAB687M1EO100120 |
| 25(28.8) | 820 | 8×16 | 4100 | 0.08 | 16 | 5050 | CAYAB827M1EO080160 |
| 25(28.8) | 820 | 8×17 | 4100 | 0.08 | 16 | 4900 | CAYAB827M1EO080170 |
| 25(28.8) | 820 | 10×13 | 4100 | 0.08 | 16 | 4800 | CAYAB827M1EO100130 |
| 25(28.8) | 1000 | 10×16 | 5000 | 0.08 | 16 | 5300 | CAYAB108M1EO100160 |
| 25(28.8) | 1000 | 12.5×12.5 | 5000 | 0.08 | 16 | 5300 | CAYAB108M1EO125125 |
| 25(28.8) | 1500 | 10×18 | 7500 | 0.09 | 16 | 5600 | CAYAB158M1EO100180 |
| 25(28.8) | 1500 | 12.5×14 | 7500 | 0.09 | 16 | 5600 | CAYAB158M1EO125140 |
| 25(28.8) | 1800 | 10×21 | 7500 | 0.10 | 16 | 6000 | CAYAB188M1EO100210 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 25(28.8) | 1800 | 12.5×16 | 7500 | 0.10 | 16 | 5900 | CAYAB188M1EO125160 |
| 25(28.8) | 2200 | 12.5×18 | 7500 | 0.10 | 16 | 6200 | CAYAB228M1EO125180 |
| 25(28.8) | 2700 | 12.5×20 | 7500 | 0.11 | 16 | 6500 | CAYAB278M1EO125200 |
| 35(41) | 10 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB106M1VO050070 |
| 35(41) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB106M1VO063042 |
| 35(41) | 15 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB156M1VO050057 |
| 35(41) | 15 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB156M1VO063042 |
| 35(41) | 22 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB226M1VO050057 |
| 35(41) | 22 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB226M1VO063042 |
| 35(41) | 33 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB336M1VO050057 |
| 35(41) | 33 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB336M1VO063042 |
| 35(41) | 39 | 5×7 | 300 | 0.12 | 50 | 1700 | CAYAB396M1VO050070 |
| 35(41) | 39 | 6.3×5.7 | 300 | 0.12 | 60 | 1550 | CAYAB396M1VO063057 |
| 35(41) | 47 | 5×7 | 329 | 0.12 | 50 | 1700 | CAYAB476M1VO050070 |
| 35(41) | 47 | 6.3×5.7 | 329 | 0.12 | 60 | 1550 | CAYAB476M1VO063057 |
| 35(41) | 56 | 5×7 | 392 | 0.12 | 50 | 1700 | CAYAB566M1VO050070 |
| 35(41) | 56 | 6.3×5.7 | 392 | 0.12 | 60 | 1650 | CAYAB566M1VO063057 |
| 35(41) | 68 | 5×8 | 476 | 0.12 | 50 | 1800 | CAYAB686M1VO050080 |
| 35(41) | 68 | 6.3×5.7 | 476 | 0.12 | 60 | 1650 | CAYAB686M1VO063057 |
| 35(41) | 68 | 8×6 | 476 | 0.12 | 60 | 1650 | CAYAB686M1VO080060 |
| 35(41) | 82 | 5×9 | 574 | 0.12 | 50 | 1900 | CAYAB826M1VO050090 |
| 35(41) | 82 | 6.3×7 | 574 | 0.12 | 50 | 1900 | CAYAB826M1VO063070 |
| 35(41) | 100 | 6.3×7 | 700 | 0.12 | 50 | 1900 | CAYAB107M1VO063070 |
| 35(41) | 100 | 8×6 | 700 | 0.12 | 60 | 1800 | CAYAB107M1VO080060 |
| 35(41) | 120 | 6.3×8 | 840 | 0.12 | 50 | 2050 | CAYAB127M1VO063080 |
| 35(41) | 120 | 8×7 | 840 | 0.12 | 60 | 1900 | CAYAB127M1VO080070 |
| 35(41) | 150 | 6.3×9 | 1050 | 0.12 | 50 | 2150 | CAYAB157M1VO063090 |
| 35(41) | 150 | 8×7 | 1050 | 0.12 | 60 | 1900 | CAYAB157M1VO080070 |
| 35(41) | 180 | 6.3×10 | 1260 | 0.12 | 40 | 2500 | CAYAB187M1VO063100 |
| 35(41) | 180 | 8×7 | 1260 | 0.12 | 60 | 1900 | CAYAB187M1VO080070 |
| 35(41) | 220 | 6.3×11 | 1540 | 0.12 | 40 | 2600 | CAYAB227M1VO063110 |
| 35(41) | 220 | 8×8 | 1540 | 0.12 | 50 | 2200 | CAYAB227M1VO080080 |
| 35(41) | 220 | 10×7 | 1540 | 0.12 | 60 | 2050 | CAYAB227M1VO100070 |
| 35(41) | 330 | 8×10 | 2310 | 0.12 | 30 | 3100 | CAYAB337M1VO080100 |
| 35(41) | 330 | 10×8 | 2310 | 0.12 | 50 | 2350 | CAYAB337M1VO100080 |
| 35(41) | 390 | 8×12 | 2730 | 0.12 | 30 | 3200 | CAYAB397M1VO080120 |
| 35(41) | 390 | 10×10 | 2730 | 0.12 | 50 | 2550 | CAYAB397M1VO100100 |
| 35(41) | 470 | 8×14 | 3290 | 0.12 | 20 | 4250 | CAYAB477M1VO080140 |
| 35(41) | 470 | 10×12 | 3290 | 0.12 | 30 | 3400 | CAYAB477M1VO100120 |
| 35(41) | 560 | 8×16 | 3920 | 0.12 | 20 | 4550 | CAYAB567M1VO080160 |
| 35(41) | 560 | 10×12 | 3920 | 0.12 | 30 | 3450 | CAYAB567M1VO100120 |
| 35(41) | 680 | 10×14 | 4760 | 0.12 | 20 | 4450 | CAYAB687M1VO100140 |
| 35(41) | 820 | 10×16 | 5000 | 0.12 | 20 | 4700 | CAYAB827M1VO100160 |


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## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 35(41) | 820 | 12.5×12.5 | 5000 | 0.12 | 30 | 3900 | CAYAB827M1VO125125 |
| 35(41) | 1000 | 10×18 | 5000 | 0.08 | 20 | 5000 | CAYAB108M1VO100180 |
| 35(41) | 1000 | 12.5×14 | 5000 | 0.08 | 30 | 4100 | CAYAB108M1VO125140 |
| 35(41) | 1200 | 10×21 | 5000 | 0.08 | 20 | 5300 | CAYAB128M1VO100210 |
| 35(41) | 1200 | 12.5×16 | 5000 | 0.08 | 20 | 5300 | CAYAB128M1VO125160 |
| 35(41) | 1500 | 12.5×18 | 5000 | 0.09 | 20 | 5600 | CAYAB158M1VO125180 |
| 35(41) | 1800 | 12.5×20 | 5000 | 0.10 | 20 | 5850 | CAYAB188M1VO125200 |
| 50(58) | 10 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB106M1HO050057 |
| 50(58) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB106M1HO063042 |
| 50(58) | 12 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB126M1HO050057 |
| 50(58) | 12 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB106M1HO063042 |
| 50(58) | 15 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB156M1HO050057 |
| 50(58) | 15 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB156M1HO063042 |
| 50(58) | 18 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB186M1HO050070 |
| 50(58) | 18 | 6.3×5.7 | 300 | 0.12 | 60 | 1400 | CAYAB186M1HO063057 |
| 50(58) | 22 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB226M1HO050070 |
| 50(58) | 22 | 6.3×5.7 | 300 | 0.12 | 60 | 1550 | CAYAB226M1HO063057 |
| 50(58) | 33 | 5×9 | 300 | 0.12 | 50 | 1800 | CAYAB336M1HO050090 |
| 50(58) | 33 | 6.3×7 | 300 | 0.12 | 60 | 1650 | CAYAB336M1HO063070 |
| 50(58) | 39 | 5×10 | 390 | 0.12 | 40 | 2200 | CAYAB396M1HO050100 |
| 50(58) | 39 | 6.3×7 | 390 | 0.12 | 60 | 1650 | CAYAB396M1HO063070 |
| 50(58) | 47 | 6.3×8 | 470 | 0.12 | 50 | 1900 | CAYAB476M1HO063080 |
| 50(58) | 47 | 8×7 | 470 | 0.12 | 60 | 1650 | CAYAB476M1HO080070 |
| 50(58) | 56 | 6.3×9 | 560 | 0.12 | 50 | 1900 | CAYAB566M1HO063090 |
| 50(58) | 56 | 8×7 | 560 | 0.12 | 60 | 1800 | CAYAB566M1HO080070 |
| 50(58) | 68 | 6.3×10 | 680 | 0.12 | 50 | 2150 | CAYAB686M1HO063100 |
| 50(58) | 68 | 8×7 | 680 | 0.12 | 60 | 1800 | CAYAB686M1HO080070 |
| 50(58) | 82 | 6.3×11 | 820 | 0.12 | 40 | 2500 | CAYAB826M1HO063110 |
| 50(58) | 82 | 8×8 | 820 | 0.12 | 60 | 1900 | CAYAB826M1HO080080 |
| 50(58) | 100 | 8×9 | 1000 | 0.12 | 50 | 2200 | CAYAB107M1HO080090 |
| 50(58) | 100 | 10×7 | 1000 | 0.12 | 60 | 2000 | CAYAB107M1HO100070 |
| 50(58) | 120 | 8×10 | 1200 | 0.12 | 50 | 2300 | CAYAB127M1HO080100 |
| 50(58) | 120 | 10×7 | 1200 | 0.12 | 60 | 2050 | CAYAB127M1HO100070 |
| 50(58) | 150 | 8×12 | 1500 | 0.12 | 50 | 2300 | CAYAB157M1HO080120 |
| 50(58) | 150 | 10×8 | 1500 | 0.12 | 50 | 2350 | CAYAB157M1HO100080 |
| 50(58) | 180 | 8×14 | 1800 | 0.12 | 40 | 2800 | CAYAB187M1HO080140 |
| 50(58) | 180 | 10×9 | 1800 | 0.12 | 50 | 2450 | CAYAB187M1HO100090 |
| 50(58) | 220 | 8×16 | 2200 | 0.12 | 30 | 3500 | CAYAB227M1HO080160 |
| 50(58) | 220 | 10×12 | 2200 | 0.12 | 40 | 2900 | CAYAB227M1HO100120 |
| 50(58) | 270 | 10×13 | 2700 | 0.12 | 40 | 3000 | CAYAB277M1HO100130 |
| 50(58) | 330 | 10×16 | 3300 | 0.12 | 30 | 3800 | CAYAB337M1HO100160 |
| 50(58) | 390 | 10×18 | 3900 | 0.12 | 30 | 3800 | CAYAB397M1HO100180 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 50(58) | 390 | 12.5×14 | 3900 | 0.12 | 40 | 3350 | CAYAB397M1HO125140 |
| 50(58) | 470 | 10×21 | 4700 | 0.12 | 30 | 4050 | CAYAB477M1HO100210 |
| 50(58) | 470 | 12.5×14 | 4700 | 0.12 | 40 | 3500 | CAYAB477M1HO125140 |
| 50(58) | 560 | 12.5×16 | 5000 | 0.12 | 30 | 4300 | CAYAB567M1HO125160 |
| 50(58) | 680 | 12.5×20 | 5000 | 0.12 | 30 | 4550 | CAYAB687M1HO125200 |
| 50(58) | 820 | 12.5×20 | 5000 | 0.12 | 30 | 4750 | CAYAB827M1HO125200 |
| 63(73) | 6.8 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB685M1JO050057 |
| 63(73) | 6.8 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB685M1JO063042 |
| 63(73) | 8.2 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB825M1JO050057 |
| 63(73) | 8.2 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB825M1JO063042 |
| 63(73) | 10 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB106M1JO050070 |
| 63(73) | 10 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB106M1JO063042 |
| 63(73) | 15 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB156M1JO050070 |
| 63(73) | 15 | 6.3×5.7 | 300 | 0.12 | 60 | 1400 | CAYAB156M1JO063057 |
| 63(73) | 22 | 5×9 | 300 | 0.12 | 50 | 1900 | CAYAB226M1JO050090 |
| 63(73) | 22 | 6.3×7 | 300 | 0.12 | 50 | 1900 | CAYAB226M1JO063070 |
| 63(73) | 33 | 6.3×8 | 416 | 0.12 | 50 | 1900 | CAYAB336M1JO063008 |
| 63(73) | 33 | 8×7 | 416 | 0.12 | 60 | 1800 | CAYAB336M1JO080070 |
| 63(73) | 39 | 6.3×9 | 491 | 0.12 | 50 | 2150 | CAYAB396M1JO0630900 |
| 63(73) | 39 | 8×7 | 491 | 0.12 | 60 | 1800 | CAYAB396M1JO080070 |
| 63(73) | 47 | 6.3×10 | 592 | 0.12 | 40 | 2500 | CAYAB476M1JO063100 |
| 63(73) | 47 | 8×8 | 592 | 0.12 | 60 | 1900 | CAYAB476M1JO080080 |
| 63(73) | 56 | 8×8 | 706 | 0.12 | 50 | 2200 | CAYAB566M1JO080080 |
| 63(73) | 56 | 10×8 | 706 | 0.12 | 60 | 1950 | CAYAB566M1JO100080 |
| 63(73) | 68 | 8×9 | 857 | 0.12 | 50 | 2300 | CAYAB686M1JO080090 |
| 63(73) | 68 | 10×7 | 857 | 0.12 | 60 | 2050 | CAYAB686M1JO100070 |
| 63(73) | 82 | 8×10 | 1033 | 0.12 | 50 | 2300 | CAYAB106M1JO050070 |
| 63(73) | 82 | 10×9 | 1033 | 0.12 | 60 | 2050 | CAYAB826M1JO080100 |
| 63(73) | 100 | 8×12 | 1260 | 0.12 | 40 | 2700 | CAYAB107M1JO080120 |
| 63(73) | 100 | 10×10 | 1260 | 0.12 | 50 | 2350 | CAYAB107M1JO100100 |
| 63(73) | 120 | 10×12 | 1512 | 0.12 | 50 | 2450 | CAYAB127M1JO100120 |
| 63(73) | 150 | 10×13 | 1890 | 0.12 | 40 | 3000 | CAYAB157M1JO100130 |
| 63(73) | 180 | 10×14 | 2268 | 0.12 | 30 | 3600 | CAYAB187M1JO100140 |
| 63(73) | 220 | 10×16 | 2772 | 0.12 | 30 | 3800 | CAYAB227M1JO100160 |
| 63(73) | 220 | 12.5×12.5 | 2772 | 0.12 | 40 | 3350 | CAYAB227M1JO125125 |
| 63(73) | 270 | 10×21 | 3402 | 0.12 | 30 | 4050 | CAYAB277M1JO100210 |
| 63(73) | 270 | 12.5×14 | 3402 | 0.12 | 40 | 3500 | CAYAB277M1JO125140 |
| 63(73) | 330 | 10×21 | 4158 | 0.12 | 30 | 4350 | CAYAB337M1JO100210 |
| 63(73) | 330 | 12.5×16 | 4158 | 0.12 | 30 | 4300 | CAYAB337M1JO125160 |
| 63(73) | 390 | 12.5×18 | 4914 | 0.12 | 30 | 4550 | CAYAB397M1JO125180 |
| 63(73) | 470 | 12.5×20 | 5000 | 0.12 | 30 | 4750 | CAYAB477M1JO125200 |
| 80(92) | 4.7 | 5×5.7 | 300 | 0.12 | 60 | 1350 | CAYAB475M1KO050057 |
| 80(92) | 4.7 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB475M1KO063042 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

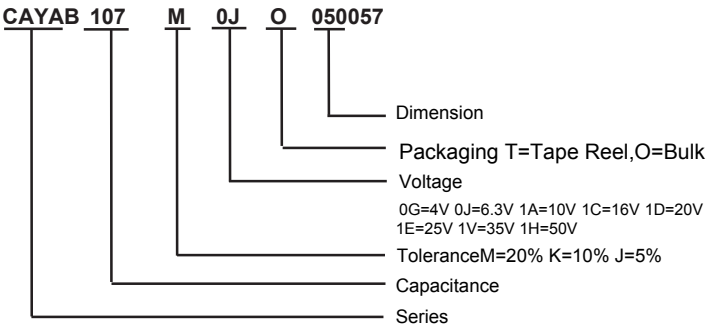
| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 80(92) | 6.8 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB685M1KO050057 |
| 80(92) | 6.8 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB685M1KO063042 |
| 80(92) | 8.2 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB825M1KO050070 |
| 80(92) | 8.2 | 6.3×4.2 | 300 | 0.12 | 60 | 1400 | CAYAB825M1KO063042 |
| 80(92) | 10 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB106M1KO050070 |
| 80(92) | 10 | 6.3×5.7 | 300 | 0.12 | 60 | 1400 | CAYAB106M1KO063057 |
| 80(92) | 15 | 5×9 | 300 | 0.12 | 50 | 1900 | CAYAB156M1KO050090 |
| 80(92) | 15 | 6.3×7 | 300 | 0.12 | 50 | 1900 | CAYAB156M1KO063070 |
| 80(92) | 22 | 6.3×8 | 352 | 0.12 | 50 | 1900 | CAYAB226M1KO063080 |
| 80(92) | 22 | 8×7 | 352 | 0.12 | 60 | 1800 | CAYAB26M1KO080070 |
| 80(92) | 33 | 6.3×10 | 528 | 0.12 | 40 | 2500 | CAYAB336M1KO063100 |
| 80(92) | 33 | 8×7 | 528 | 0.12 | 60 | 1800 | CAYAB336M1KO080070 |
| 80(92) | 39 | 6.3×11 | 624 | 0.12 | 40 | 2600 | CAYAB396M1KO063110 |
| 80(92) | 39 | 8×8 | 624 | 0.12 | 50 | 2200 | CAYAB396M1KO080080 |
| 80(92) | 47 | 8×9 | 752 | 0.12 | 50 | 2200 | CAYAB476M1KO080090 |
| 80(92) | 47 | 10×7 | 752 | 0.12 | 60 | 2050 | CAYAB476M1KO100070 |
| 80(92) | 56 | 8×10 | 896 | 0.12 | 50 | 2300 | CAYAB566M1KO080100 |
| 80(92) | 56 | 10×9 | 896 | 0.12 | 50 | 2450 | CAYAB566M1KO100090 |
| 80(92) | 68 | 8×11 | 1088 | 0.12 | 40 | 2700 | CAYAB686M1KO080110 |
| 80(92) | 68 | 10×9 | 1088 | 0.12 | 50 | 2450 | CAYAB686M1KO100090 |
| 80(92) | 82 | 8×14 | 1312 | 0.12 | 40 | 2900 | CAYAB826M1KO080140 |
| 80(92) | 82 | 10×10 | 1312 | 0.12 | 50 | 2550 | CAYAB826M1KO100100 |
| 80(92) | 100 | 8×16 | 1600 | 0.12 | 30 | 3500 | CAYAB107M1KO080160 |
| 80(92) | 100 | 10×12 | 1600 | 0.12 | 40 | 2950 | CAYAB107M1KO100120 |
| 80(92) | 120 | 10×13 | 1920 | 0.12 | 40 | 3000 | CAYAB127M1KO100130 |
| 80(92) | 150 | 10×16 | 2400 | 0.12 | 30 | 3800 | CAYAB157M1KO100160 |
| 80(92) | 150 | 12.5×12.5 | 2400 | 0.12 | 40 | 3350 | CAYAB157M1KO125125 |
| 80(92) | 180 | 10×18 | 2880 | 0.12 | 30 | 4050 | CAYAB187M1KO100180 |
| 80(92) | 180 | 12.5×14 | 2880 | 0.12 | 40 | 3500 | CAYAB187M1KO125140 |
| 80(92) | 220 | 10×21 | 3520 | 0.12 | 30 | 4350 | CAYAB227M1KO100210 |
| 80(92) | 220 | 12.5×16 | 3520 | 0.12 | 30 | 4300 | CAYAB227M1KO125160 |
| 80(92) | 270 | 12.5×18 | 4320 | 0.12 | 30 | 4550 | CAYAB277M1KO125180 |
| 80(92) | 330 | 12.5×20 | 5000 | 0.12 | 30 | 4750 | CAYAB337M1KO125200 |
| 100(115) | 2.2 | 5×5.7 | 300 | 0.12 | 80 | 1200 | CAYAB225M2AO050057 |
| 100(115) | 2.2 | 6.3×4.2 | 300 | 0.12 | 80 | 1250 | CAYAB225M2AO063042 |
| 100(115) | 3.3 | 5×5.7 | 300 | 0.12 | 60 | 1450 | CAYAB335M2AO050057 |
| 100(115) | 3.3 | 6.3×4.2 | 300 | 0.12 | 80 | 1250 | CAYAB335M2AO063042 |
| 100(115) | 4.7 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB475M2AO050070 |
| 100(115) | 4.7 | 6.3×5.7 | 300 | 0.12 | 80 | 1350 | CAYAB475M2AO063057 |
| 100(115) | 5.6 | 5×7 | 300 | 0.12 | 60 | 1450 | CAYAB565M2AO050070 |
| 100(115) | 5.6 | 6.3×5.7 | 300 | 0.12 | 80 | 1350 | CAYAB565M2AO063057 |
| 100(115) | 6.8 | 5×8 | 300 | 0.12 | 60 | 1550 | CAYAB685M2AO050080 |
| 100(115) | 6.8 | 6.3×5.7 | 300 | 0.12 | 60 | 1650 | CAYAB685M2AO063057 |

# CAYAB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 100(115) | 8.2 | 5×9 | 300 | 0.12 | 60 | 1700 | CAYAB825M2AO050090 |
| 100(115) | 8.2 | 6.3×7 | 300 | 0.12 | 60 | 1650 | CAYAB825M2AO063070 |
| 100(115) | 10 | 6.3×7 | 300 | 0.12 | 60 | 1650 | CAYAB106M2AO063070 |
| 100(115) | 12 | 6.3×8 | 300 | 0.12 | 50 | 1900 | CAYAB126M2AO063080 |
| 100(115) | 15 | 6.3×9 | 300 | 0.12 | 50 | 2150 | CAYAB156M2AO063090 |
| 100(115) | 15 | 8×7 | 300 | 0.12 | 60 | 1800 | CAYAB156M2AO080070 |
| 100(115) | 18 | 6.3×10 | 360 | 0.12 | 50 | 2250 | CAYAB186M2AO063100 |
| 100(115) | 18 | 8×8 | 360 | 0.12 | 60 | 1900 | CAYAB186M2AO080080 |
| 100(115) | 22 | 6.3×12 | 440 | 0.12 | 50 | 2300 | CAYAB226M2AO063120 |
| 100(115) | 22 | 8×8 | 440 | 0.12 | 50 | 2200 | CAYAB226M2AO080080 |
| 100(115) | 27 | 8×11 | 540 | 0.12 | 50 | 2200 | CAYAB276M2AO080110 |
| 100(115) | 27 | 10×7 | 540 | 0.12 | 60 | 2050 | CAYAB276M2AO100070 |
| 100(115) | 33 | 8×11 | 660 | 0.12 | 50 | 2300 | CAYAB336M2AO080110 |
| 100(115) | 33 | 10×9 | 660 | 0.12 | 50 | 2450 | CAYAB336M2AO100090 |
| 100(115) | 39 | 8×14 | 780 | 0.12 | 50 | 2400 | CAYAB396M2AO080140 |
| 100(115) | 39 | 10×9 | 780 | 0.12 | 50 | 2450 | CAYAB396M2AO100090 |
| 100(115) | 47 | 10×10 | 940 | 0.12 | 50 | 2550 | CAYAB476M2AO100100 |
| 100(115) | 56 | 10×12 | 1120 | 0.12 | 50 | 2650 | CAYAB566M2AO100120 |
| 100(115) | 68 | 10×16 | 1360 | 0.12 | 50 | 2700 | CAYAB686M2AO100160 |
| 100(115) | 82 | 10×18 | 1640 | 0.12 | 40 | 3100 | CAYAB826M2AO100180 |
| 100(115) | 82 | 12.5×12.5 | 1640 | 0.12 | 50 | 3000 | CAYAB826M2AO125125 |
| 100(115) | 100 | 10×21 | 2000 | 0.12 | 40 | 3500 | CAYAB107M2AO100210 |
| 100(115) | 100 | 12.5×14 | 2000 | 0.12 | 50 | 3150 | CAYAB107M2AO125140 |
| 100(115) | 120 | 10×21 | 2400 | 0.12 | 40 | 3750 | CAYAB127M2AO100210 |
| 100(115) | 120 | 12.5×16 | 2400 | 0.12 | 40 | 3700 | CAYAB127M2AO125160 |
| 100(115) | 150 | 12.5×18 | 3000 | 0.12 | 40 | 3900 | CAYAB157M2AO125180 |
| 100(115) | 180 | 12.5×20 | 3600 | 0.12 | 40 | 4100 | CAYAB187M2AO125200 |

**PART NUMBER EXAMPLE**





www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

# CAYAC




- ◆ 105°C 2000 Hours
- ◆ Standard Product
- ◆ High Stability, Low ESR, High Frequency
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 6.3-25V |
| **Capacitance Range** | 10~2500μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Endurance** | After load rated voltage for 2000hours at105°C,the following specification shall be satisfied after placing capacitor for 16 hours at 20°C |
| **Humidity** | Store the capacitor at 60 °C under the condition of 90%~95%R.H with no load for 1000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C. |

Endurance:

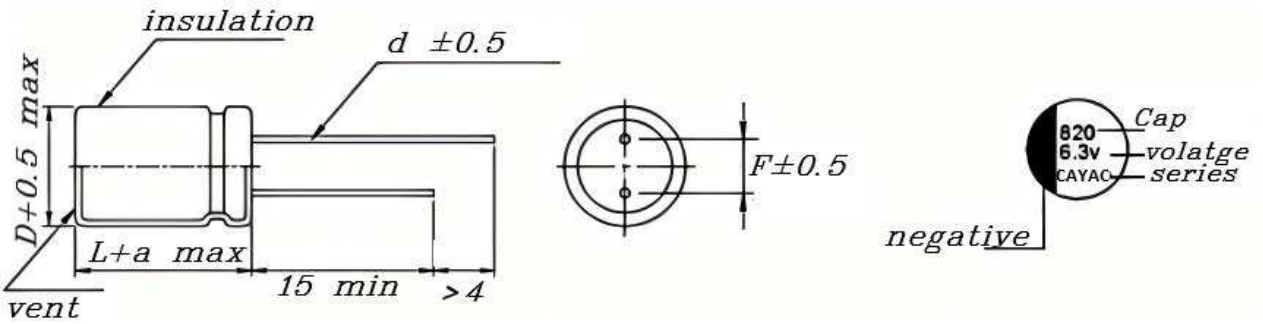
| | |
|---|---|
| Capacitance change | Within±20% of the initial value |
| ESR | Not more than 150% of the specified value |
| Dissipation Factor | Not more than 150% of the specified value |
| Leakage current | Not more than the specified value |

Humidity:

| | |
|---|---|
| Capacitance change | Within±20% of the initial value |
| ESR | Not more than 150% of the specified value |
| Dissipation Factor | Not more than 150% of the specified value |
| Leakage current | Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| D(±0.5) | 5 | 6.3 | 8 | 10 |
|---|---|---|---|---|
| d(±0.05) | 0.45/0.50 | 0.45/0.50 | 0.6 | 0.6 |
| F(±0.5) | 2.0 | 2.5 | 3.5 | 5.0 |
| α | +1 | | | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |

# CAYAC

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 100 | 6.3×7 | 280 | 0.08 | 8 | 4800 | CAYAC107M0JO063070 |
| 6.3(7.2) | 150 | 6.3×7 | 280 | 0.08 | 8 | 4800 | CAYAC157M0JO063070 |
| 6.3(7.2) | 180 | 6.3×7 | 280 | 0.08 | 8 | 4800 | CAYAC187M0JO063070 |
| 6.3(7.2) | 180 | 8×8 | 280 | 0.08 | 8 | 5600 | CAYAC187M0JO080080 |
| 6.3(7.2) | 180 | 8×11 | 280 | 0.08 | 8 | 6150 | CAYAC187M0JO080110 |
| 6.3(7.2) | 220 | 5×9 | 280 | 0.08 | 10 | 4150 | CAYAC227M0JO050090 |
| 6.3(7.2) | 220 | 6.3×7 | 280 | 0.08 | 8 | 4800 | CAYAC227M0JO063070 |
| 6.3(7.2) | 220 | 8×8 | 280 | 0.08 | 8 | 5600 | CAYAC227M0JO080080 |
| 6.3(7.2) | 220 | 8×11 | 280 | 0.08 | 8 | 6150 | CAYAC227M0JO080110 |
| 6.3(7.2) | 270 | 5×9 | 340 | 0.08 | 10 | 4150 | CAYAC277M0JO050090 |
| 6.3(7.2) | 270 | 6.3×7 | 340 | 0.08 | 8 | 4800 | CAYAC277M0JO063070 |
| 6.3(7.2) | 270 | 8×8 | 340 | 0.08 | 8 | 5600 | CAYAC277M0JO080080 |
| 6.3(7.2) | 270 | 8×11 | 340 | 0.08 | 8 | 6150 | CAYAC277M0JO080110 |
| 6.3(7.2) | 330 | 5×9 | 416 | 0.08 | 10 | 4150 | CAYAC337M0JO050090 |
| 6.3(7.2) | 330 | 5×11 | 416 | 0.08 | 10 | 4500 | CAYAC337M0JO050110 |
| 6.3(7.2) | 330 | 6.3×7 | 416 | 0.08 | 8 | 4800 | CAYAC337M0JO063070 |
| 6.3(7.2) | 330 | 8×8 | 416 | 0.08 | 8 | 5600 | CAYAC337M0JO080080 |
| 6.3(7.2) | 330 | 8×11 | 416 | 0.08 | 8 | 6150 | CAYAC337M0JO080110 |
| 6.3(7.2) | 390 | 6.3×7 | 491 | 0.08 | 8 | 4800 | CAYAC397M0JO063070 |
| 6.3(7.2) | 390 | 6.3×9 | 491 | 0.08 | 8 | 5250 | CAYAC397M0JO063090 |
| 6.3(7.2) | 390 | 8×8 | 491 | 0.08 | 8 | 5600 | CAYAC397M0JO080080 |
| 6.3(7.2) | 390 | 8×11 | 491 | 0.08 | 8 | 6150 | CAYAC397M0JO080110 |
| 6.3(7.2) | 470 | 6.3×9 | 592 | 0.08 | 8 | 5250 | CAYAC477M0JO063090 |
| 6.3(7.2) | 470 | 6.3×10 | 592 | 0.08 | 8 | 5500 | CAYAC477M0JO063100 |
| 6.3(7.2) | 470 | 8×8 | 592 | 0.08 | 8 | 5600 | CAYAC477M0JO080080 |
| 6.3(7.2) | 470 | 8×11 | 592 | 0.08 | 8 | 6150 | CAYAC477M0JO080110 |
| 6.3(7.2) | 560 | 6.3×9 | 706 | 0.08 | 8 | 5250 | CAYAC567M0JO063090 |
| 6.3(7.2) | 560 | 8×8 | 706 | 0.08 | 8 | 5600 | CAYAC567M0JO080080 |
| 6.3(7.2) | 560 | 8×11 | 706 | 0.08 | 8 | 6150 | CAYAC567M0JO080110 |
| 6.3(7.2) | 680 | 6.3×10 | 857 | 0.08 | 8 | 5500 | CAYAC687M0JO063100 |
| 6.3(7.2) | 680 | 8×8 | 857 | 0.08 | 8 | 5600 | CAYAC687M0JO080080 |
| 6.3(7.2) | 680 | 8×11 | 857 | 0.08 | 8 | 6150 | CAYAC687M0JO080110 |
| 6.3(7.2) | 680 | 10×12 | 857 | 0.08 | 8 | 6640 | CAYAC687M0JO100120 |
| 6.3(7.2) | 820 | 8×11 | 1033 | 0.08 | 8 | 6150 | CAYAC827M0JO080110 |
| 6.3(7.2) | 820 | 10×12 | 1033 | 0.08 | 8 | 6640 | CAYAC827M0JO100120 |
| 6.3(7.2) | 1000 | 8×11.5 | 1260 | 0.08 | 8 | 6150 | CAYAC108M0JO080115 |
| 6.3(7.2) | 1000 | 10×12 | 1260 | 0.08 | 8 | 6640 | CAYAC108M0JO100120 |
| 6.3(7.2) | 1200 | 8×11 | 1512 | 0.08 | 8 | 6150 | CAYAC128M0JO080110 |
| 6.3(7.2) | 1200 | 10×12 | 1512 | 0.08 | 8 | 6640 | CAYAC128M0JO100120 |
| 6.3(7.2) | 1500 | 10×12 | 1890 | 0.09 | 8 | 6640 | CAYAC158M0JO100120 |
| 6.3(7.2) | 2000 | 10×12 | 2520 | 0.10 | 8 | 6640 | CAYAC208M0JO100120 |
| 6.3(7.2) | 2200 | 10×12 | 2772 | 0.10 | 8 | 6640 | CAYAC228M0JO100120 |
| 6.3(7.2) | 2500 | 10×12 | 3150 | 0.11 | 8 | 6640 | CAYAC258M0JO100120 |

# CAYAC

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | I=C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 7.5(8.6) | 270 | 5×7 | 405 | 0.08 | 12 | 3400 | CAYAC277M0MO050070 |
| 7.5(8.6) | 330 | 5×9 | 495 | 0.08 | 12 | | CAYAC337M0MO050090 |
| 7.5(8.6) | 390 | 5×10 | 585 | 0.08 | 10 | 4350 | CAYAC397M0MO050100 |
| 7.5(8.6) | 470 | 5×11 | 705 | 0.08 | 10 | 4500 | CAYAC477M0MO050110 |
| 7.5(8.6) | 680 | 6.3×9 | 1020 | 0.08 | 9 | 5000 | CAYAC687M0MO063090 |
| 7.5(8.6) | 680 | 6.3×11 | 1020 | 0.08 | 8 | 5700 | CAYAC687M0MO063110 |
| 7.5(8.6) | 1000 | 8×11 | 1500 | 0.08 | 8 | 6150 | CAYAC108M0MO080110 |
| 10(11.5) | 33 | 6.3×5 | 280 | 0.08 | 30 | 2200 | CAYAC336M1AO063050 |
| 10(11.5) | 39 | 6.3×5 | 280 | 0.08 | 30 | 2200 | CAYAC396M1AO063050 |
| 10(11.5) | 47 | 6.3×7 | 280 | 0.08 | 12 | 3900 | CAYAC476M1AO063070 |
| 10(11.5) | 68 | 6.3×7 | 280 | 0.08 | 12 | 3900 | CAYAC686M1AO063070 |
| 10(11.5) | 82 | 6.3×7 | 280 | 0.08 | 12 | 3900 | CAYAC826M1AO063070 |
| 10(11.5) | 100 | 6.3×7 | 280 | 0.08 | 12 | 3900 | CAYAC107M1AO063070 |
| 10(11.5) | 100 | 5×7 | 280 | 0.08 | 15 | 3050 | CAYAC107M1AO050070 |
| 10(11.5) | 150 | 5×11 | 300 | 0.08 | 12 | 4100 | CAYAC157M1AO050110 |
| 10(11.5) | 150 | 6.3×7 | 300 | 0.08 | 12 | 3900 | CAYAC157M1AO063070 |
| 10(11.5) | 180 | 5×11 | 360 | 0.08 | 12 | 4100 | CAYAC187M1AO050110 |
| 10(11.5) | 180 | 6.3×9 | 360 | 0.08 | 12 | 4300 | CAYAC187M1AO063090 |
| 10(11.5) | 180 | 8×8 | 360 | 0.08 | 10 | 5100 | CAYAC187M1AO080080 |
| 10(11.5) | 180 | 8×11 | 360 | 0.08 | 9 | 5800 | CAYAC187M1AO080110 |
| 10(11.5) | 220 | 6.3×9 | 440 | 0.08 | 12 | 4300 | CAYAC227M1AO063090 |
| 10(11.5) | 220 | 8×8 | 440 | 0.08 | 10 | 5100 | CAYAC227M1AO080080 |
| 10(11.5) | 220 | 8×11 | 440 | 0.08 | 9 | 5800 | CAYAC227M1AO080110 |
| 10(11.5) | 270 | 6.3×9 | 540 | 0.08 | 12 | 4300 | CAYAC277M1AO063090 |
| 10(11.5) | 270 | 6.3×11 | 540 | 0.08 | 9 | 5400 | CAYAC277M1AO063110 |
| 10(11.5) | 270 | 8×8 | 540 | 0.08 | 10 | 5100 | CAYAC277M1AO080080 |
| 10(11.5) | 270 | 8×11 | 540 | 0.08 | 9 | 5800 | CAYAC277M1AO080110 |
| 10(11.5) | 330 | 6.3×11 | 660 | 0.08 | 9 | 5400 | CAYAC337M1AO063110 |
| 10(11.5) | 330 | 8×8 | 660 | 0.08 | 10 | 5100 | CAYAC337M1AO080080 |
| 10(11.5) | 330 | 8×11 | 660 | 0.08 | 9 | 5800 | CAYAC337M1AO080110 |
| 10(11.5) | 390 | 6.3×11 | 780 | 0.08 | 9 | 5400 | CAYAC397M1AO063110 |
| 10(11.5) | 390 | 8×8 | 780 | 0.08 | 10 | 5100 | CAYAC377M1AO080080 |
| 10(11.5) | 390 | 8×11 | 780 | 0.08 | 9 | 5800 | CAYAC397M1AO080110 |
| 10(11.5) | 470 | 6.3×11 | 940 | 0.08 | 9 | 5400 | CAYAC477M1AO063110 |
| 10(11.5) | 470 | 8×8 | 940 | 0.08 | 10 | 5100 | CAYAC477M1AO080080 |
| 10(11.5) | 470 | 8×11 | 940 | 0.08 | 9 | 5800 | CAYAC477M1AO080110 |
| 10(11.5) | 560 | 8×11 | 1120 | 0.08 | 9 | 5800 | CAYAC567M1AO080110 |
| 10(11.5) | 680 | 8×11 | 1360 | 0.08 | 9 | 5800 | CAYAC687M1AO080110 |
| 10(11.5) | 680 | 10×12 | 1360 | 0.08 | 9 | 6300 | CAYAC687M1AO100120 |
| 10(11.5) | 820 | 10×12 | 1640 | 0.08 | 9 | 6300 | CAYAC827M1AO100120 |
| 10(11.5) | 1000 | 10×12 | 2000 | 0.08 | 9 | 6300 | CAYAC108M1AO100120 |
| 10(11.5) | 1200 | 10×12 | 2400 | 0.08 | 9 | 6300 | CAYAC128M1AO100120 |
| 10(11.5) | 1500 | 10×12 | 3000 | 0.08 | 9 | 6300 | CAYAC158M1AO100120 |

# CAYAC

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 16(18.4) | 22 | 6.3×7 | 280 | 0.08 | 15 | 3500 | CAYAC226M1CO063070 |
| 16(18.4) | 33 | 6.3×7 | 280 | 0.08 | 15 | 3500 | CAYAC336M1CO063070 |
| 16(18.4) | 47 | 6.3×7 | 280 | 0.08 | 15 | 3500 | CAYAC476M1CO063070 |
| 16(18.4) | 68 | 6.3×7 | 280 | 0.08 | 15 | 3500 | CAYAC686M1CO063070 |
| 16(18.4) | 82 | 6.3×7 | 280 | 0.08 | 15 | 3500 | CAYAC826M1CO063070 |
| 16(18.4) | 100 | 6.3×7 | 320 | 0.08 | 15 | 3500 | CAYAC107M1CO063070 |
| 16(18.4) | 100 | 6.3×11 | 320 | 0.08 | 10 | 5100 | CAYAC107M1CO063110 |
| 16(18.4) | 100 | 8×11 | 320 | 0.08 | 10 | 5500 | CAYAC107M1CO080070 |
| 16(18.4) | 150 | 6.3×10 | 480 | 0.08 | 10 | 4900 | CAYAC157M1CO063100 |
| 16(18.4) | 150 | 8×8 | 480 | 0.08 | 12 | 4500 | CAYAC187M1CO080080 |
| 16(18.4) | 180 | 6.3×7 | 576 | 0.08 | 15 | 3500 | CAYAC187M1CO063070 |
| 16(18.4) | 180 | 6.3×11 | 576 | 0.08 | 10 | 5100 | CAYAC187M1CO063110 |
| 16(18.4) | 180 | 8×8 | 576 | 0.08 | 12 | 4500 | CAYAC187M1CO080080 |
| 16(18.4) | 180 | 8×11 | 576 | 0.08 | 10 | 5500 | CAYAC187M1CO080110 |
| 16(18.4) | 220 | 6.3×10 | 704 | 0.08 | 10 | 4900 | CAYAC227M1CO063110 |
| 16(18.4) | 220 | 8×8 | 704 | 0.08 | 12 | 4500 | CAYAC227M1CO080080 |
| 16(18.4) | 220 | 8×11 | 704 | 0.08 | 10 | 5500 | CAYA277M1CO080110 |
| 16(18.4) | 270 | 6.3×10 | 864 | 0.08 | 10 | 4900 | CAYAC277M1CO063110 |
| 16(18.4) | 270 | 8×8 | 864 | 0.08 | 12 | 4500 | CAYAC277M1CO080080 |
| 16(18.4) | 270 | 8×11 | 864 | 0.08 | 10 | 5500 | CAYAC277M1CO080110 |
| 16(18.4) | 270 | 10×12 | 864 | 0.08 | 10 | 6000 | CAYAC277M1CO100120 |
| 16(18.4) | 330 | 8×8 | 1056 | 0.08 | 12 | 4500 | CAYAC337M1CO080080 |
| 16(18.4) | 330 | 8×11 | 1056 | 0.08 | 10 | 5500 | CAYAC337M1CO080110 |
| 16(18.4) | 330 | 10×12 | 1056 | 0.08 | 10 | 6000 | CAYAC337M1CO100120 |
| 16(18.4) | 390 | 8×8 | 1248 | 0.08 | 12 | 4500 | CAYAC397M1CO080080 |
| 16(18.4) | 390 | 8×11 | 1248 | 0.08 | 10 | 5500 | CAYAC397M1CO080110 |
| 16(18.4) | 390 | 10×12 | 1248 | 0.08 | 10 | 6000 | CAYAC397M1CO100120 |
| 16(18.4) | 470 | 8×11 | 1504 | 0.08 | 10 | 5500 | CAYAC477M1CO080110 |
| 16(18.4) | 470 | 10×12 | 1504 | 0.08 | 10 | 6000 | CAYAC477M1CO080120 |
| 16(18.4) | 560 | 8×11 | 1792 | 0.08 | 10 | 5500 | CAYAC567M1CO080110 |
| 16(18.4) | 560 | 10×12 | 1792 | 0.08 | 10 | 6000 | CAYAC567M1CO100120 |
| 16(18.4) | 680 | 10×12 | 2176 | 0.08 | 10 | 6000 | CAYAC687M1CO100120 |
| 16(18.4) | 820 | 10×12 | 2624 | 0.08 | 10 | 6000 | CAYAC827M1CO100120 |
| 16(18.4) | 1000 | 10×12 | 3200 | 0.08 | 10 | 6000 | CAYAC108M1CO100120 |
| 16(18.4) | 1000 | 8×16 | 3200 | 0.08 | 8 | 7100 | CAYAC108M1CO080160 |
| 25(28.8) | 10 | 6.3×7 | 280 | 0.08 | 16 | 3400 | CAYAC106M1EO063070 |
| 25(28.8) | 15 | 6.3×7 | 280 | 0.08 | 16 | 3400 | CAYAC156M1EO063070 |
| 25(28.8) | 22 | 6.3×7 | 280 | 0.08 | 16 | 3400 | CAYAC226M1EO063070 |
| 25(28.8) | 22 | 6.3×9 | 280 | 0.08 | 16 | 3750 | CAYAC226M1EO063090 |
| 25(28.8) | 33 | 6.3×9 | 280 | 0.08 | 16 | 3750 | CAYAC336M1EO063090 |
| 25(28.8) | 39 | 6.3×9 | 280 | 0.08 | 16 | 3750 | CAYAC396M1EO063090 |
| 25(28.8) | 39 | 8×8 | 280 | 0.08 | 16 | 3900 | CAYAC396M1EO080080 |
| 25(28.8) | 39 | 8×11 | 280 | 0.08 | 16 | 4400 | CAYAC396M1EO080110 |


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# CAYAC

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 25(28.8) | 47 | 6.3×11 | 280 | 0.08 | 20 | 3650 | CAYAC476M1EO063110 |
| 25(28.8) | 47 | 8×8 | 280 | 0.08 | 16 | 3900 | CAYAC476M1EO080080 |
| 25(28.8) | 47 | 8×11 | 280 | 0.08 | 16 | 4400 | CAYAC476M1EO080110 |
| 25(28.8) | 68 | 8×8 | 340 | 0.08 | 16 | 3900 | CAYAC686M1EO080080 |
| 25(28.8) | 68 | 8×11 | 340 | 0.08 | 16 | 4400 | CAYAC686M1EO080110 |
| 25(28.8) | 82 | 8×8 | 410 | 0.08 | 16 | 3900 | CAYAC826M1EO080080 |
| 25(28.8) | 82 | 8×11 | 410 | 0.08 | 16 | 4400 | CAYAC826M1EO080110 |
| 25(28.8) | 100 | 8×11 | 500 | 0.08 | 16 | 4400 | CAYAC107M1EO080110 |
| 25(28.8) | 100 | 10×12 | 500 | 0.08 | 16 | 4700 | CAYAC107M1EO100120 |
| 25(28.8) | 150 | 8×11 | 750 | 0.08 | 16 | 4400 | CAYAC157M1EO080110 |
| 25(28.8) | 150 | 10×12 | 750 | 0.08 | 16 | 4700 | CAYAC157M1EO100120 |
| 25(28.8) | 180 | 8×11 | 900 | 0.08 | 16 | 4400 | CAYAC187M1EO080110 |
| 25(28.8) | 180 | 10×12 | 900 | 0.08 | 16 | 4700 | CAYAC187M1EO100120 |
| 25(28.8) | 220 | 8×11 | 1100 | 0.08 | 16 | 4400 | CAYAC227M1EO080110 |
| 25(28.8) | 220 | 10×12 | 1100 | 0.08 | 16 | 4700 | CAYAC227M1EO100120 |
| 25(28.8) | 270 | 8×11 | 1350 | 0.08 | 16 | 4400 | CAYAC277M1EO080110 |
| 25(28.8) | 270 | 10×12 | 1350 | 0.08 | 16 | 4700 | CAYAC277M1EO100120 |
| 25(28.8) | 330 | 10×12 | 1650 | 0.08 | 16 | 4700 | CAYAC337M1EO100120 |
| 25(28.8) | 390 | 10×12 | 1950 | 0.08 | 16 | 4700 | CAYAC397M1EO100120 |
| 25(28.8) | 470 | 10×12 | 2350 | 0.08 | 16 | 4700 | CAYAC477M1EO100120 |
| 25(28.8) | 560 | 10×12 | 2800 | 0.08 | 16 | 4700 | CAYAC567M1EO100120 |
| 25(28.8) | 680 | 8×16 | 3400 | 0.08 | 16 | 5050 | CAYAC687M1EO080160 |
| 25(28.8) | 820 | 10×12 | 4100 | 0.08 | 16 | 4700 | CAYAC827M1EO100120 |
| 25(28.8) | 1000 | 10×16 | 5000 | 0.08 | 16 | 5300 | CAYAC108M1EO100160 |

# CAYAD



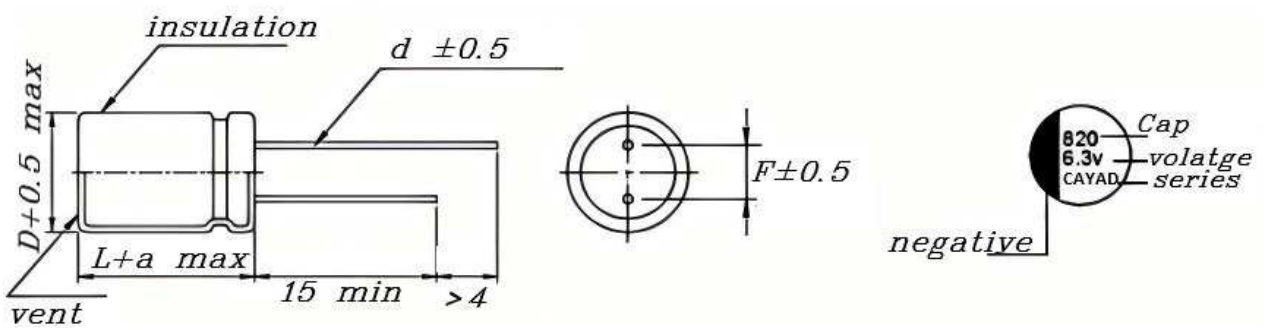

- ◆ 105°C 2000 Hours
- ◆ High Capacitance,Miniature Size
- ◆ High Stability, Low ESR, High Frequency
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 6.3~100V |
| **Capacitance Range** | 180~18000μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Endurance** | After load rated voltage for 2000hours at105°C,the following specification shall be satisfied afte placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 200% of the specified value<br>Dissipation Factor: Not more than 200% of the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60 °C under the condition of 90%~95%R.H with no load for 1000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 200% of the specified value<br>Dissipation Factor: Not more than 200% of the specified value<br>Leakage current: Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| | | |
|---|---|---|
| **D(±0.5)** | 16 | 18 |
| **d(±0.05)** | 0.8 | 0.8 |
| **F(±0.5)** | 7.5 | 7.5 |
| **α** | +1.0 | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| **Correction factor** | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |


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# CAYAD

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 10000 | 16×16 | 7500 | 0.30 | 7 | 9200 | CAYAD109M0JO160160 |
| 6.3(7.2) | 12000 | 16×18 | 7500 | 0.34 | 7 | 9650 | CAYAD129M0JO160180 |
| 6.3(7.2) | 15000 | 16×20 | 7500 | 0.40 | 7 | 9950 | CAYAD159M0JO160200 |
| 6.3(7.2) | 15000 | 18×18 | 7500 | 0.40 | 7 | 9650 | CAYAD159M0JO180180 |
| 6.3(7.2) | 18000 | 18×20 | 7500 | 0.46 | 7 | 9950 | CAYAD189M0JO180200 |
| 10(11.5) | 6800 | 16×16 | 7500 | 0.24 | 8 | 8600 | CAYAD688M1AO160160 |
| 10(11.5) | 8200 | 16×18 | 7500 | 0.26 | 8 | 9000 | CAYAD828M1AO160180 |
| 10(11.5) | 10000 | 16×20 | 7500 | 0.30 | 8 | 9300 | CAYAD109M1AO160200 |
| 10(11.5) | 10000 | 18×18 | 7500 | 0.30 | 8 | 9000 | CAYAD109M1AO180180 |
| 10(11.5) | 12000 | 18×20 | 7500 | 0.34 | 8 | 9300 | CAYAD129M1AO180200 |
| 16(18.4) | 3900 | 16×16 | 7500 | 0.18 | 8 | 8600 | CAYAD398M1CO160160 |
| 16(18.4) | 4700 | 16×18 | 7500 | 0.19 | 8 | 9000 | CAYAD478M1CO160180 |
| 16(18.4) | 5600 | 16×20 | 7500 | 0.21 | 8 | 9300 | CAYAD568M1CO160200 |
| 16(18.4) | 6800 | 18×18 | 7500 | 0.24 | 8 | 9000 | CAYAD688M1CO180180 |
| 16(18.4) | 8200 | 18×20 | 7500 | 0.26 | 8 | 9300 | CAYAD828M1CO180200 |
| 25(28.8) | 2200 | 16×16 | 7500 | 0.14 | 16 | 6000 | CAYAD228M1EO160160 |
| 25(28.8) | 2700 | 16×18 | 7500 | 0.15 | 16 | 6400 | CAYAD278M1EO160180 |
| 25(28.8) | 3300 | 16×20 | 7500 | 0.17 | 16 | 6550 | CAYAD338M1EO160200 |
| 25(28.8) | 3900 | 18×18 | 7500 | 0.18 | 16 | 6400 | CAYAD388M1EO180180 |
| 25(28.8) | 4700 | 18×20 | 7500 | 0.19 | 16 | 6550 | CAYAD478M1EO180200 |
| 35(41) | 1800 | 16×16 | 7500 | 0.14 | 20 | 5450 | CAYAD188M1VO160160 |
| 35(41) | 2200 | 16×18 | 7500 | 0.14 | 20 | 5700 | CAYAD228M1VO160180 |
| 35(41) | 2700 | 16×20 | 7500 | 0.15 | 20 | 5950 | CAYAD278M1VO160200 |
| 35(41) | 2700 | 18×18 | 7500 | 0.15 | 20 | 5700 | CAYAD278M1VO180180 |
| 35(41) | 3300 | 18×20 | 7500 | 0.17 | 20 | 5950 | CAYAD338M1VO160200 |
| 50(58) | 680 | 16×16 | 6800 | 0.12 | 30 | 4400 | CAYAD687M1HO160160 |
| 50(58) | 820 | 16×18 | 7500 | 0.12 | 30 | 4650 | CAYAD827M1HO160180 |
| 50(58) | 1000 | 16×20 | 7500 | 0.12 | 30 | 4800 | CAYAD108M1HO160200 |
| 50(58) | 1200 | 18×18 | 7500 | 0.12 | 30 | 4650 | CAYAD128M1HO180180 |
| 50(58) | 1500 | 18×20 | 7500 | 0.13 | 30 | 4800 | CAYAD158M1HO180200 |
| 63(73) | 560 | 16×16 | 7056 | 0.12 | 30 | 4400 | CAYAD567M1JO160160 |
| 63(73) | 680 | 16×18 | 7500 | 0.12 | 30 | 4650 | CAYAD687M1JO160180 |
| 63(73) | 820 | 16×20 | 7500 | 0.12 | 30 | 4800 | CAYAD827M1JO160200 |
| 63(73) | 820 | 18×18 | 7500 | 0.12 | 30 | 4650 | CAYAD827M1JO180180 |
| 63(73) | 1000 | 18×20 | 7500 | 0.12 | 30 | 4800 | CAYAD108M1JO180200 |
| 80(92) | 330 | 16×16 | 5280 | 0.12 | 30 | 4400 | CAYAD337M1KO160160 |
| 80(92) | 390 | 16×18 | 6240 | 0.12 | 30 | 4650 | CAYAD397M1KO160180 |
| 80(92) | 470 | 16×20 | 7500 | 0.12 | 30 | 4800 | CAYAD477M1KO160200 |
| 80(92) | 560 | 18×18 | 7500 | 0.12 | 30 | 4650 | CAYAD567M1KO180180 |
| 80(92) | 680 | 18×20 | 7500 | 0.12 | 30 | 4800 | CAYAD687M1KO180200 |
| 100(115) | 180 | 16×16 | 3600 | 0.12 | 40 | 3850 | CAYAD187M2AO160160 |
| 100(115) | 220 | 16×18 | 4400 | 0.12 | 40 | 4000 | CAYAD227M2AO160180 |
| 100(115) | 270 | 16×20 | 5400 | 0.12 | 40 | 4150 | CAYAD277M2AO160200 |
| 100(115) | 270 | 18×18 | 5400 | 0.12 | 40 | 4000 | CAYAD277M2AO180180 |
| 100(115) | 330 | 18×20 | 6600 | 0.12 | 40 | 4150 | CAYAD337M2AO180200 |

# CAYAE



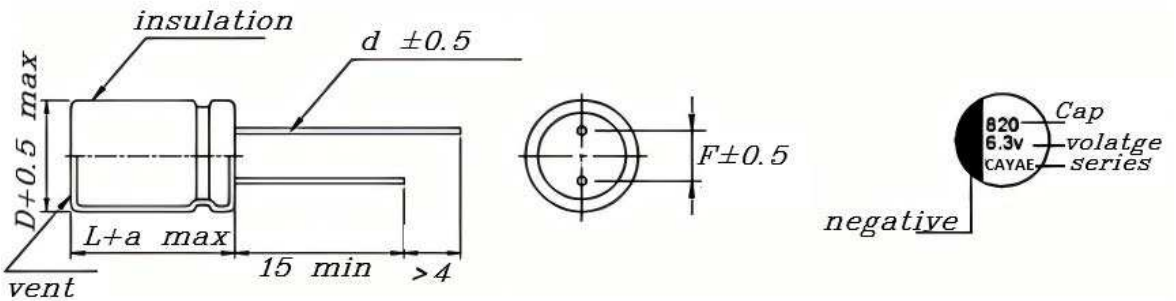

- ◆ 105°C 2000 Hours
- ◆ High Voltage
- ◆ High Stability, Low ESR, High Frequency
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 125~250V |
| **Capacitance Range** | 1.0~82μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Endurance** | After load rated voltage for 2000hours at105°C,the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 150% of the specified value<br>Dissipation Factor: Not more than 150% of the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60 °C under the condition of 90%~95 %R.H with no load for 100 hours, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 150% of the specified value<br>Dissipation Factor: Not more than 150% of the specified value<br>Leakage current: Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| D(±0.5) | 5 | 6.3 | 8 | 10 | 12.5 |
|---|---|---|---|---|---|
| d(±0.05) | 0.45/0.50 | 0.45/0.50 | 0.6 | 0.6 | 0.6 |
| F(±0.5) | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 |
| α | +1 | | | | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |

# CAYAE

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 125(144) | 1.5 | 6.3×5.7 | 300 | 0.12 | 400 | 1200 | CAYAE155M2QO063057 |
| 125(144) | 2.2 | 6.3×5.7 | 300 | 0.12 | 400 | 1200 | CAYAE225M2QO063057 |
| 125(144) | 2.7 | 6.3×7 | 300 | 0.12 | 350 | 1550 | CAYAE275M2QO063070 |
| 125(144) | 3.3 | 6.3×7 | 300 | 0.12 | 350 | 1550 | CAYAE335M2QO063070 |
| 125(144) | 4.7 | 6.3×9 | 300 | 0.12 | 250 | 1700 | CAYAE475M2QO063090 |
| 125(144) | 4.7 | 8×6.2 | 300 | 0.12 | 200 | 1250 | CAYAE475M2QO080062 |
| 125(144) | 5.6 | 6.3×9 | 300 | 0.12 | 250 | 1700 | CAYAE565M2QO063090 |
| 125(144) | 5.6 | 8×7 | 300 | 0.12 | 200 | 1450 | CAYAE565M2QO080070 |
| 125(144) | 6.8 | 6.3×11 | 300 | 0.12 | 200 | 1850 | CAYAE685M2QO063110 |
| 125(144) | 6.8 | 8×8 | 300 | 0.12 | 200 | 1450 | CAYAE685M2QO080080 |
| 125(144) | 8.2 | 6.3×11 | 300 | 0.12 | 200 | 1850 | CAYAE825M2QO063110 |
| 125(144) | 8.2 | 8×9 | 300 | 0.12 | 80 | 1800 | CAYAE825M2QO080090 |
| 125(144) | 10 | 8×9 | 300 | 0.12 | 80 | 1800 | CAYAE106M2QO080090 |
| 125(144) | 12 | 8×11.5 | 300 | 0.12 | 80 | 1980 | CAYAE126M2QO080120 |
| 125(144) | 12 | 10×7 | 300 | 0.12 | 100 | 1500 | CAYAE126M2QO100070 |
| 125(144) | 15 | 8×11.5 | 375 | 0.12 | 80 | 1980 | CAYAE156M2QO080115 |
| 125(144) | 15 | 10×9 | 375 | 0.12 | 80 | 1950 | CAYAE156M2QO100090 |
| 125(144) | 18 | 8×13 | 450 | 0.12 | 80 | 2100 | CAYAE186M2QO080130 |
| 125(144) | 18 | 10×10 | 450 | 0.12 | 80 | 2050 | CAYAE186M2QO100100 |
| 125(144) | 22 | 8×15 | 550 | 0.12 | 60 | 2550 | CAYAE226M2QO080150 |
| 125(144) | 22 | 10×11 | 550 | 0.12 | 80 | 2100 | CAYAE226M2QO100110 |
| 125(144) | 27 | 8×16 | 675 | 0.12 | 60 | 2600 | CAYAE276M2QO080160 |
| 125(144) | 27 | 10×13 | 675 | 0.12 | 80 | 2200 | CAYAE276M2QO100130 |
| 125(144) | 33 | 10×16 | 825 | 0.12 | 60 | 2700 | CAYAE336M2QO100160 |
| 125(144) | 39 | 10×17 | 975 | 0.12 | 60 | 2700 | CAYAE396M2QO100170 |
| 125(144) | 39 | 12.5×12.5 | 975 | 0.12 | 80 | 2350 | CAYAE396M2QO125125 |
| 125(144) | 47 | 10×18 | 1175 | 0.12 | 60 | 2800 | CAYAE476M2QO100180 |
| 125(144) | 47 | 12.5×14 | 1175 | 0.12 | 80 | 2450 | CAYAE476M2QO125140 |
| 125(144) | 56 | 10×21 | 1400 | 0.12 | 60 | 3000 | CAYAE566M2QO100210 |
| 125(144) | 56 | 12.5×16 | 1400 | 0.12 | 60 | 3000 | CAYAE566M2QO125160 |
| 125(144) | 68 | 12.5×18 | 1700 | 0.12 | 60 | 3200 | CAYAE686M2QO125180 |
| 125(144) | 82 | 12.5×20 | 2050 | 0.12 | 60 | 3350 | CAYAE826M2QO125200 |
| 160(184) | 1 | 5×5 | 300 | 0.12 | 500 | 1200 | CAYAE105M2CO050050 |
| 160(184) | 1.2 | 5×5 | 300 | 0.12 | 500 | 1200 | CAYAE125M2CO050050 |
| 160(184) | 1.5 | 6.3×5.7 | 300 | 0.12 | 400 | 1200 | CAYAE155M2CO063057 |
| 160(184) | 2.2 | 6.3×7 | 300 | 0.12 | 350 | 1400 | CAYAE225M2CO063070 |
| 160(184) | 3.3 | 6.3×9 | 300 | 0.12 | 250 | 1700 | CAYAE335M2CO063090 |
| 160(184) | 3.3 | 8×7 | 300 | 0.12 | 200 | 1450 | CAYAE335M2CO080070 |
| 160(184) | 4.7 | 6.3×11 | 300 | 0.12 | 200 | 1850 | CAYAE475M2CO063110 |
| 160(184) | 4.7 | 8×8 | 300 | 0.12 | 150 | 1500 | CAYAE475M2CO080080 |
| 160(184) | 5.6 | 6.3×11 | 300 | 0.12 | 200 | 1850 | CAYAE565M2CO063110 |
| 160(184) | 5.6 | 8×7 | 300 | 0.12 | 200 | 1450 | CAYAE565M2CO080070 |
| 160(184) | 6.8 | 6.3×11 | 300 | 0.12 | 200 | 1850 | CAYAE685M2CO063110 |

# CAYAE

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 160(184) | 6.8 | 8×9 | 300 | 0.12 | 80 | 1800 | CAYAE685M2CO080090 |
| 160(184) | 8.2 | 8×9 | 300 | 0.12 | 80 | 1800 | CAYAE825M2CO080090 |
| 160(184) | 8.2 | 10×7 | 300 | 0.12 | 100 | 1500 | CAYAE825M2CO100070 |
| 160(184) | 10 | 8×11.5 | 320 | 0.12 | 80 | 1980 | CAYAE106M2CO080115 |
| 160(184) | 10 | 10×9 | 320 | 0.12 | 80 | 1950 | CAYAE106M2CO100090 |
| 160(184) | 12 | 8×11.5 | 384 | 0.12 | 80 | 1980 | CAYAE126M2CO080115 |
| 160(184) | 12 | 10×9 | 384 | 0.12 | 80 | 1950 | CAYAE126M2CO100090 |
| 160(184) | 15 | 8×13 | 480 | 0.12 | 80 | 2100 | CAYAE156M2CO080130 |
| 160(184) | 15 | 10×10 | 480 | 0.12 | 80 | 2100 | CAYAE156M2CO100100 |
| 160(184) | 18 | 8×15 | 576 | 0.12 | 60 | 2550 | CAYAE186M2CO080150 |
| 160(184) | 18 | 10×11 | 576 | 0.12 | 80 | 2100 | CAYAE186M2CO100110 |
| 160(184) | 22 | 8×17 | 704 | 0.12 | 60 | 2650 | CAYAE226M2CO080170 |
| 160(184) | 22 | 10×13 | 704 | 0.12 | 80 | 2200 | CAYAE226M2CO100130 |
| 160(184) | 27 | 8×17 | 864 | 0.12 | 60 | 2650 | CAYAE276M2CO080170 |
| 160(184) | 27 | 10×15 | 864 | 0.12 | 60 | 2700 | CAYAE276M2CO100150 |
| 160(184) | 33 | 10×17 | 1056 | 0.12 | 60 | 2750 | CAYAE336M2CO100170 |
| 160(184) | 39 | 10×18 | 1248 | 0.12 | 60 | 2800 | CAYAE396M2CO100180 |
| 160(184) | 39 | 12.5×14 | 1248 | 0.12 | 80 | 2450 | CAYAE396M2CO125140 |
| 160(184) | 47 | 12.5×16 | 1504 | 0.12 | 80 | 2600 | CAYAE476M2CO125160 |
| 160(184) | 56 | 12.5×18 | 1792 | 0.12 | 60 | 3200 | CAYAE566M2CO125180 |
| 160(184) | 68 | 12.5×20 | 2176 | 0.12 | 60 | 3350 | CAYAE686M2CO125200 |
| 200(230) | 1 | 6.3 × 5.7 | 300 | 0.12 | 400 | 1200 | CAYAE105M2DO063057 |
| 200(230) | 1.5 | 6.3×7 | 300 | 0.12 | 350 | 1400 | CAYAE155M2DO063070 |
| 200(230) | 2.2 | 6.3×9 | 300 | 0.12 | 250 | 1700 | CAYAE225M2DO063090 |
| 200(230) | 3.3 | 8×7 | 300 | 0.12 | 200 | 1450 | CAYAE335M2DO080070 |
| 200(230) | 3.9 | 8×9 | 300 | 0.12 | 100 | 1450 | CAYAE395M2DO080090 |
| 200(230) | 4.7 | 8×9 | 300 | 0.12 | 80 | 1800 | CAYAE475M2DO080090 |
| 200(230) | 4.7 | 10×7 | 300 | 0.12 | 100 | 1500 | CAYAE475M2DO100070 |
| 200(230) | 5.6 | 8×11.5 | 300 | 0.12 | 80 | 1980 | CAYAE565M2DO080115 |
| 200(230) | 6.8 | 8×11.5 | 300 | 0.12 | 80 | 1980 | CAYAE685M2DO080115 |
| 200(230) | 6.8 | 10×9 | 300 | 0.12 | 80 | 1950 | CAYAE685M2DO100090 |
| 200(230) | 8.2 | 8×14 | 328 | 0.12 | 80 | 2150 | CAYAE825M2DO080140 |
| 200(230) | 8.2 | 10×9 | 328 | 0.12 | 80 | 1950 | CAYAE825M2DO100090 |
| 200(230) | 10 | 8×16 | 400 | 0.12 | 60 | 2600 | CAYAE106M2DO080160 |
| 200(230) | 10 | 10×12 | 400 | 0.12 | 80 | 2150 | CAYAE106M2DO100120 |
| 200(230) | 15 | 10×13 | 600 | 0.12 | 80 | 2200 | CAYAE156M2DO100130 |
| 200(230) | 18 | 10×16 | 720 | 0.12 | 60 | 2700 | CAYAE186M2DO100160 |
| 200(230) | 18 | 12.5×12.5 | 720 | 0.12 | 60 | 2700 | CAYAE186M2DO125125 |
| 200(230) | 22 | 12.5×14 | 880 | 0.12 | 80 | 2450 | CAYAE226M2DO125140 |
| 250(288) | 4.7 | 8×11.5 | 300 | 0.12 | 80 | 1980 | CAYAE475M2EO080115 |
| 250(288) | 6.8 | 8×14 | 340 | 0.12 | 80 | 2150 | CAYAE685M2EO080140 |
| 250(288) | 6.8 | 10×11 | 340 | 0.12 | 80 | 2150 | CAYAE685M2EO100110 |
| 250(288) | 8.2 | 8×16 | 410 | 0.12 | 60 | 2600 | CAYAE825M2EO080160 |
| 250(288) | 8.2 | 10×12 | 410 | 0.12 | 80 | 2150 | CAYAE825M2EO100120 |
| 250(288) | 10 | 10×12 | 500 | 0.12 | 80 | 2150 | CAYAE106M2EO100120 |

# CAYAF



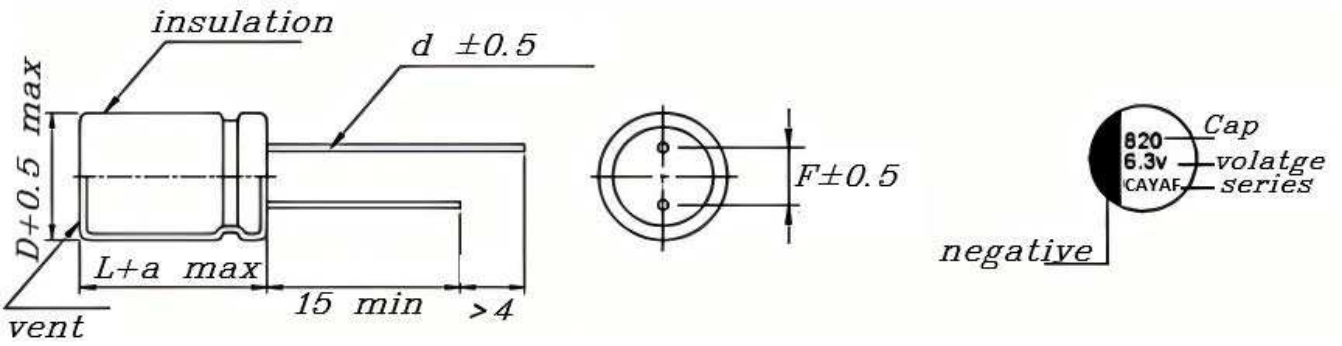

- ◆ 105°C 2000 Hours
- ◆ Diameter 3.55mm/4mm
- ◆ High Stability, Low ESR, High Frequency
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 6.3~100V |
| **Capacitance Range** | 1.2~270μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Endurance** | After load rated voltage for 2000hours at105°C,the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 150% of the specified value<br>Dissipation Factor: Not more than 150% of the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 60 °C under the condition of 90%~95%R.H with no load for l000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.<br>Capacitance change: Within±20% of the initial value<br>ESR: Not more than 150% of the specified value<br>Dissipation Factor: Not more than 150% of the specified value<br>Leakage current: Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| D(±0.5) | 3.55×5.7 | 4×5.7 | 3.55×7 | 4×7 | 3.55×11 | 4×11 |
|---|---|---|---|---|---|---|
| d(±0.05) | 0.40 | 0.50 | 0.40 | 0.50 | 0.40 | 0.50 |
| F(±0.5) | 1.5 | | | | | |
| α | +0.3 | | +0.5 | | +1.0 | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |

# CAYAF

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 82 | 3.55×5.7 | 300 | 0.12 | 100 | 450 | CAYAF826M0JO035057 |
| 6.3(7.2) | 100 | 4×5.7 | 300 | 0.12 | 100 | 650 | CAYAF107M0JO040057 |
| 6.3(7.2) | 120 | 3.55×7 | 300 | 0.12 | 100 | 650 | CAYAF127M0JO035070 |
| 6.3(7.2) | 150 | 4×7 | 300 | 0.12 | 100 | 850 | CAYAF157M0JO040070 |
| 6.3(7.2) | 220 | 3.55×11 | 300 | 0.12 | 60 | 950 | CAYAF227M0JO035110 |
| 6.3(7.2) | 270 | 4×11 | 415 | 0.12 | 60 | 1250 | CAYAF227M0JO040110 |
| 10(11.5) | 47 | 3.55×5.7 | 300 | 0.12 | 100 | 450 | CAYAF476M1AO035057 |
| 10(11.5) | 68 | 3.55×7 | 300 | 0.12 | 100 | 650 | CAYAF686M1AO035057 |
| 10(11.5) | 68 | 4×5.7 | 300 | 0.12 | 100 | 650 | CAYAF686M1AO040057 |
| 10(11.5) | 100 | 4×7 | 300 | 0.12 | 100 | 850 | CAYAF107M1AO040070 |
| 10(11.5) | 120 | 3.55×11 | 300 | 0.12 | 60 | 950 | CAYAF127M1AO035110 |
| 10(11.5) | 180 | 4×11 | 440 | 0.12 | 60 | 1250 | CAYAF187M1AO040110 |
| 16(18.4) | 27 | 3.55×5.7 | 300 | 0.12 | 100 | 450 | CAYAF276M1CO035057 |
| 16(18.4) | 39 | 3.55×7 | 300 | 0.12 | 100 | 650 | CAYAF396M1CO035070 |
| 16(18.4) | 39 | 4×5.7 | 300 | 0.12 | 100 | 650 | CAYAF396M1CO040057 |
| 16(18.4) | 56 | 4×7 | 300 | 0.12 | 100 | 850 | CAYAF566M1CO040070 |
| 16(18.4) | 68 | 3.55×11 | 300 | 0.12 | 60 | 950 | CAYAF686M1CO035110 |
| 16(18.4) | 100 | 4×11 | 384 | 0.12 | 60 | 1250 | CAYAF107M1CO040110 |
| 25(28.8) | 15 | 3.55×5.7 | 300 | 0.12 | 100 | 350 | CAYAF156M1EO035057 |
| 25(28.8) | 22 | 3.55×7 | 300 | 0.12 | 100 | 500 | CAYAF226M1EO035070 |
| 25(28.8) | 22 | 4×5.7 | 300 | 0.12 | 100 | 500 | CAYAF226M1EO040057 |
| 25(28.8) | 33 | 4×7 | 300 | 0.12 | 100 | 650 | CAYAF336M1EO040070 |
| 25(28.8) | 47 | 3.55×11 | 300 | 0.12 | 100 | 750 | CAYAF476M1EO035110 |
| 25(28.8) | 68 | 4×11 | 340 | 0.12 | 100 | 950 | CAYAF686M1EO040110 |
| 35(41) | 12 | 3.55×5.7 | 300 | 0.12 | 100 | 350 | CAYAF126M1VO035057 |
| 35(41) | 18 | 3.55×7 | 300 | 0.12 | 100 | 500 | CAYAF186M1VO035070 |
| 35(41) | 18 | 4×5.7 | 300 | 0.12 | 100 | 500 | CAYAF186M1VO040057 |
| 35(41) | 22 | 4×7 | 300 | 0.12 | 100 | 650 | CAYAF226M1VO040070 |
| 35(41) | 33 | 3.55×11 | 300 | 0.12 | 100 | 750 | CAYAF336M1VO035110 |
| 35(41) | 56 | 4×11 | 329 | 0.12 | 100 | 950 | CAYAF566M1VO040110 |
| 50(58) | 4.7 | 3.55×5.7 | 300 | 0.12 | 100 | 350 | CAYAF475M1HO035057 |
| 50(58) | 6.8 | 3.55×7 | 300 | 0.12 | 100 | 500 | CAYAF685M1HO035070 |
| 50(58) | 6.8 | 4×5.7 | 300 | 0.12 | 100 | 500 | CAYAF685M1HO040057 |
| 50(58) | 12 | 3.55×11 | 300 | 0.12 | 100 | 750 | CAYAF126M1HO035110 |
| 50(58) | 10 | 4×7 | 300 | 0.12 | 100 | 650 | CAYAF106M1HO040070 |
| 50(58) | 22 | 4×11 | 300 | 0.12 | 100 | 950 | CAYAF426M1HO040110 |
| 63(73) | 3.9 | 3.55×5.7 | 300 | 0.12 | 100 | 350 | CAYAF395M1JO035057 |
| 63(73) | 5.6 | 3.55×7 | 300 | 0.12 | 100 | 500 | CAYAF565M1JO035070 |
| 63(73) | 5.6 | 4×5.7 | 300 | 0.12 | 100 | 500 | CAYAF565M1JO040057 |
| 63(73) | 8.2 | 4×7 | 300 | 0.12 | 100 | 650 | CAYAF825M1JO040070 |
| 63(73) | 10 | 3.55×11 | 300 | 0.12 | 100 | 750 | CAYAF106M1JO035110 |
| 63(73) | 15 | 4×11 | 300 | 0.12 | 100 | 950 | CAYAF156M1JO040110 |
| 80(92) | 2.2 | 3.55×5.7 | 300 | 0.12 | 100 | 350 | CAYAF225M1KO035057 |

# CAYAF

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 80(92) | 3.3 | 3.55×7 | 300 | 0.12 | 100 | 500 | CAYAF335M1KO035070 |
| 80(92) | 2.7 | 4×5.7 | 300 | 0.12 | 100 | 500 | CAYAF275M1KO040057 |
| 80(92) | 4.7 | 4×7 | 300 | 0.12 | 100 | 650 | CAYAF475M1KO040070 |
| 80(92) | 5.6 | 3.55×11 | 300 | 0.12 | 100 | 750 | CAYAF565M1KO035110 |
| 80(92) | 8.2 | 4×11 | 300 | 0.12 | 100 | 950 | CAYAF825M1KO040110 |
| 100(115) | 1.2 | 3.55×5.7 | 300 | 0.12 | 100 | 350 | CAYAF125M2AO035057 |
| 100(115) | 1.8 | 3.55×7 | 300 | 0.12 | 100 | 500 | CAYAF185M2AO035070 |
| 100(115) | 1.8 | 4×5.7 | 300 | 0.12 | 100 | 500 | CAYAF185M2AO040057 |
| 100(115) | 2.2 | 4×7 | 300 | 0.12 | 100 | 650 | CAYAF225M2AO040070 |
| 100(115) | 3.3 | 3.55×11 | 300 | 0.12 | 100 | 750 | CAYAF335M2AO035110 |
| 100(115) | 4.7 | 4×11 | 300 | 0.12 | 100 | 950 | CAYAF475M2AO040110 |

# CAYAG




- ◆ 125°C 5000 Hours
- ◆ High Temperature, Thin Size
- ◆ High Stability, Low ESR, High Frequency
- ◆ RoHS Compliant (2011/65/EU)

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+105°C |
| **Rated Voltage** | 6.3~100V |
| **Capacitance Range** | 8.2~10000μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Endurance** | After load rated voltage for 2000hours at125°C,the following specification shall be satisfied after placing capacitor for 16 hours at 20°C |
| **Humidity** | Store the capacitor at 60 °C under the condition of 90%~95%R.H with no load for l000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C. |

Endurance:

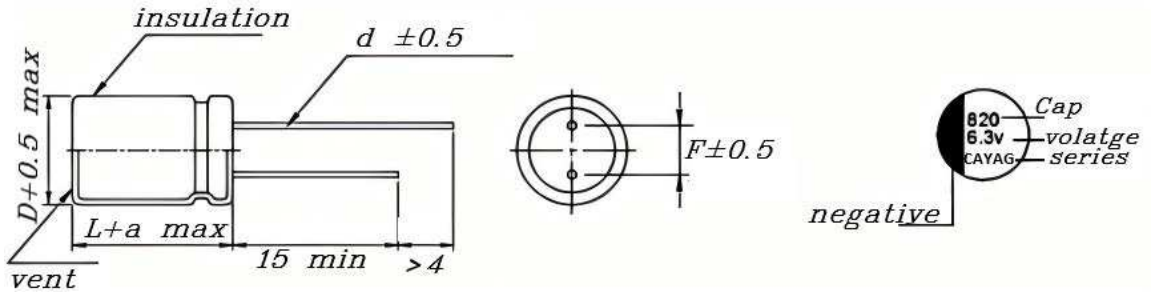
| | |
|---|---|
| Capacitance change | Within±20% of the initial value |
| ESR | Not more than 150% of the specified value |
| Dissipation Factor | Not more than 150% of the specified value |
| Leakage current | Not more than the specified value |

Humidity:

| | |
|---|---|
| Capacitance change | Within±20% of the initial value |
| ESR | Not more than 150% of the specified value |
| Dissipation Factor | Not more than 150% of the specified value |
| Leakage current | Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| D(±0.5) | 8 | 10 | 12.5 | 16 | 18 | 22 | 25 |
|---|---|---|---|---|---|---|---|
| d(±0.05) | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 |
| F(±0.5) | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 | 12.5 |
| α | +0.5 | | +1.0 | | | | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |

# CAYAG

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 6.3(7.2) | 560 | 8×6.2 | 705.6 | 0.08 | 20 | 1350 | CAYAG567M0JO080062 |
| 6.3(7.2) | 1000 | 10×6.5 | 1260 | 0.08 | 20 | 1500 | CAYAG108M0JO100065 |
| 6.3(7.2) | 3300 | 12.5×10.5 | 4158 | 0.12 | 20 | 1950 | CAYAG338M0JO120105 |
| 6.3(7.2) | 4700 | 16×11.5 | 5922 | 0.15 | 20 | 2050 | CAYAG478M0JO160115 |
| 6.3(7.2) | 6800 | 18×11.5 | 7500 | 0.19 | 20 | 2150 | CAYAG688M0JO180115 |
| 6.3(7.2) | 8200 | 22×12.5 | 7500 | 0.22 | 20 | 2500 | CAYAG828M0JO220125 |
| 6.3(7.2) | 10000 | 25×12.5 | 7500 | 0.26 | 20 | 2650 | CAYAG109M0JO250125 |
| 10(11.5) | 330 | 8×6.2 | 660 | 0.13 | 25 | 1250 | CAYAG337M1AO080062 |
| 10(11.5) | 560 | 10×6.5 | 1120 | 0.15 | 25 | 1350 | CAYAG567M1AO100065 |
| 10(11.5) | 2200 | 12.5×10.5 | 4400 | 0.19 | 25 | 1750 | CAYAG228M1AO125105 |
| 10(11.5) | 3900 | 16×11.5 | 7500 | 0.22 | 25 | 1800 | CAYAG398M1AO160115 |
| 10(11.5) | 4700 | 18×11.5 | 7500 | 0.08 | 25 | 1900 | CAYAG478M1AO180115 |
| 10(11.5) | 6800 | 22×12.5 | 7500 | 0.08 | 25 | 2250 | CAYAG688M1AO220125 |
| 10(11.5) | 8200 | 25×12.5 | 7500 | 0.08 | 25 | 2350 | CAYAG828M1AO250125 |
| 16(18.4) | 180 | 8×6.2 | 576 | 0.15 | 25 | 1250 | CAYAG187M1CO080062 |
| 16(18.4) | 330 | 10×6.5 | 1056 | 0.08 | 40 | 1350 | CAYAG337M1CO080065 |
| 16(18.4) | 1200 | 12.5×10.5 | 3840 | 0.08 | 40 | 1750 | CAYAG128M1CO125105 |
| 16(18.4) | 2200 | 16×11.5 | 7040 | 0.08 | 40 | 1800 | CAYAG228M1CO160115 |
| 16(18.4) | 2700 | 18×11.5 | 7500 | 0.08 | 40 | 1900 | CAYAG278M1CO180115 |
| 16(18.4) | 3300 | 22×12.5 | 7500 | 0.09 | 40 | 2250 | CAYAG338M1CO220125 |
| 16(18.4) | 4700 | 25×12.5 | 7500 | 0.10 | 40 | 2350 | CAYAG478M1CO250125 |
| 25(28.8) | 120 | 8×6.2 | 600 | 0.08 | 40 | 1000 | CAYAG127M1EO080062 |
| 25(28.8) | 220 | 10×6.5 | 1100 | 0.08 | 40 | 1100 | CAYAG227M1EO100065 |
| 25(28.8) | 680 | 12.5×10.5 | 3400 | 0.08 | 40 | 1400 | CAYAG687M1EO125105 |
| 25(28.8) | 1200 | 16×11.5 | 6000 | 0.09 | 40 | 1450 | CAYAG128M1EO160115 |
| 25(28.8) | 1500 | 18×11.5 | 7500 | 0.10 | 40 | 1500 | CAYAG158M1EO180115 |
| 25(28.8) | 2200 | 22×12.5 | 7500 | 0.08 | 40 | 1800 | CAYAG228M1EO220125 |
| 25(28.8) | 2700 | 25×12.5 | 7500 | 0.08 | 50 | 1850 | CAYAG278M1EO250125 |
| 35(41) | 82 | 8×6.2 | 574 | 0.08 | 50 | 1000 | CAYAG826M1VO080062 |
| 35(41) | 150 | 10×6.5 | 1050 | 0.08 | 50 | 1100 | CAYAG157M1VO100065 |
| 35(41) | 470 | 12.5×10.5 | 3290 | 0.08 | 50 | 1400 | CAYAG477M1VO125105 |
| 35(41) | 820 | 16×11.5 | 5740 | 0.08 | 50 | 1450 | CAYAG827M1VO160115 |
| 35(41) | 1200 | 18×11.5 | 7500 | 0.08 | 50 | 1500 | CAYAG128M1VO180115 |
| 35(41) | 1500 | 22×12.5 | 7500 | 0.08 | 50 | 1750 | CAYAG158M1VO220125 |
| 35(41) | 2200 | 25×12.5 | 7500 | 0.08 | 50 | 1850 | CAYAG228M1VO225125 |
| 50(58) | 27 | 8×6.2 | 270 | 0.08 | 50 | 1000 | CAYAG276M1HO080062 |
| 50(58) | 56 | 10×6.5 | 560 | 0.08 | 50 | 1000 | CAYAG566M1HO100065 |
| 50(58) | 180 | 12.5×10.5 | 1800 | 0.08 | 50 | 1250 | CAYAG187M1HO125105 |
| 50(58) | 330 | 16×11.5 | 3300 | 0.08 | 50 | 1300 | CAYAG337M1HO160115 |
| 50(58) | 390 | 18×11.5 | 3900 | 0.08 | 50 | 1350 | CAYAG397M1HO180115 |
| 50(58) | 560 | 22×12.5 | 5600 | 0.08 | 50 | 1600 | CAYAG567M1HO220125 |
| 50(58) | 820 | 25×12.5 | 7500 | 0.08 | 50 | 1650 | CAYAG827M1HO250125 |
| 63(72) | 22 | 8×6.2 | 277.2 | 0.08 | 50 | 900 | CAYAG226M1JO080062 |

# CAYAG

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | L.C (μA,2 min) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|---|
| 63(72) | 39 | 10×6.5 | 491.4 | 0.08 | 50 | 1000 | CAYAG396M1JO100065 |
| 63(72) | 120 | 12.5×10.5 | 1512 | 0.08 | 50 | 1250 | CAYAG127M1JO125105 |
| 63(72) | 220 | 16×11.5 | 2772 | 0.08 | 20 | 1300 | CAYAG227M1JO160115 |
| 63(72) | 270 | 18×11.5 | 3402 | 0.08 | 20 | 1350 | CAYAG277M1JO180115 |
| 63(72) | 390 | 22×12.5 | 4914 | 0.12 | 20 | 1600 | CAYAG397M1JO220125 |
| 63(72) | 560 | 25×12.5 | 7056 | 0.15 | 20 | 1650 | CAYAG567M1JO250125 |
| 80(92) | 15 | 8×6.2 | 240 | 0.08 | 25 | 900 | CAYAG156M1KO080062 |
| 80(92) | 27 | 10×6.5 | 432 | 0.08 | 25 | 1000 | CAYAG276M1KO100065 |
| 80(92) | 100 | 12.5×10.5 | 1600 | 0.10 | 25 | 1250 | CAYAG107M1KO125105 |
| 80(92) | 180 | 16×11.5 | 2880 | 0.13 | 25 | 1300 | CAYAG187M1KO160115 |
| 80(92) | 220 | 18×11.5 | 3520 | 0.15 | 25 | 1350 | CAYAG227M1KO180115 |
| 80(92) | 270 | 22×12.5 | 4320 | 0.19 | 25 | 1600 | CAYAG277M1KO220125 |
| 80(92) | 390 | 25×12.5 | 6240 | 0.22 | 25 | 1650 | CAYAG397M1KO250125 |
| 100(115) | 8.2 | 8x6.2 | 164 | 0.10 | 25 | 900 | CAYAG825M2AO080062 |
| 100(115) | 15 | 10x6.5 | 300 | 0.11 | 25 | 1000 | CAYAG156M2AO100065 |
| 100(115) | 56 | 12.5x10.5 | 1120 | 0.12 | 25 | 1250 | CAYAG566M2AO125105 |
| 100(115) | 82 | 16x11.5 | 1640 | 0.15 | 25 | 1300 | CAYAG826M2AO160115 |
| 100(115) | 120 | 18x11.5 | 2400 | 0.08 | 40 | 1350 | CAYAG127M2AO180115 |
| 100(115) | 150 | 22x12.5 | 3000 | 0.08 | 40 | 1600 | CAYAG157M2AO220125 |
| 100(115) | 220 | 25x12.5 | 4400 | 0.08 | 40 | 1650 | CAYAG227M2AO250125 |


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**SMD**

# CAYCA



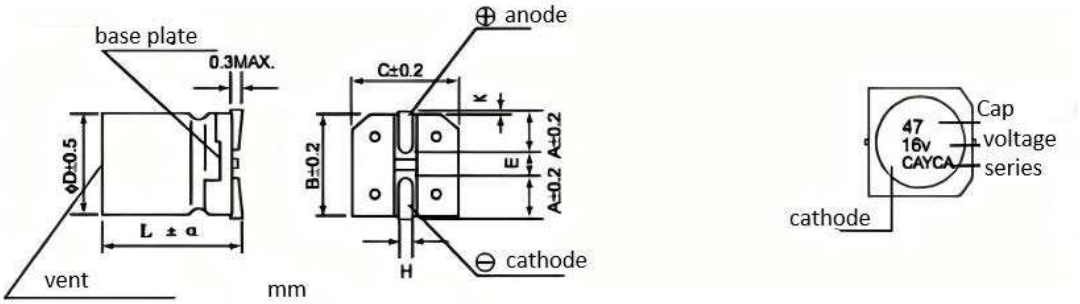
- ◆ Low ESR, High Ripple CurrentHigh Reilability
- ◆ 125°C 4000 Hours
- ◆ SMD Type：High Temperature Reflow-Soldering

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+125°C |
| **Rated Voltage** | 6.3~100V |
| **Capacitance Range** | 8.2~10000μF 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | Less than standard data charging 2mins with rated voltage，20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Temperature Characteristics** | Z (-25°C)/Z (+20°C)2.0；Z (-55°C)/Z (+20°C)2.5 (100KHZ) |
| **Endurance** | After load rated voltage with rated ripple current for 4000hours at 125°C, the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±30% of the initial value<br>ESR: Not more than 200% of the specified value<br>Dissipation Factor: Not more than 200% of the specified value<br>Leakage current: Not more than the specified value |
| **ShelfLife** | After leaving capacitors under no load at 125°C for 1000 hours, then test at 20°C±2°C after 16 hours, the following specification should be met:<br>Capacitance change: Within±30% of the initial value<br>ESR: Not more than 300% of the specified value<br>Dissipation Factor: Not more than 300% of the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 85°C under the condition of 85%R.H with no load for l000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.<br>Capacitance change: Within±30% of the initial value<br>Dissipation Factor: Not more than 200% of the specified value<br>Leakage current: Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| ΦD | B | C | A | H | E | K | α |
|---|---|---|---|---|---|---|---|
| 5 | 5.3 | 5.3 | 2.1 | 0.65±0.10 | 1.3 | 0.5MAX | ±0.3 |
| 6.3 | 6.6 | 6.6 | 2.6 | 0.90±0.20 | 1.8 | 0.5MAX | |
| 8 | 8.3 | 8.3 | 3.4 | 0.90+0.20 | 3.1 | 0.5MAX | ±0.5 |
| 10.55 | 10.3 | 10.3 | 3.5 | 0.90±0.20 | 4.6 | 0.7±0.20 | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.45 | 0.50 | 1.00 | 1.00 |

# CAYCA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|
| 16(18.4) | 47 | 5×5.8 | 0.16 | 80 | 550 | CAYCA476M1CT050058 |
| 16(18.4) | 82 | 6.3×5.8 | 0.16 | 45 | 950 | CAYCA826M1CT063058 |
| 16(18.4) | 150 | 6.3×7.7 | 0.16 | 27 | 1450 | CAYCA157M1CT063077 |
| 16(18.4) | 270 | 8×10.5 | 0.16 | 22 | 1700 | CAYCA277M1CT080105 |
| 16(18.4) | 470 | 10×10.5 | 0.16 | 18 | 2100 | CAYCA477M1CT100105 |
| 25(28.8) | 33 | 5×5.8 | 0.14 | 80 | 550 | CAYCA336M1ET050058 |
| 25(28.8) | 47 | 6.3×5.8 | 0.14 | 50 | 900 | CAYCA476M1ET063058 |
| 25(28.8) | 56 | 6.3×5.8 | 0.14 | 50 | 900 | CAYCA566M1ET063058 |
| 25(28.8) | 68 | 6.3×7.7 | 0.14 | 30 | 1400 | CAYCA686M1ET063077 |
| 25(28.8) | 100 | 6.3×7.7 | 0.14 | 30 | 1400 | CAYCA107M1ET063077 |
| 25(28.8) | 150 | 8×10.5 | 0.14 | 27 | 1600 | CAYCA157M1ET080105 |
| 25(28.8) | 220 | 8×10.5 | 0.14 | 27 | 1800 | CAYCA227M1ET080105 |
| 25(28.8) | 270 | 10×10.5 | 0.14 | 20 | 2000 | CAYCA277M1ET100105 |
| 25(28.8) | 330 | 10×12.5 | 0.14 | 16 | 2300 | CAYCA337M1ET100125 |
| 25(28.8) | 330 | 10×10.5 | 0.14 | 20 | 2000 | CAYCA337M1ET100105 |
| 35(41) | 22 | 5×5.8 | 0.12 | 100 | 550 | CAYCA226M1VT050058 |
| 35(41) | 27 | 6.3×5.8 | 0.12 | 60 | 900 | CAYCA276M1VT063058 |
| 35(41) | 47 | 6.3×5.8 | 0.12 | 60 | 900 | CAYCA476M1VT063058 |
| 35(41) | 47 | 6.3×7.7 | 0.12 | 35 | 1400 | CAYCA476M1VT063077 |
| 35(41) | 68 | 6.3×7.7 | 0.12 | 35 | 1400 | CAYCA686M1VT063077 |
| 35(41) | 100 | 8×10.5 | 0.12 | 27 | 1600 | CAYCA107M1VT080105 |
| 35(41) | 150 | 8×10.5 | 0.12 | 27 | 1600 | CAYCA157M1VT080105 |
| 35(41) | 150 | 10×10.5 | 0.12 | 20 | 2000 | CAYCA157M1VT100105 |
| 35(41) | 270 | 10×12.5 | 0.12 | 17 | 2200 | CAYCA277M1VT100125 |
| 35(41) | 270 | 10×10.5 | 0.12 | 20 | 2000 | CAYCA277M1VT100105 |
| 50(58) | 10 | 5×5.8 | 0.10 | 120 | 550 | CAYCA106M1HT050058 |
| 50(58) | 10 | 6.3×5.8 | 0.10 | 80 | 750 | CAYCA106M1HT063058 |
| 50(58) | 15 | 6.3×7.7 | 0.10 | 40 | 1100 | CAYCA156M1HT063077 |
| 50(58) | 22 | 6.3×5.8 | 0.10 | 80 | 750 | CAYCA226M1HT063058 |
| 50(58) | 33 | 6.3×7.7 | 0.10 | 40 | 1100 | CAYCA336M1HT063077 |
| 50(58) | 33 | 8×10.5 | 0.10 | 30 | 1250 | CAYCA336M1HT080105 |
| 50(58) | 47 | 8×10.5 | 0.10 | 30 | 1250 | CAYCA476M1HT080105 |
| 50(58) | 56 | 10×10.5 | 0.10 | 25 | 1600 | CAYCA566M1HT100105 |
| 50(58) | 68 | 8×10.5 | 0.10 | 30 | 1250 | CAYCA686M1HT080105 |
| 50(58) | 100 | 10×10.5 | 0.10 | 25 | 1600 | CAYCA106M1HT100105 |
| 50(58) | 120 | 10×12.5 | 0.10 | 19 | 2100 | CAYCA126M1HT100125 |
| 50(58) | 120 | 10×10.5 | 0.10 | 25 | 1600 | CAYCA126M1HT100105 |
| 63(73) | 6.8 | 6.3×5.8 | 0.10 | 120 | 700 | CAYCA685M1JT063058 |
| 63(73) | 10 | 6.3×5.8 | 0.10 | 120 | 700 | CAYCA106M1JT063058 |
| 63(73) | 10 | 6.3×7.7 | 0.10 | 80 | 900 | CAYCA106M1JT063077 |
| 63(73) | 22 | 6.3×7.7 | 0.10 | 80 | 900 | CAYCA226M1JT063077 |
| 63(73) | 22 | 8×10.5 | 0.10 | 40 | 1100 | CAYCA226M1JT080105 |
| 63(73) | 33 | 8×10.5 | 0.10 | 40 | 1100 | CAYCA336M1JT080105 |

# CAYCA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|
| 63(73) | 33 | 10×10.5 | 0.10 | 30 | 1400 | CAYCA336M1JT100105 |
| 63(73) | 47 | 8×10.5 | 0.10 | 40 | 1100 | CAYCA476M1JT080105 |
| 63(73) | 56 | 10×10.5 | 0.10 | 30 | 1400 | CAYCA566M1JT100105 |
| 63(73) | 82 | 10×10.5 | 0.10 | 30 | 1400 | CAYCA826M1JT100105 |
| 63(73) | 100 | 10×12.5 | 0.10 | 20 | 2000 | CAYCA107M1JT100125 |
| 80(92) | 22 | 8×10.5 | 0.10 | 45 | 1100 | CAYCA226M1JT080105 |
| 80(92) | 33 | 10×10.5 | 0.10 | 36 | 1200 | CAYCA336M1JT100105 |
| 80(92) | 39 | 10×10.5 | 0.10 | 35 | 1200 | CAYCA396M1JT100105 |

**SMD**

# CAYCAA



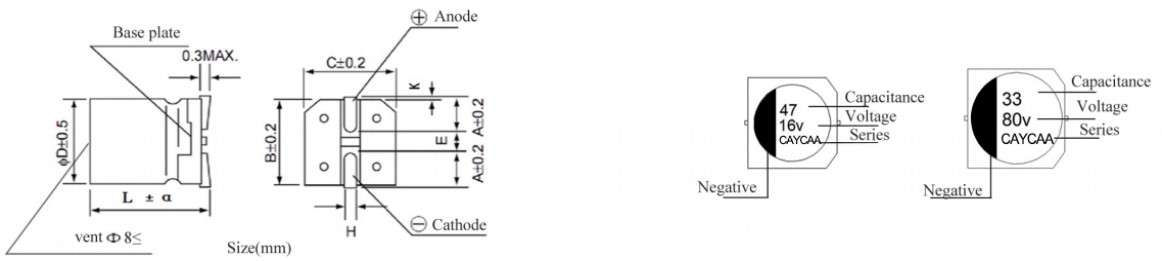

- ◆ Improved From CAYCA Series With Less Size And Higher Capacitance High Reliability
- ◆ 125°C 4000 Hours Low ESR, High Ripple Current
- ◆ SMD Type：High Temperature Reflow-Soldering
- ◆ RoHS Compliant ( 2011/65/EU )

## ■ Specification

| Items | Characteristics |
|---|---|
| **Operation Temperature Range** | -55°C~+125°C |
| **Rated Voltage** | 16-100V |
| **Capacitance Range** | 3.3~1200μ F 120Hz/20°C |
| **Capacitance Tolerance** | ±20%(120Hz/20°C) |
| **Dissipation Factor** | Less than standard data 120Hz/20°C |
| **Leakage Current** | I≤0.01CV, charging 2 mins with rated voltage, 20°C |
| **ESR** | Less than standard data 100KHz/20°C |
| **Temperature Characteristics** | Z (-25°C)/Z (+20°C)≤2.0； Z (-55°C)/Z (+20°C)≤2.5 (100KHZ) |
| **Endurance** | After load rated voltage with rated ripple current for 4000hours at 125°C, the following specification shall be satisfied after placing capacitor for 16 hours at 20°C<br>Capacitance change: Within±30% of the initial value<br>ESR: Not more than 300% of the specified value<br>Dissipation Factor: Not more than 300% of the specified value<br>Leakage current: Not more than the specified value |
| **ShelfLife** | After leaving capacitors under no load at 125°C for 1000 hours, then test at 20°C±2°C after 16 hours the following specification should be met:<br>Capacitance change: Within±30% of the initial value<br>ESR: Not more than 300% of the specified value<br>Dissipation Factor: Not more than 300% of the specified value<br>Leakage current: Not more than the specified value |
| **Humidity** | Store the capacitor at 85°C under the condition of 85%R.H with no load for l000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C.<br>Capacitance change: Within±30% of the initial value<br>ESR: Not more than 200% of the specified value<br>Dissipation Factor: Not more than 200% of the specified value<br>Leakage current: Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| ΦD | B | C | A | H | E | K | α |
|---|---|---|---|---|---|---|---|
| 5 | 5.3 | 5.3 | 2.1 | 0.65±0.10 | 1.3 | 0.5MAX | ±0.3 |
| 6.3 | 6.6 | 6.6 | 2.6 | 0.90±0.20 | 1.8 | 0.5MAX | |
| 8 | 8.3 | 8.3 | 3.4 | 0.90±0.20 | 3.1 | 0.5MAX | ±0.5 |
| 10 | 10.3 | 10.3 | 3.5 | 0.90±0.20 | 4.6 | 0.7±0.20 | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| **Correction factor** | 0.12 | 0.35 | 0.80 | 1.00 | 1.00 |

# CAYCAA

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|
| 16(18.4) | 82 | 5×5.8 | 0.12 | 80 | 850 | CAYCAA826M1CT050058 |
| 16(18.4) | 150 | 6.3×5.8 | 0.12 | 45 | 1400 | CAYCAA157M1CT063058 |
| 16(18.4) | 220 | 6.3×7.7 | 0.12 | 27 | 2000 | CAYCAA227M1CT063077 |
| 16(18.4) | 560 | 8×10.5 | 0.12 | 22 | 2200 | CAYCAA567M1CT080105 |
| 16(18.4) | 1000 | 10×10.5 | 0.12 | 18 | 2800 | CAYCAA108M1CT100105 |
| 16(18.4) | 1200 | 10×12.5 | 0.12 | 18 | 3100 | CAYCAA128M1CT100125 |
| 16(18.4) | 56 | 5×5.8 | 0.12 | 80 | 850 | CAYCAA566M1ET050058 |
| 16(18.4) | 100 | 6.3×5.8 | 0.12 | 50 | 1300 | CAYCAA107M1ET063058 |
| 16(18.4) | 180 | 6.3×7.7 | 0.12 | 30 | 1800 | CAYCAA187M1ET063077 |
| 16(18.4) | 330 | 8×10.5 | 0.12 | 27 | 2000 | CAYCAA337M1ET080105 |
| 16(18.4) | 560 | 10×10.5 | 0.12 | 20 | 2800 | CAYCAA567M1ET100105 |
| 16(18.4) | 820 | 10×12.5 | 0.12 | 16 | 3100 | CAYCAA827M1ET100125 |
| 35(41) | 39 | 5×5.8 | 0.12 | 100 | 750 | CAYCAA396M1VT050058 |
| 35(41) | 68 | 6.3×5.8 | 0.12 | 60 | 1200 | CAYCAA686M1VT063058 |
| 35(41) | 120 | 6.3×7.7 | 0.12 | 35 | 1800 | CAYCAA127M1VT063077 |
| 35(41) | 220 | 8×10.5 | 0.12 | 27 | 2000 | CAYCAA227M1VT080105 |
| 35(41) | 390 | 10×10.5 | 0.12 | 20 | 2800 | CAYCAA397M1VT100105 |
| 35(41) | 560 | 10×12.5 | 0.12 | 17 | 3000 | CAYCAA567M1VT100125 |
| 50(58) | 12 | 5×5.8 | 0.10 | 120 | 650 | CAYCAA126M1HT050058 |
| 50(58) | 22 | 6.3×5.8 | 0.10 | 80 | 1000 | CAYCAA226M1HT063058 |
| 50(58) | 33 | 6.3×7.7 | 0.10 | 40 | 1600 | CAYCAA336M1HT063077 |
| 50(58) | 82 | 8×10.5 | 0.10 | 30 | 1600 | CAYCAA826M1HT080105 |
| 50(58) | 150 | 10×10.5 | 0.10 | 25 | 1800 | CAYCAA157M1HT100105 |
| 50(58) | 220 | 10×12.5 | 0.10 | 19 | 2400 | CAYCAA227M1HT100125 |
| 63(58) | 8.2 | 5×5.8 | 0.10 | 120 | 650 | CAYCAA825M1JT050058 |
| 63(73) | 15 | 6.3×5.8 | 0.10 | 80 | 1000 | CAYCAA156M1JT063058 |
| 63(73) | 22 | 6.3×7.7 | 0.10 | 50 | 1500 | CAYCAA226M1JT063077 |
| 63(73) | 56 | 8×10.5 | 0.10 | 40 | 1400 | CAYCAA566M1JT080105 |
| 63(73) | 100 | 10×10.5 | 0.10 | 30 | 1500 | CAYCAA107M1JT100105 |
| 63(73) | 150 | 10×12.5 | 0.10 | 20 | 2200 | CAYCAA157M1JT100125 |
| 80(92) | 5.6 | 5×5.8 | 0.10 | 120 | 650 | CAYCAA565M1KT050058 |
| 80(92) | 10 | 6.3×5.8 | 0.10 | 80 | 1000 | CAYCAA106M1KT063058 |
| 80(92) | 15 | 6.3×7.7 | 0.10 | 50 | 1500 | CAYCAA156M1KT063077 |
| 80(92) | 39 | 8×10.5 | 0.10 | 40 | 1400 | CAYCAA396M1KT080105 |
| 80(92) | 68 | 10×10.5 | 0.10 | 30 | 1500 | CAYCAA686M1KT100105 |
| 80(92) | 82 | 10×12.5 | 0.10 | 20 | 2200 | CAYCAA826M1KT100125 |
| 100(115) | 3.3 | 5×5.8 | 0.10 | 120 | 650 | CAYCAA335M2AT050058 |
| 100(115) | 5.6 | 6.3×5.8 | 0.10 | 80 | 1000 | CAYCAA565M2AT063058 |
| 100(115) | 10 | 6.3×7.7 | 0.10 | 50 | 1500 | CAYCAA106M2AT063077 |
| 100(115) | 22 | 8×10.5 | 0.10 | 40 | 1400 | CAYCAA226M2AT080105 |
| 100(115) | 39 | 10×10.5 | 0.10 | 30 | 1500 | CAYCAA396M2AT100105 |
| 100(115) | 56 | 10×12.5 | 0.10 | 20 | 2200 | CAYCAA566M2AT100125 |

## SMD

# CAYCB



- ◆ 150°C Ultra High Temperature 2000 Hours
- ◆ Low ESR, High Ripple Current, High Reliability
- ◆ SMD Type：High Temperature Reflow-Soldering
- ◆ RoHS Compliant ( 2011/65/EU )

### ■ Specification

| Items | Characteristics |
|---|---|
| Operation Temperature Range | -55°C~+150°C |
| Rated Voltage | 25-80V |
| Capacitance Range | 33~1800μF 120Hz/20°C |
| Capacitance Tolerance | ±20%(120Hz/20°C) |
| Dissipation Factor | Less than standard data 120Hz/20°C |
| Leakage Current | I≤0.01CV, charging 2 mins with rated voltage, 20°C |
| ESR | Less than standard data 100KHz/20°C |
| Temperature Characteristics | Z (-25°C)/Z (+20°C)≤2.0； Z (-55°C)/Z (+20°C)≤2.5 (100KHZ) |
| Endurance | After applying the rated voltage with rated ripple current at 150°C for 2000 hours, the following specifications shall be satisfied after 16 hours at 20°C: |
| ShelfLife | After leaving capacitor under no load at 105C for 1000 hours, and place it in normal temperature 16 hours with test temperature at 20°C±2°C, the following specifications shall be satisfied |
| Humidity | Store the capacitor at 85°C under the condition of 85%R.H with no load for l000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C. |

Endurance

| | |
|---|---|
| Capacitance change | Within±30% of the initial value |
| ESR | Not more than 200% of the specified value |
| Dissipation Factor | Not more than 200% of the specified value |
| Leakage current | Not more than the specified value |

ShelfLife

| | |
|---|---|
| Capacitance change | Within±30% of the initial value |
| ESR | Not more than 200% of the specified value |
| Dissipation Factor | Not more than 200% of the specified value |
| Leakage current | Not more than the specified value |

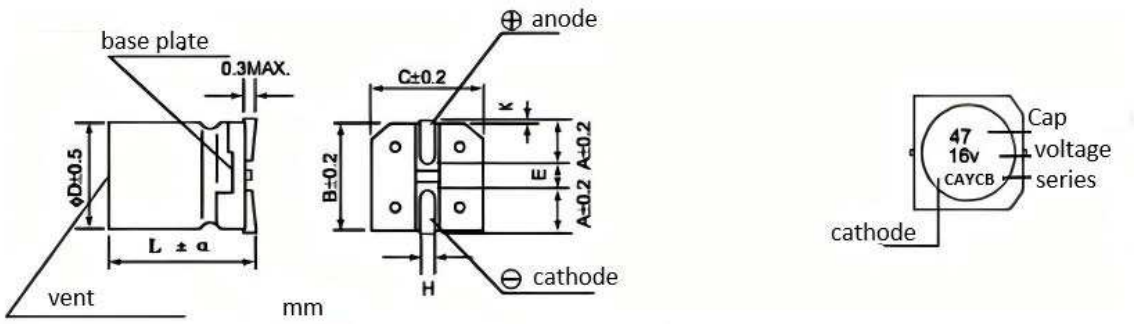
Note: Over voltage test has to be done before LC test

Humidity

| | |
|---|---|
| Capacitance change | Within±30% of the initial value |
| ESR | Not more than 200% of the specified value |
| Dissipation Factor | Not more than 200% of the specified value |
| Leakage current | Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

### ■ Standard Size




| ΦD | B | C | A | H | E | K | α |
|---|---|---|---|---|---|---|---|
| 8 | 8.3 | 8.3 | 3.4 | 0.90±0.20 | 3.1 | 0.5MAX | ±0.5 |
| 10 | 10.3 | 10.3 | 3.5 | 0.90±0.20 | 4.6 | 0.7±0.20 | |
| 12.5 | 13.5 | 13.5 | 4.7 | 0.90±0.20 | 4.6 | 0.7±0.30 | |
| 16 | 17.0 | 17.0 | 5.5 | 1.20±0.30 | 6.7 | 0.7±0.30 | ±1.0 |
| 18 | 19.0 | 19.0 | 6.7 | 1.20±0.30 | 6.7 | 0.7±0.30 | |

### ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.12 | 0.35 | 0.80 | 1.00 | 1.00 |

**SMD**

# CAYCB

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|
| 25(28.8) | 220 | 8×10.5 | 0.14 | 27 | 700 | CAYCB227M1ET080105 |
| 25(28.8) | 470 | 10×10.5 | 0.14 | 25 | 900 | CAYCB477M1ET100105 |
| 25(28.8) | 560 | 10×12.5 | 0.14 | 20 | 1050 | CAYCB567M1ET100125 |
| 25(28.8) | 1500 | 12.5×21.5 | 0.14 | 15 | 2500 | CAYCB158M1ET125215 |
| 35(41) | 120 | 8×10.5 | 0.12 | 27 | 700 | CAYCB127M1VT080105 |
| 35(41) | 220 | 10×10.5 | 0.12 | 25 | 900 | CAYCB227M1VT100105 |
| 35(41) | 330 | 10×12.5 | 0.12 | 20 | 1050 | CAYCB337M1VT100125 |
| 35(41) | 1800 | 18×26.5 | 0.12 | 15 | 4000 | CAYCB188M1VT180265 |
| 50(58) | 82 | 8×10.5 | 0.10 | 30 | 600 | CAYCB826M1HT080105 |
| 50(58) | 120 | 10×10.5 | 0.10 | 28 | 800 | CAYCB127M1HT100105 |
| 50(58) | 180 | 10×12.5 | 0.10 | 25 | 1000 | CAYCB187M1HT100125 |
| 50(58) | 1800 | 18×31.5 | 0.10 | 18 | 5300 | CAYCB188M1HT180315 |
| 63(73) | 47 | 8×10.5 | 0.08 | 40 | 600 | CAYCB476M1JT080105 |
| 63(73) | 82 | 10×10.5 | 0.08 | 30 | 800 | CAYCB826M1JT100105 |
| 63(73) | 120 | 10×12.5 | 0.08 | 25 | 1000 | CAYCB127M1JT100125 |
| 63(73) | 1200 | 18×31.5 | 0.08 | 20 | 5000 | CAYCB128M1JT180315 |
| 80(92) | 33 | 8×10.5 | 0.08 | 40 | 600 | CAYCB336M1KT080105 |
| 80(92) | 47 | 10×10.5 | 0.08 | 30 | 800 | CAYCB476M1KT100105 |
| 80(92) | 68 | 10×12.5 | 0.08 | 25 | 1000 | CAYCB686M1KT100125 |
| 80(92) | 680 | 18×31.5 | 0.08 | 20 | 4700 | CAYCB337M1KT180315 |

## SMD

# CAYCD




- ◆ 105°C 10000 Hours
- ◆ Low ESR, High Ripple Current, High Reilability
- ◆ SMD Type：High Temperature Reflow-Soldering
- ◆ AEC-Q200, RoHS Compliant ( 2011/65/EU )

## ■ Specification

| Items | Characteristics |
|---|---|
| Operation Temperature Range | -55°C~+105°C |
| Rated Voltage | 16~80V |
| Capacitance Range | 6.8~470μF 120Hz/20°C |
| Capacitance Tolerance | ±20%(120Hz/20°C) |
| Dissipation Factor | Less than standard data 120Hz/20°C |
| Leakage Current | I≤0.01CV, charging 2 mins with rated voltage, 20°C |
| ESR | Less than standard data 100KHz/20°C |
| Temperature Characteristics | Z (-25°C)/Z (+20°C)2.0； Z (-55°C)/Z (+20°C)2.5 (100KHZ) |
| Endurance | After applying the rated voltage with rated ripple current at 105°C for 10000 hours, the following specifications shall be satisfied after 16 hours at 20°C： |

| | |
|---|---|
| Capacitance change | Within±30% of the initial value |
| ESR | Not more than 200% of the specified value |
| Dissipation Factor | Not more than 200% of the specified value |
| Leakage current | Not more than the specified value |

| | |
|---|---|
| ShelfLife | Store the capacitor at 60°C under the condition of 90%~95%R.H with no load for 1000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C. |

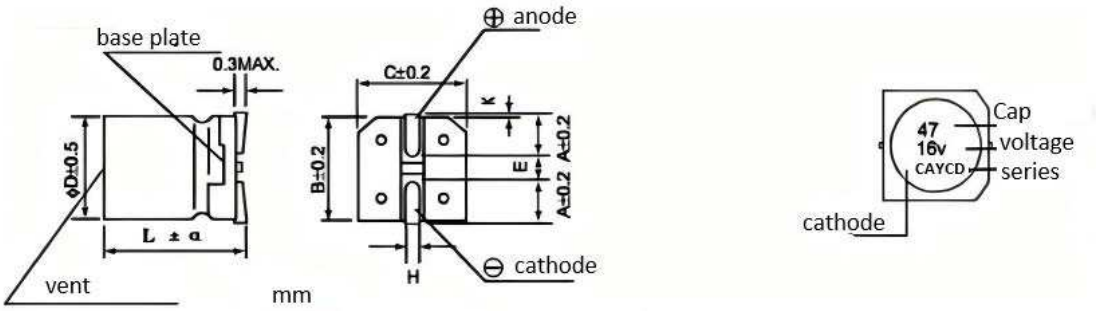
| | |
|---|---|
| Capacitance change | Within±30% of the initial value |
| ESR | Not more than 200% of the specified value |
| Dissipation Factor | Not more than 200% of the specified value |
| Leakage current | Not more than the specified value |

| | |
|---|---|
| Humidity | Store the capacitor at 60°C under the condition of 90%~95%R.H with no load for 1000hrs, the following specifications shall be satisfied after placing capacitor for 16 hours at 20°C. |

| | |
|---|---|
| Capacitance change | Within±30% of the initial value |
| Dissipation Factor | Not more than 200% of the specified value |
| Leakage current | Not more than the specified value |

If you have question for leakage current, please apply rated voltage on capacitors at 105°C for 2hours, then test the leakage current again at 20°C.

## ■ Standard Size




| ΦD | B | C | A | H | E | K | α |
|---|---|---|---|---|---|---|---|
| 5 | 5.3 | 5.3 | 2.1 | 0.65±0.10 | 1.3 | 0.5MAX | ±0.3 |
| 6.3 | 6.6 | 6.6 | 2.6 | 0.90±0.20 | 1.8 | 0.5MAX | |
| 8 | 8.3 | 8.3 | 3.4 | 0.90+0.20 | 3.1 | 0.5MAX | ±0.5 |
| 10 | 10.3 | 10.3 | 3.5 | 0.90±0.20 | 4.6 | 0.7±0.20 | |

## ■ Rated Ripple Current Frequency Correction Factor

| Frequency（Hz） | 120Hz | 1KHz | 10KHz | 100KHz | 300KHz |
|---|---|---|---|---|---|
| Correction factor | 0.10 | 0.35 | 0.80 | 1.00 | 1.00 |

**SMD**

# CAYCD

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|
| 16(18.4) | 47 | 5×5.8 | 0.16 | 80 | 900 | CAYCD476M1CT050058 |
| 16(18.4) | 82 | 6.3×5.8 | 0.16 | 45 | 1600 | CAYCD826M1CT063058 |
| 16(18.4) | 150 | 6.3×7.7 | 0.16 | 27 | 2200 | CAYCD157M1CT063077 |
| 16(18.4) | 270 | 8×10.5 | 0.16 | 22 | 2500 | CAYCD277M1CT080105 |
| 16(18.4) | 470 | 10×10.5 | 0.16 | 18 | 2600 | CAYCD477M1CT100105 |
| 25(28.8) | 33 | 5×5.8 | 0.14 | 80 | 900 | CAYCD336M1ET050058 |
| 25(28.8) | 47 | 6.3×5.8 | 0.14 | 50 | 1300 | CAYCD476M1ET063058 |
| 25(28.8) | 56 | 6.3×5.8 | 0.14 | 50 | 1300 | CAYCD566M1ET063058 |
| 25(28.8) | 68 | 6.3×7.7 | 0.14 | 30 | 2000 | CAYCD686M1ET063077 |
| 25(28.8) | 100 | 6.3×7.7 | 0.14 | 30 | 2000 | CAYCD107M1ET063077 |
| 25(28.8) | 150 | 8×10.5 | 0.14 | 27 | 2300 | CAYCD157M1ET080105 |
| 25(28.8) | 220 | 8×10.5 | 0.14 | 27 | 2300 | CAYCD227M1ET080105 |
| 25(28.8) | 270 | 10×10.5 | 0.14 | 20 | 2500 | CAYCD277M1ET100105 |
| 25(28.8) | 330 | 10×12.5 | 0.14 | 20 | 2500 | CAYCD337M1ET100105 |
| 25(28.8) | 330 | 10×10.5 | 0.14 | 16 | 3100 | CAYCD337M1ET100125 |
| 35(41) | 22 | 5×5.8 | 0.12 | 100 | 900 | CAYCD226M1VT050058 |
| 35(41) | 27 | 6.3×5.8 | 0.12 | 60 | 1300 | CAYCD276M1VT063058 |
| 35(41) | 47 | 6.3×5.8 | 0.12 | 60 | 1300 | CAYCD476M1VT063058 |
| 35(41) | 47 | 6.3×7.7 | 0.12 | 35 | 2000 | CAYCD476M1VT063077 |
| 35(41) | 68 | 6.3×7.7 | 0.12 | 35 | 2000 | CAYCD686M1VT063077 |
| 35(41) | 100 | 8×10.5 | 0.12 | 27 | 2300 | CAYCD107M1VT080105 |
| 35(41) | 150 | 8×10.5 | 0.12 | 27 | 2300 | CAYCD157M1VT080105 |
| 35(41) | 150 | 10×10.5 | 0.12 | 20 | 2500 | CAYCD157M1VT100105 |
| 35(41) | 270 | 10×10.5 | 0.12 | 20 | 2500 | CAYCD277M1VT100105 |
| 35(41) | 270 | 10×12.5 | 0.12 | 17 | 3000 | CAYCD227M1VT100125 |
| 50(58) | 10 | 5×5.8 | 0.10 | 120 | 750 | CAYCD106M1HT050058 |
| 50(58) | 10 | 6.3×5.8 | 0.10 | 80 | 1100 | CAYCD106M1HT063058 |
| 50(58) | 15 | 6.3×5.8 | 0.10 | 80 | 1100 | CAYCD156M1HT063058 |
| 50(58) | 22 | 6.3×5.8 | 0.10 | 80 | 1100 | CAYCD226M1HT063058 |
| 50(58) | 33 | 6.3×7.7 | 0.10 | 40 | 1400 | CAYCD336M1HT063077 |
| 50(58) | 33 | 8×10.5 | 0.10 | 30 | 1800 | CAYCD336M1HT080105 |
| 50(58) | 47 | 8×10.5 | 0.10 | 30 | 1800 | CAYCD476M1HT080105 |
| 50(58) | 56 | 8×10.5 | 0.10 | 30 | 1800 | CAYCD566M1HT080105 |
| 50(58) | 68 | 8×10.5 | 0.10 | 30 | 1800 | CAYCD686M1HT080105 |
| 50(58) | 100 | 10×10.5 | 0.10 | 28 | 2000 | CAYCD107M1HT100105 |
| 50(58) | 120 | 10×10.5 | 0.10 | 25 | 2000 | CAYCD127M1HT100105 |
| 50(58) | 120 | 10×12.5 | 0.10 | 19 | 2800 | CAYCD127M1HT100125 |
| 63(73) | 6.8 | 6.3×5.8 | 0.08 | 120 | 1000 | CAYCD685M1JT063058 |
| 63(73) | 10 | 6.3×5.8 | 0.08 | 120 | 1000 | CAYCD106M1JT063058 |
| 63(73) | 10 | 6.3×7.7 | 0.08 | 80 | 1500 | CAYCD106M1JT063077 |
| 63(73) | 15 | 6.3×7.7 | 0.08 | 80 | 1500 | CAYCD156M1JT063077 |
| 63(73) | 22 | 6.3×7.7 | 0.08 | 80 | 1500 | CAYCD226M1JT063077 |
| 63(73) | 22 | 8×10.5 | 0.08 | 40 | 1600 | CAYCD226M1JT080105 |

# CAYCD

## ■ Standard Size Ripple current (mA/r.m.s) 125°C100kHz ESR(mΩ100kHz)

| Rated Voltag (Surge Voltage) (V) | Capacitance (μF) | Size ΦD×L(mm) | Tanδ 120Hz | ESR | Ripple current | Part number |
|---|---|---|---|---|---|---|
| 63(73) | 33 | 8×10.5 | 0.08 | 40 | 1700 | CAYCD336M1JT080105 |
| 63(73) | 47 | 8×10.5 | 0.08 | 40 | 1600 | CAYCD476M1JT080105 |
| 63(73) | 56 | 10×10.5 | 0.08 | 30 | 1800 | CAYCD566M1JT100105 |
| 63(73) | 68 | 10×10.5 | 0.08 | 30 | 1800 | CAYCD686M1JT100105 |
| 63(73) | 82 | 10×10.5 | 0.08 | 30 | 1800 | CAYCD826M1JT100105 |
| 63(73) | 100 | 10×12.5 | 0.08 | 20 | 2600 | CAYCD107M1JT100125 |
| 80(92) | 22 | 8×10.5 | 0.08 | 45 | 1500 | CAYCD226M1KT080105 |
| 80(92) | 33 | 10×10.5 | 0.08 | 36 | 1700 | CAYCD336M1KT100105 |
| 80(92) | 39 | 10×10.5 | 0.08 | 35 | 1700 | CAYCD396M1KT100105 |

# CAHZ SERIES: Surface Mount Type, Low Leakage




## FEATURES

- Vertical chip type miniaturized for 5.5mm, high capacitors
- Low leakage current
- RoHS compliant

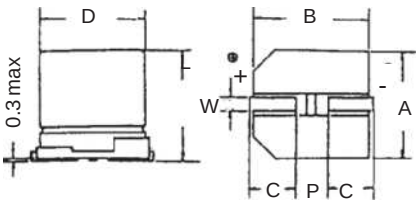
## SPECIFICATIONS

| Item | Performance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temp. Range | -40°C ~ + 85°C | | | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | | |
| Leakage Current (at 20•C) | I=0.002CV or 0.5μA (whichever is greater) after 2 minutes, where C=rated capacitance in μF and V = rated working Voltage | | | | | | | | | | | |
| Dissipation Factor<br>Tanδ at 120 Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | |
| | Tanδ (max) | 0.28 | 0.24 | 0.20 | 0.14 | 0.12 | 0.10 | | | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | | 6.3 | 10 | 16 | 25 | 35 | 50 | | | |
| | Impedance Ratio Maximum | Z(-25°C) /Z(+20°C) | | 3 | 3 | 2 | 2 | 2 | 2 | | | |
| | | Z(-40°C) /Z(+20°C) | | 8 | 5 | 4 | 3 | 3 | 3 | | | |
| Life Test | Test Time | | Load Life | | | | | Shelf Life | | | | |
| | | | 2000 Hrs | | | | | 2000 Hrs | | | | |
| | Capacitance Change | | Within ± 20% of initial value | | | | | Within ± 20% of initial value | | | | |
| | Dissipation Factor | | Less than 200% of specified value | | | | | Less than 200% of specified value | | | | |
| | Leakage Current | | Within specified value | | | | | Within specified value | | | | |
| | Test Conditions | | 20°C (after rated voltage applied for 2000 hours at 85°C | | | | | 20° C (after storage for 2000 hours at 85°C without voltage) | | | | |
| Ripple Current & Frequency Multilpiers | VDC(V) \ Freq. (Hz) | 50 | 120 | 1K | 10K up | | | | | | | |
| | Under 16 | 0.8 | 1.00 | 1.15 | 1.25 | | | | | | | |
| | 25 ~ 35 | 0.8 | 1.00 | 1.25 | 1.40 | | | | | | | |
| | 50 | 0.8 | 1.00 | 1.35 | 1.50 | | | | | | | |
| Standards | JIS C 5101-1,-18 | | | | | | | | | | | |

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φ D x L(mm)
Ripple Current mA/rms at 120 Hz, 85°C

| VDC | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA |
| 0.1 | 0R1 | | | | | | | | | | | 4 x 5.3 | 3 |
| 0.22 | R22 | | | | | | | | | | | 4 x 5.3 | 5 |
| 0.33 | R33 | | | | | | | | | | | 4 x 5.3 | 6 |
| 0.47 | R47 | | | | | | | | | | | 4 x 5.3 | 7 |
| 1 | 010 | | | | | | | | | | | 4 x 5.3 | 10 |
| 2.2 | 2R2 | | | | | | | | | | | 4 x 5.3 | 15 |
| 3.3 | 3R3 | | | | | | | | | | | 4 x 5.3 | 19 |
| 4.7 | 4R7 | | | | | | | 4 x 5.3 | 19 | 4 x 5.3 | 20 | 5 x 5.3 | 26 |
| 10 | 100 | | | 4 x 5.3 | 23 | 4 x 5.3 | 26 | 5 x 5.3 | 32 | 5 x 5.3 | 34 | 6.3 x 7.7 | 44 |
| 22 | 220 | 4 x 5.3 | 31 | 5 x 5.3 | 39 | 5 x 5.3 | 44 | 6.3 x 5.3 | 55 | 6.3 x 5.3 | 59 | | |
| 33 | 330 | 5 x 5.3 | 44 | 5 x 5.3 | 48 | 6.3 x 5.3 | 63 | 6.3 x 5.3 | 67 | | | | |
| 47 | 470 | 5 x 5.3 | 52 | 6.3 x 5.3 | 67 | 6.3 x 5.3 | 75 | | | | | | |
| 100 | 101 | 6.3 x 5.3 | 89 | 6.3 x 5.3 | 98 | | | | | | | | |




## PAD SPACING AND DIAMETER

| ϕD | L | A | B | C | W | P+0.2 |
|---|---|---|---|---|---|---|
| 4 | 5.3±0.2 | 4.3 | 4.3 | 2.0 | 0.5 to 0.8 | 1.0 |
| 5 | 5.3±0.2 | 5.3 | 5.3 | 2.3 | 0.5 to 0.8 | 1.5 |
| 6.3 | 5.3±0.2 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |

## PART NUMBER EXAMPLE

CAHZ 100 M 1V TR 050053

# CAGA SERIES: SMD General Purpose

## FEATURES




- Endurance : 2000 hours at 85°C
- Available: 3Φ~18Φ
- SMD Technology, for high temperature reflow soldering
- RoHS directive compliant

## SPECIFICATIONS

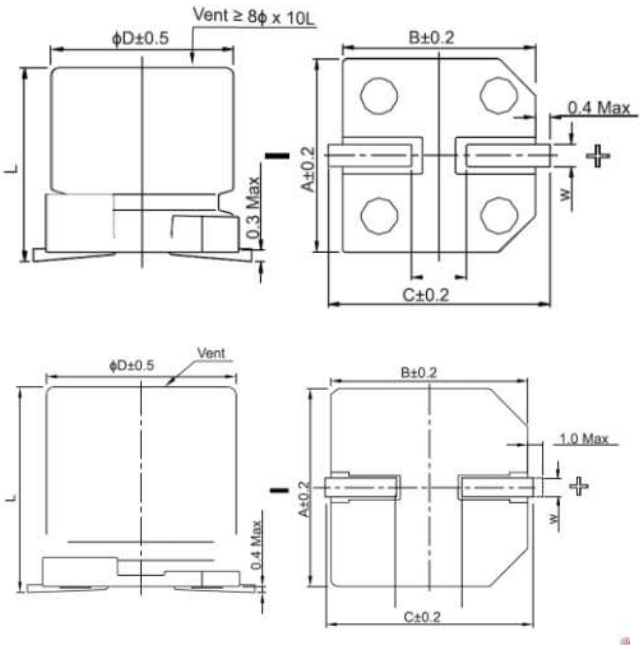
| Item | Performance |
|---|---|
| Operating Temperature Range | -40°C ~ +85°C |
| Capacitance Tolerance | ± 20% |
| Leakage Current (at 20°C) | Rated Voltage: 6.3 ~ 100V / 160 ~ 450V<br>Time: after 2 minutes / after 5 minutes<br>Case Size: 3~10Φ / 12.5~18Φ / 12.5~18Φ<br>Leakage Current: I = 0.01CV or 3μA whichever is greater / I = 0.03CV or 4μA whichever is greater / I = 0.04CV + 100μA<br>Where, C = rated capacitance in μF. V=rated DC working voltage in V |
| Dissipaton Factor (Tan δ at 120Hz, 20°C) | Rated Voltage: 4.0 / 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 / 160~250 / 400~450<br>3~10Φ: 7 / 0.28 / 0.24 / 0.20 / 0.14 / 0.12 / 0.10 / 0.10 / 0.10 / — / —<br>12.5~18Φ: — / 0.38 / 0.34 / 0.30 / 0.26 / 0.22 / 0.18 / 0.14 / 0.10 / 0.20 / 0.25<br>When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below.<br>Rated Voltage: 4.0 / 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 / 160~250 / 400~450<br>Impedance Ratio Z(-25°/Z(+20°: ΦD < 12.5: 7 / 4 / 4 / 3 / 2 / 2 / 2 / 2 / 2 / — / —<br>Impedance Ratio Z(-25°/Z(+20°: ΦD≥12.5: — / 5 / 5 / 4 / 2 / 2 / 2 / 2 / 2 / 3 / 6<br>Impedance Ratio Z(-40°/Z(+20°: ΦD < 12.5: 15 / 8 / 5 / 4 / 3 / 3 / 3 / 3 / 3 / — / —<br>Impedance Ratio Z(-40°/Z(+20°: ΦD≥12.5: — / 14 / 12 / 10 / 5 / 4 / 3 / 3 / 3 / 6 / 10 |
| Load Life Test | Test Time: 2,000 hours<br>Capacitance Change: Within ± 20% of initial value (4V : ± 30%)<br>Tan δ: Less than 200% of specified value (4V : < 300%)<br>Leakage Current: Within specified value<br>The above spec1f1cation shall be sat1sf1ed when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hours at 85°C. |
| Shelf Life Test | Test time: 1,000 hours; other items are the same as those for the Load Life Test<br>The rated voltage shall be applied to the capacitors before the measurements for 160~450V (refer to JIS C 5101-4 4.1) |
| Ripple Current & Frequency Multilpiers | Freq. (Hz) / Cap. (μF): 50 / 120 / 1K / 10K Up<br>Under 1,000: 0.80 / 1.00 / 1.25 / 1.40<br>1,000＜C≤10,000: 0.85 / 1.00 / 1.15 / 1.25 |

## Lead Spacing and Diameter

Unit: mm

| D | L | A | B | C | W | P±0.2 | Fig. No. |
|---|---|---|---|---|---|---|---|
| 3 | 5.3±0.2 | 3.3 | 3.3 | 4.1 | 0.45~0.75 | 0.8 | 1 |
| 4 | 5.3±0.2 | 4.3 | 4.3 | 5.1 | 0.5~0.8 | 1.0 | 1 |
| 5 | 5.3±0.2 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.5 | 1 |
| 6.3 | 5.3±0.2 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 2.0 | 1 |
| 6.3 | 7.7±0.3 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 2.0 | 1 |
| 8 | 6.5±0.3 | 8.4 | 8.4 | 9.0 | 0.5~0.8 | 2.3 | 1 |
| 8 | 10.0±0.5 | 8.4 | 8.4 | 9.0 | 0.7~1.1 | 3.1 | 1 |
| 10 | 7.7±0.3 | 10.4 | 10.4 | 11.0 | 0.7~1.3 | 4.7 | 1 |
| 10 | 10.0±0.5 | 10.4 | 10.4 | 11.0 | 0.7~1.3 | 4.7 | 1 |
| 12.5 | 13.5±0.5 | 13.0 | 13.0 | 13.7 | 1.1~1.4 | 4.4 | 2 |
| 12.5 | 16.0±0.5 | 13.0 | 13.0 | 13.7 | 1.1~1.4 | 4.4 | 2 |
| 16 | 16.5±0.5 | 17.0 | 17.0 | 18.0 | 1.1~1.4 | 6.4 | 2 |
| 16 | 21.5±0.5 | 17.0 | 17.0 | 18.0 | 1.1~1.4 | 6.4 | 2 |
| 18 | 16.5±0.5 | 19.0 | 19.0 | 20.0 | 1.1~1.4 | 6.4 | 2 |
| 18 | 21.5±0.5 | 19.0 | 19.0 | 20.0 | 1.1~1.4 | 6.4 | 2 |

## FEATURES



# ALUMINUM ELECTROLYTIC CAPACITORS

## CAGA SERIES: SMD General Purpose

### DIMENSION (mm) & PERMISSIBLE RIPPLE CURRENT

| Vdc / μF | Code | 4 V ( OG ) | | 63V (0J ) | | 10V (1A) | | 16V (1C) | | 25V (1E ) | | 35V (1V) | | 50V (1H ) | | 63V (1J ) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA |
| 1 | 010 | | | | | | | | | | | | | 4x5.3 | 10 | 4x5.3 | 8 |
| 2.2 | 2R2 | | | | | | | | | | | | | 4x5.3 | 14 | 4x5.3 | 12 |
| 3.3 | 3R3 | | | | | | | | | 3x5.3 | 14 | 3x5.3 | 14 | 4x5.3 | 17 | 5x5.3 | 22 |
| 4.7 | 4R7 | | | | | 3x5.3 | 14 | 3x5.3 | 14 | 4 x 5.3 | 26 | 4x5.3 | 26 | 4x5.3 | 20 | 5x5 | |
| 10 | 100 | | | 3x5.3 | 16 | 4x5.3 | 26 | 4x5.3 | 26 | 5x5.3 | 44 | 5x5.3 | 44 | 5x5.3 | 35 | 6.3x5.3<br>8x6.5 | 40<br>46 |
| 22 | 220 | 3x5.3 | 16 | 4x5.3 | 26 | 5x5.3 | 44 | 4x5.3<br>5x5.3 | 30<br>44 | 5x5.3<br>6.3x5.3 | 47<br>59 | 5x5.3<br>6.3x5.3 | 47<br>59 | 6.3x5.3<br>6.3x7.7 | 50<br>65 | 8 X 10 | 139 |
| 33 | 330 | 4x5.3 | 31 | 4x5.3 | 31 | 4x5.3<br>5x5.3 | 31<br>55 | 5x5.3 | 55 | 5x5.3<br>6.3x5.3 | 55<br>67 | 6.3x5.3<br>6.3x7.7 | 67<br>85 | 6.3x7.7<br>8x6.5 | 75<br>95 | 8 X 10 | 139 |
| 47 | 470 | 4x5.3 | 34 | 4x5.3<br>5x5.3 | 34<br>55 | 6.3x5.3 | 75 | 5x5.3<br>6.3x5.3 | 55<br>75 | 6.3x5.3<br>6.3x7.7 | 75<br>98 | 6.3x7.7<br>8x6.5 | 98<br>105 | 6.3x7.7<br>8 X 10 | 75<br>190 | 10 X 10 | 200 |
| 68 | 680 | 5x5.3 | 58 | 5x5.3<br>6.3x5.3 | 58<br>89 | 5x5.3<br>6.3x5.3 | 58<br>89 | 6.3x5.3 | 89 | 6.3x7.7 | 109 | 6.3 x7.7 | 109 | 8 X 10 | 190 | 10 X 10 | 226 |
| 100 | 101 | 5x5.3<br>6.3x5.3 | 58<br>89 | 6.3x5.3 | 89 | 6.3x5.3<br>6.3x7.7 | 89<br>109 | 6.3x5.3<br>6.3x7.7<br>8x6.5 | 89<br>109<br>125 | 6.3x7.7<br>8x6.5 | 109<br>145 | 8 X 10 | 252 | 8 X 10 | 190 | 10 X 10 | 226 |
| 150 | 151 | | | | | | | | | | | 10 X7.7 | 252 | | | | |
| 220 | 22 1 | 6.3x5.3<br>6.3x7.7 | 89<br>124 | 6.3x5.3<br>6.3x7.7 | 89<br>124 | 6.3x7.7<br>8x6.5<br>8 X 10 | 124<br>175<br>270 | 6.3x7.7<br>8X10 | 124<br>270 | 8 X 10<br>10 X7.7 | 270<br>270 | 8 X 10<br>10 X 10 | 270<br>370 | 10 X 10 | 320 | 12.5x13.5 | 500 |
| 330 | 331 | 6.3x7.7 | 124 | 6.3x7.7<br>8x6.5 | 124<br>190 | 8 X 10 | 290 | 8 x10<br>10 X7.7 | 290<br>290 | 10 X 10 | 400 | 10 X 10 | 400 | 12.5 x 13.5 | 600 | 12.5 x 16 | 600 |
| 470 | 471 | 8 X 10 | 290 | 8 X 10 | 290 | 10 X 7.7<br>10 X 10 | 290<br>400 | 10 X 10 | 400 | 10 X 10 | 400 | 12.5x13.5 | 680 | 12.5x16 | 740 | 16 X 16.5 | 850 |
| 680 | 681 | | | 10 X7.7 | 290 | 10 X 10 | 410 | 10 X 10 | 410 | 12.5X13.5 | 680 | 12.5x13.5 | 680 | 16 X 16.5 | 1,100 | 18 X 16.5 | 1,100 |
| 1,000 | 102 | | | 10 X 10 | 430 | 10 X 10 | 430 | 12.5 x 13.5 | 750 | 12.5x13.5 | 750 | 16 x16.5 | 1,100 | 18 x 16.5<br>16 x 21.5 | 1,350<br>1,400 | | |
| 2,200 | 222 | | | 12.5X13.5 | 890 | 12.5 X 13.5 | 890 | 16 X 16 5 | 1,100 | 16 X 16.5 | 1,100 | 18 x 16.5<br>16 x 21.5 | 1,450<br>1,500 | | | | |
| 3,300 | 332 | | | 12.5x16 | 1,000 | 16x16.5 | 1,300 | 16 x 16.5 | 1,300 | 18 x 16.5<br>16 x 21.5 | 1,500<br>1,450 | 18 X 21.5 | 1,750 | | | | |
| 4,700 | 472 | | | 16x16.5 | 1,400 | 16 x16.5 | 1,400 | 18 x 16.5<br>16 x 21.5 | 1,600<br>1,650 | 18 X 21.5 | 1,750 | | | | | | |
| 6,800 | 682 | | | 18 x 16.5<br>16 x 21.5 | 1,700<br>1,750 | 18 x 16.5<br>16 x 21.5 | 1,700<br>1,750 | 18 X 21.5 | 2,000 | | | | | | | | |
| 10,000 | 103 | | | 18 X 21.5 | 2,000 | 18 X 21.5 | 2,000 | | | | | | | | | | |

| Vdc / μF | Code | V (2A) | | 160V (2C) | | 200V (20 ) | | 250V (2E) | | 400V (2G) | | 450V (2W) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA |
| 4.7 | 4R7 | | | | | | | | | 12.5x13.5 | 120 | 12.5x13.5 | 120 |
| 10 | 100 | 8x 10 | 90 | | | | | 12.5x13.5 | 150 | 12.5x13.5 | 120 | 12.5x16 | 130 |
| 22 | 220 | 8 X 10 | 90 | | | 12.5x13.5 | 240 | 12.5x13.5 | 150 | 16x16.5 | 140 | 16x16.5 | 140 |
| 33 | 330 | 10 X 10 | 120 | 12.5x13.5 | 290 | 12.5x16 | 310 | 12.5X16 | 240 | 16x16.5 | 140 | 18X16.5 | 180 |
| 47 | 470 | 10 X 10 | 120 | 12.5x16 | 370 | 16x16.5 | 420 | 16x16.5 | 340 | 18x16.5 | 280 | 18x21.5 | 250 |
| 68 | 680 | 12.5x13.5 | 380 | 16x16.5 | 500 | 16x16.5 | 420 | 18X16.5<br>16X21.5 | 440<br>450 | 18X21.5 | 350 | | |
| 100 | 101 | 12.5x13.5 | 440 | 18X16.5<br>16X21.5 | 650<br>690 | 18X16.5<br>16X21.5 | 550<br>590 | 18X21.5 | 490 | | | | |
| 220 | 221 | 16x16.5 | 600 | | | | | | | | | | |
| 330 | 331 | 18X16.5<br>16X21.5 | 780<br>850 | | | | | | | | | | |

### PART NUMBER EXAMPLE

CAGA 221 M 1C TR 080110

- Case Size (8Φ*10L)
- Package Style (Tape & Reel)
- Voltage Code
- Tolerance (±20%)
- Capacitance Code
- Series

# CAGB SERIES: Surface Mount, Extended Range

## FEATURES

- 85℃, 2000hours assured.
- RoHS Compliant
- Voltages up to 400vdc.



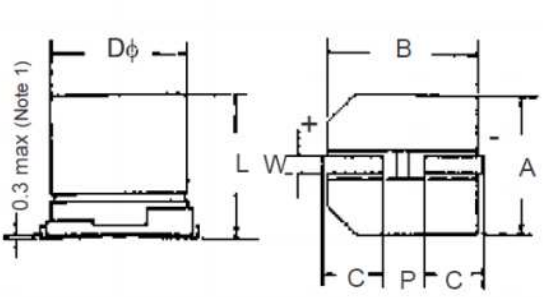

## SPECIFICATIONS

| Item | Performance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temp. Range | -40°C ~ + 85°C | | | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | | |
| Leakage Current (at 20·C) | I=0.01CV or 3μA (whichever is greater) after 2 minutes, where C=rated capacitance in F V=rated DC working Volts | | | | | | | | | | | |
| Dissipation Factor Tanδ at 120 Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 ~ 250 | 400 ~ 450 | |
| | 4 ~ 10φ | 0.35 | 0.30 | 0.26 | 0.16 | 0.14 | 0.12 | 0.12 | 0.12 | - | - | |
| | 12.5 ~ 16φ | 0.38 | 0.34 | 0.30 | 0.26 | 0.22 | 0.18 | 0.14 | 0.10 | 0.20 | 0.25 | |

| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160-250 | 400-450 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | 4 ~ 10 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | - | - |
| | | | 12.5 ~ 16 | - | 5 | 4 | 2 | 3 | 2 | 2 | 2 | 3 | 6 |
| | | Z(-40°C) /Z(+20°C) | D<10 | 17 | 10 | 8 | 4 | 3 | 3 | 3 | 4 | - | - |
| | | | D>10 | - | 12 | 10 | 5 | 4 | 3 | 3 | 3 | 6 | 10 |

| Life Test | Test Time | Load Life | Shelf Life |
|---|---|---|---|
| | | 2000 Hrs | 1000 Hrs |
| | Capacitance Change | Within ±20% of initial value | Within ± 20% of initial value |
| | Dissipation Factor | Less than 200% of specified value | Less than 200% of specified value |
| | Leakage Current | Within specified value | Within specified value |
| | Test Conditions | 20°C (after rated voltage applied for 2000 hours at 85°C | 20° C (after storage for 1000 hours at 85°C without voltage) |

| Ripple Current & Frequency Multipliers | VDC(V)\Freq. (Hz) | 50,60 | 120 | 1K | 10K up |
|---|---|---|---|---|---|
| | 6.3 ~ 35 | 0.64 | 0.8 | 0.93 | 1.0 |
| Standards | JLS C 5101-1, -18 | | | | |




Note 1-Diameters of 12.5mm & 16mm diameter is 0.4mm Max

## PAD SPACING AND DIAMETER

| φD | L | A | B | C | W | P±0.2 |
|---|---|---|---|---|---|---|
| 4 | 5.3±0.2 | 4.3 | 4.3 | 2.0 | 0.5 to 0.8 | 1.0 |
| 5 | 5.3±0.2 | 5.3 | 5.3 | 2.3 | 0.5 to 0.8 | 1.5 |
| 6.3 | 5.3±0.2 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |
| 6.3 | 7.7±0.3 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |
| 8 | 10±0.3 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 3.1 |
| 10 | 10±0.3 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |
| 12.5 | 1.3±0.3 | 12.8 | 12.8 | 4.9 | 1.1 to 1.4 | 4.6 |
| 12.5 | 16±0.3 | 12.8 | 12.8 | 4.9 | 1.1 to 1.4 | 4.6 |
| 16 | 16.5±0.3 | 16.3 | 16.3 | 5.8 | 1.8 to 2.2 | 6.0 |

## PART NUMBER EXAMPLE CAGB 220 M 1A TR 040 053


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# ALUMINUM ELECTROLYTIC CAPACITORS

## CAGB SERIES: Surface Mount, Extended Range

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L(mm)

Ripple Current mA/rms at 120Hz, 85°C

| μF \ VDC | Code | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | φ D x L | mA | φ D x L | mA | φ D x L | mA | φ D x L | mA | φ D x L | mA | φ D x L | mA |
| 0.1 | 0R1 | | | | | | | | | | | 4 x 5.3 | 3 |
| 0.22 | R22 | | | | | | | | | | | 4 x 5.3 | 5 |
| 0.33 | R33 | | | | | | | | | | | 4 x 5.3 | 6 |
| 0.47 | R47 | | | | | | | | | | | 4 x 5.3 | 7 |
| 1 | 010 | | | | | | | | | | | 4 x 5.3 | 10 |
| 2.2 | 2R2 | | | | | | | | | | | 4 x 5.3 | 15 |
| 3.3 | 3R3 | | | | | | | | | | | 4 x 5.3 | 15 |
| 4.7 | 4R7 | | | | | | | 4 x 5.3 | 19 | 4 x 5.3 | 18 | 4 x 5.3 | 18 |
| 10 | 100 | | | 4 x 5.3 | 26 | 4 x 5.3 | 26 | 4 x 5.3 | 24 | 4 x 5.3 | 24 | 5 x 5.3 | 30 |
| 22 | 220 | 4 x 5.3 | 30 | 4 x 5.3 | 26 | 4 x 5.3 | 26 | 5 x 5.3 | 41 | 5 x 5.3 | 41 | 6.3 x 5.3 | 47 |
| 33 | 330 | 4 x 5.3 | 30 | 5 x 5.3 | 30 | 5 x 5.3 | 37 | 5 x 5.3 | 47 | 6.3 x 5.3 | 54 | 6.3 x 7.7 | 70 |
| 47 | 470 | 4 x 5.3 | 33 | 5 x 5.3 | 44 | 5 x 5.3 | 44 | 6.3 x 5.3 | 60 | 6.3 x 5.3 | 64 | 6.3 x 7.7 | 85 |
| 100 | 101 | 5 x 5.3 | 55 | 6.3 x 5.3 | 70 | 6.3 x 5.3 | 70 | 6.3 x 7.7 | 120 | 6.3 x 7.7 | 120 | 8 x 10 | 190 |
| 220 | 221 | 6.3 x 5.3 | 88 | 6.3 x 7.7 | 130 | 6.3 x 7.7 | 130 | 8 x 10 | 260 | 8 x 10 | 260 | 10 x 10 | 320 |
| 330 | 331 | 6.3 x 7.7 | 135 | 8 x 10 | 270 | 8 x 10 | 270 | 8 x 10 | 300 | 10 x 10 | 360 | 12.5 x 13.5 | 600 |
| 470 | 471 | 8 x 10 | 280 | 8 x 10 | 280 | 8 x 10 | 280 | 10 x 10 | 400 | 12.5 x 13.5 | 600 | 12.5 x 16 | 740 |
| 1000 | 102 | 8 x 10 | 430 | 10 x 10 | 430 | 12.5 x 13.5 | 710 | 12.5 x 13.5 | 820 | 16 x 16.5 | 1100 | | |
| 2200 | 222 | 12.5 x 13.5 | 890 | 12.5 x 13.5 | 960 | 16 x 16.5 | 1150 | 16 x 16.5 | 1450 | | | | |
| 3300 | 332 | 12.5 x 16 | 1000 | 16 x 16.5 | 1300 | 16 x 16.5 | 1150 | | | | | | |
| 4700 | 472 | 16 x 16.5 | 1400 | 16 x 16.5 | 1300 | | | | | | | | |
| 6800 | 682 | 16 x 16.5 | 1700 | | | | | | | | | | |

| μF \ VDC | Code | 63V (1J) | | 100V (2A) | | 160V (2C) | | 200V (2D) | | 250V (2E) | | 400V (2G) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | φ D x L | mA | φ D x L | mA | φ D x L | mA | φ D x L | mA | φ D x L | mA | φ D x L | mA |
| 0.1 | 0R1 | 4 x 5.3 | 1.3 | | | | | | | | | | |
| 0.22 | R22 | 4 x 5.3 | 30 | | | | | | | | | | |
| 0.33 | R33 | 4 x 5.3 | 4 | | | | | | | | | | |
| 0.47 | R47 | 4 x 5.3 | 5 | | | | | | | | | | |
| 1 | 010 | 4 x 5.3 | 8 | | | | | | | | | | |
| 2.2 | 2R2 | 4 x 5.3 | 12 | | | | | | | | | | |
| 3.3 | 3R3 | 5 x 5.3 | 17 | | | | | | | | | | |
| 4.7 | 4R7 | 5 x 5.3 | 20 | | | | | | | | | 12.5 x 13.5 | 120 |
| 10 | 100 | 6.3 x 5.3 | 32 | 8 x 10 | 90 | | | | | 12.5 x 13.5 | 150 | 12.5 x 13.5 | 120 |
| 22 | 220 | 6.3 x 7.7 | 60 | 8 x 10 | 90 | | | 12.5 x 13.5 | 240 | 12.5 x 13.5 | 150 | 16 x 16.5 | 140 |
| 33 | 330 | 6.3 x 7.7 | 60 | 10 x 10 | 120 | 12.5 x 13.5 | 240 | 12.5 x 16 | 310 | 12.5 x 16 | 240 | 16 x 16.5 | 340 |
| 47 | 470 | 8 x 10 | 130 | 10 x 10 | 120 | 12.5 x 16 | 370 | 16 x 16.5 | 340 | 16 x 16.5 | 340 | | |
| 68 | 680 | 10 x 10 | 170 | 12.5 x 13.5 | 380 | 16 x 16.5 | 500 | 16 x 16.5 | 340 | | | | |
| 100 | 101 | 12.5 x 13.5 | 380 | 12.5 x 13.5 | 380 | | | | | | | | |
| 220 | 221 | 12.5 x 13.5 | 580 | 16 x 16.5 | 500 | | | | | | | | |
| 330 | 331 | 12.5 x 16 | 720 | | | | | | | | | | |
| 470 | 471 | 16 x 16.5 | 950 | | | | | | | | | | |

| μF \ VDC | Code | 450V (2W) | |
|---|---|---|---|
| | | φ D x L | mA |
| 4.7 | 4R7 | 12.5 x 13.5 | 120 |
| 10 | 100 | 12.5 x 16 | 130 |
| 22 | 220 | 16 x 16.5 | 140 |

### RATED VOLTAGE

| WV | 6.3 | 10 | 16 | 25 | 35 | 50 |
|---|---|---|---|---|---|---|
| Code | 0J | 1A | 1C | 1E | 1V | 1H |
| WV | 63 | 100 | 160 | 200 | 250 | 400 |
| Code | 1J | 2A | 2C | 2D | 2E | 2GH |

### PART NUMBER EXAMPLE

CAGB 220 M 1A TR 040 053

- Length
- Diameter
- Package Style
- Voltage
- Tolerance
- Capacitance Code
- Series

### SIZE CODE EXAMPLE

| Type | Diameter | Length | Diameter | Length |
|---|---|---|---|---|
| Size | 4.0 | 5.3 | 12.7 | 13.5 |
| Code | 040 | 053 | 127 | 135 |

### TOLERANCE CODE

| Code | Tolerance |
|---|---|
| J | ± 5% |
| K | ± 10% |
| M | ± 20% |

# CAKA SERIES: Surface Mount Type,105°C




## FEATURES

- 105°C, 1000 hours assured.
- Replaces RVS Series
- Vertical chip type miniaturized for 5.5mm.
- RoHS Compliant

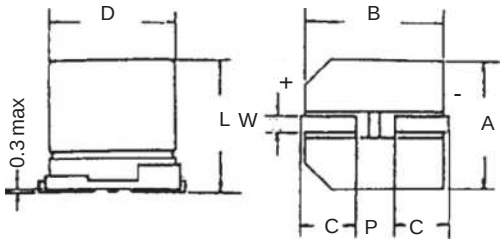
## SPECIFICATIONS

| Item | Performance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Operating Temp. Range | -55°C ~ + 105°C | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | |
| Leakage Current (at 20•C) | I=0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where C=rated capacitance in μ F and V= rated working voltage | | | | | | | | |
| Dissipation Factor Tanδ at 120 Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | | |
| | Tanδ (max) | 0.30 | 0.26 | 0.22 | 0.16 | 0.13 | 0.12 | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Impedance Ratio Maximum | Z(-25°C) /Z(+20°C) | | 4 | 3 | 2 | 2 | 2 | 2 |
| | | Z(-40°C) /Z(+20°C) | | 8 | 5 | 4 | 3 | 3 | 3 |
| Life Test | Test Time | Load Life | | | | Shelf Life | | | |
| | | 1000 Hrs | | | | 1000 Hrs | | | |
| | Capacitance Change | Within ±20% of initial value | | | | Within ± 20% of initial value | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | Less than 200% of specified value | | | |
| | Leakage Current | Within specified value | | | | Within specified value | | | |
| | Test Conditions | 20°C (after rated voltage applied for 1000 hours at 105°C | | | | 20° C (after storage for 1000 hours at 105°C without voltage) | | | |
| Ripple Current & Frequency Multilpiers | VDC(V) \ Freq. (Hz) | 50 | 120 | 1K | 10K up | | | | |
| | Under 16 | 0.80 | 1.00 | 1.15 | 1.25 | | | | |
| | 25 ~ 35 | 0.80 | 1.00 | 1.25 | 1.40 | | | | |
| | 50 | 0.80 | 1.00 | 1.35 | 1.50 | | | | |
| Standards | JIS C 5101-1-18 | | | | | | | | |

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Ripple Current mA/rms at 120 Hz, 105°C

| VDC | | 6.3 (0J) | | 10 (1A) | | 16 (1C) | | 25 (1E) | | 35 (1V) | | 50 (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA |
| 0.1 | 0R1 | | | | | | | | | | | 4 x 5.3 | 2 |
| 0.22 | R22 | | | | | | | | | | | 4 x 5.3 | 3 |
| 0.33 | R33 | | | | | | | | | | | 4 x 5.3 | 4 |
| 0.47 | R47 | | | | | | | | | | | 4 x 5.3 | 5 |
| 1 | 010 | | | | | | | | | | | 4 x 5.3 | 7 |
| 2.2 | 2R2 | | | | | | | | | | | 4 x 5.3 | 10 |
| 3.3 | 3R3 | | | | | | | | | | | 4 x 5.3 | 12 |
| 4.7 | 4R7 | | | | | | | 4 x 5.3 | 12 | 4 x 5.3 | 14 | 5 x 5.3 | 17 |
| 10 | 100 | | | 4 x 5.3 | 15 | 4 x 5.3 | 16 | 5 x 5.3 | 21 | 5 x 5.3 | 23 | 6.3 x 5.3 | 26 |
| 22 | 220 | 4 x 5.3 | 21 | 5 x 5.3 | 25 | 5 x 5.3 | 28 | 6.3 x 5.3 | 36 | 6.3 x 5.3 | 50 | | |
| 33 | 330 | 5 x 5.3 | 30 | 5 x 5.3 | 31 | 6.3 x 5.3 | 40 | 6.3 x 5.3 | 44 | | | | |
| 47 | 470 | 5 x 5.3 | 36 | 6.3 x 5.3 | 43 | 6.3 x 5.3 | 47 | 6.3 x 5.3 | 60 | | | | |
| 100 | 101 | 6.3 x 5.3 | 61 | 6.3 x 5.3 | 65 | 6.3 x 5.3 | 70 | | | | | | |




## PAD SPACING AND DIAMETER

| ϕD±0.5 | L | A±0.2 | B±0.2 | C±0.2 | W | P±0.2 |
|---|---|---|---|---|---|---|
| 4 | 5.3±0.2 | 4.3 | 4.3 | 2.0 | 0.5 to 0.8 | 1.0 |
| 5 | 5.3±0.2 | 5.3 | 5.3 | 2.3 | 0.5 to 0.8 | 1.5 |
| 6.3 | 5.3±0.2 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |

## PART NUMBER EXAMPLE

CAKA 100 M 1E TR 050053



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# CAHA SERIES: Surface Mount Type, Low Impedance




## FEATURES

- 105°C, 2000 hours assured
- Low Impedance
- Replaces RVH Series
- RoHS Compliant

## SPECIFICATIONS

| Item | Performance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Operating Temp. Range | -55°C ~ + 105°C | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | |
| Leakage Current (at 20•C) | I=0.01CV or 3μA (whichever is greater) after 2 minutes, where C=rated capacitance in μF V=rated DC working Volts | | | | | | | | |
| Dissipation Factor<br>Tanδ at 120 Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | | | |
| | Tanδ (max) | 0.30 | 0.26 | 0.22 | 0.16 | 0.13 | | | |
| Low Temperature<br>Characteristics (at 120Hz) | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | | |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | 4 | 3 | 2 | 2 | 2 | | |
| | | Z(-40°C) /Z(+20°C) | 8 | 5 | 4 | 3 | 3 | | |
| Life Test | Test Time | | Load Life | | | | Shelf Life | | |
| | | | 2000 Hrs | | | | 1000 Hrs | | |
| | Capacitance Change | | Within ±20% of initial value | | | | Within ± 20% of initial value | | |
| | Dissipation Factor | | Less than 200% of specified value | | | | Less than 200% of specified value | | |
| | Leakage Current | | Within specified value | | | | Within specified value | | |
| | Test Conditions | | 20°C (after rated voltage applied for 2000 hours at 105°C | | | | 20° C (after storage for 1000 hours at 105°C without voltage) | | |
| Ripple Current & Frequency Multilpiers | VDC(V) \ Freq. (Hz) | 50,60 | 120 | 1K | 10K up | | | | |
| | 6.3 ~ 35 | 0.64 | 0.8 | 0.93 | 1.0 | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | |

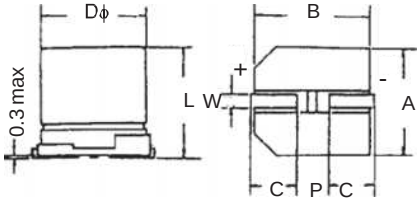
## DIMENSION, IMPEDANCE & PERMISSIBLE RIPPLE CURRENT

Ripple Current mA/rms at 120 Hz, 105°C
Impedance : at 100K Hz, 20ºC

| VDC / μF | Contents | 6.3V (0J) | | | 10V (1A) | | | 16V (1C) | | | 25V (1E) | | | 35V (1V) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ϕD x L | Imp. mA | | ϕD x L | Imp. mA | | ϕD x L | Imp. mA | | ϕD x L | Imp. mA | | ϕD x L | Imp. mA | |
| 47 | 470 | | | | | | | | | | | | | 8 x 10 | 0.45 | 369 |
| 100 | 101 | | | | | | | | | | 8 x 10 | 0.45 | 369 | 10 x 10 | 0.25 | 553 |
| 150 | 151 | | | | | | | | | | | | | 8 x 10 | 0.45 | 369 |
| 220 | 221 | | | | 8 x 10 | 0.45 | 369 | | | | 10 x 10 | 0.25 | 553 | | | |
| | | | | | | | | | | | 8 x 10 | 0.45 | 369 | | | |
| 330 | 331 | 8 x 10 | 0.45 | 369 | | | 553 | 10 x 10 | 0.25 | 553 | | | | | | |
| | | | | | | | | 8 x 10 | 0.45 | 369 | | | | | | |
| 470 | 471 | 8 x 10 | 0.45 | 369 | 10 x 10 | 0.25 | 553 | 8 x 10 | 0.45 | 369 | | | | | | |
| | | | | | 8 x 10 | 0.45 | 369 | | | | | | | | | |
| 820 | 821 | | | | 10 x 10 | 0.25 | 553 | | | | | | | | | |
| 1000 | 102 | 10 x 10 | 0.25 | 553 | | | | | | | | | | | | |

## PAD SPACING AND DIAMETER

| φD±0.5 | L | A±0.2 | B±0.2 | C±0.2 | W | P±0.2 |
|---|---|---|---|---|---|---|
| 8 | 10±0.5 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 3.1 |
| 10 | 10±0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |




## PART NUMBER EXAMPLE

CAHA 470 M 1V TR 080100

# CAHB SERIES: Surface Mount Type, Low Impedance

## FEATURES

- 105°C, 1000 hours assured
- Low Impedance
- Smaller size than VEH
- RoHS Compliant



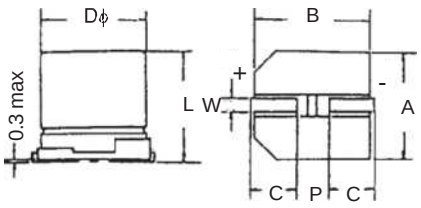

## SPECIFICATIONS

| Items | Performance | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -55 ℃~ +105 ℃ | | | | | | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20℃) | | | | | | | | | |
| Leakage Current (at 20℃) | I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where, C= rated capacitance in μF. V= rated DC working voltage in V. | | | | | | | | | |
| Dissipation Factor (Tanδ at 120Hz, 20℃) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | | | |
| | Tanδ (max) | 0.28 | 0.24 | 0.2 | 0.16 | 0.14 | 0.12 | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | |
| | Rated Voltage | | | 6.3 | 10 | 16 | 25 | 50 | | |
| | Impedance Ratio | Z (-25℃)/Z(+20℃) | | 4 | 3 | 2 | 2 | 2 | | |
| | | Z(-40℃)/Z(+20℃) | | 8 | 5 | 4 | 3 | 3 | | |
| Load Life Test | Test Time | 1,000 Hrs | | | | | | | | |
| | Capacitance Change | Within +25% of initial value | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied for 1,000 hrs at 105℃ | | | | | | | | | |
| Shelf Life Test | Test Time: 1000 hrs; other items are the same as those for the load life test. | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / VDC(V) | 50, 60 | 120 | 1k | 10k up | | | | | |
| | 6.3 ~35 | 0.64 | 0.8 | 0.93 | 1.0 | | | | | |
| Standards | JIS C 5101-1 | | | | | | | | | |

## DIMENSION, IMPEDANCE & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L(mm)
Ripple Current mA/rms at 100KHz, 105°C
Impedance: at 100KHz, 20ºC

| V.DC | | 6.3V (0J) | | | 10V (1A) | | | 16V (1C) | | | 25V (1E) | | | 35V (1V) | | | 50V (1H) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | φD x L | mA | Imp. | φD x L | mA | Imp. | φD x L | mA | Imp. | φD x L | mA | Imp. | φD x L | mA | Imp. | φD x L | mA | Imp. |
| 1.0 | 010 | | | | | | | | | | | | | | | | 4 x 5.3 | 30 | 5.0 |
| 2.2 | 2R2 | | | | | | | | | | | | | | | | 4 x 5.3 | 30 | 5.0 |
| 3.3 | 3R3 | | | | | | | | | | | | | | | | 4 x 5.3 | 30 | 5.0 |
| 4.7 | 4R7 | | | | | | | | | | 4 x 5.3 | 65 | 3.20 | 4 x 5.3 | 65 | 3.20 | 5 x 5.3 | 50 | 3.0 |
| 10 | 100 | | | | 4 x 5.3 | 65 | 3.20 | 4 x 5.3 | 65 | 3.20 | 5 x 5.3 | 110 | 1.50 | 5 x 5.3 | 110 | 1.50 | 6.3 x 5.3 | 70 | 2.0 |
| 22 | 220 | 4 x 5.3 | 65 | 3.20 | 5 x 5.3 | 110 | 1.50 | 5 x 5.3 | 110 | 1.50 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 5.3 | 70 | 2.0 |
| 33 | 330 | 5 x 5.3 | 110 | 1.50 | 5 x 5.3 | 110 | 1.50 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 7.7 | 170 | 1.0 |
| 47 | 470 | 5 x 5.3 | 110 | 1.50 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 7.7 | 255 | 0.50 | | | |
| 100 | 101 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 5.3 | 170 | 0.85 | 6.3 x 7.7 | 255 | 0.50 | | | | | | |
| 150 | 151 | 6.3 x 7.7 | 255 | 0.50 | 6.3 x 7.7 | 255 | 0.50 | 6.3 x 7.7 | 255 | 0.50 | | | | | | | | | |
| 220 | 221 | 6.3 x 7.7 | 255 | 0.50 | 6.3 x 7.7 | 255 | 0.50 | 6.3 x 7.7 | 255 | 0.50 | | | | | | | | | |




## PAD SPACING AND DIAMETER

| ϕD | L | A | B | C | W | P+0.2 |
|---|---|---|---|---|---|---|
| 4 | 5.3 + 0.2 | 4.3 | 4.3 | 2.0 | 0.5 to 0.8 | 1.0 |
| 5 | 5.3 + 0.2 | 5.3 | 5.3 | 2.3 | 0.5 to 0.8 | 1.5 |
| 6.3 | 5.3 + 0.2 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |
| 6.3 | 7.7 + 0.3 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |

## PART NUMBER EXAMPLE

CAHB 220 M 1A TR 050053


www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

# CAJA SERIES: Surface Mount Type,105°C, Long Life

## FEATURES

- 105°C, 3000 hours assured.
- RoHS Compliant



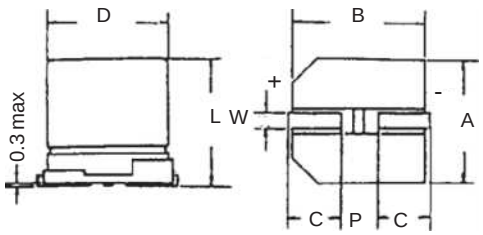

## SPECIFICATIONS

| Item | Performance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Operating Temp. Range | -40°C ~ + 105°C | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | |
| Leakage Current (at 20•C) | I=0.01CV or 3μA (whichever is greater) after 2 minutes, where C=rated capacitance in μF and V= rated working voltage | | | | | | | | |
| Dissipation Factor<br>Tanδ at 120 Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | | |
| | Tanδ (max) | 0.30 | 0.26 | 0.20 | 0.16 | 0.13 | 0.12 | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Impedance Ratio Maximum | Z(-25°C) /Z(+20°C) | | 4 | 3 | 2 | 2 | 2 | 2 |
| | | Z(-40°C) /Z(+20°C) | | 10 | 7 | 5 | 3 | 3 | 3 |
| Life Test | Test Time | Load Life | | | | | Shelf Life | | |
| | | 3000 Hrs | | | | | 1000 Hrs | | |
| | Capacitance Change | Within ±30% of initial value | | | | | Within ± 20% of initial value | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | Less than 200% of specified value | | |
| | Leakage Current | Within specified value | | | | | Within specified value | | |
| | Test Conditions | 20°C (after rated voltage applied for 3000 hours at 105°C | | | | | 20° C (after storage for 1000 hours at 105°C without voltage) | | |
| Ripple Current & Frequency Multilpiers | VDC(V) / Freq. (Hz) | 50 | 120 | 1K | 10K up | | | | |
| | 6.3 ~ 50 | 0.70 | 1.00 | 1.36 | 1.50 | | | | |
| Standards | JIS C 5101-1-18 | | | | | | | | |

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L (mm)
Ripple Current mA/rms at 120 Hz, 105°C

| | VDC | 6.3 (0J) | | 10 (1A) | | 16 (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | φD x L | mA | φD x L | mA | φD x L | mA | φD x L | mA | φD x L | mA | φD x L | mA |
| 0.1 | 0R1 | | | | | | | | | | | 4 x 5.7 | 1 |
| 0.22 | R22 | | | | | | | | | | | 4 x 5.7 | 2.6 |
| 0.33 | R33 | | | | | | | | | | | 4 x 5.7 | 3.2 |
| 0.47 | R47 | | | | | | | | | | | 4 x 5.7 | 5 |
| 1 | 010 | | | | | | | | | | | 4 x 5.7 | 8 |
| 2.2 | 2R2 | | | | | | | | | | | 4 x 5.7 | 12 |
| 3.3 | 3R3 | | | | | | | | | | | 4 x 5.7 | 17 |
| 4.7 | 4R7 | | | | | | | | | 4 x 5.7 | 16 | 5 x 5.7 | 22 |
| 10 | 100 | | | | | 4 x 5.7 | 18 | 5 x 5.7 | 27 | 5 x 5.7 | 27 | 6.3 x 5.7 | 32 |
| 22 | 220 | 4 x 5.7 | 22 | 5 x 5.7 | 30 | 5 x 5.7 | 30 | 6.3 x 5.7 | 44 | 6.3 x 5.7 | 44 | 6.3 x 7.7 | 58 |
| 33 | 330 | 5 x 5.7 | 35 | 5 x 5.7 | 35 | 6.3 x 5.7 | 48 | 6.3 x 5.7 | 50 | 6.3 x 7.7 | 57 | 8 x 10 | 140 |
| 47 | 470 | 5 x 5.7 | 38 | 6.3 x 5.7 | 50 | 6.3 x 5.7 | 50 | 6.3 x 7.7 | 63 | 8 x 10 | 92 | 8 x 10 | 170 |
| 100 | 101 | 6.3 x 5.7 | 69 | 6.3 x 7.7 | 81 | 6.3 x 7.7 | 81 | 8 x 10 | 116 | 10 x 10 | 151 | 10 x 10 | 310 |
| 220 | 221 | 6.3 x 7.7 | 120 | 8 x 10 | 141 | 10 x 10 | 216 | 10 x 10 | 320 | 10 x 10 | 375 | | |
| 330 | 331 | 8 x 10 | 290 | 10 x 10 | 290 | 10 x 10 | 290 | 10 x 10 | 450 | | | | |
| 470 | 471 | 10 x 10 | 320 | 10 x 10 | 320 | 10 x 10 | 320 | | | | | | |
| 1000 | 102 | 10 x 10 | 410 | | | | | | | | | | |




## PAD SPACING AND DIAMETER

| φD±0.5 | L | A±0.2 | B±0.2 | C±0.2 | W | P±0.2 |
|---|---|---|---|---|---|---|
| 4 | 5.7±0.3 | 4.3 | 4.3 | 2.0 | 0.5 to 0.8 | 1.0 |
| 5 | 5.7±0.3 | 5.3 | 5.3 | 2.3 | 0.5 to 0.8 | 1.5 |
| 6.3 | 5.7±0.3 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |
| 6.3 | 7.7±0.3 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |
| 8 | 10±0.5 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 3.1 |
| 10 | 10±0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 |

## PART NUMBER EXAMPLE

CAJA 100 M 1E TR 050057

# CAMA SERIES: High Temperature, 125°C

## FEATURES




- High Temperature Range up to +125°C
- For automobile modules and other high temperature applications
- RoHS Compliant

## SPECIFICATIONS

| Items | Performance | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | 10 ~ 50V | | | | | | | | | |
| | 40 °C ~ +125 °C | | | | | | | | | |
| Capacitance Tolerance | ±20% | | | | | | | | | |
| Leakage Current (at 20 °C) | I = 0.03CV or 4 (μA) whichever is greater (after 1 minute) Where C = rated capacitance in μF. V = rated DC working voltage in V. | | | | | | | | | |
| Dissipation Factor (Tan δ at 120Hz, 20 °C) | Rated Voltage | 10 | 16 | 25 | 35 | 50 | | | | |
| | Tan δ (max) | 0.32 | 0.24 | 0.21 | 0.18 | 0.18 | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | |
| | Rated Voltage | | | | 10 | 16 | 25 | 35 | 50 | |
| | Impedance Ratio | Z (-40 °C)/Z(+20 °C) | | | 5 | 4 | 3 | 3 | 3 | |
| Load Life Test | Test Time | 1,000 Hrs | | | | | | | | |
| | Capacitance Change | Within ±30% of initial value | | | | | | | | |
| | Dissipation Factor | Less than 300% of specified value | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 °C after the rated voltage applied for 1,000 hrs at 125 °C | | | | | | | | | |
| Shelf Life Test | Test Time: 1,000 hrs; other items are the same as those for the load life test. | | | | | | | | | |
| Other Standards | JIS C 5101-1, -18 | | | | | | | | | |

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L(mm)

Ripple Current mA/rms at 120KHz, 125°C

| V.DC | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA |
| 33 | 330 | | | 6.3 x 5.7 | 50 | 6.3 x 5.7 | 50 | 6.3 x 7.7 | 70 | 8 x 10 | 130 |
| 47 | 470 | | | 6.3 x 5.7 | 70 | 6.3 x 7.7 | 70 | 8 x 6.5 | 75 | 8 x 10 | 130 |
| 100 | 101 | 8.0 x 6.5 | 78 | 8 x 6.5 | 75 | 8 x 10 | 134 | 10 x 10 | 182 | 12.5 x 13.5 | 357 |
| 220 | 221 | 8.0 x 10 | 131 | 10 x 10 | 181 | 10 x 10 | 181 | 12.5 x 13.5 | 357 | 12.5 x 16 | 401 |
| 330 | 331 | 8.0 x 10 | 131 | 12.5 x 13.5 | 480 | 12.5 x 13.5 | 480 | 16 x 16.5 | 650 | 16 x 16.5 | 652 |
| 470 | 471 | 12.5 x 13.5 | 480 | 12.5 x 13.5 | 480 | 12.5 x 13.5 | 480 | 16 x 16.5 | 650 | | |
| 680 | 681 | 12.5 x 13.5 | 480 | 12.5 x 13.5 | 480 | 12.5 x 16 | 585 | 16 x 16.5 | 650 | | |
| 1,000 | 102 | 12.5 x 16 | 585 | 12.5 x 16 | 589 | 16 x 16.5 | 650 | 18 x 16.5 | 855 | | |

Fig. 1

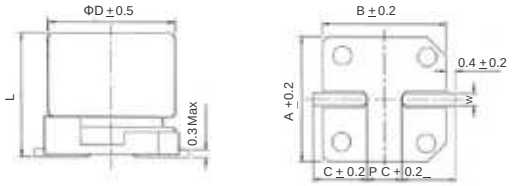
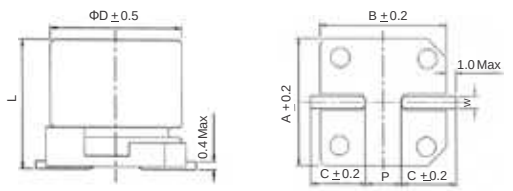



Fig. 2




## PAD SPACING AND DIAMETER

| ΦD | L | A | B | C | W | P±0.2 | Fig. No. |
|---|---|---|---|---|---|---|---|
| 8 | 10.0 ± 0.5 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 3.1 | 1 |
| 10 | 10.0 ± 0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 | 1 |
| 12.5 | 13.0 ± 0.5 | 12.8 | 12.8 | 4.9 | 1.1 to 1.4 | 4.2 | 2 |
| 12.5 | 16.0 ± 0.5 | 12.8 | 12.8 | 4.9 | 1.1 to 1.4 | 4.2 | 2 |
| 16 | 16.5 ± 0.5 | 16.3 | 16.3 | 5.8 | 1.1 to 1.4 | 6.0 | 2 |

## PART NUMBER EXAMPLE

CAMA 221 M 1A TR 080 100



www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

# CALA SERIES: Surface Mount Type, Bi-Polar

## FEATURES




- 85°C, 2000 hours assured.
- 5.5mm height
- Bipolar capacitor, replaces RVB Series
- RoHS Compliant

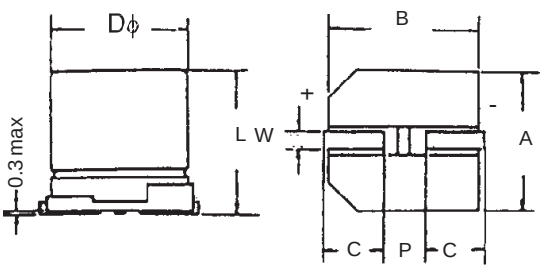
## SPECIFICATIONS

| Item | Performance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Operating Temp. Range | -40°C ~ + 85°C | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | |
| Leakage Current (at 20•C) | I=0.01CV or 3 μA (whichever is greater) after 2 minutes Where C=rated capacitance in μF . Voltage=rated DC working voltage in V. | | | | | | | |
| Dissipation Factor Tanδ at 120 Hz,20°C | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Tanδ (max) | 4 | 0.35 | 0.30 | 0.25 | 0.25 | 0.25 | 0.25 |
| | | 5 ~ 6.3 | 0.30 | 0.25 | 0.20 | 0.15 | 0.15 | 0.15 |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | 3 | 3 | 2 | 2 | 2 | 2 |
| | | Z(-40°C) /Z(+20°C) | 8 | 5 | 4 | 3 | 3 | 3 |
| Life Test | Test Time | | Load Life | | | | Shelf Life | |
| | | | 2000 Hrs | | | | 1000 Hrs | |
| | Capacitance Change | | Within ±20% of initial value | | | | Within ± 20% of initial value | |
| | Dissipation Factor | | Less than 200% of specified value | | | | Less than 200% of specified value | |
| | Leakage Current | | Within specified value | | | | Within specified value | |
| | Test Conditions | | 20°C (after rated voltage applied for 2000 hours at 85°C | | | | 20° C (after storage for 1000 hours at 85°C without voltage) | |
| Ripple Current & Frequency Multilpiers | VDC(V) \ Freq. (Hz) | 50 | 120 | 1K | 10K up | Riple Current & Temperature Multipliers | Temperature (°C) | Under 70 | 85 |
| | Under 16 | 0.80 | 1.00 | 1.15 | 1.25 | | Multipliers | 1.35 | 1.00 |
| | 25 ~ 35 | 0.80 | 1.00 | 1.25 | 1.40 | | | | |
| | 50 | 0.80 | 1.00 | 1.35 | 1.50 | | | | |
| Standards | JIS C 5101-1,-18 | | | | | | | | |

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Ripple Current mA/rms at 120 Hz, 85°C

| VDC | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | φD x L | mA | φD x L | mA | φD x L | mA | φD x L | mA | φD x L | mA | φD x L | mA |
| 0.1 | 0R1 | | | | | | | | | | | 4 x 5.3 | 2.3 |
| 0.22 | R22 | | | | | | | | | | | 4 x 5.3 | 3.3 |
| 0.33 | R33 | | | | | | | | | | | 4 x 5.3 | 4.1 |
| 0.47 | R47 | | | | | | | | | | | 4 x 5.3 | 4.9 |
| 1 | 010 | | | | | | | | | | | 4 x 5.3 | 7.2 |
| 2.2 | 2R2 | | | | | | | | | 4 x 5.3 | 10 | 5 x 5.3 | 14 |
| 3.3 | 3R3 | | | | | | | 4 x 5.3 | 13 | 5 x 5.3 | 17 | 5 x 5.3 | 17 |
| 4.7 | 4R7 | | | | | 4 x 5.3 | 14 | 5 x 5.3 | 20 | 5 x 5.3 | 21 | 6.3 x 5.3 | 24 |
| 10 | 100 | | | 4 x 5.3 | 18 | 5 x 5.3 | 26 | 6.3 x 5.3 | 35 | 6.3 x 5.3 | 35 | | |
| 22 | 220 | 5 x 5.3 | 27 | 6.3 x 5.3 | 40 | 6.3 x 5.3 | 45 | | | | | | |
| 33 | 330 | 6.3 x 5.3 | 45 | 6.3 x 5.3 | 50 | 6.3 x 5.3 | 55 | | | | | | |
| 47 | 470 | 6.3 x 5.3 | 54 | | | | | | | | | | |




## PAD SPACING AND DIAMETER

| ϕD±0.5 | L | A±0.2 | B±0.2 | C±0.2 | W | P±0.2 |
|---|---|---|---|---|---|---|
| 4 | 5.3±0.2 | 4.3 | 4.3 | 2.0 | 0.5 to 0.8 | 1.0 |
| 5 | 5.3±0.2 | 5.3 | 5.3 | 2.3 | 0.5 to 0.8 | 1.5 |
| 6.3 | 5.3±0.2 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 |

## PART NUMBER EXAMPLE

CALA 100 M 1E TR 063053

# CAGAA SERIES: Surface Mount | SMD E-CAP General Purpose

## FEATURES

- Endurance : 2000 hours at 105°C
- Available: 3Φ~18Φ
- SMD Technology, for high temperature reflow soldering
- RoHS directive compliant




## SPECIFICATIONS

| Item | Performance |
|---|---|
| Operating Temperature Range | -40°C ~ +105°C |
| Capacitance Tolerance | ± 20% |
| Leakage Current (at 20°C) | Where, C = rated capacitance in μF. V=rated DC working voltage in V |
| Dissipaton Factor (Tan δ at 120Hz, 20°C) | When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. |
| Load Life Test | The above spec1f1cation shall be sat1sf1ed when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hours at 105°C. |
| Shelf Life Test | Test time: 1,000 hours; other items are the same as those for the Load Life Test<br>The rated voltage shall be applied to the capacitors before the measurements for 160~450V (refer to JIS C 5101-4 4.1) |
| Ripple Current & Frequency Multilpiers | |

| Rated Voltage | 6.3 ~ 100V | | 160 ~ 450V |
|---|---|---|---|
| Time | after 2 minutes | | after 5 minutes |
| Case Size | 3~10Φ | 12.5~18Φ | 12.5~18Φ |
| Leakage Current | I = 0.01CV or 3μA whichever is greater | I = 0.03CV or 4μA whichever is greater | I = 0.04CV + 100μA |

| Rated Voltage | 4.0 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 400~450 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3~10Φ | 7 | 0.28 | 0.24 | 0.20 | 0.14 | 0.12 | 0.10 | 0.10 | 0.10 | — | — |
| 12.5~18Φ | — | 0.38 | 0.34 | 0.30 | 0.26 | 0.22 | 0.18 | 0.14 | 0.10 | 0.20 | 0.25 |

| Rated Voltage | | | 4.0 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 400~450 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Impedance Ratio | Z(-25°)/Z(+20° | ΦD < 12.5 | 7 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | — | — |
| | | ΦD≥12.5 | — | 5 | 5 | 4 | 2 | 2 | 2 | 2 | 2 | 3 | 6 |
| | Z(-40°/Z(+20° | ΦD < 12.5 | 15 | 8 | 5 | 4 | 3 | 3 | 3 | 3 | 3 | — | — |
| | | ΦD≥12.5 | — | 14 | 12 | 10 | 5 | 4 | 3 | 3 | 3 | 6 | 10 |

| Test Time | 2,000 hours |
|---|---|
| Capacitance Change | Within ± 20% of initial value (4V : ± 30%) |
| Tan δ | Less than 200% of specified value (4V : < 300%) |
| Leakage Current | Within specified value |

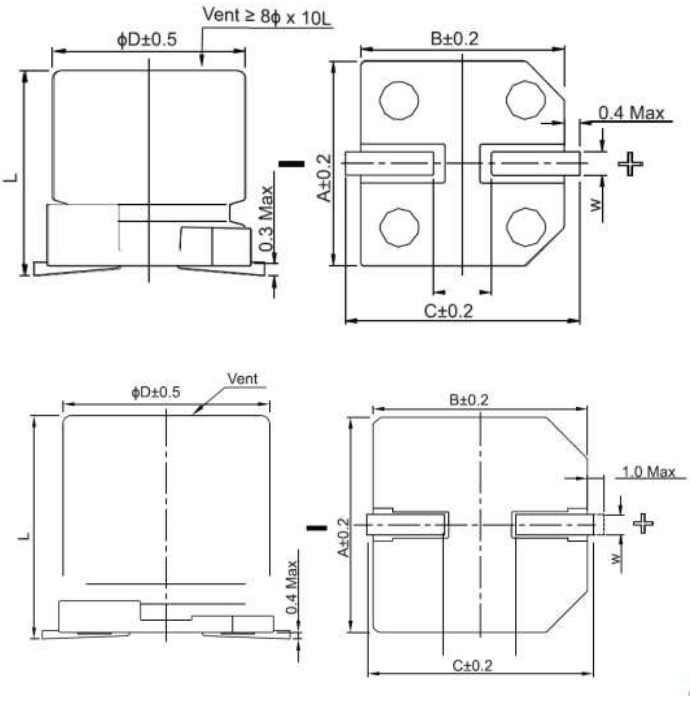
| Cap. (μF) \ Freq. (Hz) | 50 | 120 | 1K | 10K Up |
|---|---|---|---|---|
| Under 1,000 | 0.80 | 1.00 | 1.25 | 1.40 |
| 1,000＜C≤10,000 | 0.85 | 1.00 | 1.15 | 1.25 |

## Lead Spacing and Diameter

Unit: mm

| D | L | A | B | C | W | P±0.2 | Fig. No. |
|---|---|---|---|---|---|---|---|
| 3 | 5.3±0.2 | 3.3 | 3.3 | 4.1 | 0.45~0.75 | 0.8 | 1 |
| 4 | 5.3±0.2 | 4.3 | 4.3 | 5.1 | 0.5~0.8 | 1.0 | 1 |
| 5 | 5.3±0.2 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.5 | 1 |
| 6.3 | 5.3±0.2 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 2.0 | 1 |
| 6.3 | 7.7±0.3 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 2.0 | 1 |
| 8 | 6.5±0.3 | 8.4 | 8.4 | 9.0 | 0.5~0.8 | 2.3 | 1 |
| 8 | 10.0±0.5 | 8.4 | 8.4 | 9.0 | 0.7~1.1 | 3.1 | 1 |
| 10 | 7.7±0.3 | 10.4 | 10.4 | 11.0 | 0.7~1.3 | 4.7 | 1 |
| 10 | 10.0±0.5 | 10.4 | 10.4 | 11.0 | 0.7~1.3 | 4.7 | 1 |
| 12.5 | 13.5±0.5 | 13.0 | 13.0 | 13.7 | 1.1~1.4 | 4.4 | 2 |
| 12.5 | 16.0±0.5 | 13.0 | 13.0 | 13.7 | 1.1~1.4 | 4.4 | 2 |
| 16 | 16.5±0.5 | 17.0 | 17.0 | 18.0 | 1.1~1.4 | 6.4 | 2 |
| 16 | 21.5±0.5 | 17.0 | 17.0 | 18.0 | 1.1~1.4 | 6.4 | 2 |
| 18 | 16.5±0.5 | 19.0 | 19.0 | 20.0 | 1.1~1.4 | 6.4 | 2 |
| 18 | 21.5±0.5 | 19.0 | 19.0 | 20.0 | 1.1~1.4 | 6.4 | 2 |

## FEATURES



# ALUMINUM ELECTROLYTIC CAPACITORS

## CAGAA SERIES: Surface Mount | SMD E-CAP General Purpose

### DIMENSION (mm) & PERMISSIBLE RIPPLE CURRENT

| Vdc / μF | Code | 4 V ( 0G ) | | 6.3V (0J ) | | 10V (1A) | | 16V (1C) | | 25V (1E ) | | 35V (1V) | | 50V (1H ) | | 63V (1J ) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA |
| 1 | 105 | | | | | | | | | | | | | 4x5.3 | 10 | 4x5.3 | 8 |
| 2.2 | 225 | | | | | | | | | | | | | 4x5.3 | 14 | 4x5.3 | 12 |
| 3.3 | 335 | | | | | | | | | 3x5.3 | 14 | 3x5.3 | 14 | 4x5.3 | 17 | 5x5.3 | 22 |
| 4.7 | 475 | | | | | 3x5.3 | 14 | 3x5.3 | 14 | 4 x 5.3 | 26 | 4x5.3 | 26 | 4x5.3 | 20 | 5x5 | |
| 10 | 106 | | | 3x5.3 | 16 | 4x5.3 | 26 | 4x5.3 | 26 | 5x5.3 | 44 | 5x5.3 | 44 | 5x5.3 | 35 | 6.3x5.3<br>8x6.5 | 40<br>46 |
| 22 | 226 | 3x5.3 | 16 | 4x5.3 | 26 | 5x5.3 | 44 | 4x5.3<br>5x5.3 | 30<br>44 | 5x5.3<br>6.3x5.3 | 47<br>59 | 5x5.3<br>6.3x5.3 | 47<br>59 | 6.3x5.3<br>6.3x7.7 | 50<br>65 | 8 X 10 | 139 |
| 33 | 336 | 4x5.3 | 31 | 4x5.3 | 31 | 4x5.3<br>5x5.3 | 31<br>55 | 5x5.3 | 55 | 5x5.3<br>6.3x5.3 | 55<br>67 | 6.3x5.3<br>6.3x7.7 | 67<br>85 | 6.3x7.7<br>8x6.5 | 75<br>95 | 8 X 10 | 139 |
| 47 | 476 | 4x5.3 | 34 | 4x5.3<br>5x5.3 | 34<br>55 | 6.3x5.3 | 75 | 5x5.3<br>6.3x5.3 | 55<br>75 | 6.3x5.3<br>6.3x7.7 | 75<br>98 | 6.3x7.7<br>8x6.5 | 98<br>105 | 6.3x7.7<br>8 X 10 | 75<br>190 | 10 X 10 | 200 |
| 68 | 686 | 5x5.3 | 58 | 5x5.3<br>6.3x5.3 | 58<br>89 | 5x5.3<br>6.3x5.3 | 58<br>89 | 6.3x5.3 | 89 | 6.3x7.7 | 109 | 6.3 x7.7 | 109 | 8 X 10 | 190 | 10 X 10 | 226 |
| 100 | 107 | 5x5.3<br>6.3x5.3 | 58<br>89 | 6.3x5.3 | 89 | 6.3x5.3<br>6.3x7.7 | 89<br>109 | 6.3x5.3<br>6.3x7.7<br>8x6.5 | 89<br>109<br>125 | 6.3x7.7<br>8x6.5 | 109<br>145 | 8 X 10 | 252 | 8 X 10 | 190 | 10 X 10 | 226 |
| 150 | 157 | | | | | | | | | | | 10 X7.7 | 252 | | | | |
| 220 | 227 | 6.3x5.3<br>6.3x7.7 | 89<br>124 | 6.3x5.3<br>6.3x7.7 | 89<br>124 | 6.3x7.7<br>8x6.5<br>8 X 10 | 124<br>175<br>270 | 6.3x7.7<br>8X10 | 124<br>270 | 8 X 10<br>10 X7.7 | 270<br>270 | 8 X 10<br>10 X 10 | 270<br>370 | 10 X 10 | 320 | 12.5x13.5 | 500 |
| 330 | 337 | 6.3x7.7 | 124 | 6.3x7.7<br>8x6.5 | 124<br>190 | 8 X 10 | 290 | 8 x10<br>10 X7.7 | 290<br>290 | 10 X 10 | 400 | 10 X 10 | 400 | 12.5 x 13.5 | 600 | 12.5 x 16 | 600 |
| 470 | 477 | 8 X 10 | 290 | 8 X 10 | 290 | 10 X 7.7<br>10 X 10 | 290<br>400 | 10 X 10 | 400 | 10 X 10 | 400 | 12.5x13.5 | 680 | 12.5x16 | 740 | 16 X 16.5 | 850 |
| 680 | 687 | | | 10 X7.7 | 290 | 10 X 10 | 410 | 10 X 10 | 410 | 12.5X13.5 | 680 | 12.5x13.5 | 680 | 16 X 16.5 | 1,100 | 18 X 16.5 | 1,100 |
| 1,000 | 108 | | | 10 X 10 | 430 | 10 X 10 | 430 | 12.5 x 13.5 | 750 | 12.5x13.5 | 750 | 16 x16.5 | 1,100 | 18 x 16.5<br>16 x 21.5 | 1,350<br>1,400 | | |
| 2,200 | 228 | | | 12.5X13.5 | 890 | 12.5 X 13.5 | 890 | 16 X 16 5 | 1,100 | 16 X 16.5 | 1,100 | 18 x 16.5<br>16 x 21.5 | 1,450<br>1,500 | | | | |
| 3,300 | 338 | | | 12.5x16 | 1,000 | 16x16.5 | 1,300 | 16 x 16.5 | 1,300 | 18 x 16.5<br>16 x 21.5 | 1,500<br>1,450 | 18 X 21.5 | 1,750 | | | | |
| 4,700 | 478 | | | 16x16.5 | 1,400 | 16 x16.5 | 1,400 | 18 x 16.5<br>16 x 21.5 | 1,600<br>1,650 | 18 X 21.5 | 1,750 | | | | | | |
| 6,800 | 688 | | | 18 x 16.5<br>16 x 21.5 | 1,700<br>1,750 | 18 x 16.5<br>16 x 21.5 | 1,700<br>1,750 | 18 X 21.5 | 2,000 | | | | | | | | |
| 10,000 | 109 | | | 18 X 21.5 | 2,000 | 18 X 21.5 | 2,000 | | | | | | | | | | |

| Vdc / μF | Code | 100V (2A) | | 160V (2C) | | 200V (2D ) | | 250V (2E) | | 400V (2G) | | 450V (2W) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA |
| 4.7 | 475 | | | | | | | | | 12.5x13.5 | 120 | 12.5x13.5 | 120 |
| 10 | 106 | 8x 10 | 90 | | | | | 12.5x13.5 | 150 | 12.5x13.5 | 120 | 12.5x16 | 130 |
| 22 | 226 | 8 X 10 | 90 | | | 12.5x13.5 | 240 | 12.5x13.5 | 150 | 16x16.5 | 140 | 16x16.5 | 140 |
| 33 | 336 | 10 X 10 | 120 | 12.5x13.5 | 290 | 12.5x16 | 310 | 12.5X16 | 240 | 16x16.5 | 140 | 18X16.5 | 180 |
| 47 | 476 | 10 X 10 | 120 | 12.5x16 | 370 | 16x16.5 | 420 | 16x16.5 | 340 | 18x16.5 | 280 | 18x21.5 | 250 |
| 68 | 686 | 12.5x13.5 | 380 | 16x16.5 | 500 | 16x16.5 | 420 | 18X16.5<br>16X21.5 | 440<br>450 | 18X21.5 | 350 | | |
| 100 | 107 | 12.5x13.5 | 440 | 18X16.5<br>16X21.5 | 650<br>690 | 18X16.5<br>16X21.5 | 550<br>590 | 18X21.5 | 490 | | | | |
| 220 | 227 | 16x16.5 | 600 | | | | | | | | | | |
| 330 | 337 | 18X16.5<br>16X21.5 | 780<br>850 | | | | | | | | | | |

### PART NUMBER EXAMPLE

CAGAA 227 M 1C T 080100

- Case Size (8Φ*10L)
- Package Style (Tape & Reel)
- Voltage Code
- Tolerance (±20%)
- Capacitance Code
- Series

# CAHC SERIES: Surface Mount | SMD E-CAP Ultra Low ESR (Impedance)

## FEATURES

- 105°C, 2000 ~ 5000 hours assured
- Ultra Low Impedance Capacitors
- RoHS Compliant




## SPECIFICATIONS

| Items | Performance | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | 6.3 ~ 63V | | | | | | | | 80 ~ 100V | | | | |
| | -55℃ ~ +105℃ | | | | | | | | -40℃ ~ +105℃ | | | | |
| Capacitance Tolerance | ±20% | | | | | | | | | | | | |
| Leakage Current (at 20℃) | I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where, C= rated capacitance in μF. V= rated DC working voltage in V. | | | | | | | | | | | | |
| Dissipation Factor (Tanδ at 120Hz, 20℃) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | | | |
| | Tanδ (max) | 0.30 | 0.26 | 0.22 | 0.16 | 0.13 | 0.10 | 0.08 | 0.08 | 0.07 | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | | |
| | Rated Voltage | | | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
| | Impedance Ratio | Z (-25℃)/Z(+20℃) | | | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | | Z(-40℃)/Z(+20℃) | | | 8 | 5 | 4 | 3 | 3 | 3 | 3 | 3 | 3 |
| Load Life Test | Test Time | 2,000 Hrs for 4 ~ 6.3Φ | | | 3,000 Hrs for 8 ~ 10Φ | | | | | | 5,000 Hrs for 12.5 ~ -16Φ | | |
| | Capacitance Change | Within ±25% of initial value | | | Within ±30% of initial value | | | | | | Within ±30% of initial value | | |
| | Dissipation Factor | Less than 200% of specified value | | | Less than 300% of specified value | | | | | | Less than 300% of specified value | | |
| | Leakage Current | Within specified value | | | Within specified value | | | | | | Within specified value | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied for 2,000 ~ 5,000 hrs at 105℃ | | | | | | | | | | | | |
| Shelf Life Test | Test Time: 1000 hrs; other items are the same as those for the load life test | | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / V.DC (V) | 50, 60 | 120 | 1k | 1k up | | | | | | | | |
| | 6.3 ~ 100 | 0.64 | 0.8 | 0.93 | 1.0 | | | | | | | | |
| Standards | JIS C 5101-1 | | | | | | | | | | | | |

Figure 1

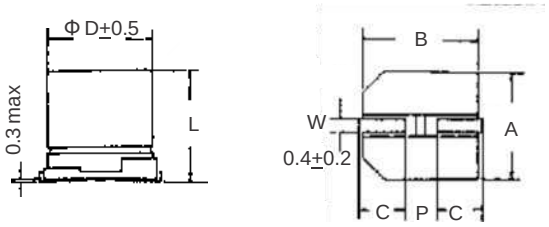
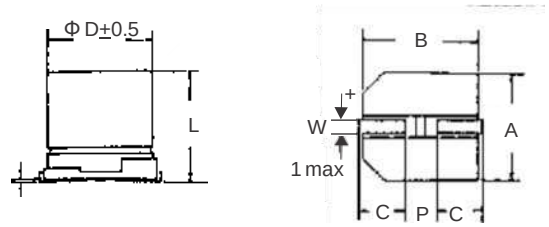



Figure 2




## PAD SPACING AND DIAMETER

| ΦD | L | A ±0.2 | B ±0.2 | C ±0.2 | W | P±0.2 | Fig. No. |
|---|---|---|---|---|---|---|---|
| 4 | 5.7 ± 0.3 | 4.3 | 4.3 | 2.0 | 0.5 to 0.8 | 1.0 | 1 |
| 5 | 5.7 ± 0.3 | 5.3 | 5.3 | 2.3 | 0.5 to 0.8 | 1.5 | 1 |
| 6.3 | 5.7 ± 3.3 | 6.3 | 6.3 | 2.7 | 0.5 to 0.8 | 2.0 | 1 |
| 6.3 | 7.7 ± 0.3 | 6.6 | 6.6 | 2.7 | 0.5 to 0.8 | 2.0 | 1 |
| 8 | 10 ± 0.5 | 8.4 | 8.4 | 3.0 | 0.7 to 1.1 | 3.1 | 1 |
| 10 | 10 ± 0.5 | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7 | 1 |
| 12.5 | 13.5 ± 0.5 | 12.8 | 12.8 | 4.9 | 1.1 to 1.4 | 4.2 | 2 |
| 12.5 | 16 ± 0.5 | 12.8 | 12.8 | 4.9 | 1.1 to 1.4 | 4.2 | 2 |
| 16 | 16.5 ± 0.5 | 16.3 | 16.3 | 5.8 | 1.8 to 2.2 | 6.0 | 2 |

## PART NUMBER EXAMPLE

CAHC 107 M 1V T 080 100



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JINPEI

# CAHC SERIES: Surface Mount | SMD E-CAP Ultra Low ESR (Impedance)

## DIMENSION, IMPEDANCE & PERMISSIBLE RIPPLE CURRENT

Dimension : φD x L(mm)
Ripple Current mA/rms at 100KHz, 105°C
Impedance : at 100KHz, 20ºC

| V.DC / μF | Contents | 6.3V (0J) | | | 10V (1A) | | | 16V (1C) | | | 25V (1E) | | | 35V (1V) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ΦD x L | mA | Imp. | ΦD x L | mA | Imp. | ΦD x L | mA | Imp. | ΦD x L | mA | Imp. | ΦD x L | mA | Imp. |
| 4.7 | 475 | | | | | | | | | | | | | 4 x 5.7 | 80 | 1.35 |
| 10 | 106 | | | | | | | 4 x 5.7 | 80 | 1.35 | 4 x 5.7 | 80 | 1.35 | 5 x 5.7 | 150 | 0.80 |
| 22 | 226 | 4 x 5.7 | 80 | 1.35 | 4 x 5.7 | 80 | 1.35 | 5 x 5.7 | 150 | 0.80 | 5 x 5.7 | 150 | 0.80 | 6.3 x 5.7 | 230 | 0.44 |
| 33 | 336 | 4 x 5.7 | 80 | 1.35 | 5 x 5.7 | 150 | 0.80 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 5.7 | 230 | 0.44 |
| 47 | 476 | 5 x 5.7 | 150 | 0.80 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 5.7 | 230 | 0.44 |
| 100 | 107 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 7.7 | 280 | 0.36 | 8 x 10 | 450 | 0.17 |
| 150 | 157 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 5.7 | 230 | 0.44 | 6.3 x 7.7 | 280 | 0.36 | 8 x 10 | 450 | 0.17 | 8 x 10 | 450 | 0.17 |
| 220 | 227 | 6.3 x 7.7 | 280 | 0.36 | 6.3 x 7.7 | 280 | 0.36 | 6.3 x 7.7 | 280 | 0.36 | 8 x 10 | 450 | 0.17 | 10 x 10 | 670 | 0.09 |
| 330 | 337 | 8 x 10 | 450 | 0.17 | 8 x 10 | 450 | 0.17 | 8 x 10 | 450 | 0.17 | 8 x 10 | 450 | 0.17 | 12.5 x 13.5 | 820 | 0.07 |
| 470 | 477 | 8 x 10 | 450 | 0.17 | 8 x 10 | 450 | 0.17 | 8 x 10 | 450 | 0.17 | 10 x 10 | 670 | 0.09 | 12.5 x 16 | 950 | 0.06 |
| 680 | 687 | 8 x 10 | 450 | 0.17 | 10 x 10 | 670 | 0.09 | 10 x 10 | 670 | 0.09 | 12.5 x 13.5 | 820 | 0.07 | 12.5 x 16 | 950 | 0.06 |
| 1,000 | 108 | 8 x 10 | 450 | 0.17 | 10 x 10 | 670 | 0.09 | 12.5 x 13.5 | 820 | 0.07 | 12.5 x 16 | 950 | 0.06 | 16 x 16.5 | 1,260 | 0.054 |
| 1,500 | 158 | 10 x 10 | 670 | 0.09 | 13 x 13.5 | 820 | 0.07 | 12.5 x 16 | 950 | 0.06 | 16 x 16.5 | 1,260 | 0.054 | | | |
| 2,200 | 228 | 12.5 x 14 | 820 | 0.07 | 13 x 16 | 950 | 0.06 | 16 x 16.5 | 1,260 | 0.054 | 16 x 16.5 | 1,260 | 0.054 | | | |
| 3,300 | 338 | 12.5 x 16 | 950 | 0.06 | 16 x 16.5 | 1,260 | 0.054 | 16 x 16.5 | 1,260 | 0.054 | | | | | | |
| 4,700 | 478 | 16 x 17 | 1,260 | 0.054 | 16 x 16.5 | 1,260 | 0.054 | | | | | | | | | |

| V.DC / μF | Contents | 50V (1H) | | | 63V (1J) | | | 80V (1K) | | | 100V (2A) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Φ D xL | mA | Imp. | Φ D xL | mA | Imp. | ΦD x L | mA | Imp. | ΦD x L | mA | Imp. |
| 1 | 105 | 4 x 5.7 | 60 | 2.9 | | | | | | | | | |
| 2.2 | 225 | 4 x 5.7 | 60 | 2.9 | | | | | | | | | |
| 3.3 | 335 | 4 x 5.7 | 60 | 2.9 | | | | | | | | | |
| 4.7 | 475 | 5 x 5.7 | 85 | 1.52 | 5 x 5.7 | 85 | 1.52 | | | | | | |
| 10 | 106 | 6.3 x 5.7 | 165 | 0.88 | 6.3 x 5.7 | 165 | 0.88 | | | | | | |
| 22 | 226 | 6.3 x 5.7 | 165 | 0.88 | 6.3 x 7.7 | 185 | 0.68 | | | | | | |
| 33 | 336 | 6.3 x 7.7 | 185 | 0.68 | 8 x 10 | 369 | 0.34 | | | | | | |
| 47 | 476 | 6.3 x 7.7 | 185 | 0.68 | 8 x 10 | 369 | 0.34 | | | | 10 x 10 | 200 | 0.7 |
| 68 | 686 | 8 x 10 | 369 | 0.34 | 10 x 10 | 553 | 0.18 | 10 x 10 | 200 | 0.7 | 12.5 x 13.5 | 450 | 0.32 |
| 100 | 107 | 8 x 10 | 369 | 0.34 | 10 x 10 | 553 | 0.18 | 12.5 x 13.5 | 450 | 0.32 | 12.5 x 16 | 550 | 0.26 |
| 150 | 157 | 10 x 10 | 553 | 0.18 | 12.5 x 13.5 | 650 | 0.12 | 12.5 x 13.5 | 450 | 0.32 | 16 x 16.5 | 650 | 0.17 |
| 220 | 227 | 10 x 10 | 553 | 0.18 | 12.5 x 13.5 | 650 | 0.12 | 12.5 x 16 | 550 | 0.26 | | | |
| 330 | 337 | 12.5 x 13.5 | 650 | 0.12 | 16 x 16.5 | 900 | 0.082 | 16 x 16.5 | 650 | 0.17 | | | |
| 470 | 477 | 16 x 16.5 | 900 | 0.082 | 16 x 16.5 | 900 | 0.082 | | | | | | |
| 680 | 687 | 16 x 16.5 | 900 | 0.082 | | | | | | | | | |

# CAGC SERIES: Surface Mount | SMD E-CAP | AEC-Q200 | 105°C, 2,000hrs

## FEATURES

- Standard 105℃, 2,000 hours assured
- Voltage Range 6.3 Vdc ~ 450Vdc, 4Φ ~ 18Φ
- Capacitance Range 1μF ~ 8,200 μF
- Automotive version available, TS-16949




## PART NUMBER EXAMPLE

CAGC 227 M 1C T 080100

- Case Size (8Φ*10L)
- Package Style (Tape & Reel)
- Voltage Code
- Tolerance (±20%)
- Capacitance Code
- Series

## SPECIFICATIONS

| Items | Performance | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | 6.3 ~ 100V | | | | | | | | 160 ~ 450V | | | | |
| | -55 ˚C ~ +105˚C | | | | | | | | -40˚C ~ +105˚C | | | | |
| Capacitance Tolerance | Standard (+20% (at 120Hz, 20˚C), Option + 10% (at 120Hz, 20˚C) | | | | | | | | | | | | |
| Leakage Current(at 20˚C) | Rated Voltage | 6.3 ~ 100V | | | | | | | 160 ~ 450V | | | | |
| | Time | after 2 minutes | | | | | | | after 5 minutes | | | | |
| | Case Size | 4 ~ 10ϕ | | | | 12.5 ~ 18ϕ | | | 12.5 ~ 18ϕ | | | | |
| | Leakage Current | I = 0.01CV or 3 A, whichever is greater | | | | I = 0.03CV or 4 A, whichever is greater | | | I = 0.04CV + 100 A | | | | |
| | Where, C = rated capacitance in μF | | | | | | | | V = rated DC working voltage in V | | | | |
| Dissipation Factor (Tan δ at 120Hz, 20˚C) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 ~ 250 | 400 ~ 450 | | |
| | 4 ~ 10 | 0.45 | 0.35 | 0.28 | 0.18 | 0.16 | 0.14 | 0.12 | 0.12 | - | - | | |
| | 12.5 ~ 18 | 0.40 | 0.38 | 0.34 | 0.26 | 0.22 | 0.18 | 0.14 | 0.10 | 0.20 | 0.25 | | |
| | When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase. | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | | |
| | Rated Voltage | | | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 ~ 250 | 400 ~ 450 |
| | Impedance Ratio | Z (-25˚C)/Z(+20˚C) | | ϕD < 12.5 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | - | - |
| | | | | ϕD < 12.5 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 6 |
| | | Z(-55/-40˚C)/Z(+20˚C) | | ϕD < 12.5 | 12 | 8 | 6 | 4 | 3 | 3 | 3 | 4 | - | - |
| | | | | ϕD < 12.5 | 10 | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 6 | 10 |
| Endurance | Test Time | 2,000 Hrs | | | | | | | | | | | |
| | Capacitance Change | Within +25% of initial value for ϕ D < 6.3mm; Within + 20% of initial value for ϕ D > 8mm | | | | | | | | | | | |
| | Dissipation Factor | Less than 300% of specified value for ϕ D < 6.3mm; less than 200% of specified value for ϕ D > 8mm | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | |
| | *The above specifications shall be satisfied when the capacitors are restored to 20˚C after the rated voltage applied for 2,000 hrs at 105˚C | | | | | | | | | | | | |
| Shelf Life Test | Test Time: 1,000 hrs; other items are the same as those for the Endurance. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1). | | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / Cap. (μF) | 50 | 120 | 1k | 10k up | | | | | | | | |
| | Under 1,000 | 0.80 | 1.00 | 1.25 | 1.40 | | | | | | | | |
| | 1,000 < C < 8,200 | 0.85 | 1.00 | 1.15 | 1.25 | | | | | | | | |


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# CAGC SERIES: Surface Mount | SMD E-CAP | AEC- Q200 | 105℃2,000hrs

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Unit: mm

| | V.DC | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | | 63V (1J) | | 100V (2A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | Φ D xL | mA | Φ D xL | mA | ΦD x L | mA | ΦD x L | mA |
| 1 | 105 | | | | | | | | | | | 4 x 5.7 | 8 | 4 x 5.7 | 8 | | |
| 2.2 | 225 | | | | | | | | | | | 4 x 5.7 | 12 | 4 x 5.7 | 12 | | |
| 3.3 | 335 | | | | | | | | | | | 4 x 5.7 | 14 | 5 x 5.7 | 17 | | |
| 4.7 | 475 | | | | | | | 4 x 5.7 | 17 | 4 x 5.7 | 17 | 5 x 5.7 | 20 | 6.3 x 5.7 | 22 | | |
| 10 | 106 | | | | | 4 x 5.7 | 20 | 4 x 5.7 | 20 | 5 x 5.7 | 27 | 6.3 x 5.7 | 32 | 6.3 x 5.7 | 32 | | |
| 22 | 226 | 4 x 5.7 | 22 | 4 x 5.7 | 22 | 5 x 5.7 | 30 | 5 x 5.7 | 30 | 6.3 x 5.7 | 44 | 6.3 x 5.7 | 38 | 6.3 x 7.7 | 58 | 8 x 10 | 100 |
| 33 | 336 | 5 x 5.7 | 34 | 5 x 5.7 | 34 | 5 x 5.7 | 34 | 6.3 x 5.7 | 46 | 6.3 x 5.7 | 46 | 6.3 x 7.7 | 65 | 8 x 10 | 140 | 10 x 10 | 150 |
| 47 | 476 | 5 x 5.7 | 38 | 5 x 5.7 | 38 | 6.3 x 5.7 | 48 | 6.3 x 5.7 | 48 | 6.3 x 7.7 | 80 | 6.3 x 7.7 | 70 | 8 x 10 | 170 | 12.5 x 13.5 | 250 |
| 100 | 107 | 6.3 x 5.7 | 69 | 6.3 x 5.7 | 69 | 6.3 x 5.7 | 69 | 6.3 x 7.7 | 100 | 8 x 10 | 240 | 8 x 10 | 210 | 10 x 10.3 | 310 | 12.5 x 13.5 | 380 |
| 220 | 227 | 6.3 x 7.7 | 120 | 6.3 x 7.7 | 120 | 6.3 x 7.7 | 120 | 8 x 10<br>10 x 7.7 | 270<br>270 | 8 x 10 | 270 | 10 x 10.3 | 330 | 12.5 x 13.5 | 470 | 16 x 16.5 | 450 |
| 330 | 337 | 8 x 10 | 290 | 8 x 10 | 290 | 8 x 10<br>10 x 7.7 | 290<br>290 | 8 x 10 | 290 | 10 x 10 | 370 | 12.5 x 13.5 | 490 | 16 x 16.5 | 650 | 18 x 16.5<br>16 x 21.5 | 590<br>750 |
| 470 | 477 | 8 x 10 | 320 | 8 x 10<br>10 x 7.7 | 320<br>320 | 10 x 10 | 380 | 10 x 10 | 380 | 12.5 x 13.5 | 520 | 12.5 x 16 | 550 | 16 x 16.5 | 700 | 18 x 21.5 | 980 |
| 1,000 | 108 | 10 x 10 | 410 | 10 x 10.3 | 410 | 12.5 x 13.5 | 550 | 12.5 x 16 | 550 | 16 x 16.5 | 800 | 18 x 16.5 | 990 | | | | |
| 2,200 | 228 | 12.5 x 13.5 | 680 | 12.5 x 13.5 | 680 | 16 x 16.5 | 900 | 16 x 16.5 | 900 | 18 x 16.5 | 1,050 | | | | | | |
| 3,300 | 338 | 12.5 x 16 | 850 | 16 x 16.5 | 950 | 16 x 16.5 | 950 | 18 x 16.5<br>16 x 21.5 | 1,150<br>1,200 | | | | | | | | |
| 4,700 | 478 | 16 x 16.5 | 1,000 | 16 x 16.5 | 1,000 | 18 x 16.5<br>16 x 21.5 | 1,225<br>1,275 | 18 x 21.5 | 1,300 | | | | | | | | |
| 6,800 | 688 | 18 x 16.5<br>16 x 21.5 | 1,290<br>1,350 | 18 x 16.5<br>16 x 21.5 | 1,290<br>1,350 | | | | | | | | | | | | |
| 8,200 | 828 | 18 x 21.5 | 1,450 | 18 x 21.5 | 1,450 | | | | | | | | | | | | |

| | V.DC | 160V (2C) | | 200V (2D) | | 250V (2E) | | 400V (2G) | | 450V (2W) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | Φ D xL | mA | Φ D xL | mA | Φ D xL | mA | D x L | mA | D x L | mA |
| 3.3 | 335 | | | | | 12.5 x 13.5 | 60 | | | 12.5 x 13.5 | 40 |
| 4.7 | 475 | | | | | 12.5 x 13.5 | 65 | 12.5 x 13.5 | 45 | 12.5 x 13.5 | 45 |
| 10 | 106 | | | 12.5 x 13.5 | 80 | 12.5 x 13.5 | 70 | 12.5 x 13.5 | 50 | 12.5 x 16 | 75 |
| 22 | 226 | | | 12.5 x 16 | 10 | 12.5 x 13.5 | 105 | 16 x 16.5 | 85 | 16 x16.5 | 85 |
| 33 | 336 | 12.5 x 13.5 | 95 | 12.5 x 16 | 120 | 16 x 16.5 | 180 | 18 x 16.5 | 100 | 18 x16.5 | 100 |
| 47 | 476 | 16 x 16.5 | 240 | 16 x 16.5 | 220 | 16 x 16.5 | 220 | 18 x 21.5 | 130 | | |
| 100 | 107 | 16 x 16.5 | 250 | 18 x 16.5 | 280 | 18 x 16.5 | 260 | | | | |

Fig 1

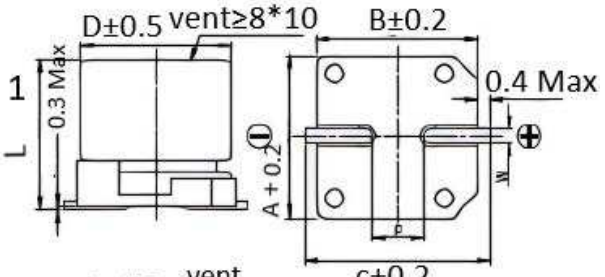
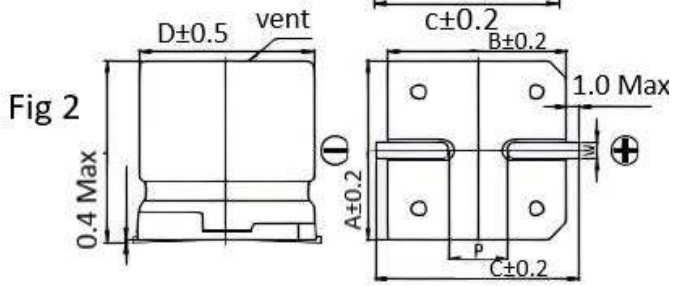



Fig 2



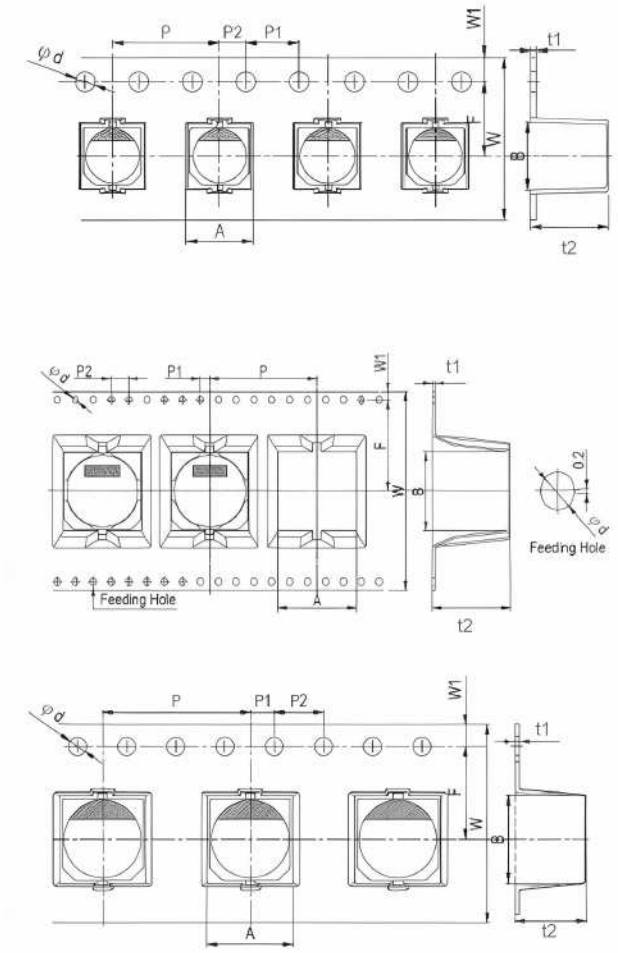

## LEAD SPACING AND DIAMETER

| D | L | A | B | C | W | P±0.2 | Fig. No. |
|---|---|---|---|---|---|---|---|
| 4 | 5.7 ± 0.3 | 4.3 | 4.3 | 5.1 | 0.5 ~ 0.8 | 1.0 | 1 |
| 5 | 5.7 ± 0.3 | 5.3 | 5.3 | 5.9 | 0.5 ~ 0.8 | 1.5 | 1 |
| 6.3 | 5.7 ± 0.3 | 6.6 | 6.6 | 7.2 | 0.5 ~ 0.8 | 2.0 | 1 |
| 6.3 | 7.7 ± 0.3 | 6.6 | 6.6 | 7.2 | 0.5 ~ 0.8 | 2.0 | 1 |
| 8 | 10.0 ± 0.5 | 8.4 | 8.4 | 9.0 | 0.7 ~ 1.1 | 3.1 | 1 |
| 10 | 7.7 ± 0.3 | 10.4 | 10.4 | 11.0 | 0.7 ~ 1.3 | 4.7 | 1 |
| 10 | 10.0 ± 0.5 | 10.4 | 10.4 | 11.0 | 0.7 ~ 1.3 | 4.7 | 1 |
| 10 | 10.3 ± 0.5 | 10.4 | 10.4 | 11.0 | 0.7 ~ 1.3 | 4.7 | 1 |
| 13 | 13.5 ± 0.5 | 13.0 | 13.0 | 13.7 | 1.1 ~ 1.4 | 4.4 | 2 |
| 13 | 16.0 ± 0.5 | 13.0 | 13.0 | 13.7 | 1.1 ~ 1.4 | 4.4 | 2 |
| 16 | 16.5 ± 0.5 | 17.0 | 17.0 | 18.0 | 1.1 ~ 1.4 | 6.4 | 2 |
| 16 | 21.5 ± 0.5 | 17.0 | 17.0 | 18.0 | 1.1 ~ 1.4 | 6.4 | 2 |
| 18 | 16.5 ± 0.5 | 19.0 | 19.0 | 20.0 | 1.1 ~ 1.4 | 6.4 | 2 |
| 18 | 21.5 ± 0.5 | 19.0 | 19.0 | 20.0 | 1.1 ~ 1.4 | 6.4 | 2 |

# CAGC SERIES: Surface Mount | SMD E-CAP | AEC- Q200 | 105℃2,000hrs

## TAPING SPECIFICATIONS

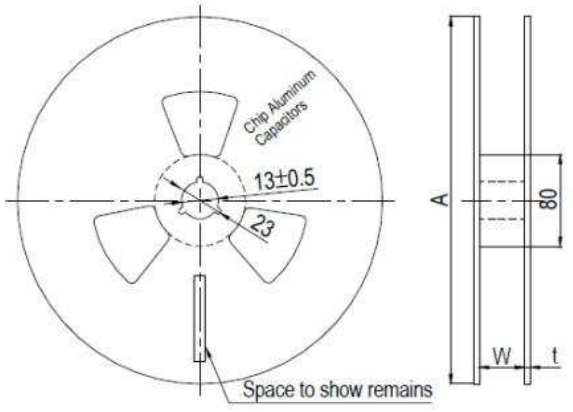
| ΦD x L | A | B | d | F | P | P1 | P2 | t1 | t2 | W | W1 | Fig. No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 ~ 4 x 4.5 ~5.3 | 5.0 | 5.0 | 1.5 | 5.5 | 8.0 | 2.0 | 4.0 | 0.4 | 5.8 | 12.0 | 1.75 | 1-1 |
| 4 x 5.7 | 5.0 | 5.0 | | 5.5 | 8.0 | | | | 6.2 | | | |
| 5 x 4.5 ~ 5.3 | 6.0 | 6.0 | | 5.5 | 12.0 | | | | 5.8 | | | |
| 5 x 5.7 (*) | 6.0 | 6.0 | | 5.5 | 12.0 | | | | 6.2 | | | |
| 6.3 x 4.5 ~ 5.3 | 7.0 | 7.0 | | 7.5 | 12.0 | | | | 5.8 | 16.0 | | 1-2 |
| 6.3 x 5.7 | | | | | | | | | 6.2 | | | |
| 6.3 x 5.9* | | | | | | | | | 6.2 | | | |
| 6.3 x 7.0* | | | | | | | | | 6.8 | | | |
| 6.3 x 7.7 | | | | | | | | | 8.3 | | | |
| 8 x 6.5 | 8.7 | 8.7 | | | | | | | 6.8 | | | |
| 8 x 6.7* | | | | | | | | | 6.8 | | | |
| 8 x 10 | | | | 11.5 | 16.0 | | | | 11.0 | 24.0 | | |
| 8 x 12* | | | | | | | | | 13.0 | | | |
| 10 x 7.7* | 10.7 | 10.7 | | | | | | | 10.0 | | | |
| 10 x 10 (9.9*) | | | | | | | | | 11.0 | | | |
| 10 x 12.7* | | | | | | | | | 14.0 | | | |
| 12.5 x 13.5 | 13.4 | 13.4 | | 14.2 | 24.0 | | | 0.5 | 15.0 | 32.0 | | 1-3 |
| 12.5 x 13.5 (G) | 13.7 | 13.7 | | 14.2 | 24.0 | | | | 15.0 | 32.0 | | |
| 12.5 X 16 | 13.4 | 13.4 | | 14.2 | 24.0 | | | | 17.5 | 32.0 | | |
| 12.5 X 16 (G) | 13.7 | 13.7 | | 14.2 | 24.0 | | | | 17.5 | 44.0 | | |
| 16 X 16.5 | 17.5 | 17.5 | | 20.2 | 28.0 | | | | 17.5 | 44.0 | | |
| 16 X 16.5 (G) | 17.5 | 17.5 | | 20.2 | 28.0 | | | | 17.5 | 44.0 | | |
| 16 X 21.5 | 17.5 | 17.5 | | 20.2 | 28.0 | | | | 22.5 | 44.0 | | |
| 18 X 16.5 | 19.5 | 19.5 | | 20.2 | 32.0 | | | | 17.5 | 44.0 | | |
| 18 X 21.5 | 19.5 | 19.5 | | 20.2 | 32.0 | | | | 22.5 | 44.0 | | |
| Tolerance | +0.2 | +0.2 | +0.1 / -0 | +0.1 | +0.2 | +0.1 | +0.1 | +0.1 | +0.2 | +0.3 | +0.15 | |

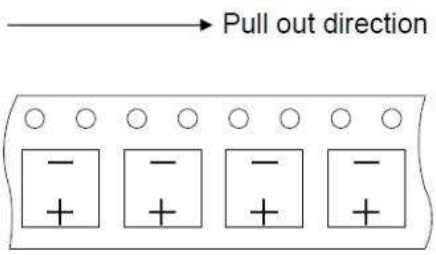



## REEL SPECIFICATIONS

Unit: mm

| Case Size | 3 ~ 4Φ | 5Φ | 6.3Φ | 8Φ x 6.5 ~ 7.0L | 8Φ x 10 ~ 12L | 10Φ | 12.5Φ | 16 ~ 18Φ |
|---|---|---|---|---|---|---|---|---|
| W | 14 | 14 | 18 | 18 | 26 | 26 | 34 | 46 |
| A | 380 | 380 | 380 | 380 | 380 | 380 | 380 / 450 | 380 / 450 |
| t | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 |



# CAFA SERIES: Slim Type

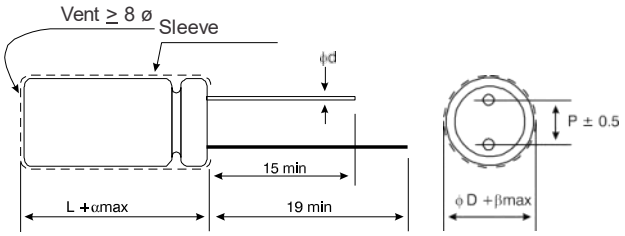


## FEATURES

- Long life, 105 ℃, 2,000 hours assured
- Smaller size with large permissible ripple current
- Slim Type

## SPECIFICATIONS

| Items | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Life | at 105 ° C 2000 Hours | | | | | | |
| Operating Temp | 400V | | | 420 ~450V | | | |
| | -40 ° C ~ +105 ° C | | | -25 ° C ~ +105 ° C | | | |
| Capacitance Tolerance | ±20% (at 120Hz, 20 ° C) | | | | | | |
| Leakage Current (at 20 ° C) | Time | after 5 minutes | | | | | |
| | Leakage Current | CV < 1,000 I = 0.03CV + 15(μA) | | CV > 1,000 I = 0.02CV+25 (μA) | | | |
| | Where C = rated capacitance in μF. V = rated DC working voltage in V | | | | | | |
| Dissipation Factor (Tan δ at 120Hz, 20° C) | Rated Voltage | 400 | 420 | 450 | | | |
| | Tan δ (max) | 0.24 | 0.24 | 0.24 | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below | | | | | | |
| | Rated Voltage | | 400 | 420 | 450 | | |
| | Impedance Ratio | Z (-25° C) / Z (+20 ° C) | 5 | 6 | 6 | | |
| | | Z (-40° C) / Z (+20° C) | 6 | -- | -- | | |
| Load Life Test | Test Time | 2,000 hrs | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 ° C after the rated voltage applied with rated ripple current for 2,000 hrs at 105 ° C | | | | | | |
| Shelf Life Test | Test Time | 1,000 hours | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 ° C after exposing them for 1,000 hrs at 105 ° C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS C 5101-4 4.1) | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) | 60 | 120 | 500 | 1k | 10k up | |
| | Multipliers | 0.80 | 1.00 | 1.25 | 1.45 | 1.50 | |
| Other Standards | JIS C 5101-4 | | | | | | |




## DIMENSIONS

Unit: mm

| φD | 8 | 10 | 12.5 | 16 | 18 |
|---|---|---|---|---|---|
| P | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.6 | | | 0.8 | |
| α | 2.0 | | | | |
| P | 0.5 | | | | |

# CAFA SERIES: Slim T ype

## DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

Dimension: φDx L(mm)
Ripple Current: mA/rms at 100Hz, 105°C

| V. DC | Cap. (μF) | 8φ | | | 10φ | | | 12.5φ | | | 16φ | | | 18φ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | φD x L | Ripple Current | | φ D x L | Ripple Current | | φ D x L | Ripple Current | | φ D x L | Ripple Current | | φ D x L | Ripple Current | |
| | | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz |
| 400V (2G) | 15 | 8 x 30 | 190 | 285 | | | | | | | | | | | | |
| | 22 | 8 x 35 | 250 | 375 | | | | | | | | | | | | |
| | 27 | 8 x 40 | 300 | 450 | 10 x 30 | 245 | 370 | | | | | | | | | |
| | 33 | 8 x 45 | 350 | 525 | 10 x 35 | 295 | 445 | | | | | | | | | |
| | 39 | 8 x 50 | 390 | 585 | 10 x 40 | 345 | 515 | | | | | | | | | |
| | 47 | | | | 10 x 45 | 400 | 600 | | | | | | | | | |
| | 56 | | | | 10 x 50 | 450 | 675 | 12.5 x 30 | 470 | 705 | | | | | | |
| | 68 | | | | | | | 12.5 x 35 | 540 | 810 | | | | | | |
| | 82 | | | | | | | 12.5 x 40 | 620 | 930 | | | | | | |
| | 100 | | | | | | | | | | | | | | | |
| | 120 | | | | | | | | | | 16 x 35.5<br>16 x 40 | 800<br>840 | 1,200<br>1,260 | | | |
| | 150 | | | | | | | | | | 16 x 45 | 940 | 1,410 | | | |
| | 180 | | | | | | | | | | 16 x 50 | 1050 | 1,575 | 18 x 40 | 1,060 | 1,590 |
| | 220 | | | | | | | | | | | | | 18 x 45 | 1,200 | 1,800 |
| 420V (2P) | 15 | 8 x 30 | 195 | 293 | | | | | | | | | | | | |
| | 22 | 8 x 35 | 255 | 383 | | | | | | | | | | | | |
| | 27 | 8 x 45 | 320 | 480 | 10 x 30 | 245 | 370 | | | | | | | | | |
| | 33 | 8 x 50 | 370 | 555 | 10 x 35 | 295 | 445 | | | | | | | | | |
| | 39 | | | | 10 x 40 | 345 | 515 | | | | | | | | | |
| | 47 | | | | 10 x 45 | 400 | 600 | | | | | | | | | |
| | 56 | | | | 10 x 50 | 450 | 675 | 12.5 x 30 | 470 | 705 | | | | | | |
| | 68 | | | | | | | 12.5 x 35 | 540 | 810 | | | | | | |
| | 82 | | | | | | | 12.5 x 45 | 630 | 945 | | | | | | |
| | 100 | | | | | | | 12.5 x 50 | 730 | 1,095 | 16 x 35.5 | 730 | 1,095 | | | |
| | 120 | | | | | | | | | | 16 x 40 | 840 | 1,260 | | | |
| | 150 | | | | | | | | | | 16 x 45 | 940 | 1,410 | 18 x 35.5 | 920 | 1,380 |
| | 180 | | | | | | | | | | 16 x 50 | 1,050 | 1,575 | 18 x 40 | 1,060 | 1,590 |
| | 220 | | | | | | | | | | | | | 18 x 50 | 1,220 | 1,830 |
| 450V (2W) | 15 | 8 x 30 | 195 | 293 | | | | | | | | | | | | |
| | 22 | 8 x 40 | 270 | 405 | 10 x 30 | 225 | 330 | | | | | | | | | |
| | 27 | 8 x 45 | 320 | 480 | 10 x 35 | 265 | 400 | | | | | | | | | |
| | 33 | 8 x 50 | 370 | 555 | 10 x 40 | 315 | 475 | | | | | | | | | |
| | 39 | | | | 10 x 45 | 360 | 545 | | | | | | | | | |
| | 47 | | | | 10 x 50 | 420 | 625 | 12.5 x 30 | 430 | 645 | | | | | | |
| | 56 | | | | | | | 12.5 x 35 | 490 | 735 | | | | | | |
| | 68 | | | | | | | 12.5 x 40 | 560 | 840 | | | | | | |
| | 82 | | | | | | | 12.5 x 45 | 630 | 945 | | | | | | |
| | 100 | | | | | | | 12.5 x 50 | 730 | 1,095 | 16 x 35.5 | 730 | 1,095 | | | |
| | 120 | | | | | | | | | | 16 x 45 | 840 | 1,260 | 18 x 35.5 | 820 | 1,230 |
| | 150 | | | | | | | | | | 16 x 50 | 980 | 1,470 | 18 x 40 | 970 | 1,455 |
| | | | | | | | | | | | | | | 18 x 45 | 995 | 1,490 |
| | 180 | | | | | | | | | | | | | 18 x 45 | 1,090 | 1,635 |
| | | | | | | | | | | | | | | 18 x 50 | 1,140 | 1,710 |

## PART NUMBER EXAMPLE

CAFA 567 M 2G BK 125 300


www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

# CAFC SERIES: Radial High Temperature, 105°C

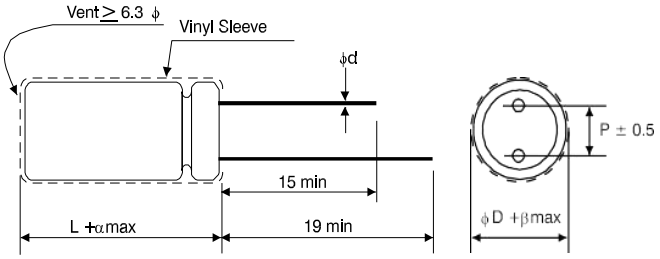


## FEATURES

- High Temperature, 105 ℃
- For general purpose
- Replaces RG & RHG Series

## SPECIFICATIONS

| Items | Performance | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Life | at 105 °C 2000 Hours | | | | | | | | | | | | | | | | | |
| Operating Temp. | -40 °C ~ +105 °C | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20 °C) | | | | | | | | | | | | | | | | | |
| Leakage Current (at 20 ° C) | Rated Voltage | < 100V | | | | | | | | | > 100V | | | | | | | |
| | Time | after 2 minutes | | | | | | | | | after 5 minutes | | | | | | | |
| | Leakage Current | I = 0.01CV or 3 (μA) whichever is greater | | | | | | | | | CV ≤ 1000 I = 0.03CV+15 (μA) | | | CV > 1000 I = 0.02CV+25 (μA) | | | | |
| | Where C = rated capacitance in μF. V = rated DC working voltage in V. | | | | | | | | | | | | | | | | | |
| Dissipation Factor (Tanδ at 120Hz, 20°C) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | | | |
| | Tan δ (max) | 0.23 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.12 | 0.14 | 0.17 | 0.20 | 0.25 | 0.25 | | | |
| | When the capacitance exceeds 1,000 μF, 0.02 shall be the added every 1,000 μF increase. | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | | | | | | | |
| | Rated Voltage | | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | |
| | Impedance Ratio | Z (-25°C) / Z (+20 °C) | D < 16 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 6 | 8 | 12 | 14 | 16 | |
| | | | D > 16 | 6 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | | | | | | | |
| | | Z (-40°C) / Z (+20°C) | D < 16 | 8 | 6 | 6 | 4 | 4 | 3 | 3 | 3 | 4 | 8 | 10 | 16 | 18 | 20 | |
| | | | D > 16 | 12 | 10 | 8 | 8 | 8 | 8 | 6 | 6 | | | | | | | |
| Load Life Test | Test Time | 2,000 hrs | | | | | | | | | | | | | | | | |
| | Capacitance Change | Within + 20% of initial value | | | | | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 °C after the rated voltage applied with rated ripple current for 2,000 hrs at 105 °C. | | | | | | | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1,000 hours | | | | | | | | | | | | | | | | |
| | Capacitance Change | Within + 20% of initial value | | | | | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 °C after exposing them for 1,000 hrs at 105 °C without voltage applied. Th rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-44.1). | | | | | | | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / Cap. (μF) | 60 | 120 | 500 | 1k | 10k up | | | | | | | | | | | | |
| | Under 100 | 0.70 | 1.00 | 1.30 | 1.40 | 1.50 | | | | | | | | | | | | |
| | 100 < C < 1,000 | 0.75 | 1.00 | 1.20 | 1.30 | 1.35 | | | | | | | | | | | | |
| | 1,000 up above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 | | | | | | | | | | | | |
| Other Standards | JIS C 5101-4 | | | | | | | | | | | | | | | | | |




## PART NUMBER EXAMPLE

CAFB 221 M 1H BK 100 200

## LEAD SPACING AND DIAMETER

| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 | 25 |
|---|---|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5 | 7.5 | 7.5 | 10 | 12.5 |
| φd | 0.5 | | 0.6 | | | 0.8 | | 1.0 | |
| α | 1.0 | | | 1.5 | | | | 2.0 | |
| β | 0.5 | | | | | | | | |

# GENERAL ALUMINUM ELECTROLYTIC CAPACITORS

## CAFC SERIES: Radial High Temperature, 105°C

### DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: ϕ D×L(mm) Ripple Current: mA/RMS at 120Hz 105°C

| V.DC | | 6.3V (OJ) | | | | 10V (1A) | | | | 16V (1C) | | | | 25V (1E) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ϕD x L | mA | ϕ*D x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA |
| 4.7 | 475 | | | | | | | | | | | | | 5 x 11 | 26 | | |
| 10 | 106 | | | | | | | | | 5 x 11 | 35 | | | 5 x 11 | 43 | | |
| 22 | 226 | | | | | 5 x 11 | 49 | | | 5 x 11 | 58 | | | 5 x 11 | 62 | | |
| 33 | 336 | 5 x 11 | 54 | | | 5 x 11 | 60 | | | 5 x 11 | 71 | | | 5 x 11 | 76 | | |
| 47 | 476 | 5 x 11 | 65 | | | 5 x 11 | 76 | | | 5 x 11 | 85 | | | 5 x 11 | 97 | | |
| 100 | 107 | 5 x 11 | 95 | | | 5 x 11 | 105 | | | 6.3 x 11 | 133 | 5 x 11 | 110 | 6.3 x 11 | 142 | | |
| 220 | 227 | 6.3 x 11 | 160 | 5 x 11 | 140 | 6.3 x 11 | 175 | | | 8 x 11.5 | 215 | 6.3 x 11 | 190 | 8 x 11.5 | 236 | | |
| 330 | 337 | 8 x 11.5 | 195 | 6.3 x 11 | 190 | 8 x 11.5 | 245 | 6.3 x 11 | 200 | 8 x 11.5 | 270 | | | 10 x 12.5 | 335 | 8 x 11.5 | 310 |
| 470 | 477 | 8 x 11.5 | 270 | 6.3 x 11 | 230 | 8 x 11.5 | 290 | | | 10 x 12.5 | 370 | 8 x 11.5 | 310 | 10 x 16 | 440 | 10 x 12.5 | 380 |
| 1,000 | 108 | 10 x 12.5 | 460 | 8 x 11.5 | 380 | 10 x 16 | 550 | 10 x 12.5 | 460 | 10 x 20 | 640 | 10 x 16 | 560 | 12.5 x 20 | 770 | 10 x 20 | 680 |
| 2,200 | 228 | 10 x 20 | 810 | 10 x 16 | 690 | 12.5 x 20 | 860 | 10 x 20 | 760 | 12.5 x 25 | 1,000 | 12.5 x 20 | 920 | 16 x 25 | 1,170 | 12.5 x 25.0 | 1,110 |
| 3,300 | 338 | 12.5 x 20 | 960 | 10 x 20 | 840 | 12.5 x 20 | 1,100 | | | 16 x 25 | 1,300 | 12.5 x 25 | 1,170 | 16 x 31.5 | 1,460 | 16 x 25 | 1,440 |
| 4,700 | 478 | 16 x 25 | 1,330 | 12.5 x 20 | 1,090 | 16 x 25 | 1,400 | 12.5 x 25 | 1,260 | 16 x 32 | 1,600 | 16 x 25 | 1,480 | 18 x 35.5 | 1,780 | 16 x 31.5 | 1,710 |
| 6,800 | 688 | 16 x 25 | 1,640 | 12.5 x 25 | 1,460 | 16 x 31.5 | 1,880 | 16 x 25 | 1,690 | 18 x 35.5 | 2,170 | 16 x 31.5 | 1,930 | 18 x 40 | 2,280 | 18 x 35.5 | 2,160 |
| 10,000 | 109 | 16 x 31.5 | 2,200 | 16 x 25 | 1,990 | 16 x 35.5 | 2,400 | 16 x 31.5 | 2,120 | 18 x 35.5 | 2,640 | 18 x 31.5 | 2,330 | | | 22 x 40 | 2,720 |
| 22,000 | 229 | 18 x 40 | 3,270 | 18 x 35.5 | 2,930 | 18 x 40 | 3,100 | | | | | 22 x 40 | 3,460 | | | | |

| V.DC | | 35V (1V) | | | | 50V (1H) | | | | 63V (1J) | | | | 100V (2A) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ϕD x L | mA | ϕ*D x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA |
| 0.1 | 104 | | | | | 5 x 11 | 3 | | | 5 11 | 3.5 | | | 5 x 11 | 4 | | |
| 0.2 | 204 | | | | | 5 x 11 | 5 | | | 5 x 11 | 5.1 | | | 5 x 11 | 6 | | |
| 0.3 | 304 | | | | | 5 x 11 | 6 | | | 5 x 11 | 7.5 | | | 5 x 11 | 8 | | |
| 0.47 | 474 | | | | | 5 x 11 | 7 | | | 5 x 11 | 9 | | | 5 x 11 | 9 | | |
| 1 | 105 | | | | | 5 x 11 | 13 | | | 5 x 11 | 15 | | | 5 x 11 | 15 | | |
| 2.2 | 225 | | | | | 5 x 11 | 20 | | | 5 x 11 | 30 | | | 5 x 11 | 30 | | |
| 3.3 | 335 | | | x | | 5 x 11 | 30 | | | 5 x 11 | 31 | | | 5 x 11 | 31 | | |
| 4.7 | 474 | 5 x 11 | 30 | x | | 5 x 11 | 33 | | | 5 x 11 | 36 | | | 6.3 x 11 | 40 | | |
| 10 | 106 | 5 x 11 | 46 | x | | 5 x 11 | 50 | | | 5 x 11 | 54 | | | 8 x 11.5 | 66 | 6.3 x 11 | 54 |
| 22 | 226 | 5 x 11 | 71 | x | | 5 x 11 | 78 | | | 6.3 x 11 | 86 | | | 8.0 x 11.5 | 99 | 6.3 x 11 | 93 |
| 33 | 336 | 6.3 x 11 | 90 | 5 x 11 | 75 | 6.3 x 11 | 96 | 5 x 11 | 90 | 8 x 11.5 | 114 | 6.3 x 11 | 100 | 10 x 12.5 | 148 | 8.0 x 11.5 | 130 |
| 47 | 476 | 6.3 x 11 | 110 | 5 x 11 | 90 | 6.3 x 11 | 120 | | | 8 x 11.5 | 141 | 6.3 x 11 | 130 | 10 x 16 | 180 | 10 x 12.5 | 165 |
| 100 | 107 | 8 x 11.5 | 180 | 6.3 x 11 | 150 | 8 x 11.5 | 188 | | | 10 x 12.5 | 235 | | | 12.5 x 20 | 320 | 10 x 20.0 | 265 |
| 220 | 227 | 10 x 12.5 | 300 | 8 x 11.5 | 270 | 10 x 16 | 300 | 10 x 12.5 | 240 | 10 x 20 | 450 | 10 x 16 | 335 | 16 x 25 | 570 | 12.5 x 25.0 | 440 |
| 330 | 337 | 10 x 16 | 400 | 10 x 12.5 | 350 | 10 x 20 | 460 | 10 x 16 | 410 | 12.5 x 20 | 540 | 10 x 20 | 510 | 16 x 31.5 | 700 | 16 x 25 | 540 |
| 470 | 477 | 10 x 20 | 520 | 10 x 16 | 460 | 12.5 x 25 | 610 | 10 x 20 | 530 | 12.5X25 | 720 | 12.5 x 20 | 640 | 18 x 35.5 | 880 | 16 x 31.5 | 715 |
| 1,000 | 108 | 12.5 x 25 | 920 | 12.5 x 20 | 810 | 16 x 25 | 1,080 | 12.5 x 25 | 950 | 16x31.5 | | 16 x 25 | 930 | 22 x 40 | 1,760 | 18 x 40 | 985 |
| 2,200 | 228 | 16 x 31.5 | 1,340 | 16 x 25 | 1,260 | 18 x 35.5 | 2,120 | 16 x 35.5 | 1,470 | 18 x 40 | 2,340 | | | | | | |
| 3,300 | 338 | 16 x 35.5 | 1,610 | 16 x 31.5 | 1,420 | 22 x 40 | 2,290 | 18 x 35.5 | 1,770 | 22 x 40 | 2,510 | | | | | | |
| 4,700 | 478 | 18 x 40 | 1,920 | 18 x 35.5 | 1,900 | 25 x 40 | 2,610 | 22 x 40 | 2,340 | 25 x 40 | 3,000 | | | | | | |

| V.DC | | 160V (2C) | | | | 200V (2D) | | | | 250V (2E) | | | | 350V (2V) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ϕD x L | mA | ϕ*D x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA |
| 0.47 | 474 | 6.3 x 11 | 13 | 5 x 11 | 11 | 6.3 x 11 | 14 | 5 x 11 | 12 | 8 x 11.5 | 18 | 5 x 11 | 11 | 8 x 11.5 | 18 | 8 x 11 | 16 |
| 1 | 105 | 6.3 x 11 | 20 | 5 x 11 | 17 | 6.3 x 11 | 21 | 5 x 11 | 18 | 8 x 11.5 | 27 | 5 x 11 | 16 | 8 x 11.5 | 27 | 8 x 11 | 23 |
| 2.2 | 225 | 6.3 x 11 | 29 | 5 x 11 | 25 | 8 x 11.5 | 37 | 6.3 x 11 | 30 | 8 x 11.5 | 41 | 6.3 x 11 | 35 | 10 x 16 | 53 | 10 x 11.5 | 41 |
| 3.3 | 335 | 8 x 11.5 | 42 | 6.3 x 11 | 36 | 8 x 11.5 | 45 | 6.3 x 11 | 39 | 8 x 11.5 | 50 | 6.3 x 11 | 40 | 10 x 12.5 | 59 | 10 x 11.5 | 47 |
| 4.7 | 475 | 8 x 11.5 | 50 | 6.3 x 11 | 43 | 8 x 11.5 | 54 | 6.3 x 11 | 43 | 10 x 16 | 93 | 8 x 11.5 | 60 | 10 x 16 | 78 | 10 x 12.5 | 65 |
| 10 | 106 | 10 x 12.5 | 87 | 8 x 11.5 | 73 | 10 x 20 | 115 | 10 x 12.5 | 94 | 10 x 16 | 115 | 10 x 12.5 | 92 | 10 x 20 | 125 | 10 x 16 | 105 |
| 22 | 226 | 10 x 20 | 158 | 10 x 16 | 135 | 10 x 20 | 170 | 10 x 16 | 142 | 12.5 x 20 | 255 | 10 x 20 | 215 | 12.5 x 25 | 235 | 12.5 x 20 | 210 |
| 33 | 336 | 12.5 x 20 | 225 | 10 x 20 | 190 | 12.5 x 25 | 265 | 12.5 x 20 | 240 | 12.5 x 25 | 348 | 12.5 x 20 | 315 | 16 x 31.5 | 365 | 16 x 25 | 325 |
| 47 | 476 | 12.5 x 25 | 295 | 12.5 x 20 | 265 | 12.5 x 25 | 315 | 12.5 x 20 | 250 | 16 x 25 | 468 | 12.5 x 25 | 350 | 16 x 31.5 | 395 | 16 x 25 | 365 |
| 100 | 107 | 16 x 25 | 485 | 12.5 x 25 | 425 | 16 x 35.5 | 565 | 16 x 25 | 485 | 16 x 35.5 | 610 | 16 x 31.5 | 530 | 18 x 40 | 575 | 18 x 35.5 | 505 |
| 220 | 227 | 18 x 35.5 | 750 | 16 x 31.5 | 660 | 18 x 40 | 885 | 18 x 35.5 | 835 | 22 x 40 | 945 | | | | | | |
| 330 | 337 | 18 x 40 | 865 | 18 x 35.5 | 820 | | | | | | | | | | | | |

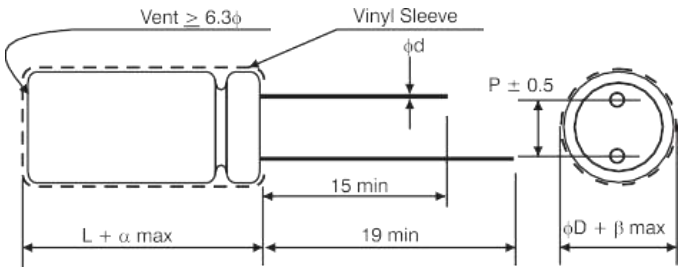
### PART NUMBER EXAMPLE

CAFC 227 M 1H O 100 200

| V.DC | | 400V (2G) | | | | 450V (2W) | | | |
|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ϕD x L | mA | ϕ*D x L | mA | ϕD x L | mA | ϕD xL | mA |
| 0.47 | 474 | 8.0 x 11.5 | 18 | 6.3 x 11 | 15 | 10 x 12.5 | 22 | 8 x 11.5 | 18 |
| 1 | 105 | 8.0 x 11.5 | 27 | 6.3 x 11 | 21 | 10 x 12.5 | 32 | 8 x 12 | 27 |
| 2.2 | 225 | 10.0 x 12.5 | 48 | 8 x 11.5 | 39 | 10 x 12.5 | 48 | 8 x 12 | 39 |
| 3.3 | 335 | 10 x 16 | 65 | 8 x 11.5 | 47 | 10 x 16 | 65 | 10 x 13 | 55 |
| 4.7 | 475 | 10 x 20 | 86 | 10 x 12.5 | 70 | 10 x 20 | 86 | 10 x 16 | 75 |
| 10 | 106 | 12.5 x 20 | 145 | 10 x 20 | 125 | 12.5 x 25 | 160 | 12.5 x 20.0 | 145 |
| 22 | 226 | 16 x 25 | 265 | 12.5 x 25 | 235 | 16 x 25 | 265 | 16 x 20 | 245 |
| 33 | 336 | 16 x 31.5 | 360 | 16 x 25 | 325 | 16 x 31.5 | 360 | 16 x 25 | 325 |
| 47 | 476 | 16 x 35.5 | 420 | 16 x 31.5 | 390 | 18 x 40 | 515 | 16 x 35.5 | 420 |
| 100 | 107 | 22 x 40 | 595 | 18 x 40 | 530 | 22 x 45 | 625 | 22 x 40 | 595 |

* = Flat (non-vented) rubber bung. Other units are made with raised (vented) rubber bung.

# CAFC SERIES: Radial High Temperature, 105°C




## Low-Profile Size
## LEAD SPACING AND DIAMETER

| φD | 12.5 | 16 | 18 |
|---|---|---|---|
| P | 5.0 | 7.5 | 7.5 |
| φd | 0.6 | 0.8 | |
| α | 1.5 | | |
| β | 0.5 | | |

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: ΦD×L(mm) Ripple Current: mA/RMS at 120Hz 105°C

| V.DC | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA |
| 470 | 477 | | | | | | | | | | | 12.5 x 16 | 425 |
| 1,000 | 108 | | | | | | | 12.5 x 16 | 590 | 12.5 x 16 | 600 | 16 x 16 | 535 |
| | | | | | | | | | | 16 x 16 | 720 | 16 x 20 | 830 |
| 2,200 | 228 | | | 13 x 16 | 690 | 16 x 16 | 830 | 16 x 20 | 970 | 18 x 20 | 1,110 | | |
| 3,300 | 338 | 12.5 x 16 | 700 | 16 x 16 | 940 | 16 x 16 | 950 | 18 x 20 | 1,220 | 18 x 25 | 1,570 | | |
| | | | | | | 16 x 20 | 1,050 | | | | | | |
| 4,700 | 478 | 16 x 16 | 1,010 | 16 x 16 | 1,060 | 16 x 20 | 1,185 | 18 x 25 | 1,470 | | | | |
| | | | | 16 x 20 | 1,120 | 18 x 20 | 1,260 | | | | | | |
| 6,800 | 688 | 16 x 20 | 1,190 | 16 x 20 | 1,270 | 18 x 25 | 1,560 | | | | | | |
| | | | | 18 x 20 | 1,330 | | | | | | | | |
| 10,000 | 109 | 16 x 20 | 1,340 | 18 x 25 | 1,700 | | | | | | | | |
| | | 18 x 20 | 1,440 | | | | | | | | | | |

| V.DC | | 160V (2C) | | 200V (2D) | | 250V (2E) | | 400V (2G) | |
|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA | ϕD x L | mA |
| 10 | 106 | | | | | | | 12.5 x 16 | 120 |
| | | | | | | | | 16 x 16 | 150 |
| 22 | 226 | | | | | 12.5 x 16 | 200 | 16 x 20 | 220 |
| 33 | 336 | | | 12.5 x 16 | 215 | 16 x 16 | 250 | 18 x 20 | 270 |
| | | | | 16 x 16 | 250 | | | | |
| 47 | 476 | 12.5 x 16 | 230 | 16 x 16 | 275 | 16 x 20 | 300 | 18 x 25 | 350 |
| | | 16 x 16 | 275 | 16 x 20 | 300 | | | | |
| 68 | 686 | 16 x 20 | 330 | 16 x 20 | 330 | 18 x 20 | 350 | | |
| | | | | 18 x 20 | 350 | | | | |
| 100 | 107 | 16 x 20 | 395 | 18 x 25 | 420 | | | | |
| | | 18 x 20 | 420 | | | | | | |
| 150 | 157 | 18 x 25 | 510 | | | | | | |

## PART NUMBER EXAMPLE

CAFC 227M 1H O 100 200

# CAFB SERIES: Radial, General Purpose



## FEATURES

- 85℃, 2000hrs for Dia ≤ 8mm, 3000hrs Dia ≥ 10mm
- Standard series for general purpose
- Replaces RC, RE & RH Series

## SPECIFICATIONS

| Item | Performance | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temp. | -40°C ~ +85°C | | | | | | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | | | | | |
| Leakage Current (at 20° C) | Rated Voltage | ≤ 100V | | | | | | | | >100V | | | | | |
| | Time | After 2 minutes | | | | | | | | After 5 minutes | | | | | |
| | Leakage Current | I = 0.01CV or 3 (μA) whichever is greater | | | | | | | | CV ≤ 1000 I = 0.03CV + 15(μA) | | CV > 1000 I = 0.02CV + 25(μA) | | | |
| | Where C = rated capacitance in F. V = rated DC working volatage in V. | | | | | | | | | | | | | | |
| Dissipation Factor Tanδ at 120Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | Tanδ (max) | 0.23 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.12 | 0.14 | 0.17 | 0.20 | 0.25 | 0.25 |
| | When the capacitance exceeds 1000μF, 0.02 shall be added for every 1000μF increase. | | | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | | | | |
| | Rated Voltage | | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 550 |
| | Impedance Radio | Z(-25°C) | φD<16 | 6 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 6 | 8 | 12 | 14 | 16 |
| | | /Z(+20°C) | φD≥16 | 8 | 6 | 4 | 4 | 3 | 3 | 3 | 3 | | | | | | |
| | | Z(-40°C) | φD<16 | 10 | 8 | 6 | 6 | 4 | 3 | 3 | 3 | 4 | 8 | 10 | 10 | 10 | 10 |
| | | /Z(+20°C) | φD≥16 | 18 | 16 | 12 | 10 | 8 | 8 | 6 | 6 | | | | | | |
| Load Life test at 20°C (after rated voltage is applied at 85°C for 2000 / 3000 hours) | Test Time | 2000hrs(3000hrs for φ D ≥ 10mm) | | | | Shelf Life at 20°C after exposure to 85 for 1000 hours with no voltage | | | | Test Time | 1000hrs | | | | | | |
| | Capacitance Change | Within ≤ ±20% of initial value | | | | | | | | Capacitance Change | Within ≤ ±20% of initial value | | | | | | |
| | Dissipation Factor | Less than 200% of specific value | | | | | | | | Dissipation Factor | Less than 200% of specific value | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | Leakage Current | Within specified value | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / Cap. (μF) | 60 (50) | 120 | 500 | 1K | 10K up | | | | | | | | | | | |
| | Under 100 | 0.70 | 1.00 | 1.30 | 1.40 | 1.50 | | | | | | | | | | | |
| | 100 to 1000 | 0.75 | 1.00 | 1.20 | 1.30 | 1.35 | | | | | | | | | | | |
| | 1000 and above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 | | | | | | | | | | | |
| Ripple Current & Temperature Multipliers | Temperature (°C) | Under 50 | 70 | 85 | | | | | | | | | | | | | |
| | Mutipliers | 1.78 | 1.4 | 1.00 | | | | | | | | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | | | | | | | | |

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Ripple Current :mA/rms at 120Hz, 85°C

| V.DC / μF | Code | 6.3V (OJ) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | | 63V (1J) | | 100V (2A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA | ΦD x L | mA |
| 0.1 | 104 | | | | | | | | | | | 5 x 11 | 1.5 | 5 x 11 | 3 | 5 x 11 | 3 |
| 0.2 | 204 | | | | | | | | | | | 5 x 11 | 3.5 | 5 x 11 | 5 | 5 x 11 | 5.8 |
| 0.3 | 304 | | | | | | | | | | | 5 x 11 | 5 | 5 x 11 | 8 | 5 x 11 | 8.8 |
| 0.47 | 474 | | | | | | | | | | | 5 x 11 | 7 | 5 x 11 | 10 | 5 x 11 | 12 |
| 1.0 | 105 | | | | | | | | | | | 5 x 11 | 15 | 5 x 11 | 17 | 5 x 11 | 22 |
| 2.2 | 225 | | | | | | | | | | | 5 x 11 | 29 | 5 x 11 | 28 | 5 x 11 | 33 |
| 3.3 | 335 | | | | | | | | | | | 5 x 11 | 35 | 5 x 11 | 34 | 5 x 11 | 40 |
| 4.7 | 475 | | | | | | | 5 x 11 | 31 | 5 x 11 | 40 | 5 x 11 | 42 | 5 x 11 | 45 | 5 x 11 | 48 |
| 10 | 106 | | | | | 5 x 11 | 49 | 5 x 11 | 54 | 5 x 11 | 58 | 5 x 11 | 65 | 5 x 11 | 70 | 5 x 11<br>6.3 x 11 | 59<br>80 |
| 22 | 226 | | | 5 x 11 | 70 | 5 x 11 | 75 | 5 x 11 | 80 | 5 x 11 | 87 | 5 x 11 | 95 | 6.3 x 11 | 115 | 6.3 x 11<br>8 x 11.5 | 115<br>135 |
| 33 | 336 | 5 x 11 | 72 | 5 x 11 | 84 | 5 x 11 | 90 | 5 x 11 | 97 | 5 x 11<br>6.3 x 11 | 108<br>115 | 5 x 11<br>6.3 x 11 | 136<br>163 | 6.3 x 11<br>8 x 11.5 | 140<br>340 | 8 x 11.5<br>10 x 16 | 145<br>195 |
| 47 | 476 | 5 x 11 | 90 | 5 x 11 | 100 | 5 x 11 | 110 | 5 x 11 | 115 | 5 x 11<br>6.3 x 11 | 130<br>145 | 6.3 x 11 | 165 | 6.3 x 11<br>8 x 11.5 | 170<br>397 | 10 x 13<br>10 x 16 | 235<br>255 |



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# GENERAL ALUMINUM ELECTROLYTIC CAPACITORS

## CAFB SERIES: Radial, General Purpose

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

Ripple Current :mA/rms at 120Hz, 85°C

| μF \ V.DC | Code | 6.3V(OJ) ΦD x L | mA | 10V(1A) ΦD x L | mA | 16V(1C) ΦD x L | mA | 25V(1E) ΦD x L | mA | 35V(1V) ΦD x L | mA | 50V(1H) ΦD x L | mA | 63V(1J) ΦD x L | mA | 100V(2A) ΦD x L | mA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100 | 107 | 5 x 11 | 130 | 5 x 11 | 145 | 5 x 11<br>6.3 x 11 | 160<br>180 | 6.3 x 11 | 190 | 6.3 x 11<br>8 x 11.5 | 260<br>260 | 8 x 11.5 | 260 | 8 x 11.5<br>10 x 12.5 | 245<br>485 | 10 x 16<br>10 x 20 | 490<br>370 |
| 220 | 227 | 5 x 11<br>6.3 x 11 | 200<br>230 | 5 x 11<br>6.3 x 11 | 220<br>250 | 6.3 x 11<br>8 x 11.5 | 260<br>300 | 8 x 11.5 | 320 | 8 x 11.5<br>10 x 12.5 | 385<br>420 | 10 x 12.5<br>10 x 16 | 455<br>490 | 10 x 16<br>10 x 20 | 490<br>565 | 12.5 x 20<br>12.5 x 25 | 640<br>675 |
| 330 | 337 | 6.3 x 11<br>8 x 11.5 | 270<br>290 | 6.3 x 11<br>8 x 11.5 | 290<br>350 | 8 x 11.5 | 370 | 8 x 11.5<br>10 x 12.5 | 440<br>470 | 10 x 12.5<br>10 x 16 | 490<br>570 | 10 x 16<br>12.5 x 20 | 585<br>635 | 10 x 20<br>12.5 x 20 | 710<br>765 | 16 x 20<br>16 x 25 | 695<br>825 |
| 470 | 477 | 6.3 x 11<br>8 x 11.5 | 320<br>380 | 8 x 11.5<br>6.3 x 11 | 350<br>415 | 8 x 11.5<br>10 x 12.5 | 440<br>520 | 10 x 12.5<br>10 x 16 | 545<br>620 | 10 x 16 | 740 | 12.5 x 16*<br>16 x 16*<br>10 x 20<br>12.5 x 20 | 610<br>745<br>765<br>860 | 12.5 x 20<br>16 x 25 | 900<br>1050 | 16 x 31.5<br>18 x 35.5 | 1070<br>1135 |
| 1000 | 108 | 8 x 11.5 | 540 | 8 x 11.5<br>10 x 12.5 | 550<br>650 | 10 x 16 | 785 | 12.5 x 16*<br>10 x 20<br>12.5 x 20 | 830<br>955<br>1090 | 16 x 16*<br>12.5 x 20 | 1010<br>1145 | 16 x 20*<br>12.5 x 25<br>16 x 25 | 1160<br>1340<br>1530 | 16 x 25<br>16 x 31.5 | 1560<br>1700 | 18 x 40<br>22 x 40 | 2410<br>2600 |
| 2200 | 228 | 10 x 20 | 1000 | 12.5 x 16*<br>10 x 20<br>12.5 x 20 | 970<br>1070<br>1240 | 12.5 x 16*<br>16 x 16*<br>12.5 x 20 | 930<br>1160<br>1295 | 16 x 16*<br>16 x 20*<br>12.5 x 25<br>16 x 25 | 1150<br>1360<br>1540<br>1660 | 16 x 20*<br>18 x 20*<br>16 x 25<br>16 x 31.5 | 1490<br>1560<br>1785<br>1890 | 16 x 35.5<br>18 x 40 | 2075<br>2231 | 18 x 31.5<br>18 x 35.5<br>18 x 40 | 1955<br>2100<br>2385 | | |
| 3300 | 338 | 10 x 20<br>12.5 x 20<br>12.5 x 16* | 1185<br>1380<br>960 | 16 x 16*<br>12.5 x 20 | 1310<br>1420 | 12.5 x 20<br>12.5 x 25<br>16 x 20*<br>16 x 16* | 1370<br>1653<br>1460<br>1240 | 16 x 25<br>16 x 32<br>18 x 20*<br>16 x 20* | 1975<br>2070<br>1720<br>1490 | 18 x 25*<br>16 x 35.5<br>18 x 35.5 | 1970<br>2275<br>2430 | 18 x 35.5<br>22 x 40 | 2500<br>2785 | 22 x 40 | 3000 | | |
| 4700 | 478 | 16 x 16*<br>12.5 x 20<br>16 x 25 | 1410<br>1545<br>1880 | 16 x 16*<br>16 x 20*<br>12.5 x 25<br>16 x 25 | 1420<br>1560<br>1780<br>1980 | 16 x 20*<br>18 x 20*<br>16 x 25<br>16 x 31.5 | 1600<br>1770<br>2090<br>2260 | 16 x 25*<br>16 x 31.5<br>18 x 35.5 | 2070<br>2420<br>2520 | 18 x 35.5<br>18 x 40 | 2700<br>2890 | 22 x 40<br>25 x 40 | 3155<br>3300 | 25 x 40 | 3560 | | |
| 6800 | 688 | 16 x 20*<br>12.5 x 25<br>16 x 25 | 1660<br>1880<br>2120 | 18 x 20*<br>16 x 20*<br>16 x 25 | 1870<br>1700<br>2220 | 18 x 25*<br>18 x 20*<br>16 x 31.5 | 2170<br>1850<br>2520 | 18 x 35.5 | 2880 | | | | | | | | |
| 10000 | 109 | 18 x 20*<br>16 x 25<br>16 x 31.5 | 2020<br>2530<br>2500 | 16 x 20*<br>18 x 25*<br>16 x 35.5<br>18 x 35.5 | 2050<br>2370<br>2670<br>2880 | 18 x 35.5<br>18 x 40 | 2920<br>3080 | 18 x 40<br>22 x 40 | 3080<br>3440 | | | | | | | | |
| 22000 | 229 | 22 x 40 | 3700 | 18 x 40<br>22 x 40 | 3370<br>3790 | 22 x 40 | 2900 | | | | | | | | | | |

| μF \ V.DC | Code | 160V(2G) ΦD x L | mA | 200V(2D) ΦD x L | mA | 250V(2E) ΦD x L | mA | 350V(2V) ΦD x L | mA | 400V(2G) ΦD x L | mA | 450V(2W) ΦD x L | mA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.47 | 474 | 5 x 11<br>6.3 x 11 | 13<br>15 | 5 x 11<br>6.3 x 11 | 14<br>16 | 8 x 11.5 | 21 | 6.3 x 11<br>8 x 12 | 18<br>21 | 8 x 11.5<br>10 x 12.5 | 21<br>26 | 8 x 11.5<br>10 x 12.5 | 21<br>26 |
| 1.0 | 105 | 5 x 11<br>6.3 x 11 | 20<br>24 | 5 x 11<br>6.3 x 11 | 21<br>25 | 8 x 11.5 | 32 | 6.3 x 11.0<br>8 x 12 | 27<br>32 | 8 x 11.5<br>10 x 12.5 | 32<br>38 | 8 x 11.5<br>10 x 12.5 | 32<br>38 |
| 2.2 | 225 | 5 x 11<br>6.3 x 11 | 29<br>34 | 6.3 x 11<br>8 x 11.5 | 37<br>44 | 6.3 x 11<br>8 x 11.5 | 42<br>49 | 8 x 11.5<br>10 x 16.0 | 49<br>63 | 8 x 12.5<br>10 x 16 | 57<br>63 | 10 x 12.5<br>10 x 16 | 57<br>63 |
| 3.3 | 335 | 6.3 x 11<br>8 x 11.5 | 43<br>50 | 6.3 x 11<br>8 x 11.5 | 46<br>54 | 8 x 11.5<br>10 x 12.5 | 60<br>70 | 10 x 12.5<br>10 x 16 | 70<br>78 | 10 x 16<br>10 x 20 | 78<br>86 | 10 x 12.5<br>10 x 16 | 78<br>86 |
| 4.7 | 475 | 6.3 x 11<br>8 x 11.5 | 51<br>60 | 8 x 11.5<br>10 x 12.5 | 64<br>76 | 8 x 11.5<br>10 x 16 | 72<br>93 | 10 x 16<br>10 x 20 | 93<br>103 | 10 x 12.5<br>10 x 20 | 80<br>103 | 10 x 12.5<br>10 x 10.3 | 75<br>103 |
| 10 | 106 | 10 x 12.5<br>10 x 16 | 104<br>115 | 10 x 12.5<br>10 x 20 | 112<br>138 | 10 x 16<br>10 x 20 | 138<br>150 | 10 x 20<br>12.5 x 20 | 150<br>174 | 12.5 x 16*<br>10 x 20<br>12.5 x 20<br>12.5 x 20 | 150<br>140<br>174<br>150 | 10 x 20<br>12.5 x 20 | 140<br>174 |
| 22 | 226 | 10 x 20<br>12.5 x 20 | 189<br>216 | 10 x 20<br>12.5 x 20 | 204<br>243 | 10 x 20<br>12.5 x 20<br>12.5 x 16* | 220<br>255<br>280 | 12.5 x 20<br>12.5 x 25 | 255<br>282 | 12.5 x 20<br>12.5 x 25<br>16 x 16* | 280<br>318<br>280 | 12.5 x 25<br>16 x 25 | 300<br>354 |
| 33 | 336 | 10 x 20<br>12.5 x 20<br>12.5 x 16* | 228<br>270<br>305 | 12.5 x 16*<br>12.5 x 20<br>12.5 x 20<br>16 x 16* | 350<br>210<br>288<br>350 | 12.5 x 20<br>12.5 x 25<br>16 x 16* | 310<br>348<br>350 | 16 x 25<br>16 x 31.5 | 390<br>438 | 13 x 25<br>16 x 25<br>16 x 20* | 325<br>426<br>355 | 16 x 20<br>16 x 31.5<br>18 x 35.5 | 350<br>378<br>426 |
| 47 | 476 | 12.5 x 20<br>16 x 16*<br>12.5 16*<br>12.5 x 25 | 318<br>354<br>360<br>420 | 12.5 x 20<br>16x 16*<br>16 20*<br>12.5 x 25 | 300<br>390<br>420<br>378 | 12.5 x 25<br>16 x 20*<br>16 x 25 | 420<br>420<br>468 | 16 x 20<br>16 x 31.5 | 385<br>474 | 16 x 25<br>16 x 31.5<br>18 x 20* | 395<br>485<br>435 | 16 x 31.5<br>16 x 35.5<br>18 x 40 | 460<br>414<br>555 |
| 68 | 686 | 16 x 16*<br>16 x 20* | 440<br>490 | 16 x 16*<br>18 x 20* | 470<br>190 | 18 x 20* | 490 | | | | | | |
| 100 | 107 | 12.5 x 25<br>16 x 25<br>16 x 20*<br>18 x 20* | 510<br>582<br>560<br>590 | 16 x 20*<br>16 x 25<br>18 x 25*<br>16 x 35.5 | 520<br>582<br>590<br>678 | 16 x 35.5<br>16 x 31.5 | 732<br>645 | 16 x 31.5<br>18 x 40 | 645<br>685 | 18 x 35.5<br>22 x 40 | 600<br>710 | 18 x 40<br>22 x 45 | 630<br>750 |
| 150 | 157 | 18 x 20*<br>18 x 25* | 640<br>710 | | | | | | | | | | |
| 220 | 226 | 16 x 31.5<br>18 x 35.5 | 792<br>900 | 18 x 31.5<br>18 x 35.5 | 825<br>1002 | | | | | | | | |
| 330 | 337 | 18 x 35.5<br>18 x 40 | 984<br>1010 | 18 x 40 | 1200 | | | | | | | | |

# CAFB SERIES: Radial, General Purpose

## HOW TO MAKE A PART NUMBER

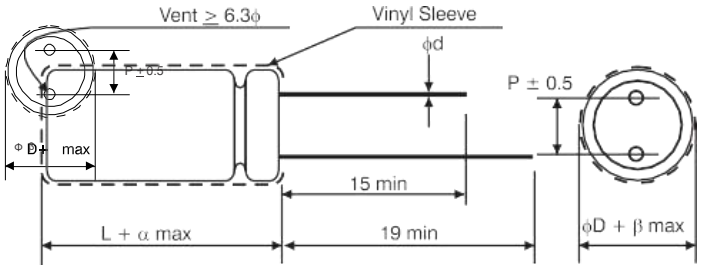
CAFB 100 M 1H O 050110

(7) L
(6) D
(5) Packaging
(4) Raate voltage
(3) Tolerance
(2) Capacitance
(1) CAFB Series

| Code | Lead Forming Type |
|---|---|
| O | Bulk |
| T | 5mm Chip tape |
| A | (Φ4~Φ6.3)2.5mm tape |
| F | (Φ4~Φ8)5mm tape |
| P | Φ≥Φ8mm original(vertical)tape |
| M | 5mm Lead forming |
| C | C Lead forming |
| B | B Lead forming |
| D | (Φ4~Φ8)2.5mm Lead forming |

## LEAD SPACING AND DIAMETER

| φD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 | 22 | 25 |
|---|---|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 | 12.5 |
| φd | 0.5 | | 0.6 | | | 0.8 | | 1.0 | |
| α | 1.0 | | | 1.5 | | | | 2.0 | |
| β | 0.5 | | | | | | | | |




* = Flat (non-vented) rubber bung.
Other units are made with
raised (vented) rubber bung.

## CAZB SERIES: Radial, Miniature, Low Leakage Current



## FEATURES

- 85°C, Low Leakage Current.
- 7mm height.

## SPECIFICATIONS

| Item | Performance | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAZBA | | | | | | | CAZBB | | |
| Life | At 85°C 1000 Hrs | | | | | | | At 85°C 2000 Hrs | | |
| Operating Temp. | -40°C ~ +85°C Range | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.002CV or 0.4 ( A) whichever is greater (after 2 minutes) Where, C = rated capacitance in F. V=rated DC working voltage in V. | | | | | | | | | |
| Dissipaton Factor Tan at 120 Hz,20°C | Rated Voltage | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | |
| | Tan (max) | 0.35 | 0.23 | 0.21 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | |
| | Impedance ratio shall not exceed the values given in the table. | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | | 6 | 4 | 3 | 3 | 2 | 2 | 2 | 2 |
| | | Z(-40°C) /Z(+20°C) | | 12 | 8 | 6 | 6 | 4 | 3 | 3 | 3 |
| Load Life Test at 20°C (after rated voltage is applied at 85°C for 1000/2000 hours) | Test Time | 1000 / 200 Hrs | | Shelf Life Test at 20°C (after exposure to 85°C for 1000 hours with no voltage) | | | Test Time | 1000 Hrs | | |
| | Capacitance Change | ± 20% | | | | | Capacitance Change | ± 20% | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | Dissipation Factor | Less than 200% of specified value | | |
| | Leakage Current | Within specified value | | | | | Leakage Current | Within specified value | | |
| Ripple Current & Frequency Multilpliers | | 60(50) | 120 | 500 | 1K | 10K up | | | | |
| | Under 33 | 0.70 | 1.00 | 1.20 | 1.30 | 1.45 | | | | |
| | 47 to 220 | 0.80 | 1.00 | 1.10 | 1.15 | 1.20 | | | | |
| Riple Current & Temperature Multipliers | Temperature (°C) | Under 50 | 70 | 85 | | | | | | |
| | Multipliers | 1.85 | 1.58 | 1.00 | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | |

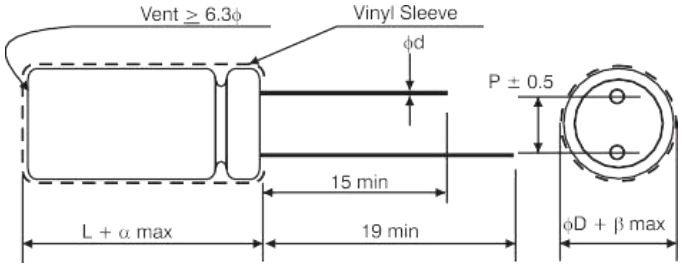
## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: D×L(mm); Ripple Current: mA/RMS at 120Hz 85°C

| VDC | 4V(0G) | | 6.3V(0J) | | 10V(1A) | | 16V(1C) | | 25V(1E) | | 35V(1V) | | 50V(1H) | | 63V(1J) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF / Code | ϕ D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA |
| 0.1 / 0R1 | | | | | | | | | | | | | 4 x 7 | 3 | 4 x 7 | 3 |
| 0.22 / R22 | | | | | | | | | | | | | 4 x 7 | 5 | 4 x 7 | 5 |
| 0.33 / R33 | | | | | | | | | | | | | 4 x 7 | 6 | 4 x 7 | 6 |
| 0.47 / R47 | | | | | | | | | | | | | 4 x 7 | 7 | 4 x 7 | 7 |
| 1 / 010 | | | | | | | | | | | | | 4 x 7 | 10 | 4 x 7 | 10 |
| 2.2 / 2R2 | | | | | | | | | | | | | 4 x 7 | 16 | 5 x 7 | 19 |
| 3.3 / 3R3 | | | | | | | | | | | 4 x 7 | 18 | 4 x 7 | 20 | 6.3 x 7 | 29 |
| 4.7 / 4R7 | | | | | | | | | 4 x 7 | 19 | 5 x 7 | 21 | 5 x 7 | 24 | 6.3 x 7 | 36 |
| 10 / 100 | | | | | | | 4 x 7 | 27 | 5 x 7 | 29 | 6.3 x7 | 36 | 6.3 x7 | 40 | | |
| 22 / 220 | | | | | 4 x 7 | 36 | 4 x 7 | 40 | 6.3 x7 | 47 | 6.3 x7 | 53 | | | | |
| 33 / 330 | 4 x 7 | 33 | 4 x 7 | 41 | 5 x 7 | 44 | 5 x 7 | 55 | 6.3 x7 | 63 | 8 x 7 | 71 | | | | |
| 47 / 470 | 4 x 7 | 39 | 5 x 7 | 49 | 6.3 x 7 | 54 | 6.3 x7 | 62 | 8 x 7 | 74 | | | | | | |
| 100 / 101 | 6.3 x 7 | 59 | 6.3 x7 | 75 | 8 x 7 | 90 | 8 x 7 | 110 | | | | | | | | |

## LEAD SPACING AND DIAMETER

| D | 4 | 5 | 6.3 | 8 |
|---|---|---|---|---|
| P | 1.5 | 2.0 | 2.5 | 3.5 |
| d | 0.45 | 0.5 | | |
| α | 1.0 | | | |
| β | 0.5 | | | |




## PART NUMBER EXAMPLE

CAZB 0R1 M 1H SA 040 070

## CAZC SERIES: Radial Micro-Miniature Size, Low Leakage



## FEATURES

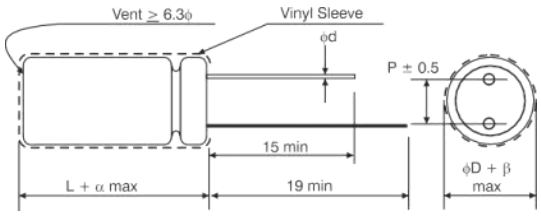
- 85°C, 1000 hours assured, 5mm height with low leakage.
- Use in very compact high temperature industrial equipment.

## SPECIFICATIONS

| Item | Performance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40° ~ + 85°C | | | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.002CV or 0.4 ( A) whichever is greater (after 2 minutes) Where, C = rated capacitance in F. V=rated DC working voltage in V. | | | | | | | | | | | |
| Dissipaton Factor Tan at 120 Hz,20°C | Rated Voltage | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | |
| | Tan (max) | 0.35 | 0.27 | 0.23 | 0.19 | 0.15 | 0.13 | 0.11 | | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | Impedance ratio shall not exceed the values given in the table. |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | | | 6 | 3 | 2 | 2 | 2 | 2 | 2 | |
| | | Z(-40°C) /Z(+20°C) | | | 12 | 9 | 7 | 5 | 3 | 3 | 3 | |
| Load Life Test | Test Time | 1000 Hrs | | | | | | | The specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 1000hrs at 85°C. | | | |
| | Capacitance Change | 4 ~ 6.3V | ± 30% | | | | | | | | | |
| | | 10 ~ 50V | ± 25% | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specifiec value | | | | | | | | | | |
| | Leakage Current | Within specified values | | | | | | | | | | |
| Shelf Life Test | Test Time | 500 Hrs | | | | | | | The specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hrs at 85°C without voltage applied. | | | |
| | Capacitance Change | 4 ~ 6.3V | ± 30% | | | | | | | | | |
| | | 10 ~ 50V | ± 25% | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specifiec value | | | | | | | | | | |
| | Leakage Current | Within specified values | | | | | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | | | |

## LEAD SPACING AND DIAMETER

| D | 4 | 5 | 6.3 |
|---|---|---|---|
| P | 1.5 | 2.0 | 2.5 |
| d | | 0.45 | |
| | | 1.0 | |
| | | 0.5 | |




## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

| VDC | | 4V (0G) | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | Code | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA |
| 0.10 | 0R1 | | | | | | | | | | | | | 4 x 5 | 1 |
| 0.22 | R22 | | | | | | | | | | | | | 4 x 5 | 2 |
| 0.33 | R33 | | | | | | | | | | | | | 4 x 5 | 3 |
| 0.47 | R47 | | | | | | | | | | | | | 4 x 5 | 3.8 |
| 1 | 010 | | | | | | | | | | | | | 4 x 5 | 6.9 |
| 2.2 | 2R2 | | | | | | | | | | | | | 4 x 5 | 10 |
| 3.3 | 3R3 | | | | | | | | | | | | | 4 x 5 | 13 |
| 4.7 | 4R7 | | | | | | | | | 4 x 5 | 14 | 4 x 5 | 16 | 5 x 5 | 19 |
| 10 | 100 | | | | | | | 4 x 5 | 19 | 5 x 5 | 23 | 5 x 5 | 24 | 6.3 x 5 | 32 |
| 22 | 220 | | | 4 x5 | 22 | 5 x5 | 24 | 5 x 5 | 28 | 6.3 x 5 | 38 | 6.3 x 5 | 42 | | |
| 33 | 330 | 5 x 5 | 27 | 5 x5 | 28 | 5 x5 | 30 | 6.3 x 5 | 41 | 6.3 x 5 | 46 | | | | |
| 47 | 470 | 5 x 5 | 32 | 5 x5 | 34 | 6.3 x5 | 43 | 6.3 x 5 | 50 | | | | | | |
| 100 | 101 | 6.3 x 5 | 54 | 6.3 x5 | 60 | | | | | | | | | | |

## PART NUMBER EXAMPLE

CAZC 0R1 M 1H SA 040 050



www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

## CAZF SERIES: Radial Micro-Miniature Size



### FEATURES

- 85°C, 1000 hours assured.
- Standard micro miniature size with 5mm height.

### SPECIFICATIONS

| Item | Performance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | ~40°C ~+85°C | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (120Hz, 20°C) | | | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes)<br>Where, C = rated capacitance in μF, V = rated DC working voltage in V. | | | | | | | | | | | |
| Dissipation Factor Tan at 120Hz, 20°C) | Rated Voltage | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | |
| | Tan (max) | 0.35 | 0.25 | 0.20 | 0.17 | 0.15 | 0.13 | 0.10 | | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | Impendance ratio shall not exceed the values given in this table. | | | |
| | Impendance Ratio | 7 | 6 | 4 | 3 | 2 | 2 | 2 | | | | |
| | | 15 | 12 | 8 | 6 | 4 | 4 | 4 | | | | |
| Load Life Test at 20°C (after rated voltage is applied at 85°C for 2000/3000 hours) | Test Time | 1000 hours | | | Shelf Life Test at 20°C after exposure to 85 for 1000 hours with no voltage | | Test Time | 1000 hours | | | | |
| | Capacitance Change | Within ± 20% of inital value | | | | | Capacitance Change | Within ± 20% of inital value | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | Dissipation Factor | Less than 200% of specified value | | | | |
| | Leakage Current | Within specified value | | | | | Leakage Current | Within specified value | | | | |
| Ripple Current & Frequency Multipliers | Cap.( F) Freq.(Hz) | 60 (50) | 120 | 500 | 1K | 10K up | | | | | | |
| | Under 33 | 0.75 | 1.00 | 1.15 | 1.34 | 1.50 | | | | | | |
| | 47 to 220 | 0.80 | 1.00 | 1.08 | 1.20 | 1.30 | | | | | | |
| Ripple Current & Temperature Multipliers | Temperature(°C) | Under 50 | 70 | 85 | | | | | | | | |
| | Multipliers | 1.27 | 1.27 | 1.00 | | | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | | | |

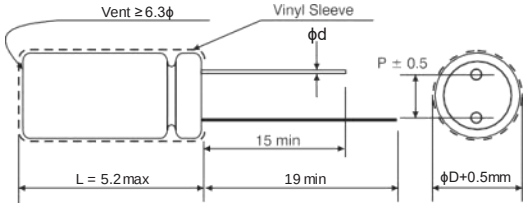
### DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ϕD×L(mm); Ripple Current: mA/RMS at 120Hz 85°C

| VDC | | 4V(0G) | | 6.3V(0J) | | 10V(1A) | | 16V(1C) | | 25V(1E) | | 35V(1V) | | 50V(1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | Code | DxL | mA | DxL | mA | DxL | mA | DxL | mA | DxL | mA | DxL | mA | DxL | mA |
| 0.1 | 0R1 | | | | | | | | | | | | | 4 x 5<br>3 x 5 | 1<br>1 |
| 0.22 | R22 | | | | | | | | | | | | | 4 x 5<br>3 x 5 | 2<br>2 |
| 0.33 | R33 | | | | | | | | | | | | | 4 x 5<br>3 x 5 | 3<br>2.8 |
| 0.47 | R47 | | | | | | | | | | | | | 4 x 5<br>3 x 5 | 5<br>4 |
| 1 | 010 | | | | | | | | | | | | | 4 x 5<br>3 x 5 | 8.7<br>7 |
| 2.2 | 2R2 | | | | | | | | | | | 4 x 5<br>3 x 5 | 8.7<br>7 | 4 x 5 | 10 |
| 3.3 | 3R3 | | | | | | | | | 4 x 5<br>3 x 5 | 11<br>10 | 4 x 5 | 12 | 4 x 5 | 13 |
| 4.7 | 4R7 | | | | | | | 4 x 5<br>3 x 5 | 14<br>11 | 4 x 5 | 14 | 4 x 5 | 17 | 4 x 5 | 20 |
| 10 | 100 | | | | | 4 x 5<br>3 x 5 | 17<br>13 | 4 x 5 | 23 | 5 x 5 | 27 | 5 x 5 | 27 | 6.3 x 5 | 31 |
| 22 | 220 | | | 4 x 5 | 22 | 5 x 4 | 30 | 5 x 5 | 35 | 6.3 x 5 | 42 | 6.3 x 5 | 46 | 6.3 x 5 | 46 |
| 33 | 330 | 4 x 5 | 27 | 4 x 5 | 34 | 5 x 5 | 41 | 5 x 5 | 49 | 6.3 x 5 | 52 | 6.3 x 5 | 52 | 8 x 5 | 66 |
| 47 | 470 | 4 x 5 | 34 | 5 x 5 | 37 | 6.3 x 5 | 50 | 6.3 x 5 | 58 | 6.3 x 5 | 58 | 8 x 5 | 72 | | |
| 100 | 101 | 5 x 5 | 55 | 6.3 x 5 | 62 | 6.3 x 5 | 70 | 8 x 5 | 99 | 8 x 5 | 99 | | | | |
| 220 | 221 | 6.3x5 | 74 | 8x5 | 104 | 8x5 | 120 | | | | | | | | |

### LEAD SPACING AND DIAMETER

| D | 3 | 4 | 5 | 6.3 | 8 |
|---|---|---|---|---|---|
| P | 1.0 | 1.5 | 2.0 | 2.5 | |
| d | 0.4 | 0.45 | | | |




### PART NUMBER EXAMPLE

CAZF 0R1 M 1H SA 040 050

## CAZG SERIES: Radial Micro Miniature Size, 105°C



### FEATURES

- 105°C, 1000 hours assured.
- Standard micro miniature size with 5mm height.

### SPECIFICATIONS

| Item | Performance | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40° ~ + 105°C | | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 0.3 ( A) whichever is greater (after 2 minutes) Where, C = rated capacitance in F. V=rated DC working voltage in V. | | | | | | | | | | |
| Dissipaton Factor Tan at 120 Hz,20°C | Rated Voltage | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | | | |
| | Tan (max) | 0.35 | 0.25 | 0.20 | 0.17 | 0.15 | 0.13 | 0.10 | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Impedance Ratio | Z(-25°C)/Z(+20°C) | | | 7 | 6 | 4 | 3 | 2 | 2 | 2 |
| | | Z(-40°C)/Z(+20°C) | | | 15 | 12 | 8 | 6 | 4 | 4 | 4 |
| | Impedance ratio shall not exceed the values given in the table. | | | | | | | | | | |
| Load Life Test | Test Time | 1000 Hrs | | | | | | | | | |
| | Capacitance Change | 4 ~ 6.3V | ± 30% | | | | | | | | |
| | | 10 ~ 50V | ± 250% | | | | | | | | |
| | Dissipation Factor | Less than 200% of specifiec value | | | | | | | | | |
| | Leakage Current | Within specified values | | | | | | | | | |
| | The specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 1000hrs at 105°C. | | | | | | | | | | |
| Shelf Life Test | Test Time | 1000 Hrs | | | | | | | | | |
| | Capacitance Change | 4 ~ 6.3V | ± 30% | | | | | | | | |
| | | 10 ~ 50V | ± 30% | | | | | | | | |
| | Dissipation Factor | Less than 200% of specifiec value | | | | | | | | | |
| | Leakage Current | Within specified values | | | | | | | | | |
| | The specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 105°C without voltage applied. | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / Cap. ( F) | 60 (50) | 120 | 500 | 1K | 10K up | | | | | |
| | Under 33 | 0.75 | 1.00 | 1.15 | 1.34 | 1.50 | | | | | |
| | 47 to 220 | 0.80 | 1.00 | 1.08 | 1.20 | 1.30 | | | | | |
| Ripple Current & Temperature Mutipliers | Temperature (°C) Multipliers | Under 70 | 85 | 100 | | | | | | | |
| | | 1.65 | 1.27 | 1.00 | | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | | |

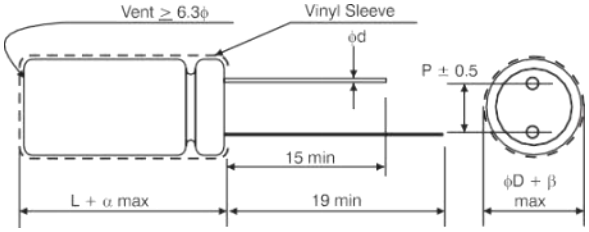
### DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: D×L(mm); Ripple Current: mA/RMS at 120Hz 105°C

| VDC | | 4V (0G) | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | Code | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA |
| 0.10 | 0R1 | | | | | | | | | | | | | 4 x 5 | 1 |
| 0.22 | R22 | | | | | | | | | | | | | 4 x 5 | 2 |
| 0.33 | R33 | | | | | | | | | | | | | 4 x 5 | 2.8 |
| 0.47 | R47 | | | | | | | | | | | | | 4 x 5 | 4 |
| 1 | 010 | | | | | | | | | | | | | 4 x 5 | 7 |
| 2.2 | 2R2 | | | | | | | | | | | 4 x 5 | 8.7 | 4 x 5 | 10 |
| 3.3 | 3R3 | | | | | | | | | 4 x 5 | 11 | 4 x 5 | 12 | 4 x 5 | 13 |
| 4.7 | 4R7 | | | | | | | 4 x 5 | 14 | 4 x 5 | 15 | 4 x 5 | 17 | 5 x 5 | 20 |
| 10 | 100 | | | | | 4 x 5 | 14 | 4 x 5 | 23 | 5 x 5 | 27 | 5 x 5 | 27 | 6.3 x 5 | 31 |
| 22 | 220 | | | 4 x 5 | 21 | 5 x 5 | 27 | 5 x 5 | 30 | 6.3 x 5 | 42 | 6.3 x 5 | 46 | 6.3 x 5 | 46 |
| 33 | 330 | 4 x 5 | 27 | 5 x 5 | 30 | 5 x 5 | 34 | 6.3 x 5 | 40 | 6.3 x 5 | 52 | 6.3 x 5 | 52 | | |
| 47 | 470 | 4 x 5 | 34 | 5 x 5 | 36 | 6.3 x 5 | 43 | 6.3 x 5 | 48 | 6.3 x 5 | 58 | | | | |
| 100 | 101 | 5 x 5 | 50 | 6.3 x 5 | 56 | 6.3 x 5 | 70 | | | | | | | | |
| 220 | 221 | 6.3 x 5 | 74 | | | | | | | | | | | | |

### LEAD SPACING AND DIAMETER

| D | 3 | 4 | 5 | 6.3 |
|---|---|---|---|---|
| P | 1.0 | 1.5 | 2.0 | 2.5 |
| d | 0.4 | 0.45 | | |
| | 1.0 | | | |
| | 0.50 | | | |




### PART NUMBER EXAMPLE

CAZG 0R1 M 1H SA 040 050



www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

## CAZE SERIES: Radial, Miniature, High Temperature Range, 105°C




## FEATURES

- •105°C, 1000 hours assured.
- High temperature range, with 7mm height.

## SPECIFICATIONS

| Item | Performance | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40° ~ + 105°C | | | | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 0.3 ( A) whichever is greater (after 2 minutes) Where, C = rated capacitance in F. V=rated DC working voltage in V. | | | | | | | | | | | | |
| Dissipaton Factor Tan at 120 Hz,20°C | Rated Voltage | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | | | | |
| | Tan (max) | 0.35 | 0.25 | 0.20 | 0.17 | 0.15 | 0.13 | 0.10 | 0.10 | | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | Impedance ratio shall not exceed the values given in the table. |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | | | 7 | 6 | 4 | 3 | 2 | 2 | 2 | 2 | |
| | | Z(-40°C) /Z(+20°C) | | | 15 | 12 | 8 | 6 | 4 | 4 | 4 | 4 | |
| Load Life Test | Test Time | 1000 Hrs | | | | | | | | | | | The specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 1000hrs at 105°C. |
| | Capacitance Change | ± 20% | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specifiec value | | | | | | | | | | | |
| | Leakage Current | Within specified values | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1000 Hrs | | | | | | | | | | | The specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 105°C without voltage applied. |
| | Capacitance Change | ± 20% | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specifiec value | | | | | | | | | | | |
| | Leakage Current | Within specified values | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / Cap. ( F) | 60 (50) | 120 | 500 | 1K | 10K up | | | | | | | |
| | Under 33 | 0.75 | 1.00 | 1.20 | 1.30 | 1.45 | | | | | | | |
| | 47 to 220 | 0.80 | 1.00 | 1.10 | 1.15 | 1.20 | | | | | | | |
| Ripple Current & Temperature Mutipliers | Temperature (°C) Multipliers | Under 50 | 70 | 85 | 105 | | | | | | | | |
| | | 1.95 | 1.65 | 1.27 | 1.0 | | | | | | | | |
| Standards | | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | | | |

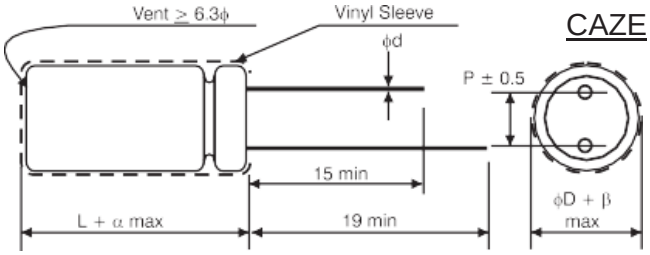
## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: D×L(mm); Ripple Current: mA/RMS at 120Hz 105°C

| VDC | | 4V (0G) | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | | 63V (1J) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | Code | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA |
| 0.10 | 0R1 | | | | | | | | | | | | | 4 x 7 | 2 | 4 x 7 | 2 |
| 0.22 | R22 | | | | | | | | | | | | | 4 x 7 | 3 | 4 x 7 | 3 |
| 0.33 | R33 | | | | | | | | | | | | | 4 x 7 | 4 | 4 x 7 | 4.4 |
| 0.47 | R47 | | | | | | | | | | | | | 4 x 7 | 5 | 4 x 7 | 7.9 |
| 1 | 010 | | | | | | | | | | | | | 4 x 7 | 10 | 4 x 7 | 11 |
| 2.2 | 2R2 | | | | | | | | | | | | | 4 x 7 | 15 | 4 x 7 | 17 |
| 3.3 | 3R3 | | | | | | | | | | | | | 4 x 7 | 18 | 4 x 7 | 21 |
| 4.7 | 4R7 | | | | | | | | | 4 x 7 | 22 | 4 x 7 | 22 | 4 x 7<br>5 x 7 | 22<br>23 | 5 x 7 | 26 |
| 10 | 100 | | | | | | | 4 x 7 | 25 | 4 x 7 | 26 | 4 x 7<br>5 x 7 | 26<br>30 | 5 x 7<br>6.3 x 7 | 31<br>34 | 6.3 x 7 | 40 |
| 22 | 220 | | | 4 x 7 | 31 | 4 x 7 | 32 | 4 x 7<br>5 x 7 | 33<br>39 | 4 x 7<br>5 x 7 | 34<br>41 | 6.3 x 7 | 47 | 6.3 x 7 | 53 | 8 x 7 | 70 |
| 33 | 330 | 4 x 7 | 32 | 4 x 7 | 32 | 4 x 7 | 35 | 5 x 7 | 43 | 6.3 x 7 | 53 | 6.3 x 7<br>8 x 7 | 60<br>71 | 8 x 7 | 76 | | |
| 47 | 470 | 4 x 7 | 38 | 4 x 7<br>5 x 7 | 39<br>47 | 6.3 x 7<br>5 x 7 | 49<br>59 | 6.3 x 7 | 65 | 8 x 7 | 83 | 8 x 7 | 85 | | | | |
| 100 | 101 | 5 x 7 | 61 | 6.3 x 7<br>5 x 7 | 75<br>63 | 6.3 x 7 | 80 | 6.3 x 7 | 90 | 6.3 x 7 | 125 | | | | | | |
| 220 | 221 | 6.3 x 7 | 90 | 6.3 x 7 | 99 | 8 x 7 | 140 | 8 x 7 | 146 | | | | | | | | |
| 330 | 331 | 8 x 7 | 156 | 8 x 7 | 156 | | | | | | | | | | | | |

## LEAD SPACING AND DIAMETER

| D | 4 | 5 | 6.3 | 8 |
|---|---|---|---|---|
| P | 1.5 | 2.0 | 2.5 | 3.5 |
| d | 0.45 | 0.5 | | |
| | 1.0 | | | |
| | 0.5 | | | |




## PART NUMBER EXAMPLE

CAZE 0R1 M 1H SA 040 070

## CAZA SERIES: Radial, Miniature, Low Leakage Current, 105°C




## FEATURES

- 105°C, 1000 hours assured, Low Leakage Current.
- 7mm height.
- Use in very compact high temperature industrial equipment.

## SPECIFICATIONS

| Item | Performance | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40°C ~ +105°C | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.002CV or 0.4 ( A) whichever is greater (after 2 minutes)<br>Where, C = rated capacitance in F. V=rated DC working voltage in V. | | | | | | | | | |
| Dissipaton Factor<br>Tan at 120 Hz, 20°C | Rated Voltage | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | |
| | Tan (max) | 0.35 | 0.24 | 0.21 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | |
| | Impedance ratio shall not exceed the values given in the table below | | | | | | | | | |
| Low Temperature<br>Characteristics (at 120Hz) | Rated Voltage | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | 6 | 4 | 3 | 3 | 2 | 2 | 2 | 2 |
| | | Z(-40°C) /Z(+20°C) | 12 | 10 | 6 | 6 | 4 | 4 | 4 | 3 |
| Load Life Test | Test Time | 1000 Hrs | The specification shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 1000 hrs at 105°C. | | | | | | | |
| | CapacitanceChange | ± 20% | | | | | | | | |
| | DissipationFactor | Less than 200% of specified value | | | | | | | | |
| | LeakageCurrent | Within specified value | | | | | | | | |
| Shelf Life Test | Test Time | 500 Hrs | The specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hrs at 105°C without voltage applied. | | | | | | | |
| | CapacitanceChange | ± 20% | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | |
| Ripple Current &<br>Frequency Multilpiers | Freq. (Hz)<br>Cap. F | 60(50) | 120 | 500 | 1K | 10K up | | | | |
| | Under 33 | 0.70 | 1.00 | 1.20 | 1.30 | 1.45 | | | | |
| | 47 to 220 | 0.80 | 1.00 | 1.10 | 1.15 | 1.20 | | | | |
| Riple Current &<br>Temperature Multipliers | Temperature (°C) | Under 50 | 70 | 85 | 105 | | | | | |
| | Multipliers | 1.95 | 1.65 | 1.27 | 1.0 | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | |

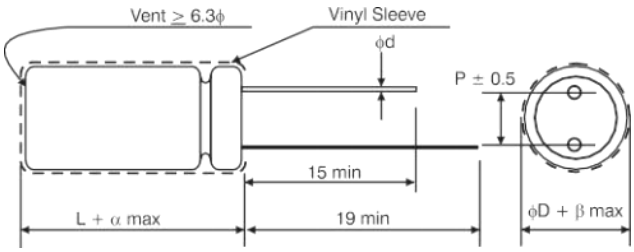
## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: D×L(mm); Ripple Current: mA/RMS at 120Hz 85°C

| | VDC | 4V (0G) | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | | 63V (1J) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | Code | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA | D x L | mA |
| 0.10 | 0R1 | | | | | | | | | | | | | 4 x 7 | 3 | 4 x 7 | 3 |
| 0.22 | R22 | | | | | | | | | | | | | 4 x 7 | 5 | 4 x 7 | 5 |
| 0.33 | R33 | | | | | | | | | | | | | 4 x 7 | 6 | 4 x 7 | 6 |
| 0.47 | R47 | | | | | | | | | | | | | 4 x 7 | 7 | 4 x 7 | 7 |
| 1 | 010 | | | | | | | | | | | | | 4 x 7 | 10 | 4 x 7 | 10 |
| 2.2 | 2R2 | | | | | | | | | | | | | 4 x 7 | 16 | 5 x 7 | 19 |
| 3.3 | 3R3 | | | | | | | | | | | 4 x 7 | 18 | 4 x 7 | 20 | 6.3 x 7 | 29 |
| 4.7 | 4R7 | | | | | | | | | 4 x 7 | 19 | 5 x 7 | 21 | 6.3 x 7 | 24 | 6.3 x 7 | 36 |
| 10 | 100 | | | | | | | 4 x 7 | 27 | 5 x 7 | 29 | 6.3 x 7 | 32 | 8 x 7 | 40 | | |
| 22 | 220 | | | | | 4 x 7 | 36 | 4 x 7 | 40 | 6.3 x 7 | 44 | 6.3 x 7 | 49 | | | | |
| 33 | 330 | 4 x 7 | 33 | 4 x 7 | 41 | 5 x 7 | 44 | 5 x 7 | 55 | 6.3 x 7 | 55 | 8 x 7 | 67 | | | | |
| 47 | 470 | 4 x 7 | 39 | 5 x 7 | 49 | 6.3 x 7 | 54 | 6.3 x 7 | 62 | 8 x 7 | 74 | | | | | | |
| 100 | 101 | 6.3 x 7 | 59 | 6.3 x 7 | 75 | 8 x 7 | 90 | | | | | | | | | | |

## LEAD SPACING AND DIAMETER

| ϕ D | 4 | 5 | 6.3 | 8 |
|---|---|---|---|---|
| P | 1.5 | 2.0 | 2.5 | 3.5 |
| ϕ d | 0.45 | 0.5 | | |
| α | 1.0 | | | |
| β | 0.5 | | | |




## PART NUMBER EXAMPLE

CAZA 0R1 M 1H SA 040 070



www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

## CAZD SERIES: Radial Super Miniature



### FEATURES

- 85°C, 2000 hours assured, standard miniature type with 7mm height for compact circuits.

### SPECIFICATIONS

| Item | Performance | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | CAZDA | | | | | | | | CAZDB | | |
| Life | At 85°C 1000 Hrs | | | | | | | | At 85°C 2000 Hrs | | |
| Operating Temp. | -40°C ~ +85°C Range | | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 3 ( A) whichever is greater (after 2 minutes)<br>Where, C = rated capacitance in F. V=rated DC working voltage in V. | | | | | | | | | | |
| Dissipaton Factor Tan at 120 Hz,20°C | Rated Voltage | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | | |
| | Tan (max) | 0.35 | 0.23 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below | | | | | | | | | | |
| | Rated Voltage | | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | | 7 | 4 | 3 | 3 | 2 | 2 | 2 | 2 |
| | | Z(-40°C) /Z(+20°C) | | 14 | 10 | 8 | 6 | 4 | 4 | 4 | 4 |
| Load Life Test at 20°C (after rated voltage is applied at 85°C for 1000/2000 hours) | Test Time | 1000 / 200 Hrs | | | | Shelf Life Test at 20°C (after exposure to 85°C for 1000 hours with no voltage) | | | Test Time | 1000 Hrs | |
| | Capacitance Change | ± 20% | | | | | | | Capacitance Change | ± 20% | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | Dissipation Factor | Less than 200% of specified value | |
| | Leakage Current | Within specified value | | | | | | | Leakage Current | Within specified value | |
| Ripple Current & Frequency Multilpliers | | 60(50) | 120 | 500 | 1K | 10K up | | | | | |
| | Under 33 | 0.70 | 1.00 | 1.20 | 1.30 | 1.45 | | | | | |
| | 47 to 220 | 0.80 | 1.00 | 1.10 | 1.15 | 1.20 | | | | | |
| Riple Current & Temperature Multipliers | Temperature (°C) | Under 50 | 70 | 85 | | | | | | | |
| | Multipliers | 1.75 | 1.58 | 1.00 | | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | | |

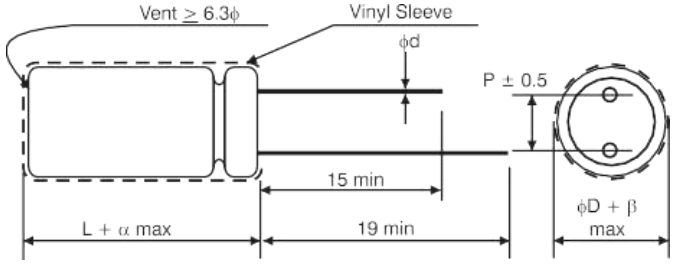
### DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: D×L(mm); Ripple Current: mA/RMS at 120Hz 85°C

| VDC / F / Contents | | 4V(0G) | | 6.3V(0J) | | 10V(1A) | | 16V(1C) | | 25V(1E) | | 35V(1V) | | 50V(1H) | | 63V(1J) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DXL | mA | DXL | mA | DXL | mA | DXL | mA | DXL | mA | DXL | mA | DXL | mA | DXL | mA |
| 0.1 | 0R1 | | | | | | | | | | | | | 4 x 7 | 2 | 4 x 7 | 2 |
| 0.22 | R22 | | | | | | | | | | | | | 4 x 7 | 3 | 4 x 7 | 3 |
| 0.33 | R33 | | | | | | | | | | | | | 4 x 7 | 4 | 4 x 7 | 4.4 |
| 0.47 | R47 | | | | | | | | | | | | | 4 x 7 | 5 | 4 x 7 | 7.9 |
| 1 | 10 | | | | | | | | | | | | | 4 x 7 | 10 | 4 x 7 | 11 |
| 2.2 | 2R2 | | | | | | | | | | | | | 4 x 7 | 15 | 4 x 7 | 17 |
| 3.3 | 3R3 | | | | | | | | | | | | | 4 x 7 | 18 | 4 x 7 | 21 |
| 4.7 | 4R7 | | | | | | | | | | | 4 x 7 | 22 | 5 x 7<br>4 x 7 | 23<br>22 | 5 x 7 | 26 |
| 10 | 100 | | | | | | | 4 x 7 | 25 | 4 x 7 | 26 | 5 x 7<br>4 x 7 | 30<br>26 | 6.3 x 7<br>5 x 7 | 34<br>31 | 6.3 x 7 | 40 |
| 22 | 220 | | | 4 x 7 | 31 | 4 x 7 | 32 | 5 x 7<br>4 x 7 | 39<br>33 | 5 x 7<br>4 x 7 | 41<br>34 | 6.3 x 7 | 47 | 6.3 x 7 | 53 | 8 x 7 | 70 |
| 33 | 330 | 4 x 7 | 32 | 4 x 7 | 32 | 4 x 7 | 35 | 5 x 7 | 43 | 6.3 x 7 | 53 | 8 x 7<br>6.3 x 7 | 71<br>60 | 8 x 7<br>6.3 x 7 | 76<br>65 | | |
| 47 | 470 | 4 x 7 | 38 | 4 x 7 | 38 | 5 x 7<br>4 x 7 | 47<br>39 | 6.3 x 7<br>5 x 7 | 59<br>49 | 6.3 x 7 | 65 | 8 x 7 | 83 | 8 x 7 | 85 | | |
| 100 | 101 | 5 x 7 | 61 | 6.3 x 7<br>5 x 7 | 75<br>63 | 6.3 x 7 | 80 | 6.3 x 7 | 90 | 8 x 7 | 125 | | | | | | |
| 220 | 221 | 6.3 x 7 | 90 | 6.3 x 7 | 99 | 8 x 7 | 140 | 8 x 7 | 146 | | | | | | | | |
| 330 | 331 | 8 x 7 | 129 | 8 x 7 | 156 | | | | | | | | | | | | |
| 470 | 471 | 8 x 7 | 154 | | | | | | | | | | | | | | |

### LEAD SPACING AND DIAMETER

| D | 4 | 5 | 6.3 | 8 |
|---|---|---|---|---|
| P | 1.5 | 2.0 | 2.5 | 3.5 |
| d | 0.45 | 0.5 | | |
| | 1.0 | | | |
| | 0.5 | | | |

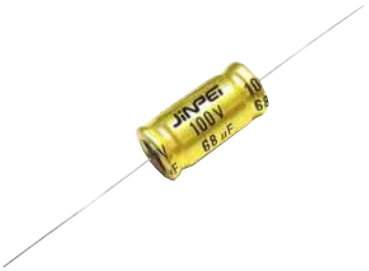



### PART NUMBER EXAMPLE

CAZD 0R1 M 1H SA 040 070

# CAOA: LOW VOLTAGE , 2 RUBBER TYPE

## FEATURES:




- 85℃, 2000 hours assured.
- Voltage range of 6.3 ~ 450V
- Wide operating temperature range, from -40℃~ +85℃

## ITEMS CHARACTERISTIC

| | |
|---|---|
| Operating Temperature Range | -40℃ ~ +85℃ |
| Capacitance Tolerance (120Hz 20℃) | ±10% (K) , ±20% (M) |
| Voltage Range | 6.3 ~ 100 VDC / 160 ~ 450 VDC |
| (20℃)Leakage Current | I≦0.03CV or 3 (u A)Whichever is greater (after 2 minutes applying the rated DC working Voltage at 20 ℃) / I≦0.04CV+15 (u A) for CV≦1000, I≦0.03CV+25 (u A) for CV>1000 (after 5 minutes applying the rated DC working Voltage at 20 ℃) |
| | Where: I=Leakage Current (u A) , C=rated Capacitance (μ F) , V= working Voltage (V) |

(at 20℃, 120Hz) Dissipation Factor (tanδ)

| W.V | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| tanδ | 0.23 | 0.20 | 0.17 | 0.15 | 0.12 | 0.10 | 0.09 | 0.08 | 0.15 | 0.15 | 0.20 | 0.20 | 0.24 | 0.24 |

Add 0.02 per 1000μ F for more than 1000μF.

(20℃)Surge Voltage

| W.V | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S.V | 8 | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | 250 | 300 | 400 | 450 | 500 |

Low Temperature Stability

Impedance radio at 120Hz.

| Rated Voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(-25℃) / +20℃ | ϕD < 16 | 6 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 6 | 8 | 12 | 14 | 16 |
| | ϕD≥16 | 8 | 6 | 4 | 4 | 3 | 3 | 3 | 3 | | | | | | |
| Z(-40℃) / +20℃ | ϕD < 16 | 10 | 8 | 6 | 6 | 4 | 3 | 3 | 3 | 4 | 8 | 10 | - | - | - |
| | ϕD≥16 | 18 | 16 | 12 | 10 | 8 | 8 | 6 | 6 | | | | | | |

Load Life Test

After 2000 hours application of rated voltage at 85℃, capacitors meet the characteristics requirements listed at right.

| | |
|---|---|
| Capacitance Change | Within ±20% of initial value |
| Dissipation Factor | Less than 200% of specified value |
| Leakage Current | Within specified value |

Shelf Life Test

After leaving capacitors under no load at 85 ℃ for 1,000 hours and applying Voltage they meet the specified value for load life characteristics listed above.

Frequency Coefficient of Allowable Ripple Current

| Freq.(Hz) / Cap.( μ F) | 60 | 120 | 500 | 1K | 10K up |
|---|---|---|---|---|---|
| Under 10 | 0.70 | 1.00 | 1.30 | 1.40 | 1.50 |
| 00 to 1000 | 0.75 | 1.00 | 1.20 | 1.30 | 1.35 |
| 1000 up above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 |

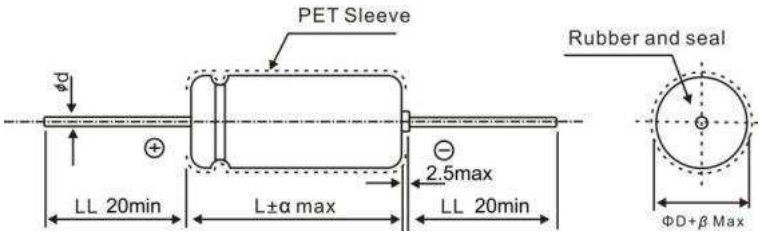
Allowable Ripple Current Vs Ambient Temperature

| Temperature(℃) | Under 50 | 70 | 85 |
|---|---|---|---|
| Multiplier | 1.78 | 1.40 | 1.00 |

# CAOA: LOW VOLTAGE , 2 RUBBER TYPE

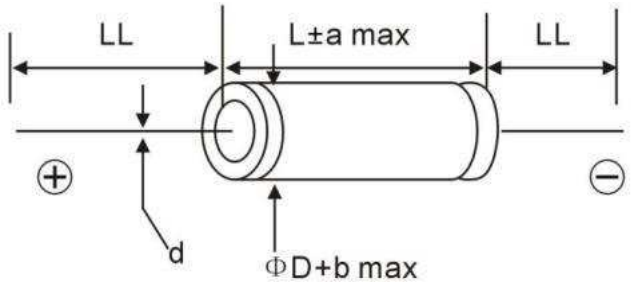
## DIAGRAM OF DIMENSIONS

**Unit:mm**




LEAD DIAMETER

| ØD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 | 22 | 25 |
|---|---|---|---|---|---|---|---|---|---|
| Ød | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 |
| α | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| β | 0.5 | 0.5 | 0.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |




## DIMENSIONS: Diameter (DØ) x Length (L) mm

## RIPPLE CURRENT. mA at 85℃, 120Hz

| V.DC | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | |
|---|---|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 10 | -- | -- | -- | -- | -- | -- | 5x12 | 40 | 5x12 | 55 |
| 22 | -- | -- | -- | -- | 5x12 | 71 | 6.3x13 | 76 | 6.3x13 | 70 |
| 33 | -- | -- | -- | -- | 5x12 | 85 | 6.3x13 | 80 | 6.3x13 | 115 |
| 47 | 5x12 | 87 | 5x12 | 94 | 6.3x13 | 88 | 6.3x13 | 100 | 6.3x13 | 138 |
| 100 | 6.3x13 | 121 | 6.3x13 | 145 | 6.3x13 | 160 | 8x13 | 215 | 8x16 | 232 |
| 220 | 6.3x13 | 215 | 8x13 | 231 | 8x13 | 298 | 8x16 | 319 | 10x17 | 401 |
| 330 | 8x16 | 305 | 8x16 | 327 | 8x16 | 365 | 10x17 | 454 | 10x21 | 514 |
| 470 | 8x16 | 364 | 8x16 | 390 | 8x16 | 460 | 10x21 | 524 | 13x22 | 613 |
| 1000 | 10x17 | 662 | 10x17 | 671 | 10x21 | 775 | 13x22 | 873 | 13x27 | 955 |
| 2200 | 13x22 | 929 | 13x22 | 1051 | 13x27 | 1125 | 16x28 | 1344 | 16x33 | 1421 |
| 3300 | 13x27 | 1150 | 13x27 | 1288 | 16x28 | 1454 | 16x33 | 1611 | 18x40 | 1640 |
| 4700 | 13x27 | 1354 | 16x28 | 1552 | 16x33 | 1650 | 18x40 | 1881 | 22x40 | 2280 |
| 6800 | 16x28 | 1762 | 16x33 | 1930 | 16x40 | 2040 | 18x40 | 2170 | 22x40 | 2470 |
| 10000 | 16x40 | 2062 | 18x40 | 2122 | 18x40 | 2503 | 22x40 | 2893 | 25x41 | 3180 |

Note: Specifications are subject to change without notice. For more detail and update, please visit our website.

# CAOA: LOW VOLTAGE , 2 RUBBER TYPE

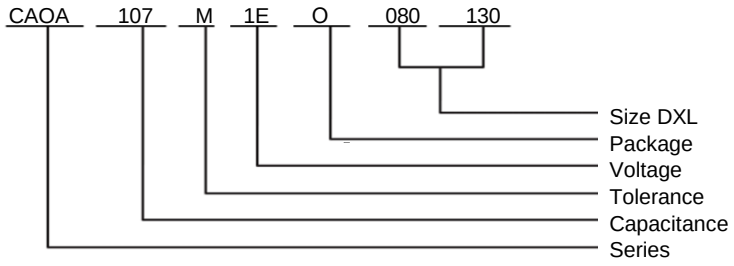
## RIPPLE CURRENT. mA at 85℃, 120Hz

| V.DC | 50V (1H) | | 63V (1J) | | 100V (2A) | | 160V (2C) | | 200V (2D) | |
|---|---|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 1 | 5x12 | 10 | 5x12 | 15 | 5x12 | 15 | 6.3x13 | 7 | 6.3x13 | 9 |
| 2.2 | 5x12 | 20 | 5x12 | 30 | 5x12 | 30 | 6.3x13 | 15 | 8x13 | 16 |
| 3.3 | 5x12 | 30 | 5x12 | 36 | 5x12 | 40 | 8x16 | 21 | 8x16 | 26 |
| 4.7 | 5x12 | 42 | 5x12 | 44 | 6.3x13 | 41 | 8x16 | 31 | 10x17 | 33 |
| 10 | 5x12 | 50 | 6.3x13 | 55 | 6.3x13 | 72 | 10x17 | 60 | 10x21 | 66 |
| 22 | 6.3x13 | 85 | 6.3x13 | 109 | 8x16 | 133 | 10x21 | 121 | 13x22 | 121 |
| 33 | 6.3x13 | 126 | 8x13 | 154 | 10x17 | 190 | 13x22 | 154 | 13x27 | 167 |
| 47 | 8x13 | 174 | 8x16 | 214 | 10x21 | 237 | 13x27 | 198 | 16x33 | 214 |
| 100 | 10x17 | 296 | 10x17 | 326 | 13x22 | 377 | 16x33 | 345 | 16x33 | 368 |
| 220 | 10x21 | 459 | 13x22 | 527 | 16x28 | 625 | 18x40 | 586 | 22x40 | 609 |
| 330 | 13x22 | 613 | 13x22 | 675 | 16x33 | 793 | 22x40 | 632 | -- | -- |
| 470 | 13x22 | 731 | 13x27 | 780 | 16x36 | 942 | -- | -- | -- | -- |
| 1000 | 16x33 | 1111 | 16x40 | 1249 | 22x40 | 1452 | -- | -- | -- | -- |
| 2200 | 18x40 | 1699 | 22x40 | 1744 | 25x43 | 2430 | -- | -- | -- | -- |
| 3300 | 22x40 | 2027 | 25x43 | 2309 | -- | -- | -- | -- | -- | -- |
| 4700 | 25x41 | 2347 | 25x43 | 2710 | -- | -- | -- | -- | -- | -- |
| 6800 | 25x52 | 2650 | -- | -- | -- | -- | -- | -- | -- | -- |

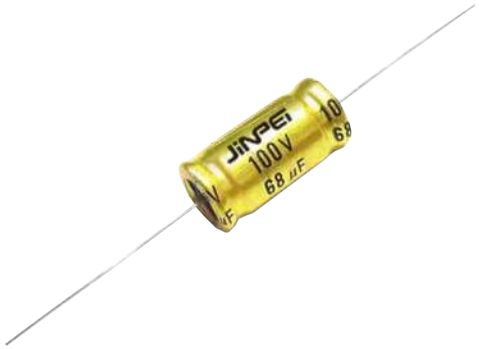
| V.DC | 250V (2E) | | 350V (2V) | | 400V (2G) | | 450V (2W) | |
|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 1 | 6.3x13 | 12 | 8x16 | 13 | 8x16 | 14 | 8x16 | 15 |
| 2.2 | 8x16 | 17 | 10x17 | 19 | 10x17 | 21 | 10x21 | 23 |
| 3.3 | 10x17 | 31 | 10x17 | 33 | 10x17 | 34 | 10x21 | 36 |
| 4.7 | 10x17 | 38 | 10x21 | 44 | 10x21 | 45 | 13x22 | 46 |
| 10 | 10x21 | 72 | 13x22 | 72 | 13x22 | 80 | 13x27 | 82 |
| 22 | 13x27 | 126 | 13x27 | 132 | 16x33 | 137 | 16x36 | 143 |
| 33 | 16x28 | 178 | 16x33 | 186 | 16x40 | 192 | 16x40 | 201 |
| 47 | 16x33 | 241 | 16x40 | 253 | 18x40 | 339 | 18x40 | 339 |
| 100 | 16x40 | 391 | 22x40 | 402 | 22x43 | 424 | 22x43 | 448 |
| 220 | 22x40 | 632 | -- | -- | -- | -- | -- | -- |

Note: Specifications are subject to change without notice. For more detail and update, please visit our website.

### PART NUMBER EXAMPLE



## CAOB: LOW LEAKAGE CURRENT, 2 RUBBER TYPE




### FEATURES:

- 85℃, 2000 hours assured.
- Voltage range of 6.3 ~ 450V
- Wide operating temperature range, from -40℃~ +85℃

| ITEMS | CHARACTERISTIC |
|---|---|
| Operating Temperature Range | -40℃ ~ +85℃ |
| Capacitance Tolerance (120Hz 20℃) | ±10% (K) , ±20% (M) |
| Voltage Range | 6.3 ~ 100 VDC / 160 ~ 450 VDC |
| (20℃)Leakage Current | I≦0.02CV or 3 (u A)Whichever is greater (after 2 minutes applying the rated DC working Voltage at 20 ℃) / I≦0.03CV+15 (u A) for CV≦1000, I≦0.02CV+25 (u A) for CV>1000 (after 5 minutes applying the rated DC working Voltage at 20 ℃) |
| | Where: I=Leakage Current (u A) , C=rated Capacitance (μ F) , V= working Voltage (V) |

(at 20℃, 120Hz) Dissipation Factor (tanδ)

| W.V | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| tanδ | 0.23 | 0.20 | 0.17 | 0.15 | 0.12 | 0.10 | 0.09 | 0.08 | 0.15 | 0.15 | 0.20 | 0.20 | 0.24 | 0.24 |

Add 0.02 per 1000μ F for more than 1000μF.

(20℃)Surge Voltage

| W.V | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S.V | 8 | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | 250 | 300 | 400 | 450 | 500 |

Low Temperature Stability

Impedance radio at 120Hz.

| Rated Voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(-25℃) / +20℃ | ϕD < 16 | 6 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 6 | 8 | 12 | 14 | 16 |
| | ϕD≥16 | 8 | 6 | 4 | 4 | 3 | 3 | 3 | 3 | | | | | | |
| Z(-40℃) / +20℃ | ϕD < 16 | 10 | 8 | 6 | 6 | 4 | 3 | 3 | 3 | 4 | 8 | 10 | - | - | - |
| | ϕD≥16 | 18 | 16 | 12 | 10 | 8 | 8 | 6 | 6 | | | | | | |

Load Life Test

After 2000 hours application of rated voltage at 85℃, capacitors meet the characteristics requirements listed at right.

| | |
|---|---|
| Capacitance Change | Within ±20% of initial value |
| Dissipation Factor | Less than200% of specified value |
| Leakage Current | Within specified value |

Shelf Life Test

After leaving capacitors under no load at 85 ℃ for 1,000 hours and applying Voltage they meet the specified value for load life characteristics listed above.

Frequency Coefficient of Allowable Ripple Current

| Freq.(Hz) / Cap.( μ F) | 60 | 120 | 500 | 1K | 10K up |
|---|---|---|---|---|---|
| Under 100 | 0.70 | 1.00 | 1.30 | 1.40 | 1.50 |
| 100 to 1000 | 0.75 | 1.00 | 1.20 | 1.30 | 1.35 |
| 1000 up above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 |

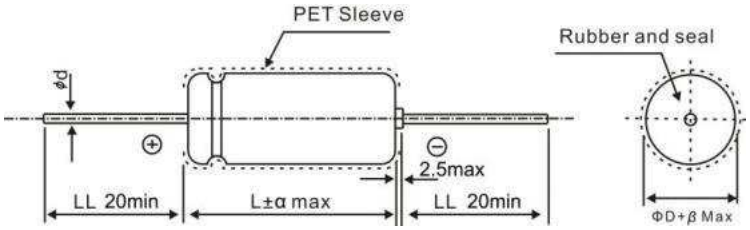
Allowable Ripple Current Vs Ambient Temperature

| Temperature (℃) | Under 50 | 70 | 85 |
|---|---|---|---|
| Multiplier | 1.78 | 1.40 | 1.00 |

# CAOB: LOW LEAKAGE CURRENT, 2 RUBBER TYPE

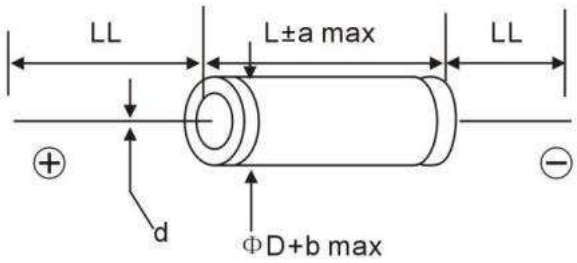
## DIAGRAM OF DIMENSIONS

**Unit:mm**




LEAD DIAMETER

| ØD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 | 22 | 25 |
|---|---|---|---|---|---|---|---|---|---|
| Ød | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 |
| α | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| β | 0.5 | 0.5 | 0.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |




## DIMENSIONS: Diameter (DØ) x Length (L) mm

## RIPPLE CURRENT. mA at 85℃, 120Hz

| V.DC | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | |
|---|---|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 10 | -- | -- | -- | -- | -- | -- | 5x12 | 40 | 5x12 | 55 |
| 22 | -- | -- | -- | -- | 5x12 | 71 | 6.3x13 | 76 | 6.3x13 | 70 |
| 33 | -- | -- | -- | -- | 5x12 | 85 | 6.3x13 | 80 | 6.3x13 | 115 |
| 47 | 5x12 | 87 | 5x12 | 94 | 6.3x13 | 88 | 6.3x13 | 100 | 6.3x13 | 138 |
| 100 | 6.3x13 | 121 | 6.3x13 | 145 | 6.3x13 | 160 | 8x13 | 215 | 8x16 | 232 |
| 220 | 6.3x13 | 215 | 8x13 | 231 | 8x13 | 298 | 8x16 | 319 | 10x17 | 401 |
| 330 | 8x16 | 305 | 8x16 | 327 | 8x16 | 365 | 10x17 | 454 | 10x21 | 514 |
| 470 | 8x16 | 364 | 8x16 | 390 | 8x16 | 460 | 10x21 | 524 | 13x22 | 613 |
| 1000 | 10x17 | 662 | 10x17 | 671 | 10x21 | 775 | 13x22 | 873 | 13x27 | 955 |
| 2200 | 13x22 | 929 | 13x22 | 1051 | 13x27 | 1125 | 16x28 | 1344 | 16x33 | 1421 |
| 3300 | 13x27 | 1150 | 13x27 | 1288 | 16x28 | 1454 | 16x33 | 1611 | 18x40 | 1640 |
| 4700 | 13x27 | 1354 | 16x28 | 1552 | 16x33 | 1650 | 18x40 | 1881 | 22x40 | 2280 |
| 6800 | 16x28 | 1762 | 16x33 | 1930 | 16x40 | 2040 | 18x40 | 2170 | 22x40 | 2470 |
| 10000 | 16x40 | 2062 | 18x40 | 2122 | 18x40 | 2503 | 22x40 | 2893 | 25x41 | 3180 |

Note: Specification are subject to change without notice. For more detail and update, please visit our website.

# AXIAL ALUMINUM ELECTROLYTIC CAPACITORS

## CAOB: LOW LEAKAGE CURRENT , 2 RUBBER TYPE

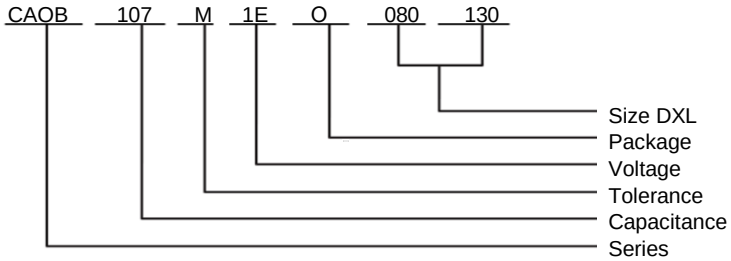
### RIPPLE CURRENT. mA at 85℃, 120Hz

| V.DC | 50V (1H) | | 63V (1J) | | 100V (2A) | | 160V (2C) | | 200V (2D) | |
|---|---|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 1 | 5x12 | 10 | 5x12 | 15 | 5x12 | 15 | 6.3x13 | 7 | 6.3x13 | 9 |
| 2.2 | 5x12 | 20 | 5x12 | 30 | 5x12 | 30 | 6.3x13 | 15 | 8x13 | 16 |
| 3.3 | 5x12 | 30 | 5x12 | 36 | 5x12 | 40 | 8x16 | 21 | 8x16 | 26 |
| 4.7 | 5x12 | 42 | 5x12 | 44 | 6.3x13 | 41 | 8x16 | 31 | 10x17 | 33 |
| 10 | 5x12 | 50 | 6.3x13 | 55 | 6.3x13 | 72 | 10x17 | 60 | 10x21 | 66 |
| 22 | 6.3x13 | 85 | 6.3x13 | 109 | 8x16 | 133 | 10x21 | 121 | 13x22 | 121 |
| 33 | 6.3x13 | 126 | 8x13 | 154 | 10x17 | 190 | 13x22 | 154 | 13x27 | 167 |
| 47 | 8x13 | 174 | 8x16 | 214 | 10x21 | 237 | 13x27 | 198 | 16x33 | 214 |
| 100 | 10x17 | 296 | 10x17 | 326 | 13x22 | 377 | 16x33 | 345 | 16x33 | 368 |
| 220 | 10x21 | 459 | 13x22 | 527 | 16x28 | 625 | 18x40 | 586 | 22x40 | 609 |
| 330 | 13x22 | 613 | 13x22 | 675 | 16x33 | 793 | 22x40 | 632 | -- | -- |
| 470 | 13x22 | 731 | 13x27 | 780 | 16x36 | 942 | -- | -- | -- | -- |
| 1000 | 16x33 | 1111 | 16x40 | 1249 | 22x40 | 1452 | -- | -- | -- | -- |
| 2200 | 18x40 | 1699 | 22x40 | 1744 | 25x43 | 2430 | -- | -- | -- | -- |
| 3300 | 22x40 | 2027 | 25x43 | 2309 | -- | -- | -- | -- | -- | -- |
| 4700 | 25x41 | 2347 | 25x43 | 2710 | -- | -- | -- | -- | -- | -- |
| 6800 | 25x52 | 2650 | -- | -- | -- | -- | -- | -- | -- | -- |

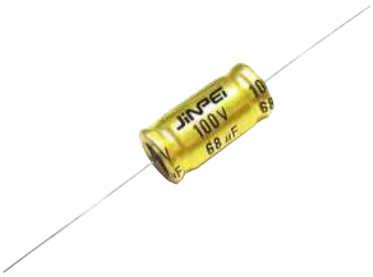
| V.DC | 250V (2E) | | 350V (2V) | | 400V (2G) | | 450V (2W) | |
|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 1 | 6.3x13 | 12 | 8x16 | 13 | 8x16 | 14 | 8x16 | 15 |
| 2.2 | 8x16 | 17 | 10x17 | 19 | 10x17 | 21 | 10x21 | 23 |
| 3.3 | 10x17 | 31 | 10x17 | 33 | 10x17 | 34 | 10x21 | 36 |
| 4.7 | 10x17 | 38 | 10x21 | 44 | 10x21 | 45 | 13x22 | 46 |
| 10 | 10x21 | 72 | 13x22 | 72 | 13x22 | 80 | 13x27 | 82 |
| 22 | 13x27 | 126 | 13x27 | 132 | 16x33 | 137 | 16x36 | 143 |
| 33 | 16x28 | 178 | 16x33 | 186 | 16x40 | 192 | 16x40 | 201 |
| 47 | 16x33 | 241 | 16x40 | 253 | 18x40 | 339 | 18x40 | 339 |
| 100 | 16x40 | 391 | 22x40 | 402 | 22x43 | 424 | 22x43 | 448 |
| 220 | 22x40 | 632 | -- | -- | -- | -- | -- | -- |

Note: Specifications are subject to change without notice. For more detail and update, please visit our website.

### PART NUMBER EXAMPLE



## CAOC: 105℃，1000hours，2 RUBBER TYPE




### FEATURES:

- 105℃, 1000 hours assured
- Voltage range of 6.3 ~ 450V
- Wide operating temperature range, from -40℃~ +105℃

| ITEMS | CHARACTERISTIC |
|---|---|
| Operating Temperature Range | -40℃ ~ +105℃ |
| Rated Voltage | 6.3 ~ 100VDC / 160 ~ 450VDC |
| Capacitance Tolerance | ±10%(K), ±20%(M) |
| (at 20℃,120Hz) Dissipation Factor (tanδ) | Add 0.02 per 1000μF for more than 1000μF |

| W.V | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
|---|---|---|---|---|---|---|---|
| tan δ | 0.23 | 0.20 | 0.17 | 0.15 | 0.12 | 0.10 | 0.09 |
| W.V | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| tan δ | 0.08 | 0.15 | 0.15 | 0.20 | 0.20 | 0.24 | 0.24 |

| Leakage Current mA | | |
|---|---|---|
| | I≦0.02CV or 3 (uA)Whichever is greater (after 2 minutes applying the rated DC working Voltage at 20 ℃) | I≦0.03CV+15 (uA) for CV≦1000,<br>I≦0.02CV+25 (uA) for CV>1000<br>(after 5 minutes applying the rated DC working Voltage at 20 ℃) |
| | Where: I=Leakage Current (uA) , C=rated Capacitance (μF) , V= working Voltage (V) | |

(20℃) Surge Voltage

| W.V | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
|---|---|---|---|---|---|---|---|
| S.V | 8 | 13 | 20 | 32 | 44 | 63 | 79 |
| W.V | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| S.V | 125 | 200 | 250 | 300 | 400 | 450 | 500 |

Low Temperature Stability

Impedance ratio at 120HZ

| Rated Voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
|---|---|---|---|---|---|---|---|---|
| Z(-25℃) /+20℃ | ϕD<16 | 6 | 4 | 3 | 3 | 2 | 2 | 2 |
| | ϕD≥16 | 8 | 6 | 4 | 4 | 3 | 3 | 3 |
| Z(-40℃) /+20℃ | ϕD<16 | 1 | 8 | 6 | 6 | 4 | 3 | 3 |
| | ϕD≥16 | | 16 | 12 | 10 | 8 | 8 | 6 |
| Rated Voltage (V) | | 18 | 160 | 200 | 250 | 350 | 400 | 450 |
| Z(-25℃) /+20℃ | ϕD<16 | 100 | 3 | 6 | 8 | 12 | 14 | 16 |
| | ϕD≥16 | 2 | | | | | | |
| Z(-40℃) /+20℃ | ϕD<16 | 3 | 4 | 8 | 10 | - | - | - |
| | ϕD≥16 | 3 | | | | | | |

Load Life Test

After 1,000 hours application of rated voltage at 105℃, capacitors meet the characteristics requirements listed as below.

| | |
|---|---|
| Capacitance Change | Within ±20% of initial value |
| Dissipation Factor | Less than 200% of specified value |
| Leakage Current | Within specified value |

Shelf Life Test

After leaving capacitors under no load at 105℃ for 1,000 hours and applying Voltage they meet the specified value for load life characteristics listed above.

Frequency Coefficient of Allowable Ripple Current

| Freq.(Hz) / Cap.( μF) | 60 | 120 | 500 | 1K | 10K up |
|---|---|---|---|---|---|
| Under 00 | 0.70 | 1.00 | 1.30 | 1.40 | 1.50 |
| 100 to 1000 | 0.75 | 1.00 | 1.20 | 1.30 | 1.35 |
| 1000 up above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 |

Allowable Ripple Current Vs Ambient Temperature

| Temperature(℃) | Under 50 | 70 | 85 | 105 |
|---|---|---|---|---|
| Multiplier | 1.95 | 1.78 | 1.40 | 1.00 |

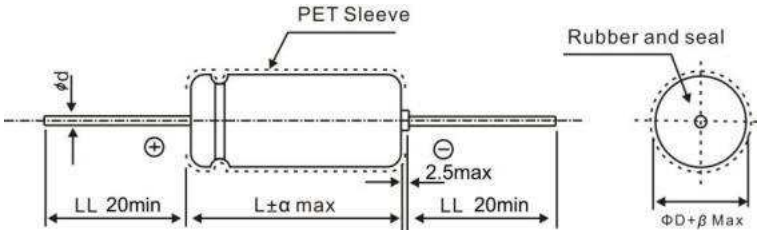

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# AXIAL ALUMINUM ELECTROLYTIC CAPACITORS

## CAOC: 105℃，1000hours，2 RUBBER TYPE

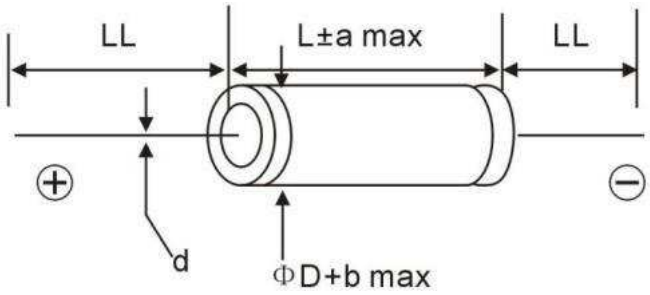
### DIAGRAM OF DIMENSIONS

**Unit:mm**




LEAD DIAMETER

| ØD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 | 22 | 25 |
|---|---|---|---|---|---|---|---|---|---|
| Ø d | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 |
| α | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| β | 0.5 | 0.5 | 0.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |




### DIMENSIONS: Diameter (DØ) x Length (L) mm

### RIPPLE CURRENT. mA at 85℃, 120Hz

| V.DC | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | |
|---|---|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 10 | -- | -- | -- | -- | -- | -- | 5x12 | 39 | 5x12 | 44 |
| 22 | -- | -- | -- | -- | 5x12 | 55 | 6.3x13 | 63 | 6.3x13 | 65 |
| 33 | -- | -- | -- | -- | 5x12 | 73 | 6.3x13 | 75 | 6.3x13 | 96 |
| 47 | -- | -- | 5x12 | 77 | 6.3x13 | 85 | 6.3x13 | 90 | 6.3x13 | 114 |
| 100 | 6.3x13 | 102 | 6.3x13 | 110 | 6.3x13 | 145 | 8x13 | 166 | 8x16 | 180 |
| 220 | 6.3x13 | 167 | 8x13 | 180 | 8x13 | 231 | 8x16 | 246 | 10x17 | 305 |
| 330 | 8x16 | 236 | 8x16 | 253 | 8x16 | 323 | 10x17 | 345 | 10x21 | 391 |
| 470 | 8x16 | 281 | 8x16 | 302 | 10x17 | 359 | 10x21 | 432 | 13x22 | 490 |
| 1000 | 10x17 | 453 | 10x17 | 486 | 10x21 | 569 | 13x22 | 662 | 13x27 | 721 |
| 2200 | 13x22 | 740 | 13x22 | 793 | 13x27 | 926 | 16x28 | 1024 | 16x33 | 1177 |
| 3300 | 13x27 | 906 | 13x27 | 1015 | 16x28 | 1173 | 16x33 | 1300 | 18x40 | 1449 |
| 4700 | 13x27 | 1168 | 16x28 | 1252 | 16x33 | 1443 | 18x40 | 1638 | 22x40 | 1878 |

Note: Specifications are subject to change without notice. For more detail and update, please visit our website

# AXIAL ALUMINUM ELECTROLYTIC CAPACITORS

## CAOC: 105℃，1000hours，2 RUBBER TYPE

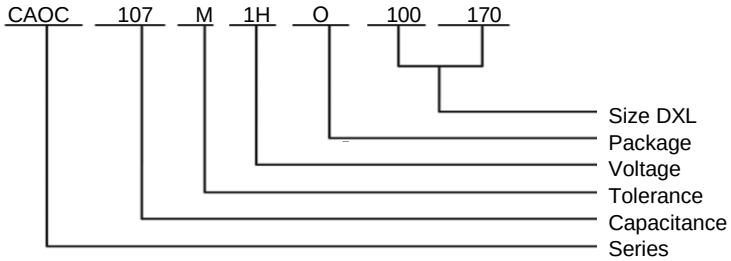
### RIPPLE CURRENT. mA at 85℃, 120Hz

| V.DC | 50V (1H) | | 63V (1J) | | 100V (2A) | | 160V (2C) | | 200V (2D) | |
|---|---|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 1 | 5x12 | 10 | 5x12 | 15 | 5x12 | 15 | 6.3x13 | 7 | 6.3x13 | 9 |
| 2.2 | 5x12 | 20 | 5x12 | 30 | 5x12 | 30 | 6.3x13 | 15 | 8x13 | 16 |
| 3.3 | 5x12 | 30 | 5x12 | 32 | 5x12 | 32 | 8x16 | 21 | 8x16 | 26 |
| 4.7 | 5x12 | 34 | 5x12 | 36 | 6.3x13 | 37 | 8x16 | 31 | 10x17 | 33 |
| 10 | 5x12 | 50 | 6.3x13 | 55 | 6.3x13 | 64 | 10x17 | 60 | 10x21 | 66 |
| 22 | 6.3x13 | 75 | 6.3x13 | 90 | 8x16 | 106 | 10x21 | 121 | 13x22 | 121 |
| 33 | 6.3x13 | 105 | 8x13 | 123 | 10x17 | 150 | 13x22 | 154 | 13x27 | 167 |
| 47 | 8x13 | 140 | 8x16 | 162 | 10x21 | 180 | 13x27 | 198 | 16x33 | 214 |
| 100 | 10x17 | 225 | 10x17 | 248 | 13x22 | 287 | 16x33 | 345 | 16x33 | 368 |
| 220 | 10x21 | 349 | 13x22 | 420 | 16x28 | 458 | 18x40 | 586 | 22x40 | 609 |
| 330 | 13x22 | 450 | 13x27 | 495 | 16x33 | 582 | 22x40 | 632 | -- | -- |
| 470 | 13x22 | 561 | 13x27 | 632 | 16x36 | 713 | -- | -- | -- | -- |
| 1000 | 16x33 | 875 | 16x40 | 984 | 22x40 | 1148 | -- | -- | -- | -- |
| 2200 | 18x40 | 1408 | 22x40 | 1540 | 25x43 | 2310 | -- | -- | -- | -- |
| 3300 | 22x40 | 1724 | 25x43 | 1950 | -- | -- | -- | -- | -- | -- |
| 4700 | 25x41 | 1950 | 25x43 | 2290 | -- | -- | -- | -- | -- | -- |

| V.DC | 250V (2E) | | 350V (2V) | | 400V (2G) | | 450V (2W) | |
|---|---|---|---|---|---|---|---|---|
| μF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA |
| 1 | 6.3x13 | 12 | 8x16 | 13 | 8x16 | 15 | 8x16 | 15 |
| 2.2 | 8x16 | 17 | 10x17 | 19 | 10x17 | 23 | 10x21 | 23 |
| 3.3 | 10x17 | 31 | 10x17 | 33 | 10x17 | 36 | 10x21 | 36 |
| 4.7 | 10x17 | 38 | 10x21 | 44 | 10x21 | 46 | 13x22 | 46 |
| 10 | 10x21 | 72 | 13x22 | 72 | 13x22 | 79 | 13x27 | 82 |
| 22 | 13x27 | 126 | 13x27 | 132 | 16x33 | 143 | 16x36 | 154 |
| 33 | 16x28 | 178 | 16x33 | 186 | 16x40 | 201 | 16x40 | 201 |
| 47 | 16x33 | 241 | 16x40 | 253 | 18x40 | 253 | 18x40 | 304 |
| 100 | 16x40 | 391 | 22x40 | 402 | 22x43 | 439 | 22x43 | 448 |
| 220 | 22x40 | 632 | -- | -- | -- | -- | -- | -- |

Note: Specifications are subject to change without notice. For more detail and update, please visit our website

### PART NUMBER EXAMPLE





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# CABB SERIES: Radial Low Leakage



## FEATURES

- 85℃
- Standard low leakage current series

## SPECIFICATIONS

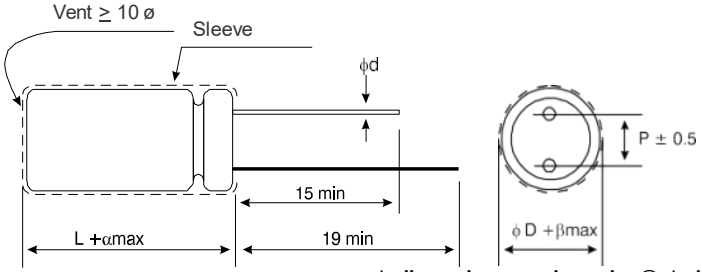
| Item | Performance | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CABB | | | | | | | | CABB | |
| Life | At 85°C 1000 Hrs | | | | | | | | At 85°C 2000 Hrs | |
| Operating Temperature | -40°C ~ +85°C | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.002CV or 0.4 ( A) whichever is greater (after 2 minutes) Where, C = rated capacitance in μF. V=rated DC working voltage in V. | | | | | | | | | |
| Dissipaton Factor | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | |
| Tan δat 120 Hz, 20°C | Tan δ (max) | 0.24 | 0.21 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | |
| | When the capacitance exceed 1000 μF 0.02 shall be added every 1000 μF | | | | | | | | | |
| | Impedance ratio shall not exceed the values given in the table below | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | 5 | 4 | 2 | 2 | 2 | 2 | 2 | 2 |
| | | Z(-40°C) /Z(+20°C) | 10 | 8 | 6 | 4 | 4 | 3 | 3 | 3 |
| Load Life Test | Test Time | 1000 / 2000 Hrs | | | | | | | | |
| | Capacitance Change | ≤ ± 20% | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | |
| | Specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 1000/2000 hrs.at 85°C. | 10K up | | | | | | | | |
| Shelf Life Test | Test Time | 1000 Hrs | | | | | | | | |
| | Capacitance Change | ≤ ± 20% | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | |
| | Specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 85°C without voltage applied. | | | | | | | | | |
| Ripple Current & Frequency Multilpiers | Freq. (Hz) / Cap. ( F) | | 120 | 500 | 1K | | | | | |
| | Under 100 | 0.70 | 1.00 | 1.35 | 1.55 | 2.00 | | | | |
| | 220 to 1000 | 0.83 | 1.00 | 1.23 | 1.32 | 1.50 | | | | |
| | 2200 up above | 0.90 | 1.00 | 1.12 | 1.10 | 1.15 | | | | |
| Riple Current & Temperature Multipliers | Temperature (°C) | Under 50 | 70 | 85 | | | | | | |
| | Multipliers | 1.75 | 1.58 | 1.00 | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | |

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: ΦD×L(mm) Ripple Current: mA/RMS at 120Hz 85°C

| VDC | | 6.3V(0J) | | 10V(1A) | | 16V(1C) | | 25V(1E) | | 35V(1V) | | 50V(1H) | | 63V(1J) | | 100V(2A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | DXL | mA | DXL | mA | DXL | mA | DXL | mA | DXL | mA | DXL | mA | DXL | mA | DXL | mA |
| 0.1 | 0R1 | | | | | | | | | | | 5 x 11 | 1.3 | | | 5 x 11 | 2.6 |
| 0.22 | R22 | | | | | | | | | | | 5 x 11 | 2.9 | | | 5 x 11 | 5.8 |
| 0.33 | R33 | | | | | | | | | | | 5 x 11 | 4.4 | | | 5 x 11 | 8.8 |
| 0.47 | R47 | | | | | | | | | | | 5 x 11 | 7 | | | 5 x 11 | 12 |
| 1 | 010 | | | | | | | | | | | 5 x 11 | 13 | | | 5 x 11 | 22 |
| 2.2 | 2R2 | | | | | | | | | | | 5 x 11 | 29 | | | 5 x 11 | 33 |
| 3.3 | 3R3 | | | | | | | | | | | 5 x 11 | 35 | | | 5 x 11 | 40 |
| 4.7 | 4R7 | | | | | | | 5 x 11 | 31 | 5 x 11 | 40 | 5 x 11 | 42 | 5 x 11 | 45 | 5 x 11 | 48 |
| 10 | 100 | | | | | 5 x 11 | 44 | 5 x 11 | 54 | 5 x 11 | 58 | 5 x 11 | 65 | 5 x 11 | 70 | 6.3 x 11 | 80 |
| 22 | 220 | | | 5 x 11 | 59 | 5 x 11 | 75 | 5 x 11 | 80 | 5 x 11 | 87 | 5 x 11 | 95 | 6.3 x 11 | 115 | 8 x 11.5 | 135 |
| 33 | 330 | 5 x 11 | 55 | 5 x 11 | 84 | 5 x 11 | 90 | 5 x 11 | 97 | 5 x 11 | 105 | 6.3 x 11 | 125 | 6.3 x 11 | 140 | 10 x 12.5 | 195 |
| 47 | 470 | 5 x 11 | 79 | 5 x 11 | 100 | 5 x 11 | 110 | 5 x 11 | 115 | 6.3 x 11 | 145 | 6.3 x 11 | 150 | 8 x 11.5 | 190 | 10 x 16 | 255 |
| 100 | 101 | 5 x 11 | 130 | 5 x 11 | 145 | 6.3 x 11 | 180 | 6.3 x 11 | 190 | 8 x 11.5 | 240 | 8 x 11.5 | 255 | 10 x 12.5 | 320 | 13 x 20 | 450 |
| 220 | 221 | 6.3 x 11 | 230 | 6.3 x 11 | 250 | 8 x 11.5 | 300 | 8 x 11.5 | 320 | 10 x 12.5 | 420 | 10 x 16 | 490 | 10 x 20 | 565 | 16 x 25 | 810 |
| 330 | 331 | 6.3 x 11 | 280 | 8 x 11.5 | 350 | 8 x 11.5 | 370 | 10 x 12.5 | 470 | 10 x 16 | 570 | 10 x 20 | 650 | 13 x 20 | 765 | 16 x 25 | 990 |
| 470 | 471 | 8 x 11.5 | 380 | 8 x 11.5 | 415 | 10 x 12.5 | 520 | 10 x 16 | 620 | 10 x 20 | 740 | 13 x 20 | 860 | 13 x 25 | 990 | 16 x 31.5 | 1250 |
| 1000 | 102 | 10 x 12.5 | 650 | 10 x 16 | 790 | 10 x 20 | 910 | 13 x 20 | 1090 | 13 x 25 | 1300 | 16 x 25 | 1530 | 16 x 31.5 | 1700 | | |
| 2200 | 222 | 13 x 20 | 1150 | 13 x 20 | 1240 | 13 x 25 | 1420 | 16 x 25 | 1660 | 16 x 31.5 | 1890 | 18 x 35.5 | 2160 | | | | |
| 3300 | 332 | 13 x 20 | 1380 | 13 x 25 | 1590 | 16 x 25 | 1840 | 16 x 31.5 | 2070 | 18 x 35.5 | 2340 | | | | | | |
| 4700 | 472 | 16 x 25 | 1880 | 16 x 25 | 1980 | 16 x 31.5 | 2260 | 18 x 35.5 | 2520 | 18 x 40 | 2690 | | | | | | |

## PART NUMBER EXAMPLE CABB 220 M 1C BK 050 110




## LEAD SPACING AND DIAMETER

| φd | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.5 | | 0.6 | | | 0.8 | |
| α | 1.0 | | 1.5 | | | | |
| β | 0.5 | | | | | | |

# CABA SERIES: Radial Very Low Leakage, 105℃



## FEATURES

- 105℃, 1000 hours assured.
- Very Low leakage current.
- Use in high temperature industrial equipment.

## SPECIFICATIONS

| Item | Performance |
|---|---|
| Operating Temperature Range | -40°C ~ +105°C |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) |
| Leakage Current (at 20°C) | I = 0.002CV or 0.4 ( A) whichever is greater (after 2 minutes). Where, C = rated capacitance in F. V=rated DC working voltage in V. |

**Dissipaton Factor Tan δ at 120 Hz, 20°C**

| Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|---|---|---|---|---|---|---|---|---|
| Tan δ (max) | 0.24 | 0.21 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 |

When the capacitance exceed 1000 F 0.02 shall be added every 1000 F. Impedance ratio shall not exceed the values given in the table below.

**Low Temperature Characteristics (at 120Hz)**

| Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|---|---|---|---|---|---|---|---|---|---|
| Impedance Ratio | Z(-25°C)/Z(+20°C) | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 |
| | Z(-40°C)/Z(+20°C) | 8 | 6 | 6 | 4 | 4 | 3 | 3 | 3 |

**Load Life Test (after application of the rated voltage applied for 1000 hours at 105°C)**

| | | | |
|---|---|---|---|
| Test Time | 1000 Hrs | Shelf Life Test (at 20°C after rated voltage applied for 1000 hours at 105°C without voltage applied) | Test Time: 1000 Hrs |
| Capacitance Change | ≤ ± 20% | | Capacitance Change: ≤ ± 20% |
| Dissipation Factor | Less than 200% of specified value | | Dissipation Factor: Less than 200% of specified value |
| Leakage Current | Within specified value | | Leakage Current: Within specified value |

**Ripple Current & Frequency Multilpiers**

| Freq. (Hz) / Cap. (μF) | 60(50) | 120 | 500 | 1K | 10K μp |
|---|---|---|---|---|---|
| Under 100 | 0.75 | 1.00 | 1.35 | 1.55 | 1.90 |
| 220 to 1000 | 0.83 | 1.00 | 1.23 | 1.32 | 1.45 |
| 2200 up above | 0.90 | 1.00 | 1.12 | 1.10 | 1.12 |

**Riple Current & Temperature Multipliers**

| Temperature (°C) | Under 50 | 70 | 85 | 105 |
|---|---|---|---|---|
| Multipliers | 2.20 | 1.75 | 1.58 | 1.00 |

| Standards | Satisfies Characteristic W of JIS C 5141 |
|---|---|

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: ΦD×L(mm) Ripple Current: mA/RMS at 120Hz 105°C

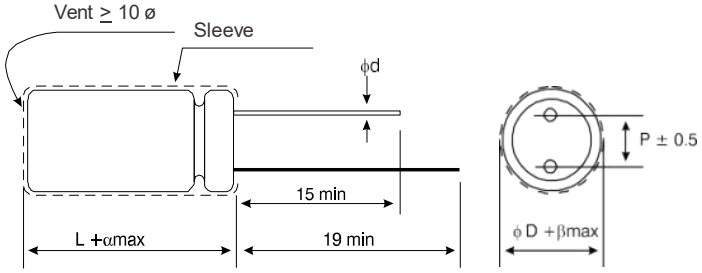
| VDC | | 6.3V(0J) | | 10V(1A) | | 16V(1C) | | 25V(1E) | | 35V(1H) | | 50V(1H) | | 63V(1J) | | 100V(2A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | φDXL | mA | φDXL | mA | φDXL | mA | φDXL | mA | φDXL | mA | φDXL | mA | φDXL | mA | φDXL | mA |
| 0.1 | 0R1 | | | | | | | | | | | 5 x 11 | 1.3 | | | 5 x 11 | 2.6 |
| 0.22 | R22 | | | | | | | | | | | 5 x 11 | 2.9 | | | 5 x 11 | 5.8 |
| 0.33 | R33 | | | | | | | | | | | 5 x 11 | 4.4 | | | 5 x 11 | 8 |
| 0.47 | R47 | | | | | | | | | | | 5 x 11 | 7 | | | 5 x 11 | 10 |
| 1 | 010 | | | | | | | | | | | 5 x 11 | 13 | | | 5 x 11 | 15 |
| 2.2 | 2R2 | | | | | | | | | | | 5 x 11 | 20 | | | 5 x 11 | 23 |
| 3.3 | 3R3 | | | | | | | | | | | 5 x 11 | 25 | | | 5 x 11 | 29 |
| 4.7 | 4R7 | | | | | | | 5 x 11 | 26 | 5 x 11 | 28 | 5 x 11 | 30 | 5 x 11 | 32 | 5 x 11 | 34 |
| 10 | 100 | | | | | 5 x 11 | 35 | 5 x 11 | 38 | 5 x 11 | 41 | 5 x 11 | 46 | 5 x 11 | 50 | 6.3 x 11 | 56 |
| 22 | 220 | | | 5 x 11 | 49 | 5 x 11 | 54 | 5 x 11 | 57 | 5 x 11 | 61 | 5 x 11 | 68 | 6.3 x 11 | 82 | 8 x 11.5 | 96 |
| 33 | 330 | 5 x 11 | 54 | 5 x 11 | 60 | 5 x 11 | 64 | 5 x 11 | 69 | 5 x 11 | 75 | 6.3 x 11 | 90 | 6.3 x 11 | 100 | 10 x 12.5 | 140 |
| 47 | 470 | 5 x 11 | 65 | 5 x 11 | 70 | 5 x 11 | 99 | 5 x 11 | 82 | 6.3 x 11 | 100 | 6.3 x 11 | 110 | 8 x 11.5 | 135 | 10 x 16 | 180 |
| 100 | 101 | 5 x 11 | 95 | 5 x 11 | 105 | 6.3 x 11 | 25 | 6.3 x 11 | 135 | 8 x 11.5 | 170 | 8 x 11.5 | 180 | 10 x 12.5 | 225 | 13 x 20 | 320 |
| 220 | 221 | 6.3 x 11 | 160 | 6.3 x 11 | 175 | 8 x 11.5 | 15 | 8 x 11.5 | 230 | 10 x 12.5 | 300 | 10 x 16 | 345 | 10 x 20 | 400 | 16 x 25 | 570 |
| 330 | 331 | 6.3 x 11 | 195 | 8 x 11.5 | 245 | 8 x 11.5 | 60 | 10 x 12.5 | 335 | 10 x 16 | 400 | 10 x 20 | 460 | 13 x 20 | 540 | 16 x 25 | 700 |
| 470 | 471 | 8 x 11.5 | 270 | 8 x 11.5 | 290 | 10 x 12.5 | 70 | 10 x 16 | 440 | 10 x 20 | 520 | 13 x 20 | 610 | 13 x 25 | 700 | 16 x 31.5 | 880 |
| 1000 | 102 | 10 x 12.5 | 460 | 10 x 16 | 550 | 10 x 20 | 40 | 13 x 20 | 770 | 13 x 25 | 920 | 16 x 25 | 1080 | 16 x 31.5 | 1210 | | |
| 2200 | 222 | 13 x 20 | 810 | 13 x 20 | 860 | 13 x 25 | 000 | 16 x 25 | 1170 | 16 x 31.5 | 1340 | 18 x 35.5 | 1530 | | | | |
| 3300 | 332 | 13 x 20 | 960 | 13 x 25 | 1100 | 16 x 25 | 300 | 16 x 31.5 | 1460 | 18 x 35.5 | 1650 | | | | | | |
| 4700 | 472 | 16 x 25 | 1330 | 16 x 25 | 1400 | 16 x 31.5 | 600 | 18 x 35.5 | 1780 | 18 x 40 | 1900 | | | | | | |

## PART NUMBER EXAMPLE

CABA 220 M 1C BK 050 110

## LEAD SPACING AND DIAMETER

| φd | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.5 | | 0.6 | | | 0.8 | |
| α | 1.0 | | | 1.5 | | | |
| β | 0.5 | | | | | | |





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# CAAA SERIES: Low Impedance, High Temperature



## FEATURES

- 105℃, 2000 ~ 5000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- 160 ~ 450V also suitable for ballasts

## SPECIFICATIONS

| Item | Performance | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature | 6.3 ~ 100V | | | | | | | | 160 ~ 450V | | | | | | |
| | -55°C ~ +105°C | | | | | | | | -40°C ~ +105°C | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | | | | | |
| Leakage Current (at 20°C) | Rated Voltage | <100V | | >100V | | | | | | | | | | | |
| | Time | After 2 minutes | | After 5 minutes | | | | | | | | | | | |
| | Leakage Curent | I = 0.01CV or 3 (μA) whichever is greater | | CV<1000 I=0.03CV+15(μA) | | | CV>1000 I=0.02CV+25(μA) | | | | | | | | |
| | Where, C = rated capacitance in μF. V=rated DC working voltage in V. | | | | | | | | | | | | | | |
| Dissipaton Factor Tan δ at 120 Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | Tan δ (max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.05 | 0.20 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| | When the capacitance exceed 1000 μF 0.02 shall be added every 1000 μF. | | | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below | | | | | | | | | | | | | | |
| | Rated Voltage | | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | |
| | Impedance Ratio | Z(-55°C) /Z(+20°C) | | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the valuesgivenin the table below | | | | | | | | | | | | | | |
| | Impedance Ratio | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | |
| | | Z((-55°C)/Z(+20°C) | | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | | | | |
| | | Rated Voltage | | 160 | 200 | 250 | 350 | 400 | 450 | | | | | | |
| | | Z(-40)/Z(+200176C) | | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | |
| Load Life Test | Test Time | 2000hrs for φD =5~8mm 5000hrs for φ D＞10mm | | | | | | | | | | | | | |
| | Capacitance Change | Within ≤ ± 20% of initial value | | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value. | | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | | |
| | The above specification shall be satisfied when the capacitors are restored to 20° C after rated voltage applied for 2000 hrs at 105° C.High than 2000 hrs load life are available upon request. | | | | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1000 Hrs | | | | | | | | | | | | | |
| | Capacitance Change | Within ≤ ± 20% | | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | | |
| | Leakage Current | Within Specified value | | | | | | | | | | | | | |
| | The above specification shall be satisfied when the capacitors are restored to 20° C after rated voltage applied for 1000 hours at 105° C without voltage applied. | | | | | | | | | | | | | | |
| Ripple Current & Frequency Multilpiers | Freq. (Hz) / Cap. (μF) | 60(50) | 120 | 500 | 1K | 10K | 100K | | | | | | | | |
| | Under 33 | 0.40 | 0.55 | 0.65 | 0.80 | 0.90 | 1.00 | | | | | | | | |
| | 39 to 330 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 1.00 | | | | | | | | |
| | 390 to 1000 | 0.65 | 0.80 | 0.85 | 0.98 | 1.00 | 1.00 | | | | | | | | |
| | 1200 up above | 0.80 | 0.90 | 0.95 | 0.98 | 1.00 | 1.00 | | | | | | | | |
| Riple Current & Temperature Multipliers | Temperature (°C) | Under 50 | 70 | 85 | 105 | | | | | | | | | | |
| | Multipliers | 2.40 | 2.05 | 1.70 | 1.00 | | | | | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | | | | | | |

## PART NUMBER EXAMPLE

CAAA 106 M 1E O 050 115

# CAAA SERIES: Low Impedance, High Temperature

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: ϕ D×L(mm) Ripple Current: mA/rms at 100K Hz 105°C

| VDC / Item / μF | 6.3V(0J) | | | | | 10V(1A) | | | | | 16V(1C) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | φDxL | Impedance (Ω) Max @100KHz | | Ripple current (mA rms) @105°C | | φDxL | Impedance (Ω) Max @100KHz | | Ripple current (mA rms) @105°C | | φDxL | Impedance (Ω) Max @100KHz | | Ripple current (mA rms) @105°C | |
| | | 20°C | -10°C | 120Hz | 100KHz | | 20°C | -10°C | 120Hz | 100KHz | | 20°C | -10°C | 120Hz | 100KHz |
| 33 | | | | | | | | | | | 5 x 11 | 1.30 | 3.90 | 108 | 154 |
| 39 | | | | | | | | | | | 5 x 11 | 1.30 | 3.90 | 108 | 154 |
| 47 | | | | | | 5 x 11 | 2.10 | 5.50 | 78 | 111 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 |
| 56 | | | | | | 5 x 11 | 1.90 | 4.80 | 85 | 121 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 |
| 68 | | | | | | 5 x 11 | 1.30 | 3.90 | 108 | 154 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 |
| 100 | 5 x 11 | 1.30 | 3.90 | 108 | 154 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 |
| 220 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 8 x 11.5 | 0.33 | 0.99 | 280 | 400 | 8 x 11.5 | 0.33 | 0.99 | 320 | 400 |
| 330 | 8 x 11.5 | 0.33 | 0.88 | 280 | 400 | 8 x 11.5 | 0.33 | 0.99 | 280 | 400 | 10 x 12.5 | 0.25 | 0.75 | 360 | 510 |
| 390 | 8 x 11.5 | 0.33 | 0.88 | 320 | 400 | 10 x 12.5 | 0.27 | 0.70 | 410 | 510 | 10 x 16 | 0.19 | 0.57 | 510 | 635 |
| 470 | 10 x 12.5 | 0.25 | 0.75 | 410 | 510 | 10 x 12.5 | 0.25 | 0.75 | 410 | 510 | 10 x 16 | 0.19 | 0.57 | 510 | 635 |
| 560 | 10 x 12.5 | 0.25 | 0.75 | 410 | 510 | 10 x 16 | 0.19 | 0.57 | 510 | 635 | 10 x 20 | 0.14 | 0.42 | 775 | 860 |
| 680 | 10 x 16 | 0.19 | 0.57 | 510 | 635 | 10 x 16 | 0.19 | 0.57 | 510 | 635 | 10 x 20 | 0.14 | 0.42 | 775 | 860 |
| 1000 | 10 x 20 | 0.14 | 0.42 | 690 | 860 | 10 x 20 | 0.14 | 0.37 | 690 | 860 | 12.5 x 20 | 0.085 | 0.26 | 1000 | 1250 |
| 1200 | 10 x 20 | 0.14 | 0.42 | 775 | 860 | 10 x 25 | 0.12 | 0.30 | 930 | 1030 | 12.5 x 20 | 0.085 | 0.26 | 1125 | 1250 |
| 2200 | 12.5 x 20 | 0.085 | 0.26 | 1125 | 1250 | 12.5 x 25 | 0.070 | 0.21 | 1200 | 1355 | 12.5 x 25 | 0.070 | 0.21 | 1200 | 1355 |
| 3300 | 12.5 x 25 | 0.070 | 0.21 | 1200 | 1355 | 12.5 x 25 | 0.070 | 0.21 | 1200 | 1355 | 16 x 31.5 | 0.048 | 0.14 | 1830 | 2030 |
| 4700 | 16 x 25 | 0.060 | 0.18 | 1595 | 1770 | 16 x 31.5 | 0.048 | 0.14 | 1830 | 2030 | 16 x 35.5 | 0.044 | 0.13 | 2065 | 2295 |

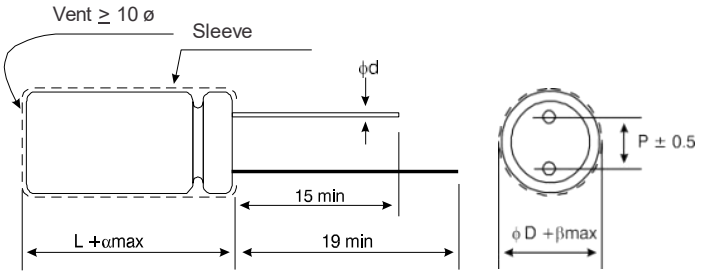
| VDC / Item / μF | 25V(1E) | | | | | 35V(1V) | | | | | 50V(1H) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | φDxL | Impedance (Ω)Max @ 100KHz | | Ripple current (mA rms) @105°C | | φDxL | Impedance (Ω)Max @ 100KHz | | Ripple current (mA rms) @105°C | | φDxL | Impedance (Ω)Max @ 100KHz | | Ripple current (mA rms) @105°C | |
| | | 20°C | -10°C | 120Hz | 100KHz | | 20°C | -10°C | 120Hz | 100KHz | | 20°C | -10°C | 120Hz | 100KHz |
| 1 | | | | | | | | | | | 5 x 11 | 5.0 | 15.0 | 43 | 78 |
| 2.2 | | | | | | | | | | | 5 x 11 | 4.0 | 12.0 | 48 | 88 |
| 3.3 | | | | | | | | | | | 5 x 11 | 3.50 | 11.0 | 52 | 94 |
| 4.7 | | | | | | | | | | | 5 x 11 | 3.00 | 9.00 | 55 | 100 |
| 6.8 | | | | | | | | | | | 5 x 11 | 3.00 | 9.00 | 55 | 100 |
| 10 | | | | | | | | | | | 5 x 11 | 2.00 | 6.00 | 68 | 124 |
| 22 | | | | | | 5 x 11 | 1.30 | 3.90 | 108 | 154 | 6.3 x 11 | 0.60 | 1.80 | 143 | 260 |
| 33 | 5 x 11 | 1.30 | 3.90 | 108 | 154 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 6.3 x 11 | 0.60 | 1.80 | 143 | 260 |
| 39 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 |
| 47 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 8 x 11.5 | 0.33 | 0.99 | 320 | 400 |
| 56 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 8 x 11.5 | 0.33 | 0.99 | 320 | 400 |
| 68 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 6.3 x 11 | 0.60 | 1.80 | 182 | 260 | 8 x 11.5 | 0.33 | 0.99 | 320 | 400 |
| 100 | 8 x 11.5 | 0.33 | 0.99 | 320 | 400 | 8 x 11.5 | 0.33 | 0.99 | 320 | 400 | 10 x 16 | 0.19 | 0.57 | 445 | 635 |
| 220 | 10 x 12.5 | 0.25 | 0.75 | 360 | 510 | 10 x 16 | 0.19 | 0.57 | 445 | 635 | 10 x 25 | 0.12 | 0.30 | 825 | 1030 |
| 330 | 10 x 16 | 0.19 | 0.57 | 445 | 635 | 10 x 20 | 0.12 | 0.42 | 600 | 860 | 12.5 x 20 | 0.085 | 0.26 | 875 | 1250 |
| 390 | 10 x 20 | 0.14 | 0.42 | 775 | 635 | 10 x 25 | 0.12 | 0.30 | 930 | 1030 | 12.5 x 25 | 0.070 | 0.21 | 1085 | 1355 |
| 470 | 10 x 20 | 0.14 | 0.42 | 775 | 635 | 12.5 x 20 | 0.085 | 0.26 | 1000 | 1250 | 12.5 x 25 | 0.070 | 0.21 | 1085 | 1355 |
| 560 | 10 x 25 | 0.12 | 0.30 | 930 | 1030 | 12.5 x 20 | 0.085 | 0.26 | 1000 | 1250 | 12.5 x 25 | 0.070 | 0.21 | 1085 | 1355 |
| 680 | 12.5 x 20 | 0.085 | 0.26 | 1000 | 1250 | 12.5 x 25 | 0.070 | 0.21 | 1085 | 1355 | 16 x 25 | 0.060 | 0.18 | 1415 | 1770 |
| 1000 | 12.5 x 25 | 0.070 | 0.23 | 1080 | 1355 | 12.5 x 25 | 0.070 | 0.21 | 1085 | 1355 | 16 x 25 | 0.060 | 0.18 | 1595 | 1770 |
| 1200 | 12.5 x 25 | 0.070 | 0.21 | 1200 | 1355 | 12.5 x 25 | 0.070 | 0.21 | 1200 | 1355 | 16 x 31.5 | 0.048 | 0.14 | 1830 | 2030 |
| 2200 | 16 x 25 | 0.060 | 0.18 | 1595 | 1770 | 16 x 35.5 | 0.044 | 0.13 | 2065 | 2295 | 18 x 40 | 0.037 | 0.1 | 2465 | 2740 |
| 3300 | 16 x 35.5 | 0.044 | 0.13 | 2065 | 2295 | 18 x 40 | 0.037 | 0.10 | 2465 | 2740 | | | | | |
| 4700 | 18 x 40 | 0.037 | 0.1 | 2465 | 2740 | | | | | | | | | | |

# CAAA SERIES: Low Impedance, High Temperature

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: D×L(mm) Ripple Current: mA/rms at 100K Hz 105°C

| VDC / Item / μF | 63V(1J) | | | | | 100V(2A) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | φDxL | Impedance (Ω) Max @ 100KHz | | Ripple current (mA rms) @ 105°C | | φDxL | Impedance (Ω) Max @ 100KHz | | Ripple current (mA rms) @ 105°C | |
| | | 20°C | -10°C | 120Hz | 100KHz | | 20°C | -10°C | 120Hz | 100KHz |
| 1 | | | | | | 5 x 11 | 7.00 | 25 | 36 | 66 |
| 2.2 | | | | | | 5 x 11 | 6.00 | 21 | 40 | 72 |
| 3.3 | | | | | | 5 x 11 | 5.00 | 18.0 | 43 | 78 |
| 4.7 | | | | | | 6.3 x 11 | 1.20 | 4.20 | 100 | 180 |
| 6.8 | | | | | | 6.3 x 11 | 1.20 | 4.20 | 100 | 180 |
| 10 | 6.3 x 11 | 1.20 | 4.2 | 100 | 180 | 8 x 11.5 | 0.56 | 2.00 | 168 | 305 |
| 22 | 6.3 x 11 | 1.20 | 4.2 | 100 | 180 | 8 x 11.5 | 0.56 | 2.00 | 168 | 308 |
| 33 | 8 x 11.5 | 0.56 | 2.00 | 170 | 305 | 10 x 12.5 | 0.50 | 1.80 | 210 | 380 |
| 39 | 8 x 11.5 | 0.56 | 2.00 | 170 | 305 | 10 x 16 | 0.32 | 1.10 | 350 | 500 |
| 47 | 8 x 11.5 | 0.56 | 2.00 | 170 | 305 | 10 x 20 | 0.27 | 0.95 | 435 | 620 |
| 56 | 10 x 12.5 | 0.50 | 1.80 | 265 | 380 | 10 x 20 | 0.27 | 0.95 | 435 | 620 |
| 68 | 10 x 12.5 | 0.50 | 1.80 | 265 | 380 | 10 x 25 | 0.21 | 0.63 | 530 | 760 |
| 100 | 10 x 20 | 0.27 | 0.95 | 600 | 620 | 13 x 20 | 0.16 | 0.56 | 625 | 890 |
| 220 | 12.5 x 20 | 0.094 | 0.24 | 570 | 820 | 16 x 25 | 0.090 | 0.32 | 1010 | 1440 |
| 330 | 12.5 x 25 | 0.073 | 0.21 | 770 | 1100 | 16 x 31.5 | 0.060 | 0.17 | 1255 | 1790 |
| 390 | 12.5 x 25 | 0.073 | 0.21 | 770 | 1100 | 16 x 35.5 | 0.056 | 0.14 | 1650 | 2065 |
| 470 | 16 x 25 | 0.060 | 0.18 | 1420 | 1770 | | | | | |
| 560 | 16 x 31.5 | 0.048 | 0.14 | 1625 | 2030 | | | | | |
| 680 | 16 x 31.5 | 0.048 | 0.14 | 1625 | 2030 | | | | | |
| 1000 | 18 x 35.5 | 0.041 | 0.11 | 1790 | 2240 | | | | | |




## LEAD SPACING AND DIAMETER

| φD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.5 | | 0.6 | | | 0.8 | |
| α | 1.0 | | | 1.5 | | | |
| β | 0.5 | | | | | | |

# CAAB SERIES: Radial Low Impedance & ESR



## FEATURES

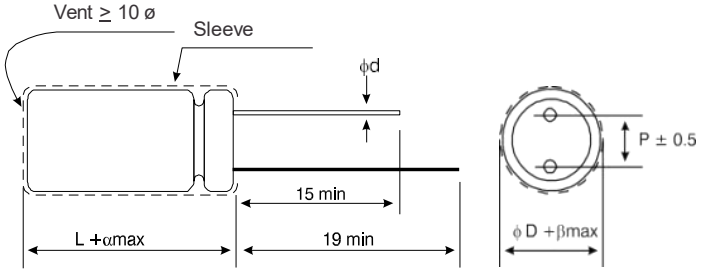
- 105°C, 2000 ~ 5000 hours assured.
- Low ESR, suitable for switching power supplies.
- Small size with large permissible ripple current.

## SPECIFICATIONS

| Item | Performance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -55°C ~ +105°C | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 3 ( A) whichever is greater (after 2 minutes)<br>Where, C = rated capacitance in μF. V=rated DC working voltage in V. | | | | | | | | |
| Dissipaton Factor Tan δ at 120 Hz, 20° C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | |
| | Tan δ (max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | |
| | When the capacitance exceed 1000 μF 0.02 shall be added every 1000 μ F. | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below | | | | | | | | |
| | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
| | Impedance Ratio | Z(-55°C) /Z(+20°C) | 4 | 4 | 3 | 3 | 3 | 3 | 3 |
| Load Life Test | Test Time | 2000hrs for ΦD 5 ~8mm 4000hrs for ΦD =10mm 5000hrs for ΦD >13mm | | | | | | | |
| | Capacitance Change | Within ≤± 20% | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value. | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | |
| | The above specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 2000 hrs at 105°C. High than 2000 hrs load life are available upon request. | | | | | | | | |
| Shelf Life Test | Test Time | 1000 Hrs | | | | | | | |
| | Capacitance Change | Within ≤± 20% | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | |
| | Leakage Current | Within Specified value | | | | | | | |
| | The above specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 105°C without voltage applied. | | | | | | | | |
| Ripple Current & Frequency Multilpiers | Freq. (Hz) / Cap. (mF) | 60(50) | 120 | 500 | 1K | 10K | 100K | | |
| | Under 33 | 0.40 | 0.55 | 0.65 | 0.80 | 0.90 | 1.00 | | |
| | 39 to 330 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 1.00 | | |
| | 390 to 1000 | 0.65 | 0.80 | 0.85 | 0.98 | 1.00 | 1.00 | | |
| | 1200 up above | 0.80 | 0.90 | 0.95 | 0.98 | 1.00 | 1.00 | | |
| Riple Current & Temperature Multipliers | Temperature (°C) | Under 50 | 70 | 85 | 105 | | | | |
| | Multipliers | 2.40 | 2.05 | 1.70 | 1.00 | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | |

## PART NUMBER EXAMPLE

CAAB 221 M 1H BK 100 250




## LEAD SPACING AND DIAMETER

| ϕD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ϕd | 0.5 | | 0.6 | | | 0.8 | |
| α | 1.0 | | | 1.5 | | | |
| β | 0.5 | | | | | | |



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# CAAB SERIES: Radial Low Impedance & ESR

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension:ϕ D×L(mm) Ripple Current: mA/rms at 100K Hz 105°C

| VDC | | 6.3V(0J) | | | | |
|---|---|---|---|---|---|---|
| Item | | ΦDXL | Impedance (Ω, Max/100K Hz) | | Ripple Current (mA/rms, 105°C) | |
| μF | Code | | 20°C | -10°C | 120Hz | 100KHz |
| 120 | 121 | 5 x 11 | 0.720 | 1.800 | 116 | 165 |
| 220 | 221 | 6.3 x 11 | 0.380 | 0.950 | 179 | 255 |
| 330 | 331 | 6.3 x 15 | 0.270 | 0.680 | 231 | 330 |
| 390 | 391 | 8 x 11.5 | 0.200 | 0.500 | 332 | 415 |
| 470 | 471 | 10 x 12.5 | 0.120 | 0.300 | 500 | 625 |
| 560 | 561 | 8 x 15 | 0.160 | 0.400 | 396 | 495 |
| 680 | 681 | 10 x 16 | 0.084 | 0.210 | 660 | 825 |
| 820 | 821 | 8 x 20 | 0.110 | 0.280 | 512 | 640 |
| 1200 | 122 | 10 x 20 | 0.062 | 0.160 | 936 | 1040 |
| 1500 | 152 | 10 x 25 | 0.052 | 0.130 | 1134 | 1260 |
| 2200 | 222 | 10 x 30 | 0.044 | 0.110 | 1296 | 1440 |
| | | 13 x 20 | 0.046 | 0.120 | 1206 | 1340 |
| 2700 | 272 | 13 x 25 | 0.034 | 0.085 | 1521 | 1690 |
| 3900 | 392 | 13 x 30 | 0.03 | 0.075 | 1755 | 1950 |
| 4700 | 472 | 13 x 35 | 0.027 | 0.068 | 1980 | 2200 |
| 5600 | 562 | 13 x 40 | 0.024 | 0.06 | 2151 | 2390 |
| | | 16 x 25 | 0.028 | 0.07 | 1863 | 2070 |
| 6800 | 682 | 16 x 31.5 | 0.025 | 0.063 | 2115 | 2350 |

| VDC | | 10V(1A) | | | | |
|---|---|---|---|---|---|---|
| Item | | ΦDXL | Impedance (Ω, Max/100K Hz) | | Ripple Current (mA/rms, 105°C) | |
| μF | Code | | 20°C | -10°C | 120Hz | 100KHz |
| 82 | 820 | 5 x 11 | 0.720 | 1.800 | 116 | 165 |
| 180 | 181 | 6.3 x 11 | 0.380 | 0.950 | 179 | 255 |
| 270 | 271 | 6.3 x 15 | 0.270 | 0.680 | 231 | 330 |
| 330 | 331 | 8 x 11.5 | 0.200 | 0.500 | 291 | 415 |
| 390 | 391 | 10 x 12.5 | 0.120 | 0.300 | 500 | 625 |
| 470 | 471 | 8 x 15 | 0.160 | 0.400 | 396 | 495 |
| 680 | 681 | 8 x 20 | 0.110 | 0.280 | 512 | 640 |
| | | 10 x 16 | 0.084 | 0.210 | 660 | 825 |
| 1000 | 102 | 10 x 20 | 0.062 | 0.160 | 832 | 1040 |
| 1200 | 122 | 10 x 25 | 0.052 | 0.130 | 1134 | 1260 |
| 1500 | 152 | 10 x 30 | 0.044 | 0.110 | 1296 | 1440 |
| 1800 | 182 | 13 x 20 | 0.046 | 0.120 | 1206 | 1340 |
| 2200 | 222 | 13 x 25 | 0.034 | 0.085 | 1521 | 1690 |
| 2700 | 272 | 13 x 30 | 0.03 | 0.075 | 1755 | 1950 |
| 3300 | 332 | 13 x 35 | 0.027 | 0.068 | 1980 | 2200 |
| 3900 | 392 | 13 x 40 | 0.024 | 0.060 | 2151 | 2390 |
| | | 16 x 25 | 0.028 | 0.070 | 1863 | 2070 |
| 5600 | 562 | 16 x 31.5 | 0.025 | 0.063 | 2115 | 2350 |
| 6800 | 682 | 16 x 35.5 | 0.022 | 0.055 | 2295 | 2550 |

| VDC | | 16V(1C) | | | | |
|---|---|---|---|---|---|---|
| Item | | ΦDXL | Impedance (Ω, Max/100K Hz) | | Ripple Current (mA/rms, 105°C) | |
| μF | Code | | 20°C | -10°C | 120Hz | 100KHz |
| 56 | 560 | 5 x 11 | 0.720 | 1.800 | 116 | 165 |
| 120 | 121 | 6.3 x 11 | 0.380 | 0.950 | 179 | 255 |
| 180 | 181 | 6.3 x 15 | 0.270 | 0.680 | 231 | 330 |
| 270 | 271 | 8 x 11.5 | 0.200 | 0.500 | 291 | 415 |
| | | 10 x 12.5 | 0.120 | 0.300 | 438 | 625 |
| 330 | 331 | 8 x 15 | 0.160 | 0.400 | 347 | 495 |
| 470 | 471 | 8 x 20 | 0.110 | 0.280 | 512 | 640 |
| | | 10 x 16 | 0.084 | 0.210 | 660 | 825 |
| 680 | 681 | 10 x 20 | 0.062 | 0.160 | 832 | 1040 |
| 820 | 821 | 10 x 25 | 0.052 | 0.130 | 1008 | 1260 |
| 1200 | 122 | 10 x 30 | 0.044 | 0.110 | 1296 | 1440 |
| | | 13 x 20 | 0.046 | 0.120 | 1206 | 1340 |
| 1500 | 152 | 13 x 25 | 0.034 | 0.080 | 1521 | 1690 |
| 2200 | 222 | 13 x 30 | 0.030 | 0.075 | 1755 | 1950 |
| 2700 | 272 | 13 x 35 | 0.027 | 0.068 | 1980 | 2200 |
| | | 16 x 25 | 0.028 | 0.07 | 1863 | 2070 |
| 3300 | 332 | 13 x 40 | 0.024 | 0.06 | 2151 | 2390 |
| 3900 | 392 | 16 x 31.5 | 0.025 | 0.063 | 2115 | 2350 |
| 4700 | 472 | 16 x 35.5 | 0.022 | 0.055 | 2295 | 2550 |
| 5600 | 562 | 16 x 40 | 0.018 | 0.045 | 2610 | 2900 |
| 6800 | 682 | 18 x 35.5 | 0.021 | 0.053 | 2394 | 2660 |

| VDC | | 25V(1E) | | | | |
|---|---|---|---|---|---|---|
| Item | | ΦDXL | Impedance (Ω, Max/100K Hz) | | Ripple Current (mA/rms, 105°C) | |
| μF | Code | | 20°C | -10°C | 120Hz | 100KHz |
| 39 | 390 | 5 x 11 | 0.720 | 1.800 | 116 | 165 |
| 82 | 820 | 6.3 x 11 | 0.380 | 0.950 | 179 | 255 |
| 120 | 121 | 6.3 x 15 | 0.270 | 0.680 | 231 | 330 |
| 150 | 151 | 8 x 11.5 | 0.500 | 0.020 | 291 | 415 |
| 180 | 181 | 10 x 12.5 | 0.120 | 0.300 | 438 | 625 |
| 220 | 221 | 8 x 15 | 0.160 | 0.400 | 347 | 495 |
| 330 | 331 | 8 x 20 | 0.110 | 0.280 | 448 | 640 |
| | | 10 x 16 | 0.084 | 0.210 | 578 | 825 |
| 470 | 471 | 10 x 20 | 0.062 | 0.160 | 832 | 1040 |
| 560 | 561 | 10 x 25 | 0.052 | 0.130 | 1008 | 1260 |
| 820 | 821 | 10 x 30 | 0.044 | 0.110 | 1152 | 1440 |
| | | 13 x 20 | 0.046 | 0.120 | 1072 | 1340 |
| 1000 | 102 | 13 x 25 | 0.034 | 0.085 | 1352 | 1690 |
| 1500 | 152 | 13 x 30 | 0.030 | 0.075 | 1755 | 1950 |
| 1800 | 182 | 16 x 25 | 0.028 | 0.070 | 1863 | 2070 |
| 2200 | 222 | 13 x 40 | 0.024 | 0.060 | 2151 | 2390 |
| 2700 | 272 | 16 x 31.5 | 0.025 | 0.063 | 2115 | 2350 |
| 3300 | 332 | 16 x 35.5 | 0.022 | 0.055 | 2295 | 2550 |
| 3900 | 392 | 16 x 40 | 0.018 | 0.045 | 2610 | 2900 |
| | | 18 x 35.5 | 0.021 | 0.053 | 2394 | 2660 |
| 4700 | 472 | 18 x 40 | 0.017 | 0.043 | 2709 | 3010 |

# CAAB SERIES: Radial Low Impedance & ESR

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension:ϕ D×L(mm) Ripple Current: mA/rms at 100K Hz 105°C

| VDC | | 35V(1V) | | | | |
|---|---|---|---|---|---|---|
| Item | | ΦDXL | Impedance (Ω, Max/100K Hz) | | Ripple Current (mA/rms, 105°C) | |
| μF | Code | | 20°C | -10°C | 120Hz | 100KHz |
| 27 | 270 | 5 x 11 | 0.720 | 1.800 | 91 | 165 |
| 56 | 560 | 6.3 x 11 | 0.380 | 0.950 | 179 | 255 |
| 82 | 820 | 6.3 x 15 | 0.270 | 0.680 | 231 | 330 |
| 120 | 121 | 8 x 11.5 | 0.200 | 0.500 | 291 | 415 |
| | | 10 x 12.5 | 0.120 | 0.300 | 438 | 625 |
| 180 | 181 | 8 x 15 | 0.160 | 0.400 | 347 | 495 |
| 220 | 221 | 8 x 20 | 0.110 | 0.280 | 448 | 640 |
| | | 10 x 16 | 0.084 | 0.210 | 578 | 825 |
| 330 | 331 | 10 x 20 | 0.062 | 0.160 | 728 | 1040 |
| 390 | 391 | 10 x 25 | 0.052 | 0.130 | 1008 | 1260 |
| 560 | 561 | 10 x 30 | 0.040 | 0.110 | 1152 | 1440 |
| | | 13 x 20 | 0.046 | 0.120 | 1072 | 1340 |
| 680 | 681 | 13 x 25 | 0.034 | 0.085 | 1352 | 1690 |
| 1000 | 102 | 13 x 30 | 0.030 | 0.750 | 1560 | 1950 |
| 1200 | 122 | 13 x 35 | 0.027 | 0.068 | 1980 | 2200 |
| | | 16 x 25 | 0.028 | 0.070 | 1863 | 2070 |
| 1500 | 152 | 13 x 40 | 0.024 | 0.060 | 2151 | 2390 |
| 1800 | 182 | 16 x 31.5 | 0.025 | 0.063 | 2115 | 2350 |
| 2200 | 222 | 16 x 35.5 | 0.022 | 0.055 | 2295 | 2550 |
| 2700 | 272 | 16 x 40 | 0.018 | 0.045 | 2610 | 2900 |
| | | 18 x 35.5 | 0.021 | 0.053 | 2394 | 2660 |
| 3300 | 332 | 18 x 40 | 0.010 | 0.043 | 2709 | 3010 |

| VDC | | 50V(1H) | | | | |
|---|---|---|---|---|---|---|
| Item | | ΦDXL | Impedance (Ω, Max/100K Hz) | | Ripple Current (mA/rms, 105°C) | |
| μF | Code | | 20°C | -10°C | 120Hz | 100KHz |
| 18 | 180 | 5 x 11 | 1.100 | 3.300 | 72 | 130 |
| 39 | 390 | 6.3 x 11 | 0.560 | 1.600 | 154 | 220 |
| 56 | 560 | 6.3 x 15 | 0.410 | 1.200 | 217 | 310 |
| 68 | 680 | 8 x 11.5 | 0.290 | 0.840 | 238 | 340 |
| 82 | 820 | 8 x 15 | 0.250 | 0.750 | 329 | 470 |
| | | 10 x 12.5 | 0.160 | 0.400 | 336 | 480 |
| 120 | 121 | 8 x 20 | 0.180 | 0.520 | 427 | 610 |
| | | 10 x 16 | 0.120 | 0.300 | 529 | 755 |
| 180 | 181 | 10 x 20 | 0.088 | 0.220 | 662 | 945 |
| 220 | 221 | 10 x 25 | 0.068 | 0.170 | 805 | 1150 |
| 330 | 331 | 10 x 30 | 0.059 | 0.150 | 882 | 1260 |
| | | 13 x 20 | 0.059 | 0.150 | 833 | 1190 |
| 470 | 471 | 13 x 25 | 0.045 | 0.110 | 1192 | 1490 |
| 560 | 561 | 13 x 30 | 0.039 | 0.098 | 1376 | 1720 |
| 680 | 681 | 13 x 35 | 0.033 | 0.083 | 1512 | 1890 |
| 820 | 821 | 13 x 40 | 0.029 | 0.073 | 1624 | 2030 |
| | | 16 x 25 | 0.033 | 0.083 | 1504 | 1880 |
| 1000 | 102 | 16 x 31.5 | 0.029 | 0.073 | 1720 | 2150 |
| 1200 | 122 | 16 x 35.5 | 0.025 | 0.063 | 2088 | 2320 |
| 1500 | 152 | 16 x 40 | 0.021 | 0.063 | 2286 | 2540 |
| 1800 | 182 | 18 x 35.5 | 0.023 | 0.058 | 2160 | 2400 |
| 2200 | 222 | 18 x 40 | 0.020 | 0.050 | 2349 | 2610 |

| VDC | | 63V(1J) | | | | |
|---|---|---|---|---|---|---|
| Item | | ΦDXL | Impedance (Ω, Max/100K Hz) | | Ripple Current (mA/rms, 105°C) | |
| μF | Code | | 20°C | -10°C | 120Hz | 100KHz |
| 12 | 120 | 5 x 11 | 1.900 | 4.800 | 55 | 100 |
| 27 | 270 | 6.3 x 11 | 1.100 | 2.800 | 88 | 160 |
| 39 | 390 | 6.3 x 15 | 0.620 | 1.600 | 161 | 230 |
| 47 | 470 | 8 x 11.5 | 0.490 | 1.300 | 193 | 275 |
| 56 | 560 | 10 x 12.5 | 0.270 | 0.680 | 294 | 420 |
| 68 | 680 | 8 x 15 | 0.340 | 0.850 | 252 | 360 |
| | | 10 x 16 | 0.210 | 0.530 | 366 | 523 |
| 82 | 820 | 8 x 20 | 0.210 | 0.530 | 350 | 500 |
| 120 | 121 | 10 x 20 | 0.160 | 0.400 | 455 | 650 |
| 150 | 151 | 10 x 25 | 0.130 | 0.330 | 546 | 780 |
| 180 | 181 | 10 x 30 | 0.100 | 0.250 | 672 | 960 |
| 220 | 221 | 13 x 20 | 0.110 | 0.280 | 609 | 870 |
| 270 | 271 | 13 x 25 | 0.074 | 0.190 | 805 | 1150 |
| 390 | 391 | 13 x 30 | 0.068 | 0.170 | 1024 | 1280 |
| 470 | 471 | 13 x 35 | 0.063 | 0.160 | 1112 | 1390 |
| | | 16 x 25 | 0.055 | 0.140 | 1184 | 1480 |
| 560 | 561 | 13 x 40 | 0.051 | 0.130 | 1224 | 1530 |
| 680 | 681 | 16 x 31.5 | 0.046 | 0.120 | 1376 | 1720 |
| 820 | 821 | 16 x 35.5 | 0.040 | 0.100 | 1528 | 1910 |
| 1000 | 102 | 18 x 35.5 | 0.040 | 0.100 | 1576 | 1970 |

# CACB SERIES: Low Impedance, High Temperature



## FEATURES

- 105℃, 2000 ~ 3000 hours assured
- Low ESR, suitable for switching power supplies, UPS
- For ballast use, 3000 ~ 5000 hours assured
- Smaller size with large permissible ripple current

## SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Temperature Range | -40°C ~ +105°C |
| Rated Voltage Range | 160 ~ 450V |
| Capacitance Tolerance | ±20% (at 120Hz, 20°C) |
| Leakage Current (at 20°C) | Time: After 5 minutes<br>Leakage Current: CV≤1000 I=0.03CV(μA); CV>1000 I=0.02CV(μA)<br>Where, C= rated capacitance in μF. V = rated DC working voltage |
| Dissipation Factor (Tan δ at 120Hz, 20°C) | Rated Voltage: 160 / 200 / 250 / 350 / 400 / 450<br>Tan δ(max): 0.20 / 0.20 / 0.20 / 0.24 / 0.24 / 0.24<br>When the capacitance exceeds 1000μF, 0.02 shall be added every 1000μF increase. |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below.<br>Rated Vo ltage: 160 / 200 / 250 / 350 / 400 / 45 0<br>Impedance Ratio Z(-25°C)/Z(+20°C): 3 / 3 / 3 / 3 / 5 / 6<br>Impedance Ratio Z(-40°C)/Z(+20°C): 4 / 4 / 4 / 4 / 6 / |
| Load Life Test | Test Time: 2000 hrs for φD≤10 mm; 3000 hrs for φD≥ 13 mm<br>Capacitance Change: Within ±20% of initial value<br>Dissipation Factor: Less than 200% of specified value<br>Leakage Current: Within specified value<br>*The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2000/3000 hrs at 105°C |
| Shelf Life Test | Test Time: 1000 Hrs<br>Capacitance Change: Within ±20% of initial value<br>Dissipation Factor: Less than 200% of specified value<br>Leakage Current: Less than 500% of specified value<br>*The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 105°C without voltage applied. |
| Ripple Current & Frequency Multipliers | Freq.(Hz) / Cap(μF): 60 (50) / 120 / 500 / 1K / 10K / 100K<br>Under33: 0.40 / 0.55 / 0.65 / 0.80 / 0.90 / 1.00<br>33 to 330: 0.60 / 0.70 / 0.80 / 0.90 / 0.95 / 1.00<br>390 to 1000: 0.65 / 0.80 / 0.85 / 0.98 / 1.00 / 1.00<br>1200 up above: 0.80 / 0.90 / 0.95 / 0.98 / 1.00 / 1.00 |
| Ripple Current & Temperature Multipliers | Temperature(°C): 65 / 70 / 85 / 95 / 105<br>Multiplier: 1.8 / 1.65 / 1.5 / 1.25 / 1.00 |
| Standards | Satisfies Characteristic W of JIS C 5141 |

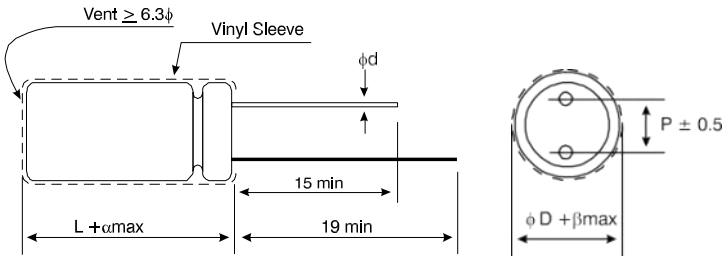
## PART NUMBER EXAMPLE

CACB 100 M 2G BK 100 200

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension:ϕ D×L(mm) Ripple Current: mA/rms at 100K Hz 105°C

| VDC | | 160V (2C) | | | | 200V (2D) | | | | 250V (2E) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ϕD x L | Impedance 20℃ | Ripple Current 120Hz | Ripple Current 100KHz | ϕD x L | Impedance 20℃ | Ripple Current 120Hz | Ripple Current 100KHz | ϕD x L | Impedance 20℃ | Ripple Current 120Hz | Ripple Current 100KHz |
| 0.47 | R47 | 6.3 x 11 | 14.5 | 9 | 35 | 6.3 x 11 | 14.50 | 9 | 35 | 6.3 x 11 | 14.50 | 8 | 30 |
| 1.0 | 010 | 6.3 x 11 | 8.5 | 13 | 50 | 6.3 x 11 | 8.50 | 13 | 50 | 6.3 x 11 | 8.50 | 13 | 50 |
| 2.2 | 2R2 | 6.3 x 11 | 5.5 | 23 | 90 | 6.3 x 11 | 5.50 | 19 | 75 | 8 x 11.5 | 5.00 | 21 | 85 |
| 3.3 | 3R3 | 8 x 11.5 | 4.3 | 28 | 110 | 8 x 11.5 | 4.30 | 33 | 130 | 10 x 12.5 | 4.20 | 30 | 120 |
| 4.7 | 4R7 | 8 x 11.5 | 3.1 | 33 | 130 | 10 x 12.5 | 3.10 | 39 | 155 | 10 x 16 | 3.50 | 41 | 165 |
| 10 | 100 | 10 x 16 | 1.55 | 63 | 250 | 10 x 16 | 1.55 | 63 | 250 | 10 x 20 | 3.18 | 50 | 200 |
| 22 | 220 | 10 x 16 | 1.47 | 75 | 300 | 10 x 20 | 1.47 | 75 | 300 | 13 x 20 | 1.74 | 85 | 340 |
| 33 | 330 | 10 x 20 | 1.15 | 90 | 360 | 13 x 20 | 1.15 | 90 | 360 | 13 x 25 | 1.35 | 115 | 460 |
| 47 | 470 | 13 x 25 | 0.92 | 125 | 500 | 13 x 20 | 0.92 | 125 | 500 | 13 x 25 | 1.08 | 138 | 550 |
| 68 | 680 | 13 x 25 | 0.71 | 165 | 660 | 13 x 25 | 0.71 | 165 | 660 | 16 x 25 | 0.84 | 183 | 730 |
| 100 | 101 | 13 x 25 | 0.59 | 213 | 850 | 16 x 25 | 0.59 | 213 | 850 | 16 x 31.5 | 0.70 | 248 | 990 |
| 150 | 151 | 16 x 25 | 0.41 | 303 | 1,200 | 16 x 31.5 | 0.41 | 303 | 1,210 | 18 x 31.5 | 0.49 | 325 | 1,300 |
| 220 | 221 | 16 x 31.5 | 0.31 | 368 | 1,470 | 18 x 35.5 | 0.31 | 408 | 1,630 | 18 x 40 | 0.36 | 433 | 1,730 |
| VDC | | 350V (2V) | | | | 400V (2G) | | | | 450V (2W) | | | |
| μF | Code | ϕD x L | Impedance 20℃ | Ripple Current 120Hz | Ripple Current 100KHz | ϕD x L | Impedance 20℃ | Ripple Current 120Hz | Ripple Current 100KHz | ϕD x L | Impedance 20℃ | Ripple Current 120Hz | Ripple Current 100KHz |
| 0.47 | R47 | 8 x 11.5 | 3.50 | 18 | 70 | | | | | | | | |
| 1.0 | 010 | 10 x 12.5 | 4.20 | 30 | 85 | 10 x 12.5 | 4.20 | 21 | 85 | 10 x 12.5 | 8.80 | 18 | 70 |
| 2.2 | 2R2 | 10 x 16 | 3.50 | 49 | 140 | 10 x 16 | 3.50 | 35 | 140 | 10 x 16 | 6.90 | 25 | 100 |
| 3.3 | 3R3 | 10 x 16 | 3.50 | 49 | 140 | 10 x 20 | 2.94 | 46 | 183 | 10 x 20 | 4.47 | 31 | 125 |
| 4.7 | 4R7 | 10 x 20 | 2.94 | 63 | 180 | 10 x 20 | 2.94 | 46 | 183 | 13 x 20 | 3.77 | 43 | 173 |
| 10 | 100 | 10 x 20 | 2.94 | 45 | 180 | 10 x 20 | 2.94 | 46 | 183 | 13 x 25 | 2.95 | 69 | 277 |
| 22 | 220 | 12.5 x 20 | 1.60 | 78 | 310 | 13 x 25 | 1.60 | 79 | 314 | 16 x 25 | 1.61 | 128 | 510 |
| 33 | 330 | 13 x 25 | 1.25 | 105 | 420 | 13 x 25 | 1.25 | 106 | 422 | 16 x 31.5 | 1.25 | 155 | 620 |
| 47 | 470 | 16 x 25 | 1.00 | 140 | 560 | 16 x 31.5 | 1.00 | 140 | 560 | 18 x 31.5 | 1.01 | 198 | 790 |
| 68 | 680 | 16 x 31.5 | 0.78 | 188 | 750 | 16 x 31.5 | 0.75 | 188 | 750 | 18 x 35.5 | 0.78 | 248 | 990 |
| 100 | 101 | 16 x 31.5 | 0.65 | 253 | 1,010 | 18 x 31.5 | 0.65 | 253 | 1,010 | | | | |




## LEAD SPACING AND DIAMETER

| ϕD | 5 | 6.3 | 8 | 10 | 12 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ϕd | 0.5 | | 0.6 | | | 0.8 | |
| α | 1.0 | | | 1.5 | | | |
| β | 0.5 | | | | | | |

# CADC SERIES: Low ESR, High Temperature

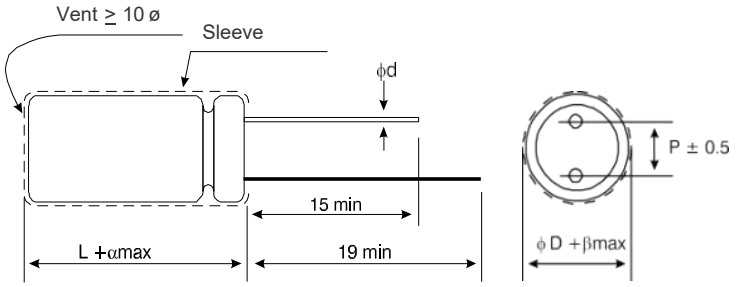


## FEATURES

- 105C, 5000 hours assured
- Low ESR, suitable for switching power supplies, UPS, Ballast
- Smaller size with large permissible ripple current

## SPECIFICATIONS

| Item | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Rated Voltage Range | 200 ~ 400V | | | | | 450V | |
| Operating Temp. | -40°C ~+105°C | | | | | -25°C ~+105°C | |
| Capacitance Toloerance | ± 20% (120Hz, 20°C) | | | | | | |
| Leakage Current (at 20°C) | Time | After 5 minutes | | | | | |
| | Leakage Current | CV≤1000 | | | | CV≤1000 | |
| | | I = 0.03CV (μA) | | | | I = 0.03CV (μA) | |
| | Where, C= rated capacitance in μF. V= rated DC working voltage in V. | | | | | | |
| Dissipation Factor Tan δ at 120Hz, 20°C | Rated Voltage | 200 | 250 | 350 | 400 | 450 | |
| | Tanδ (max) | 0.20 | 0.20 | 0.24 | 0.14 | 0.24 | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | 200 | 250 | 350 | 400 | 450 | |
| | Impedance Ratio Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 5 | 6 | |
| | Impedance Ratio Z(-40°C)/Z(+20°C) | 4 | 4 | 4 | 6 | | |
| | Impedance ratio shall not exceed the values given in the table above. | | | | | | |
| Load Life Test | Test Time | 5000 hours | | | | | |
| | Capacitance Change | Within ±20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | The above specifications shall be satisfied when capacitors are restored to 20°C after voltage with rated rippled current applied for 5000 hours at 105°C. | | | | | | |
| Shelf Life Test | Test time: 1000 hours; other items are the same as those for load life test. | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / φD (mm) | 120 | 1K | 10K | 100K up | | |
| | 10 | 0.8 | 1.0 | 1.25 | 1.40 | | |
| | 12.5 ~ 18 | 0.8 | 1.0 | 1.15 | 1.25 | | |
| Other Standards | JIS C 5101-4 | | | | | | |




## DIMENSIONS

Unit: mm

| φD | 10 | 12.5 | 16 | 18 |
|---|---|---|---|---|
| P | 5.0 | | 7.5 | |
| φd | 0.6 | | 0.8 | |
| α | 1.5 | | | |
| β | 0.5 | | | |

## DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L (mm) Ripple Current: mA/rms at 120Hz, 105°C

| V.DC / Content / μF | 200V (2D) | | | 250V (2E) | | | 350V (2V) | | | 400V (2G) | | | 450V (2W) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | φD x L | Ripple Current | | φD x L | Ripple Current | | φD x L | Ripple Current | | φD x L | Ripple Current | | φD x L | Ripple Current | |
| | | 120Hz | 100KHz | | 120Hz | 100KHz | | 120Hz | 100KHz | | 120Hz | 100KHz | | 120Hz | 100KHz |
| 2.2 | | | | | | | | | | 10 x 16 | 35 | 140 | | | |
| 3.3 | | | | | | | 10 x 16 | 37.5 | 150 | 10 x 16 | 37.5 | 150 | 10 x 16 | 38 | 150 |
| 4.7 | | | | | | | 10 x 16 | 47 | 180 | 10 x 16 | 47 | 180 | 10 x 16 | 45 | 180 |
| 6.8 | | | | | | | 10 x 16 | 47.5 | 190 | 10 x 16 | 72.5 | 290 | 10 x 20 | 55 | 220 |
| 10 | 10 x 16 | 47.5 | 190 | 10 x 16 | 47.5 | 190 | 10 x 20 | 55 | 220 | 10 x 20 | 62.5 | 250 | 12.5 x 20 | 98 | 280 |
| 22 | 10 x 20 | 80 | 320 | 12.5 x 20 | 137 | 390 | 12.5 x 25 | 147 | 420 | 12.5 x 25 | 147 | 420 | 16 x 25 | 182 | 520 |
| 33 | 12.5 x 20 | 154 | 440 | 12.5 x 20 | 147 | 420 | 16 x 25 | 193 | 550 | 16 x 25 | 193 | 550 | 16 x 31.5 | 217 | 620 |
| 47 | 12.5 x 25 | 200 | 570 | 16 x 25 | 217 | 620 | 16 x 31.5 | 245 | 700 | 16 x 31.5 | 245 | 700 | 18 x 31.5 | 277 | 790 |
| 68 | 16 x 25 | 259 | 740 | 16 x 25 | 259 | 740 | 18 x 31.5 | 273 | 780 | 18 x 31.5 | 273 | 780 | 18 x 40 | 357 | 1020 |
| 100 | 16 x 25 | 319 | 910 | 16 x 31.5 | 350 | 1000 | 18 x 35.5 | 368 | 1050 | 18 x 40 | 385 | 1100 | | | |
| 120 | 16 x 31.5 | 361 | 1030 | 18 x 31.5 | 399 | 1140 | 18 x 40 | 403 | 1150 | 18 x 45 | 420 | 1200 | | | |
| 150 | 16 x 31.5 | 424 | 1210 | 18 x 35.5 | 473 | 1350 | | | | | | | | | |
| 180 | 18 x 31.5 | 490 | 1400 | 18 x 40 | 536 | 1530 | | | | | | | | | |
| 220 | 18 x 35.5 | 578 | 1650 | 18 x 45 | 623 | 1780 | | | | | | | | | |
| 270 | 18 x 40 | 648 | 1850 | | | | | | | | | | | | |
| 330 | 18 x 45 | 735 | 2100 | | | | | | | | | | | | |

# CADE SERIES: Low ESR Type



## FEATURES

- Long life, 105℃, 4,000 ~ 7,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current

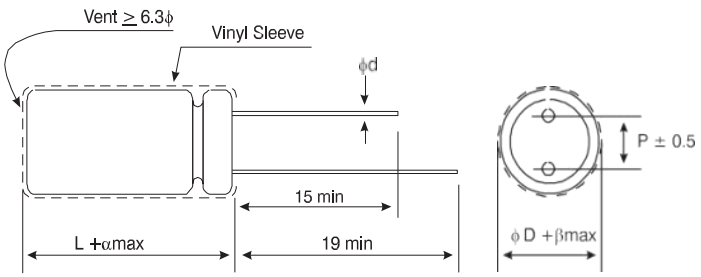
## SPECIFICATIONS

| Item | Performance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Operating Temp | -55°C ~ +105°C | | | | | | | |
| Capacitance Toloerance | ± 20% (120Hz, 20°C) | | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where, C= rated capacitance in μF. V= rated DC working voltage in V. | | | | | | | |
| Dissipation Factor Tan δ at 120Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
| | Tanδ(max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 |
| | When the capacitance exceeds 1000μF, 0.02 shall be added every 1000μF increase. | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | Impedance ratio shall not exceed the values given in the table. | | | | | | | |
| Load Life Test | Test Time | 4,000 hours for φD≤6.3mm<br>5,000 hours for φD=8mm<br>6,000 hours for φD=10mm<br>7,000 hours for φD≥12.5mm | | | | | | |
| | Capacitance Change | Within ±25% of initial value | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | |
| | Leakage Current | Within specified value | | | | | | |
| | The above specifications hall be satisfied when the capacitors are restored to 20° C after the rated ripple current for 4,000 ~ 7,000 hrs at 105° C. | | | | | | | |
| Shelf Life Test | Test Time | 1,000 hours | | | | | | |
| | Capacitance Change | Within ±25% of initial value | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | |
| | Leakage Current | Within specified value | | | | | | |
| | The above specifications shall be satisfied when the capacitors are restored to 20° C after exposing them for 1,000 hours at 105° C without voltage applied. | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / Cap. (μF) | 120 | 1K | 10K | 100K up | | | |
| | Under ~ 33 | 0.42 | 0.70 | 0.90 | 1.0 | | | |
| | 39 ~ 270 | 0.50 | 0.73 | 0.92 | 1.0 | | | |
| | 330 ~ 680 | 0.55 | 0.77 | 0.94 | 1.0 | | | |
| | 820 ~ 1,800 | 0.60 | 0.80 | 0.96 | 1.0 | | | |
| | 2,200 ~ 15,000 | 0.70 | 0.85 | 0.98 | 1.0 | | | |
| Standards | Satisfies Characteristic JIS C 5101-4 | | | | | | | |

## DIMENSIONS

Unit: mm

| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.5 | | 0.6 | | | 0.8 | |
| α | 1.0 | | | 1.5 | | | |
| β | 0.5 | | | | | | |






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# CADE SERIES: Low ESR Type

## DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

Dimension: φDx L(mm) Ripple Current: mA/rms at 100Hz, 105°C

| VDC / Item / μF | 6.3V (0J) | | | | 10V (1A) | | | | 16V (1C) | | | | 25V (1E) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | φDx L | Impedance (Ω, Max/100KHz) | | Ripple Current (mA/rms, 105°C) | φDx L | Impedance (Ω, Max/100KHz) | | Ripple Current (mA/rms, 105°C) | φDx L | Impedance (Ω, Max/100KHz) | | Ripple Current (mA/rms, 105°C) | φDx L | Impedance (Ω, Max/100KHz) | | Ripple Current (mA/rms, 105°C) |
| | | 20°C | -10°C | 100kHz | | 20°C | -10°C | 100kHz | | 20°C | -10°C | 100kHz | | 20°C | -10°C | 100kHz |
| 4.7 | | | | | | | | | | | | | 5 x 11 | 0.6 | 1.2 | 180 |
| 10 | | | | | | | | | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 |
| 22 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 |
| 33 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 |
| 39 | | | | | | | | | | | | | 5 x 11 | 0.6 | 1.2 | 180 |
| 47 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 |
| 56 | | | | | | | | | 5 x 11 | 0.6 | 1.2 | 180 | | | | |
| 82 | | | | | 5 x 11 | 0.6 | 1.2 | 180 | | | | | 6.3 x 11 | 0.25 | 0.5 | 290 |
| 100 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 0.6 | 1.2 | 180 | 6.3 x 11 | 0.25 | 0.5 | 290 | 6.3 x 11 | 0.25 | 0.5 | 290 |
| 120 | | | | | | | | | 6.3 x 11 | 0.25 | 0.5 | 290 | 6.3 x 15 | 0.23 | 0.46 | 430 |
| 150 | 6.3 x 11 | 0.25 | 0.5 | 290 | 6.3 x 11 | 0.25 | 0.5 | 290 | 6.3 x 11 | 0.29 | 0.5 | 290 | 8 x 11.5 | 0.117 | 0.234 | 555 |
| 180 | | | | | 6.3 x 11 | 0.25 | 0.5 | 290 | 6.3 x 15 | 0.23 | 0.46 | 430 | | | | |
| 220 | 6.3 x 11 | 0.25 | 0.5 | 290 | 6.3 x 11 | 0.25 | 0.5 | 290 | 8 x 11.5 | 0.117 | 0.234 | 555 | 8 x 11.5 | 0.117 | 0.234 | 555 |
| | | | | | 6.3 x 15 | 0.23 | 0.46 | 430 | | | | | | | | |
| 330 | 6.3 x 11 | 0.25 | 0.500 | 290 | 8 x 11.5 | 0.117 | 0.234 | 555 | 8 x 11.5 | 0.117 | 0.234 | 555 | 10 x 12.5 | 0.090 | 0.18 | 755 |
| | 6.3 x 15 | 0.23 | 0.46 | 430 | | | | | | | | | 8 x 15 | 0.085 | 0.17 | 730 |
| 470 | 8 x 11.5 | 0.117 | 0.234 | 555 | 8 x 11.5 | 0.117 | 0.234 | 555 | 10 x 12.5 | 0.090 | 0.18 | 755 | 10 x 16 | 0.068 | 0.136 | 1,050 |
| | | | | | | | | | 8 x 15 | 0.085 | 0.17 | 730 | 8 x 20 | 0.065 | 0.130 | 995 |
| 560 | 8 x 11.5 | 0.117 | 0.234 | 555 | | | | | | | | | 10 x 20 | 0.052 | 0.104 | 1,220 |
| 680 | 10 x 12.5 | 0.090 | 0.180 | 755 | 10 x 12.5 | 0.090 | 0.180 | 755 | 10 x 16 | 0.068 | 0.136 | 1,050 | 10 x 20 | 0.052 | 0.104 | 1,220 |
| | | | | | 8 x 15 | 0.085 | 0.170 | 730 | 8 x 20 | 0.065 | 0.130 | 995 | | | | |
| 820 | 8 x 15 | 0.085 | 0.170 | 730 | | | | | 10 x 20 | 0.052 | 0.104 | 1,220 | 10 x 25 | 0.045 | 0.090 | 1,440 |
| | 10 x 12.5 | 0.090 | 0.180 | 755 | | | | | | | | | | | | |
| 1,000 | 10 x 12.5 | 0.090 | 0.180 | 755 | 10 x 16 | 0.068 | 0.136 | 1,050 | 10 x 20 | 0.052 | 0.104 | 1,220 | 12.5 x 20 | 0.038 | 0.076 | 1,655 |
| | | | | | 8 x 20 | 0.065 | 0.130 | 995 | | | | | 10 x 30 | 0.035 | 0.070 | 1,815 |
| 1,200 | 8 x 20 | 0.065 | 0.130 | 955 | 10 x 20 | 0.052 | 0.104 | 1,220 | 10 x 25 | 0.045 | 0.090 | 1,440 | | | | |
| | 10 x 16 | 0.068 | 0.136 | 1,050 | | | | | | | | | | | | |
| 1,500 | 10 x 20 | 0.052 | 0.104 | 1,220 | 10 x 20 | 0.052 | 0.104 | 1,220 | 12.5 x 20 | 0.038 | 0.076 | 1,655 | 16 x 25 | 0.022 | 0.044 | 2,555 |
| | | | | | 10 x 25 | 0.045 | 0.090 | 1,440 | 10 x 30 | 0.035 | 0.070 | 1,815 | 12.5 x 25 | 0.030 | 0.060 | 1,945 |
| 1,800 | | | | | | | | | | | | | 12.5 x 30 | 0.025 | 0.050 | 2,310 |
| | | | | | | | | | | | | | 16 x 20 | 0.029 | 0.058 | 2,205 |
| 2,200 | 10 x 25 | 0.045 | 0.090 | 1,440 | 12.5 x 20 | 0.038 | 0.076 | 1,655 | 12.5 x 25 | 0.030 | 0.060 | 1,945 | 16 x 25 | 0.022 | 0.044 | 2,555 |
| | 12.5 x 20 | 0.038 | 0.076 | 1,815 | 10 x 30 | 0.035 | 0.070 | 1,815 | | | | | 18 x 20 | 0.028 | 0.056 | 2,490 |
| | | | | | | | | | | | | | 12.5 x 35 | 0.022 | 0.044 | 2,510 |
| 2,700 | 10 x 30 | 0.035 | 0.070 | 1,815 | 12.5 x 25 | 0.030 | 0.060 | 1,945 | 12.5 x 30 | 0.025 | 0.050 | 2,310 | 16 x 25 | 0.022 | 0.044 | 2,555 |
| | | | | | | | | | 16 x 20 | 0.029 | 0.058 | 2,205 | | | | |
| 3,300 | 12.5 x 20 | 0.038 | 0.076 | 1,655 | 12.5 x 25 | 0.030 | 0.060 | 1,945 | 16 x 25 | 0.022 | 0.044 | 2,555 | 16 x 31.5 | 0.018 | 0.036 | 3,010 |
| | | | | | 12.5 x 30 | 0.025 | 0.050 | 2,310 | 12.5 x 35 | 0.022 | 0.044 | 2,510 | 18 x 25 | 0.020 | 0.040 | 2,740 |
| 3,900 | 12.5 x 25 | 0.030 | 0.060 | 1,945 | 12.5 x 35 | 0.022 | 0.044 | 2,510 | 16 x 25 | 0.022 | 0.044 | 2,555 | 16 x 35.5 | 0.016 | 0.032 | 3,150 |
| | | | | | 16 x 20 | 0.029 | 0.058 | 2,205 | 18 x 20 | 0.028 | 0.056 | 2,490 | 18 x 31.5 | 0.016 | 0.032 | 3,635 |
| 4,700 | 16 x 25 | 0.022 | 0.044 | 2,555 | 16 x 25 | 0.022 | 0.044 | 2,555 | 16 x 31.5 | 0.018 | 0.036 | 3,010 | 18 x 35.5 | 0.015 | 0.030 | 3,680 |
| | 12.5 x 30 | 0.025 | 0.050 | 2,310 | | | | | 18 x 25 | 0.020 | 0.040 | 2,740 | | | | |
| 5,600 | 12.5 x 35 | 0.022 | 0.044 | 2,510 | 16 x 25 | 0.022 | 0.044 | 2,555 | 18 x 35.5 | 0.016 | 0.032 | 3,150 | | | | |
| | 16 x 20 | 0.029 | 0.058 | 2,205 | 18 x 20 | 0.028 | 0.056 | 2,490 | 18 x 31.5 | 0.016 | 0.032 | 3,635 | | | | |
| 6,800 | 16 x 25 | 0.022 | 0.044 | 2,555 | 16 x 31.5 | 0.018 | 0.036 | 3,010 | 18 x 35.5 | 0.015 | 0.030 | 3,680 | 18 x 40 | 0.014 | 0.028 | 3,800 |
| | 18 x 20 | 0.028 | 0.056 | 2,490 | 18 x 25 | 0.020 | 0.040 | 2,740 | | | | | | | | |
| 8,200 | 16 x 31.5 | 0.018 | 0.036 | 3,010 | 16 x 35.5 | 0.016 | 0.032 | 3,150 | 18 x 35.5 | 0.015 | 0.030 | 3,680 | | | | |
| | | | | | 18 x 31.5 | 0.016 | 0.032 | 3,635 | | | | | | | | |
| 10,000 | 16 x 31.5 | 0.016 | 0.032 | 3,150 | 18 x 35.5 | 0.015 | 0.030 | 3,680 | 18 x 40 | 0.014 | 0.028 | 3,800 | | | | |
| | 18 x 25 | 0.020 | 0.040 | 2,740 | | | | | | | | | | | | |
| 12,000 | 18 x 31.5 | 0.016 | 0.032 | 3,635 | | | | | | | | | | | | |
| 15,000 | 18 x 35.5 | 0.015 | 0.030 | 3,680 | 18 x 40 | 0.014 | 0.028 | 3,800 | | | | | | | | |

## PART NUMBER EXAMPLE

CADE 102 M 1C BK 100 200

# CADE SERIES: Low ESR Type

## DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

Dimension: φDx L(mm) Ripple Current: mA/rms at 100Hz, 105°C

| VDC / Item / μF | 35V (1V) | | | | 50V (1H) | | | | 63V (1J) | | | | 100V (2A) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | φDx L | Impedance (Ω,Max/100KHz) | | Ripple Current (mA/rms, 105°C) | φDx L | Impedance (Ω, Max/100KHz) | | Ripple Current (mA/rms, 105°C) | φDx L | Impedance (Ω, Max/100KHz) | | Ripple Current (mA/rms, 105°C) | φDx L | Impedance (Ω, Max/100KHz) | | Ripple Current (mA/rms, 105°C) |
| | | 20°C | -10°C | 100kHz | | 20°C | -10°C | 100kHz | | 20°C | -10°C | 100kHz | | 20°C | -10°C | 100kHz |
| 0.47 | | | | | | | | | | | | | 5 x 11 | 43 | 86 | 20 |
| 1 | | | | | | | | | | | | | 5 x 11 | 20 | 40 | 30 |
| 2.2 | | | | | | | | | | | | | 5 x 11 | 9.8 | 19.6 | 44 |
| 3.3 | | | | | | | | | | | | | 5 x 11 | 6.6 | 13.2 | 58 |
| 4.7 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 2.3 | 4.6 | 90 | 5 x 11 | 4.7 | 9.4 | 68 | 5 x 11 | 4.6 | 9.2 | 74 |
| 6.8 | | | | | 5 x 11 | 1.4 | 2.8 | 120 | 5 x 11 | 2.5 | 5.0 | 95 | 5 x 11 | 3.5 | 7.0 | 95 |
| 10 | 5 x 11 | 0.6 | 1.2 | 180 | | | | | 5 x 11 | 2.1 | 4.2 | 110 | 6.3 x 11 | 1.8 | 3.6 | 130 |
| 12 | | | | | | | | | 5 x 11 | 2 | 4.0 | 145 | | | | |
| 15 | | | | | | | | | 6.3 x 11 | 1.2 | 2.4 | 160 | 8 x 11.5 | 0.83 | 1.66 | 180 |
| 18 | | | | | 5 x 11 | 1.3 | 2.6 | 155 | | | | | 6.3 x 15 | 0.80 | 1.60 | 200 |
| 22 | 5 x 11 | 0.6 | 1.2 | 180 | 5 x 11 | 1.2 | 2.4 | 170 | 6.3 x 11 | 0.71 | 1.42 | 250 | 8 x 11.5 | 0.68 | 1.36 | 230 |
| 27 | 5 x 11 | 0.6 | 1.2 | 180 | | | | | | | | | | | | |
| 33 | 5 x 11 | 0.6 | 1.2 | 180 | 6.3 x 11 | 0.43 | 0.86 | 300 | 6.3 x 11 | 0.71 | 1.42 | 250 | 10 x 12.5 | 0.46 | 0.92 | 320 |
| | | | | | | | | | | | | | 8 x 15 | 0.45 | 0.90 | 360 |
| 39 | | | | | | | | | 6.3 x 15 | 0.70 | 1.40 | 330 | | | | |
| 47 | 6.3 x 11 | 0.25 | 0.5 | 290 | 6.3 x 11 | 0.43 | 0.86 | 300 | 8 x 11.5 | 0.342 | 0.684 | 405 | 10 x 16 | 0.37 | 0.74 | 420 |
| | | | | | | | | | | | | | 8 x 20 | 0.37 | 0.74 | 420 |
| 56 | 6.3 x 11 | 0.25 | 0.5 | 290 | 6.3 x 15 | 0.4 | 0.80 | 360 | | | 0.234 | | | | | |
| 68 | | | | | | | | | 8 x 11.5 | 0.342 | 0.684 | 405 | 10 x 20 | 0.30 | 0.60 | 490 |
| 82 | 6.3 x 11 | 0.25 | 0.500 | 290 | 8 x 11.5 | 0.234 | 0.468 | 485 | | | | | 10 x 25 | 0.25 | 0.50 | 540 |
| 100 | 8 x 11.5 | 0.117 | 0.234 | 555 | 8 x 11.5 | 0.234 | 0.468 | 485 | 10 x 12.5 | 0.256 | 0.512 | 535 | 12.5 x 20 | 0.18 | 0.36 | 580 |
| | | | | | | | | | 8 x 15 | 0.230 | 0.460 | 535 | | | | |
| 120 | | | | | 8 x 15.0 | 0.155 | 0.31 | 635 | 10 x 16 | 0.194 | 0.388 | 600 | | | | |
| | | | | | 10 x 12.5 | 0.162 | 0.324 | 615 | | | | | | | | |
| 150 | 8 x 11.5 | 0.117 | 0.234 | 555 | 10 x 12.5 | 0.162 | 0.324 | 615 | 10 x 16 | 0.194 | 0.388 | 660 | 12.5 x 25 | 0.13 | 0.26 | 710 |
| 180 | | | | | 8 x 20 | 0.12 | 0.240 | 860 | 10 x 20 | 0.147 | 0.294 | 885 | 12.5 x 30 | 0.12 | 0.24 | 790 |
| | | | | | 10 x 16 | 0.119 | 0.238 | 850 | 12.5 x 16 | 0.150 | 0.300 | 1,020 | 16 x 20 | 0.13 | 0.26 | 750 |
| 220 | 10 x 12.5 | 0.090 | 0.180 | 755 | 10 x 16 | 0.119 | 0.238 | 850 | 10.0 x 20 | 0.147 | 0.294 | 885 | 16 x 25 | 0.10 | 0.20 | 890 |
| | 8 x 15 | 0.085 | 0.170 | 730 | 10 x 20 | 0.090 | 0.180 | 1,030 | 10 x 25 | 0.130 | 0.260 | 1,050 | 18 x 20 | 0.11 | 0.22 | 850 |
| 270 | | | | | 10.0 x 25 | 0.082 | 0.164 | 1,200 | 16 x 16 | 0.090 | 0.180 | 1,410 | | | | |
| 330 | 10 x 16 | 0.068 | 0.136 | 1050 | 10 x 20 | 0.09 | 0.180 | 1,030 | 12.5 x 20 | 0.085 | 0.170 | 1,285 | 16 x 25 | 0.090 | 0.180 | 1,080 |
| | 8 x 20 | 0.065 | 0.130 | 995 | 10 x 30 | 0.060 | 0.120 | 1,610 | | | | | | | | |
| 390 | 10 x 20 | 0.052 | 0.104 | 1,220 | 12.5 x 20 | 0.063 | 0.126 | 1,480 | 12.5 x 25 | 0.070 | 0.140 | 1,720 | 18 x 25 | 0.083 | 0.166 | 1,260 |
| | | | | | | | | | 18 x 16 | 0.086 | 0.172 | 1,690 | | | | |
| 470 | 10 x 20 | 0.052 | 0.104 | 1,220 | 12.5 x 20 | 0.06 | 0.120 | 1,500 | 12.5 x 25 | 0.070 | 0.140 | 1,720 | 16 x 31.5 | 0.076 | 0.152 | 1,310 |
| | | | | | | | | | 12.5 x 30 | 0.055 | 0.110 | 2,090 | | | | |
| | | | | | | | | | 16 x 20 | 0.059 | 0.118 | 1,765 | | | | |
| 560 | 10 x 25 | 0.045 | 0.090 | 1,440 | 12.5 x 25 | 0.05 | 0.100 | 1,832 | 16 x 25.0 | 0.050 | 0.100 | 2,160 | 18 x 31.5 | 0.068 | 0.136 | 1,370 |
| | | | | | | | | | | | | | 18 x 35.5 | 0.064 | 0.128 | 1,410 |
| 680 | 12.5 x 20 | 0.038 | 0.076 | 1,655 | 12.5 x 25 | 0.05 | 0.100 | 1,832 | 12.5 x 35 | 0.047 | 0.094 | 2,265 | | | | |
| | 10 x 30 | 0.035 | 0.070 | 1,815 | 16 x 20 | 0.048 | 0.096 | 1,835 | 18 x 20.0 | 0.055 | 0.110 | 2,290 | | | | |
| 820 | | | | | 12.5 x 35 | 0.035 | 0.068 | 2,285 | 16 x 31.5 | 0.043 | 0.086 | 2,670 | 18 x 40 | 0.047 | 0.094 | 1,520 |
| | | | | | 18 x 20 | 0.042 | 0.084 | 2,420 | 18 x 25 | 0.043 | 0.086 | 2,585 | | | | |
| 1,000 | 12.5 x 25 | 0.030 | 0.060 | 1,945 | 16 x 25.0 | 0.034 | 0.068 | 2,235 | 16 x 31.5 | 0.043 | 0.086 | 2,670 | | | | |
| | | | | | | | | | 16 x 35.5 | 0.036 | 0.072 | 2,770 | | | | |
| 1,200 | 12.5 x 30 | 0.025 | 0.050 | 2,310 | 16 x 31.5 | 0.028 | 0.056 | 2,700 | 18 x 31.5 | 0.032 | 0.064 | 2,950 | | | | |
| | 16 x 20 | 0.029 | 0.058 | 2,205 | 18 x 25 | 0.029 | 0.058 | 2,610 | | | | | | | | |
| 1,500 | 16 x 25 | 0.022 | 0.044 | 2,555 | 16 x 31.5 | 0.028 | 0.056 | 2,700 | 18 x 35.5 | 0.030 | 0.060 | 3,095 | | | | |
| | 12.5 x 35 | 0.022 | 0.044 | 2,510 | 16 x 35.5 | 0.025 | 0.05 | 2,790 | | | | | | | | |
| 1,800 | 16 x 25.0 | 0.022 | 0.044 | 2,555 | 18 x 31.5 | 0.025 | 0.05 | 3,000 | | | | | | | | |
| | 18 x 20 | 0.028 | 0.056 | 2,490 | | | | | | | | | | | | |
| 2,200 | 16 x 31.5 | 0.018 | 0.036 | 3,010 | 18 x 35.5 | 0.023 | 0.046 | 3,100 | 18 x 40 | 0.028 | 0.056 | 3,200 | | | | |
| | 18 x 25.0 | 0.02 | 0.040 | 2,740 | | | | | | | | | | | | |
| 2,700 | 16 x 35.5 | 0.016 | 0.032 | 3,150 | | | | | | | | | | | | |
| | 18 x 31.5 | 0.016 | 0.032 | 3,635 | | | | | | | | | | | | |
| 3300 | 18 x 35.5 | 0.015 | 0.030 | 3,680 | | | | | | | | | | | | |
| 4700 | 18 x 40 | 0.014 | 0.028 | 3,800 | | | | | | | | | | | | |

## PART NUMBER EXAMPLE

CADE 102 M 1C BK 100 200



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# CADF SERIES: Low Impedance

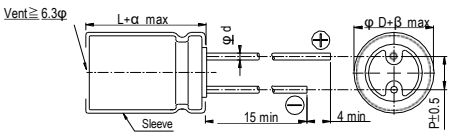


## FEATURES

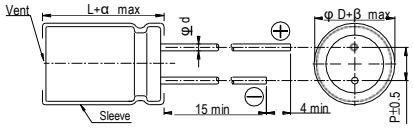
- Long life, 105 ℃, 4,000 ~ 10,000 hours assured
- Low Impedance, suitable for switching power supplies
- Smaller size with large permissible ripple current

## SPECIFICATIONS

| Items | Performance | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life | at 105 °C 4,000 ~ 10,000 Hours | | | | | | | | | | |
| Operating Temp. | -55 °C ~ +105 °C | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 120Hz, 20 °C) | | | | | | | | | | |
| Leakage Current (at 20 ° C) | I = - 0.1CV or 3 (μA) whichever is greater (after 2 minutes) Where C = rated capacitance in μF. V = rated DC working voltage in V. | | | | | | | | | | |
| Dissipation Factor (Tan φ at 120Hz, 20°C) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | | | |
| | Tan φ (max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | |
| | Rated Voltage | | | | 6 | 10 | 16 | 25 | 35 | 50 | 63 |
| | Impedance Ratio | Z (-25°C) / Z (+20 °C) | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Load Life Test | Test Time | 6.3 ~ 10V | 4,000 Hrs for D = 5 ~ 6.3mm | | | | | | | | |
| | | | 6,000 Hrs for D = 8 ~ 10mm | | | | | | | | |
| | | | 8,000 Hrs for D ≧12.5mm | | | | | | | | |
| | | 16 ~ 63V | 5,000 Hrs for D = 5 ~ 6.3mm | | | | | | | | |
| | | | 7,000 Hrs for D = 8 ~ 10mm | | | | | | | | |
| | | | 10,000 Hrs for D ≧ 12.5mm | | | | | | | | |
| | Capacitance Change | Within ± 25% of initial value | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 ° C after the rated voltage applied with rated ripple current for 4,000 ~ 10,000hrs at 105 ℃. | | | | | | | | | | |
| Shelf Life Test | Test Time | 1,000 hours | | | | | | | | | |
| | Capacitance Change | Within ± 25% of initial value | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 °C after exposing them for 1,000 hrs at 105 °C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS C 5101-4 4.1). | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / Cap. (μF) | 120 | 1K | 10K | 100K up | | | | | | |
| | under ~ 33 | 0.42 | 0.70 | 0.90 | 1.0 | | | | | | |
| | 39 ~ 270 | 0.50 | 0.73 | 0.92 | 1.0 | | | | | | |
| | 330 ~ 680 | 0.55 | 0.77 | 0.94 | 1.0 | | | | | | |
| | 820 ~ 1,800 | 0.60 | 0.80 | 0.96 | 1.0 | | | | | | |
| | 2,200 ~ 18,000 | 0.70 | 0.85 | 0.98 | 1.0 | | | | | | |
| Other Standards | JIS C 5101-4 | | | | | | | | | | |




The case size of 12.5×16, 16×16, 16×20, 18×16, 18×20 and 18×25 are suitable for below diagram:




## DIMENSIONS

Unit: mm

| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.5 | | 0.6 | | | 0.8 | |
| α | 1.0 | | L < 20:1.5, L ≥ 20:2.0 | | | | |
| β | 0.5 | | | | | | |

# CADF SERIES: Low Impedance

## DIMENSIONS & PERMISSIBLE RIPPLE CURRENT AND MAX IMPEDANCE

Dimension: φD x L(mm) Ripple Current: mA/rms at 100Hz, 105°C

| V.DC / Contents μF | | 6.3V (0J) | | | | 10V (1A) | | | | 16V (1C) | | | | 25V (1E) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | φ D x L | Impedance (Ω, Max / 100kHz) | | Ripple Current (mA / rms, 105°C) | φ D x L | Impedance (Ω, Max / 100kHz) | | Ripple Current (mA / rms, 105°C) | φ D x L | Impedance (Ω, Max / 100kHz) | | Ripple Current (mA / rms, | φ D x L | Impedance (Ω, Max / 100kHz) | | Ripple Current (mA / rms, 105°C) |
| | | | 20°C | -10°C | 100k Hz | | 20°C | -10°C | 100k Hz | | 20°C | -10°C | 100k Hz | | 20°C | -10°C | 100k Hz |
| 47 | 470 | | | | | | | | | | | | | 5 x 11 | 0.58 | 1.16 | 210 |
| 56 | 560 | | | | | | | | | | | | | | | | |
| 100 | 101 | | | | | 5 x 11 | 0.58 | 1.16 | 210 | | | | | 6.3 x 11 | 0.22 | 0.44 | 340 |
| 120 | 121 | | | | | | | | | 6.3 x 11 | 0.22 | 0.44 | 340 | | | | |
| 150 | 151 | 5 x 11 | 0.58 | 1.16 | 210 | | | | | | | | | | | | |
| 220 | 221 | | | | | 6.3 x 11 | 0.22 | 0.44 | 340 | | | | | 8 x 11.5 | 0.11 | 0.22 | 640 |
| 330 | 331 | 6.3 x 11 | 0.22 | 0.44 | 340 | | | | | 8 x 11.5 | 0.11 | 0.22 | 640 | 8 x 15<br>10 x 13 | 0.083<br>0.080 | 0.166<br>0.160 | 840<br>865 |
| 470 | 471 | | | | | 8 x 11.5 | 0.11 | 0.22 | 640 | 8 x 15<br>10 x 12.5 | 0.083<br>0.080 | 0.166<br>0.16 | 840<br>865 | 8 x 20<br>10 x 16 | 0.064<br>0.060 | 0.128<br>0.120 | 1,050<br>1,210 |
| 680 | 681 | 8 x 12 | 0.11 | 0.22 | 640 | 8 x 15<br>10 x 12.5 | 0.083<br>0.080 | 0.166<br>0.160 | 840<br>865 | 8 x 20<br>10 x 16 | 0.064<br>0.060 | 0.128<br>0.120 | 1,050<br>1,210 | 10 x 20<br>12.5 x16 | 0.046<br>0.049 | 0.092<br>0.098 | 1,400<br>1,450 |
| 820 | 821 | 10 x 12.5 | 0.080 | 0.16 | 865 | | | | | | | | | 10 x 25 | 0.042 | 0.084 | 1,650 |
| 1,000 | 102 | 8 x 15 | 0.087 | 0.174 | 840 | 8 x 20<br>10 x 16 | 0.064<br>0.060 | 0.128<br>0.120 | 1,050<br>1,210 | 10 x 20<br>12.5 x16 | 0.046<br>0.049 | 0.092<br>0.098 | 1,400<br>1,450 | 10 x 30<br>12.5x20<br>16x16 | 0.031<br>0.035<br>0.042 | 0.062<br>0.070<br>0.084 | 1,910<br>1,900<br>1,940 |
| 1,200 | 122 | 8 x 20<br>10 x 16 | 0.069<br>0.060 | 0.128<br>0.120 | 1,050<br>1,210 | 10 x 20 | 0.046 | 0.092 | 1,400 | 10 x 25 | 0.042 | 0.084 | 1,650 | 18 x 16 | 0.043 | 0.086 | 2,210 |
| 1,500 | 152 | 10 x 20 | 0.046 | 0.092 | 1,400 | 10 x 25<br>12.5 x16 | 0.042<br>0.049 | 0.084<br>0.090 | 1,650<br>1,450 | 10 x 30<br>12.5x20<br>16x16 | 0.031<br>0.035<br>0.042 | 0.062<br>0.070<br>0.084 | 1,910<br>1,900<br>1,940 | 12.5 x 25 | 0.027 | 0.054 | 2,230 |
| 1,800 | 182 | 12.5 x 16 | 0.045 | 0.090 | 1,450 | | | | | | | | | 12.5 x 30<br>16 x 20 | 0.024<br>0.027 | 0.048<br>0.054 | 2,650<br>2,530 |
| 2,200 | 222 | 10 x 25 | 0.042 | 0.084 | 1,650 | 10 x 30<br>12.5x20<br>16x16 | 0.031<br>0.035<br>0.042 | 0.062<br>0.070<br>0.084 | 1,910<br>1,900<br>1,940 | 12.5 x 25<br>18 x 16 | 0.027<br>0.043 | 0.054<br>0.086 | 2,230<br>2,210 | 12.5 x 35<br>18 x 20 | 0.020<br>0.026 | 0.040<br>0.052 | 2,880<br>2,860 |
| 2,700 | 272 | 10 x 30<br>16 x 16 | 0.031<br>0.042 | 0.062<br>0.084 | 1,910<br>1,940 | 18 x 16 | 0.043 | 0.086 | 2,210 | 12.5 x30<br>16 x 20 | 0.024<br>0.027 | 0.048<br>0.054 | 2,650<br>2,530 | 12.5 x40<br>16 x 25 | 0.017<br>0.021 | 0.034<br>0.042 | 3,350<br>3,610 |
| 3,300 | 332 | 12.5 x 20 | 0.035 | 0.070 | 1,900 | 12.5 x 25 | 0.027 | 0.054 | 2,230 | 12.5 x 35 | 0.020 | 0.040 | 2,880 | 16 x 31.5<br>18 x 25 | 0.017<br>0.019 | 0.034<br>0.038 | 3,450<br>3,140 |
| 3,900 | 392 | 12.5 x25<br>18 x 16 | 0.027<br>0.043 | 0.054<br>0.086 | 2,230<br>2,210 | 12.5 x30<br>16 x 20 | 0.024<br>0.027 | 0.048<br>0.054 | 2,650<br>2,530 | 12.5 x40<br>16 x 25<br>18 x 20 | 0.017<br>0.021<br>0.026 | 0.034<br>0.042<br>0.052 | 3,350<br>2,930<br>2,860 | 16 x 35.5<br>18 x 31.5 | 0.015<br>0.015 | 0.030<br>0.030 | 3,610<br>4,170 |
| 4,700 | 472 | 12.5 x 30 | 0.024 | 0.048 | 2,650 | 12.5 x 35 | 0.020 | 0.040 | 2,880 | 16 x 31.5<br>18 x 25 | 0.017<br>0.019 | 0.034<br>0.038 | 3,450<br>3,140 | 16 x 40<br>18 x 35.5 | 0.013<br>0.014 | 0.026<br>0.028 | 4,080<br>4,220 |
| 5,600 | 562 | 12.5 x35<br>16 x 20 | 0.02<br>0.027 | 0.040<br>0.054 | 2,880<br>2,530 | 12.5 x40<br>16 x 25<br>18 x 20 | 0.017<br>0.021<br>0.026 | 0.034<br>0.042<br>0.052 | 3,350<br>2,930<br>2,860 | 16 x35.5<br>18 x31.5 | 0.015<br>0.015 | 0.030<br>0.030 | 3,610<br>4,170 | 18 x 40 | 0.012 | 0.024 | 4,280 |
| 6,800 | 682 | 12.5 x40<br>16 x 25<br>18 x 20 | 0.017<br>0.021<br>0.026 | 0.034<br>0.042<br>0.052 | 3,350<br>2,930<br>2,860 | 16.0 x 31.5<br>18 x 25 | 0.017<br>0.019 | 0.034<br>0.038 | 3,450<br>3,140 | 16 x 40 | 0.013 | 0.026 | 4,080 | | | | |
| 8,200 | 822 | 16 x 31.5 | 0.017 | 0.034 | 3,450 | 16 x 35.5<br>18 x 31.5 | 0.015<br>0.015 | 0.030<br>0.030 | 3,610<br>4,170 | 18 x 35.5 | 0.014 | 0.020 | 4,220 | | | | |
| 10,000 | 103 | 16 x 35.5<br>18 x 25 | 0.015<br>0.019 | 0.030<br>0.038 | 3,610<br>3,140 | 16 x 31.5<br>18 x 25 | 0.017<br>0.019 | 0.034<br>0.038 | 3,450<br>3,140 | 16 x 40 | 0.013 | 0.026 | 4,080 | | | | |
| 12,000 | 123 | 16 x 40<br>18 x 31.5 | 0.013<br>0.015 | 0.026<br>0.030 | 4,080<br>4,170 | 18 x 40 | 0.012 | 0.024 | 4,280 | | | | | | | | |
| 15,000 | 153 | 18 x 35.5 | 0.014 | 0.028 | 4,220 | | | | | | | | | | | | |
| 18,000 | 183 | 18 x 40 | 0.012 | 0.024 | 4,280 | | | | | | | | | | | | |

Note: Case size in mark of " ∗ " is downsize

# CADF SERIES: Low Impedance

## DIMENSIONS & PERMISSIBLE RIPPLE CURRENT AND MAX IMPEDANCE

Dimension: φD x L(mm) Ripple Current: mA/rms at 100Hz, 105°C

| V. DC / Contents | | 35V (1V) | | | | 50V (1H) | | | | 63V (1J) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | φ D x L | Impedance (Ω, Max /100kHz) | | Ripple Current (mA /rms, 105°C) | φ D x L | Impedance (Ω, Max /100kHz) | | Ripple Current (mA /rms, 105°C) | φ D x L | Impedance (Ω, Max /100kHz) | | Ripple Current (mA /rms, 105°C) |
| μF | | | 20°C | -10°C | 100k Hz | | 20°C | -10°C | 100k Hz | | 20℃ | -10℃ | 100k Hz |
| 2.2 | 2R2 | | | | | 5 x 11 | 3.3 | 6.6 | 43 | | | | |
| 3.3 | 3R3 | | | | | 5 x 11 | 2.9 | 5.8 | 53 | | | | |
| 4.7 | 4R7 | | | | | 5 x 11 | 2.5 | 5.0 | 95 | | | | |
| 10 | 101 | | | | | 5 x 11 | 2 | 4.0 | 130 | | | | |
| 15 | 151 | | | | | | | | | 5 x 11 | 1.2 | 2.4 | 165 |
| 22 | 220 | | | | | 5 x 11 | 0.91 | 1.82 | 180 | | | | |
| 33 | 330 | 5 x 11 | 0.58 | 1.16 | 210 | | | | | 6.3 x 11 | 0.49 | 0.98 | 265 |
| 56 | 560 | 6.3 x 11 | 0.22 | 0.44 | 340 | 6.3 x 11 | 0.39 | 0.78 | 295 | 8 x 12 | 0.31 | 0.62 | 500 |
| 82 | 820 | | | | | | | | | 8 x 15<br>10 x 12.5 | 0.22<br>0.150 | 0.44<br>0.3 | 665<br>690 |
| 100 | 101 | | | | | 8 x 12 | 0.220 | 0.440 | 555 | | | | |
| 120 | 121 | | | | | 8 x 15 | 0.150 | 0.300 | 730 | 8 x 20.0<br>10 x 16.0 | 0.170<br>0.110 | 0.340<br>0.220 | 820<br>950 |
| 150 | 151 | 8 x 11.5 | 0.110 | 0.220 | 640 | 10 x 12.5 | 0.160 | 0.320 | 760 | | | | |
| 180 | 181 | | | | | 8 x 20 | 0.118 | 0.236 | 910 | 10 x 20.0<br>12.5 x 16.0 | 0.078<br>0.101 | 0.156<br>0.202 | 1,150<br>1,150 |
| 220 | 221 | 8 x 15<br>10 x 12.5 | 0.083<br>0.080 | 0.166<br>0.160 | 840<br>865 | 10 x 16 | 0.110 | 0.220 | 1,050 | 10 x 25 | 0.064 | 0.128 | 1,350 |
| 270 | 271 | 8 x 20 | 0.064 | 0.128 | 1,050 | 10.0 x 20<br>12.5 x 60 | 0.078<br>0.079 | 0.156<br>0.158 | 1,220<br>1,260 | 12.5 x 20 | 0.057 | 0.114 | 1,500 |
| 330 | 331 | 10 x 16 | 0.060 | 0.120 | 1,210 | 10 x 25 | 0.072 | 0.144 | 1,440 | | | | |
| 390 | 391 | | | | | | | | | 12.5 x 20 | 0.057 | 0.114 | 1,500 |
| 470 | 471 | 10 x 20<br>12.5 x 16 | 0.046<br>0.049 | 0.092<br>0.098 | 1,400<br>1,450 | 10 x 30<br>12.5 x 20<br>16 x 16 | 0.056<br>0.059<br>0.072 | 0.112<br>0.118<br>0.114 | 1,690<br>1,660<br>1,690 | 12.5 x 30<br>16 x 20 | 0.039<br>0.04 | 0.078<br>0.090 | 2,300<br>2,000 |
| 560 | 561 | 10 x 25 | 0.042 | 0.084 | 1,650 | 12.5 x 25<br>18 x 16 | 0.044<br>0.070 | 0.088<br>0.140 | 1,950<br>1,930 | 12.5 x 35 | 0.034 | 0.068 | 2,500 |
| 680 | 681 | 10 x 25<br>10 x 30<br>12.5 x 20<br>16 x 16 | 0.030<br>0.031<br>0.035<br>0.042 | 0.060<br>0.062<br>0.070<br>0.084 | 2,200<br>2,200<br>1,900<br>1,940 | 12.5 x 30 | 0.039 | 0.078 | 2,310 | 12.5 x 40<br>16 x 25<br>18 x 20 | 0.029<br>0.035<br>0.042 | 0.058<br>0.070<br>0.084 | 2,800<br>2,600<br>2,500 |
| 820 | 821 | 10 x 25 | 0.03 | 0.060 | 2,200 | 12.5 x 35<br>16 x 20 | 0.033<br>0.044 | 0.066<br>0.088 | 2,510<br>2,210 | 16 x 31.5<br>18 x 25 | 0.029<br>0.034 | 0.058<br>0.068 | 2,850<br>2,800 |
| 1,000 | 102 | 12.5 x 25<br>18 x 16 | 0.027<br>0.043 | 0.054<br>0.086 | 2,230<br>2,210 | 12.5 x 40<br>16 x 25<br>18 x 20 | 0.027<br>0.033<br>0.047 | 0.054<br>0.066<br>0.094 | 2,920<br>2,555<br>2,490 | 16 x 35.5 | 0.027 | 0.054 | 2,900 |
| 1,200 | 122 | 12.5 x 30<br>16 x 20 | 0.024<br>0.027 | 0.048<br>0.054 | 2,650<br>2,530 | 16 x 31.5<br>18 x 25 | 0.027<br>0.028 | 0.054<br>0.056 | 3,010<br>2,740 | 16 x 40<br>18 x 31.5 | 0.025<br>0.028 | 0.050<br>0.056 | 3,400<br>3,300 |
| 1,500 | 152 | 12.5 x 25 | 0.024 | 0.040 | 2,530 | 16 x 35.5 | 0.024 | 0.048 | 3,150 | 18 x35.5 | 0.025 | 0.050 | 3,400 |
| 1,800 | 182 | 12.5 x 35<br>16 x 25<br>18 x 20 | 0.017<br>0.021<br>0.026 | 0.034<br>0.042<br>0.052 | 3,350<br>2,930<br>2,860 | 16 x 40<br>18 x 31.5 | 0.021<br>0.024 | 0.042<br>0.048 | 3,710<br>3,635 | 18 x 40 | 0.024 | 0.048 | 3,500 |
| 2,200 | 222 | 16 x 31.5<br>18 x 25 | 0.017<br>0.019 | 0.034<br>0.038 | 3,450<br>3,140 | 18 x 35.5 | 0.022 | 0.044 | 3,680 | | | | |
| 2,700 | 272 | 16 x 35.5<br>18 x 31.5 | 0.015<br>0.015 | 0.030<br>0.030 | 3,610<br>4,170 | 18 x 40 | 0.018 | 0.036 | 3,800 | | | | |
| 3,300 | 332 | 16 x 40<br>18 x 35.5 | 0.013<br>0.014 | 0.026<br>0.028 | 4,080<br>4,220 | | | | | | | | |
| 3,900 | 392 | 18 x 40 | 0.012 | 0.024 | 4,280 | | | | | | | | |

Note: Case size in mark of " " is downsize

## PART NUMBER EXAMPLE

CADF 102 M 1C BK 100200

# CADA SERIES: Slim T ype, High Ripple, 5K hrs 105°C

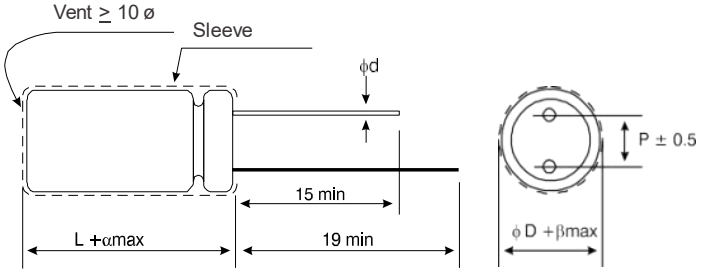


## FEATURES

- Long life, 105° C, 5,000 hours assured
- Smaller size with large permissible ripple current
- Slim Type

## SPECIFICATIONS

| Items | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Life | at 105 °C 5,000 Hours | | | | | | |
| Operating Temp. | 400V | | | | 420 ~ 450V | | |
| | -40 °C ~ +105 °C | | | | -25 °C ~ +105 °C | | |
| Capacitance Tolerance | ±20% (at 120Hz, 20 ° C) | | | | | | |
| Leakage Current (at 20 ° C) | Time | after 5 minutes | | | | | |
| | Leakage Current | CV ≤ 1,000 I = 0.03CV + 15(μA) | | | CV > 1,000 I = 0.02CV+25 ( A) | | |
| | Where C = rated capacitance in μF. V = rated DC working voltage in V. | | | | | | |
| Dissipation Factor (Tan δ at 120Hz, 20°C) | Rated Voltage | 400 | 420 | 450 | | | |
| | Tan δ (max) | 0.24 | 0.24 | 0.24 | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | |
| | Rated Voltage | | | 400 | 420 | 450 | |
| | Impedance Ratio | Z (-25°C) / Z (+20 °C) | | 5 | 6 | 6 | |
| | | Z (-40°C) / Z (+20°C) | | 6 | -- | -- | |
| Load Life Test | Test Time | 5,000 hrs | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 °C after the rated voltage applied with rated ripple current for 5,000 hrs at 105 °C. | | | | | | |
| Shelf Life Test | Test Time | 1,000 hours | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 °C after exposing them for 1,000 hrs at 105 °C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS C 5101-4 4.1). | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) | 60 | 120 | 500 | 1k | 10k up | |
| | Multipliers | 0.80 | 1.00 | 1.25 | 1.40 | 1.50 | |
| Other Standards | JIS C 5101-4 | | | | | | |




## DIMENSIONS

Unit: mm

| φD | 10 | 12.5 | 16 | 18 |
|---|---|---|---|---|
| P | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.6 | | 0.8 | |
| α | 2.0 | | | |
| P | 0.5 | | | |

# HIGH RIPPLE ALUMINUM ELECTROLYTIC CAPACITORS

## CADA SERIES: Slim T ype, High Ripple, 5K hrs

### DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

Dimension: φDx L(mm)
Ripple Current: mA/rms at 100Hz, 105°C

| V. DC | Cap. (μF) | 10φ | | | 12.5φ | | | 16φ | | | 18φ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | φD x L | Ripple Current | | φD x L | Ripple Current | | φD x L | Ripple Current | | φD x L | Ripple Current | |
| | | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz |
| 400V (2G) | 33 | 10 x 35 | 320 | 480 | | | | | | | | | |
| | 39 | 10 x 40 | 380 | 570 | 12.5 x 30 | 380 | 570 | | | | | | |
| | 47 | 10 x 45 | 425 | 638 | | | | | | | | | |
| | 56 | 10 x 50 | 490 | 735 | 12.5 x 35 | 475 | 713 | | | | | | |
| | 68 | | | | 12.5 x 40 | 550 | 825 | 16 x 31.5 | 530 | 795 | | | |
| | 82 | | | | 12.5 x 45 | 615 | 923 | 16 x 35.5 | 605 | 908 | | | |
| | 100 | | | | 12.5 x 50 | 690 | 1,035 | 16 x 40 | 740 | 1,110 | | | |
| | 120 | | | | | | | 16 x 45 | 795 | 1,193 | 18 x 36 | 730 | 1,095 |
| | 150 | | | | | | | 16 x 50 | 865 | 1,300 | 18 x 45 | 910 | 1,365 |
| 420V (2P) | 33 | 10 x 40 | 350 | 525 | | | | | | | | | |
| | 39 | 10 x 45 | 390 | 585 | 12.5 x 30 | 380 | 570 | | | | | | |
| | 47 | 10 x 50 | 445 | 668 | 12.5 x 35 | 410 | 615 | | | | | | |
| | 56 | | | | 12.5 x 40 | 490 | 735 | 16 x 31.5 | 475 | 713 | | | |
| | 68 | | | | 12.5 x 45 | 560 | 840 | 16 x 35.5 | 550 | 825 | | | |
| | 82 | | | | 12.5 x 50 | 625 | 938 | 16 x 40 | 630 | 945 | | | |
| | 100 | | | | | | | 16 x 45 | 750 | 1,125 | 18 x 36 | 675 | 1,013 |
| | 120 | | | | | | | 16 x 50 | 865 | 1,298 | 18 x 40<br>18 x 45 | 810<br>825 | 1,238<br>1,215 |
| | 150 | | | | | | | | | | 18 x 45<br>18 x 50 | 950<br>950 | 1,425<br>1,425 |
| 450V (2W) | 33 | 10 x 45 | 315 | 475 | 12.5 x 30 | 350 | 525 | | | | | | |
| | 39 | 10 x 50 | 360 | 545 | 12.5 x 35 | 400 | 600 | | | | | | |
| | 47 | | | | 12.5 x 40 | 425 | 683 | 16 x 31.5 | 455 | 683 | | | |
| | 56 | | | | 12.5 x 45 | 500 | 750 | 16 x 35.5 | 560 | 750 | | | |
| | 68 | | | | 12.5 x 50<br>12.5 x 50 | 540<br>625 | 810<br>938 | 16 x 40<br>16 x 35.5 | 590<br>530 | 885<br>795 | | | |
| | 82 | | | | | | | 16 x 45 | 675 | 1,013 | 18 x 36<br>18 x 32 | 645<br>585 | 968<br>875 |
| | 100 | | | | | | | 16 x 50 | 785 | 1,178 | 18 x 40<br>18 x 36 | 740<br>685 | 1,110<br>1,025 |
| | 120 | | | | | | | | | | 18 x 45<br>18 x 40 | 825<br>790 | 1,238<br>1,185 |
| | 150 | | | | | | | | | | 18 x 50 | 950 | 1,425 |

### PART NUMBER EXAMPLE

**CADA 470 M 2G BK 100 450**

# CADB SERIES: Slim T ype, High Ripple, 10K hrs 105°C

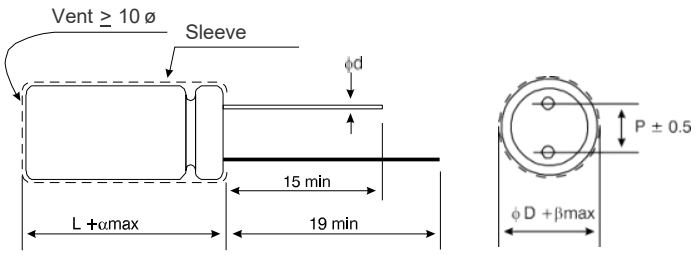


## FEATURES

- 105℃, 10,000 hours assured
- Smaller size with large permissible ripple current
- Slim Type

## SPECIFICATIONS

| Items | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Life | at 105 ° C 10,000 Hours | | | | | | |
| Operating Temp | 400V | | | 420 ~ 450V | | | |
| | -40 ° C ~ +105 ° C | | | -25 ° C ~ +105 ° C | | | |
| Capacitance Tolerance | ±20% (at 120Hz, 20 ° C) | | | | | | |
| Leakage Current (at 20 ° C) | Time | after 5 minutes | | | | | |
| | Leakage Current | CV ≤ 1,000 I = 0.01CV + 15(μA) | | CV > 1,000 I = 0.02CV+25 (μA) | | | |
| | Where C = rated capacitance in μF. V = rated DC working voltage in V | | | | | | |
| Dissipation Factor (Tan δ at 120Hz, 20° C) | Rated Voltage | 400 | 420 | 450 | | | |
| | Tan δ (max) | 0.24 | 0.24 | 0.24 | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below | | | | | | |
| | Rated Voltage | | 400 | 420 | 450 | | |
| | Impedance Ratio | Z (-25° C) / Z (+20 ° C) | 5 | 6 | 6 | | |
| | | Z (-40° C) / Z (+20° C) | 6 | -- | -- | | |
| Load Life Test | Test Time | 10,000 hrs | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 ° C after the rated voltage applied with rated ripple current for 10,000 hrs at 105 ° C | | | | | | |
| Shelf Life Test | Test Time | 1,000 hours | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 ° C after exposing them for 1,000 hrs at 105 ° C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS C 5101-4 4.1) | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) | 60 | 120 | 500 | 1k | 10k up | |
| | Multipliers | 0.80 | 1.00 | 1.25 | 1.40 | 1.50 | |
| Other Standards | JIS C 5101-4 | | | | | | |




## DIMENSIONS

Unit: mm

| φD | 10 | 12.5 | 16 | 18 |
|---|---|---|---|---|
| P | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.6 | | 0.8 | |
| α | 2.0 | | | |
| β | 0.5 | | | |

# CADB SERIES: Slim T ype, High Ripple, 10K hrs

## FEATURES

## DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

Dimension: φ D x L(mm)
Ripple Current: mA/rms at 100Hz, 105°C

| V. DC | Cap. (μF) | 10φ | | | 12.5φ | | | 16φ | | | 18φ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | φ D x L | Ripple Current | | φ D x L | Ripple Current | | φ D x L | Ripple Current | | φ D x L | Ripple Current | |
| | | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz | | 120 Hz | 100k Hz |
| 400V (2G) | 33 | 10 x 40 | 315 | 475 | | | | | | | | | |
| | 39 | 10 x 45 | 360 | 545 | | | | | | | | | |
| | 47 | 10 x 50 | 420 | 630 | 13 x 30 | 440 | 660 | | | | | | |
| | 56 | | | | 13 x 35 | 500 | 750 | | | | | | |
| | 68 | | | | 13 x 40 | 580 | 870 | 16 x 32 | 530 | 795 | | | |
| | 82 | | | | 13 x 50 | 625 | 935 | 16 x 35.5 | 615 | 920 | | | |
| | 100 | | | | | | | 16 x 40 | 715 | 1,070 | | | |
| | 120 | | | | | | | 16 x 40 | 800 | 1,200 | 18 x 35.5<br>18 x 40 | 790<br>870 | 1,185<br>1,305 |
| | 150 | | | | | | | 16 x 45 | 915 | 1,375 | 18 x 45 | 985 | 1,475 |
| | 180 | | | | | | | | | | 18 x 50 | 1,120 | 1,685 |
| 420V (2P) | 33 | 10 x 40 | 370 | 555 | | | | | | | | | |
| | 39 | 10 x 45 | 410 | 615 | 12.5 x 30 | 390 | 585 | | | | | | |
| | 47 | 10 x 50 | 465 | 700 | 12.5 x 35 | 450 | 675 | | | | | | |
| | 56 | | | | 12.5 x 40 | 520 | 780 | 16 x 31.5 | 500 | 750 | | | |
| | 68 | | | | 12.5 x 45 | 580 | 870 | 16 x 35.5 | 580 | 870 | | | |
| | 82 | | | | 12.5 x 50 | 660 | 990 | 16 x 35.5<br>16 x 40 | 730<br>675 | 1,095<br>1,010 | | | |
| | 100 | | | | | | | 16 x 40<br>16 x 45 | 750<br>755 | 1,125<br>1,130 | 18 x 36 | 725 | 1,085 |
| | 120 | | | | | | | | | | 18 x 40<br>18 x 45 | 835<br>880 | 1,250<br>1,320 |
| | 150 | | | | | | | | | | 18 x 50 | 1,030 | 1,550 |
| 450V (2W) | 33 | 10 x 45 | 330 | 495 | 12.5 x 30 | 370 | 555 | | | | | | |
| | 39 | 10 x 50 | 380 | 570 | 12.5 x 35 | 420 | 630 | | | | | | |
| | 47 | | | | 12.5 x 40 | 480 | 720 | | | | | | |
| | 53 | | | | 12.5 x 45 | 500 | 750 | | | | | | |
| | 56 | | | | 12.5 x 45 | 530 | 795 | 16 x 31.5 | 510 | 765 | | | |
| | 68 | | | | 12.5 x 50 | 620 | 930 | 16 x 35.5 | 590 | 885 | | | |
| | 82 | | | | | | | 16 x 40 | 615 | 920 | 18 x 35.5 | 645 | 965 |
| | 100 | | | | | | | 16 x 45 | 715 | 1,070 | 18 x 40 | 750 | 1,125 |
| | 120 | | | | | | | | | | 18 x 45 | 835 | 1,250 |
| | 150 | | | | | | | | | | 18 x 50 | 975 | 1,465 |

## PART NUMBER EXAMPLE

**CADB 101 M 2P BK 160400**

# CADD SERIES: 105C, up to 10,000 hours



## FEATURES

- 105℃, 8,000 ~ 10,000 hours assured
- Suitable for switching power supplies, UPS, Ballast
- Smaller size with large permissible ripple current
- RoHS Compliant

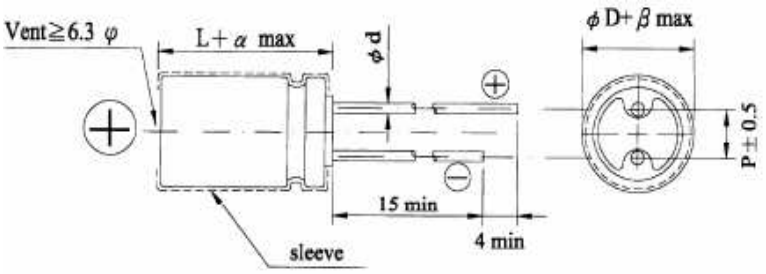
## SPECIFICATIONS

| Items | Performance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Rated Voltage Range | 160 ~ 400V | | | | | 450V | | | |
| Operating Temperature Range | -40°C ~ +105°C | | | | | -25°C ~ +105°C | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20°C) | | | | | | | | |
| Leakage Current (at 20 °C) | Time | after 1 minute | | | | after 5 minutes | | | |
| | Leakage Current | CV ≤ 1000 | | CV ≥ 1000 | | CV ≤ 1000 | | cv ≥ 1000 | |
| | | I = 0.1CV + 40 (μA) | | I = 0.04CV + 100 (μA) | | I = 0.03CV + 15 (μA) | | I = 0.02cv + 25 (μA) | |
| | Where C = rated capacitance in μF. V = rated DC working voltage in V. | | | | | | | | |
| Dissipation Factor (Tan δ at 120Hz, 20 °C) | Rated Voltage | 200 | 250 | 350 | 400 | 450 | | | |
| | Tan δ (max) | 0.20 | 0.20 | 0.24 | 0.24 | 0.24 | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance shall not exceed the values given in the table below. | | | | | | | | |
| | Rated Voltage | 200 | 250 | 350 | 400 | 450 | | | |
| | Impedance Ratio Z (-25) / Z (+20°C) | 3 | 3 | 5 | 5 | 6 | | | |
| | Z (-40) / Z (+20°C) | 6 | 6 | 6 | 6 | - | | | |
| Load Life Test | Test Time | 8,000 hrs for ΦD = 10mm; 10,000 hrs for ΦD >12.5mm | | | | | | | |
| | Capacitance Change | Within + 20% of initial value | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 8,000 hrs / 10,000 hrs at 105°C. | | | | | | | | |
| Shelf Life Test | Capacitance Change | Within + 20% of initial value | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | |
| | Leakage Current | Less than 500% of specified value | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hrs at 105°C without voltage applied. The rated voltage shall be applied to the capacitors before themeasurements (Refer to JIS C 5102). | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / ΦD (mm) | 120 | 1k | 10k | 100k up | | | | |
| | 10 | 0.25 | 0.61 | 0.88 | 1.0 | | | | |
| | 12.5 ~ 18 | 0.35 | 0.66 | 0.89 | 1.0 | | | | |
| Other Standards | JIS C 5101-4 | | | | | | | | |

## DIMENSIONS

Unit: mm

| φD | 10 | 12.5 | 16 | 18 |
|---|---|---|---|---|
| P | 5.0 | | 7.5 | |
| φd | 0.6 | | 0.8 | |
| α | 1.5 | | | |
| β | 0.5 | | | |






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# HIGH RIPPLE ALUMINUM ELECTROLYTIC CAPACITORS

## CADD SERIES: 105C, up to 10,000 hours

### DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

Ripple Current: mA/rms at 105°C

| V.D C / Item / μF | 160V (2C) | | | 200V (2D) | | | 250V (2E) | | |
|---|---|---|---|---|---|---|---|---|---|
| | φD x L | Ripple Current | | φD x L | Ripple Current | | φD x L | Ripple Current | |
| | | 120Hz | 100kHz | | 120Hz | 100kHz | | 120Hz | 100kHz |
| 10 | 10 x 16 | 125 | 315 | 10 x 16 | 125 | 315 | 10 x 20 | 140 | 350.00 |
| 22 | 10 x 20 | 200 | 500 | 10 x 20 | 200 | 500 | 10 x 20 | 200 | 500 |
| 33 | 10 x 20 | 250 | 625 | 10 x 20 | 260 | 650 | 12.5 x 20 | 320 | 800 |
| 47 | 10 x 20 | 300 | 750 | 12.5 x 20 | 390 | 975 | 12.5 x 20 | 390 | 975 |
| 68 | 12.5 x 20 | 470 | 1175 | 12.5 x 20 | 470 | 1175 | 16 x 20 | 520 | 1300 |
| 82 | 12.5 x 20 | 510 | 1275 | 16 x 20 | 550 | 1375 | 16 x 20 | 550 | 1,375 |
| 100 | 12.5 x 25 | 620 | 1,395 | 16 x 20 | 630 | 1,420 | 16 x 25 | 680 | 1,530 |
| | 16 x 20 | 630 | 1,420 | | | | | | |
| 150 | 16 x 20 | 770 | 1,735 | 16 x 25 | 840 | 1,890 | 18 x 25 | 860 | 1,935 |
| 220 | 16 x 25 | 1,020 | 2,295 | 18 x 25 | 1,050 | 2,365 | 18 x 31.5 | 1,130 | 2545 |
| 330 | 18 x 31.5 | 1,390 | 3,130 | 18 x 35.5 | 1,430 | 3,220 | | | |

| V.D C / Item / μF | 350V (2V) | | | 400V (2G) | | | 450V (2W) | | |
|---|---|---|---|---|---|---|---|---|---|
| | φD x L | Ripple Current | | φD x L | Ripple Current | | φD x L | Ripple Current | |
| | | 120Hz | 100kHz | | 120Hz | 100kHz | | 120Hz | 100kHz |
| 6.8 | 10 x 16 | 110 | 275 | 10 x 16 | 110 | 275 | 10 x 20 | 110 | 275 |
| 10 | 10 x 20 | 140 | 350 | 10 x 20 | 140 | 350 | 12.5 x 20 | 180 | 450 |
| 22 | 12.5 x 20 | 260 | 650 | 12.5 x 20 | 260 | 650 | 16 x 20 | 290 | 725 |
| 33 | 16 x 20 | 360 | 900 | 16 x 20 | 360 | 900 | 16 x 25 | 390 | 975 |
| | | | | | | | 18 x 20 | 380 | 950 |
| 47 | 16 x 20 | 430 | 1,075 | 16 x 25 | 470 | 1,175 | 18 x 25 | 480 | 1,200 |
| | | | | 18 x 20 | 450 | 1,125 | | | |
| 68 | 16 x 25 | 560 | 1,400 | 18 x 25 | 585 | 1,465 | 18 x 31.5 | 630 | 1,575 |
| | 18 x 20 | 550 | 1,375 | | | | | | |
| 82 | 18 x 25 | 610 | 1,525 | 18 x 25 | 610 | 1,525 | 18 x 35.5 | 715 | 1,785 |
| 100 | 18 x 25 | 700 | 1,575 | 18 x 31.5 | 765 | 1,720 | 18 x 40 | 800 | 1,800 |
| 120 | 18 x 31.5 | 830 | 1,865 | 18 x 35.5 | 865 | 1,945 | | | |
| 150 | 18 x 35.5 | 960 | 2,160 | 18 x 40 | 985 | 2,215 | | | |

### PART NUMBER EXAMPLE

CADD 470 M 2G BK 100 450

# CAEA SERIES: 130°C, Long Life

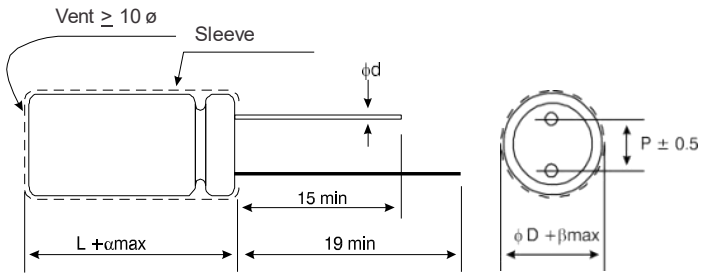


## FEATURES

- 1,000 ~ 3,000 hours assured
- 130° C
- For high temperature applications
- RoHS Compliant

## SPECIFICATIONS

| Items | Performance | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | 10 ~ 250V | | | | | | | 350 ~ 450V | | | | | | |
| | -40°C ~ +130°C | | | | | | | -25°C ~ 130°C | | | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20°C) | | | | | | | | | | | | | |
| Leakage Current (at 20° C) | Rated Voltage | < 100V | | | > 100V | | | | | | | | | |
| | Time | after 2 minutes | | | after 1 minutes | | | | | | | | | |
| | Leakage Current | I = 0.01CV or 3 (μA) whichever is greater | | | CV ≤ 1000 I = 0.1CV+40 (μA) | | | CV ≥ 1000 I = 0.04CV+100 (μA) | | | | | | |
| | Where C = rated capacitance in μF. V = rated DC working voltage in V. | | | | | | | | | | | | | |
| Dissipation Factor (Tan ä at 120Hz, 20°C) | Rated Voltage | 10 | 16 | 25 | 35 | 50 | 63 | 160 | 200 | 250 | 350 | 400 | 450 | |
| | Tan (max) | 0.15 | 0.12 | 0.10 | 0.10 | 0.08 | 0.08 | 0.20 | 0.20 | 0.20 | 0.24 | 0.24 | 0.24 | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | | | |
| | Rated Voltage | | 10 | 16 | 25 | 35 | 50 | 63 | 160 | 200 | 250 | 350 | 400 | 450 |
| | Impedance Ratio | Z (-25) / Z (+20°C) | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 6 | 6 | 6 |
| | | Z (-40) / Z (+20°C) | 6 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | - | - | - |
| Load Life Test | Test Time | 2,000 hrs for φD≤ φ8mm (125°C) 3,000 hrs for φD≥ φ10mm (130°C) | | | | | | | | | | | | |
| | Capacitance Change | Within + 20% of initial value | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20°C after applied with rated subjected to DC voltage with the rated ripple current is applied for 2.000 / 3,000 hrs at 125°C / 130°C | | | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1,000 hours | | | | | | | | | | | | |
| | Capacitance Change | Within + 20% of initial value | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | |
| | Leakage Current | Less than 500% of specified value | | | | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hrs at 130°C without voltage applied. (The procedures before testing JIS C 5102 4.4) | | | | | | | | | | | | | |
| Other Standards | JIS C 5101-4 | | | | | | | | | | | | | |




## LEAD SPACING AND DIAMETER

Unit: mm

| φD | 8 | 10 | 12.5 | 16 |
|---|---|---|---|---|
| P | 3.5 | 5.0 | 5.0 | 7.5 |
| φd | 0.6 | | | 0.8 |
| α | 1.0 | 1.5 | | |
| P | 0.5 | | | |



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# CAEA SERIES: 130°C, Long Life

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: ΦD×L(mm) Ripple Current: mA/RMS at 120Hz 130°C

| V.DC | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | |
|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | φDx L | mA | φD x L | mA | φDx L | mA | φDx L | mA |
| 22 | 220 | | | | | | | 8 x 11.5 | 75 |
| 33 | 330 | | | | | 8 x 11.5 | 92 | 10 x 13 | 108 |
| 47 | 470 | | | 8 x 11.5 | 100 | 10 x 12.5 | 129 | 10 x 16 | 142 |
| 100 | 101 | 10 x 12.5 | 154 | 10 x 16 | 190 | 10 x 16 | 208 | 10 x 20 | 225 |
| 220 | 221 | 10 x 16 | 252 | 10 x 20 | 305 | 12.5 x 20 | 371 | 12.5 x 25 | 403 |
| 330 | 331 | 10 x 16 | 308 | 12.5 x 20 | 414 | 12.5 x 25 | 493 | 16 x 20 | 503 |
| 470 | 471 | 10 x 20 | 399 | 12.5 x 25 | 537 | 16 x 20 | 601 | | |
| 1,000 | 102 | 16 x 20 | 715 | | | | | | |

| V.DC | | 50V (1H) | | 63V (1J) | | 160V (2C) | | 200V (2D) | |
|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | φDx L | mA | φDx L | MA | φDx L | mA | φDx L | mA |
| 0.47 | R47 | 8 x 11.5 | 12 | 8 x 11.5 | 12 | | | | |
| 1 | 010 | 8 x 11.5 | 17 | 8 x 11.5 | 17 | | | | |
| 2.2 | 2R2 | 8 x 11.5 | 26 | 8 x 11.5 | 26 | | | | |
| 3.3 | 3R3 | 8 x 11.5 | 32 | 8 x 11.5 | 32 | | | | |
| 4.7 | 4R7 | 8 x 11.5 | 38 | 8 x 11.5 | 38 | | | | |
| 10 | 100 | 8 x 11.5 | 56 | 8 x 11.5 | 56 | | | 10 x 20 | 78 |
| 22 | 220 | 10 x 12.5 | 99 | 10 x 12.5 | 99 | 10 x 20 | 115 | 10 x 25 | 126 |
| 33 | 330 | 10 x 16 | 133 | 10 x 16 | 133 | 10 x 25 | 154 | 12.5 x 20 | 157 |
| 47 | 470 | 10 x 16 | 159 | 10 x 20 | 173 | 12.5 x 20 | 187 | 12.5 x 25 | 204 |
| 68 | 680 | | | | | 12.5 x 25 | 245 | 16 x 20 | 250 |
| 100 | 101 | 12.5 x 20 | 279 | 12.5 x 20 | 279 | 16 x 25 | 329 | 16 x 25 | 329 |
| 150 | 151 | | | | | 16 x 31.5 | 434 | | |
| 220 | 221 | 16 x 20 | 459 | | | | | | |

| V.DC | | 250V (2E) | | 350V (2V) | | 400V (2G) | | 450V (2W) | |
|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | φDx L | mA | φDx L | mA | φDx L | MA | φDx L | mA |
| 4.7 | 4R7 | | | 10 x 20 | 53 | 10 x 20 | 53 | 10 x 25 | 58 |
| 10 | 100 | 10 x 20 | 78 | 10 x 25 | 85 | 10 x 25 | 86 | 12.5 x 20 | 86 |
| 22 | 220 | 13 x 20 | 128 | 12.5 x 25 | 139 | 12.5 x 25 | 142 | 16 x 25 | 154 |
| 33 | 330 | 13 x 25 | 171 | 16 x 25 | 189 | 16 x 25 | 189 | 16 x 31.5 | 203 |
| 47 | 470 | 16 x 25 | 225 | 16 x 31.5 | 243 | 16 x 31.5 | 243 | | |
| 68 | 680 | 16 x 31.5 | 292 | | | | | | |

## PART NUMBER EXAMPLE

CAEA 100 M 1H BK 080 115

# CAEB SERIES: 125°C, Long Life



## FEATURES

- 3,000 ~ 5,000 hours assured
- 125° C
- For high temperature applications
- RoHS Compliant

| Items | Performance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40 °C ~ + 125°C | | | | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20 °C) | | | | | | | |
| Leakage Current (at 20 ° C) | I = 0.01CV or 3 (μA) whichever is greater after 2 minutes<br>Where C = rated capacitance in μF. V = rated DC working voltage in V. | | | | | | | |
| Dissipation Factor (Tan ä at 120Hz, 20°C) | Rated Voltage | 10 | 16 | 25 | 35 | 50 | 63 | |
| | Tan ä(max) | 0.15 | 0.12 | 0.10 | 0.10 | 0.08 | 0.08 | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | |
| | Rated Voltage | 10 | 16 | 25 | 35 | 50 | 63 | |
| | Impedance Ratio Z (-25) / Z (+20 °C) | 3 | 2 | 2 | 2 | 2 | 2 | |
| | Impedance Ratio Z (-40) / Z (+20 °C) | 6 | 4 | 4 | 4 | 4 | 4 | |
| Load Life Test | Test Time | 3,000 hrs for ÖD ≤ 8 mm<br>5,000 hrs for ÖD ≥ 10 mm | | | | | | |
| | Capacitance Change | Within + 20% of initial value | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | |
| | Leakage Current | Within specified value | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 °C after applied with rated subjected to DC voltage with the rated ripple current is applied for 3,000 / 5,000 hrs at 125 °C | | | | | | | |
| Shelf Life Test | Test Time | 1,000 hours | | | | | | |
| | Capacitance Change | Within + 20% of initial value | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | |
| | Leakage Current | Less than 500% of specified value | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20 °C after exposing them for 1,000 hrs at 125 °C without voltage applied. (The procedures before testing JIS C 5102 4.4) | | | | | | | |
| Other Standards | JIS C 5101-4 | | | | | | | |

## DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: ϕD×L(mm) Ripple Current: mA/RMS at 120Hz 125°C

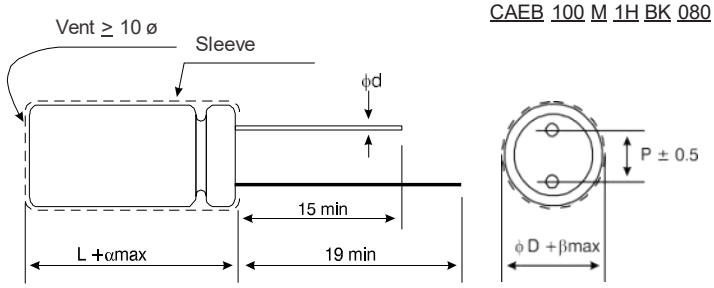
| | V.DC | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 30V (1H) | | 63V (1J) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Contents | φDx L | mA | φDx L | mA | φDx L | mA | φDx L | mA | φDx L | mA | φDx L | mA |
| 0.47 | R47 | | | | | | | | | 8 x 11.5 | 12 | 8 x 11.5 | 12 |
| 1 | 010 | | | | | | | | | 8 x 11.5 | 17 | 8 x 11.5 | 17 |
| 2.2 | 2R2 | | | | | | | | | 8 x 11.5 | 26 | 8 x 11.5 | 26 |
| 3.3 | 3R3 | | | | | | | | | 8 x 11.5 | 32 | 8 x 11.5 | 32 |
| 4.7 | 4R7 | | | | | | | | | 8 x 11.5 | 38 | 8 x 11.5 | 38 |
| 10 | 100 | | | | | | | | | 8 x 11.5 | 56 | 8 x 11.5 | 56 |
| 22 | 220 | | | | | | | 8 x 11.5 | 75 | 10 x 12.5 | 99 | 10 x 12.5 | 99 |
| 33 | 330 | | | | | 8 x 11.5 | 92 | 10 x 12.5 | 108 | 10 x 16 | 133 | 10 x 16 | 133 |
| 47 | 470 | | | 8 11.5 | 100 | 10 x 12.5 | 129 | 10 x 16 | 142 | 10 x 16 | 159 | 10 x 20 | 173 |
| 100 | 101 | 10 x 12.5 | 154 | 10 x 16 | 190 | 10 x 16 | 208 | 10 x 20 | 225 | | | | |
| 220 | 221 | 10 x 16 | 252 | 10 x 20 | 305 | 12.5 x 20 | 371 | 12.5 x 25 | 403 | 12.5 x 20 | 279 | 12.5 x 20 | 279 |
| 330 | 331 | 10 x 16 | 308 | 12.5 x 20 | 414 | 12.5 x 25 | 493 | 16 x 20 | 503 | | | | |
| 470 | 471 | 10 x 20 | 399 | 12.5 x 25 | 537 | 16 x 20 | 601 | | | 16 x 20 | 459 | | |
| 1,000 | 102 | 16 x 20 | 715 | | | | | | | | | | |

## PART NUMBER EXAMPLE

CAEB 100 M 1H BK 080 115

## LEAD SPACING AND DIAMETER

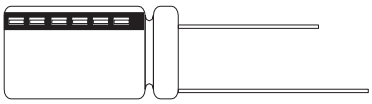
| φD | 8 | 10 | 12.5 | 16 |
|---|---|---|---|---|
| P | 3.5 | 5.0 | 5.0 | 7.5 |
| φd | 0.6 | | | 0.8 |
| α | 1.0 | 1.5 | | |
| β | 0.5 | | | |






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- 105 ℃, Solvent-proof type
- Suitable for high reliability products



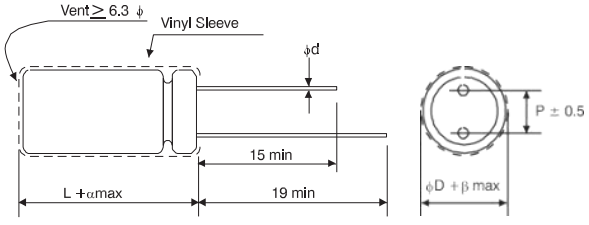


## SPECIFICATIONS

| Item | Performance | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CACA | | | | | | | | CACA |
| Life | At 105°C 1000 Hrs | | | | | | | | At 105°C 2000 Hrs |
| Operating Temperature | -55°C ~ +105°C | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes)<br>Where, C = rated capacitance in μF. V=rated DC working voltage in V. | | | | | | | | |
| Dissipaton Factor Tanδ at 120 Hz, 20°C | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | |
| | Tanδ (max) | 0.23 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | |
| | When the capacitance exceed 1000 μF 0.02 shall be added every 1000 μF increase.. | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below | | | | | | | | |
| | Rated Voltage | | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
| | Impedance Ratio | Z(-25°C) /Z(+20°C) | φD<16 | 4 | 3 | 3 | 2 | 2 | 2 | 2 |
| | | | φD>16 | 5 | 4 | 3 | 2 | 2 | 3 | 3 |
| | | Z(-55°C) /Z(+20°C) | φD<16 | 8 | 6 | 4 | 4 | 4 | 3 | 3 |
| | | | φD>16 | 10 | 8 | 6 | 4 | 3 | 3 | 3 |
| Load Life Test | Test Time | 1000hrs / 2000hrs | | | | | | | | |
| | Capacitance Change | Within ±20% | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value. | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | |
| | The above specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 1000/2000 hrs at 105°C. | | | | | | | | | |
| Shelf Life Test | Test Time | 1000 Hrs | | | | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | |
| | Leakage Current | Within Specified value | | | | | | | | |
| | The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 105°C without voltage applied. | | | | | | | | | |
| Ripple Current & Frequency Multilpiers | Freq. (Hz) / Cap. (μF) | 60 | 120 | 500 | 1K | 10K up | | | | |
| | Under 100 | 0.70 | 1.00 | 1.30 | 1.40 | 1.50 | | | | |
| | 100 to 1000 | 0.75 | 1.00 | 1.20 | 1.30 | 1.35 | | | | |
| | 1000 and above | 0.80 | 1.00 | 1.10 | 1.12 | 1.15 | | | | |
| Riple Current & Temperature Multipliers | Temperature (°C) | 45 | 70 | 85 | 105 | | | | | |
| | Multipliers | 1.95 | 1.78 | 1.40 | 1.00 | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | |

## LEAD SPACING AND DIAMETER

| φD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 | 22 |
|---|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 |
| φd | 0.5 | | 0.6 | | | 0.8 | | 1.0 |
| α | 1.0 | | 1.5 | | | | | 2.0 |
| β | 0.5 | | | | | | | |




## PART NUMBER EXAMPLE

CACA 221 M 1H BK 100 200

# ANTI-SOLVENT ALUMINUM ELECTROLYTIC CAPACITORS

## CACA SERIES: Wide Temp. Anti-Solvent, 105°C

### DIMENSIONS AND PERMISSABLE RIPPLE CURRENT

Dimension: ΦD×L(mm) Ripple Current: mA/RMS at 120Hz 105°C

| VDC | | 6.3v(0J) | | 10V(1A) | | 16V(1C) | | 25V(1E) | | 35V(1V) | | 50V(1H) | | 63V(1J) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | φDxL | mA | φDxL | mA | φDxL | mA | φDxL | mA | φDxL | mA | φDxL | mA | φDxL | mA |
| 0.1 | 0R1 | | | | | | | | | | | 5 x 11 | 1.3 | 5 x 11 | 2.1 |
| 0.22 | R22 | | | | | | | | | | | 5 x 11 | 2.9 | 5 x 11 | 3.2 |
| 0.33 | R33 | | | | | | | | | | | 5 x 11 | 4.3 | 5 x 11 | 5.4 |
| 0.47 | R47 | | | | | | | | | | | 5 x 11 | 7.1 | 5 x 11 | 7.1 |
| 1 | 010 | | | | | | | | | | | 5 x 11 | 13 | 5 x 11 | 15 |
| 2.2 | 2R2 | | | | | | | | | | | 5 x 11 | 20 | 5 x 11 | 26 |
| 3.3 | 3R3 | | | | | | | | | | | 5 x 11 | 30 | 5 x 11 | 31 |
| 4.7 | 4R7 | | | | | | | | | | | 5 x 11 | 33 | 5 x 11 | 36 |
| 10 | 100 | | | | | 5 x 11 | 36 | 5 x 11 | 40 | 5 x 11 | 45 | 5 x 11 | 50 | 5 x 11 | 54 |
| 22 | 220 | | | | | 5 x 11 | 58 | 5 x 11 | 68 | 5 x 11 | 71 | 5 x 11 | 78 | 6.3 x 11 | 96 |
| 33 | 330 | | | | | 5 x 11 | 76 | 5 x 11 | 78 | 6.3 x 11<br>5 x 11 | 90<br>85 | 6.3 x 11<br>5 x 11 | 96<br>90 | 8 x 11.5<br>6.3 x 11 | 141<br>100 |
| 47 | 470 | | | 5 x 11 | 76 | 5 x 11 | 90 | 5 x 11 | 97 | 6.3 x 11<br>5 x 11 | 105<br>90 | 8 x 11.5<br>6.3 x 11 | 130<br>117 | 8 x 11.5<br>6.3 x 11 | 151<br>129 |
| 100 | 101 | 5 x 11 | 103 | 5 x 11 | 111 | 6.3 x 11<br>5 x 11 | 133<br>110 | 6.3 x 11 | 142 | 8 x 11.5<br>6.3 x 11 | 170<br>150 | 8 x 11.5 | 188 | 10 x 12.5 | 235 |
| 220 | 221 | 6.3 x 11<br>5 x 11 | 160<br>140 | 6.3 x 11<br>5 x 11 | 175<br>150 | 8 x 11.5<br>6.3 x 11 | 215<br>180 | 8 x 11.5 | 236 | 10 x 12.5<br>8 x 11.5 | 300<br>270 | 10 x 20<br>10 x 16 | 355<br>335 | 10 x 20<br>10 x 16 | 400<br>360 |
| 330 | 331 | 8 x 11.5<br>6.3 x 11 | 219<br>190 | 8 x 11.5<br>6.3 x 11 | 245<br>200 | 8 x 11.5 | 260 | 10 x 12.5<br>8 x 11.5 | 335<br>330 | 10 x 16<br>10 x 12.5 | 400<br>350 | 10 x 20<br>10 x 16 | 460<br>410 | 13 x 20<br>10 x 20 | 520<br>490 |
| 470 | 471 | 8 x 11.5<br>6.3 x 11 | 261<br>230 | 8 x 11.5<br>6.3 x 11 | 290<br>250 | 10 x 12.5<br>8 x 11.5 | 370<br>310 | 10 x 16<br>10 x 12.5 | 440<br>380 | 10 x 20<br>10 x 16 | 520<br>460 | 13 x 20<br>10 x 20 | 610<br>530 | 13 x 25<br>13 x 20 | 720<br>665 |
| 1000 | 102 | 10 x 12.5<br>8 x 11.5 | 455<br>380 | 10 x 16<br>10 x 12.5 | 550<br>460 | 10 x 20<br>10 x 16 | 640<br>560 | 13 x 20<br>10 x 20 | 770<br>680 | 13 x 25<br>13 x 20 | 920<br>830 | 16 x 25<br>13 x 25 | 1080<br>980 | 16 x 31.5<br>16 x 25 | 1260<br>1190 |
| 2200 | 222 | 10 x 20 | 750 | 13 x 20<br>10 x 20 | 860<br>760 | 13 x 25<br>13 x 20 | 1000<br>920 | 16 x 25<br>13 x 25 | 1170<br>1090 | 16 x 31.5<br>16 x 25 | 1340<br>1260 | 18 x 35.5<br>16 x 35.5 | 1530<br>1470 | | |
| 3300 | 332 | 13 x 20<br>10 x 20 | 920<br>840 | 13 x 20 | 1100 | 16 x 25<br>13 x 25 | 1300<br>1170 | 16 x 31.5<br>16 x 25 | 1460<br>1400 | 18 x 35.5<br>16 x 35.5 | 1650<br>1610 | 22 x 40<br>18 x 35.5 | 1707<br>1650 | | |
| 4700 | 472 | 16 x 25<br>16 x 20 | 1330<br>1090 | 16 x 25<br>13 x 25 | 1400<br>1260 | 16 x 31.5<br>16 x 25 | 1600<br>1480 | 18 x 35.5<br>16 x 31.5 | 1780<br>1710 | 18 x 40<br>18 x 35.5 | 1900<br>1875 | | | | |

### PART NUMBER EXAMPLE

CACA 221 M 1H BK 100 200

# CAIA SERIES: Snap-In Terminal Types




## FEATURES

- Has a snap-in terminal which can solder directly to a PCB
- Suitable for electronic equipment with medium-high voltage circuits
- Printed circuit board terminal snap-in type and lug terminal type available

## SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Temperature Range | -40 °C ~ +85 °C |
| Capacitance Tolerance | ±20% (at 120Hz, 20 °C) |
| Leakage Current (at 20 °C) | I = 0.02CV or1.5 mA whichever is smaller (after 5 minutes)<br>Where, C= rated capacitance in μF.V= rated DC working voltage in V. |

**Dissipation Factor (Tanδ at 120Hz, 20°C)**

| Rated Voltage | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160 | 200 | 250 | 350 | 400 | 420 | 450 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tanδ (max) | 0.50 | 0.45 | 0.40 | 0.35 | 0.30 | 0.25 | 0.20 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |

**Low Temperature Characteristics (at 120Hz)**

Impedance ratio shall not exceed the values given in the table below.

| Rated Voltage | | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 420 | 450 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Impedance Ratio | Z (-25 °C)/Z(+20 °C) | 4 | 3 | 3 | 2 | 2 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | 8 | 8 |
| | Z(-40 °C)/Z(+20 °C) | 15 | 10 | 8 | 6 | 5 | 4 | 8 | 10 | 10 | 16 | 18 | 18 | 20 | 20 |

**Load Life Test**

| | | |
|---|---|---|
| Test Time | 3,000 Hrs | * The specifications shall be satisfied when the capacitors are restored to 20 °C after the rated voltage applied for 3,000 hrs at 85 °C |
| Capacitance Change | ≤ ± 20% | |
| Dissipation Factor | Less than 200% of specified value | |
| Leakage Current | Within specified value | |

**Shelf Life Test**

| | | |
|---|---|---|
| Test Time | 1,000 Hrs | * The specification shall be staisfied when the capacitors are restored to 20 °C after exposing them for 1,000 hrs at 85 °C |
| Capacitance Change | ≤ ± 20% | |
| Dissipation Factor | Less than 200% of specified value | |
| Leakage Current | Within specified value | |

**Ripple Current & Frequency Multipliers**

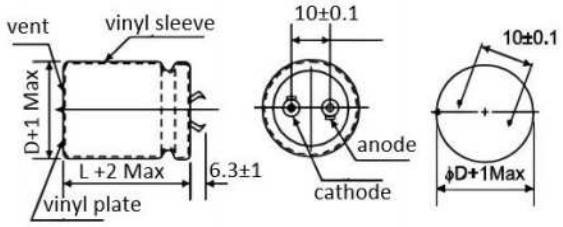
| W. V. (V) \ Freq. (Hz) | 60 | 120 | 500 | 1k | 10k up |
|---|---|---|---|---|---|
| Under 100 | 0.92 | 1.0 | 1.13 | 1.19 | 1.20 |
| 160 and Up | 0.81 | 1.0 | 1.32 | 1.45 | 1.50 |
| 350 and Up | 0.77 | 1.0 | 1.30 | 1.41 | 1.43 |

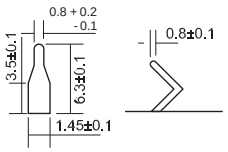
**Ripple Current & Temperature Multipliers**

| Temperature ( °C) | 40 | 55 | 70 | 85 |
|---|---|---|---|---|
| Multiplier | 2.1 | 1.8 | 1.5 | 1.0 |

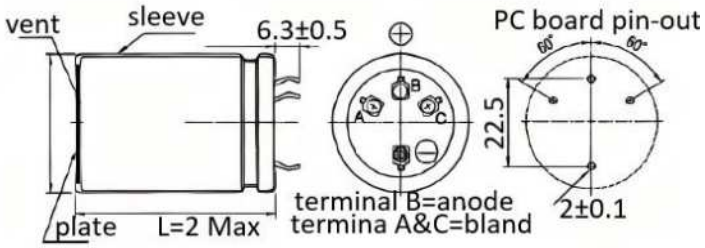
| | |
|---|---|
| Other Standards | Satisfies Characteristic W fo JIS C 5141 |

## SNAP-IN TERMINAL TYPE (2 TERMINAL)




## SNAP-IN TERMINAL (4 TERMINAL)



# CAIA SERIES: Snap-In Terminal Types

## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm); Ripple Current: A/RMS at 120Hz, 85°C

| WV / μF / DxL | 16V(1C) | | | | | | | | 25V(1E) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22Φ | | 25Φ | | 30Φ | | 35Φ | | 22Φ | | 25Φ | | 30Φ | | 35Φ | |
| 5,600 | | | | | | | | | 22 x 25 | 2.31 | | | | | | |
| 6,800 | | | | | | | | | 22 x 25 | 2.38 | 25 x 25 | 2.78 | | | | |
| | | | | | | | | | 22 x 30 | 2.56 | | | | | | |
| 8,200 | 22 x 25 | 2.56 | | | | | | | 22 x 25 | 2.43 | 25 x 25 | 2.78 | | | | |
| | | | | | | | | | 22 x 35 | 2.81 | | | | | | |
| 10,000 | 22 x 25 | 2.6 | 25 x 25 | 2.81 | | | | | 22 x 30 | 2.97 | 25 x 25 | 2.93 | 30 x 25 | 3.21 | | |
| | 22 x 30 | 2.81 | 25 x 30 | 3.03 | | | | | 22 x 35 | 3.18 | 25 x 30 | 3.16 | | | | |
| 12,000 | 22 x 25 | 2.88 | 25 x 25 | 2.96 | | | | | 22 x 35 | 3.33 | 25 x 30 | 3.24 | 30 x 25 | 3.59 | 35 x 25 | 3.58 |
| | 22 x 30 | 3.13 | | | | | | | 22 x 40 | 3.53 | 25 x 35 | 3.48 | 30 x 30 | 3.86 | | |
| 15,000 | 22 x 30 | 3.45 | 25 x 25 | 3.38 | 30 x 25 | 3.73 | | | 22 x 40 | 3.68 | 25 x 35 | 3.77 | 30 x 25 | 3.60 | 35 x 25 | 3.96 |
| | 22 x 35 | 3.69 | 25 x 30 | 3.64 | | | | | 22 x 50 | 4.08 | 25 x 40 | 4.00 | 30 x 35 | 4.12 | | |
| 18,000 | 22 x 30 | 3.47 | 25 x 25 | 3.47 | | | | | 22 x 50 | 4.54 | 25 x 40 | 4.42 | 30 x 30 | 4.40 | 35 x 25 | 4.34 |
| | 22 x 40 | 3.98 | 25 x 35 | 3.98 | | | | | | | 25 x 45 | 4.68 | 30 x 35 | 4.66 | 35 x 30 | 4.68 |
| 22,000 | 22 x 35 | 3.84 | 25 x 30 | 3.93 | 30 x 25 | 4.08 | 35 x 25 | 4.15 | | | 25 x 45 | 4.71 | 30 x 35 | 4.70 | 35 x 25 | 4.60 |
| | 22 x 50 | 4.52 | 25 x 40 | 4.44 | 30 x 30 | 4.38 | | | | | | | 30 x 45 | 5.26 | 35 x 35 | 5.20 |
| 27,000 | 22 x 50 | 4.84 | | | | | | | | | | | | | | |
| 33,000 | 22 x 50 | 5.2 | | | | | | | | | | | | | | |

| WV / μF / DxL | 35V(1V) | | | | | | | | 50V(1H | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22Φ | | 25Φ | | 30Φ | | 35Φ | | 22Φ | | 25Φ | | 30Φ | | 35Φ | |
| 2,200 | | | | | | | | | 22 x 25 | 1.93 | | | | | | |
| 2,700 | | | | | | | | | 22 x 25 | 2.05 | | | | | | |
| | | | | | | | | | 22 x 30 | 2.21 | | | | | | |
| 3,300 | | | | | | | | | 22 x 30 | 2.41 | 25 x 25 | 2.38 | | | | |
| 3,900 | | | | | | | | | 22 x 30 | 2.51 | 25 x 25 | 2.46 | | | | |
| | | | | | | | | | 22 x 35 | 2.72 | 25 x 30 | 2.68 | | | | |
| 4,700 | 22 x 25 | 2.21 | 25 x 25 | 2.42 | | | | | 22 x 35 | 2.83 | 25 x 30 | 3.03 | 30 x 25 | 3.01 | | |
| | 22 x 30 | 2.41 | | | | | | | 22 x 40 | 3.01 | | | | | | |
| 5,600 | 22 x 30 | 2.69 | 25 x 25 | 2.69 | | | | | 22 x 40 | 3.21 | 25 x 35 | 3.37 | 30 x 25 | 3.17 | 35 x 25 | 3.47 |
| | 22 x 35 | 2.79 | | | | | | | 22 x 45 | 3.43 | | | 30 x 30 | 3.43 | | |
| 6,800 | 22 x 35 | 2.70 | 25 x 25 | 2.67 | 30 x 25 | 3.09 | | | 22 x 45 | 3.73 | 25 x 35 | 3.59 | 30 x 30 | 3.56 | 35 x 25 | 3.64 |
| | 22 x 40 | 2.89 | 25 x 30 | 2.89 | | | | | 22 x 50 | 3.94 | 25 x 40 | 3.87 | 30 x 35 | 3.87 | | |
| 8,200 | 22 x 35 | 3.09 | 25 x 30 | 3.12 | 30 x 25 | 3.04 | | | | | 25 x 40 | 4.10 | 30 x 30 | 4.12 | 35 x 25 | 4.07 |
| | 22 x 45 | 3.47 | 25 x 35 | 3.33 | 30 x 30 | 3.29 | | | | | 25 x 45 | 4.37 | 30 x 35 | 4.42 | 35 x 30 | 4.41 |
| 10,000 | 22 x 40 | 3.22 | 25 x 35 | 3.37 | 30 x 25 | 3.36 | 35 x 25 | 3.32 | | | 25 x 50 | 4.91 | 30 x 35 | 4.68 | 35 x 30 | 4.59 |
| | 22 x 50 | 3.59 | 25 x 40 | 3.59 | 30 x 30 | 3.61 | | | | | | | 30 x 40 | 5.02 | 35 x 35 | 4.92 |
| 12,000 | 22 x 45 | 3.71 | 25 x 40 | 3.79 | 30 x 30 | 3.74 | 35 x 25 | 3.75 | | | | | 30 x 40 | 5.10 | 35 x 35 | 5.30 |
| | | | 25 x 45 | 4.01 | 30 x 35 | 4.01 | 35 x 30 | 4.02 | | | | | 30 x 50 | 5.60 | 35 x 40 | 5.60 |
| 15,000 | | | 25 x 45 | 4.55 | 30 x 35 | 4.54 | 35 x 25 | 4.37 | | | | | | | 35 x 40 | 6.03 |
| | | | | | 30 x 40 | 4.80 | 35 x 35 | 5.01 | | | | | | | 35 x 45 | 6.44 |
| 18,000 | | | 25 x 50 | 4.84 | 30 x 40 | 4.87 | 35 x 30 | 5.03 | | | | | | | | |
| | | | | | 30 x 45 | 5.18 | 35 x 40 | 5.71 | | | | | | | | |
| 22,000 | | | | | 30 x 45 | 5.79 | 35 x 35 | 5.71 | | | | | | | | |
| | | | | | | | 35 x 45 | 6.38 | | | | | | | | |

# CAIA SERIES: Snap-In Terminal Types

## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm); Ripple Current: A/RMS at 120Hz, 85°C

| WV / μF \ DxL | 35V(1V) | | | | | | | | 50V(1H | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22Φ | | 25Φ | | 30Φ | | 35Φ | | 22Φ | | 25Φ | | 30Φ | | 35Φ | |
| 2,200 | | | | | | | | | 22 x 25 | 1.93 | | | | | | |
| 2,700 | | | | | | | | | 22 x 25 | 2.05 | | | | | | |
| | | | | | | | | | 22 x 30 | 2.21 | | | | | | |
| 3,300 | | | | | | | | | 22 x 30 | 2.41 | 25 x 25 | 2.38 | | | | |
| 3,900 | | | | | | | | | 22 x 30 | 2.51 | 25 x 25 | 2.46 | | | | |
| | | | | | | | | | 22 x 35 | 2.72 | 25 x 30 | 2.68 | | | | |
| 4,700 | 22 x 25 | 2.21 | 25 x 25 | 2.42 | | | | | 22 x 35 | 2.83 | 25 x 30 | 3.03 | 30 x 25 | 3.01 | | |
| | 22 x 30 | 2.41 | | | | | | | 22 x 40 | 3.01 | | | | | | |
| 5,600 | 22 x 30 | 2.69 | 25 x 25 | 2.69 | | | | | 22 x 40 | 3.21 | 25 x 35 | 3.37 | 30 x 25 | 3.17 | 35 x 25 | 3.47 |
| | 22 x 35 | 2.79 | | | | | | | 22 x 45 | 3.43 | | | 30 x 30 | 3.43 | | |
| 6,800 | 22 x 35 | 2.70 | 25 x 25 | 2.67 | 30 x 25 | 3.09 | | | 22 x 45 | 3.73 | 25 x 35 | 3.59 | 30 x 30 | 3.56 | 35 x 25 | 3.64 |
| | 22 x 40 | 2.89 | 25 x 30 | 2.89 | | | | | 22 x 50 | 3.94 | 25 x 40 | 3.87 | 30 x 35 | 3.87 | | |
| 8,200 | 22 x 35 | 3.09 | 25 x 30 | 3.12 | 30 x 25 | 3.04 | | | | | 25 x 40 | 4.10 | 30 x 30 | 4.12 | 35 x 25 | 4.07 |
| | 22 x 45 | 3.47 | 25 x 35 | 3.33 | 30 x 30 | 3.29 | | | | | 25 x 45 | 4.37 | 30 x 35 | 4.42 | 35 x 30 | 4.41 |
| 10,000 | 22 x 40 | 3.22 | 25 x 35 | 3.37 | 30 x 25 | 3.36 | 35 x 25 | 3.32 | | | 25 x 50 | 4.91 | 30 x 35 | 4.68 | 35 x 30 | 4.59 |
| | 22 x 50 | 3.59 | 25 x 40 | 3.59 | 30 x 30 | 3.61 | | | | | | | 30 x 40 | 5.02 | 35 x 35 | 4.92 |
| 12,000 | 22 x 45 | 3.71 | 25 x 40 | 3.79 | 30 x 30 | 3.74 | 35 x 25 | 3.75 | | | | | 30 x 40 | 5.10 | 35 x 35 | 5.30 |
| | | | 25 x 45 | 4.01 | 30 x 35 | 4.01 | 35 x 30 | 4.02 | | | | | 30 x 50 | 5.60 | 35 x 40 | 5.60 |
| 15,000 | | | 25 x 45 | 4.55 | 30 x 35 | 4.54 | 35 x 25 | 4.37 | | | | | | | 35 x 40 | 6.03 |
| | | | | | 30 x 40 | 4.80 | 35 x 35 | 5.01 | | | | | | | 35 x 45 | 6.44 |
| 18,000 | | | 25 x 50 | 4.84 | 30 x 40 | 4.87 | 35 x 30 | 5.03 | | | | | | | | |
| | | | | | 30 x 45 | 5.18 | 35 x 40 | 5.71 | | | | | | | | |
| 22,000 | | | | | 30 x 45 | 5.79 | 35 x 35 | 5.71 | | | | | | | | |
| | | | | | | | 35 x 45 | 6.38 | | | | | | | | |

| WV / μF \ DxL | 63V(1J) | | | | | | | | 100V(2A) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22Φ | | 25Φ | | 30Φ | | 35Φ | | 22Φ | | 25Φ | | 30Φ | | 35Φ | |
| 1,200 | | | | | | | | | 22 x 30 | 2.12 | 25 x 25 | | | | | |
| 1,500 | | | | | | | | | 22 x 35 | 2.45 | 25 x 30 | | 30 x 25 | 2.46 | | |
| 1,800 | 22 x 25 | 1.90 | | | | | | | 22 x 40 | 2.77 | 25 x 35 | | 30 x 25 | 2.65 | | |
| 2,200 | 22 x 30 | 2.35 | 25 x 25 | 2.30 | | | | | 22 x 45 | 3.12 | 25 x 40 | | 30 x 30 | 3.10 | 35 x 25 | 3.14 |
| 2,700 | 22 x 35 | 2.50 | 25 x 25 | 2.29 | | | | | | | 25 x 45 | | 30 x 35 | 3.60 | 35 x 30 | 3.71 |
| | 22 x 30 | | 25 x 30 | 2.52 | | | | | | | | | | | | |
| 3,300 | 22 x 35 | 2.62 | 25 x 30 | 2.69 | 30 x 25 | 2.78 | | | | | 25 x 50 | | 30 x 40 | 4.05 | 35 x 35 | 4.07 |
| 3,900 | 22 x 40 | 2.90 | 25 x 35 | 3.09 | 30 x 30 | 3.09 | | | | | | | 30 x 45 | 4.60 | 35 x 35 | 4.50 |
| | 22 x 45 | 3.10 | | | | | | | | | | | | | | |
| 4,700 | 22 x 50 | 3.49 | 25 x 40 | 3.37 | 30 x 30 | 3.37 | 35 x 25 | 3.36 | | | | | 30 x 50 | 5.13 | 35 x 40 | 5.12 |
| 5,600 | | | 25 x 45 | 3.77 | 30 x 35 | 3.75 | 35 x 30 | 3.88 | | | | | | | 35 x 45 | 5.75 |
| 6,800 | | | 25 x 50 | 4.41 | 30 x 40 | 4.41 | 35 x 30 | 4.04 | | | | | | | 35 x 50 | 6.01 |
| | | | | | | 4.90 | 35 x 35 | 4.33 | | | | | | | | |
| 8,200 | | | | | 30 x 45 | 5.49 | 35 x 35 | 4.80 | | | | | | | | |
| 10,000 | | | | | 30 x 50 | | 35 x 40 | 5.47 | | | | | | | | |
| 12,000 | | | | | | | 35 x 45 | 5.97 | | | | | | | | |
| | | | | | | | 35 x 50 | 6.30 | | | | | | | | |

# CAIA SERIES: Snap-In Terminal Types

## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm); Ripple Current: A/RMS at 120Hz, 85°C

| WV / μF / DxL | 160V(2C) | | | | | | | | 200V(2D) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22Φ | | 25Φ | | 30Φ | | 35Φ | | 22Φ | | 25Φ | | 30Φ | | 35Φ | |
| 150 | 22 x 25 | 0.95 | | | | | | | 22 x 25 | 0.95 | | | | | | |
| 180 | 22 x 25 | 1.04 | | | | | | | 22 x 25 | 1.04 | | | | | | |
| 220 | 22 x 25 | 1.15 | | | | | | | 22 x 25 | 1.15 | | | | | | |
| 270 | 20 x 25 | 1.12 | | | | | | | | | | | | | | |
| | 22 x 25 | 1.27 | | | | | | | 22 x 25 | 1.30 | | | | | | |
| 330 | 20 x 30 | 1.28 | | | | | | | 22 x 30 | 1.40 | 25 x 25 | 1.43 | | | | |
| | 22 x 25 | 1.4 | | | | | | | | | | | | | | |
| 390 | 22 x 30 | 1.62 | | | | | | | 22 x 30 | 1.65 | 25 x 25 | 1.63 | | | | |
| | | | | | | | | | 22 x 35 | 1.76 | 25 x 30 | 1.74 | | | | |
| 470 | 22 x 30 | 1.77 | 25 x 25 | 1.77 | | | | | 22 x 35 | 1.88 | 25 x 30 | 1.86 | 30 x 25 | 1.85 | | |
| | | | | | | | | | 22 x 40 | 1.97 | | | | | | |
| 560 | 22 x 30 | 1.92 | 25 x 25 | 1.92 | 30 x 25 | 2.02 | | | 22 x 40 | 2.08 | 25 x 30 | 2.05 | 30 x 25 | 2.05 | | |
| | 22 x 35 | 2.05 | 25 x 30 | 2.05 | | | | | 22 x 45 | 2.18 | 25 x 35 | 2.16 | 30 x 30 | 2.15 | | |
| 680 | 22 x 35 | 2.12 | 25 x 30 | 2.22 | 30 x 25 | 2.22 | | | 22 x 45 | 2.36 | 25 x 35 | 2.36 | 30 x 30 | 2.36 | 35 x 25 | 2.10 |
| | 22 x 40 | 2.24 | 25 x 35 | 2.31 | | | | | 22 x 50 | 2.47 | 25 x 40 | 2.43 | 30 x 35 | 2.43 | | |
| 820 | 22 x 40 | 2.32 | 25 x 30 | 2.32 | 30 x 25 | 2.31 | 35 x 25 | 2.50 | 22 x 50 | 2.68 | 25 x 40 | 2.66 | 30 x 30 | 2.62 | 35 x 30 | 2.72 |
| | 22 x 45 | 2.55 | 25 x 35 | 2.52 | 30 x 30 | 2.51 | | | | | 25 x 45 | 2.79 | 30 x 35 | 2.77 | 35 x 25 | 2.39 |
| 1,000 | 22 x 50 | 2.88 | 25 x 40 | 2.86 | 30 x 30 | 2.82 | 35 x 25 | 2.79 | | | 25 x 45 | 2.96 | 30 x 35 | 3.00 | 35 x 30 | 2.96 |
| | | | 25 x 45 | 2.98 | 30 x 35 | 2.94 | 35 x 30 | 2.92 | | | 25 x 50 | 3.12 | 30 x 40 | 3.10 | 35 x 35 | 3.09 |
| 1,200 | | | 25 x 45 | 3.27 | 30 x 35 | 3.25 | 35 x 30 | 3.24 | | | 25 x 50 | 3.44 | 30 x 40 | 3.44 | 35 x 35 | 3.40 |
| | | | 25 x 50 | 3.43 | 30 x 40 | 3.42 | 35 x 35 | 3.40 | | | | | 30 x 45 | 3.53 | 35 x 40 | 3.50 |
| 1,500 | | | | | 30 x 40 | 3.77 | 35 x 35 | 3.75 | | | | | 30 x 50 | 3.93 | 35 x 40 | 3.87 |
| | | | | | 30 x 45 | 3.92 | 35 x 40 | 3.90 | | | | | | | 35 x 45 | 3.95 |
| 1,800 | | | | | 30 x 45 | 4.10 | 35 x 35 | 4.08 | | | | | | | 35 x 45 | 4.37 |
| | | | | | 30 x 50 | 4.32 | 35 x 40 | 4.30 | | | | | | | 35 x 50 | 4.45 |
| 2,200 | | | | | | | 35 x 45 | 4.72 | | | | | | | 35 x 50 | 5.00 |
| | | | | | | | 35 x 50 | 4.88 | | | | | | | | |

| WV / μF / DxL | 250V(2E) | | | | | | | | 350V(2V) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22Φ | | 25Φ | | 30Φ | | 35Φ | | 22Φ | | 25Φ | | 30Φ | | 35Φ | |
| 82 | | | | | | | | | 22 x 25 | 0.81 | | | | | | |
| 100 | | | | | | | | | 22 x 25 | 0.90 | | | | | | |
| 120 | | | | | | | | | 20 x 30 | 0.95 | 25 x 25 | 1.04 | | | | |
| | | | | | | | | | 22 x 25 | 0.99 | | | | | | |
| | | | | | | | | | 22 x 30 | 1.05 | | | | | | |
| 150 | | | | | | | | | 20 x 35 | 1.05 | 25 x 25 | 1.16 | 30 x 25 | 1.24 | | |
| | 22 x 25 | 0.91 | | | | | | | 22 x 30 | 1.14 | | | | | | |
| | | | | | | | | | 22 x 35 | 1.24 | 25 x 30 | 1.24 | | | | |
| 180 | 22 x 25 | 1.01 | | | | | | | 20 x 40 | 1.23 | 25 x 30 | 1.30 | 30 x 25 | 1.37 | | |
| | | | | | | | | | 22 x 35 | 1.28 | | | | | | |
| | | | | | | | | | 22 x 40 | 1.38 | 25 x 35 | 1.37 | | | | |
| 220 | 22 x 25 | 1.18 | 25 x 25 | 1.24 | | | | | 20 x 45 | 1.36 | 25 x 35 | 1.46 | 30 x 25 | 1.47 | | |
| | | | | | | | | | 22 x 40 | 1.40 | | | | | | |
| | 22 x 30 | 1.27 | | | | | | | 22 x 45 | 1.49 | 25 x 40 | 1.51 | 30 x 30 | 1.52 | | |
| 270 | 22 x 30 | 1.43 | 25 x 25 | 1.49 | | | | | 22 x 45 | 1.62 | 25 x 35 | 1.65 | 30 x 30 | 1.71 | 35 x 25 | 1.72 |
| | 22 x 35 | 1.52 | | | | | | | 22 x 50 | 1.69 | 25 x 40 | 1.73 | 30 x 35 | 1.76 | | |
| 330 | 22 x 30 | 1.58 | 25 x 25 | 1.53 | 30 x 25 | 1.59 | | | 22 x 50 | 1.94 | 25 x 40 | 1.88 | 30 x 35 | 1.93 | 35 x 25 | 1.77 |
| | 22 x 35 | 1.67 | 25 x 30 | 1.62 | | | | | | | 25 x 45 | 1.96 | 30 x 40 | 1.98 | 35 x 30 | 1.96 |
| 390 | 22 x 35 | 1.79 | 25 x 30 | 1.79 | 30 x 25 | 1.77 | | | | | 25 x 45 | 2.04 | 30 x 35 | 2.12 | 35 x 30 | 2.19 |
| | 22 x 40 | 1.89 | 25 x 35 | 1.87 | 30 x 30 | 1.85 | | | | | | | 30 x 40 | 2.18 | 35 x 35 | 2.24 |
| 470 | 22 x 40 | 2.05 | 25 x 35 | 2.05 | 30 x 25 | 1.80 | | | | | | | 30 x 40 | 2.41 | 35 x 35 | 2.43 |
| | 22 x 45 | 2.14 | | | 30 x 30 | 2.03 | | | | | | | 30 x 45 | 2.48 | 35 x 40 | 2.50 |
| 560 | 22 x 50 | 2.43 | 25 x 40 | 2.32 | 30 x 30 | 2.24 | 35 x 25 | 2.21 | | | | | 30 x 45 | 2.60 | 35 x 35 | 2.62 |
| | | | 25 x 45 | 2.41 | 30 x 35 | 2.32 | 35 x 30 | 2.30 | | | | | | | 35 x 40 | 2.69 |
| 680 | | | 25 x 45 | 2.62 | 30 x 35 | 2.58 | 35 x 30 | 2.54 | | | | | | | 35 x 40 | 2.80 |
| | | | 25 x 50 | 2.70 | 30 x 40 | 2.65 | 35 x 35 | 2.62 | | | | | | | 35 x 45 | 3.08 |
| 820 | | | | | 30 x 40 | 2.92 | 35 x 35 | 2.90 | | | | | | | | |
| | | | | | 30 x 45 | 3.00 | 35 x 40 | 2.98 | | | | | | | | |
| 1,000 | | | | | 30 x 45 | 3.11 | 35 x 35 | 3.06 | | | | | | | | |
| | | | | | 30 x 50 | 3.47 | 35 x 40 | 3.39 | | | | | | | | |
| | | | | | | | 35 x 45 | 3.45 | | | | | | | | |
| 1,200 | | | | | | | 35 x 40 | 3.39 | | | | | | | | |
| | | | | | | | 35 x 45 | 3.74 | | | | | | | | |
| | | | | | | | 35 x 50 | 3.81 | | | | | | | | |

# CAIA SERIES: Snap-In Terminal Types

## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm); Ripple Current: A/RMS at 120Hz, 85°C

| WV / μF | 400V(2G) | | | | | | | | 450V(2W) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DxL | 22Φ | | 25Φ | | 30Φ | | 35Φ | | 22Φ | | 25Φ | | 30Φ | | 35Φ | |
| 56 | | | | | | | | | 20 x 25 | 0.57 | | | | | | |
| | | | | | | | | | 22 x 25 | 0.68 | | | | | | |
| 68 | 20 x 25 | 0.66 | | | | | | | 20 x 25 | 0.62 | | | | | | |
| | 22 x 25 | 0.72 | | | | | | | 22 x 25 | 0.72 | | | | | | |
| | | | | | | | | | 22 x 30 | 0.80 | | | | | | |
| 82 | 20 x 25 | 0.72 | | | | | | | 20 x 30 | 0.74 | 25 x 25 | 0.85 | | | | |
| | 22 x 25 | 0.80 | | | | | | | 22 x 30 | 0.87 | | | | | | |
| 100 | 22 x 25 | 0.81 | | | | | | | 20 x 35 | 0.87 | 25 x 25 | 0.98 | | | | |
| | 22 x 30 | 0.94 | 25 x 25 | 0.97 | | | | | 22 x 30 | 0.87 | | | | | | |
| | | | | | | | | | 22 x 35 | 1.00 | | | | | | |
| 120 | 22 x 30 | 1.04 | 25 x 25 | 1.08 | | | | | 20 x 40 | 0.96 | 25 x 30 | 1.09 | 30 25 | 1.10 | | |
| | 22 x 35 | 1.12 | 25 x 30 | 1.16 | | | | | 22 x 35 | 1.05 | | | | | | |
| | | | | | | | | | 22 x 40 | 1.15 | 25 x 35 | 1.12 | | | | |
| 150 | 20 x 35 | 1.00 | 25 x 30 | 1.21 | | | | | 20 x 45 | 1.13 | 25 x 30 | 1.16 | 30 x 25 | 1.16 | | |
| | 22 x 35 | 1.18 | | | 30 x 25 | 1.24 | | | 22 x 35 | 1.20 | 25 x 35 | 1.27 | 30 x 30 | 1.32 | | |
| | 22 x 40 | 1.25 | | | | | | | 22 x 40 | 1.25 | 25 x 40 | 1.35 | | | | |
| 180 | 20 x 40 | 1.17 | 25 x 30 | 1.23 | 30 x 25 | 1.45 | | | 20 x 50 | 1.29 | 25 x 35 | 1.31 | | | 35 x 25 | 1.35 |
| | 22 x 40 | 1.34 | 25 x 35 | 1.37 | 30 x 30 | 1.52 | 35 25 | 1.54 | 22 x 45 | 1.36 | 25 x 40 | 1.45 | 30 x 30 | 1.43 | 35 x 30 | 1.49 |
| | 22 x 45 | 1.40 | | | | | | | 22 x 50 | 1.51 | 25 x 45 | 1.50 | 30 x 35 | 1.49 | | |
| 220 | 20 x 50 | 1.43 | 25 x 35 | 1.56 | 30 x 30 | 1.58 | 35 25 | 1.6 | | | 25 x 40 | 1.47 | 30 x 30 | 1.45 | 35 x 25 | 1.43 |
| | 22 x 50 | 1.56 | 25 x 40 | 1.62 | 30 x 35 | 1.64 | | | | | 25 x 45 | 1.65 | 30 x 35 | 1.63 | 35 x 30 | 1.61 |
| | 22 x 50 | 1.56 | | | | | | | | | 25 x 50 | 1.73 | 30 x 40 | 1.72 | | |
| 270 | 22 x 50 | 1.74 | 25 x 40 | 1.70 | 30 x 30 | 1.56 | 35 x 25 | 1.53 | | | 25 x 45 | 1.59 | 30 x 35 | 1.65 | 35 x 30 | 1.71 |
| | | | 25 x 45 | 1.76 | 30 x 35 | 1.73 | 35 x 30 | 1.75 | | | 25 x 50 | 1.72 | 30 x 40 | 1.83 | 35 x 35 | 1.86 |
| | | | | | 30 x 40 | 1.79 | | | | | | | 30 x 45 | 1.95 | | |
| 330 | | | 25 x 45 | 1.76 | 30 x 35 | 1.76 | 35 x 30 | 1.95 | | | 25 x 50 | 1.76 | 30 x 40 | 1.93 | 35 x 30 | 1.88 |
| | | | 25 x 50 | 1.90 | 30 x 40 | 1.97 | 35 x 35 | 2.02 | | | | | 30 x 45 | 2.10 | 35 x 35 | 2.06 |
| | | | | | 30 x 45 | 2.02 | | | | | | | 30 x 50 | 2.19 | 35 x 40 | 2.13 |
| 390 | | | 25 x 50 | 1.95 | 30 x 40 | 2.15 | 35 x 30 | 1.97 | | | | | 30 x 45 | 2.03 | 35 x 35 | 2.00 |
| | | | | | 30 x 45 | 2.22 | 35 x 35 | 2.17 | | | | | 30 x 50 | 2.24 | 35 x 40 | 2.11 |
| | | | | | | | 35 x 40 | 2.24 | | | | | | | 35 x 45 | 2.34 |
| 470 | | | | | 30 x 45 | 2.23 | 35 x 35 | 2.20 | | | | | 30 x 50 | 2.33 | 35 x 45 | 2.43 |
| | | | | | 30 x 50 | 2.40 | 35 x 40 | 2.42 | | | | | | | 35 x 50 | 2.63 |
| | | | | | | | 35 x 45 | 2.48 | | | | | | | | |
| 560 | | | | | 30 x 50 | 2.44 | 35 x 40 | 2.49 | | | | | | | 35 x 45 | 2.60 |
| | | | | | | | 35 x 45 | 2.71 | | | | | | | | |
| | | | | | | | 35 x 50 | 2.78 | | | | | | | | |
| 680 | | | | | | | 35 x 45 | 2.68 | | | | | | | 35 x 50 | 2.91 |
| | | | | | | | 35 x 50 | 2.95 | | | | | | | | |

| WV / μF | 500V(2H) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DxL | 22Φ | | 25Φ | | 30Φ | | 35Φ | |
| 56 | 22 x 25 | 0.70 | | | | | | |
| 68 | 22 x 30 | 0.82 | | | | | | |
| 82 | 22 x 35 | 0.96 | 25 30 | 0.97 | | | | |
| 100 | 22 x 40 | 1.14 | 25 35 | 1.15 | 30 x 30 | 1.16 | | |
| 120 | 22 x 45 | 1.30 | 25 35 | 1.25 | 30 x 30 | 1.26 | 35 x 25 | 1.20 |
| 150 | 22 x 50 | 1.52 | 25 40 | 1.48 | 30 x 35 | 1.50 | 35 x 30 | 1.34 |
| 180 | | | 25 50 | 1.65 | 30 x 40 | 1.60 | 35 x 30 | 1.55 |
| 220 | | | | | 30 x 45 | 1.90 | 35 x 30 | 1.85 |
| 270 | | | | | | | 35 x 40 | 1.95 |
| 330 | | | | | | | 35 x 45 | 2.00 |

# CAIA SERIES: Snap-In Terminal Types

## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm); Ripple Current: A/RMS at 120Hz, 85°C

Items below available only in 4 Terminal Types (L4)

| WV / μF / DxL | 160V(2C) | | | | 200V(2D) | | | | 250V(2E) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 35ϕ | | 40ϕϕ | | 35ϕ | | 40ϕ | | 35ϕ | | 40ϕ | |
| 1,500 | | | | | | | | | | | 40 x 40 | 4.04 |
| 1,800 | | | | | | | | | 35 x 70 | 4.60 | 40 x 50 | 4.5 |
| 2,200 | | | | | | | 40 x 40 | 4.92 | 35 x 80 | 4.90 | 40 x 60 | 4.90 |
| 2,700 | | | | | 35 x 70 | 5.40 | 40 x 50 | 5.00 | 35 x 90 | 5.40 | 40 x 80 | 6.30 |
| 3,300 | 35 x 70 | 4.80 | 40 x 60 | 5.00 | 35 x 80 | 5.90 | 40 x 60 | 5.90 | 35 x 90 | 6.10 | 40 x 80 | 7.00 |
| 3,900 | 35 x 80 | 5.40 | 40 x 70 | 5.60 | 35 x 80 | 6.30 | 40 x 80 | 6.40 | 35 x 100 | 7.47 | 40 x 90 | 8.00 |
| 4,700 | | | 40 x 80 | 6.60 | 35 x 90 | 7.10 | 40 x 80 | 7.38 | | | 40 x 100 | 8.88 |
| 5,600 | | | | | 35 x 100 | 8.90 | 40 x 90 | 8.00 | | | | |
| 6,800 | | | | | | | 40 x 100 | 8.65 | | | | |

| WV / μF / DxL | 400V(2G) | | | | 420V(2P) | | | | 450V(2W) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 35ϕ | | 40ϕ | | 35ϕ | | 40ϕ | | 35ϕ | | 40ϕ | |
| 680 | 35 x 60 | 3.70 | 40 x 50 | 3.7 | 35 x 60 | 3.7 | 40 x 50 | 3.7 | 35 x 70 | 4.0 | 40 x 50 | 3.7 |
| 820 | 35 x 60 | 4.10 | 40 x 50 | 4.0 | 35 x 70 | 4.4 | 40 x 60 | 4.3 | 35 x 80 | 4.6 | 40 x 60 | 4.3 |
| 1,000 | 35 x 70 | 4.80 | 40 x 60 | 4.8 | 35 x 80 | 5.1 | 40 x 60 | 4.8 | 35 x 100 | 5.6 | 40 x 70 | 5.1 |
| 1,200 | 35 x 100 | 6.10 | 40 x 70 | 5.5 | | | 40 x 70 | 5.5 | | | 40 x 80 | 5.8 |
| 1,500 | 35 x 100 | 6.80 | 40 x 80 | 6.5 | | | 40 x 100 | 7.2 | | | 40 x 100 | 7.2 |
| 1,800 | | | 40 x 100 | 7.8 | | | 40 x 100 | 7.8 | | | | |

## PART NUMBER EXAMPLE

CAIA 101 M 2G 220 300

- 300 — Blank =6.3mm A=4mm L4 =4 terminals
- 220 — Case Size (22mm X 30mm)
- 2G — Rated Voltage (400V)
- M — Capacitance tolerance (±20%)
- 101 — Capacitance (100μF)
- CAIA — Series name



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# CAIB SERIES: Snap-In & Lug Terminal Types, 85°C



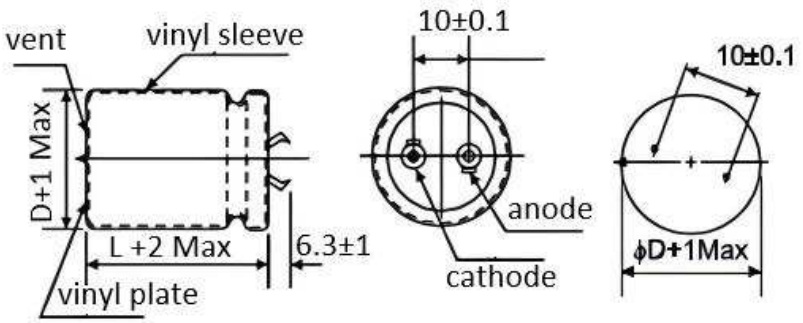

## FEATURES

- Snap-in & Lug 2000 Hrs, 85°C
- Fail-Safe, will fail open without flame if excessive voltage is applied
- RoHS Compliant

## SPECIFICATIONS

| Items | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40°C ~ +85°C | | | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20°C) | | | | | | |
| Leakage Current (at 20°C) | I = 0.02CV or1.5 mA whichever is smaller (after 5 minutes) Where, C= rated capacitance in μF. V= rated DC working voltage in V. | | | | | | |
| Dissipation Factor (Tan at 120Hz, 20°C) | Rated Voltage | 200 | 250 | 400 | 450 | | |
| | Tan (max) | 0.15 | 0.15 | 0.20 | 0.20 | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | |
| | Rated Voltage | | | 200 | 250 | 400 | 450 |
| | Impedance Ratio | Z(-25°C)/Z(+20°C) | | 4 | 4 | 8 | 8 |
| | | Z(-40°C)/Z(+20°C) | | 8 | 10 | 18 | 20 |
| Load Life Test | Test Time | 2,000 Hrs | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hrs at 85°C | | | | | | |
| Shelf Life Test | Test Time | 1,000 Hrs | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | |
| | Dissipation Factor | Less than 150% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hrs at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5102) | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / W. V. (V) | 50/60 | 120 | 300 | 1K | 10K up | |
| | Multiplier | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | |
| Ripple Current & Temperature Multipliers | Temperature ( C ) | 40 | 60 | 70 | 85 | | |
| | Multiplier | 1.8 | 1.4 | 1.2 | 1.0 | | |
| Safety Fundtion Test Conditions | 1. DC reverse voltage test: The capacitor is shall be connected in reverse polarity, and applied under specified working voltage. | | | | | | |
| | 2. DC over voltage test: The rated voltage of 1.2 times shall be applied to the capacitor. | | | | | | |
| Other Standards | JIS C 5101-4 | | | | | | |

## SNAP-IN TERMINAL TYPE



# CAIB SERIES: Snap-In Lug and Terminal Types, 85°C

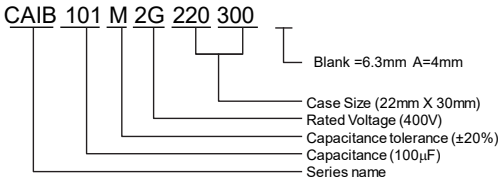
## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm); Ripple Current: A/RMS at 120Hz, 85°C

| Cap. \ WV | 200V (2D) | | | | | | | | 250V (2E) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DxL | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | |
| 180 | | | | | | | | | 22 x 25 | 1.01 | | | | | | |
| 220 | 22 x 25 | 1.15 | | | | | | | 22 x 30 | 1.27 | 25 x 25 | 1.24 | | | | |
| 270 | 22 x 25 | 1.30 | | | | | | | 22 x 35 | 1.52 | 25 x 25 | 1.49 | | | | |
| 330 | 22 x 30 | 1.44 | 25 x 25 | 1.43 | | | | | 22 x 40 | 1.77 | 25 x 30 | 1.62 | 30 x 25 | 1.59 | | |
| 470 | 22 x 35 | 1.88 | 25 x 30 | 1.86 | 30 x 25 | 1.85 | | | 22 x 50 | 2.24 | 25 x 35 | 2.05 | 30 x 30 | 2.03 | 35 x 25 | 2.01 |
| 560 | 22 x 45 | 2.18 | 25 x 35 | 2.16 | 30 x 25 | 2.05 | | | | | 25 x 40 | 2.32 | 30 x 30 | 2.24 | 35 x 25 | 2.21 |
| 680 | 22 x 50 | 2.47 | 25 x 35 | 2.36 | 30 x 30 | 2.36 | 35 x 25 | 2.30 | | | 25 x 50 | 2.70 | 30 x 35 | 2.58 | 35 x 30 | 2.54 |
| 820 | | | 25 x 45 | 2.79 | 30 x 30 | 2.62 | 35 x 25 | 2.53 | | | | | 30 x 40 | 2.92 | 35 x 35 | 2.90 |
| 1,000 | | | 25 x 50 | 2.96 | 30 x 35 | 3.00 | 35 x 30 | 2.96 | | | | | 30 x 45 | 3.31 | 35 x 35 | 3.21 |
| 1,200 | | | | | 30 x 40 | 3.44 | 35 x 35 | 3.40 | | | | | | | 35 x 40 | 3.56 |
| 1,500 | | | | | 30 x 50 | 3.93 | 35 x 40 | 3.87 | | | | | | | 35 x 50 | 4.26 |
| 1,800 | | | | | | | 35 x 45 | 4.37 | | | | | | | | |

| Cap. \ WV | 400V (2G) | | | | | | | | 450V (2W) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DxL | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | |
| 47 | | | | | | | | | 22 x 25 | 0.62 | | | | | | |
| 68 | | | | | | | | | 22 x 30 | 0.80 | 25 x 25 | 0.77 | | | | |
| 82 | 22 x 25 | 0.80 | | | | | | | 22 x 30 | 0.87 | 25 x 25 | 0.85 | | | | |
| 100 | 22 x 30 | 0.94 | 25 x 25 | 0.97 | | | | | 22 x 35 | 1.00 | 25 x 30 | 1.05 | 30 x 25 | 1.09 | | |
| 120 | 22 x 35 | 1.12 | 25 x 25 | 1.08 | | | | | 22 x 40 | 1.15 | 25 x 30 | 1.09 | 30 x 25 | 1.10 | | |
| 150 | 22 x 40 | 1.25 | 25 x 30 | 1.21 | 30 x 25 | 1.24 | | | 22 x 45 | 1.25 | 25 x 35 | 1.27 | 30 x 30 | 1.32 | 35 x 25 | 1.35 |
| 180 | 22 x 45 | 1.40 | 25 x 35 | 1.37 | 30 x 25 | 1.45 | | | | | 25 x 40 | 1.45 | 30 x 30 | 1.43 | 35 x 25 | 1.39 |
| 220 | 22 x 50 | 1.56 | 25 x 40 | 1.62 | 30 x 30 | 1.58 | 35 x 25 | 1.60 | | | 25 x 45 | 1.65 | 30 x 35 | 1.63 | 35 x 30 | 1.61 |
| 270 | | | 25 x 45 | 1.76 | 30 x 35 | 1.73 | 35 x 30 | 1.75 | | | | | 30 x 45 | 1.95 | 35 x 35 | 1.86 |
| 330 | | | | | 30 x 40 | 1.97 | 385 x 30 | 1.95 | | | | | 30 x 45 | 2.10 | 35 x 35 | 2.06 |
| 390 | | | | | 30 x 45 | 2.22 | 35 x 35 | 2.17 | | | | | 30 x 50 | 2.24 | 35 x 45 | 2.34 |
| 470 | | | | | 30 x 50 | 2.40 | 35 x 40 | 2.42 | | | | | | | 35 x 50 | 2.63 |
| 560 | | | | | | | 35 x 45 | 2.71 | | | | | | | | |

## PART NUMBER EXAMPLE



# CAIC SERIES: Snap-in Terminal Type, 105°C



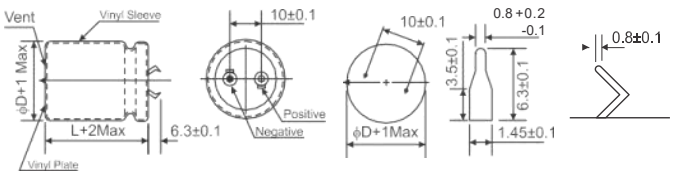

## FEATURES

- Has a snap-in terminal which can solder to a PCB directly and need not fixture to s processing time.
- Suitable for electronic equipment with medium-high voltage circuits.
- Printed circuit board terminal snap-in type and lug terminal type available.

## SPECIFICATIONS

| Item | Performance | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40°C ~ +105°C | | | | | | | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | | | | | | | |
| Leakage Current (at 20°C) | I = 0.02CV (μA after 2minutes)<br>Where, C = rated capacitance in μF. V=rated DC working voltage in V. | | | | | | | | | | | | |
| Dissipaton Factor (Tanδ ) | Rated Voltage | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | Tanδ (max) | 0.40 | 0.30 | 0.25 | 0.20 | 0.15 | 0.15 | 0.10* | 0.10* | 0.10* | 0.15* | 0.15 | 0.15 |
| | 0.15 for D = 35mm | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Rated Voltage | | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | Impedance Ratio | Z(-25°C)/Z(=20°C) | 4 | 3 | 3 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 8 | 8 |
| | | Z(-40°C)/Z(=20°C) | 15 | 10 | 8 | 6 | 6 | 5 | 4 | 8 | 10 | 16 | 18 | 20 |
| | Impedance ratio shall not exceed the vaues given in the table above | | | | | | | | | | | | | |
| Load Life Test (after application of the rated voltage at 85°C/105°C, the polarity inverted every 250 hours.) | Test Time | 2000 Hrs | | | | | | | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specifiec value | | | | | | | | | | | |
| | Leakage Current | Within specified values | | | | | | | | | | | |
| | The above specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 2000 hrs at 85°C/105°C | | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1000 Hrs | | | | | | | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specifiec value | | | | | | | | | | | |
| | Leakage Current | Within specified values | | | | | | | | | | | |
| | The above specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hrs at 85°C/105°C without voltage applied. | | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq.(Hz) / W.V.(V) | 60 | 120 | 500 | 1K | 10K up | | | | | | | |
| | Under 100 | 0.92 | 1.00 | 1.13 | 1.19 | 1.20 | | | | | | | |
| | 160 ~ 250 | 0.81 | 1.00 | 1.32 | 1.45 | 1.50 | | | | | | | |
| | 350 and up | 0.77 | 1.00 | 1.30 | 1.41 | 1.43 | | | | | | | |
| Ripple Current & Temperature Multipliers | Temperature (°C) | 55 | 70 | 85 | 105 | | | | | | | | |
| | Multiplier | 2.1 | 1.8 | 1.5 | 1.0 | | | | | | | | |
| Standards | Satisfies Characteristic W of JIS C 5141 | | | | | | | | | | | | |

## SNAP-IN TERMINAL TYPE




## PART NUMBER EXAMPLE

CAIC 101 M 2G 220 300

- Blank =6.3mm A=4mm terminal
- Case Size (22mm X 30mm)
- Rated Voltage (400V)
- Capacitance tolerance (±20%)
- Capacitance (100μF)
- Series name

# CAIC SERIES: Snap-in Terminal Type, 105°C

## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm): Ripple Current: A/RMS at 120Hz, 105°C

| V.D.C. / μF | DxL | 16V (1C) | | | | | | | | 25V (1E) | | | | | | | | 35V (1V) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | |
| 4700 | 472 | | | | | | | | | 22x25 | 1.50 | | | | | | | | | 25x25 | 1.80 | | | | |
| 5600 | 562 | | | | | | | | | 22x25 | 1.72 | | | | | | | 22 x 35 | 1.95 | 25x60 | 1.96 | 30x25 | 2 | | |
| 6800 | 682 | 22x25 | 1.57 | | | | | | | 22x30 | 1.86 | 25x25 | 1.87 | | | | | 22 x 40 | 2.20 | 25x35 | 2.23 | | | | |
| 8200 | 822 | 22x25 | 1.94 | | | | | | | 22x35 | 2.11 | 25x30 | 2.12 | 30x25 | 2.15 | | | 22 x 50 | 2.55 | 25x40 | 2.53 | 30x30 | 2.75 | 35x25 | 2.75 |
| 10000 | 103 | 22x30 | 1.94 | 25x30 | 2.12 | | | | | 22x40 | 2.39 | 25x35 | 2.42 | | | | | | | 25x45 | 2.87 | 30x35 | 2.90 | | |
| 12000 | 123 | 22x35 | 2.22 | 25x30 | 2.24 | 30x25 | 2.45 | | | 22x45 | 2.69 | 25x40 | 2.74 | 30x30 | 2.78 | 35 x 25 | 2.74 | | | 25x50 | 3.24 | 30x40 | 3.23 | 35x25 | 2.69 |
| | | | | | | | | | | | | | | | | | | | | | | | | 35x30 | 2.99 |
| 15000 | 153 | 22x40 | 2.55 | 25x35 | 2.58 | | | | | | | 25x45 | 3.15 | 30x35 | 3.13 | 35 x 30 | 3.27 | | | | | 30x45 | 3.72 | 35x25 | 3.12 |
| | | | | | | | | | | | | | | | | | | | | | | | | 35x35 | 3.67 |
| 18000 | 183 | 22x45 | 2.87 | 25x40 | 2.92 | 30x30 | 2.88 | 35 x 25 | 2.92 | | | 25x50 | 3.54 | 30x40 | 3.54 | | | | | | | | | 35x35 | 4.02 |
| | | | | | | | | | | | | | | | | | | | | | | | | 35x40 | 4.37 |
| 22000 | 223 | | | 25x45 | 3.32 | 30x35 | 2.29 | | | | | | | 30x45 | 4.04 | 35 x 35 | 3.64 | | | | | 30x50 | 4.71 | 35x40 | 4.69 |
| | | | | | | | | | | | | | | | | | | | | | | | | 35x50 | 4.92 |

| V.D.C. / μF | DxL | 50V (1H0) | | | | | | | | 63V (1J) | | | | | | | | 100V (2A) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | |
| 1200 | 122 | | | | | | | | | 22x25 | 1.19 | | | | | | | 22x35 | 1.55 | 25x30 | 0.50 | 30x25 | 1.68 | | |
| 1500 | 152 | | | | | | | | | | | | | | | | | 22x40 | 1.78 | 25x35 | 1.80 | 30x25 | 1.76 | 35x25 | 1.98 |
| 1800 | 182 | 22x25 | 1.33 | | | | | | | 22x25 | 1.30 | 25x25 | 1.52 | | | | | 22x45 | 1.99 | 25x35 | 1.95 | 30x30 | 2.24 | 35 25 | 2 |
| | | | | | | | | | | 22x30 | 1.51 | | | | | | | | | | | | | | |
| 2200 | 222 | 22x25 | 1.48 | | | | | | | 22x35 | 1.73 | 25x25 | 1.55 | | | | | 22x50 | 2.21 | 25x40 | 2.15 | 30x30 | 2.12 | 35x25 | 2.27 |
| | | | | | | | | | | | | 25x30 | 1.74 | | | | | | | | | | | | |
| 2700 | 272 | 22x30 | 1.69 | 25x25 | 1.70 | | | | | 22x40 | 1.97 | 25x35 | 1.99 | 30x25 | 1.76 | | | | | 25x50 | 2.59 | 30x35 | 2.37 | 35x20 | 2.62 |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3300 | 323 | 22x35 | 1.93 | 25x35 | 1.85 | | | | | 22x50 | 2.29 | 25x40 | 2.27 | 30x25 | 2.00 | 35x25 | 2.06 | | | | | 30x40 | 2.77 | 35x35 | 2.99 |
| | | | | | | | | | | | | | | 30x30 | 2.24 | | | | | | | | | | |
| 3900 | 392 | 22x40 | 2.16 | 25x35 | 2.18 | 30x25 | 1.95 | | | | | 25x45 | 2.54 | 30x25 | 2.18 | | | | | | | 30x45 | 3.02 | 35x40 | 3.35 |
| | | | | | | | | | | | | | | 30x35 | 2.55 | | | | | | | | | | |
| 4700 | 472 | 22x45 | 2.43 | | | 30x30 | 2.25 | 35x25 | 2.48 | | | 25x50 | 2.86 | 30x30 | 2.48 | 35x30 | 2.79 | | | | | | | 35x40 | 3.30 |
| | | | | | | | | | | | | | | 30x40 | 2.86 | | | | | | | | | | |
| 5600 | 562 | 22x50 | 2.75 | 25x40 | 2.70 | 30x35 | 2.76 | | | | | | | 30x35 | 2.78 | 35x35 | 3.19 | | | | | | | 35x45 | 3.51 |
| | | | | | | | | | | | | | | 30x45 | 3.22 | | | | | | | | | | |
| 6800 | 682 | | | 25x50 | 3.30 | 30x40 | 3.30 | 35x30 | 3.25 | | | | | 30x50 | 3.65 | 35x40 | 3.64 | | | | | | | | |
| 8200 | 822 | | | | | 30x45 | 3.60 | 35x35 | 3.55 | | | | | | | 35x46 | 3.90 | | | | | | | | |
| 10000 | 103 | | | | | 30x50 | 4.04 | 35x40 | 4.03 | | | | | | | 35x50 | 4.00 | | | | | | | | |
| 12000 | 123 | | | | | | | 35x45 | 4.55 | | | | | | | | | | | | | | | | |

# CAIC SERIES: Snap-in Terminal Type, 105°C

## DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm): Ripple Current: A/RMS at 120Hz, 105°C

| V.D.C. / μF | DxL | 160V (2C) | | | | | | | | 200V (2D) | | | | | | | | 250V (2E) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | |
| 180 | 181 | | | | | | | | | 22 x 25 | 0.80 | | | | | | | 22 x 30 | 0.85 | 25 x 25 | 0.85 | | | | |
| | | | | | | | | | | | | | | | | | | 22 x 25 | 0.78 | | | | | | |
| 220 | 221 | | | | | | | | | 22 x 25 | 0.89 | | | | | | | 22 x 30 | 0.82 | 25 x 25 | 0.90 | 30 x 25 | 1 | | |
| | | | | | | | | | | | | | | | | | | 22 x 35 | 0.90 | 25 x 30 | 1.00 | | | | |
| 270 | 271 | 22 x 25 | 0.86 | | | | | | | 22 x 30 | 1.00 | | | | | | | 22 x 40 | 1.14 | | | | | | |
| | | | | | | | | | | 22 x 25 | 0.87 | 25 x 25 | 1.00 | | | | | 22 x 35 | 1.00 | | | | | | |
| 330 | 331 | 22 x 30 | 1.20 | | | | | | | 22 x 35 | 1.20 | 25 x 30 | 1.21 | | | | | 22 x 45 | 1.26 | 25 x 35 | 1.20 | 30 x 30 | 1.13 | | |
| | | 22 x 25 | 1.10 | | | | | | | 22 x 30 | 1.13 | 25 x 25 | 1.13 | | | | | 22 x 40 | 1.10 | 25 x 30 | 1.13 | | | | |
| 390 | 391 | 22 x 35 | 1.30 | | | | | | | 22 x 40 | 1.31 | | | | | | | 22 x 50 | 1.49 | 25 x 40 | 1.49 | | | | |
| | | 22 x 30 | 1.22 | 25 x 25 | 1.15 | | | | | 22 x 35 | 1.25 | | | 30 x 25 | 1.20 | | | 22 x 45 | 1.25 | 25 x 35 | 1.27 | | | | |
| 470 | 471 | 22 x 40 | 1.40 | 25 x 30 | 1.41 | | | | | 22 x 45 | 1.40 | 25 x 35 | 1.41 | 30 x 25 | 1.50 | | | 22 x 50 | 1.57 | 25 x 45 | 1.57 | 30 x 35 | 1.57 | 35 x 30 | 1.30 |
| | | 22 x 35 | 1.35 | 25 x 25 | 1.33 | | | | | 22 x 40 | 1.32 | 25 x 30 | 1.32 | | | | | | | 25 x 40 | 1.38 | 30 x 30 | 1.37 | | |
| 560 | 561 | 22 x 40 | 1.50 | 25 x 35 | 1.51 | | | | | 22 x 50 | 1.56 | 25 x 40 | 1.53 | 30 x 30 | 1.52 | | | | | 25 x 45 | 1.79 | 30 x 40 | 1.79 | 35 x 30 | 1.79 |
| | | | | 25 x 30 | 1.45 | 30 x 25 | 1.40 | | | 22 x 45 | 1.53 | 25 x 35 | 1.50 | | | | | | | | | | | | |
| 680 | 681 | 22 x 50 | 1.71 | 25 x 40 | 1.70 | 30 x 30 | 1.72 | | | 22 x 50 | 1.74 | 25 x 45 | 1.74 | 30 x 35 | 1.73 | 35 x 30 | 1.73 | | | 25 x 50 | 1.84 | 30 x 40 | 2.00 | | |
| | | 22 x 45 | 1.65 | 25 x 35 | 1.65 | 30 x 25 | 1.65 | | | | | 25 x 40 | 1.70 | | | 35 x 25 | 1.72 | | | | | | | 35 x 35 | 1.58 |
| 820 | 821 | 22 x 50 | 1.93 | 25 x 45 | 2.01 | 30 x 35 | 2.00 | 35 x 30 | 2.00 | | | 25 x 50 | 2.04 | 30 x 40 | 1.93 | 35 x 35 | 1.93 | | | | | 30 x 50 | 2.16 | 35 x 40 | 1.81 |
| | | | | 25 x 40 | 1.85 | 30 x 30 | 1.76 | 35 x 25 | 1.91 | | | | | | | | | | | | | 30 x 50 | 1.85 | | |
| 1000 | 102 | | | 25 x 45 | 2.20 | 30 x 40 | 2.22 | 35 x 35 | 2.20 | 22 x 50 | 2.30 | | | 30 x 50 | 2.30 | 35 x 40 | 2.30 | | | | | | | 35 x 45 | 2.00 |
| | | | | | | 30 x 35 | 2.02 | 35 x 30 | 2.44 | | | | | 30 x 45 | 2.20 | 35 x 35 | 2.20 | | | | | | | | |
| 1200 | 122 | | | 25 x 50 | 2.45 | 30 x 45 | 2.44 | 35 x 35 | 2.50 | | | | | 30 x 50 | 2.60 | 35 x 40 | 2.65 | | | | | | | 35 x 45 | 3.41 |
| | | | | | | 30 x 40 | 2.35 | | | | | | | | | | | | | | | | | | |
| 1500 | 152 | | | | | 30 x 45 | | 35 x 40 | 2.70 | | | | | | | 35 x 45 | 2.58 | | | | | | | | |
| | | | | | | | | | | | | | | | | 35 x 50 | 2.80 | | | | | | | | |
| 1800 | 182 | | | | | 30 x 50 | 3.31 | 35 x 50 | 3.10 | | | | | | | 35 x 50 | 3.47 | | | | | | | | |

| V.D.C. / μF | DxL | 350 (2V) | | | | | | | | 400V (2G) | | | | | | | | 450V (2W) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | |
| 82 | 820 | 22 x 25 | 0.56 | | | | | | | 22 x 25 | 0.45 | | | | | | | 22 x 25 | 0.45 | | | | | | |
| 100 | 101 | 22 x 25 | 0.58 | | | | | | | 22 x 25 | 0.51 | | | | | | | 22 x 30 | 0.53 | 25 x 25 | 0.51 | | | | |
| 120 | 121 | 22 x 30 | 0.69 | | | | | | | 22 x 30 | 0.62 | 25 x 25 | 0.61 | | | | | 22 x 35 | 0.62 | | | | | | |
| 150 | 151 | 22 x 35 | 0.80 | | | | | | | 22 x 35 | 0.70 | 25 x 30 | 0.73 | | | | | 22 x 40 | 0.74 | 25 x 30 | 0.70 | | | 35 x 25 | 0.83 |
| 180 | 181 | | | 25 x 30 | 0.92 | 30 x 25 | 0.85 | | | 28 x 40 | 0.81 | 25 x 35 | 0.85 | 30 x 25 | 0.83 | | | 22 x 45 | 0.88 | 25 x 35 | 0.82 | 30 x 25 | 0.80 | | |
| 220 | 221 | 22 x 40 | 0.95 | 25 x 40 | 1.04 | 30 x 30 | 1.02 | 35 x 25 | 1.04 | 22 x 45 | 0.94 | 25 x 40 | 1.00 | 30 x 30 | 0.99 | | | | | 25 x 40 | 0.96 | 30 x 30 | 0.95 | | |
| 270 | 271 | | | 25 x 45 | 1.17 | 30 x 35 | 1.17 | 35 x 25 | 1.12 | 22 x 55 | 1.14 | 25 x 45 | 1.17 | 30 x 35 | 1.16 | 35 x 25 | 1.08 | | | 25 x 50 | 1.21 | 30 x 35 | 1.12 | | |
| 330 | 331 | | | 25 x 50 | 1.20 | 30 x 35 | 1.12 | 35 x 30 | 1.21 | | | 25 x 50 | 1.30 | 30 x 40 | 1.36 | | | | | 25 x 55 | 1.35 | 30 x 40 | 1.31 | 35 x 30 | 1.27 |
| 390 | 391 | | | | | 30 x 40 | 1.29 | | | | | | | | | 35 x 30 | 1.44 | | | | | 30 x 45 | 1.49 | 35 x 35 | 1.47 |
| 470 | 471 | | | | | 30 x 45 | 1.48 | 35 x 40 | 1.63 | | | | | 30 x 50 | 1.72 | 35 x 40 | 1.78 | | | | | 30 x 55 | 1.79 | 35 x 40 | 1.71 |
| 560 | 561 | | | | | | | 35 x 40 | 1.69 | | | | | 30 x 55 | 1.95 | 35 x 40 | 1.86 | | | | | | | 35 x 45 | 1.96 |

# CAVA SERIES: Snap-In, 105°C, 5000 hrs



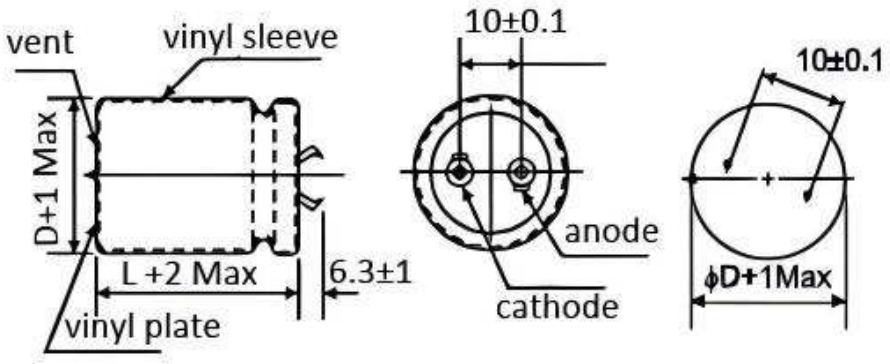

## FEATURES

- Snap-in, 105°C
- 5,000 hour life

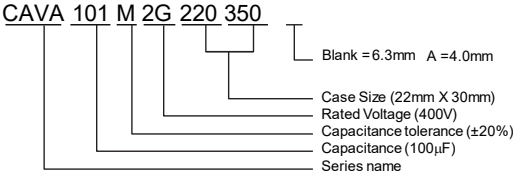
## SPECIFICATIONS

| Items | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -25°C ~ +105°C | | | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20°C) | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 3 mA whichever is smaller (after 5 minutes) Where, C= rated capacitance in μF. V= rated DC working voltage in V. | | | | | | |
| Dissipation Factor (Tanδ at 120Hz, 20°C) | Rated Voltage | 200 | 250 | 350 | 400 | 450 | |
| | Tan (max) | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | |
| | Rated Voltage | | 200 | 250 | 350 | 400 | 400 |
| | Impedance Ratio | Z(-25° C)/Z(+20° C) | 4 | 4 | 4 | 8 | 8 |
| Load Life Test | Test Time | 5,000 Hrs | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | |
| | Dissipation Factor | Less than 250% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 5,000 hrs at 105°C | | | | | | |
| Shelf Life Test | Test Time | 1,000 Hrs | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | |
| | Dissipation Factor | Less than 150% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hrs at 105°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5102) | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) | 50/60 | 120 | 300 | 1K | 10K up | |
| | Multiplier | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | |
| Other Standards | JIS C 5101-4 | | | | | | |

## SNAP-IN TERMINAL TYPE




## PART NUMBER EXAMPLE



# CAVA SERIES: Snap-In, 105°C, 5000 hrs

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L(mm); Ripple Current: A/RMS at 120Hz, 105°C

| WV / Cap. / DxL | 200V (2D) | | | | | | | | 250V (2E) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | |
| 150 | | | | | | | | | 22 x 25 | 0.57 | | | | | | |
| 180 | | | | | | | | | 22 x 30 | 0.66 | 25 x 25 | 0.66 | | | | |
| 220 | 22 x 25 | 0.72 | | | | | | | 22 x 35 | 0.75 | 25 x 25 | 0.75 | | | | |
| 270 | 22 x 30 | 0.81 | 25 x 25 | 0.81 | | | | | 22 x 40 | 0.85 | 25 x 30 | 0.83 | 30 x 25 | 0.85 | | |
| 330 | 22 x 35 | 0.92 | 25 x 30 | 0.92 | 30 x 25 | 0.94 | | | 22 x 45 | 0.96 | 25 x 35 | 0.96 | 30 x 30 | 0.96 | 35 x 25 | 1.02 |
| 390 | 22 x 40 | 1.02 | 25 x 30 | 1.01 | 30 x 25 | 1.01 | | | 22 x 50 | 1.08 | 25 x 40 | 1.07 | 30 x 30 | 1.07 | 35 x 25 | 1.12 |
| 470 | 22 x 50 | 1.17 | 25 x 35 | 1.15 | 30 x 30 | 1.15 | 35 x 25 | 1.22 | | | 25 x 50 | 1.22 | 30 x 35 | 1.19 | 35 x 30 | 1.22 |
| 560 | | | 25 x 45 | 1.28 | 30 x 35 | 1.30 | 35 x 25 | 1.31 | | | | | 30 x 40 | 1.35 | 35 x 35 | 1.36 |
| 680 | | | 25 x 50 | 1.48 | 30 x 40 | 1.49 | 35 x 30 | 1.47 | | | | | 30 x 50 | 1.58 | 35 x 40 | 1.57 |
| 820 | | | | | 30 x 45 | 1.67 | 35 x 35 | 1.65 | | | | | | | 35 x 45 | 1.75 |
| 1,000 | | | | | 30 x 50 | 1.91 | 35 x 40 | 1.90 | | | | | | | 35 x 50 | 2.02 |
| 1,200 | | | | | | | 35 x 50 | 2.21 | | | | | | | | |

| WV / Cap. / DxL | 350V (2V) | | | | | | | | 400V (2G) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 22 | | 25 | | 30 | | 35 | | 22 | | 25 | | 30 | | 35 | |
| 56 | | | | | | | | | 22 x 25 | 0.34 | | | | | | |
| 68 | 22 x 25 | 0.39 | | | | | | | 22 x 30 | 0.44 | 25 x 25 | 0.40 | | | | |
| 82 | 22 x 30 | 0.49 | | | | | | | 22 x 35 | 0.50 | 25 x 25 | 0.50 | | | | |
| 100 | 22 x 35 | 0.55 | 25 x 25 | 0.49 | | | | | 22 x 35 | 0.56 | 25 x 30 | 0.50 | 30 x 25 | 0.51 | | |
| 120 | 22 x 45 | 0.63 | 25 x 30 | 0.55 | 30 x 25 | 0.56 | | | 22 x 40 | 0.57 | 25 x 35 | 0.58 | 30 x 25 | 0.59 | 35 x 25 | 0.61 |
| 150 | 22 x 45 | 0.61 | 25 x 35 | 0.60 | 30 x 25 | 0.60 | 35 x 25 | 0.69 | 22 x 50 | 0.67 | 25 x 40 | 0.66 | 30 x 25 | 0.65 | 35 x 25 | 0.73 |
| 180 | 22 x 50 | 0.73 | 25 x 40 | 0.72 | 30 x 30 | 0.71 | 35 x 25 | 0.80 | | | 25 x 45 | 0.75 | 30 x 35 | 0.74 | 35 x 30 | 0.83 |
| 220 | | | 25 x 50 | 0.93 | 30 x 35 | 0.82 | 35 x 30 | 0.83 | | | 25 x 50 | 0.84 | 30 x 40 | 0.84 | 35 x 35 | 0.94 |
| 270 | | | | | 30 x 40 | 0.94 | 35 x 35 | 1.04 | | | | | 30 x 50 | 1.10 | 35 x 40 | 1.09 |
| 330 | | | | | 30 x 50 | 1.19 | 35 x 40 | 1.19 | | | | | | | 35 x 45 | 1.24 |
| 390 | | | | | | | 35 x 45 | 1.22 | | | | | | | 35 x 50 | 1.26 |
| 470 | | | | | | | 35 x 50 | 1.38 | | | | | | | | |

| WV / Cap. / DxL | 400V (2G) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 22 | | 25 | | 30 | | 35 | |
| 39 | 22 x 25 | 0.37 | | | | | | |
| 47 | 22 x 30 | 0.41 | | | | | | |
| 56 | 22 x 30 | 0.44 | | | | | | |
| 68 | 22 x 35 | 0.50 | 25 x 25 | 0.47 | | | | |
| 82 | 22 x 40 | 0.56 | 25 x 30 | 0.53 | | | | |
| 100 | 22 x 45 | 0.64 | 25 x 30 | 0.55 | 30 x 25 | 0.57 | | |
| 120 | 22 x 50 | 0.72 | 25 x 35 | 0.63 | 30 x 30 | 0.64 | 35 x 25 | 0.71 |
| 150 | | | 25 x 40 | 0.71 | 30 x 30 | 0.71 | 35 x 30 | 0.83 |
| 180 | | | 25 x 45 | 0.71 | 30 x 35 | 0.81 | 35 x 35 | 0.93 |
| 220 | | | 25 x 50 | 0.91 | 30 x 40 | 0.92 | 35 x 40 | 1.07 |
| 270 | | | | | 30 x 45 | 1.05 | 35 x 45 | 1.22 |
| 330 | | | | | | | 35 x 50 | 1.39 |

## CAVB SERIES: Snap-In, 105°C



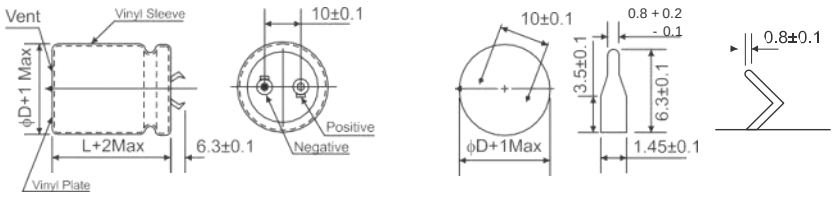

## FEATURES

- Has a snap-in terminal which can solder to PCB directly and need l time.
- Suitable for electronic equipment with medium-high voltage circuits snap-in type and lug terminal type available.
- 3,000 Hour Life

## SPECIFICATIONS

| Item | Performance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Temp. Range | -40°C ~ +105°C | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 120Hz, 20°C) | | | | | | | | | | | |
| Leakage Current (at 20°C) | I=0.02CV or 1.5mA whichever is smaller (after 5 minutes)<br>Where, C=rated capacitance in F. V=rated DC working voltage. | | | | | | | | | | | |
| Dissipation Factor (Tan at 120Hz, 20°C) | Rated Voltage | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | Tan (max) | 0.40 | 0.30 | 0.25 | 0.20 | 0.15 | 0.10* | 0.15 | 0.10* | 0.10* | 0.15 | 0.15 | 0.15 |
| | *0.15 for D = 35mm | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | | |
| | Rated Voltage | | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | Impedance Ratio | Z(-25°C) / Z(+20°C) | 4 | 3 | 3 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 8 | 8 |
| | | Z(-40°C) / Z(+20°C) | 15 | 10 | 8 | 6 | 6 | 5 | 4 | 8 | 10 | 16 | 18 | 20 |
| Load Life Test | Test Time | 3000 hours | | | | | | | | | | | | |
| | Capacitance Change | Within ±20% of initial value | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | |
| | The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 3000 hrs at 105°C | | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1000 hours | | | | | | | | | | | | |
| | Capacitance Change | Within ±20% of initial value | | | | | | | | | | | | |
| | Dissipation Factor | Less than 150% of specified value | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | |
| | The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 105°C without voltage applied. | | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | WV (V) Freq (Hz) | 50/60 | 120 | 300 | 1K | 10K up | | | | | | | |
| | Multiplier | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | | | | | | | |
| Ripple Current & Temperature Multipliers | Temperature (°C) | 40 | 60 | 70 | 85 | 105 | | | | | | | |
| | Multiplier | 2.5 | 2.2 | 2.0 | 1.8 | 1.0 | | | | | | | |
| Standards | Satisfies Characteristics W of JIS C 5141 | | | | | | | | | | | | |

## SNAP-IN TERMINAL TYPE




## PART NUMBER EXAMPLE

CAVB 101 M 2G 220 300

- Blank =6.3mm A=4mm terminal
- Case Size (22mm X 30mm)
- Rated Voltage (400V)
- Capacitance tolerance (±20%)
- Capacitance (100μF)
- Series name


www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

# SNAP-IN ALUMINUM ELECTROLYTIC CAPACITORS

## CAVB SERIES: Snap-In, 105°C

### DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm); Ripple Current: A/RMS at 120Hz, 105°C

| VDC | | 16V (1C) | | | | 25V (1E) | | | | 35V (1V) | | | | 50V (1H) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ΦD = 22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 |
| 1500 | 152 | | | | | | | | | | | Dimension=> | | 22 x 25 | | | |
| | | | | | | | | | | | | Ripple Current=> | | 1.22 | | | |
| 1800 | 182 | | | | | | | | | | | | | | | | |
| 2200 | 222 | | | | | | | | | 22 x 25 | | | | 22 x 30 | 25 x 25 | | |
| | | | | | | | | | | 1.14 | | | | 1.59 | | | |
| 3300 | 332 | | | | | 22 x 25 | | | | 22 x 30 | 25 x 25 | | | 22 x 35 | 25 x 30 | 30 x 25 | |
| | | | | | | 1.25 | | | | 1.51 | | | | 1.93 | | | |
| 4700 | 472 | 22 x 25 | | | | 22 x 30 | 25 x 25 | | | 22 x 25 | 25 x 30 | 30 x 25 | | 22 x 45 | 25 x 35 | 30 x 30 | 35 x 25 |
| | | 1.3 | | | | 1.61 | 1.61 | | | 1.92 | | | | 2.43 | | | |
| 6800 | 682 | 22 x 35 | 25 x 30 | | | 22 x 35 | 25 x 30 | 30 x 25 | | 22 x 45 | 25 x 40 | 30 x 30 | 35 x 25 | | 25 x 45 | 30 x 35 | 35 x 30 |
| | | 1.8 | | | | 1.91 | 1.91 | | | 2.31 | | | | | | | |
| 10000 | 103 | 22 x 45 | 25 x 35 | 30 x 25 | | 22 x 45 | 25 x 30 | 30 x 30 | 35 x 25 | | 25 x 45 | 30 x 35 | 35 x 30 | | | 30 x 45 | 35 x 40 |
| | | 2.34 | | | | 1.43 | 2.4 | | 2.42 | | | | | | | | |
| 15000 | 153 | | 25 x 45 | 30 x 35 | 35 x 30 | | 25 x 45 | 30 x 35 | 35 x 30 | | | 30 x 45 | 35 x 40 | | | | |
| | | | | | | | 3.12 | | 3.11 | | | | | | | | |
| 22000 | 223 | | | 30 x 35 | 35 x 35 | | | 30 x 45 | 35 x 40 | | | | 35 x 45 | | | | |
| | | | | | | | | | 3.85 | | | | | | | | |

| VDC | | 63V (1J) | | | | 80V (1K) | | | | 100V (2A) | | | | 160V (2C) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ΦD = 22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 |
| 330 | 331 | | | | | | | | | | | Dimension=> | | 25 x 25 | | | |
| | | | | | | | | | | | | Ripple Current=> | | 0.98 | | | |
| 390 | 391 | | | | | | | | | | | | | 22 x 30 | 25 x 25 | | |
| | | | | | | | | | | | | | | 1.1 | | | |
| 470 | 471 | | | | | | | | | | | | | 22 x 30 | 25 x 25 | | |
| | | | | | | | | | | | | | | 1.21 | | | |
| 560 | 561 | | | | | | | | | | | | | 22 x 35 | 25 x 30 | 30 x 25 | |
| | | | | | | | | | | | | | | 1.4 | | | |
| 680 | 681 | | | | | | | | | | | | | 22 x 40 | 25 x 35 | 30 x 25 | |
| | | | | | | | | | | | | | | 1.62 | | | |
| 820 | 821 | | | | | | | | | | | | | 22 x 45 | 25 x 40 | 30 x 30 | 30 x 25 |
| | | | | | | | | | | | | | | 1.86 | | | |
| 1000 | 102 | 22 x 25 | | | | 22 x 30 | 25 x 25 | | | 22 x 30 | 25 x 25 | | | | 25 x 45 | 30 x 35 | 30 x 25 |
| | | 1.09 | | | | 1.17 | 1.17 | | | 1.36 | | | | | | | |
| 1200 | 122 | | | | | | | | | | | | | | | 30 x 35 | 35 x 30 |
| 1500 | 152 | 22 x 30 | 25 x 25 | | | 22 x 35 | 25 x 30 | 30 x 25 | | 22 x 40 | 25 x 35 | 30 x 25 | | | | 30 x 35 | 35 x 35 |
| | | 1.44 | | | | 1.54 | 1.54 | | | 1.82 | | | | | | | |
| 1800 | 182 | | | | | | | | | | | | | | | 30 x 45 | 35 x 40 |
| 2200 | 222 | 22 x 35 | 25 x 30 | 30 x 25 | | | 25 x 35 | 30 x 30 | 35 x 25 | | 25 x 45 | 30 x 35 | 35 x 30 | | | | |
| | | 1.7 | | | | | 1.94 | | 1.94 | | | | | | | | |
| 3300 | 332 | 22 x 45 | 25 x 40 | 30 x 30 | 35 x 25 | | | 30 x 40 | 35 x 30 | | | 30 x 45 | 35 x 35 | | | | |
| | | 2.19 | | | | | | | 2.18 | | | | | | | | |
| 4700 | 472 | | | 30 x 35 | 35 x 30 | | | | 35 x 40 | | | | 35 x 45 | | | | |
| | | | | | | | | | 3.08 | | | | | | | | |
| 6800 | 682 | | | 30 x 45 | 35 x 40 | | | | | | | | | | | | |
| 8200 | 822 | | | | 35 x 45 | | | | | | | | | | | | |

# SNAP-IN ALUMINUM ELECTROLYTIC CAPACITORS

## CAVB SERIES: Snap-In, 105°C

### DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ΦDxL (mm); Ripple Current: A/RMS at 120Hz, 105°C

| VDC | | 200V (2D) | | | | 250V (2E) | | | | 350V (2V) | | | | 400V (2G) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ΦD=22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 |
| 68 | 680 | | | | | | | | | | | Dimension => Ripple Current=> | | 22 x 25 0.52 | | | |
| 82 | 820 | | | | | | | | | 22 x 25 0.47 | | | | 22 x 30 0.6 | 25 x 25 0.6 | | |
| 100 | 101 | | | | | | | | | 22 x 30 0.56 | 25 x 25 0.55 | | | 22 x 30 0.67 | 25 x 25 0.66 | | |
| 120 | 121 | | | | | | | | | 22 x 35 0.72 | 25 x 25 0.6 | | | 22 x 35 0.78 | 25 x 30 0.77 | 30 x 25 0.78 | |
| 150 | 151 | | | | | | | | | 22 x 40 0.83 | 25 x 30 0.72 | 30 x 25 0.72 | | 22 x 40 0.91 | 25 x 35 0.91 | 30 x 30 0.92 | |
| 180 | 181 | | | | | | | | | | 25 x 35 0.83 | 30 x 30 0.84 | | 22 x 45 1.04 | 25 x 40 1.04 | 30 x 30 1.01 | 35 x 25 1.01 |
| 220 | 221 | 22 x 25 0.92 | | | | 22 x 30 1.0 | 25 x 25 0.98 | | | | 25 x 40 0.96 | 30 x 35 1.09 | 35 x 25 0.93 | | 25 x 45 1.21 | 30 x 35 1.18 | 35 x 30 1.18 |
| 270 | 271 | 22 x 25 1.03 | | | | 22 x 35 1.16 | 25 x 25 1.08 | | | | 25 x 45 1.12 | 30 x 40 1.26 | 35 x 30 1.09 | | 25 x 50 1.4 | 30 x 40 1.37 | 35 30 1.31 |
| 330 | 331 | 22 x 30 1.21 | 25 x 25 1.20 | | | 22 x 35 1.28 | 25 x 30 1.27 | 30 x 25 1.28 | | | | 30 x 45 1.43 | 35 x 30 1.2 | | | 30 x 45 1.57 | 35 x 35 1.52 |
| 390 | 391 | 22 x 35 1.39 | 25 x 25 1.31 | | | 22 x 40 1.48 | 25 x 35 1.46 | 30 x 25 1.39 | | | | | 35 x 35 1.38 | | | | 35 x 40 1.73 |
| 470 | 471 | 22 x 40 1.62 | 25 x 30 1.52 | 30 x 25 1.54 | | | 25 x 40 1.69 | 30 x 30 1.63 | 35 x 25 1.62 | | | | 35 x 40 1.58 | | | | 35 x 45 1.97 |
| 560 | 561 | 22 x 45 1.85 | 25 x 35 1.75 | 30 x 30 1.78 | | | 25 x 45 1.93 | 30 x 35 1.87 | 35 x 25 1.78 | | | | 35 x 45 1.79 | | | | |
| 680 | 681 | 22 x 45 1.75 | 25 x 30 1.75 | 30 x 30 1.96 | 35 x 25 1.96 | | | 30 x 35 2.06 | 35 x 30 2.06 | | | 30x45 2.27 | | | | 30x45 2.35 | |
| 820 | 821 | | 25 x 45 2.34 | 30 x 35 2.27 | 35 x 30 2.27 | | | 30 x 45 2.48 | 35 x 35 2.41 | | | | | | | | |
| 1000 | 102 | | | 30 x 40 2.63 | 35 x 30 2.51 | | | | 35 x 40 2.76 | | | | | | | | |
| 1200 | 122 | | | 30 x 45 3.00 | 35 x 35 3.42 | | | | 35 x 45 3.14 | | | | | | | | |
| 1500 | 152 | | | 30 x 50 3.36 | 35 x 35 3.42 | | | | 35 x 45 3.14 | | | | | | | | |
| 1800 | 182 | | | 30 x 60 3.64 | 35 x 45 3.51 | | | | 35 x 60 3.97 | | | | | | | | |

| VDC | | 420V (2P) | | | | 450V (2W) | | | |
|---|---|---|---|---|---|---|---|---|---|
| μF | Code | ΦD=22 | 25 | 30 | 35 | 22 | 25 | 30 | 35 |
| 47 | 470 | 22 x 25 0.38 | | Dimension => Ripple Current => | | 22 x 25 0.42 | | | |
| 68 | 680 | 22 x 25 0.48 | | | | 22 x 30 0.55 | 25 x 25 0.54 | | |
| 82 | 820 | 22 x 25 0.53 | 25 x 25 0.54 | | | 22 x 35 0.64 | 25 x 30 0.64 | | |
| 100 | 101 | 22 x 30 0.63 | 25 x 25 0.63 | | | 22 x 40 0.74 | 25 x 35 0.74 | 30 x 25 0.71 | |
| 120 | 121 | 22 x 35 0.74 | 25 x 30 0.78 | 30 x 25 0.70 | | 22 x 45 0.85 | 25 x 35 0.80 | 30 x 30 0.82 | 35 x 25 0.82 |
| 150 | 151 | 22 x 40 0.87 | | 30 x 75 0.80 | | 22 x 45 0.92 | 25 x 35 0.89 | 30 x 30 0.93 | 35 x 25 0.95 |
| 180 | 181 | 22 x 45 0.93 | 25 x 35 0.90 | 30 x 30 0.98 | | 22 x 50 1.06 | 25 x 40 1.03 | 30 x 30 1.01 | 35 x 35 1.04 |
| 220 | 221 | | 25 x 45 1.01 | 30 x 35 1.05 | 35 x 25 0.97 | | | 30 x 35 1.08 | 35 x 30 1.22 |
| 270 | 271 | | 25 x 50 1.17 | 30 x 40 1.22 | 35 x 30 1.15 | | | 30 x 40 1.17 | 35 x 35 1.43 |
| 330 | 331 | | | 30 x 45 1.37 | 35 x 35 1.35 | | | | 35 x 35 1.64 |
| 390 | 391 | | | 30 x 50 1.56 | 35 x 40 1.55 | | | | 35 x 40 1.54 |
| 470 | 471 | | | 30 x 60 1.76 | 35 x 45 1.7 | | | | 35 x 50 1.85 |
| 560 | 561 | | | | 35 x 50 1.44 | | | | 35 x 50 2.02 |

## CAXA SERIES: Snap-In, High Voltage, Flame Retardant

### FEATURES

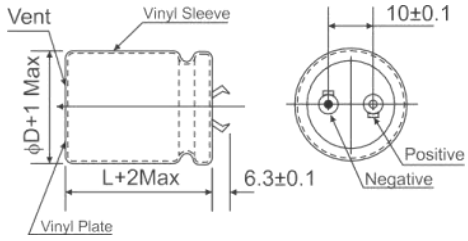
- Has a snap-in terminal which can solder to a PCB directly
- Suitable for electronic equipment with high voltage circuits.
- Printed circuit board terminal snap-in type and lug terminal type available.
- Meets UL 94V-0 Flammability
- RoHS Compliant

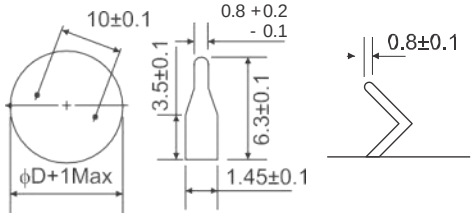



### SPECIFICATIONS

| Items | Performance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CAXA | | | | | | | CAXB | | | | |
| Operating Temperature Range | -25℃~ +85℃ | | | | | | | -25 ℃~ +105℃ | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20℃) | | | | | | | +20% (at 120Hz,20℃) | | | | |
| Leakage Current (at 20℃) | $I=3\sqrt{CV}$ or 1.5 mA whichever is smaller (after 5minutes)<br>Where C=rated capacitance in μF V=rated DC working voltage in V | | | | | | | | | | | |
| Dissipation Factor (Tan at 120Hz, 20℃) | Rated Voltage (V) | | | 400 | 450 | | | 400 | 450 | | | |
| | Tan (max) | | | 0.15 | 0.25 | | | 0.25 | 0.25 | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | |
| | Rated Voltage (V) | | | 400 | 450 | | | 400 | 450 | | | |
| | Impedance Ratio | Z(-25℃) / Z(+20℃) | | 8 | 12 | | | 12 | 12 | | | |
| Load Life Test | Test Time | 2,000 Hrs | | | | | | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage with ripple current applied for 2,000 hrs at 85℃/ 105℃. | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1,000 Hrs | | | | | | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | | | | | | |
| | Dissipation Factor | Less than 150% of specified value | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hrs at 85 ℃/ 105 ℃without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5102). | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / WV | 60 | 120 | 500 | 1k | 10k up | | | | | | |
| | 400 ~ 450 | 0.8 | 1.0 | 1.05 | 1.10 | 1.15 | | | | | | |
| Ripple Current & Temperature Multipliers | Temperature (℃) | 40 | 60 | 70 | 85 | 105 | | Temperature (℃) | 40 | 60 | 70 | 85 | 105 |
| | Multiplier | 1.8 | 1.4 | 1.2 | 1.0 | 1.0 | | Multiplier | 2.5 | 2.2 | 2.0 | 1.8 | 1.0 |
| Standards | JIS C 5101-4 | | | | | | | | | | | |

### SNAP-IN TERMINAL TYPE - CAXA/CAXB




### PART NUMBER EXAMPLE

CAXA 101 M 2G 220 350

- Blank = 6.3mm A = 4.0mm
- Case Size (22mm X 30mm)
- Rated Voltage (400V)
- Capacitance tolerance (±20%)
- Capacitance (100μF)
- Series name

# SNAP-IN ALUMINUM ELECTROLYTIC CAPACITORS

## CAXA SERIES: Snap-In, High Voltage, Flame Retardant

### DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ϕ DxL (mm); Ripple Current: A/rMS at 120 Hz 85°C (CAXA) / 105°C (CAXB)

| V.DC / uF / DxL | | CAXA Series | | | | CAXB Series | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 400V (2G) | | 450V (2W) | | 400V (2G) | | 450V (2W) | |
| uF | DxL | Size | mA | Size | mA | Size | mA | Size | mA |
| 47 | 470 | | | | | | | 22 x 25 | 0.42 |
| 56 | 560 | | | 20 x 25 | 0.58 | | | 22 x 30 | 0.51 |
| | | | | | | | | 25 x 25 | 0.50 |
| 68 | 680 | 20 x 25 | 0.71 | 20 x 30 | 0.67 | 22 x 25 | 0.34 | 22 x 35 | 0.61 |
| | | | | 22 x 25 | 0.68 | | | 25 x 30 | 0.59 |
| 82 | 820 | 20 x 30 | 0.78 | 20 x 35 | 0.76 | 22 x 30 | 0.58 | 22 x 35 | 0.67 |
| | | 22 x 25 | 0.80 | 22 x 30 | 0.82 | | | 25 x 30 | 0.65 |
| | | | | | | | | 30 x 25 | 0.62 |
| 100 | 101 | 20 x 30 | 0.90 | 20 x 35 | 0.84 | 22 x 30 | 0.64 | 22 x 40 | 0.78 |
| | | 22 x 30 | 0.94 | 22 x 35 | 0.90 | 25 x 25 | 0.64 | 25 x 35 | 0.76 |
| | | | | 25 x 25 | 0.92 | | | 30 x 25 | 0.69 |
| 120 | 121 | 20 x 35 | 1.02 | 20 x 40 | 0.94 | 22 x 35 | 0.67 | 22 x 45 | 0.9 |
| | | 22 x 30 | 1.04 | 22 x 35 | 1.02 | 25 x 30 | 0.69 | 25 x 40 | 0.89 |
| | | 25 x 25 | 1.08 | 25 x 30 | 1.04 | 30 x 25 | 0.76 | 30 x 30 | 0.81 |
| | | | | 30 x 25 | 1.07 | | | 35 x 25 | 0.72 |
| 150 | 151 | 20 x 40 | 1.16 | 22 x 45 | 1.12 | 22 x 40 | 0.77 | 25 x 45 | 1.04 |
| | | 22 x 35 | 1.18 | 25 x 35 | 1.19 | 25 x 35 | 0.78 | 30 x 35 | 0.97 |
| | | 25 x 30 | 1.21 | 30 x 30 | 1.23 | 30 x 30 | 0.76 | 35 x 30 | 0.86 |
| 180 | 181 | 22 x 40 | 1.34 | 22 x 50 | 1.26 | 22 x 45 | 0.92 | 25 x 50 | 1.20 |
| | | 25 x 35 | 1.37 | 25 x 40 | 1.33 | 25 x 40 | 0.81 | | |
| | | 30 x 25 | 1.45 | 30 x 30 | 1.38 | 30 x 30 | 0.82 | | |
| | | | | | | 35 x 25 | 0.90 | | |
| 220 | 221 | 22 x 45 | 1.50 | 25 x 45 | 1.51 | 25 x 45 | 0.93 | 30 x 40 | 1.12 |
| | | 25 x 35 | 1.56 | 30 x 35 | 1.69 | 30 x 35 | 0.91 | 30 x 45 | 1.30 |
| | | 30 x 30 | 1.58 | 35 x 30 | 1.71 | 35 x 30 | 1.08 | 35 x 35 | 1.00 |
| | | | | 30 x 40 | 1.72 | | | 35 x 35 | 1.11 |
| 270 | 271 | 25 x 45 | 1.70 | 25 x 50 | 1.65 | 25 x 50 | 1.21 | 30 x 50 | 1.51 |
| | | 30 x 35 | 1.73 | 30 x 40 | 1.80 | 30 x 40 | 1.10 | 35 x 45 | 1.36 |
| | | | | 35 x 35 | 1.81 | 35 x 35 | 1.12 | | |
| 330 | 331 | 25 x 50 | 1.90 | 30 x 40 | 1.85 | 30 x 45 | 1.39 | 35 x 50 | 1.58 |
| | | 30 x 40 | 1.97 | 35 x 35 | 2.05 | 35 x 35 | 1.18 | | |
| | | 35 x 30 | 1.95 | 30 x 45 | 2.02 | | | | |
| 390 | 391 | 30 x 40 | 2.15 | 30 x 50 | 2.24 | 30 x 50 | 1.55 | | |
| | | 35 x 35 | 2.17 | | | 35 x 40 | 1.27 | | |
| 470 | 471 | 30 x 50 | 2.39 | 35 x 40 | 2.27 | 35 x 45 | 1.62 | | |
| | | 35 x 40 | 2.42 | | | | | | |
| 560 | 561 | 35 x 45 | 2.71 | 35 x 45 | 2.55 | | | | |
| 680 | 681 | 35 x 50 | 2.95 | 35 x 50 | 2.60 | | | | |

## CAXB SERIES: Snap-In, High Voltage, Flame Retardant



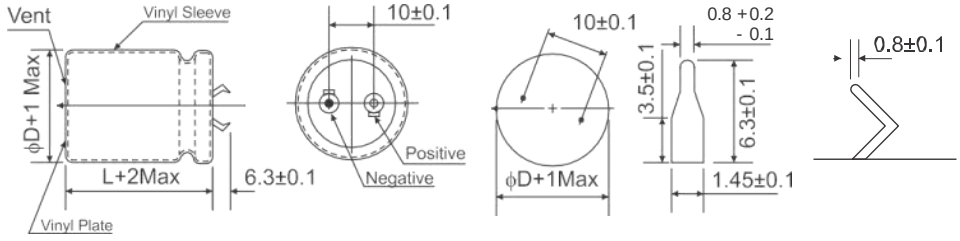

### FEATURES

- Has a snap-in terminal which can solder to a PCB directly
- Suitable for electronic equipment with high voltage circuits.
- Printed circuit board terminal snap-in type and lug terminal typ
- Meets UL 94V-0 Flammability
- RoHS Compliant

### SPECIFICATIONS

| Items | Performance | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | CAXA | | | | | | CAXB | | | | |
| Operating Temperature Range | -25℃~ +85℃ | | | | | | -25 ℃~ +105℃ | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20℃) | | | | | | +20% (at 120Hz,20℃) | | | | |
| Leakage Current (at 20℃) | 1=3$\hat{U}$CV or 1.5 mA whichever is smaller (after 5minutes)<br>Where C=rated capacitance in μF V=rated DC working voltage in V | | | | | | | | | | |
| Dissipation Factor (Tan at 120Hz, 20℃) | Rated Voltage (V) | | 400 | 450 | 400 | 450 | | | | | |
| | Tan (max) | | 0.15 | 0.25 | 0.25 | 0.25 | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | |
| | Rated Voltage (V) | | 400 | 450 | 400 | 450 | | | | | |
| | Impedance Ratio | Z(-25℃) / Z(+20℃) | 8 | 12 | 12 | 12 | | | | | |
| Load Life Test | Test Time | 2,000 Hrs | | | | | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage with ripple current applied for 2,000 hrs at 85℃/ 105℃. | | | | | | | | | | |
| Shelf Life Test | Test Time | 1,000 Hrs | | | | | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | | | | | |
| | Dissipation Factor | Less than 150% of specified value | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hrs at 85 ℃/ 105 ℃without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5102). | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) / WV | 60 | 120 | 500 | 1k | 10k up | | | | | |
| | 400 ~ 450 | 0.8 | 1.0 | 1.05 | 1.10 | 1.15 | | | | | |
| Ripple Current & Temperature Multipliers | Temperature (℃) | 40 | 60 | 70 | 85 | 105 | | Temperature (℃) | 40 | 60 | 70 | 85 | 105 |
| | Multiplier | 1.8 | 1.4 | 1.2 | 1.0 | 1.0 | | Multiplier | 2.5 | 2.2 | 2.0 | 1.8 | 1.0 |
| Standards | JIS C 5101-4 | | | | | | | | | | |

### SNAP-IN TERMINAL TYPE - CAXB




### PART NUMBER EXAMPLE

CAXB 101 M 2G 220 350

- Blank =6.3mm A =4.0mm
- Case Size (22mm X 30mm)
- Rated Voltage (400V)
- Capacitance tolerance (±20%)
- Capacitance (100μF)
- Series name

# SNAP-IN ALUMINUM ELECTROLYTIC CAPACITORS

## CAXB SERIES: Snap-In, High Voltage, Flame Retardant

### DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: ϕ DxL (mm); Ripple Current: A/rMS at 120 Hz 85°C (LV) / 105°C (LVG)

| uF \ V.DC / DxL | | CAXA Series | | | | CAXB Series | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 400V (2G) | | 450V (2W) | | 400V (2G) | | 450V (2W) | |
| | | Size | mA | Size | mA | Size | mA | Size | mA |
| 47 | 470 | | | | | | | 22 x 25 | 0.42 |
| 56 | 560 | | | 20 x 25 | 0.58 | | | 22 x 30 | 0.51 |
| | | | | | | | | 25 x 25 | 0.50 |
| 68 | 680 | 20 x 25 | 0.71 | 20 x 30 | 0.67 | 22 x 25 | 0.34 | 22 x 35 | 0.61 |
| | | | | 22 x 25 | 0.68 | | | 25 x 30 | 0.59 |
| 82 | 820 | 20 x 30 | 0.78 | 20 x 35 | 0.76 | 22 x 30 | 0.58 | 22 x 35 | 0.67 |
| | | 22 x 25 | 0.80 | 22 x 30 | 0.82 | | | 25 x 30 | 0.65 |
| | | | | | | | | 30 x 25 | 0.62 |
| 100 | 101 | 20 x 30 | 0.90 | 20 x 35 | 0.84 | 22 x 30 | 0.64 | 22 x 40 | 0.78 |
| | | 22 x 30 | 0.94 | 22 x 35 | 0.90 | 25 x 25 | 0.64 | 25 x 35 | 0.76 |
| | | | | 25 x 25 | 0.92 | | | 30 x 25 | 0.69 |
| 120 | 121 | 20 x 35 | 1.02 | 20 x 40 | 0.94 | 22 x 35 | 0.67 | 22 x 45 | 0.9 |
| | | 22 x 30 | 1.04 | 22 x 35 | 1.02 | 25 x 30 | 0.69 | 25 x 40 | 0.89 |
| | | 25 x 25 | 1.08 | 25 x 30 | 1.04 | 30 x 25 | 0.76 | 30 x 30 | 0.81 |
| | | | | 30 x 25 | 1.07 | | | 35 x 25 | 0.72 |
| 150 | 151 | 20 x 40 | 1.16 | 22 x 45 | 1.12 | 22 x 40 | 0.77 | 25 x 45 | 1.04 |
| | | 22 x 35 | 1.18 | 25 x 35 | 1.19 | 25 x 35 | 0.78 | 30 x 35 | 0.97 |
| | | 25 x 30 | 1.21 | 30 x 30 | 1.23 | 30 x 30 | 0.76 | 35 x 30 | 0.86 |
| 180 | 181 | 22 x 40 | 1.34 | 22 x 50 | 1.26 | 22 x 45 | 0.92 | 25 x 50 | 1.20 |
| | | 25 x 35 | 1.37 | 25 x 40 | 1.33 | 25 x 40 | 0.81 | | |
| | | 30 x 25 | 1.45 | 30 x 30 | 1.38 | 30 x 30 | 0.82 | | |
| | | | | | | 35 x 25 | 0.90 | | |
| 220 | 221 | 22 x 45 | 1.50 | 25 x 45 | 1.51 | 25 x 45 | 0.93 | 30 x 40 | 1.12 |
| | | 25 x 35 | 1.56 | 30 x 35 | 1.69 | 30 x 35 | 0.91 | 30 x 45 | 1.30 |
| | | 30 x 30 | 1.58 | 35 x 30 | 1.71 | 35 x 30 | 1.08 | 35 x 35 | 1.00 |
| | | | | 30 x 40 | 1.72 | | | 35 x 35 | 1.11 |
| 270 | 271 | 25 x 45 | 1.70 | 25 x 50 | 1.65 | 25 x 50 | 1.21 | 30 x 50 | 1.51 |
| | | 30 x 35 | 1.73 | 30 x 40 | 1.80 | 30 x 40 | 1.10 | 35 x 45 | 1.36 |
| | | | | 35 x 35 | 1.81 | 35 x 35 | 1.12 | | |
| 330 | 331 | 25 x 50 | 1.90 | 30 x 40 | 1.85 | 30 x 45 | 1.39 | 35 x 50 | 1.58 |
| | | 30 x 40 | 1.97 | 35 x 35 | 2.05 | 35 x 35 | 1.18 | | |
| | | 35 x 30 | 1.95 | 30 x 45 | 2.02 | | | | |
| 390 | 391 | 30 x 40 | 2.15 | 30 x 50 | 2.24 | 30 x 50 | 1.55 | | |
| | | 35 x 35 | 2.17 | | | 35 x 40 | 1.27 | | |
| 470 | 471 | 30 x 50 | 2.39 | 35 x 40 | 2.27 | 35 x 45 | 1.62 | | |
| | | 35 x 40 | 2.42 | | | | | | |
| 560 | 561 | 35 x 45 | 2.71 | 35 x 45 | 2.55 | | | | |
| 680 | 681 | 35 x 50 | 2.95 | 35 x 50 | 2.60 | | | | |

## CAWA SERIES: Large Can Size, Screw Terminal







◆Used for air conditioner, general-purpose inverter、power supplies
◆ RoHS Compliant
◆ Endurance with ripple current: 85°C, 2, 000 hours

## SPECIFICATIONS

| Item | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Operating Temp. | -40°C~+85°C | | | | | -25°C~+85°C | |
| | 10~100V | | | | | 160~450V | |
| Capacitance Toloerance | ± 20% (120Hz, 20°C) | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 5 (mA) whichever is smaller (after 5 minutes)<br>Where, C= rated capacitance in F. V= rated DC working voltage in V. | | | | | | |
| Dissipation Factor Tan at 120Hz, 20°C | Rated Voltage | 10~100 | | | | 160~450 | |
| | Tan (max) | See the case size list | | | | 0.15 | |
| Low Temperature Characteristics (at 120Hz) | Capacitance change: C(-25°C)/ C(+20°C) 0.7 | | | | | | |
| Load Life Test at 20°C after subjected to DC voltage with rated rippled current applied for 2000 hours at 85°C | Test Time | 2000 hours | | | | | |
| | Capacitance Change | Within ±15% of initial value | | | | | |
| | Dissipation Factor | Less than 175% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| Shelf Life Test at 20°C after exposing them for 500 hours at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS 5102) | Test Time | 500 hours | | | | | |
| | Capacitance Change | Within ±20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| Ripple Current & Frequency Multipliers | Frequency (Hz) | 50 / 60 | 120 | 300 | 1K | 10K up | |
| | Multiplier | 0.7 | 1.0 | 1.1 | 1.3 | 1.4 | |
| Ripple Current & Temperature Multipliers | Temperature(°C) | 40 | 60 | 70 | 85 | | |
| | Mutipliers | 2.7 | 2.0 | 1.7 | 1.0 | | |
| Standards | Satisfies Characteristic W of JIS C 5101-4 | | | | | | |

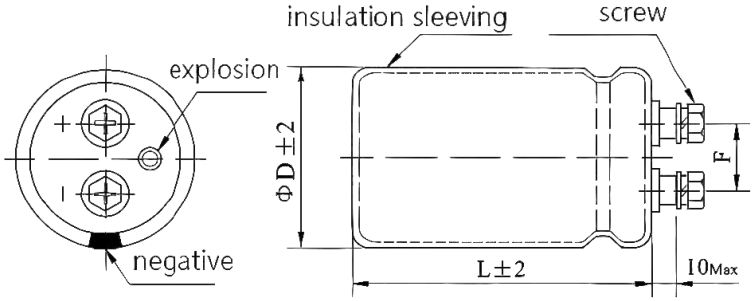
## DIMENSIONS

| D | P | | L1 | W1 | W2 | H | h |
|---|---|---|---|---|---|---|---|
| 35 | 12.7 | 2 | 10.0 | 48 | 58 | 15.0 | 10.0 |

Screw Specifications:
Plus hexagon-headed screw: M5 x 0.8 x 10
Max. screw tightening torque: 3.23Nm

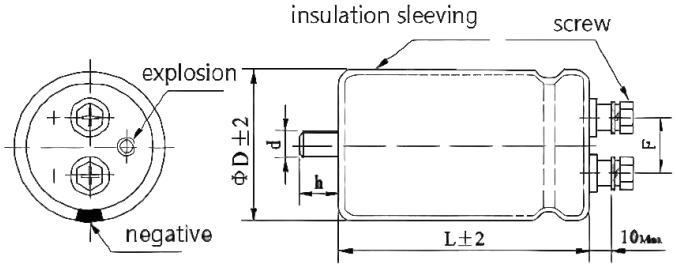
| D | P | | L1 | W1 | W2 | H | h | a | b | c | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 22.0 | 2 | 10 | 61.0 | 65.5 | 21.5 | 15.0 | 7.0 | 12.0 | 4.5 | 60 |
| 64 | 28.6 | 2 | 10 | 72.5 | 78.0 | 25.0 | 20.0 | 7.0 | 14.0 | 4.5 | 60 |
| 77 | 32.0 | 2 | 10 | 85.5 | 91.0 | 35.0 | 20.0 | 8.0 | 16.0 | 4.5 | 60 |
| 90 | 32.0 | 2 | 10 | 101 | 106 | 34.5 | 20.0 | 8.0 | 16.0 | 5.0 | 60 |






### Type A (Basic type, fixed mounting ring)






### Type B (bottom screw fixed, please specify when ordering)

# SCREW ALUMINUM ELECTROLYTIC CAPACITORS

## CAWA SERIES: Large Can Size, Screw Terminal

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L (mm)
Tanδ: 120Hz, 20°C
Ripple Current: A/rms at 120Hz, 85°C

| V.DC / Item uF | 10V (1A) | | | | 16V (1C) | | | | 25V (1E) | | | | 35V 91V) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current |
| 10,000 | | | | | | | | | | | | | A053 | 35x53 | 0.30 | 3.5 |
| 12,000 | | | | | | | | | | | | | A053 | 35x53 | 0.30 | 3.7 |
| 15,000 | | | | | | | | | | | | | A065 | 35x65 | 0.30 | 3.9 |
| 18,000 | | | | | | | | | A053 | 35x53 | 0.35 | 4.0 | A065 | 35x65 | 0.35 | 4.2 |
| 22,000 | | | | | | | | | A065 | 35x65 | 0.35 | 4.5 | A083 | 35x83 | 0.35 | 4.9 |
| 27,000 | | | | | A053 | 35x53 | 0.45 | 4.2 | A065 | 35x65 | 0.40 | 5.0 | A083 | 35x83 | 0.40 | 5.2 |
| 33,000 | A053 | 35x53 | 0.60 | 4.4 | A065 | 35x65 | 0.50 | 5.5 | A083 | 35x83 | 0.40 | 5.5 | A121 | 35x121 | 0.40 | 7.1 |
| 39,000 | A053 | 35x53 | 0.60 | 4.7 | A065 | 35x65 | 0.50 | 5.8 | A083 | 35x83 | 0.40 | 6.2 | A121 | 35x121 | 0.40 | 7.3 |
| 47,000 | A065 | 35x65 | 0.60 | 5.6 | A083 | 35x83 | 0.55 | 7.2 | A121 | 35x121 | 0.40 | 7.4 | B083 | 51x83 | 0.45 | 8.3 |
| 56,000 | A065 | 35x65 | 0.60 | 5.9 | A083 | 35x83 | 0.60 | 7.5 | A121 | 35x121 | 0.45 | 8.3 | B083 | 51x83 | 0.50 | 8.7 |
| 68,000 | A083 | 35x83 | 0.60 | 7.5 | A121 | 35x121 | 0.60 | 10.2 | B100 | 51x100 | 0.50 | 9.3 | B100 | 51x100 | 0.50 | 10.2 |
| 82,000 | A083 | 35x83 | 0.60 | 7.7 | A121 | 35x121 | 0.70 | 10.4 | B121 | 51x121 | 0.50 | 9.7 | B100 | 51x100 | 0.55 | 10.5 |
| 100,000 | A121 | 35x121 | 0.70 | 9.2 | B083 | 51x83 | 0.70 | 10.9 | B121 | 51x121 | 0.60 | 10.5 | C100 | 64x100 | 0.60 | 10.9 |
| 120,000 | A121 | 35x121 | 0.70 | 9.4 | B083 | 51x83 | 0.80 | 11.3 | B121 | 51x121 | 0.60 | 11.5 | C121 | 64x121 | 0.60 | 12.8 |
| 150,000 | B083 | 51x83 | 0.90 | 10.2 | B121 | 51x121 | 0.90 | 12.6 | C100 | 64x100 | 0.70 | 12.9 | C144 | 64x144 | 0.70 | 15.3 |
| 180,000 | B083 | 51x83 | 0.90 | 10.7 | B121 | 51x121 | 0.90 | 13.0 | E121 | 64x121 | 0.75 | 14.7 | C144 | 64x144 | 0.70 | 15.8 |
| 220,000 | B121 | 51x121 | 1.00 | 13.9 | C100 | 64x100 | 1.00 | 14.7 | C144 | 64x144 | 0.80 | 18.0 | D144 | 77x144 | 0.75 | 17.3 |
| 270,000 | B121 | 51x121 | 1.20 | 15.2 | C100 | 64x100 | 1.20 | 15.3 | C144 | 64x144 | 0.90 | 18.3 | | | | |
| 330,000 | C121 | 64x121 | 1.40 | 17.2 | D121 | 77x121 | 1.30 | 18.2 | D144 | 77x144 | 1.00 | 19.5 | | | | |
| 390,000 | C121 | 64x121 | 1.50 | 18.1 | D121 | 77x121 | 1.60 | 18.6 | D144 | 77x144 | 1.20 | 20.8 | | | | |
| 470,000 | D121 | 77x121 | 2.00 | 19.2 | D121 | 77x121 | 1.80 | 19.3 | | | | | | | | |
| 560,000 | D121 | 77x121 | 2.50 | 19.8 | D124 | 77x124 | 2.00 | 20.7 | | | | | | | | |
| 680,000 | D121 | 77x121 | 3.00 | 21.0 | | | | | | | | | | | | |

| V.DC / Item uF | 50V (1H) | | | | 63V (1J) | | | | 80V (1K) | | | | 100V (2A) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current |
| 2,200 | | | | | | | | | | | | | A053 | 35x53 | 0.15 | 2.5 |
| 2,700 | | | | | | | | | | | | | A053 | 35x53 | 0.15 | 2.5 |
| 3,300 | | | | | | | | | A053 | 35x53 | 0.15 | 2.5 | A065 | 35x65 | 0.15 | 2.9 |
| 3,900 | | | | | | | | | A053 | 35x53 | 0.15 | 2.7 | A083 | 35x83 | 0.15 | 3.5 |
| 4,700 | | | | | | | | | A065 | 35x65 | 0.15 | 2.9 | A083 | 35x83 | 0.15 | 3.7 |
| 5,600 | | | | | A053 | 35x53 | 0.20 | 3.0 | A065 | 35x65 | 0.20 | 3.7 | A100 | 35x100 | 0.15 | 4.6 |
| 6,800 | A053 | 35x53 | 0.25 | 3.2 | A053 | 35x53 | 0.20 | 3.7 | A083 | 35x83 | 0.20 | 4.3 | A100 | 35x100 | 0.20 | 4.9 |
| 8,200 | A053 | 35x53 | 0.25 | 3.4 | A065 | 35x65 | 0.25 | 4.4 | A083 | 35x83 | 0.20 | 4.5 | B083 | 51x83 | 0.20 | 5.8 |
| 10,000 | A065 | 35x65 | 0.25 | 4.3 | A083 | 35x83 | 0.25 | 4.5 | A100 | 35x100 | 0.20 | 5.4 | B083 | 51x83 | 0.20 | 6.2 |
| 12,000 | A065 | 35x65 | 0.25 | 4.5 | A083 | 35x83 | 0.25 | 4.7 | A100 | 35x100 | 0.20 | 5.6 | B100 | 51x100 | 0.20 | 7.5 |
| 15,000 | A083 | 35x83 | 0.25 | 4.7 | A100 | 35x100 | 0.25 | 5.6 | B083 | 51x83 | 0.25 | 7.3 | B121 | 51x121 | 0.20 | 8.5 |
| 18,000 | A083 | 35x83 | 0.25 | 4.9 | A100 | 35x100 | 0.25 | 6.2 | B083 | 51x83 | 0.25 | 7.7 | C100 | 64x100 | 0.20 | 8.8 |
| 22,000 | A121 | 35x121 | 0.30 | 6.3 | B083 | 51x83 | 0.30 | 7.7 | B100 | 51x100 | 0.30 | 8.5 | C100 | 64x100 | 0.25 | 9.6 |
| 27,000 | A121 | 35x121 | 0.35 | 6.6 | B083 | 51x83 | 0.30 | 8.2 | C100 | 64x100 | 0.30 | 8.6 | C121 | 64x121 | 0.25 | 10.3 |
| 33,000 | B083 | 51x83 | 0.40 | 7.5 | B100 | 51x100 | 0.35 | 8.7 | C100 | 64x100 | 0.35 | 10.5 | C144 | 64x144 | 0.25 | 12.1 |
| 39,000 | B083 | 51x83 | 0.40 | 7.7 | B100 | 51x100 | 0.35 | 9.6 | C121 | 64x121 | 0.35 | 11.8 | D144 | 77x144 | 0.25 | 12.4 |
| 47,000 | B083 | 51x100 | 0.40 | 9.6 | C100 | 64x100 | 0.40 | 11.5 | C144 | 64x144 | 0.35 | 14.0 | D144 | 77x144 | 0.25 | 13.9 |
| 56,000 | B083 | 51x100 | 0.40 | 9.8 | C100 | 64x100 | 0.40 | 11.8 | C144 | 64x144 | 0.35 | 14.2 | D144 | 77x144 | 0.30 | 15.3 |
| 68,000 | C100 | 64x100 | 0.45 | 11.9 | C144 | 64x144 | 0.40 | 13.7 | D144 | 77x144 | 0.35 | 16.7 | | | | |
| 82,000 | C100 | 64x100 | 0.50 | 12.2 | C144 | 64x144 | 0.45 | 14.2 | D144 | 77x144 | 0.35 | 17.1 | | | | |
| 100,000 | C144 | 64x144 | 0.50 | 14.2 | C144 | 77x144 | 0.45 | 15.2 | | | | | | | | |
| 120,000 | C144 | 64x144 | 0.50 | 14.5 | C144 | 77x144 | 0.50 | 15.8 | | | | | | | | |
| 150,000 | D144 | 77x144 | 0.60 | 16.5 | | | | | | | | | | | | |
| 180,000 | D144 | 77x144 | 0.70 | 16.8 | | | | | | | | | | | | |

# SCREW ALUMINUM ELECTROLYTIC CAPACITORS

## CAWA SERIES: Large Can Size, Screw Terminal

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

| V.DC / Item / uF | 160V (2C) | | | | 200V (2D) | | | | 250V (2E) | | | | 350V (2V) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current |
| 390 | | | | | | | | | | | | | A053 | 35x53 | 0.15 | 1.6 |
| 470 | | | | | | | | | | | | | A065 | 35x65 | 0.15 | 2.1 |
| 560 | | | | | | | | | | | | | A083 | 35x83 | 0.15 | 2.3 |
| 680 | | | | | | | | | | | | | A083 | 35x83 | 0.15 | 2.6 |
| 820 | | | | | | | | | | | | | A100 | 35x100 | 0.15 | 3.0 |
| 1000 | | | | | | | | | | | | | A100 | 35x100 | 0.15 | 3.4 |
| 1200 | | | | | | | | | | | | | B075 | 51x75 | 0.15 | 3.8 |
| 1500 | | | | | | | | | A100 | 35x100 | 0.15 | 3.2 | B075 | 51x75 | 0.15 | 4.2 |
| 1800 | | | | | | | | | A100 | 35x100 | 0.15 | 3.5 | B096 | 51x96 | 0.15 | 5.1 |
| 2200 | | | | | A100 | 35x100 | 0.15 | 3.9 | B075 | 51x75 | 0.15 | 4.0 | B096 | 51x96 | 0.15 | 5.7 |
| 2700 | | | | | A121 | 35x121 | 0.15 | 4.7 | B075 | 51x75 | 0.15 | 4.4 | B130 | 51x130 | 0.15 | 7.1 |
| 3300 | A121 | 35x121 | 0.15 | 5.2 | B075 | 51x75 | 0.15 | 4.9 | B096 | 51x96 | 0.15 | 5.4 | C115 | 64x115 | 0.15 | 7.9 |
| 3900 | B075 | 51x75 | 0.15 | 5.3 | B075 | 51x75 | 0.15 | 5.3 | B115 | 51x115 | 0.15 | 6.3 | C115 | 64x115 | 0.15 | 8.9 |
| 4700 | B075 | 51x75 | 0.15 | 5.8 | B096 | 51x96 | 0.15 | 6.4 | C096 | 64x96 | 0.15 | 7.1 | C130 | 64x130 | 0.15 | 10.3 |
| 5600 | B096 | 51x96 | 0.15 | 7.0 | B115 | 51x115 | 0.15 | 7.5 | C096 | 64x96 | 0.15 | 7.7 | D115 | 77x115 | 0.15 | 11.3 |
| 6800 | B096 | 51x96 | 0.15 | 7.7 | B130 | 51x130 | 0.15 | 8.7 | C115 | 64x115 | 0.15 | 9.1 | D130 | 77x130 | 0.15 | 13.1 |
| 8200 | B115 | 51x115 | 0.15 | 9.1 | C096 | 64x96 | 0.15 | 9.4 | C115 | 64x115 | 0.15 | 10.0 | D155 | 77x155 | 0.15 | 15.4 |
| 10000 | C096 | 64x96 | 0.15 | 10.3 | C096 | 64x96 | 0.15 | 10.3 | C130 | 64x130 | 0.15 | 11.6 | E157 | 90x157 | 0.15 | 18.1 |
| 12000 | C096 | 64x96 | 0.15 | 11.3 | D096 | 77x96 | 0.15 | 12.0 | D115 | 77x115 | 0.15 | 12.8 | E157 | 90x157 | 0.15 | 20.0 |
| 15000 | C130 | 64x130 | 0.15 | 14.3 | D096 | 77x96 | 0.15 | 14.4 | D130 | 77x130 | 0.15 | 15.1 | | | | |
| 18000 | C130 | 64x130 | 0.15 | 15.6 | D130 | 77x130 | 0.15 | 16.5 | D115 | 77x115 | 0.15 | 17.7 | | | | |
| 22000 | D130 | 77x130 | 0.15 | 18.2 | D155 | 77x155 | 0.15 | 19.6 | E157 | 90x157 | 0.15 | 20.9 | | | | |
| 27000 | D130 | 77x130 | 0.15 | 20.2 | E130 | 90x130 | 0.15 | 21.5 | | | | | | | | |
| 33000 | E130 | 90x130 | 0.15 | 23.7 | E157 | 90x157 | 0.15 | 25.5 | | | | | | | | |
| 39000 | E157 | 90x157 | 0.15 | 27.8 | | | | | | | | | | | | |

| V.DC / Item / uF | 400V (2G) | | | | 450V (2W) | | | |
|---|---|---|---|---|---|---|---|---|
| | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current |
| 270 | | | | | A053 | 35x53 | 0.15 | 1.3 |
| 330 | A053 | 35x53 | 0.15 | 1.5 | A065 | 35x65 | 0.15 | 1.8 |
| 390 | A065 | 35x65 | 0.15 | 2.0 | A083 | 35x83 | 0.15 | 2.0 |
| 470 | A083 | 35x83 | 0.15 | 2.1 | A083 | 35x83 | 0.15 | 2.1 |
| 560 | A083 | 35x83 | 0.15 | 2.3 | A100 | 35x100 | 0.15 | 2.5 |
| 680 | A100 | 35x100 | 0.15 | 2.8 | A100 | 35x100 | 0.15 | 2.8 |
| 820 | A100 | 35x100 | 0.15 | 3.1 | B075 | 51x75 | 0.15 | 3.2 |
| 1000 | B075 | 51x75 | 0.15 | 3.5 | B075 | 51x75 | 0.15 | 3.5 |
| 1200 | B075 | 51x75 | 0.15 | 3.8 | B096 | 51x96 | 0.15 | 4.2 |
| 1500 | B096 | 51x96 | 0.15 | 4.7 | B115 | 51x115 | 0.15 | 5.0 |
| 1800 | B096 | 51x96 | 0.15 | 5.1 | B130 | 51x130 | 0.15 | 5.8 |
| 2200 | B130 | 51x130 | 0.15 | 6.4 | C096 | 64x96 | 0.15 | 6.3 |
| 2700 | C096 | 64x96 | 0.15 | 6.9 | C115 | 64x115 | 0.15 | 7.5 |
| 3300 | C115 | 64x115 | 0.15 | 8.2 | C130 | 64x130 | 0.15 | 8.6 |
| 3900 | C130 | 64x130 | 0.15 | 9.4 | D115 | 77x115 | 0.15 | 9.5 |
| 4700 | D115 | 77x115 | 0.15 | 10.4 | D130 | 77x130 | 0.15 | 10.8 |
| 5600 | D130 | 77x130 | 0.15 | 11.9 | D155 | 77x155 | 0.15 | 12.8 |
| 6800 | E157 | 90x157 | 0.15 | 14.0 | E157 | 90x157 | 0.15 | 15.0 |
| 8200 | E157 | 90x157 | 0.15 | 16.4 | E157 | 90x157 | 0.15 | 16.4 |
| 10000 | E157 | 90x157 | 0.15 | 18.2 | | | | |

### PART NUMBER EXAMPLE

CAWA 332 M 2C - A121

- A121 — Case size: 35φ x 121L
- 2C — Rated voltage (160V)
- M — Capacitance tolerance (±20%)
- 332 — Capacitance (3300 μF)
- CAWA — Series name

## CAWC SERIES: Large Can Size, Screw Terminal

### FEATURES

◆ Endurancewith ripple current: 85℃,5，000 hours
◆ Used for air conditioner, general-purpose inverter. and Power Supplies
◆ RoHS Compliant




### SPECIFICATIONS

| Item | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Operating Temp. | -40°C~+85°C | | | | | | |
| Capacitance Toloerance | ± 20% (120Hz, 20°C) | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 5 (mA) whichever is smaller (after 5 minutes) Where, C= rated capacitance in F. V= rated DC working voltage in V. | | | | | | |
| Dissipation Factor Tan at 120Hz, 20°C | Tan (max) | 0.15 | | | | | |
| Low Temperature Characteristics (at 120Hz) | Capacitance change: C(-25°C)/ C(+20°C) 0.7 | | | | | | |
| Load Life Test at 20°C after subjected to DC voltage with rated rippled current applied for 5000 hours at 85°C | Test Time | 5000 hours | | | | | |
| | Capacitance Change | Within ±15% of initial value | | | | | |
| | Dissipation Factor | Less than 175% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| Shelf Life Test at 20°C after exposing them for 1000 hours at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS 5102) | Test Time | 1000 hours | | | | | |
| | Capacitance Change | Within ±20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| Ripple Current & Frequency Multipliers | Frequenc y (Hz) | 50 / 60 | 120 | 300 | 1K | 10K up | |
| | Multiplier | 0.7 | 1.0 | 1.1 | 1.3 | 1.4 | |
| Ripple Current & Temperature Multipliers | Temperature (°C) | 40 | 60 | 85 | | | |
| | Mutipliers | 1.89 | 1.67 | 1.0 | | | |
| Standards | Satisfies Characteristic W of JIS C 5101-4 | | | | | | |




### DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

| V.DC / Item / uF | 350V (2V) | | | | 400V (2G) | | | | 450V (2W) | | | | 500V (2H) | | | | 525V (2Y) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current |
| 1,000 | | | | | B075 | 51 x 75 | 0.15 | 5.0 | B075 | 51 x 75 | 0.15 | 5.0 | B096 | 51 x 96 | 0.20 | 5.5 | B115 | 51 x 115 | 0.20 | 6.7 |
| 1,200 | B075 | 51 x 75 | 0.15 | 5.5 | B075 | 51 x 75 | 0.15 | 5.5 | B096 | 51 x 96 | 0.15 | 6.0 | B115 | 51 x 115 | 0.20 | 6.6 | B130 | 51 x 130 | 0.20 | 7.6 |
| | | | | | | | | | | | | | C096 | 64 x 96 | 0.20 | 6.9 | C096 | 64 x 96 | 0.20 | 7.5 |
| 1,500 | B075 | 51 x 75 | 0.15 | 6.1 | B096 | 51 x 96 | 0.15 | 6.7 | B115 | 51 x 115 | 0.15 | 7.2 | B130 | 51 x 130 | 0.20 | 7.8 | C115 | 64 x 115 | 0.20 | 8.4 |
| | | | | | | | | | | | | | C096 | 64 x 96 | 0.20 | 7.7 | C130 | 64 x 130 | 0.20 | 9.1 |
| 1,800 | B096 | 51 x 96 | 0.15 | 73.4 | B096 | 51 x 96 | 0.15 | 7.4 | B130 | 51 x 130 | 0.15 | 8.3 | C115 | 64 x 115 | 0.20 | 8.6 | D115 | 77 x 115 | 0.20 | 9.9 |
| 2,200 | B096 | 51 x 96 | 0.15 | 8.20 | B130 | 51 x 130 | 0.15 | 9.2 | C096 | 64 x 96 | 0.15 | 9.0 | C130 | 64 x 130 | 0.20 | 9.40 | D130 | 77 x 130 | 0.20 | 10.5 |
| 2,700 | B130 | 51 x 130 | 0.15 | 10.20 | C096 | 64 x 96 | 0.15 | 9.9 | C115 | 64 x 115 | 0.15 | 10.7 | D115 | 77 x 115 | 0.20 | 9.90 | D155 | 77 x 155 | 0.20 | 11.2 |
| 3,300 | B130 | 51 x 130 | 0.15 | 11.30 | C115 | 64 x 115 | 0.15 | 11.8 | C130 | 64 x 130 | 0.15 | 12.4 | D130 | 77 x 130 | 0.20 | 10.40 | E157 | 90 x 157 | 0.20 | 12.1 |
| 3,900 | C115 | 64 x 115 | 0.15 | 12.80 | C130 | 64 x 130 | 0.15 | 13.5 | D115 | 77 x 115 | 0.15 | 13.6 | D130 | 77 x 155 | 0.20 | 11.00 | | | | |
| 4,700 | | | | | C155 | 64 x 155 | 0.15 | 15.9 | C195 | 64 x 195 | 0.15 | 17.5 | | | | | | | | |
| | C130 | 64 x 130 | 0.15 | 14.8 | D115 | 77 x 115 | 0.15 | 14.9 | D130 | 77 x 130 | 0.15 | 15.6 | E130 | 90 x 130 | 0.20 | 13.5 | | | | |
| 5,600 | C155 | 64 x 155 | 0.15 | 17.3 | C195 | 64 x 195 | 0.15 | 19.1 | | | | | | | | | | | | |
| | D115 | 77 x 115 | 0.15 | 16.3 | D130 | 77 x 130 | 0.15 | 17.0 | D155 | 77 x 155 | 0.15 | 18.3 | E157 | 90 x 157 | 0.20 | 15.5 | | | | |
| 6,800 | D130 | 77 x 130 | 0.15 | 18.8 | D155 | 77 x 155 | 0.15 | 20.2 | E157 | 90 x 157 | 0.15 | 21.4 | | | | | | | | |
| 8,200 | D155 | 77 x 155 | 0.15 | 22.1 | E157 | 90 x 157 | 0.15 | 23.5 | E157 | 90 x 157 | 0.15 | 23.5 | | | | | | | | |
| 10,000 | E157 | 90 x 157 | 0.15 | 25.9 | E157 | 90 x 157 | 0.15 | 25.9 | E196 | 90 x 196 | 0.15 | 28.3 | | | | | | | | |
| 12,000 | E157 | 90 x 157 | 0.15 | 28.4 | E196 | 90 x 196 | 0.15 | 31.0 | E236 | 90 x 236 | 0.15 | 33.6 | | | | | | | | |
| 15,000 | E196 | 90 x 196 | 0.15 | 34.6 | E236 | 90 x 236 | 0.15 | 37.5 | | | | | | | | | | | | |
| 18,000 | E236 | 90 x 236 | 0.15 | 41.4 | | | | | | | | | | | | | | | | |

### PART NUMBER EXAMPLE

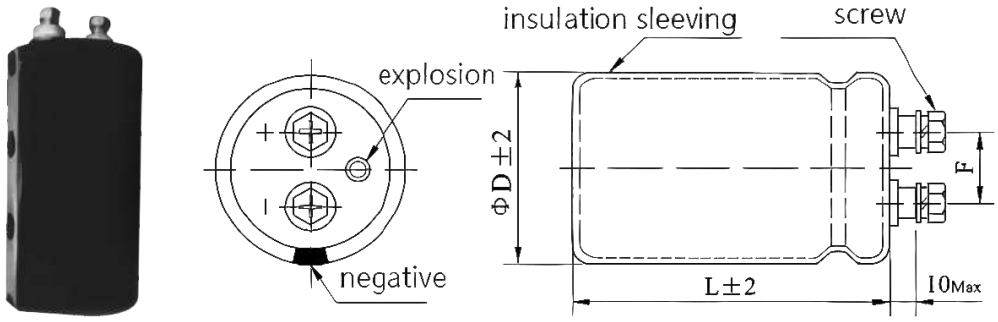
CAWC 122 M 2V - B075

- Case size: 51 φx 75L
- Rated voltage (350V)
- Capacitance tolerance (±20%)
- Capacitance (1200 μF)
- Series name

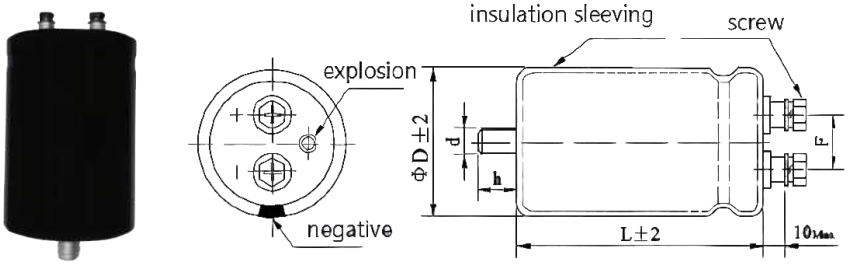
## DIMENSIONS

| D | P | | L1 | W1 | W2 | H | h | a | b | c | ° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 22.0 | 2 | 10 | 61.0 | 65.5 | 21.0 | 15.0 | 7.0 | 12.0 | 4.5 | 60 |
| 64 | 28.6 | 2 | 10 | 72.5 | 78.0 | 25.0 | 20.0 | 7.0 | 14.0 | 4.5 | 60 |
| 77 | 32.0 | 2 | 10 | 85.5 | 91.0 | 35.0 | 20.0 | 8.0 | 16.0 | 4.5 | 60 |
| 90 | 32.0 | 2 | 10 | 101 | 106 | 34.5 | 20.0 | 8.0 | 16.0 | 5.0 | 60 |

Screw Specifications:
Plus hexagon-headed screw: M5 x 0.8 x 10
Max. screw tightening torque: 3.23Nm




Type A (Basic type, fixed mounting ring)




Type B (bottom screw fixed, please specify when ordering)

## CAWD SERIES: Screw Term, 85C, 20,000hrs

### FEATURES

- ◆ Longest useful life
- ◆High Reliability
- ◆Used for inverter、professional power supplies
- ◆ RoHS Compliant





### SPECIFICATIONS

| Items | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40℃~ +85℃ | | | | | | |
| Capacitance Tolerance | +20% (at 120Hz, 20℃) | | | | | | |
| Leakage Current (at 20℃) | I = 0.01CV or 5 mA whichever is smaller (after 5 minutes) Where, C= rated capacitance in F. V= rated DC working voltage in V. | | | | | | |
| Dissipation Factor (Tan at 120Hz, 20℃) | Rated Voltage | 350~450 | | | | | |
| | Tan (max) | 0.15 | | | | | |
| Low Temperature Characteristics (at 120Hz) | Capacitance change: C( -25 ℃) / C( +20 ℃) > 0.7 | | | | | | |
| Load Life Test | Test Time | 20,000 Hrs | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with rated ripple current applied for 20,000 hrs at 85 ℃. | | | | | | |
| Shelf Life Test | Test Time | 1,000 Hrs | | | | | |
| | Capacitance Change | Within +20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| | * The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hrs at 85℃ without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5102-4.4). | | | | | | |
| Ripple Current & Frequency Multipliers | Frequency (Hz) | 50/60 | 120 | 300 | 1K | 10K up | |
| | Multiplier | 0.7 | 1.0 | 1.1 | 1.3 | 1.4 | |
| Ripple Current & Temperature Multipliers | Temperature (℃) | 40 | 60 | 85 | | | |
| | Multiplier | 2.44 | 2.2 | 1.0 | | | |
| Standards | JIS C 5101-4 | | | | | | |

### DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

| V.DC | 350V (2V) | | | | 400V (2G) | | | | 450V (2W) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item / uF | Size Code | D L | Tan | Ripple Current | Size Code | D L | Tan | Ripple Current | Size Code | D L | Tan | Ripple Current |
| 1,000 | B075 | 51 x 75 | 0.15 | 3.8 | B075 | 51 x 75 | 0.15 | 3.8 | B096 | 51 x 96 | 0.15 | 4.2 |
| 1,200 | B075 | 51 x 75 | 0.15 | 4.2 | B096 | 51 x 96 | 0.15 | 4.6 | B115 | 51 x 115 | 0.15 | 5.0 |
| 1,500 | B096 | 51 x 96 | 0.15 | 5.2 | B115 | 51 x 115 | 0.15 | 5.5 | B130 | 51 x 130 | 0.15 | 5.8 |
| 1,800 | B096 | 51 x 96 | 0.15 | 5.6 | B130 | 51 x 130 | 0.15 | 6.4 | C096 | 64 x 96 | 0.15 | 6.2 |
| 2,200 | B130 | 51 x 130 | 0.15 | 7.10 | C096 | 64 x 96 | 0.15 | 6.9 | C115 | 64 x 115 | 0.15 | 7.4 |
| 2,700 | C096 | 64 x 96 | 0.15 | 7.60 | C115 | 64 x 115 | 0.15 | 8.2 | C130 | 64 x 130 | 0.15 | 8.6 |
| | | | | | | | | | D115 | 77 x 115 | 0.15 | 8.7 |
| 3,300 | C115 | 64 x 115 | 0.15 | 9.00 | C130 | 64 x 130 | 0.15 | 9.5 | C155 | 64 x 155 | 0.15 | 10.2 |
| | | | | | | | | | D130 | 77 x 130 | 0.15 | 10.0 |
| 3,900 | C130 | 64 x 130 | 0.15 | 10.3 | C155 | 64 x 155 | 0.15 | 11.1 | D155 | 77 x 155 | 0.15 | 11.7 |
| | | | | | D15 | 77 x 115 | 0.15 | 10.4 | | | | |
| 4,700 | C155 | 64 x 155 | 0.15 | 12.2 | D130 | 77 x 130 | 0.15 | 12.0 | D155 | 77 x 155 | 0.15 | 12.9 |
| | D115 | 77 x 115 | 0.15 | 11.5 | | | | | | x | | |
| 5,600 | D130 | 77 x 130 | 0.15 | 13.1 | D155 | 77 x 155 | 0.15 | 14.4 | E157 | 90 x 157 | 0.15 | 14.9 |
| 6,800 | D155 | 77 x 155 | 0.15 | 15.5 | E157 | 90 x 157 | 0.15 | 16.5 | | | | |
| 8,200 | E157 | 90 x 157 | 0.15 | 18.1 | E157 | 90 x 157 | 0.15 | 18.1 | | | | |
| 10,000 | E157 | 90 x 157 | 0.15 | 19.9 | | | | | | | | |

### PART NUMBER EXAMPLE

CAWD 122 M 2V - B075

- Case size: 51 φx 75L
- Rated voltage (350V)
- Capacitance tolerance (±20%)
- Capacitance (1200 μF)
- Series name



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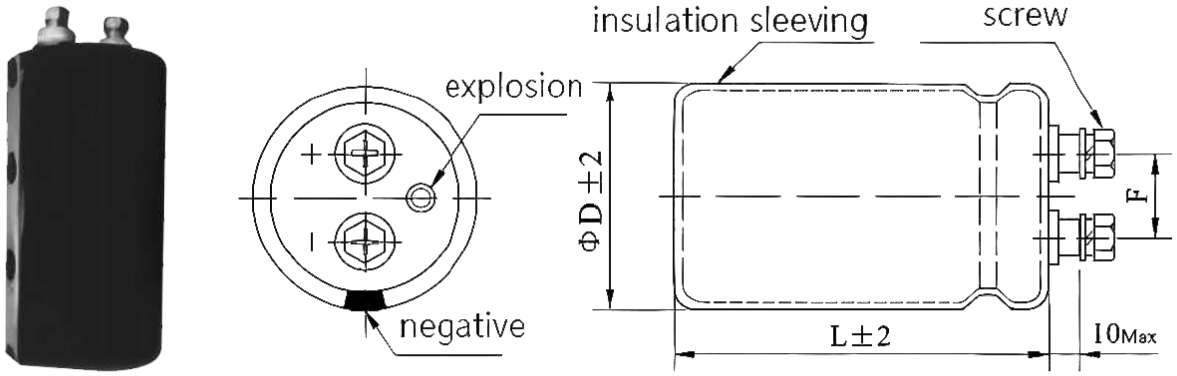
# SCREW ALUMINUM ELECTROLYTIC CAPACITORS

## DIMENSIONS

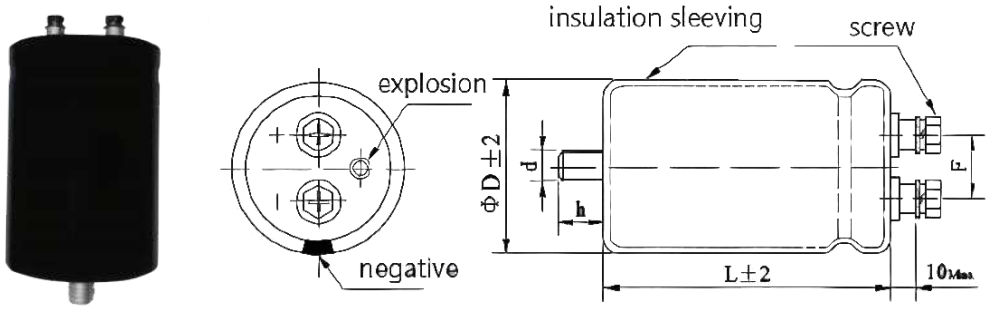
unit: mm

| D | P | | L1 | W1 | W2 | H | h | a | b | c | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 22.0 | 2 | 10 | 61.0 | 65.5 | 21.0 | 15.0 | 7.0 | 12.0 | 4.5 | 60.0 |
| 64 | 28.6 | 2 | 10 | 72.5 | 78.0 | 25.0 | 20.0 | 7.0 | 14.0 | 4.5 | 60.0 |
| 77 | 32.0 | 2 | 10 | 85.5 | 91.0 | 35.0 | 20.0 | 8.0 | 16.0 | 4.5 | 60.0 |
| 90 | 32.0 | 2 | 10 | 101 | 106.0 | 34.5 | 20.0 | 8.0 | 16.0 | 4.5 | 60.0 |

Screw Specifications:
Plus hexagon-headed screw: M5 x 0.8 x 10
Max. screw tightening torque: 3.23Nm




Type A (Basic type, fixed mounting ring)




Type B (bottom screw fixed, please specify when ordering)

## CAWB SERIES: Large Can Screw Terminal, 105 °C







### FEATURES

- Endurance with ripple current: 105°C, 2， 000 hours
- Used for air conditioner, general-purpose inverter、power supplies
- RoHS Compliant

### SPECIFICATIONS

| Item | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Operating Temp. | -40°C~+105°C | | | | | | |
| Capacitance Tolerance | ± 20% (120Hz, 20°C) | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 5 (mA) whichever is smaller (after 5 minutes)<br>Where, C= rated capacitance in F. V= rated DC working voltage in V. | | | | | | |
| Dissipation Factor Tan at 120Hz, 20°C | Rated Voltage | 16~100 | | | 160~450 | | |
| | Tan (max) | See the case size list | | | 0.15 | | |
| Low Temperature Characteristics (at 120Hz) | Capacitance change: C(-25°C)/ C(+20°C) 0.7 | | | | | | |
| Load Life Test at 20°C after subjected to DC voltage withrated rippled current applied for 2000 | Test Time | 2000 hours | | | | | |
| | Capacitance Change | Within ± 20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| Shelf Life Test at 20°C after exposing them for 500 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS 5102) | Test Time | 500 hours | | | | | |
| | Capacitance Change | Within ±20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| Ripple Current & Frequency Multipliers | Frequency (Hz) | 50 / 60 | 120 | 300 | 1K | 10K up | |
| | Multiplier | 0.8. | 1.0 | 1.1 | 1.3 | 1.4 | |
| Ripple Current & Temperature Multipliers | Temperature (°C) | 40 | 55 | 70 | 85 | 105 | |
| | Multiplier ≤ 250V | 4.9 | 3.9 | 3.0 | 1.8 | 1.0 | |
| | Multiplier ≥ 350V | 3.8 | 3.3 | 2.5 | 2.0 | 1.0 | |
| Standards | Satisfies Characteristic W of JIS C 5101-4 | | | | | | |

### DIMENSIONS

| D | P | | L1 | W1 | W2 | H | h |
|---|---|---|---|---|---|---|---|
| 35 | 12.7 | 2 | 10.0 | 48 | 58 | 15.0 | 10.0 |

Screw Specifications:
Plus hexagon-headed screw: M5 x 0.8 x 10
Max. screw tightening torque: 3.23Nm

| D | P | | L1 | W1 | W2 | H | h | a | b | c | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 22.0 | 2 | 10 | 61.0 | 65.5 | 21.5 | 15.0 | 7.0 | 12.0 | 4.5 | 60 |
| 64 | 28.6 | 2 | 10 | 72.5 | 78.0 | 25.0 | 20.0 | 7.0 | 14.0 | 4.5 | 60 |
| 77 | 32.0 | 2 | 10 | 85.5 | 91.0 | 35.0 | 20.0 | 8.0 | 16.0 | 4.5 | 60 |
| 90 | 32.0 | 2 | 10 | 101 | 106 | 34.5 | 20.0 | 8.0 | 16.0 | 5.0 | 60 |

### PART NUMBER EXAMPLE

CAWB332 M 2C - B075

- B075 — Case size: 51φ x 75L
- 2C — Rated voltage (160V)
- M — Capacitance tolerance (±20%)
- 332 — Capacitance (3300 μF)
- CAWB — Series name


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# SCREW ALUMINUM ELECTROLYTIC CAPACITORS

## CAWB SERIES: Large Can Screw Terminal, 105 °C

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L (mm)
Tanδ: 120Hz, 20°C
Ripple Current: A/rms at 120Hz, 105°C

| V.DC / Item uF | 16V (1C) | | | | 25V (1E) | | | | 35V (1V) | | | | 50V (1H) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current |
| 3,900 | | | | | | | | | | | | | A053 | 35x53 | 0.25 | 2.8 |
| 4,700 | | | | | | | | | | | | | A053 | 35x53 | 0.25 | 3.1 |
| 5,600 | | | | | | | | | | | | | A053 | 35x53 | 0.25 | 3.3 |
| 6,800 | | | | | | | | | | | | | A053 | 35x53 | 0.25 | 3.3 |
| 8,200 | | | | | | | | | A053 | 35x53 | 0.30 | 3.3 | A065 | 35x65 | 0.25 | 3.8 |
| 10,000 | | | | | | | | | A053 | 35x53 | 0.30 | 3.6 | A083 | 35x83 | 0.25 | 4.6 |
| 12,000 | | | | | A053 | 35x53 | 0.35 | 3.7 | A065 | 35x65 | 0.30 | 4.2 | A083 | 35x83 | 0.30 | 5.1 |
| 15,000 | | | | | A053 | 35x53 | 0.35 | 4.1 | A065 | 35x65 | 0.30 | 4.7 | A083 | 35x83 | 0.30 | 5.7 |
| 18,000 | A053 | 35x53 | 0.40 | 4.2 | A065 | 35x65 | 0.35 | 4.8 | A083 | 35x83 | 0.35 | 5.7 | A100 | 35x100 | 0.35 | 6.7 |
| 22,000 | A053 | 35x53 | 0.40 | 4.7 | A065 | 35x65 | 0.35 | 5.3 | A083 | 35x83 | 0.35 | 6.3 | A121 | 35x121 | 0.35 | 8.1 |
| 27,000 | A053 | 35x53 | 0.40 | 5.5 | A083 | 35x83 | 0.40 | 6.4 | A100 | 35x100 | 0.40 | 7.5 | B075 | 51x75 | 0.40 | 9.1 |
| 33,000 | A065 | 35x65 | 0.45 | 5.7 | A083 | 35x83 | 0.40 | 6.7 | A121 | 35x121 | 0.40 | 9.0 | B100 | 51x100 | 0.40 | 11.1 |
| 39,000 | A065 | 35x65 | 0.50 | 6.8 | A100 | 35x100 | 0.40 | 7.8 | B075 | 51x75 | 0.45 | 9.2 | B121 | 51x121 | 0.40 | 13.1 |
| 47,000 | A083 | 35x83 | 0.50 | 7.1 | A121 | 35x121 | 0.40 | 9.3 | B100 | 51x100 | 0.45 | 11.2 | B121 | 51x121 | 0.40 | 13.9 |
| 56,000 | A100 | 35x100 | 0.55 | 8.4 | B075 | 51x75 | 0.50 | 9.7 | B100 | 51x100 | 0.50 | 11.4 | C100 | 64x100 | 0.45 | 13.9 |
| 68,000 | A121 | 35x121 | 0.60 | 8.8 | B100 | 51x100 | 0.50 | 11.2 | B121 | 51x121 | 0.50 | 13.6 | C121 | 64x121 | 0.45 | 16.6 |
| 82,000 | B083 | 51x83 | 0.60 | 10.7 | B100 | 51x100 | 0.60 | 11.2 | C100 | 64x100 | 0.60 | 14.8 | D121 | 77x121 | 0.50 | 18.9 |
| 100,000 | B083 | 51x83 | 0.70 | 10.8 | B121 | 51x121 | 0.60 | 14.8 | C121 | 64x121 | 0.60 | 17.6 | D121 | 77x121 | 0.50 | 19.5 |
| 120,000 | B100 | 51x100 | 0.70 | 13.1 | C100 | 64x100 | 0.80 | 14.9 | C121 | 64x121 | 0.70 | 17.6 | D121 | 77x121 | 0.50 | 19.5 |
| 150,000 | B121 | 51x121 | 0.80 | 15.3 | C121 | 64x121 | 0.80 | 17.9 | D121 | 77x121 | 0.70 | 19.8 | E130 | 90x130 | 0.50 | 22.5 |
| 180,000 | B121 | 51x121 | 0.90 | 15.7 | C121 | 64x121 | 1.00 | 17.9 | D121 | 77x121 | 0.70 | 19.8 | E157 | 90x157 | 0.50 | 23.9 |
| 220,000 | C121 | 64x121 | 0.90 | 19.2 | D121 | 77x121 | 1.00 | 21.3 | D144 | 77x144 | 0.70 | 23.4 | | | | |
| 270,000 | C121 | 64x121 | 1.00 | 19.6 | D121 | 77x121 | 1.00 | 21.7 | E157 | 90x157 | 0.70 | 25.5 | | | | |
| 330,000 | D121 | 77x121 | 1.20 | 21.1 | D144 | 77x144 | 1.00 | 23.4 | | | | | | | | |
| 390,000 | D121 | 77x121 | 1.30 | 21.3 | E130 | 90x130 | 1.00 | 24.9 | | | | | | | | |
| 470,000 | D144 | 77x144 | 1.60 | 24.2 | | | | | | | | | | | | |

| V.DC / Item uF | 63V (1J) | | | | 80V (1K) | | | | 100V (2A) | | | | 160V (2C) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current |
| 560 | | | | | | | | | | | | | A053 | 35x53 | 0.15 | 1.2 |
| 680 | | | | | | | | | | | | | A053 | 35x53 | 0.15 | 1.3 |
| 820 | | | | | | | | | | | | | A065 | 35x65 | 0.15 | 1.4 |
| 1,000 | | | | | | | | | | | | | A083 | 35x83 | 0.15 | 1.8 |
| 1,200 | | | | | | | | | | | | | A083 | 35x83 | 0.15 | 1.9 |
| 1,500 | | | | | | | | | | | | | A083 | 35x83 | 0.15 | 2.1 |
| 1,800 | | | | | | | | | A053 | 35x53 | 0.15 | 2.7 | A083 | 35x83 | 0.15 | 2.5 |
| 2,200 | | | | | A053 | 35x53 | 0.15 | 2.4 | A053 | 35x53 | 0.15 | 3.0 | A100 | 35x100 | 0.15 | 2.8 |
| 2,700 | A053 | 35x53 | 0.20 | 2.3 | A053 | 35x53 | 0.15 | 2.7 | A065 | 35x65 | 0.15 | 3.5 | A100 | 35x100 | 0.15 | 3.3 |
| 3,300 | A053 | 35x53 | 0.20 | 2.5 | A053 | 35x53 | 0.15 | 3.0 | A083 | 35x83 | 0.15 | 4.2 | B075 | 51x75 | 0.15 | 3.8 |
| 3,900 | A053 | 35x53 | 0.20 | 2.8 | A065 | 35x65 | 0.15 | 3.4 | A083 | 35x83 | 0.15 | 4.2 | B075 | 51x75 | 0.15 | 3.8 |
| 4,700 | A053 | 35x53 | 0.20 | 3.1 | A065 | 35x65 | 0.15 | 3.7 | A100 | 35x100 | 0.15 | 5.0 | B096 | 51x96 | 0.15 | 4.6 |
| 5,600 | A065 | 35x65 | 0.20 | 3.5 | A083 | 35x83 | 0.20 | 4.5 | A100 | 35x100 | 0.15 | 5.4 | B096 | 51x96 | 0.15 | 5.1 |
| 6,800 | A065 | 35x65 | 0.20 | 3.9 | A083 | 35x83 | 0.20 | 4.9 | A121 | 35x121 | 0.15 | 5.8 | C096 | 64x96 | 0.15 | 6.1 |
| 8,200 | A083 | 35x83 | 0.20 | 4.4 | A100 | 35x100 | 0.20 | 5.1 | B075 | 51x75 | 0.15 | 6.4 | C096 | 64x96 | 0.15 | 7.0 |
| 10,000 | A083 | 35x83 | 0.25 | 4.7 | A121 | 35x121 | 0.20 | 6.1 | B100 | 51x100 | 0.15 | 7.8 | D096 | 77x96 | 0.15 | 8.4 |
| 12,000 | A100 | 35x100 | 0.25 | 5.5 | B075 | 51x75 | 0.25 | 6.7 | B121 | 51x121 | 0.20 | 9.3 | D115 | 77x115 | 0.15 | 9.4 |
| 15,000 | A121 | 35x121 | 0.25 | 6.6 | B100 | 51x100 | 0.25 | 8.3 | B121 | 51x121 | 0.20 | 10.4 | D130 | 77x130 | 0.15 | 11.4 |
| 18,000 | B075 | 51x75 | 0.25 | 7.4 | B121 | 51x121 | 0.25 | 9.9 | C100 | 64x100 | 0.20 | 10.4 | D144 | 77x144 | 0.15 | 13.4 |
| 22,000 | B100 | 51x100 | 0.25 | 9.0 | B121 | 51x121 | 0.25 | 11.0 | C121 | 64x121 | 0.20 | 12.5 | E130 | 90x130 | 0.15 | 14.5 |
| 27,000 | B121 | 51x121 | 0.30 | 10.9 | C100 | 64x100 | 0.30 | 11.4 | D121 | 77x121 | 0.25 | 13.7 | E157 | 90x157 | 0.15 | 16.0 |
| 33,000 | B121 | 51x121 | 0.30 | 12.0 | D100 | 77x100 | 0.30 | 13.9 | D121 | 77x121 | 0.25 | 15.2 | | | | |
| 39,000 | C100 | 64x100 | 0.30 | 12.5 | D100 | 77x100 | 0.30 | 13.9 | D144 | 77x144 | 0.25 | 16.1 | | | | |
| 47,000 | C121 | 64x121 | 0.30 | 14.9 | D121 | 77x121 | 0.30 | 16.5 | E130 | 90x130 | 0.25 | 19.3 | | | | |
| 56,000 | D121 | 77x121 | 0.35 | 16.3 | D121 | 77x121 | 0.30 | 18.1 | E157 | 90x157 | 0.25 | 21.0 | | | | |
| 68,000 | D121 | 77x121 | 0.35 | 18.4 | D144 | 77x144 | 0.30 | 19.7 | | | | | | | | |
| 82,000 | D144 | 77x144 | 0.40 | 20.0 | E130 | 90x130 | 0.30 | 22.1 | | | | | | | | |
| 100,000 | D144 | 77x144 | 0.40 | 20.0 | | | | | | | | | | | | |
| 120,000 | E157 | 90x157 | 0.40 | 21.8 | | | | | | | | | | | | |

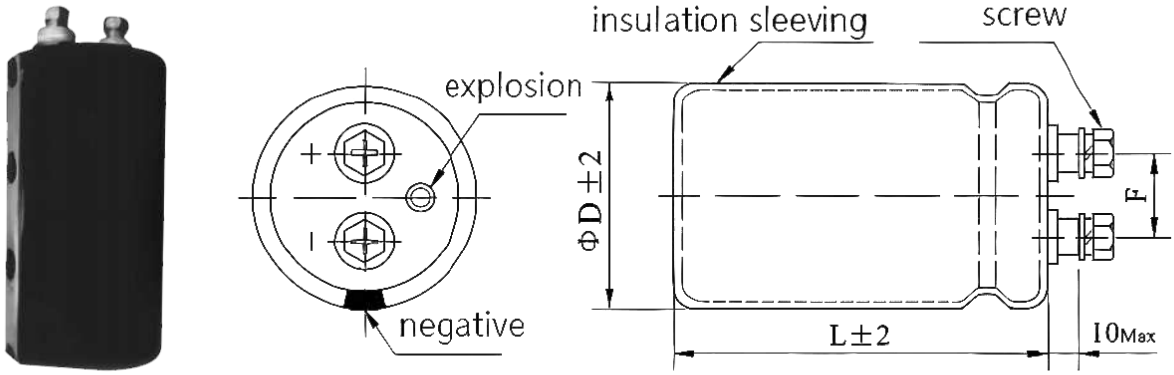
# SCREW ALUMINUM ELECTROLYTIC CAPACITORS

## CAWB SERIES: Large Can Screw Terminal, 105 °C

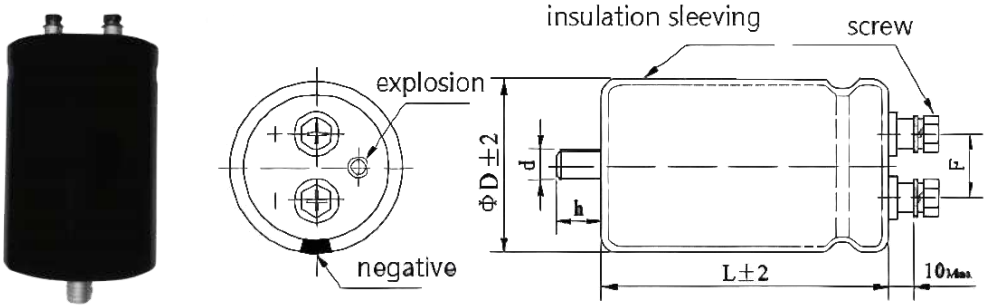
### DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φD x L (mm)
Tanδ: 120Hz, 20°C
Ripple Current: A/rms at 120Hz, 105°C

| V.DC / Item uF | 200V (2D) | | | | 250V (2E) | | | | 350V (2V) | | | | 400V (2G) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current | Size Code | D x L | Tan | Ripple Current |
| 180 | | | | | | | | | A053 | 35x53 | 0.15 | 0.8 | A053 | 35x53 | 0.15 | 0.8 |
| 220 | | | | | | | | | A053 | 35x53 | 0.15 | 0.9 | A053 | 35x53 | 0.15 | 0.9 |
| 270 | | | | | A053 | 35x53 | 0.15 | 0.8 | A053 | 35x53 | 0.15 | 1.0 | A065 | 35x65 | 0.15 | 1.1 |
| 330 | A053 | 35x53 | 0.15 | 0.9 | A053 | 35x53 | 0.15 | 0.9 | A065 | 35x65 | 0.15 | 1.2 | A065 | 35x65 | 0.15 | 1.2 |
| 390 | A053 | 35x53 | 0.15 | 1.0 | A053 | 35x53 | 0.15 | 1.0 | A065 | 35x65 | 0.15 | 1.3 | A083 | 35x83 | 0.15 | 1.3 |
| 470 | A053 | 35x53 | 0.15 | 1.1 | A053 | 35x53 | 0.15 | 1.1 | A083 | 35x83 | 0.15 | 1.5 | A083 | 35x83 | 0.15 | 1.4 |
| 560 | A053 | 35x53 | 0.15 | 1.2 | A065 | 35x65 | 0.15 | 1.4 | A083 | 35x83 | 0.15 | 1.6 | A100 | 35x100 | 0.15 | 1.6 |
| 680 | A053 | 35x53 | 0.15 | 1.3 | A083 | 35x83 | 0.15 | 1.5 | A100 | 35x100 | 0.15 | 1.7 | A100 | 35x100 | 0.15 | 1.7 |
| 820 | A065 | 35x65 | 0.15 | 1.5 | A083 | 35x83 | 0.15 | 1.6 | A100 | 35x100 | 0.15 | 1.8 | A121 | 35x121 | 0.15 | 2.0 |
| 1,000 | A083 | 35x83 | 0.15 | 1.7 | A100 | 35x100 | 0.15 | 1.8 | B075 | 51x75 | 0.15 | 2.2 | B075 | 51x75 | 0.15 | 2.2 |
| 1,200 | A083 | 35x83 | 0.15 | 1.9 | A100 | 35x100 | 0.15 | 1.9 | B075 | 51x75 | 0.15 | 2.3 | B096 | 51x96 | 0.15 | 2.7 |
| 1,500 | A100 | 35x100 | 0.15 | 2.3 | B075 | 51x75 | 0.15 | 2.3 | B096 | 51x96 | 0.15 | 3.0 | B115 | 51x115 | 0.15 | 3.3 |
| 1,800 | A100 | 35x100 | 0.15 | 2.5 | B075 | 51x75 | 0.15 | 2.5 | B115 | 51x115 | 0.15 | 3.6 | B130 | 51x130 | 0.15 | 3.7 |
| 2,200 | B075 | 51x75 | 0.15 | 3.0 | B096 | 51x96 | 0.15 | 3.0 | B130 | 51x130 | 0.15 | 4.0 | C096 | 64x96 | 0.15 | 4.2 |
| 2,700 | B096 | 51x96 | 0.15 | 3.6 | B115 | 51x115 | 0.15 | 3.5 | C096 | 64x96 | 0.15 | 4.6 | C115 | 64x115 | 0.15 | 4.8 |
| 3,300 | B096 | 51x96 | 0.15 | 4.0 | C096 | 64x96 | 0.15 | 4.2 | C115 | 64x115 | 0.15 | 5.6 | C130 | 64x130 | 0.15 | 5.5 |
| 3,900 | B115 | 51x115 | 0.15 | 4.9 | C096 | 64x96 | 0.15 | 4.6 | C130 | 64x130 | 0.15 | 6.7 | D115 | 77x115 | 0.15 | 6.5 |
| 4,700 | C096 | 64x96 | 0.15 | 5.3 | C115 | 64x115 | 0.15 | 5.7 | D121 | 77x121 | 0.15 | 7.5 | D130 | 77x130 | 0.15 | 7.6 |
| 5,600 | C096 | 64x96 | 0.15 | 5.8 | C130 | 64x130 | 0.15 | 6.3 | D130 | 77x130 | 0.15 | 8.3 | D155 | 77x155 | 0.15 | 9.4 |
| 6,800 | C115 | 64x115 | 0.15 | 6.9 | D115 | 77x115 | 0.15 | 7.7 | D155 | 77x155 | 0.15 | 9.4 | E157 | 90x157 | 0.15 | 10.4 |
| 8,200 | C130 | 64x130 | 0.15 | 7.6 | D130 | 77x130 | 0.15 | 8.4 | E157 | 90x157 | 0.15 | 11.4 | E157 | 90x157 | 0.15 | 11.8 |
| 10,000 | D115 | 77x115 | 0.15 | 9.6 | D155 | 77x155 | 0.15 | 10.0 | | | | | | | | |
| 12,000 | D130 | 77x130 | 0.15 | 10.2 | E140 | 90x140 | 0.15 | 11.9 | | | | | | | | |
| 15,000 | E130 | 90x130 | 0.15 | 12.2 | E157 | 90x157 | 0.15 | 12.5 | | | | | | | | |
| 18,000 | E157 | 90x157 | 0.15 | 13.0 | | | | | | | | | | | | |




Type A (Basic type, fixed mounting ring)




Type B (bottom screw fixed, please specify when ordering)


www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

## CAWE SERIES: Large Can , Screw Terminal, 105 °C

### FEATURES

- Endurance with ripple current: 105℃,5， 000 hours
- Used for air conditioner、general-purpose inverter、Power Supplies
- RoHS Complian







### SPECIFICATIONS

| Item | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Operating Temp. | -40°C~+105°C | | | | | | |
| Capacitance Toloerance | ± 20% (120Hz, 20°C) | | | | | | |
| Leakage Current (at 20°C) | I = 0.01CV or 5 (mA) whichever is smaller (after 5 minutes) Where, C= rated capacitance in F. V= rated DC working voltage in V. | | | | | | |
| Dissipation Factor Tan at 120Hz, 20°C | Tan (max) | 0.15 | | | | | |
| Low Temperature Characteristics (at 120Hz) | Capacitance change: C(-25°C)/ C(+20°C) 0.7 | | | | | | |
| Load Life Test at 20 °C after subjected to DC voltage with rated rippled current applied for 5000 hours at 105°C | Test Time | 5000 hours | | | | | |
| | Capacitance Change | Within ±15% of initial value | | | | | |
| | Dissipation Factor | Less than 175% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| Shelf Life Test at 20 °C after exposing them for 1000 hours at 105℃ without voltage applied. The rated voltage shall be applied to the capacitors before the measurements. (Refer to JIS 5102) | Test Time | 1000 hours | | | | | |
| | Capacitance Change | Within ±20% of initial value | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | |
| | Leakage Current | Within specified value | | | | | |
| Ripple Current & Frequency Multipliers | Frequency (Hz) | 50 / 60 | 120 | 300 | 1K | 10Kup | |
| | Multiplier | 0.7 | 1.0 | 1.1 | 1.3 | 1.4 | |
| Ripple Current & Temperature Multipliers | Temperature (°C) | 40 | 60 | 85 | 105 | | |
| | Mutipliers | 2.44 | 2.16 | 2.00 | 1.00 | | |
| Standards | Satisfies Characteristic W of JIS C 5101-4 | | | | | | |

### DIMENSIONS & PERMISSIBLE RIPPLE CURRENT

| V.D C / Item / uF | 350V (2V) | | | | 400V (2G) | | | | 450V (2W) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size Code | DxL | Tan | Ripple Current | Size Code | DxL | Tan | Ripple Current | Size Code | DxL | Tan | Ripple Current |
| 1000 | B075 | 51x75 | 0.15 | 3.9 | B075 | 51X75 | 0.15 | 3.9 | B096 | 51X96 | 0.15 | 4.2 |
| 1200 | B075 | 51x75 | 0.15 | 4.2 | B096 | 51X96 | 0.15 | 4.6 | B115 | 51X115 | 0.15 | 5.0 |
| 1500 | B096 | 51x96 | 0.15 | 5.2 | B115 | 51X115 | 0.15 | 5.6 | B130 | 51X130 | 0.15 | 5.9 |
| 1800 | B096 | 51x96 | 0.15 | 5.7 | B130 | 51X130 | 0.15 | 6.4 | C096 | 64X96 | 0.15 | 6.3 |
| 2200 | B130 | 51x130 | 0.15 | 7.1 | C096 | 64X96 | 0.15 | 6.9 | C115 | 64X115 | 0.15 | 7.4 |
| 2700 | C096 | 64x96 | 0.15 | 7.7 | C115 | 64X115 | 0.15 | 8.2 | C130 | 64X130 | 0.15 | 8.6 |
| | | | | | | | | | D115 | 77X115 | 0.15 | 8.7 |
| 3300 | C115 | 64x115 | 0.15 | 9.1 | C130 | 64X130 | 0.15 | 9.5 | C155 | 64x155 | 0.15 | 10.2 |
| | | | | | | | | | D130 | 77X130 | 0.15 | 10.1 |
| 3900 | C130 | 64x130 | 0.15 | 10.4 | C155 | 64x155 | 0.15 | 11.1 | D155 | 77X155 | 0.15 | 11.7 |
| | | | | | D115 | 77X115 | 0.15 | 10.4 | | | | |
| 4700 | C155 | 64x155 | 0.15 | 12.2 | D130 | 77X130 | 0.15 | 12.0 | D155 | 77x155 | 0.15 | 12.9 |
| | D115 | 77x115 | 0.15 | 11.5 | | | | | | | | |
| 5600 | D130 | 77x130 | 0.15 | 13.1 | D155 | 77X155 | 0.15 | 14.0 | E157 | 90X157 | 0.15 | 14.9 |
| 6800 | D155 | 77x155 | 0.15 | 15.5 | E157 | 90X157 | 0.15 | 16.5 | | | | |
| 8200 | E157 | 90x157 | 0.15 | 18.1 | E157 | 90X157 | 0.15 | 18.1 | | | | |
| 10000 | E157 | 90x157 | 0.15 | 19.9 | | | | | | | | |

### PART NUMBER EXAMPLE

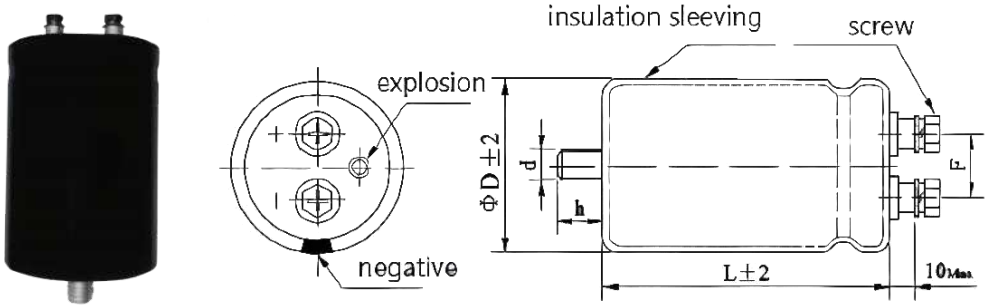
CAWE 122 M 2V - B075

- B075 — Case size: 51 x 75L
- 2V — Rated voltage (350V)
- M — Capacitance tolerance (±20%)
- 122 — Capacitance (1200 F)
- CAWE — Series name

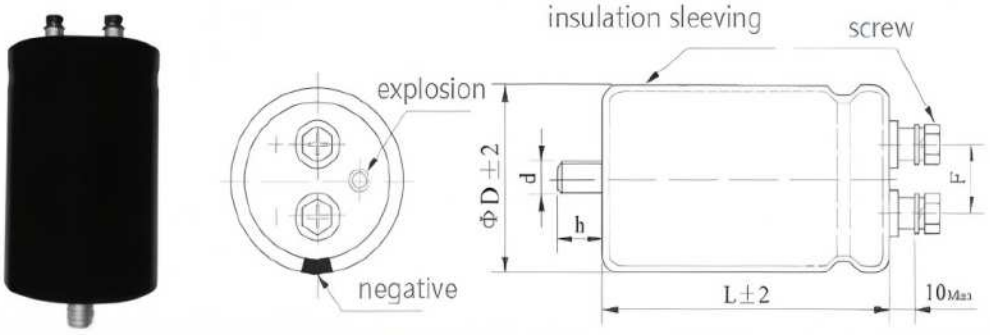
## DIMENSIONS

| D | P | | L1 | W1 | W2 | H | h | a | b | c | ° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 22.0 | 2 | 10 | 61.0 | 65.5 | 21.0 | 15.0 | 7.0 | 12.0 | 4.5 | 60 |
| 64 | 28.6 | 2 | 10 | 72.5 | 78.0 | 25.0 | 20.0 | 7.0 | 14.0 | 4.5 | 60 |
| 77 | 32.0 | 2 | 10 | 85.5 | 91.0 | 35.0 | 20.0 | 8.0 | 16.0 | 4.5 | 60 |
| 90 | 32.0 | 2 | 10 | 101 | 106 | 34.5 | 20.0 | 8.0 | 16.0 | 5.0 | 60 |

Screw Specifications:
Plus hexagon-headed screw: M5 x 0.8 x 10
Max. screw tightening torque: 3.23Nm




Type B (bottom screw fixed, please specify when ordering)



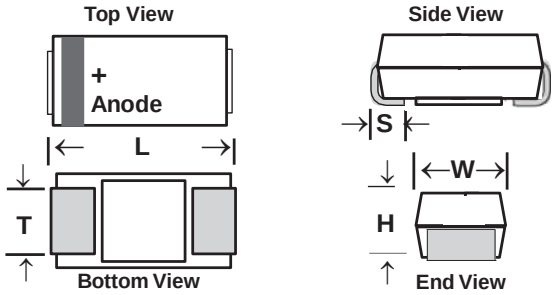

Type B (bottom screw fixed, please specify when ordering)

# CBAA SERIES: General Purpose
# CBAB SERIES: Low ESR



- Epoxy molded
- Excellent humidity and surge performance
- Low leakage current
- -55° to +125°C operating temperature range
- Extended capacitance range and low profile designs available

Jinpei provides superior performance and wide capacitance range as a result of a solid slug of high-gain tantalum powders sintered under vacuum. The flame retardant epoxy molding ensures optimum environmental protection and dielectric strength. Non-standard values, low-profile packages, custom marking, military screening, fusible, etc., are available.




## DIMENSIONS (low profile version also available)

| CASE SIZE | L | W | H | T | S |
|---|---|---|---|---|---|
| S (0805) [2012] | .079±.008 [2 ±0.2] | .049±.008 [1.25±0.2] | .047±.008 [1.2±0.2] | .043±.008 [1.1±0.2] | .020±.012 [.5±0.3] |
| A (1206) [3216] | .126±.008 [3.2±0.2] | .063±.008 [1.6±0.2] | 063±.008 [1.6±0.2] | .047±.008 [1.2±0.2] | .031±.012 [0.8±0.3] |
| B (1411) [3528] | .138±.008 [3.5±0.2] | .110±.008 [2.8±0.2] | .075±.008 [1.9±0.2] | .087±.008 [2.2±0.2] | .031±.012 [0.8±0.3] |
| C (2412) [6032] | .236±.012 [6.0±0.3] | .126±.012 [3.2±0.3] | .098±.012 [2.5±0.3] | .087±.008 [2.2±0.2] | .051±.012 [1.3±0.3] |
| D (2917) [7343] | .287±.012 [7.3±0.3] | .169±.012 [4.3±0.3] | .110±.012 [2.8±0.3] | .094±.008 [2.4±0.2] | .051±.012 [1.3±0.3] |
| E(2917H) [7343H] | .287±.012 [7.3±0.3] | 169±.012 [4.3±0.3] | .162±.012 [4.1±0.3] | .094±.008 [2.4±0.2] | .051±.012 [1.3±0.3] |

## STANDARD CAPACITANCE AND ESR (Ω) VALUES (extended value range available in each size, ESR is typ.)

| Volt Rating 85°C[2] | | 4VDC(5V Surge) | | | 6.3VDC(8V Surge) | | | 10VDC(13V Surge) | | | 16VDC(20V Surge) | | | 20VDC(26V Surge) | | | 25VDC(33V Surge) | | | 35VDC(46V Surge) | | | 50VDC(65V Surge) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| uF | Code | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR |
| 0.1 | 104 | | | | | | | | | | | | | S | 25 | | | | | A | 24 | 10 | A | 22 | 10 |
| .15 | 154 | | | | | | | | | | | | | S | 25 | | | | | A | 21 | 6 | B/A | 17/15 | 10/10 |
| .22 | 224 | | | | | | | | | | | | | S | 25 | | | | | A | 18 | 6 | B | 14 | 10 |
| .33 | 334 | | | | | | | | | | | | | S | 25 | | | | | A | 15 | 6 | B | 12 | 2.5 |
| .47 | 474 | | | | | | | | | | S | 25 | | S | 25 | | A | 14 | 9 | B/A | 10/12 | 2.5/4 | C/B | 8 | 1.8/2.0 |
| .68 | 684 | | | | | | | S | 30 | | S | 25 | | A/S | 12/25 | 8/NA | A | 10 | 6 | B | 8 | 2.5 | C/B | 7 | 1.6/3.0 |
| 1.0 | 105 | | | | A/S | 14/25 | | A/S | 13/25 | | A/S | 11/20 | 6/NA | A | 9 | 5.5 | B/A | 7/8 | 2/4 | B | 6.5 | 2 | C | 5.5 | 1.6 |
| 1.5 | 155 | S | 30 | | A/S | 12/25 | | A/S | 10 | 6/NA | A/S | 8/12 | 6/NA | B/A | 5/6.5 | NA/4.5 | B | 5 | 1.5 | C/B | 4.5/5.2 | 2.5/3 | D/C | 4/4.5 | 1/1.5 |
| 2.2 | 225 | S | 25 | | A/S | 9/20 | 6/NA | A/S | 7 | 6/NA | B/A | 5.5/6.5 | NA/4 | B/A | 3.5/5.3 | 1.5/4 | B | 4.5 | 2.2 | C | 3.5 | 1.5 | D/C | 2.5 | .8/1.5 |
| 3.3 | 335 | A/S | 9/20 | 4/NA | A/S | 7/12 | 6/NA | B/A | 5/5.5 | NA/4 | B/A | 4.5/5 | 2/4 | C/B | 2.5/3 | NA/1.3 | C | 2.8 | 1.2 | D/C | 2.0/2.5 | NA/.8 | D | 2.0 | .8 |
| 4.7 | 475 | A/S | 7.5/14 | 3.5/NA | B/A | 5/6 | NA/3.5 | B/A | 4/5 | 1.5/3 | B/A | 3.5/4 | 1.5/3 | D/C | 2.5/2.8 | NA/.6 | C | 2.4 | .6 | D/C | 1.5/2.2 | .7/.7 | D/E | 1.4/.9 | .6 |
| 6.8 | 685 | B/A | 6/6.5 | NA/3 | B/A | 4/5 | 1.2/2 | B/A | 3/4 | 1.2/3 | C/B | 2.5/3.5 | .8/1.2 | D/C | 1.8/2 | NA/.6 | D/C | 1.4/2 | NA/.6 | D | 1.3 | .5 | E | .9 | .5 |
| 10 | 106 | B/A | 4/6 | 1.2/2 | B/A | 3/4 | 1/2 | B/A | 2.5/3 | .8/2 | C/B | 2/2.8 | .6/.8 | D | 1.3 | NA/.5 | D/C | 1.2/1.8 | .4/.6 | D | 1 | .4 | E | .9 | |
| 15 | 156 | B/A | 3.5/4 | 1.2/2 | C/B | 2.5/3.2 | .6/.7 | C/B | 2.2/2.8 | .5/.7 | C | 1.8 | .4 | D | 1.1 | .35 | D | 1 | .4 | E | .9 | .3 | E | .9 | |
| 22 | 226 | C/B | 2.5/3.2 | .5/.6 | C/B | 2/2.5 | .5/.6 | C/B | 1.8/2.4 | .4/.7 | D/C | 1.1/1.6 | .25/.35 | D | .9 | .3 | D | .9 | .4 | E | .9 | .3 | E | .9 | |
| 33 | 336 | C/B | 2.2/2.8 | .5/.5 | D/C | 1.3/1.8 | NA/.3 | D/C | 1.1/1.6 | .25/.3 | D/C | .9/1.5 | .25/.3 | D | .9 | .25 | E | .9 | .3 | E | | .3 | | | |
| 47 | 476 | D/C | 1.3/1.8 | NA/.5 | D/C | 1.1/1.6 | .22/.25 | D/C | .9/1.2 | .22/.3 | D/C | .9/1.4 | .2/.3 | E/D | .9/.9 | NA/.2 | E | .9 | .3 | | | | | | |
| 68 | 686 | D/C | 1.1/1.6 | .2/.25 | D/C | .9/1.6 | .2/.2 | D | .9 | .2 | D | .9 | .15 | E | .9 | .2 | E | .9 | | | | | | | |
| 100 | 107 | D/C | .9/1.3 | .2/.2 | D/C | .9/1.4 | .15/.3 | D | .9 | .15 | D/E | .9 | .15/.15 | E | .9 | .15 | E | .9 | | | | | | | |
| 150 | 157 | D/C | .7/1.0 | .15/.3 | D | 1 | .15 | E | 1 | .15 | E | .9 | .15 | | | | | | | | | | | | |
| 220 | 227 | D | .9 | .15 | E | 1 | .15 | E | .9 | .15 | E | .9 | | | | | | | | | | | | | |
| 330 | 337 | E | .9 | .15 | E | .9 | .15 | E | .9 | .1 | E | .9 | | | | | | | | | | | | | |
| 470 | 477 | E | .9 | .15 | E | .9 | .1 | E | .9 | | E | .9 | | | | | | | | | | | | | |
| 680 | 687 | E | .9 | .1 | E | .5 | .1 | E | .9 | | E | .9 | | | | | | | | | | | | | |

[2] Derate voltage rating by .825%/°C above 85°C

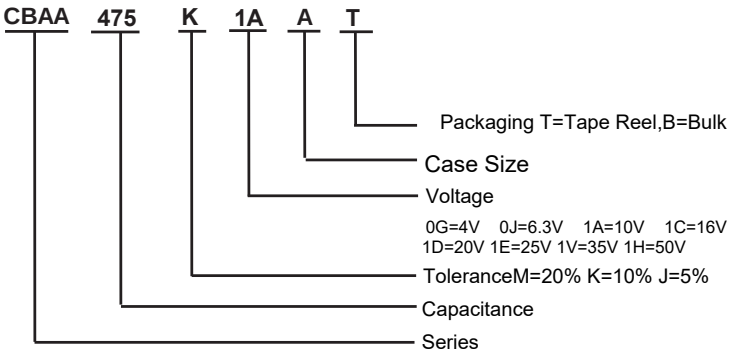
## SPECIFICATIONS

| CAPACITANCE (120 Hz) | ΔC FROM INITIAL @20°C | | | DISSIPATION FACTOR, TYP. | | | |
|---|---|---|---|---|---|---|---|
| | -55°C | +85°C | +125°C | -55°C | +20°C | +85°C | +125°C |
| <1.0µF | -10% | +10% | +12% | 6% | 4% | 5% | 6% |
| 1.5 to 68µF | | | | 10% | 6% | 8% | 10% |
| 100 to 220µF | | | | 12% | 8% | 10% | 12% |
| 330 to 680µF | | | | 16% | 12% | 14% | 16% |

## STANDARD PACKAGING

| Case Size | | 7" Reel Qty, typ. | Tape Width |
|---|---|---|---|
| S | 0805 [2012] | 2500 | 8mm |
| A | 1206 [3216] | 2000 | 8mm |
| B | 1411 [3528] | 2000 | 8mm |
| C | 2412 [6032] | 500 | 12mm |
| D | 2917 [7343] | 500 | 12mm |
| E | 2917H [7343H] | 400 | 12mm |

## PART NUMBER EXAMPLE

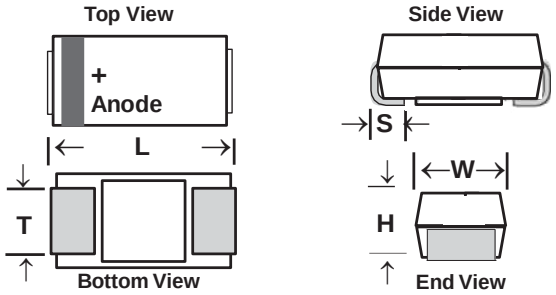


# CBAA SERIES: General Purpose
# CBAB SERIES: Low ESR



- Epoxy molded
- Excellent humidity and surge performance
- Low leakage current
- -55° to +125°C operating temperature range
- Extended capacitance range and low profile designs available

Jinpei provides superior performance and wide capacitance range as a result of a solid slug of high-gain tantalum powders sintered under vacuum. The flame retardant epoxy molding ensures optimum environmental protection and dielectric strength. Non-standard values, low-profile packages, custom marking, military screening, fusible, etc., are available.




## DIMENSIONS (low profile version also available)

| CASE SIZE | L | W | H | T | S |
|---|---|---|---|---|---|
| S (0805) [2012] | .079±.008 [2 ±0.2] | .049±.008 [1.25±0.2] | .047±.008 [1.2±0.2] | .043±.008 [1.1±0.2] | .020±.012 [.5±0.3] |
| A (1206) [3216] | .126±.008 [3.2±0.2] | .063±.008 [1.6±0.2] | 063±.008 [1.6±0.2] | .047±.008 [1.2±0.2] | .031±.012 [0.8±0.3] |
| B (1411) [3528] | .138±.008 [3.5±0.2] | .110±.008 [2.8±0.2] | .075±.008 [1.9±0.2] | .087±.008 [2.2±0.2] | .031±.012 [0.8±0.3] |
| C (2412) [6032] | .236±.012 [6.0±0.3] | .126±.012 [3.2±0.3] | .098±.012 [2.5±0.3] | .087±.008 [2.2±0.2] | .051±.012 [1.3±0.3] |
| D (2917) [7343] | .287±.012 [7.3±0.3] | .169±.012 [4.3±0.3] | .110±.012 [2.8±0.3] | .094±.008 [2.4±0.2] | .051±.012 [1.3±0.3] |
| E(2917H) [7343H] | .287±.012 [7.3±0.3] | 169±.012 [4.3±0.3] | .162±.012 [4.1±0.3] | .094±.008 [2.4±0.2] | .051±.012 [1.3±0.3] |

## STANDARD CAPACITANCE AND ESR (Ω) VALUES (extended value range available in each size, ESR is typ.)

| Volt Rating 85°C[2] | | 4VDC(5V Surge) | | | 6.3VDC(8V Surge) | | | 10VDC(13V Surge) | | | 16VDC(20V Surge) | | | 20VDC(26V Surge) | | | 25VDC(33V Surge) | | | 35VDC(46V Surge) | | | 50VDC(65V Surge) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| uF | Code | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR | Case Size | CBAA ESR | CBAB ESR |
| 0.1 | 104 | | | | | | | | | | | | | S | 25 | | | | | A | 24 | 10 | A | 22 | 10 |
| .15 | 154 | | | | | | | | | | | | | S | 25 | | | | | A | 21 | 6 | B/A | 17/15 | 10/10 |
| .22 | 224 | | | | | | | | | | | | | S | 25 | | | | | A | 18 | 6 | B | 14 | 10 |
| .33 | 334 | | | | | | | | | | | | | S | 25 | | | | | A | 15 | 6 | B | 12 | 2.5 |
| .47 | 474 | | | | | | | | | | S | 25 | | S | 25 | | A | 14 | 9 | B/A | 10/12 | 2.5/4 | C/B | 8 | 1.8/2.0 |
| .68 | 684 | | | | | | | S | 30 | | S | 25 | | A/S | 12/25 | 8/NA | A | 10 | 6 | B | 8 | 2.5 | C/B | 7 | 1.6/3.0 |
| 1.0 | 105 | | | | A/S | 14/25 | | A/S | 13/25 | | A/S | 11/20 | 6/NA | A | 9 | 5.5 | B/A | 7/8 | 2/4 | B | 6.5 | 2 | C | 5.5 | 1.6 |
| 1.5 | 155 | S | 30 | | A/S | 12/25 | | A/S | 10 | 6/NA | A/S | 8/12 | 6/NA | B/A | 5/6.5 | NA/4.5 | B | 5 | 1.5 | C/B | 4.5/5.2 | 2.5/3 | D/C | 4/4.5 | 1/1.5 |
| 2.2 | 225 | S | 25 | | A/S | 9/20 | 6/NA | A/S | 7 | 6/NA | B/A | 5.5/6.5 | NA/4 | B/A | 3.5/5.3 | 1.5/4 | B | 4.5 | 2.2 | C | 3.5 | 1.5 | D/C | 2.5 | .8/1.5 |
| 3.3 | 335 | A/S | 9/20 | 4/NA | A/S | 7/12 | 6/NA | B/A | 5/5.5 | NA/4 | B/A | 4.5/5 | 2/4 | C/B | 2.5/3 | NA/1.3 | C | 2.8 | 1.2 | D/C | 2.0/2.5 | NA/.8 | D | 2.0 | .8 |
| 4.7 | 475 | A/S | 7.5/14 | 3.5/NA | B/A | 5/6 | NA/3.5 | B/A | 4/5 | 1.5/3 | B/A | 3.5/4 | 1.5/3 | D/C | 2.5/2.8 | NA/.6 | C | 2.4 | .6 | D/C | 1.5/2.2 | .7/.7 | D/E | 1.4/.9 | .6 |
| 6.8 | 685 | B/A | 6/6.5 | NA/3 | B/A | 4/5 | 1.2/2 | B/A | 3/4 | 1.2/3 | C/B | 2.5/3.5 | .8/1.2 | D/C | 1.8/2 | NA/.6 | D/C | 1.4/2 | NA/.6 | D | 1.3 | .5 | E | .9 | .5 |
| 10 | 106 | B/A | 4/6 | 1.2/2 | B/A | 3/4 | 1/2 | B/A | 2.5/3 | .8/2 | C/B | 2/2.8 | .6/.8 | D | 1.3 | NA/.5 | D/C | 1.2/1.8 | .4/.6 | D | 1 | .4 | E | .9 | |
| 15 | 156 | B/A | 3.5/4 | 1.2/2 | C/B | 2.5/3.2 | .6/.7 | C/B | 2.2/2.8 | .5/.7 | C | 1.8 | .4 | D | 1.1 | .35 | D | 1 | .4 | E | .9 | .3 | E | .9 | |
| 22 | 226 | C/B | 2.5/3.2 | .5/.6 | C/B | 2/2.5 | .5/.6 | C/B | 1.8/2.4 | .4/.7 | D/C | 1.1/1.6 | .25/.35 | D | .9 | .3 | D | .9 | .4 | E | .9 | .3 | E | .9 | |
| 33 | 336 | C/B | 2.2/2.8 | .5/.5 | D/C | 1.3/1.8 | NA/.3 | D/C | 1.1/1.6 | .25/.3 | D/C | .9/1.5 | .25/.3 | D | .9 | .25 | E | .9 | .3 | E | | .3 | | | |
| 47 | 476 | D/C | 1.3/1.8 | NA/.5 | D/C | 1.1/1.6 | .22/.25 | D/C | .9/1.2 | .22/.3 | D/C | .9/1.4 | .2/.3 | E/D | .9/.9 | NA/.2 | E | .9 | .3 | | | | | | |
| 68 | 686 | D/C | 1.1/1.6 | .2/.25 | D/C | .9/1.6 | .2/.2 | D | .9 | .2 | D | .9 | .15 | E | .9 | .2 | E | .9 | | | | | | | |
| 100 | 107 | D/C | .9/1.3 | .2/.2 | D/C | .9/1.4 | .15/.3 | D | .9 | .15 | D/E | .9 | .15/.15 | E | .9 | .15 | E | .9 | | | | | | | |
| 150 | 157 | D/C | .7/1.0 | .15/.3 | D | 1 | .15 | E | 1 | .15 | E | .9 | .15 | | | | | | | | | | | | |
| 220 | 227 | D | .9 | .15 | E | 1 | .15 | E | .9 | .15 | E | .9 | | | | | | | | | | | | | |
| 330 | 337 | E | .9 | .15 | E | .9 | .15 | E | .9 | .1 | E | .9 | | | | | | | | | | | | | |
| 470 | 477 | E | .9 | .15 | E | .9 | .1 | E | .9 | | E | .9 | | | | | | | | | | | | | |
| 680 | 687 | E | .9 | .1 | E | .5 | .1 | E | .9 | | E | .9 | | | | | | | | | | | | | |

[2] Derate voltage rating by .825%/°C above 85°C

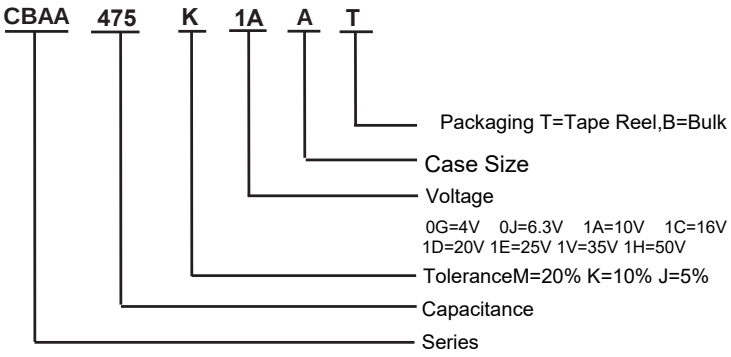
## SPECIFICATIONS

| CAPACITANCE (120 Hz) | ΔC FROM INITIAL @20°C | | | DISSIPATION FACTOR, TYP. | | | |
|---|---|---|---|---|---|---|---|
| | -55°C | +85°C | +125°C | -55°C | +20°C | +85°C | +125°C |
| <1.0µF | -10% | +10% | +12% | 6% | 4% | 5% | 6% |
| 1.5 to 68µF | | | | 10% | 6% | 8% | 10% |
| 100 to 220µF | | | | 12% | 8% | 10% | 12% |
| 330 to 680µF | | | | 16% | 12% | 14% | 16% |

## STANDARD PACKAGING

| Case Size | | 7" Reel Qty, typ. | Tape Width |
|---|---|---|---|
| S | 0805 [2012] | 2500 | 8mm |
| A | 1206 [3216] | 2000 | 8mm |
| B | 1411 [3528] | 2000 | 8mm |
| C | 2412 [6032] | 500 | 12mm |
| D | 2917 [7343] | 500 | 12mm |
| E | 2917H [7343H] | 400 | 12mm |

## PART NUMBER EXAMPLE



# CBAC: ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

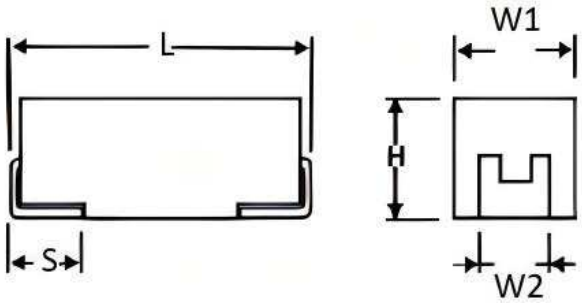
## FEATURES:

- Epoxy molded encapsulation, Chip, Easy for integration, Polarized
- Extremely low ESR , Volumetrically efficient , Stable in electrical & storage performances , Long life-span, High reliability
- Typical applications include DC/DC converters , notebook PCs , portable electronics , telecommunications (mobile phone and base station ), displays ,SSD,HDD and USB
- Operative Standard: QJ/PWV517-2013.

## SPECIFICATIONS

| | |
|---|---|
| Rated Voltage | D.C. 2.5V ~ 63V |
| Operating Temperature Range | -55°C to +105°C |
| Rated Capacitance Range | 0.47 ~ 1000 μF at 100 Hz |
| Capacitance Tolerance | ±20%(M) |
| Leakage Current DCL | 0.1CV (μA)at rated voltage after 5 minutes |
| Equivalent Series Resistance ESR | Refer to Part Number Electrical Specifications Table |
| Termination Finished | Sn Plating (standard), Gold and SnPb Plating upon request |
| Resistance to soldering heat | 3×260℃ peak for max. 10s reflow |




## DIMENSIONS - MILLIMETERS

Unit:mm

| Case Size | | L | W1 | H | W2 | S |
|---|---|---|---|---|---|---|
| A | 1206 \| 3216 | 3.2±0.2 | 1.6±0.2 | 1.6±0.2 | 0.8±0.2 | 1.2±0.2 |
| B | 1210 \| 3225 | 3.5±0.2 | 2.8±0.2 | 1.9±0.2 | 0.8±0.2 | 2.2±0.2 |
| C | 2312 \| 6032 | 6.0±0.2 | 3.2±0.2 | 2.5±0.2 | 1.3±0.2 | 2.2±0.2 |
| H | 2917 \| 7343 | 7.3±0.2 | 4.3±0.2 | 2.0±0.2 | 1.3±0.2 | 2.4±0.2 |
| D | 2917 \| 7343 | 7.3±0.2 | 4.3±0.2 | 2.8±0.2 | 1.3±0.2 | 2.4±0.2 |
| E | 2917 \| 7343 | 7.3±0.4 | 4.3±0.4 | 4.1±0.4 | 1.3±0.2 | 2.4±0.2 |
| V | 2924 \| 7361 | 7.3±0.4 | 6.1±0.4 | 3.6±0.4 | 1.35±0.2 | 3.0±0.2 |
| W | 2924 \| 7361 | 7.3±0.4 | 6.1±0.4 | 4.1±0.4 | 1.35±0.2 | 3.0±0.2 |

## Capacitance And Rated Voltage Range

**(Letter Denotes Case Size)**

| Rated Voltage(V) | 2.5 0E | 4 0G | 6.3 0J | 10 1A | 16 1C |
|---|---|---|---|---|---|
| Capacitance(μF) | Case Size & ESR mΩ | | | | |
| 1 | | | | | B(300) |
| 1.5 | | | | | B(300) |
| 2.2 | | | | | B(300) |
| 3.3 | | | | | A(250), B(150,300) |
| 4.7 | | | | A(250) | A(250), B(100,150,300), C(150) |
| 6.8 | | | | A(180,250) | A(200), B(100,150,300), C(150) |
| 10 | | | A(120,250,300) | A(80,120,300), B(100) | A(200), B(100,200,300), C(150) |
| 15 | | A(120,300), B(100) | A(300), B(90) | A(80,200), B(90), C(70) | B(100,150,300), C(70,150), D(80) |
| 22 | | A(300), B(90), C(70) | A(90,300), B(90), C(70) | A(80), B(90,300), C(70) | B(150), C(70,150), D(60,80), E(80) |
| 33 | | A(70,300), B(90), C(70) | A(70,120,200), B(40,90,200), C(70,100) | B(40), B(90,200), C(70,100) | C(70,150), H(45,70), D(60,80), E(80) |
| 47 | A(90) | A(70,200), B(90), C(70) | A(150,200), B(40,90), C(70) | B(35,70,90), C(70,100) | C(150), H(45,80), D(35,70,90), E(50,80) |
| 68 | A(70,250) | A(250), B(25,40,80), C(70) | A(150), B(35,55,80), C(70,100), D(60) | C(45,70), H(45,60,100), D(45,60,100) | H(50,90), D(50,80), E(50,80) |
| 100 | A(200), B(25,40), B(70) | A(150,200,300), B(25,40,80), C(70) | A(70), B(25,45,70), C(25,45,70), H(45), D(60) | C(25,45,70), H(25,55), D(45,60,80) | H(50), D(60,80), E(40,80) |
| 150 | B(70) | B(25,40,70), C(25,45,100), H(25,45), D(60) | B(25,45,70), C(25,55), H(25,45), D(25,60) | C(55), H(25,55), D(25,40,60), E(50) | V(80), W(80), E(40,80) |
| 220 | B(25,55,70), C(25,45), H(25,45), D(40) | B(35,70), C(25,55), H(25,45), D(25,65) | B(25,70,200), C(25,45), H(25,50), D(40,60), E(50) | H(25,50), D(25,60), E(50) | V(40), V(80), W(80), E(25,50,80) |
| 330 | B(35,70), C(25,45), H(25,40), D(25,60) | C(25,45), H(25,50), D(25,60), E(50) | H(25,50), D(25,60), E(50) | V(40), E(35,50) | V(40), V(80), W(80), E(25,50,80) |
| 470 | C(25,45), H(25,50), D(25,40,60) | H(25,50), D(25,60), E(50) | H(35,55), D(30), V(40), E(35,50) | | |
| 680 | D(25,40), E(50) | D(25), V(40), E(35,50) | E(25) | | |
| 1000 | D(30), V(40), E(50) | | | | |

# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

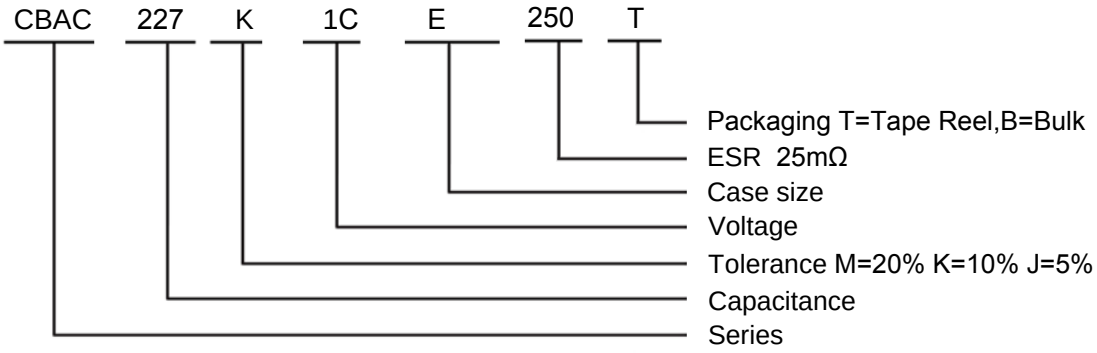
**CBAC:** ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

## Capacitance And Rated Voltage Range

**(Letter Denotes Case Size)**

| Rated Voltage(V) | 20 1D | 25 1E | 35 1V | 50 1H | 63 1J |
|---|---|---|---|---|---|
| Capacitance(μF) | Case Size & ESR mΩ | | | | |
| 0.68 | | B(300) | B(350) | B(350,400) | |
| 1 | B(300) | B(300) | B(350) | B(300,350) | B(300), C(200,300), D(120) |
| 1.5 | B(300) | B(300), C(150) | B(200,350), C(200) | B(300,350), C(200,300) | C(200,300), D(120) |
| 2.2 | A(250), B(150,300) | B(250,300), C(100,150) | B(200,(350), C(200) | B(350), C(200,300) | C(200), D(120) |
| 3.3 | A(250), B(150,00), C(150) | B(250,300), C(100,150) | B(200,350), C(200) | C(200), D(100) | C(200), D(120) |
| 4.7 | B(150,300), C(100,150) | B(150,250,300), C(100,150) | B(200,350), C(200) | C(200), D(100) | C(200), D(75,120,300), E(120) |
| 6.8 | B(150,300), C(100,150) | B(90,150,300), C(100,150) | C(200), D(90) | C(200), H(70,90), D(70,100,120) | D(120), E(100,150) |
| 10 | B(100,150,300), C(100,150) | B(100,150,300), C(100,150), D(90) | B(200), C(200), H(70,120), D(90), E(90) | D(90,120), E(70,100) | D(120), E(50,(100,150) |
| 15 | B(90), C(80,150), D(70,80) | B(100,150), C(150), H(90), D(90), E(80) | C(200), H(100,125), D(70,100), E(90) | V(100), E(70,100) | V(120), E(35,120,150) |
| 22 | C(100,150), H(45,70), H(90), D(60,80), E(50,80) | B(150), C(100,150), H(60,90), D(60,80,100), E(80) | D(70,100), E(90) | V(100), W(100), E(75,100) | W(120) |
| 33 | C(150), H(70), D(60,80), E(50,80) | H(60,100), D(60,80,100), E(80) | D(65), D(100), V(90), E(55,70,90) | V(100), W(100), E(75) | |
| 47 | C(150), H(55,70,90), D(55,80), E(50,80) | D(60,80,100), E(50,80) | V(90), W(90), E(30,55,90) | W(100) | |
| 68 | D(55,80), E(45,80) | D(80), V(80), E(50,80) | W(90) | | |
| 100 | D(55), V(80), E(45,80) | V(80), W(80), E(60,80) | | | |
| 150 | V(80), W(80), E(80) | V(80), W(80) | | | |
| 220 | V(80), W(80), E(80) | | | | |

## PART NUMBER EXAMPLE




Capacitance Code:

103=10,000pF or 0.01uF, 104=100,000pF or 0.1uF,

105 = 1uF, 106= 10uF, 107=100uF,108=1,000uF

# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

**CBAC:** ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 2.5 0E | 47 | A | 105 | 2.3 | 11.8 | 8 | 90 | 850 | 595 | 212 |
| | 68 | A | 105 | 2.3 | 17 | 8 | 70 | 964 | 675 | 241 |
| | | A | 105 | 2.3 | 17 | 6 | 250 | 510 | 357 | 127 |
| | 100 | A | 105 | 2.3 | 25 | 6 | 200 | 570 | 399 | 143 |
| | | B | 105 | 2.3 | 25 | 8 | 25 | 1732 | 1212 | 433 |
| | | B | 105 | 2.3 | 25 | 8 | 40 | 1369 | 959 | 342 |
| | | B | 105 | 2.3 | 25 | 8 | 70 | 1035 | 725 | 259 |
| | 150 | B | 105 | 2.3 | 37.5 | 6 | 70 | 1035 | 725 | 259 |
| | 220 | B | 105 | 2.3 | 55 | 8 | 25 | 1732 | 1212 | 433 |
| | | B | 105 | 2.3 | 55 | 8 | 55 | 1168 | 817 | 292 |
| | | B | 105 | 2.3 | 55 | 8 | 70 | 1035 | 725 | 259 |
| | | C | 105 | 2.3 | 55 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 2.3 | 55 | 8 | 45 | 1414 | 990 | 354 |
| | | D | 105 | 2.3 | 55 | 10 | 40 | 1620 | 1134 | 405 |
| | | H | 105 | 2.3 | 55 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 2.3 | 55 | 10 | 45 | 1667 | 1167 | 417 |
| | 330 | B | 105 | 2.3 | 82.5 | 8 | 35 | 1464 | 1025 | 366 |
| | | B | 105 | 2.3 | 82.5 | 8 | 70 | 1035 | 725 | 259 |
| | | C | 105 | 2.3 | 82.5 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 2.3 | 82.5 | 8 | 45 | 1414 | 990 | 354 |
| | | D | 105 | 2.3 | 82.5 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 2.3 | 82.5 | 10 | 60 | 1323 | 926 | 331 |
| | | H | 105 | 2.3 | 82.5 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 2.3 | 82.5 | 10 | 40 | 1768 | 1237 | 442 |
| | 470 | C | 105 | 2.3 | 117.5 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 2.3 | 117.5 | 8 | 45 | 1414 | 990 | 354 |
| | | D | 105 | 2.3 | 117.5 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 2.3 | 117.5 | 6 | 40 | 1620 | 1134 | 405 |
| | | D | 105 | 2.3 | 117.5 | 10 | 60 | 1323 | 926 | 331 |
| | | H | 105 | 2.3 | 117.5 | 6 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 2.3 | 117.5 | 6 | 50 | 1581 | 1107 | 395 |
| | 680 | D | 105 | 2.3 | 170 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 2.3 | 170 | 10 | 40 | 1620 | 1134 | 405 |
| | | E | 105 | 2.3 | 170 | 10 | 50 | 1581 | 1107 | 395 |
| | 1000 | D | 105 | 2.3 | 250 | 10 | 30 | 1871 | 1310 | 468 |
| | | E | 105 | 2.3 | 250 | 10 | 50 | 1581 | 1107 | 395 |
| | | V | 105 | 2.3 | 250 | 10 | 40 | 1936 | 1356 | 484 |
| 4 0G | 15 | A | 105 | 3.6 | 6 | 10 | 120 | 736 | 515 | 184 |
| | | A | 105 | 3.6 | 6 | 6 | 300 | 465 | 326 | 116 |
| | | B | 105 | 3.6 | 6 | 10 | 100 | 866 | 606 | 217 |
| | 22 | A | 105 | 3.6 | 8.8 | 6 | 300 | 465 | 326 | 116 |
| | | B | 105 | 3.6 | 8.8 | 10 | 90 | 913 | 639 | 228 |
| | | C | 105 | 3.6 | 8.8 | 10 | 70 | 1134 | 794 | 283 |
| | 33 | A | 105 | 3.6 | 13.2 | 8 | 70 | 964 | 675 | 241 |
| | | A | 105 | 3.6 | 13.2 | 6 | 300 | 465 | 326 | 116 |
| | | B | 105 | 3.6 | 13.2 | 10 | 90 | 913 | 639 | 228 |
| | | C | 105 | 3.6 | 13.2 | 10 | 70 | 1134 | 794 | 283 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2˚1.0V U~=1.0˚0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.

# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

**CBAC:** ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| | 47 | A | 105 | 3.6 | 18.8 | 8 | 70 | 964 | 675 | 241 |
| | | A | 105 | 3.6 | 18.8 | 6 | 200 | 570 | 399 | 143 |
| | | B | 105 | 3.6 | 18.8 | 10 | 90 | 913 | 639 | 228 |
| | | C | 105 | 3.6 | 18.8 | 10 | 70 | 1134 | 794 | 283 |
| | 68 | A | 105 | 3.6 | 27.2 | 6 | 250 | 510 | 357 | 127 |
| | | B | 105 | 3.6 | 27.2 | 8 | 25 | 1732 | 1212 | 433 |
| | | B | 105 | 3.6 | 27.2 | 8 | 40 | 1369 | 959 | 342 |
| | | B | 105 | 3.6 | 27.2 | 8 | 80 | 968 | 678 | 242 |
| | | C | 105 | 3.6 | 27.2 | 10 | 70 | 1134 | 794 | 283 |
| | 100 | A | 105 | 3.6 | 40 | 8 | 150 | 658 | 461 | 165 |
| | | A | 105 | 3.6 | 40 | 8 | 200 | 570 | 399 | 143 |
| | | A | 105 | 3.6 | 40 | 10 | 300 | 465 | 326 | 116 |
| | | B | 105 | 3.6 | 40 | 8 | 25 | 1732 | 1212 | 433 |
| | | B | 105 | 3.6 | 40 | 8 | 40 | 1369 | 959 | 342 |
| | | B | 105 | 3.6 | 40 | 8 | 80 | 968 | 678 | 242 |
| | | C | 105 | 3.6 | 40 | 10 | 70 | 1134 | 794 | 283 |
| | 150 | B | 105 | 3.6 | 60 | 8 | 25 | 1732 | 1212 | 433 |
| | | B | 105 | 3.6 | 60 | 8 | 40 | 1369 | 959 | 342 |
| | | B | 105 | 3.6 | 60 | 8 | 70 | 1035 | 725 | 259 |
| | | C | 105 | 3.6 | 60 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 3.6 | 60 | 8 | 45 | 1414 | 990 | 354 |
| | | C | 105 | 3.6 | 60 | 8 | 100 | 949 | 664 | 237 |
| | | D | 105 | 3.6 | 60 | 10 | 60 | 1323 | 926 | 331 |
| | | H | 105 | 3.6 | 60 | 10 | 25 | 2236 | 1565 | 559 |
| 4 0G | | H | 105 | 3.6 | 60 | 6 | 45 | 1667 | 1167 | 417 |
| | 220 | B | 105 | 3.6 | 88 | 8 | 35 | 1464 | 1025 | 366 |
| | | B | 105 | 3.6 | 88 | 8 | 70 | 1035 | 725 | 259 |
| | | C | 105 | 3.6 | 88 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 3.6 | 88 | 8 | 55 | 1279 | 895 | 320 |
| | | D | 105 | 3.6 | 88 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 3.6 | 88 | 10 | 65 | 1271 | 890 | 318 |
| | | H | 105 | 3.6 | 88 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 3.6 | 88 | 10 | 45 | 1667 | 1167 | 417 |
| | 330 | C | 105 | 3.6 | 132 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 3.6 | 132 | 8 | 45 | 1414 | 990 | 354 |
| | | D | 105 | 3.6 | 132 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 3.6 | 132 | 10 | 60 | 1323 | 926 | 331 |
| | | E | 105 | 3.6 | 132 | 10 | 50 | 1581 | 1107 | 395 |
| | | H | 105 | 3.6 | 132 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 3.6 | 132 | 6 | 50 | 1581 | 1107 | 395 |
| | 470 | D | 105 | 3.6 | 188 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 3.6 | 188 | 10 | 60 | 1323 | 926 | 331 |
| | | E | 105 | 3.6 | 188 | 10 | 50 | 1581 | 1107 | 395 |
| | | H | 105 | 3.6 | 188 | 6 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 3.6 | 188 | 6 | 50 | 1581 | 1107 | 395 |
| | 680 | D | 105 | 3.6 | 272 | 10 | 25 | 2049 | 1435 | 512 |
| | | E | 105 | 3.6 | 272 | 10 | 35 | 1890 | 1323 | 472 |
| | | E | 105 | 3.6 | 272 | 10 | 50 | 1581 | 1107 | 395 |
| | | V | 105 | 3.6 | 272 | 10 | 40 | 1936 | 1356 | 484 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2° 1.0V U~=1.0° 0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.


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# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

**CBAC:** ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 6.3 0J | 10 | A | 105 | 5.7 | 6.3 | 10 | 120 | 736 | 515 | 184 |
| | | A | 105 | 5.7 | 6.3 | 10 | 250 | 510 | 357 | 127 |
| | | A | 105 | 5.7 | 6.3 | 6 | 300 | 465 | 326 | 116 |
| | 15 | A | 105 | 5.7 | 9.5 | 6 | 300 | 465 | 326 | 116 |
| | | B | 105 | 5.7 | 9.5 | 10 | 90 | 913 | 639 | 228 |
| | 22 | A | 105 | 5.7 | 13.9 | 8 | 90 | 850 | 595 | 212 |
| | | A | 105 | 5.7 | 13.9 | 6 | 300 | 465 | 326 | 116 |
| | | B | 105 | 5.7 | 13.9 | 10 | 90 | 913 | 639 | 228 |
| | | C | 105 | 5.7 | 13.9 | 10 | 70 | 1134 | 794 | 283 |
| | 33 | A | 105 | 5.7 | 20.8 | 8 | 70 | 964 | 675 | 241 |
| | | A | 105 | 5.7 | 20.8 | 8 | 120 | 736 | 515 | 184 |
| | | A | 105 | 5.7 | 20.8 | 6 | 200 | 570 | 399 | 143 |
| | | B | 105 | 5.7 | 20.8 | 8 | 40 | 1369 | 959 | 342 |
| | | B | 105 | 5.7 | 20.8 | 10 | 90 | 913 | 639 | 228 |
| | | B | 105 | 5.7 | 20.8 | 6 | 200 | 612 | 429 | 153 |
| | | C | 105 | 5.7 | 20.8 | 10 | 70 | 1134 | 794 | 283 |
| | | C | 105 | 5.7 | 20.8 | 8 | 100 | 949 | 664 | 237 |
| | 47 | A | 105 | 5.7 | 29.6 | 8 | 150 | 658 | 461 | 165 |
| | | A | 105 | 5.7 | 29.6 | 6 | 200 | 570 | 399 | 143 |
| | | B | 105 | 5.7 | 29.6 | 8 | 40 | 1369 | 959 | 342 |
| | | B | 105 | 5.7 | 29.6 | 10 | 90 | 913 | 639 | 228 |
| | | C | 105 | 5.7 | 29.6 | 10 | 70 | 1134 | 794 | 283 |
| | 68 | A | 105 | 5.7 | 42.8 | 8 | 150 | 658 | 461 | 165 |
| | | B | 105 | 5.7 | 42.8 | 8 | 35 | 1464 | 1025 | 366 |
| | | B | 105 | 5.7 | 42.8 | 8 | 55 | 1168 | 817 | 292 |
| | | B | 105 | 5.7 | 42.8 | 8 | 80 | 968 | 678 | 242 |
| | | C | 105 | 5.7 | 42.8 | 10 | 70 | 1134 | 794 | 283 |
| | | C | 105 | 5.7 | 42.8 | 8 | 100 | 949 | 664 | 237 |
| | | D | 105 | 5.7 | 42.8 | 10 | 60 | 1323 | 926 | 331 |
| | 100 | A | 105 | 5.7 | 63 | 8 | 70 | 964 | 675 | 241 |
| | | B | 105 | 5.7 | 63 | 8 | 25 | 1732 | 1212 | 433 |
| | | B | 105 | 5.7 | 63 | 8 | 45 | 1291 | 904 | 323 |
| | | B | 105 | 5.7 | 63 | 8 | 70 | 1035 | 725 | 259 |
| | | C | 105 | 5.7 | 63 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 5.7 | 63 | 8 | 45 | 1414 | 990 | 354 |
| | | C | 105 | 5.7 | 63 | 10 | 70 | 1134 | 794 | 283 |
| | | D | 105 | 5.7 | 63 | 10 | 60 | 1323 | 926 | 331 |
| | | H | 105 | 5.7 | 63 | 10 | 45 | 1667 | 1167 | 417 |
| | 150 | B | 105 | 5.7 | 94.5 | 8 | 25 | 1732 | 1212 | 433 |
| | | B | 105 | 5.7 | 94.5 | 8 | 45 | 1291 | 904 | 323 |
| | | B | 105 | 5.7 | 94.5 | 8 | 70 | 1035 | 725 | 259 |
| | | C | 105 | 5.7 | 94.5 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 5.7 | 94.5 | 8 | 55 | 1279 | 895 | 320 |
| | | D | 105 | 5.7 | 94.5 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 5.7 | 94.5 | 10 | 60 | 1323 | 926 | 331 |
| | | H | 105 | 5.7 | 94.5 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 5.7 | 94.5 | 10 | 45 | 1667 | 1167 | 417 |
| | 220 | B | 105 | 5.7 | 138.6 | 8 | 25 | 1732 | 1212 | 433 |
| | | B | 105 | 5.7 | 138.6 | 8 | 70 | 1035 | 725 | 259 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2° 1.0V U~=1.0° 0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.

# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

## CBAC: ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 6.3 0J | 220 | B | 105 | 5.7 | 138.6 | 10 | 200 | 612 | 429 | 153 |
| | | C | 105 | 5.7 | 138.6 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 5.7 | 138.6 | 8 | 45 | 1414 | 990 | 354 |
| | | D | 105 | 5.7 | 138.6 | 10 | 40 | 1620 | 1134 | 405 |
| | | D | 105 | 5.7 | 138.6 | 10 | 60 | 1323 | 926 | 331 |
| | | E | 105 | 5.7 | 138.6 | 10 | 50 | 1581 | 1107 | 395 |
| | | H | 105 | 5.7 | 138.6 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 5.7 | 138.6 | 6 | 50 | 1581 | 1107 | 395 |
| | 330 | D | 105 | 5.7 | 207.9 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 5.7 | 207.9 | 10 | 60 | 1323 | 926 | 331 |
| | | E | 105 | 5.7 | 207.9 | 10 | 50 | 1581 | 1107 | 395 |
| | | H | 105 | 5.7 | 207.9 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 5.7 | 207.9 | 12 | 50 | 1581 | 1107 | 395 |
| | 470 | D | 105 | 5.7 | 296.1 | 10 | 30 | 1871 | 1310 | 468 |
| | | E | 105 | 5.7 | 296.1 | 10 | 35 | 1890 | 1323 | 472 |
| | | E | 105 | 5.7 | 296.1 | 10 | 50 | 1581 | 1107 | 395 |
| | | H | 105 | 5.7 | 296.1 | 10 | 35 | 1890 | 1323 | 472 |
| | | H | 105 | 5.7 | 296.1 | 10 | 55 | 1508 | 1055 | 377 |
| | | V | 105 | 5.7 | 296.1 | 10 | 40 | 1936 | 1356 | 484 |
| | 680 | E | 105 | 5.7 | 428.4 | 10 | 25 | 2236 | 1565 | 559 |
| 10 1A | 4.7 | A | 105 | 9 | 4.7 | 10 | 250 | 510 | 357 | 127 |
| | 6.8 | A | 105 | 9 | 6.8 | 10 | 180 | 601 | 421 | 150 |
| | | A | 105 | 9 | 6.8 | 10 | 250 | 510 | 357 | 127 |
| | 10 | A | 105 | 9 | 10 | 8 | 80 | 901 | 631 | 225 |
| | | A | 105 | 9 | 10 | 8 | 120 | 736 | 515 | 184 |
| | | A | 105 | 9 | 10 | 10 | 300 | 465 | 326 | 116 |
| | | B | 105 | 9 | 10 | 10 | 100 | 866 | 606 | 217 |
| | 15 | A | 105 | 9 | 15 | 8 | 80 | 901 | 631 | 225 |
| | | A | 105 | 9 | 15 | 6 | 200 | 570 | 399 | 143 |
| | | B | 105 | 9 | 15 | 10 | 90 | 913 | 639 | 228 |
| | | C | 105 | 9 | 15 | 10 | 70 | 1134 | 794 | 283 |
| | 22 | A | 105 | 9 | 22 | 8 | 80 | 901 | 631 | 225 |
| | | B | 105 | 9 | 22 | 10 | 90 | 913 | 639 | 228 |
| | | B | 105 | 9 | 22 | 6 | 300 | 500 | 350 | 125 |
| | | C | 105 | 9 | 22 | 10 | 70 | 1134 | 794 | 283 |
| | 33 | B | 105 | 9 | 33 | 8 | 40 | 1369 | 959 | 342 |
| | | B | 105 | 9 | 33 | 10 | 90 | 913 | 639 | 228 |
| | | B | 105 | 9 | 33 | 6 | 200 | 612 | 429 | 153 |
| | | C | 105 | 9 | 33 | 10 | 70 | 1134 | 794 | 283 |
| | | C | 105 | 9 | 33 | 6 | 100 | 949 | 664 | 237 |
| | 47 | B | 105 | 9 | 47 | 8 | 35 | 1464 | 1025 | 366 |
| | | B | 105 | 9 | 47 | 8 | 70 | 1035 | 725 | 259 |
| | | B | 105 | 9 | 47 | 10 | 90 | 913 | 639 | 228 |
| | | C | 105 | 9 | 47 | 10 | 70 | 1134 | 794 | 283 |
| | | C | 105 | 9 | 47 | 8 | 100 | 949 | 664 | 237 |
| | 68 | C | 105 | 9 | 68 | 8 | 45 | 1414 | 990 | 354 |
| | | C | 105 | 9 | 68 | 10 | 70 | 1134 | 794 | 283 |
| | | D | 105 | 9 | 68 | 6 | 45 | 1528 | 1069 | 382 |
| | | D | 105 | 9 | 68 | 10 | 60 | 1323 | 926 | 331 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2° 1.0V U~=1.0° 0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.


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# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

**CBAC:** ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 10 1A | 68 | D | 105 | 9 | 68 | 10 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 9 | 68 | 10 | 100 | 1025 | 717 | 256 |
| | | H | 105 | 9 | 68 | 10 | 45 | 1667 | 1167 | 417 |
| | | H | 105 | 9 | 68 | 10 | 60 | 1443 | 1010 | 361 |
| | | H | 105 | 9 | 68 | 10 | 100 | 1118 | 783 | 280 |
| | 100 | C | 105 | 9 | 100 | 8 | 25 | 1897 | 1328 | 474 |
| | | C | 105 | 9 | 100 | 8 | 45 | 1414 | 990 | 354 |
| | | C | 105 | 9 | 100 | 10 | 70 | 1134 | 794 | 283 |
| | | D | 105 | 9 | 100 | 6 | 45 | 1528 | 1069 | 382 |
| | | D | 105 | 9 | 100 | 10 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 9 | 100 | 10 | 80 | 1146 | 802 | 286 |
| | | H | 105 | 9 | 100 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 9 | 100 | 10 | 55 | 1508 | 1055 | 377 |
| | 150 | C | 105 | 9 | 150 | 8 | 55 | 1279 | 895 | 320 |
| | | D | 105 | 9 | 150 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 9 | 150 | 10 | 40 | 1620 | 1134 | 405 |
| | | D | 105 | 9 | 150 | 10 | 60 | 1323 | 926 | 331 |
| | | E | 105 | 9 | 150 | 10 | 50 | 1581 | 1107 | 395 |
| | | H | 105 | 9 | 150 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 9 | 150 | 6 | 55 | 1508 | 1055 | 377 |
| | 220 | D | 105 | 9 | 220 | 10 | 25 | 2049 | 1435 | 512 |
| | | D | 105 | 9 | 220 | 10 | 60 | 1323 | 926 | 331 |
| | | E | 105 | 9 | 220 | 10 | 50 | 1581 | 1107 | 395 |
| | | H | 105 | 9 | 220 | 10 | 25 | 2236 | 1565 | 559 |
| | | H | 105 | 9 | 220 | 6 | 50 | 1581 | 1107 | 395 |
| | 330 | E | 105 | 9 | 330 | 10 | 35 | 1890 | 1323 | 472 |
| | | E | 105 | 9 | 330 | 10 | 50 | 1581 | 1107 | 395 |
| | | V | 105 | 9 | 330 | 10 | 40 | 1936 | 1356 | 484 |
| 16 1C | 1 | B | 105 | 12.8 | 1.6 | 10 | 300 | 500 | 350 | 125 |
| | 1.5 | B | 105 | 12.8 | 2.4 | 10 | 300 | 500 | 350 | 125 |
| | 2.2 | B | 105 | 12.8 | 3.5 | 10 | 300 | 500 | 350 | 125 |
| | 3.3 | A | 105 | 12.8 | 5.3 | 10 | 250 | 510 | 357 | 127 |
| | | B | 105 | 12.8 | 5.3 | 10 | 150 | 707 | 495 | 177 |
| | | B | 105 | 12.8 | 5.3 | 10 | 300 | 500 | 350 | 125 |
| | 4.7 | A | 105 | 12.8 | 7.5 | 10 | 250 | 510 | 357 | 127 |
| | | B | 105 | 12.8 | 7.5 | 10 | 100 | 866 | 606 | 217 |
| | | B | 105 | 12.8 | 7.5 | 10 | 150 | 707 | 495 | 177 |
| | | B | 105 | 12.8 | 7.5 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 12.8 | 7.5 | 10 | 150 | 775 | 542 | 194 |
| | 6.8 | A | 105 | 12.8 | 10.9 | 6 | 200 | 570 | 399 | 143 |
| | | B | 105 | 12.8 | 10.9 | 10 | 100 | 866 | 606 | 217 |
| | | B | 105 | 12.8 | 10.9 | 10 | 150 | 707 | 495 | 177 |
| | | B | 105 | 12.8 | 10.9 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 12.8 | 10.9 | 10 | 150 | 775 | 542 | 194 |
| | 10 | A | 105 | 12.8 | 16 | 6 | 200 | 570 | 399 | 143 |
| | | B | 105 | 12.8 | 16 | 10 | 100 | 866 | 606 | 217 |
| | | B | 105 | 12.8 | 16 | 6 | 200 | 612 | 429 | 153 |
| | | B | 105 | 12.8 | 16 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 12.8 | 16 | 10 | 150 | 775 | 542 | 194 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2˚1.0V U~=1.0˚0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.

# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

**CBAC:** ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 16 1C | 15 | B | 105 | 12.8 | 24 | 10 | 100 | 866 | 606 | 217 |
| | | B | 105 | 12.8 | 24 | 6 | 150 | 707 | 495 | 177 |
| | | B | 105 | 12.8 | 24 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 12.8 | 24 | 10 | 70 | 1134 | 794 | 283 |
| | | C | 105 | 12.8 | 24 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 12.8 | 24 | 10 | 80 | 1146 | 802 | 286 |
| | 22 | B | 105 | 12.8 | 35.2 | 6 | 150 | 707 | 495 | 177 |
| | | C | 105 | 12.8 | 35.2 | 10 | 70 | 1134 | 794 | 283 |
| | | C | 105 | 12.8 | 35.2 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 12.8 | 35.2 | 10 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 12.8 | 35.2 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 12.8 | 35.2 | 10 | 80 | 1250 | 875 | 313 |
| | 33 | C | 105 | 12.8 | 52.8 | 10 | 70 | 1134 | 794 | 283 |
| | | C | 105 | 12.8 | 52.8 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 12.8 | 52.8 | 10 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 12.8 | 52.8 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 12.8 | 52.8 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 12.8 | 52.8 | 10 | 45 | 1667 | 1167 | 417 |
| | | H | 105 | 12.8 | 52.8 | 10 | 70 | 1336 | 935 | 334 |
| | 47 | C | 105 | 12.8 | 75.2 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 12.8 | 75.2 | 10 | 35 | 1732 | 1212 | 433 |
| | | D | 105 | 12.8 | 75.2 | 10 | 70 | 1225 | 857 | 306 |
| | | D | 105 | 12.8 | 75.2 | 10 | 90 | 1080 | 756 | 270 |
| | | E | 105 | 12.8 | 75.2 | 10 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 12.8 | 75.2 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 12.8 | 75.2 | 10 | 45 | 1667 | 1167 | 417 |
| | | H | 105 | 12.8 | 75.2 | 10 | 80 | 1250 | 875 | 313 |
| | 68 | D | 105 | 12.8 | 108.8 | 10 | 50 | 1449 | 1014 | 362 |
| | | D | 105 | 12.8 | 108.8 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 12.8 | 108.8 | 10 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 12.8 | 108.8 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 12.8 | 108.8 | 10 | 50 | 1581 | 1107 | 395 |
| | | H | 105 | 12.8 | 108.8 | 10 | 90 | 1179 | 825 | 295 |
| | 100 | D | 105 | 12.8 | 160 | 10 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 12.8 | 160 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 12.8 | 160 | 6 | 40 | 1768 | 1237 | 442 |
| | | E | 105 | 12.8 | 160 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 12.8 | 160 | 10 | 50 | 1581 | 1107 | 395 |
| | 150 | E | 105 | 12.8 | 240 | 10 | 40 | 1768 | 1237 | 442 |
| | | E | 105 | 12.8 | 240 | 10 | 80 | 1250 | 875 | 313 |
| | | V | 105 | 12.8 | 240 | 10 | 80 | 1369 | 959 | 342 |
| | | W | 105 | 12.8 | 240 | 10 | 80 | 1581 | 1107 | 395 |
| | 220 | E | 105 | 12.8 | 352 | 10 | 35 | 1890 | 1323 | 472 |
| | | E | 105 | 12.8 | 352 | 10 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 12.8 | 352 | 10 | 80 | 1250 | 875 | 313 |
| | | V | 105 | 12.8 | 352 | 10 | 40 | 1936 | 1356 | 484 |
| | | V | 105 | 12.8 | 352 | 10 | 80 | 1369 | 959 | 342 |
| | | W | 105 | 12.8 | 352 | 10 | 80 | 1581 | 1107 | 395 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2˚1.0V U~=1.0˚0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.


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# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

**CBAC:** ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 16 1C | 330 | E | 105 | 12.8 | 528 | 10 | 25 | 2236 | 1565 | 559 |
| | | E | 105 | 12.8 | 528 | 10 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 12.8 | 528 | 10 | 80 | 1250 | 875 | 313 |
| | | V | 105 | 12.8 | 528 | 10 | 40 | 1936 | 1356 | 484 |
| | | V | 105 | 12.8 | 528 | 10 | 80 | 1369 | 959 | 342 |
| | | W | 105 | 12.8 | 528 | 10 | 80 | 1581 | 1107 | 395 |
| 20 1D | 1 | B | 105 | 16 | 2 | 10 | 300 | 500 | 350 | 125 |
| | 1.5 | B | 105 | 16 | 3 | 10 | 300 | 500 | 350 | 125 |
| | 2.2 | A | 105 | 16 | 4.4 | 10 | 250 | 510 | 357 | 127 |
| | | B | 105 | 16 | 4.4 | 10 | 150 | 707 | 495 | 177 |
| | | B | 105 | 16 | 4.4 | 10 | 300 | 500 | 350 | 125 |
| | 3.3 | A | 105 | 16 | 6.6 | 10 | 250 | 510 | 357 | 127 |
| | | B | 105 | 16 | 6.6 | 10 | 150 | 707 | 495 | 177 |
| | | B | 105 | 16 | 6.6 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 16 | 6.6 | 10 | 150 | 775 | 542 | 194 |
| | 4.7 | B | 105 | 16 | 9.4 | 10 | 150 | 707 | 495 | 177 |
| | | B | 105 | 16 | 9.4 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 16 | 9.4 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 16 | 9.4 | 10 | 150 | 775 | 542 | 194 |
| | 6.8 | B | 105 | 16 | 13.6 | 10 | 150 | 707 | 495 | 177 |
| | | B | 105 | 16 | 13.6 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 16 | 13.6 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 16 | 13.6 | 10 | 150 | 775 | 542 | 194 |
| | 10 | B | 105 | 16 | 20 | 8 | 100 | 866 | 606 | 217 |
| | | B | 105 | 16 | 20 | 10 | 150 | 707 | 495 | 177 |
| | | B | 105 | 16 | 20 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 16 | 20 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 16 | 20 | 10 | 150 | 775 | 542 | 194 |
| | 15 | B | 105 | 16 | 30 | 10 | 90 | 913 | 639 | 228 |
| | | C | 105 | 16 | 30 | 10 | 80 | 1061 | 742 | 265 |
| | | C | 105 | 16 | 30 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 16 | 30 | 10 | 70 | 1225 | 857 | 306 |
| | | D | 105 | 16 | 30 | 10 | 80 | 1146 | 802 | 286 |
| | 22 | C | 105 | 16 | 44 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 16 | 44 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 16 | 44 | 10 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 16 | 44 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 16 | 44 | 10 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 16 | 44 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 16 | 44 | 10 | 45 | 1667 | 1167 | 417 |
| | | H | 105 | 16 | 44 | 6 | 70 | 1336 | 935 | 334 |
| | | H | 105 | 16 | 44 | 10 | 90 | 1179 | 825 | 295 |
| | 33 | C | 105 | 16 | 66 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 16 | 66 | 10 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 16 | 66 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 16 | 66 | 10 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 16 | 66 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 16 | 66 | 6 | 70 | 1336 | 935 | 334 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2˚1.0V U~=1.0˚0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.

# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

**CBAC:** ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 20 1D | 47 | C | 105 | 16 | 94 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 16 | 94 | 10 | 55 | 1382 | 967 | 345 |
| | | D | 105 | 16 | 94 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 16 | 94 | 10 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 16 | 94 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 16 | 94 | 10 | 55 | 1508 | 1055 | 377 |
| | | H | 105 | 16 | 94 | 6 | 70 | 1336 | 935 | 334 |
| | | H | 105 | 16 | 94 | 10 | 90 | 1179 | 825 | 295 |
| | 68 | D | 105 | 16 | 136 | 6 | 55 | 1382 | 967 | 345 |
| | | D | 105 | 16 | 136 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 16 | 136 | 6 | 45 | 1667 | 1167 | 417 |
| | | E | 105 | 16 | 136 | 10 | 80 | 1250 | 875 | 313 |
| | 100 | D | 105 | 16 | 200 | 10 | 55 | 1382 | 967 | 345 |
| | | E | 105 | 16 | 200 | 6 | 45 | 1667 | 1167 | 417 |
| | | E | 105 | 16 | 200 | 10 | 80 | 1250 | 875 | 313 |
| | | V | 105 | 16 | 200 | 10 | 80 | 1369 | 959 | 342 |
| | 150 | E | 105 | 16 | 300 | 10 | 80 | 1250 | 875 | 313 |
| | | V | 105 | 16 | 300 | 10 | 80 | 1369 | 959 | 342 |
| | | W | 105 | 16 | 300 | 10 | 80 | 1581 | 1107 | 395 |
| | 220 | E | 105 | 16 | 440 | 10 | 80 | 1250 | 875 | 313 |
| | | V | 105 | 16 | 440 | 10 | 80 | 1369 | 959 | 342 |
| | | W | 105 | 16 | 440 | 10 | 80 | 1581 | 1107 | 395 |
| 25 1E | 0.68 | B | 105 | 20 | 1.7 | 10 | 300 | 500 | 350 | 125 |
| | 1 | B | 105 | 20 | 2.5 | 10 | 300 | 500 | 350 | 125 |
| | 1.5 | B | 105 | 20 | 3.8 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 20 | 3.8 | 10 | 150 | 775 | 542 | 194 |
| | 2.2 | B | 105 | 20 | 5.5 | 10 | 250 | 548 | 383 | 137 |
| | | B | 105 | 20 | 5.5 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 20 | 5.5 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 20 | 5.5 | 10 | 150 | 775 | 542 | 194 |
| | 3.3 | B | 105 | 20 | 8.3 | 10 | 250 | 548 | 383 | 137 |
| | | B | 105 | 20 | 8.3 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 20 | 8.3 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 20 | 8.3 | 10 | 150 | 775 | 542 | 194 |
| | 4.7 | B | 105 | 20 | 11.8 | 6 | 150 | 707 | 495 | 177 |
| | | B | 105 | 20 | 11.8 | 10 | 250 | 548 | 383 | 137 |
| | | B | 105 | 20 | 11.8 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 20 | 11.8 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 20 | 11.8 | 10 | 150 | 775 | 542 | 194 |
| | 6.8 | B | 105 | 20 | 17 | 6 | 90 | 913 | 639 | 228 |
| | | B | 105 | 20 | 17 | 6 | 150 | 707 | 495 | 177 |
| | | B | 105 | 20 | 17 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 20 | 17 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 20 | 17 | 10 | 150 | 775 | 542 | 194 |
| | 10 | B | 105 | 20 | 25 | 8 | 100 | 866 | 606 | 217 |
| | | B | 105 | 20 | 25 | 6 | 150 | 707 | 495 | 177 |
| | | B | 105 | 20 | 25 | 10 | 300 | 500 | 350 | 125 |
| | | C | 105 | 20 | 25 | 10 | 100 | 949 | 664 | 237 |
| | | C | 105 | 20 | 25 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 20 | 25 | 10 | 90 | 1080 | 756 | 270 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2˚1.0V U~=1.0˚0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.


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# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

## CBAC: ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 25 1E | 15 | B | 105 | 20 | 37.5 | 6 | 100 | 866 | 606 | 217 |
| | | B | 105 | 20 | 37.5 | 6 | 150 | 707 | 495 | 177 |
| | | C | 105 | 20 | 37.5 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 20 | 37.5 | 10 | 90 | 1080 | 756 | 270 |
| | | E | 105 | 20 | 37.5 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 20 | 37.5 | 10 | 90 | 1179 | 825 | 295 |
| | 22 | B | 105 | 20 | 55 | 6 | 150 | 707 | 495 | 177 |
| | | C | 105 | 20 | 55 | 6 | 100 | 949 | 664 | 237 |
| | | C | 105 | 20 | 55 | 10 | 150 | 775 | 542 | 194 |
| | | D | 105 | 20 | 55 | 6 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 20 | 55 | 10 | 80 | 1146 | 802 | 286 |
| | | D | 105 | 20 | 55 | 6 | 100 | 1025 | 717 | 256 |
| | | E | 105 | 20 | 55 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 20 | 55 | 10 | 60 | 1443 | 1010 | 361 |
| | | H | 105 | 20 | 55 | 10 | 90 | 1179 | 825 | 295 |
| | 33 | D | 105 | 20 | 82.5 | 10 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 20 | 82.5 | 10 | 80 | 1146 | 802 | 286 |
| | | D | 105 | 20 | 82.5 | 6 | 100 | 1025 | 717 | 256 |
| | | E | 105 | 20 | 82.5 | 10 | 80 | 1250 | 875 | 313 |
| | | H | 105 | 20 | 82.5 | 10 | 60 | 1443 | 1010 | 361 |
| | | H | 105 | 20 | 82.5 | 6 | 100 | 1118 | 783 | 280 |
| | 47 | D | 105 | 20 | 117.5 | 6 | 60 | 1323 | 926 | 331 |
| | | D | 105 | 20 | 117.5 | 10 | 80 | 1146 | 802 | 286 |
| | | D | 105 | 20 | 117.5 | 6 | 100 | 1025 | 717 | 256 |
| | | E | 105 | 20 | 117.5 | 6 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 20 | 117.5 | 10 | 80 | 1250 | 875 | 313 |
| | 68 | D | 105 | 20 | 170 | 10 | 80 | 1146 | 802 | 286 |
| | | E | 105 | 20 | 170 | 6 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 20 | 170 | 10 | 80 | 1250 | 875 | 313 |
| | | V | 105 | 20 | 170 | 10 | 80 | 1369 | 959 | 342 |
| | 100 | E | 105 | 20 | 250 | 10 | 60 | 1443 | 1010 | 361 |
| | | E | 105 | 20 | 250 | 10 | 80 | 1250 | 875 | 313 |
| | | V | 105 | 20 | 250 | 10 | 80 | 1369 | 959 | 342 |
| | | W | 105 | 20 | 250 | 10 | 80 | 1581 | 1107 | 395 |
| | 150 | V | 105 | 20 | 375 | 10 | 80 | 1369 | 959 | 342 |
| | | W | 105 | 20 | 375 | 10 | 80 | 1581 | 1107 | 395 |
| 35 1V | 0.68 | B | 105 | 28 | 2.4 | 10 | 350 | 463 | 324 | 116 |
| | 1 | B | 105 | 28 | 3.5 | 10 | 350 | 463 | 324 | 116 |
| | 1.5 | B | 105 | 28 | 5.3 | 6 | 200 | 612 | 429 | 153 |
| | | B | 105 | 28 | 5.3 | 10 | 350 | 463 | 324 | 116 |
| | | C | 105 | 28 | 5.3 | 10 | 200 | 671 | 470 | 168 |
| | 2.2 | B | 105 | 28 | 7.7 | 6 | 200 | 612 | 429 | 153 |
| | | B | 105 | 28 | 7.7 | 10 | 350 | 463 | 324 | 116 |
| | | C | 105 | 28 | 7.7 | 10 | 200 | 671 | 470 | 168 |
| | 3.3 | B | 105 | 28 | 11.6 | 6 | 200 | 612 | 429 | 153 |
| | | B | 105 | 28 | 11.6 | 10 | 350 | 463 | 324 | 116 |
| | | C | 105 | 28 | 11.6 | 10 | 200 | 671 | 470 | 168 |
| | 4.7 | B | 105 | 28 | 16.5 | 6 | 200 | 612 | 429 | 153 |
| | | B | 105 | 28 | 16.5 | 10 | 350 | 463 | 324 | 116 |
| | | C | 105 | 28 | 16.5 | 10 | 200 | 671 | 470 | 168 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2° 1.0V U~=1.0° 0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.

# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

## CBAC: ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 35 1V | 6.8 | C | 105 | 28 | 23.8 | 10 | 200 | 671 | 470 | 168 |
| | | D | 105 | 28 | 23.8 | 10 | 90 | 1080 | 756 | 270 |
| | 10 | B | 105 | 28 | 35 | 6 | 200 | 612 | 429 | 153 |
| | | C | 105 | 28 | 35 | 10 | 200 | 671 | 470 | 168 |
| | | D | 105 | 28 | 35 | 10 | 90 | 1080 | 756 | 270 |
| | | E | 105 | 28 | 35 | 10 | 90 | 1179 | 825 | 295 |
| | | H | 105 | 28 | 35 | 6 | 70 | 1336 | 935 | 334 |
| | | H | 105 | 28 | 35 | 10 | 120 | 1021 | 714 | 255 |
| | 15 | C | 105 | 28 | 52.5 | 6 | 200 | 671 | 470 | 168 |
| | | D | 105 | 28 | 52.5 | 6 | 70 | 1225 | 857 | 306 |
| | | D | 105 | 28 | 52.5 | 6 | 100 | 1025 | 717 | 256 |
| | | E | 105 | 28 | 52.5 | 10 | 90 | 1179 | 825 | 295 |
| | | H | 105 | 28 | 52.5 | 10 | 100 | 1118 | 783 | 280 |
| | | H | 105 | 28 | 52.5 | 10 | 125 | 1000 | 700 | 250 |
| | 22 | D | 105 | 28 | 77 | 6 | 70 | 1225 | 857 | 306 |
| | | D | 105 | 28 | 77 | 6 | 100 | 1025 | 717 | 256 |
| | | E | 105 | 28 | 77 | 10 | 90 | 1179 | 825 | 295 |
| | 33 | D | 105 | 28 | 115.5 | 10 | 65 | 1271 | 890 | 318 |
| | | D | 105 | 28 | 115.5 | 6 | 100 | 1025 | 717 | 256 |
| | | E | 105 | 28 | 115.5 | 6 | 55 | 1508 | 1055 | 377 |
| | | E | 105 | 28 | 115.5 | 6 | 70 | 1336 | 935 | 334 |
| | | E | 105 | 28 | 115.5 | 10 | 90 | 1179 | 825 | 295 |
| | | V | 105 | 28 | 115.5 | 10 | 90 | 1291 | 904 | 323 |
| | 47 | E | 105 | 28 | 164.5 | 10 | 30 | 2041 | 1429 | 510 |
| | | E | 105 | 28 | 164.5 | 6 | 55 | 1508 | 1055 | 377 |
| | | E | 105 | 28 | 164.5 | 10 | 90 | 1179 | 825 | 295 |
| | | V | 105 | 28 | 164.5 | 10 | 90 | 1291 | 904 | 323 |
| | | W | 105 | 28 | 164.5 | 10 | 90 | 1491 | 1043 | 373 |
| | 68 | W | 105 | 28 | 238 | 10 | 90 | 1491 | 1043 | 373 |
| 50 1H | 0.68 | B | 105 | 40 | 3.4 | 10 | 350 | 463 | 324 | 116 |
| | | B | 105 | 40 | 3.4 | 6 | 400 | 433 | 303 | 108 |
| | 1 | B | 105 | 40 | 5 | 6 | 300 | 500 | 350 | 125 |
| | | B | 105 | 40 | 5 | 10 | 350 | 463 | 324 | 116 |
| | 1.5 | B | 105 | 40 | 7.5 | 6 | 300 | 500 | 350 | 125 |
| | | B | 105 | 40 | 7.5 | 10 | 350 | 463 | 324 | 116 |
| | | C | 105 | 40 | 7.5 | 10 | 200 | 671 | 470 | 168 |
| | | C | 105 | 40 | 7.5 | 6 | 300 | 548 | 383 | 137 |
| | 2.2 | B | 105 | 40 | 11 | 10 | 350 | 463 | 324 | 116 |
| | | C | 105 | 40 | 11 | 10 | 200 | 671 | 470 | 168 |
| | | C | 105 | 40 | 11 | 6 | 300 | 548 | 383 | 137 |
| | 3.3 | C | 105 | 40 | 16.5 | 10 | 200 | 671 | 470 | 168 |
| | | D | 105 | 40 | 16.5 | 10 | 100 | 1025 | 717 | 256 |
| | 4.7 | C | 105 | 40 | 23.5 | 10 | 200 | 671 | 470 | 168 |
| | | D | 105 | 40 | 23.5 | 10 | 100 | 1025 | 717 | 256 |
| | 6.8 | C | 105 | 40 | 34 | 10 | 200 | 671 | 470 | 168 |
| | | D | 105 | 40 | 34 | 10 | 70 | 1225 | 857 | 306 |
| | | D | 105 | 40 | 34 | 10 | 100 | 1025 | 717 | 256 |
| | | D | 105 | 40 | 34 | 10 | 120 | 935 | 655 | 234 |
| | | H | 105 | 40 | 34 | 10 | 70 | 1336 | 935 | 334 |
| | | H | 105 | 40 | 34 | 10 | 90 | 1179 | 825 | 295 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2° 1.0V U~=1.0° 0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.


www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

# ONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS

## CBAC: ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

| Rated Voltage (V) | Rated CAP (μF) | Case Code | Category Temp (℃) | Category Voltage (V) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR (mΩ) @25℃ 100KHz | 100kHz RMS Current (mA) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45℃ | 85℃ | 105℃ |
| 50 1H | 10 | D | 105 | 40 | 50 | 10 | 90 | 1080 | 756 | 270 |
| | | D | 105 | 40 | 50 | 10 | 120 | 935 | 655 | 234 |
| | | E | 105 | 40 | 50 | 6 | 70 | 1336 | 935 | 334 |
| | | E | 105 | 40 | 50 | 10 | 100 | 1118 | 783 | 280 |
| | 15 | E | 105 | 40 | 75 | 6 | 70 | 1336 | 935 | 334 |
| | | E | 105 | 40 | 75 | 10 | 100 | 1118 | 783 | 280 |
| | | V | 105 | 40 | 75 | 10 | 100 | 1225 | 857 | 306 |
| | 22 | E | 105 | 40 | 110 | 10 | 75 | 1291 | 904 | 323 |
| | | E | 105 | 40 | 110 | 10 | 100 | 1118 | 783 | 280 |
| | | V | 105 | 40 | 110 | 10 | 100 | 1225 | 857 | 306 |
| | | W | 105 | 40 | 110 | 10 | 100 | 1414 | 990 | 354 |
| | 33 | E | 105 | 40 | 165 | 10 | 75 | 1291 | 904 | 323 |
| | | V | 105 | 40 | 165 | 10 | 100 | 1225 | 857 | 306 |
| | | W | 105 | 40 | 165 | 10 | 100 | 1414 | 990 | 354 |
| | 47 | W | 105 | 40 | 235 | 10 | 100 | 1414 | 990 | 354 |
| 63 1J | 1 | B | 105 | 50.4 | 6.3 | 8 | 300 | 500 | 350 | 125 |
| | | C | 105 | 50.4 | 6.3 | 10 | 200 | 671 | 470 | 168 |
| | | C | 105 | 50.4 | 6.3 | 6 | 300 | 548 | 383 | 137 |
| | | D | 105 | 50.4 | 6.3 | 10 | 120 | 935 | 655 | 234 |
| | 1.5 | C | 105 | 50.4 | 9.5 | 10 | 200 | 671 | 470 | 168 |
| | | C | 105 | 50.4 | 9.5 | 6 | 300 | 548 | 383 | 137 |
| | | D | 105 | 50.4 | 9.5 | 10 | 120 | 935 | 655 | 234 |
| | 2.2 | C | 105 | 50.4 | 13.9 | 10 | 200 | 671 | 470 | 168 |
| | | D | 105 | 50.4 | 13.9 | 10 | 120 | 935 | 655 | 234 |
| | 3.3 | C | 105 | 50.4 | 20.8 | 10 | 200 | 671 | 470 | 168 |
| | | D | 105 | 50.4 | 20.8 | 10 | 120 | 935 | 655 | 234 |
| | 4.7 | C | 105 | 50.4 | 29.6 | 6 | 200 | 671 | 470 | 168 |
| | | D | 105 | 50.4 | 29.6 | 10 | 75 | 1183 | 828 | 296 |
| | | D | 105 | 50.4 | 29.6 | 10 | 120 | 935 | 655 | 234 |
| | | D | 105 | 50.4 | 29.6 | 10 | 300 | 592 | 414 | 148 |
| | | E | 105 | 50.4 | 29.6 | 10 | 120 | 1021 | 714 | 255 |
| | 6.8 | D | 105 | 50.4 | 42.8 | 10 | 120 | 935 | 655 | 234 |
| | | E | 105 | 50.4 | 42.8 | 6 | 100 | 1118 | 783 | 280 |
| | | E | 105 | 50.4 | 42.8 | 6 | 150 | 913 | 639 | 228 |
| | 10 | D | 105 | 50.4 | 63 | 10 | 120 | 935 | 655 | 234 |
| | | E | 105 | 50.4 | 63 | 10 | 50 | 1581 | 1107 | 395 |
| | | E | 105 | 50.4 | 63 | 6 | 100 | 1118 | 783 | 280 |
| | | E | 105 | 50.4 | 63 | 6 | 150 | 913 | 639 | 228 |
| | 15 | E | 105 | 50.4 | 94.5 | 10 | 35 | 1890 | 1323 | 472 |
| | | E | 105 | 50.4 | 94.5 | 10 | 120 | 1021 | 714 | 255 |
| | | E | 105 | 50.4 | 94.5 | 10 | 150 | 913 | 639 | 228 |
| | | V | 105 | 50.4 | 94.5 | 10 | 120 | 1118 | 783 | 280 |
| | 22 | W | 105 | 50.4 | 138.6 | 10 | 120 | 1291 | 904 | 323 |

1. Please do not use multimeter through the measuring procedures.
2. Capacitance and DF measured at :100Hz U _ =2.2° 1.0V U~=1.0° 0.5V, Frequency=100Hz. Test only applied in series equivalent circuit.
3. Voltage derating is applied at +105 The DCL parameter should be read after 5 minutes when it connected to the circuit
4. Special size and demand could consult with us.

## CBAC: ULTRA-LOW ESR, CONDUCTIVE POLYMER CHIP TANTALUM CAPACITORS, SOILD POLYMER TANTALUM CAPACITORS

### Land Dimension / Courtyard

| Case Code | Density Level A: Maximum (Most) Land Protrusion (mm) | | | | | Density Level B : Median (Nominal) Land Protrusion (mm) | | | | | Density Level C: Minimum (Least) Land Protrusion (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case | W | L | S | V1 | V2 | W | L | S | V1 | V2 | W | L | S | V1 | V2 |
| A | 1.35 | 2.20 | 0.62 | 6.02 | 2.8 | 1.23 | 1.8 | 0.82 | 4.92 | 2.3 | 1.13 | 1.42 | 0.98 | 4.06 | 2.04 |
| B | 2.35 | 2.21 | 0.92 | 6.32 | 4.0 | 2.23 | 1.8 | 1.12 | 5.22 | 3.5 | 2.13 | 1.42 | 1.28 | 4.36 | 3.24 |
| C | 2.35 | 2.77 | 2.37 | 8.92 | 4.5 | 2.23 | 2.37 | 2.57 | 7.82 | 4 | 2.13 | 1.99 | 2.73 | 6.96 | 3.74 |
| D | 2.55 | 2.77 | 3.67 | 10.22 | 5.6 | 2.43 | 2.37 | 3.87 | 9.12 | 5.1 | 2.33 | 1.99 | 4.03 | 8.26 | 4.84 |
| E | 2.55 | 2.77 | 3.67 | 10.22 | 5.6 | 2.43 | 2.37 | 3.87 | 9.12 | 5.1 | 2.33 | 1.99 | 4.03 | 8.26 | 4.84 |

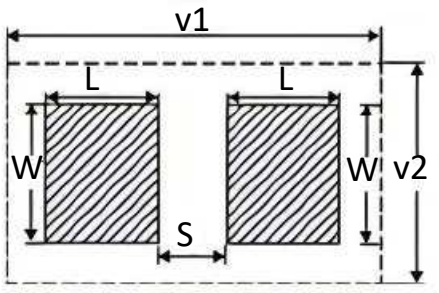
**Density Level A:** For low-density product applications. Recommended for wave solder applications and provides a wider process window for reflow solder processes.

**Density Level B:** For products with a moderate level of component density. Provides a robust solder attachment condition for reflow solder processes.

**Density Level C:** For high component density product applications. Before adapting the minimum land pattern variations the user should perform qualification testing based on the conditions outlined in IPC standard 7351 (IPC-7351).

1 Height of these chips may create problems in wave soldering.

2 Land pattern geometry is too small for silkscreen outline.




**Surface Mount Footprints**

### Soldering Process

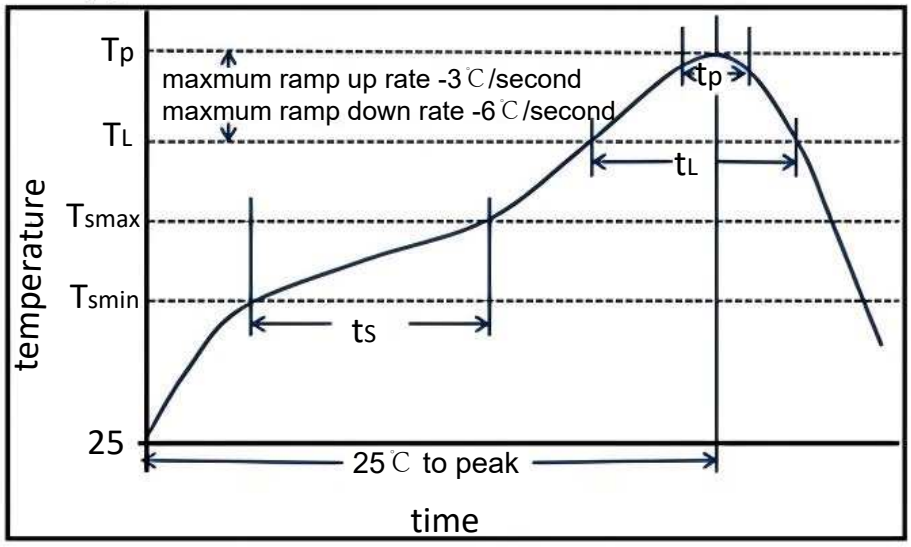
Jinpei tantalum capacitors are compatible with wave (single or dual), convection, IR, or vapor phase reflow techniques. Preheating of these components is recommended to avoid extreme thermal stress. Suntan's recommended profile conditions for convection and IR reflow reflect the profile conditions of the IPC/J CBAC standard for moisture sensitivity testing. The devices can safely withstand a maximum of three reflow passes at these conditions.

Hand soldering should be performed with care due to the difficulty in process control. If performed, care should be taken to avoid contact of the soldering iron to the molded case. The iron should be used to heat the solder pad, applying solder between the pad and the termination, until reflow occurs. Once reflow occurs, the iron should be removed immediately. "Wiping" the edges of a chip and heating the top surface is not recommended.

During typical reflow operations, a slight darkening of the gold- colored epoxy may be observed. This slight darkening is normal and not harmful to the product. Marking permanency is not affected by this change.

| Profile Feature | SnPb Assembly | Pb-Free Assembly |
|---|---|---|
| Preheat/Soak | | |
| Temperature Minimum ($T_{Smin}$)<br>Temperature Maximum ($T_{Smax}$)<br>Time (ts) from Tsmin to $T_{smax}$ ) | 100°C<br>150°C<br>60 – 120 seconds | 150°C<br>200°C<br>60 – 120 seconds |
| Ramp-up Rate ($T_L$ to $T_P$) | 3°C/seconds maximum | 3°C/seconds maximum |
| Liquidous Temperature ($T_L$) | 183°C | 217°C |
| Time Above Liquidous ($t_L$) | 60 – 150 seconds | 60 – 150 seconds |
| Peak Temperature ($T_P$) | 220℃* , 235℃** | 250℃* , 260℃** |
| Time within 5°C of Maximum Peak Temperature (tP) | 20 seconds maximum | 30 seconds maximum |
| Ramp-down Rate ($T_P$ to $T_L$) | 6°C/seconds maximum | 6°C/seconds maximum |
| Time 25°C to Peak Temperature | 6 minutes maximum | 8 minutes maximum |

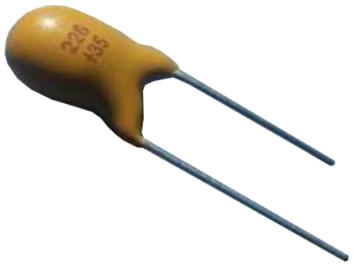
*Note: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow.*Case Size D, E**Case Size A, B, C*




recommended reflow profile

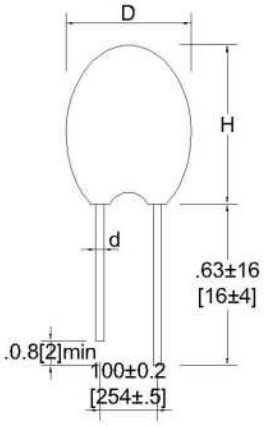
Note: Specifications are subject to change without notice. For more detail and update, please visit our website.

## CBBA SERIES

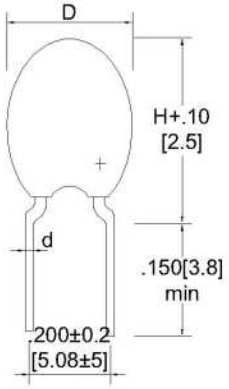


- Epoxy resin dipped
- Low leakage current and impedance
- Excellent humidity and heat resistance
- Laser marked capacitor body
- Several lead-wire forms available

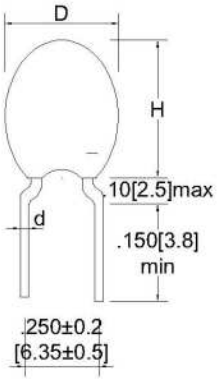
style10(0.100 lead space)



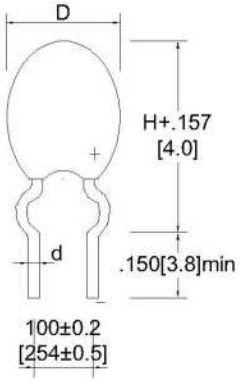

style20 (0.200 lead space)



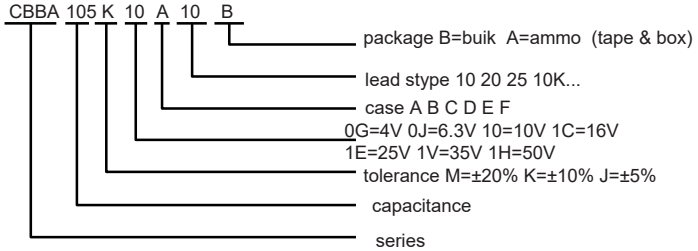

style 25(0.25 lead space)




style 10K(0.100 lead space)




### HOW TO MAKE A PART NUMBER




**DIMENSIONS**

| Case Size | D(Max) | H (Max) | d±.002 [.05] |
|---|---|---|---|
| A | .177 [4.5] | 0.28[7.1] | .020 [0.50] |
| B | .196[5.0] | .315[8.0] | .020 [0.50] |
| C | .217[5.5] | .375[9.5] | .020 [0.50] |
| D | .256[6.5] | .433[11.0] | .020 [0.50] |
| E | .335[8.5] | .512[13.0] | .020 [0.50] |
| F | .375[9.5] | .650[16.5] | .020 [0.50] |

| RATED VOLTAGE,NOMINAL CAPACITANCE AND CASE SIZES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Rated DC Voltage(85℃) | | 3 | 4 | 6.3 | 10 | 16 | 20 | 25 | 35 | 50 |
| Rated DC Voltage(125℃ | | 2 | 2.5 | 4 | 6.3 | 10 | 13 | 16 | 20 | 32 |
| Short-time Overload Voltage (30Sec) | | 4 | 5.2 | 8 | 13 | 20 | 26 | 33 | 46 | 65 |
| Capacitance(μF) | Code | Case Code | | | | | | | | |
| 0.047 | 473 | | | | | | | | A | A |
| 0.068 | 683 | | | | | | | | A | A |
| 0.1 | 104 | | | | | | | | A | A |
| 0.15 | 154 | | | | | | | | A | A |
| 0.22 | 224 | | | | | | | | A | A |
| 0.33 | 334 | | | | | | | | A | A |
| 0.47 | 474 | | | | | | | | A | A |
| 0.68 | 684 | | | | | | | | A | A |
| 1.0 | 105 | | | | | A | A | A | A | B |
| 1.5 | 155 | | | | | A | A | A | A | C |
| 2.2 | 225 | | | | A | A | A | A | B | C |
| 3.3 | 335 | | | A | A | A | B | B | B | D |
| 4.7 | 475 | A | A | A | A | B | B | B | C | D |
| 6.8 | 685 | A | A | A | B | B | C | C | D | D |
| 10 | 106 | A | A | B | B | B | C | C | D | E |
| 15 | 156 | A | A | B | C | C | D | D | E | F |
| 22 | 226 | B | B | C | C | C | D | D | E | F |
| 33 | 336 | B | B | C | D | D | E | E | F | |
| 47 | 476 | C | C | D | D | D | E | E | F | |
| 68 | 686 | D | D | D | D | E | F | F | | |
| 100 | 107 | D | D | E | E | E | F | F | | |
| 150 | 157 | D | E | E | E | F | | | | |
| 220 | 227 | E | E | E | F | | | | | |
| 330 | 337 | E | F | F | | | | | | |
| 470 | 477 | F | | | | | | | | |
| 680 | 687 | F | | | | | | | | |

**SPECIFICATIONS**

| CAPACITANCE (μF) | CFROM INITIAL LIMIT | | | DISSIPATION FACTOR (25°℃,120Hz) | | | |
|---|---|---|---|---|---|---|---|
| | -55℃ | +85℃ | +125℃ | -55℃ | +25℃ | +85℃ | +125℃ |
| <1.0 | ±10% | ±15% | ±25% | 6% | 4% | 6% | 6% |
| 1.5 to 68 | | | | 10% | 6% | 10% | 10% |
| 100 to 680 | | | | 12% | 8% | 12% | 12% |

# AXIAL LEAD SOLID TANTALUM CAPACITOR

# CBDY

Products Name:Axial Leads Solid Electrolytic Tantalum Capacitor
Model:CBDY Equative CA series
Value:1uF~1000uF
Votage:6.3V~100V
Size(mm):

## 1,Brief Introduction:

CBDY Series metal- cased solid tantalum electrolytic capacitors with polar axial leads are characterized in small size, wide operating temperature range, stable performances, high reliability and long life, CBDY Series meets the requirements of Chinese National Standard GB8583- 88, widely used in instruments meters and other electronic equipment for military and civil applications.




## 2, General Characteristics

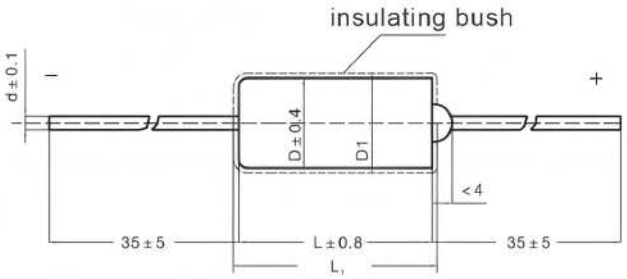
Temperature Range: - 55℃ ~ +125℃(>85℃ with rated voltage derating).
Capacitance Tolerance:± 20%,± 10%
DC Leakage:20℃ lO≤0.01CrUr or 0.5uA(whichever greater)
Dissipation factor (20℃): see table 1
Temperature Characteristics: See table 1

Table 1

| Capacitance (μF) | Cap. Change△C/C(%) | | | MAX. | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | DF(%)Max | | | DCL Max. | | |
| | - 55℃ | +85℃ | +125℃ | - 55℃ | +20℃ | +85℃ | +125℃ | +85℃ | +125℃ |
| ≤ 1 | ± 8 | ± 8 | ± 10 | 3 | 3 | 3 | | 8I0 | 10I0 (1) |
| 1.5 ~ 68 | | | | 5 | 5 | 5 | | | |
| 100 ~ 330 | | | | 6 | 6 | 6 | | | |
| 470 ~ 1000 | | | | 8 | 8 | 8 | | | |

Note: (1)Measured at a voltage derating.

## 3,Drawing ,Dimensions and Max Weight




Outline and Dimensions

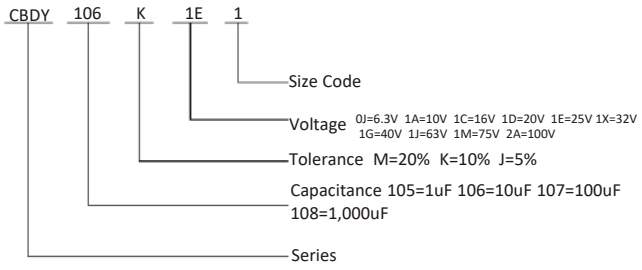
| Case code | Weight Max(g) | D±0.5(mm) | L±2 (mm) | d±0.1(mm) |
|---|---|---|---|---|
| 1 | 0.7 | 3.2 | 8 | 0.4 |
| 2 | 2.3 | 5 | 12 | 0.6 |
| 3 | 3.0 | 6 | 14 | 0.6 |
| 4 | 4.0 | 8 | 14 | 0.8 |
| 5 | 8.0 | 8 | 22 | 0.8 |
| 6 | 14.0 | 10 | 22 | 0.8 |

Note: When encapsulated with plastic insulation sleeve, dimension D increase 0.8mm and L increase 2mm.

## 4,Nominal Capacitance, Rated voltage, Voltage Derating

| Rated voltage | 6.3 | 10 | 16 | 25 | 32 | 40 | 63 | 75 | 100 |
|---|---|---|---|---|---|---|---|---|---|
| Voltage Derating | 4 | 6.3 | 10 | 16 | 20 | 25 | 40 | 50 | 63 |
| Code | Capacitance (μF) | | | | | | | | |
| 1 | 1.0 | 0.68 | 0.33 | 0.33 | 0.22 | 0.22 | 0.22 | 0.22 | 0.047 |
| | 1.5 | 1.0 | 0.47 | 0.47 | 0.33 | 0.33 | 0.33 | 0.33 | 0.068 |
| | 2.2 | 1.5 | 0.68 | 0.68 | 0.47 | 0.47 | 0.47 | | 0.1 |
| | 3.3 | 2.2 | 1.0 | 1.0 | 0.68 | 0.68 | | | 0.15 |
| | 4.7 | 3.3 | 1.5 | 1.5 | 1.0 | 1.0 | | | 0.22 |
| | 6.8 | 4.7 | 2.2 | 2.2 | 1.5 | | | | 0.33 |
| | 10 | 6.8 | 3.3 | | | | | | |
| 2 | 15 | 10 | 4.7 | 3.3 | 2.2 | 1.5 | 0.68 | 0.47 | |
| | 22 | 15 | 6.8 | 4.7 | 3.3 | 2.2 | 1.0 | 0.68 | 0.47 |
| | 33 | 22 | 10 | 6.8 | 4.7 | 3.3 | 1.5 | 1.0 | 0.68 |
| | 47 | 33 | 15 | 10 | 6.8 | 4.7 | 2.2 | 1.5 | 1.0 |
| | | 47 | 22 | 15 | 10 | 6.8 | 3.3 | 2.2 | 1.5 |
| | 68 | | 33 | | | | | 3.3 | |
| 3 | | 68 | 47 | 22 | 15 | 10 | 4.7 | 4.7 | |
| | 100 | 100 | 68 | 33 | | 15 | | | |
| 4 | 150 | 50 | 100 | 47 | 22 | 22 | 6.8 | | 2.2 |
| | 220 | | | 68 | 33 | 33 | 10 | | 3.3 |
| 5 | 330 | 220 | 150 | 100 | 47 | 47 | 15 | | |
| | 470 | 330 | 220 | | 68 | | 22 | | |
| 6 | 680 | 470 | 330 | 150 | 100 | 68 | 33 | | |
| | 1000 | 680 | 470 | 220 | 150 | 100 | 47 | | |

## 5,PART NUMBER EXAMPLE





www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

# AXIAL WET TANTALUM CAPACITOR

# CBDA

Products Name: CBDA Axial Leads Wet Electrolytic Tantalum Capacitor
Model: CBDA Equative CA30 series
Value: 1uF~3300uF
Votage:6.3V-125V
Size(mm):

## 1,Brief Introduction

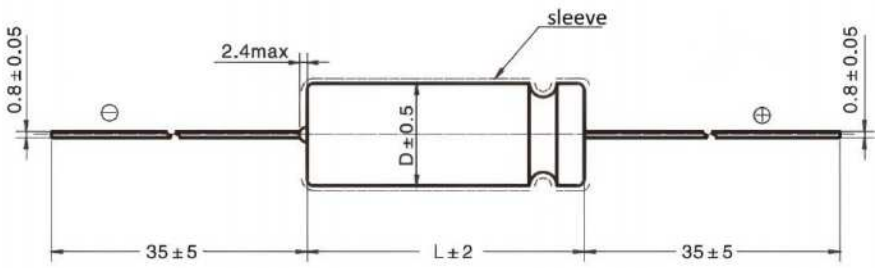
CBDA Series half-sealed tubular wet tantalum electrolytic capacitors
With polar axial leads are characterized in small size, low DC Leakage,
stable and excellent performances, high reliability and long life. CBDA
Series meets the requirements of Chinese Electronic industry standard SJ/T10030-91,
widely used in electronic equipment for military and civil applications such as telecommunication,
aerospace and aviation.



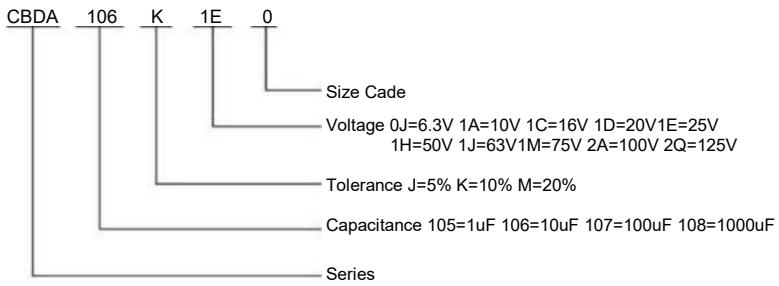

## 2,General Characteristics

Operating Temperature Range: -55℃~+125℃(>85℃ with rated voltage derating)
Capacitance range: 1uF~3300uF
Capacitance Tolerance: ±20%，±10%
Voltage: 6.3V~125V
DC Leakage: at +20℃, 10≤0.001$C_RV_R$ or 1 μ A(Whichever is greater);
at+85℃ and +125℃，10≤0.0080 $C_RV_R$ or 8μ A(Whichever is greater)

## 3,Drawing, Case Dimension and Max. Weight




## 4, PART NUMBER EXAMPLE




Outline and Dimensions

| Code | Max.weight(g) | D±0.5(mm) | L±2(mm) |
|---|---|---|---|
| 0 | 3 | 5 | 10 |
| 1 | 4 | 5 | 14 |
| 2 | 5 | 6 | 16 |
| 3 | 7 | 8 | 16 |
| 4 | 10 | 8 | 22 |
| 5 | 14 | 10 | 22 |
| 6 | 17 | 10 | 25 |
| 7 | 20 | 10 | 30 |
| 8 | 23 | 10 | 33 |

## 5, Nominal Capacitance, Rated voltage, Voltage Derating, Case size and General Characteristics

| Rated Voltage | Voltage Derating | Case size | Capacitance (μF) | DF(%)Max 25℃,85℃,125℃ | Impedance(Ω) -55℃ 100HZ |
|---|---|---|---|---|---|
| 6.3 | 4 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.7 | 6 | 500 |
| | | 0 | 6.8 | 8 | 350 |
| | | 0 | 10 | 8 | 260 |
| | | 0 | 15 | 10 | 200 |
| | | 0 | 22 | 10 | 180 |

| Rated Voltage | Voltage Derating | Case size | Capacitance (μF) | DF(%)Max 25℃,85℃,125℃ | Impedance(Ω) -55℃ 100HZ |
|---|---|---|---|---|---|
| 6.3 | 4 | 0 | 33 | 12 | 125 |
| | | 0 | 47 | 15 | 125 |
| | | 0 | 68 | 18 | 125 |
| | | 0 | 100 | 20 | 100 |
| | | 0 | 150 | 30 | 80 |
| | | 1 | 220 | 40 | 70 |
| | | 1 | 330 | 40 | 60 |
| | | 2 | 470 | 50 | 50 |
| | | 2 | 680 | 50 | 35 |
| | | 3 | 1000 | 60 | 25 |
| | | 4 | 1200 | 60 | 25 |
| | | 4 | 1500 | 60 | 20 |
| | | 5 | 2200 | 70 | 20 |
| | | 6 | 3300 | 80 | 15 |
| 10 | 6.3 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.7 | 6 | 500 |
| | | 0 | 6.8 | 8 | 350 |
| | | 0 | 10 | 8 | 250 |
| | | 0 | 15 | 10 | 200 |
| | | 0 | 22 | 10 | 175 |
| | | 0 | 33 | 12 | 125 |
| | | 0 | 47 | 15 | 100 |
| | | 0 | 68 | 18 | 80 |
| | | 0 | 100 | 20 | 60 |
| | | 1 | 150 | 30 | 55 |
| | | 2 | 220 | 40 | 45 |
| | | 2 | 330 | 45 | 50 |
| | | 3 | 470 | 50 | 35 |
| | | 3 | 680 | 50 | 30 |
| | | 4 | 1000 | 50 | 25 |
| | | 4 | 1200 | 60 | 25 |
| | | 5 | 1500 | 60 | 20 |
| | | 6 | 2200 | 70 | 20 |
| 16(15) | 10 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.7 | 6 | 500 |
| | | 0 | 6.8 | 8 | 350 |
| | | 0 | 10 | 8 | 260 |
| | | 0 | 15 | 10 | 180 |
| | | 0 | 22 | 10 | 150 |
| | | 0 | 33 | 12 | 110 |
| | | 0 | 47 | 12 | 90 |
| | | 0 | 68 | 18 | 80 |
| | | 1 | 100 | 20 | 72 |
| | | 2 | 150 | 30 | 60 |
| | | 2 | 220 | 40 | 55 |
| | | 3 | 300 | 40 | 45 |
| | | 4 | 470 | 40 | 40 |
| | | 5 | 680 | 45 | 35 |
| | | 6 | 1000 | 50 | 30 |
| | | 6 | 1200 | 50 | 25 |
| | | 7 | 1500 | 60 | 20 |

| Rated Voltage | Voltage Derating | Case size | Capacitance (μF) | DF(%)Max 25℃,85℃,125℃ | Impedance(Ω) -55℃ 100HZ |
|---|---|---|---|---|---|
| 25 | 16 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.7 | 6 | 500 |
| | | 0 | 6.8 | 8 | 300 |
| | | 0 | 10 | 8 | 260 |
| | | 0 | 15 | 10 | 175 |
| | | 0 | 22 | 10 | 150 |
| | | 0 | 33 | 12 | 110 |
| | | 0 | 47 | 12 | 80 |
| | | 1 | 68 | 20 | 75 |
| | | 2 | 100 | 20 | 70 |
| | | 3 | 150 | 25 | 60 |
| | | 3 | 220 | 30 | 55 |
| | | 4 | 330 | 30 | 45 |
| | | 5 | 470 | 40 | 40 |
| | | 6 | 680 | 40 | 35 |
| | | 7 | 1000 | 40 | 30 |
| | | 7 | 1200 | 50 | 25 |
| | | 8 | 1500 | 60 | 20 |
| 40 | 25 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.7 | 6 | 450 |
| | | 0 | 6.8 | 8 | 350 |
| | | 0 | 10 | 8 | 260 |
| | | 0 | 15 | 10 | 175 |
| | | 0 | 22 | 12 | 140 |
| | | 1 | 33 | 12 | 110 |
| | | 2 | 47 | 15 | 80 |
| | | 2 | 68 | 15 | 75 |
| | | 2 | 100 | 20 | 65 |
| | | 3 | 150 | 20 | 50 |
| | | 4 | 220 | 25 | 45 |
| | | 5 | 330 | 25 | 35 |
| | | 5 | 350 | 25 | 35 |
| | | 5 | 470 | 30 | 35 |
| | | 6 | 680 | 40 | 30 |
| | | 7 | 1000 | 45 | 30 |
| | | 8 | 1200 | 50 | 25 |
| 50 | 30 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.7 | 6 | 500 |
| | | 0 | 6.8 | 8 | 350 |
| | | 0 | 10 | 8 | 260 |
| | | 0 | 15 | 10 | 175 |
| | | 1 | 22 | 12 | 150 |
| | | 2 | 33 | 12 | 110 |
| | | 2 | 47 | 15 | 80 |
| | | 3 | 68 | 15 | 75 |
| | | 3 | 100 | 20 | 65 |
| | | 4 | 150 | 20 | 50 |
| | | 4 | 220 | 25 | 45 |
| | | 5 | 330 | 25 | 45 |
| | | 6 | 470 | 35 | 35 |
| | | 7 | 680 | 40 | 30 |
| | | 8 | 1000 | 50 | 30 |

| Rated Voltage | Voltage Derating | Case size | Capacitance (μF) | DF(%)Max 25℃,85℃,125℃ | Impedance(Ω) -55℃ 100HZ |
|---|---|---|---|---|---|
| 63 | 40 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.4 | 6 | 500 |
| | | 0 | 6.8 | 8 | 350 |
| | | 0 | 10 | 8 | 260 |
| | | 1 | 15 | 10 | 175 |
| | | 2 | 22 | 12 | 140 |
| | | 2 | 33 | 12 | 100 |
| | | 2 | 47 | 15 | 80 |
| | | 3 | 68 | 15 | 65 |
| | | 3 | 100 | 20 | 60 |
| | | 4 | 150 | 20 | 50 |
| | | 5 | 220 | 25 | 45 |
| | | 6 | 330 | 25 | 35 |
| | | 7 | 470 | 40 | 30 |
| 75(70) | 50 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.7 | 6 | 500 |
| | | 1 | 6.8 | 8 | 350 |
| | | 1 | 10 | 8 | 260 |
| | | 2 | 15 | 10 | 175 |
| | | 2 | 22 | 12 | 150 |
| | | 3 | 33 | 12 | 110 |
| | | 3 | 47 | 15 | 80 |
| | | 4 | 68 | 15 | 70 |
| | | 4 | 100 | 20 | 60 |
| | | 5 | 150 | 20 | 50 |
| | | 6 | 220 | 25 | 45 |
| | | 7 | 330 | 25 | 35 |
| 100(90) | 63 | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 0 | 4.7 | 6 | 500 |
| | | 1 | 6.8 | 8 | 350 |
| | | 1 | 10 | 8 | 260 |
| | | 2 | 15 | 10 | 175 |
| | | 2 | 22 | 10 | 150 |
| | | 3 | 33 | 15 | 100 |
| | | 3 | 47 | 15 | 70 |
| | | 4 | 68 | 15 | 65 |
| | | 5 | 100 | 20 | 60 |
| | | 6 | 150 | 20 | 50 |
| | | 7 | 220 | 20 | 40 |
| 125 | 75 | 0 | 0.47 | 6 | 4500 |
| | | 0 | 0.68 | 6 | 3000 |
| | | 0 | 1.0 | 6 | 1800 |
| | | 0 | 1.5 | 6 | 1400 |
| | | 0 | 2.2 | 6 | 1100 |
| | | 0 | 3.3 | 6 | 700 |
| | | 1 | 4.7 | 6 | 500 |
| | | 1 | 6.8 | 8 | 350 |
| | | 2 | 10 | 10 | 260 |
| | | 2 | 15 | 10 | 175 |
| | | 3 | 22 | 15 | 150 |
| | | 3 | 33 | 15 | 120 |
| | | 4 | 47 | 15 | 90 |
| | | 5 | 68 | 15 | 70 |
| | | 6 | 100 | 15 | 50 |
| | | 7 | 150 | 20 | 45 |

## CCAA SERIES

## 一、概述



### ● 电容器及介质种类:

※ 高频类： 此类介质材料的电容器为Ⅰ类电容器，包括通用型高频 COG、COH 电容器和温度补偿型高频 HG、LG、PH、RH、SH、TH、UJ、SL 电容器。其中 COG、COH 电容器电性能最稳定，几乎不随温度、电压和时间的变化而变化，适用于低损耗，稳定性要求高的高频电路，HG、LG、PH、RH、SH、TH、UJ、SL 电容器容量随温度变化而相应变化，适用于低损耗、温度补偿型电路中。

※ X7R、X5R、X7S、X6S：此类介质材料的电容器为Ⅱ类电容器，具有较高的介电常数，容量比Ⅰ类电容器高，具有较稳定的温度特性，适用于容量范围广，稳定性要求不高的电路中，如隔直、耦合、旁路、鉴频等电路中。

※Y5V：此类介质材料的电容器为Ⅱ类电容器，是所有电容器中介电常数最大的电容器，但其容量稳定性较差，对温度、电压等条件较敏感，适用于要求大容量，温度变化不大的电路中。

※Z5U：此类介质材料的电容器为Ⅱ类电容器，其温度特性介于 X7R 和 Y5V 之间，容量稳定性较差，对温度、电压等条件较敏感，适用于要求大容量，使用温度范围接近于室温的旁路，耦合等，低直流偏压的电路中。

## SUMMARY

### ● Types of Dielectric Material and Capacitor

※HIGH FREQUENCY TYPE: The capacitor of this kind dielectric material is considered as Class Ⅰ capacitor, including high frequency COG、COH capacitor and temperature compensating capacitor such as HG, LG, PH, RH,SH, TH, UJ, SL. The electrical properties of COG、COH capacitor are the most stable one and change invariablly with temperature, voltage and time. They are suited for applications where low-losses and high-stability are required, HG,LG,PH,RH,SH,TH,UJ,SL capacitor's capacitance changes with temperature.They are suited for applications where low-losses and temperature compensating circuits.

※X7R、X5R、X7S、X6S：X7R、X5R、 X7S、X6S material is a kind of material has high dielectric constant. The capacitor made of this kind material is considered as Class Ⅱ capacitor whose capacitance is higher than that of class Ⅰ. These capacitors are classified as having a semi-stable temperature characteristic and used over a wide temperature range, such in these kinds of circuits, DC-blocking, decoupling, bypassing, frequency discriminating etc.

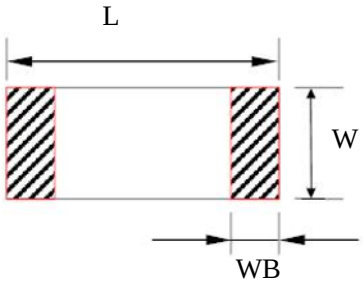
※Y5V： The capacitor made of this kind of material is the highest dielectric constant of all ceramic capacitors. They are used over a moderate temperature range in application where high capacitance is required because of its unstable temperature coefficient, but where moderate losses and capacitance changes can be tolerated. Its capacitance and dissipation factors are sensible to measuring conditions, such as temperature and voltage, etc.

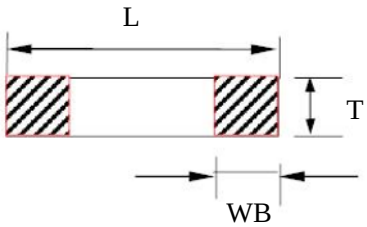
※Z5U：The capacitor made of this kind of material is considered as ClassⅡ capacitor, whose temperature characteristic is between that of X7R and Y5V. The capacitance of this kind of capacitor is unstable and sensible to temperature and voltage. Ideally suited for bypassing and decoupling application circuits operating with low DC bias in the environment approaches to room temperature.

**CCAA SERIES**

## 二、尺寸及结构 DIMENSIONS AND STRUCTURE

※尺寸 DIMENSIONS




| 型号Type | | 介质种类 Dielectric | 尺寸 Dimensions (mm) | | | | 特别说明 Special Instructions |
|---|---|---|---|---|---|---|---|
| 英制表示 British expression | 公制表示 Metric expression | | L | W | T | WB | |
| 1005 | 0402 | 所有介质 All Dielectric | 0.4±0.02 | 0.2±0.02 | 0.2±0.02 | 0.1±0.03 | All |
| 0201 | 0603 | 所有介质 All Dielectric | 0.6±0.03 | 0.3±0.03 | 0.3±0.03 | 0.15±0.10 | C < 220nF |
| | | | 0.6±0.05 | 0.3±0.05 | 0.3±0.05 | 0.15±0.10 | C≥ 220nF |
| 0402 | 1005 | Y5V/Z5U | 1.00±0.05 | 0.50±0.05 | 0.50±0.05 | 0.25±0.10 | C≤ 0.47uF |
| | | | 1.00±0.15 | 0.50±0.10 | 0.50±0.10 | 0.25±0.10 | 0.47uF < C≤ 1uF |
| | | 不包括 Exclusion Y5V/Z5U | 1.00±0.05 | 0.50±0.05 | 0.50±0.05 | 0.25±0.10 | C < 1uF |
| | | | 1.00±0.15 | 0.50±0.15 | 0.50±0.15 | 0.25±0.10 | 1uF≤ C < 10uF |
| | | | 1.00±0.20 | 0.50±0.20 | 0.50±0.20 | 0.25±0.10 | C≥ 10uF |
| 0603 | 1608 | 所有材料 All Dielectric | 1.60±0.10 | 0.80±0.10 | 0.80±0.10 | 0.30±0.10 | C≥ 10uF |
| | | | 1.60±0.20 | 0.80±0.20 | 0.80±0.20 | 0.30±0.10 | C < 10uF |
| 0805 | 2012 | Y5V/Z5U | 2.00±0.20 | 1.25±0.20 | 0.70±0.10 | 0.50±0.20 | C≤ 0.22uF |
| | | | 2.00±0.20 | 1.25±0.20 | 0.80±0.10 | 0.50±0.20 | 0.22uF < C≤ 2.2uF |
| | | | 2.00±0.20 | 1.25±0.20 | 1.25±0.20 | 0.50±0.20 | 2.2uF < C≤ 10uF |

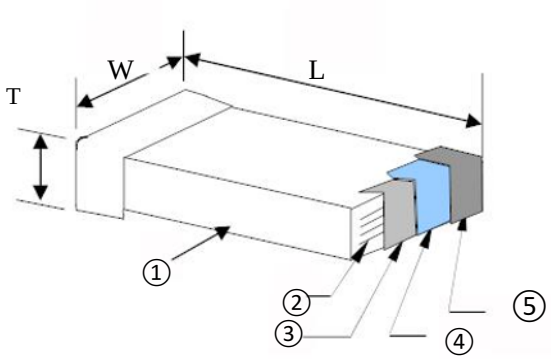
## CCAA SERIES

| 型号Type | | Dielectric 介质种类 | 尺寸 Dimensions (mm) | | | | 特别说明 Special Instructions |
|---|---|---|---|---|---|---|---|
| 英制表示 British expression | 公制表示 Metric expression | | L | W | T | WB | |
| 0805 | 2012 | 不包括 Exclusion Y5V/Z5U | 2.00±0.20 | 1.25±0.20 | 0.80±0.20 | 0.50±0.20 | C < 1uF |
| | | | 2.00±0.20 | 1.25±0.20 | 1.25±0.20 | 0.50±0.20 | C≥ 1uF |
| 1206 | 3216 | Y5V/Z5U | 3.20±0.30 | 1.60±0.30 | 0.80±0.20 | 0.60±0.30 | C≤ 10uF |
| | | | 3.20±0.30 | 1.60±0.30 | 1.60±0.30 | 0.60±0.30 | C > 10uF |
| | | 不包括 Exclusion Y5V/Z5U | 3.20±0.30 | 1.60±0.30 | 0.80±0.20 | 0.60±0.30 | C≤ 1uF |
| | | | 3.20±0.30 | 1.60±0.30 | 1.00±0.20 | 0.60±0.30 | 1uF < C≤ 2.2uF |
| | | | 3.20±0.30 | 1.60±0.30 | 1.25±0.20 | 0.60±0.30 | 2.2uF < C < 4.7uF |
| | | | 3.20±0.30 | 1.60±0.30 | 1.60±0.30 | 0.60±0.30 | C≥ 4.7uF |
| 1210 | 3225 | 所有介质 All Dielectric | 3.20±0.30 | 2.50±0.30 | ≤ 2.80 | 0.60±0.30 | All |
| 1808 | 4520 | 所有介质 All Dielectric | 4.50±0.40 | 2.00±0.20 | ≤ 2.20 | 0.60±0.30 | All |
| 1812 | 4532 | 所有介质 All Dielectric | 4.50±0.40 | 3.20±0.30 | ≤ 3.50 | 0.60±0.30 | All |
| 2220 | 5750 | 所有介质 All Dielectric | 5.70±0.40 | 5.00±0.40 | ≤ 3.50 | 0.60±0.30 | All |
| 2225 | 5763 | 所有介质 All Dielectric | 5.70±0.50 | 6.30±0.50 | ≤ 6.20 | 0.60±0.30 | All |
| 3012 | 7632 | 所有介质 All Dielectric | 7.60±0.50 | 3.20±0.30 | ≤ 8.10 | 0.60±0.30 | All |
| 3035 | 7690 | 所有介质 All Dielectric | 7.60±0.50 | 9.00±0.50 | ≤ 8.10 | 0.60±0.30 | All |

备注：可根据客户的特殊要求设计符合客户需求的产品。

Note：We can design according to customer special requirements

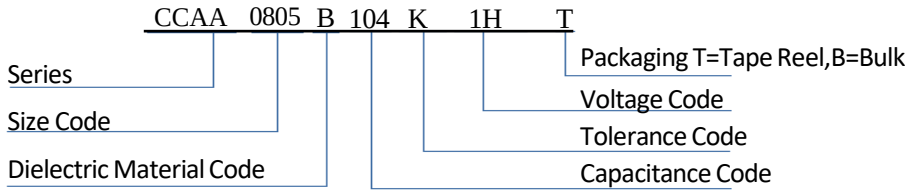
※ 结构 STRUCTURE




| 序号 NO | 名称 Name |
|---|---|
| ① | 陶瓷介质 Ceramic dielectric |
| ② | 内电极 Inner electrode |
| ③ | 外电极 Substrate electrode |
| ④ | 镍层 Nickel Layer |
| ⑤ | 锡层 Tin Layer |

## CCAA SERIES

## 三、型号规格表示方法 HOW TO ORDER




※ 说明 NOTES:

①尺寸 DIMENSIONS

| 尺寸规格 SizeCode | 1005 | 0201 | 0402 | 0603 | 0805 | 1206 | 1210 | 1808 | 1812 | 2220 | 2225 | 3035 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 长×宽 (LxW) inch | 0.01 × 0.005 | 0.02 × 0.01 | 0.04 × 0.02 | 0.06 × 0.03 | 0.08 × 0.05 | 0.12 × 0.06 | 0.12 × 0.10 | 0.18 × 0.08 | 0.18 × 0.12 | 0.22 × 0.20 | 0.22 × 0.25 | 0.30 × 0.35 |
| 长×宽 (LxW) mm | 0.40 × 0.20 | 0.60 × 0.30 | 1.00 × 0.50 | 1.60 × 0.80 | 2.00 × 1.25 | 3.20 × 1.60 | 3.20 × 2.50 | 4.50 × 2.00 | 4.50 × 3.20 | 5.70 × 5.00 | 5.70 × 6.30 | 7.60 × 9.00 |

② 介质种类DIELECTRIC STYLE

| 介质种类 (DielectricCode) | N | H | A | I | J | R | S | T | U | L | X | B | K | Q | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 介质材料 (Dielectric) | COG NPO | COH | HG | LG | PH | RH | SH | TH | UJ | SL | X5R | X7R | X7S | X6S | Z5U | Y5V |

③ 标称容量 NOMINAL CAPACITANCE 单位(unit): pF

| 表示方式 (Express Method) | 实际值 (Actual Value) |
|---|---|
| 0R5 | 0.5 |
| 1R0 | 1.0 |
| 102 | 10×102 |
| 224 | 22×104 |
| … | … |

注：头两位数字为有效数字，第三位数字为 0 的个数；R 为小数点。

Note: the first two digits are significant; third digit denotes number of zeros; R=decimal point.

④ 容量误差 CAPACITANCE TOLERANCE

| 代码(Code) | A | B | C | D | F | G | J | K | M | S | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 误差 (Tolerance) | ± 0.05pF | ± 0.10pF | ± 0.25pF | ± 0.5pF | ± 1.0% | ± 2.0% | 5.0% | ±10% | ±20% | +50% -20% | +80% -20% |

备注：A、B、C、D 级误差适用于容量≤10pF 的产品。

Note: These capacitance tolerance A, B, C, D are just applicable the capacitance that equals to or less than 10pF。


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## CCAA SERIES

⑤ 额定电压 RATED VOLTAGE 单位(unit)：V

| | | | | |
|---|---|---|---|---|
| 0J=6.3V、 | 1A=10V、 | 1C=16V、 | 1D=20、 | 1E=25V、 |
| 1V=35V、 | 1G=40V、 | 1H=50V、 | 1J=63V、 | 2A=100V、 |
| 2C=160V、 | 2D=200V、 | 2E=250V、 | 2V=350V、 | 2G=400V、 |
| 2H=500V、 | 2J=630V、 | 3A=1000V、 | 3D=2000V、 | 3E=2500V、 |
| 3U=3000V、 | 3G=4000V、 | 3H=5000V | | |

⑥ 端头材料 TERMINAL MATERIAL STYLES

| 端头类别 （Termination Styles） | 表示方式 (Express Method) |
|---|---|
| 纯银端头 （Silver Solderable Termination | S |
| 纯铜端头 （Copper Solderable Termination） | C |
| 三层电镀端头 （Nickel Barrier Termination） | N |

⑦ 包装方式PACKAGE STYLES

| B | T |
|---|---|
| 散包装（Bulk Bag） | 编带包装（Taping Package） |

## 四、温度系数/特性 Temperature Coefficient /Characteristics

| 介质种类 Dielectric | 参考温度点 Reference Temperature Point | 标称温度系数 Temperature Coefficient | 工作温度范围 Operation Temperature Range |
|---|---|---|---|
| COG | 20°C | 0±30 ppm/℃ | -55℃～125℃ |
| COH | 20°C | 0±60 ppm/℃ | -55℃～125℃ |
| HG | 20°C | -33±30 ppm/℃ | -25℃～85℃ |
| LG | 20°C | -75±30 ppm/℃ | -25℃～85℃ |
| PH | 20°C | -150± 60 ppm/℃ | -25℃～85℃ |
| RH | 20°C | -220± 60 ppm/℃ | -25℃～85℃ |
| SH | 20°C | -330± 60 ppm/℃ | -25℃～85℃ |
| TH | 20°C | -470± 60 ppm/℃ | -25℃～85℃ |
| UJ | 20°C | -750± 120 ppm/℃ | -25℃～85℃ |
| SL | 20°C | -1000～+140 ppm/℃ | -25℃～85℃ |
| X7R | 20°C | ±15% | -55℃～125℃ |
| X5R | 20°C | ±15% | -55℃～85℃ |
| X7S | 20°C | ±22% | -55℃～125℃ |
| X6S | 20°C | ±22% | -55℃～105℃ |
| Z5U | 20°C | -56%～+22% | 10℃～85℃ |
| Y5V | 20°C | -80%～+30% | -25℃～85℃ |

备注： Ⅰ类电容器标称温度系数和允许偏差是采用温度在 20°C 和 85°C 之间的电容量变化来确定的，而Ⅱ类电容器标称温度系数是按照工作范围之间的电容量相对 20°C 的电容量变化来确定的。

Note: Nominal temperature coefficient and allowed tolerance of class Ⅰ are decided by the changing of the capacitance between 20°C and 85°C. Nominal temperature coefficient of class Ⅱ are decided by the temperature of 20°C.

## CCAA SERIES

### 五、容量范围及其电压 Capacitance Range and Operating Voltage

| 尺寸规格 Size Code | 额定电压 Rated Voltage | 容量范围 Capacitance | |
|---|---|---|---|
| | | COG(NPO)(PF) | Y5V (Z5U)(PF) |
| 1005 | 4V | —— | —— |
| | 6.3V | —— | —— |
| | 10V | 0.1 ~ 220 | —— |
| | 16V | 0.1 ~ 100 | —— |
| | 25V | 0.1 ~ 100 | —— |
| | 50V | —— | —— |
| 0201 | 4V | —— | —— |
| | 6.3V | —— | 10,000 ~ 100,000 |
| | 10V | —— | —— |
| | 16V | —— | 10,000 |
| | 25V | 0.1 ~ 1,000 | —— |
| | 50V | 0.1 ~ 220 | —— |
| 0402 | 4V | —— | —— |
| | 6.3V | 0.1 ~ 4,700 | 1,000 ~ 1,000,000 |
| | 10V | 0.1 ~ 2,700 | 1,000 ~ 1,000,000 |
| | 16V | 0.1 ~ 2,700 | 1,000 ~ 220,000 |
| | 25V | 0.1 ~ 1,200 | 1,000 ~ 220,000 |
| | 50V | 0.1 ~ 1,000 | 1,000 ~ 100,000 |
| 0603 | 4V | —— | —— |
| | 6.3V | —— | 1,000 ~ 10,000,000 |
| | 10V | 0.1 ~ 22,000 | 1,000 ~ 10,000,000 |
| | 16V | 0.1 ~ 10,000 | 1,000 ~ 2,200,000 |
| | 25V | 0.1 ~ 6,800 | 1,000 ~ 2,200,000 |
| | 50V | 0.1 ~ 6,800 | 1,000 ~ 1,000,000 |
| 0805 | 4V | —— | —— |
| | 6.3V | —— | 1,000 ~ 22,000,000 |
| | 10V | 0.1 ~ 100,000 | 1,000 ~ 22,000,000 |
| | 16V | 0.1 ~ 33,000 | 1,000 ~ 10,000,000 |
| | 25V | 0.1 ~ 27,000 | 1,000 ~ 4,700,000 |
| | 50V | 0.1 ~ 22,000 | 1,000 ~ 2,200,000 |

## CCAA SERIES

| 尺寸规格 Size Code | 额定电压 Rated Voltage | 容量范围 Capacitance | |
|---|---|---|---|
| | | COG(NPO)(PF) | Y5V (Z5U)(PF) |
| 1206 | 4V | —— | —— |
| | 6.3V | —— | 1,000 ~ 47,000,000 |
| | 10V | —— | 1,000 ~ 22,000,000 |
| | 16V | —— | 1,000 ~ 22,000,000 |
| | 25V | —— | 1,000 ~ 10,000,000 |
| | 50V | 0.3 ~ 100,000 | 1,000 ~ 4,700,000 |
| 1210 | 6.3V | —— | 4,700 ~ 100,000,000 |
| | 10V | —— | 4,700 ~ 47,000,000 |
| | 16V | —— | 4,700 ~ 22,000,000 |
| | 25V | —— | 4,700 ~ 10,000,000 |
| | 50V | 10 ~ 100,000 | 4,700 ~ 4,700,000 |
| 1808 | 6.3V | —— | —— |
| | 10V | —— | —— |
| | 16V | —— | —— |
| | 25V | —— | —— |
| | 50V | 10 ~ 100,000 | —— |
| 1812 | 6.3V | —— | 10,000 ~ 100,000,000 |
| | 10V | —— | 10,000 ~ 100,000,000 |
| | 16V | —— | 10,000 ~ 22,000,000 |
| | 25V | —— | 10,000 ~ 10,000,000 |
| | 50V | 10 ~ 100,000 | 10,000 ~ 10,000,000 |

## CCAA SERIES

| 尺寸规格 Size Code | 额定电压 Rated Voltage | 容量范围 Capacitance | | | |
|---|---|---|---|---|---|
| | | X7R (PF) | X7S(PF) | X5R(uF) | X6S(uF) |
| 1005 | 4V | —— | —— | 0.015uF ~ 0.1uF | —— |
| | 6.3V | —— | —— | 0.015uF ~ 0.1uF | —— |
| | 10V | 100 ~ 1,000 | —— | 0.015uF ~ 0.01uF | —— |
| | 16V | 100 ~ 1,000 | —— | 0.015uF ~ 0.01uF | —— |
| | 25V | —— | —— | —— | —— |
| | 50V | —— | —— | —— | —— |
| 0201 | 4V | —— | 10,000~1,000,000 | 0.015uF ~ 1uF | 0.015uF ~ 1uF |
| | 6.3V | —— | 10,000~220,000 | 0.015uF ~ 1uF | 0.015uF ~ 1uF |
| | 10V | 100 ~ 22,000 | 10,000~220,000 | 0.015uF ~ 1uF | 0.015uF ~ 0.22uF |
| | 16V | 100 ~ 22,000 | —— | 0.015uF ~ 0.22uF | 0.015uF ~ 0.1uF |
| | 25V | 100 ~ 10,000 | —— | 0.015uF ~ 0.1uF | 0.015uF ~ 0.1uF |
| | 50V | 100 ~ 1,000 | —— | 0.0047uF ~ 0.01uF | —— |
| 0402 | 4V | —— | —— | 0.1uF~10uF | 0.1uF~4.7 uF |
| | 6.3V | 100 ~ 470,000 | 100,000 ~ 470,000 | 0.1uF~10uF | 0.1uF~4.7 uF |
| | 10V | 100 ~ 470,000 | 100,000 ~ 470,000 | 0.1uF~4.7uF | 0.1uF~2.2 uF |
| | 16V | 100 ~ 220,000 | 47,000 ~ 220,000 | 0.1uF~2.2 uF | 0.1uF~2.2 uF |
| | 25V | 100 ~ 220,000 | 22,000 ~ 100,000 | 0.1uF~2.2 uF | 0.1uF~1 uF |
| | 50V | 100 ~ 100,000 | 4,700 ~ 100,000 | 0.047uF~1uF | —— |
| 0603 | 4V | —— | —— | 0.47uF ~ 22uF | 0.1uF~22 uF |
| | 6.3V | 150 ~ 4,700,000 | 470,000 ~ 2,200,000 | 0.47uF ~ 22uF | 0.1uF~22 uF |
| | 10V | 150 ~ 2,200,000 | 470,000 ~ 2,200,000 | 0.47uF ~ 22uF | 0.1uF~10 uF |
| | 16V | 150 ~ 2,200,000 | 470,000 ~ 1,000,000 | 0.47uF ~ 10uF | 0.1uF~10 uF |
| | 25V | 150 ~ 1,000,000 | 470,000 ~ 1,000,000 | 0.47uF ~ 10uF | 0.1uF~4.7 uF |
| | 50V | 150 ~ 1,000,000 | —— | 0.47uF ~ 2.2uF | —— |
| 0805 | 4V | —— | —— | 1uF ~ 47uF | 0.1uF~47 uF |
| | 6.3V | 150 ~ 10,000,000 | 1,000,000 ~ 10,000,000 | 1uF ~ 47uF | 0.1uF~22 uF |
| | 10V | 150 ~ 10,000,000 | 1,000,000 ~ 10,000,000 | 1uF ~ 22uF | 0.1uF~22 uF |
| | 16V | 150 ~ 10,000,000 | 1,000,000 ~ 4,700,000 | 1uF ~ 22uF | 0.1uF~10 uF |
| | 25V | 150 ~ 4,700,000 | 1,000,000 ~ 4,700,000 | 1uF ~ 22uF | 0.1uF~10 uF |
| | 50V | 150 ~ 2,200,000 | —— | 1uF ~ 4.7uF | —— |

## CCAA SERIES

| 尺寸规格 Size Code | 额定电压 Rated Voltage | 容量范围 Capacitance | | | |
|---|---|---|---|---|---|
| | | X7R (PF) | X7S(PF) | X5R(uF) | X6S(uF) |
| 1206 | 4V | —— | 2,200,000 ~ 47,000,000 | 2.2uF ~150uF | 0.1uf ~100 uF |
| | 6.3V | 200 ~ 22,000,000 | 2,200,000 ~ 22,000,000 | 2.2uF ~ 100uF | 0.1uf ~100 uF |
| | 10V | 200 ~ 22,000,000 | 2,200,000 ~ 22,000,000 | 2.2uF ~ 47uF | 0.1uF~22 uF |
| | 16V | 200 ~ 10,000,000 | 2,200,000 ~ 10,000,000 | 2.2uF ~ 22uF | 0.1uF~22 uF |
| | 25V | 200 ~ 10,000,000 | 1,500,000 ~ 10,000,000 | 2.2uF ~ 22uF | 0.1uF ~10 uF |
| | 50V | 200 ~ 4,700,000 | 1,000,000 ~ 4,700,000 | 2.2uF ~ 10uF | —— |
| 1210 | 4V | —— | —— | 47uF ~ 330uF | 0.1uF~330 uF |
| | 6.3V | 220 ~ 47,000,000 | 3,300,00 ~ 100,000,000 | 47uF ~ 330uF | 0.1uF~100 uF |
| | 10V | 220 ~ 47,000,000 | —— | 4.7uF ~ 100uF | 0.1uF~100 uF |
| | 16V | 220 ~ 22,000,000 | 3,300,000 ~ 22,000,000 | 4.7uF ~ 100uF | 0.1uF~47 uF |
| | 25V | 220 ~ 22,000,000 | 2,200,000 ~ 22,000,000 | 4.7uF ~ 47uF | 0.1uF~22 uF |
| | 50V | 220 ~ 10,000,000 | 1,000,000 ~ 10,000,000 | 4.7uF ~ 10uF | —— |
| 1808 | 6.3V | 220 ~ 4,700,000 | —— | 4.7uF ~ 100uF | —— |
| | 10V | 220 ~ 4,700,000 | —— | 4.7uF ~ 47uF | —— |
| | 16V | 220 ~ 4,700,000 | —— | 4.7uF ~ 22uF | —— |
| | 25V | 220 ~ 4,700,000 | —— | 4.7uF ~ 10uF | —— |
| | 50V | 220 ~ 4,700,000 | —— | —— | —— |
| 1812 | 6.3V | —— | —— | 10uF ~ 100uF | —— |
| | 10V | —— | —— | 10uF ~ 47uF | —— |
| | 16V | 470 ~ 6,800,000 | —— | 4.7uF ~ 22uF | —— |
| | 25V | 470 ~ 6,800,000 | —— | 4.7uF ~ 10uF | —— |
| | 50V | 470 ~ 4,700,000 | —— | —— | —— |

备注：可根据客户的特殊要求设计符合客户需求的产品。

Note：We can design according to customer special requirements.

CCAA SERIES

## 六、高 Q 值 COG 电容器 Hi-Q COG MLCC

※ 应用:

适合于射频 RF 电路及要求 Hi-Q、低 ESR、高频率响应的微波电路中。

### ●CQ、CG 电容器说明:

※下述 Q 值标准是相对通用客户而制定的，对要求更高 Q 值产品的客户，可专门设计和生产。

※使用频率在 1MHz~2.4GHz 之间，对要求更高频率产品的客户，可根据客户的要求另外专门设计。

※CQ 比 CG 相对可应用频率略高,请客户依需选定。

### ※ Application:

Hi-Q COG capacitors are ideally suited for RF and microwave application requiring high Q, low ESR, and high resonant frequency。

### ●Note for CQ and CG:

※The following Q value is just confirmed by general customer. If there is a higher requirement for Q value requirements, we can design and produce according to the special requirements。

※For the customer whose requirements for frequency is between 1MHz and 2.4GHz or higher frequency, we can design it according to their requirements。

※The frequency of CQ is a little higher than that of CG. Please choose them according to your requirements。

### ※ CQ 电容器的容量值及其 Q 值 CQ Capacitance value and Q value

| 容量 Capacitance (pF) | 300MHz时的Q值 Q value at 300MHz | | 容量 Capacitance (pF) | 300MHz时的Q值 Q value at 300MHz | | 容量 Capacitance (pF) | 300MHz时的Q值 Q value at 300MHz | |
|---|---|---|---|---|---|---|---|---|
| | 0805 | 0603 | | 0805 | 0603 | | 0805 | 0603 |
| 4.7 | ≥1000 | ≥800 | 12 | ≥400 | ≥320 | 30 | ≥150 | ≥120 |
| 5.2 | ≥900 | ≥720 | 13 | ≥375 | ≥300 | 33 | ≥140 | ≥112 |
| 5.6 | ≥850 | ≥680 | 14 | ≥350 | ≥280 | 36 | ≥130 | ≥104 |
| 6.2 | ≥800 | ≥640 | 15 | ≥325 | ≥260 | 39 | ≥120 | ≥96 |
| 6.8 | ≥700 | ≥560 | 16 | ≥300 | ≥240 | 43 | ≥110 | ≥88 |
| 7.5 | ≥650 | ≥520 | 18 | ≥250 | ≥200 | 47 | ≥100 | ≥80 |
| 8.2 | ≥575 | ≥460 | 20 | ≥225 | ≥180 | 56 | ≥80 | ≥80 |
| 9.1 | ≥525 | ≥420 | 22 | ≥215 | ≥172 | 62 | ≥80 | ≥80 |
| 10 | ≥500 | ≥400 | 24 | ≥200 | ≥160 | 68 | ≥80 | ≥80 |
| 11 | ≥450 | ≥360 | 27 | ≥175 | ≥140 | 82 | ≥80 | ≥80 |

CCAA SERIES

## 七、中高压电容器 HIGH VOLTAGE MLCC

中高压多层片状陶瓷电容器是在多层片状陶瓷电容器的工艺技术、设备基础上，通过采用特殊工艺制作的一种具有良好高压可靠性的产品，该产品适合于表面贴装，适合于多种直流高压线路，可以有效的改 善电子线路的性能。

### ●应用范围

※ 模拟或数字调制解调器 。
※ 局域网/广域网接口界面。
※ 日光灯启动辉器照明电路。
※ 倍压电器。 ※直流变送器。
※ 背光源驱动电路。

Middle & high voltage MLCC is a kind of special design 、special technology MLCC that bases on the technology of general MLCC. This kind of MLCC has stable high voltage reliability and suitable to SMT. Middle & high MLCC is widely applicable for many direct high voltage circuits in which it can improve the performance of the circuit.

### ●APPLICATIONS

※ Analog & Digital Modems
※ LAN/WAN Interface
※ Lighting Ballast Circuits
※ Voltage Multipliers
※ DC-DC Converters
※ Back-lighting Inverters

### 容量范围及其电压

单位/unit: pF

| 尺寸规格 Size Code | 工作电压 Rated Voltage | 容量范围 Capacitance | | |
|---|---|---|---|---|
| | | NPO | X7R | Y5V |
| 0402 | 100V | 0.1 ~ 100 | 150 ~ 4,700 | —— |
| 0603 | 100V | 0.1 ~ 1,000 | 150 ~ 100,000 | 2,200 ~ 100,000 |
| | 200V | 0.1 ~ 470 | 150 ~ 10,000 | —— |
| | 250V | 0.1 ~ 470 | 150 ~ 10,000 | —— |
| 0805 | 100V | 0.1 ~ 3,300 | 150 ~ 220,000 | 10,000 ~ 100,000 |
| | 200V | 0.1 ~ 1,500 | 150 ~ 22,000 | 10,000 ~ 47,000 |
| | 250V | 0.1 ~ 1,500 | 150 ~ 22,000 | 10,000 ~ 47,000 |
| | 500V | 0.1 ~ 560 | 150 ~ 10,000 | —— |
| | 630V | 0.1 ~ 560 | 150 ~ 10,000 | —— |
| | 1000V | 0.1 ~ 100 | —— | —— |
| 1206 | 100V | 0.1 ~ 3,300 | 150 ~ 1,000,000 | 15,000 ~ 470,000 |
| | 200V | 0.1 ~ 2,700 | 150 ~ 220,000 | 10,000 ~ 220,000 |
| | 250V | 0.1 ~ 2,700 | 150 ~ 220,000 | 10,000 ~ 220,000 |
| | 500V | 0.1 ~ 1,500 | 150 ~ 33,000 | —— |
| | 630V | 0.1 ~ 1,500 | 150 ~ 33,000 | —— |
| | 1000V | 0.1 ~ 1,000 | 150 ~ 10,000 | —— |
| | 2000V | 0.1 ~ 270 | 150 ~ 2,700 | —— |

## CCAA SERIES

### 容量范围及其电压

单位/unit: pF

| 尺寸规格 Size Code | 工作电压 Rated Voltage | 容量范围 Capacitance | | |
|---|---|---|---|---|
| | | NPO | X7R | Y5V |
| 1210 | 100V | 1.0 ~ 6,800 | 150 ~ 2,200,000 | 15,000 ~ 1,000,000 |
| | 200V | 1.0 ~ 3,300 | 150 ~ 220,000 | 15,000 ~ 470,000 |
| | 250V | 1.0 ~ 3,300 | 150 ~ 220,000 | 15,000 ~ 470,000 |
| | 500V | 1.0 ~ 2,200 | 150 ~ 68,000 | —— |
| | 630V | 1.0 ~ 2,200 | 150 ~ 68,000 | —— |
| | 1000V | 1.0 ~ 1,200 | 150 ~ 22,000 | —— |
| | 2000V | 1.0 ~ 470 | 150 ~ 10,000 | —— |
| | 3000V | —— | 150 ~ 680 | —— |
| | 4000V | —— | 150 ~ 680 | —— |
| 1808 | 100V | 2.0 ~ 4,700 | 220 ~ 2,200,000 | 15,000 ~ 1,000,000 |
| | 200V | 2.0 ~ 3,900 | 220 ~ 220,000 | 10,000 ~ 390,000 |
| | 250V | 2.0 ~ 3,900 | 220 ~ 220,000 | 10,000 ~ 390,000 |
| | 500V | 2.0 ~ 2,700 | 220 ~ 68,000 | —— |
| | 630V | 2.0 ~ 2,700 | 220 ~ 68,000 | —— |
| | 1000V | 2.0 ~ 1,000 | 150 ~ 22,000 | —— |
| | 2000V | 2.0 ~ 470 | 150 ~ 10,000 | —— |
| | 3000V | 2.0 ~ 330 | 150 ~ 4,700 | —— |
| | 4000V | 2.0 ~ 33 | 150 ~ 2,200 | —— |
| | 5000V | 2.0 ~ 33 | —— | —— |
| 1812 | 100V | 3.0 ~ 10,000 | 270 ~ 1,000,000 | 150,000 ~ 2,200,000 |
| | 200V | 3.0 ~ 6,800 | 270 ~ 560,000 | 100,000 ~ 470,000 |
| | 250V | 3.0 ~ 6,800 | 270 ~ 560,000 | 100,000 ~ 470,000 |
| | 500V | 3.0 ~ 4,700 | 270 ~ 220,000 | —— |
| | 630V | 3.0 ~ 4,700 | 270 ~ 220,000 | —— |
| | 1000V | 3.0 ~ 1,200 | 270 ~ 56,000 | —— |
| | 2000V | 3.0 ~ 1,000 | 270 ~ 12,000 | —— |
| | 3000V | 3.0 ~ 560 | 270 ~ 4,700 | —— |
| | 4000V | 3.0 ~ 220 | 270 ~ 3,300 | —— |
| | 5000V | 3.0 ~ 68 | —— | —— |
| 1825 | 100V | 3.0 ~ 22,000 | 12,000 ~ 2,200,000 | 150,000 ~ 2,200,000 |
| | 200V | 3.0 ~ 8,200 | 12,000 ~ 1,200,000 | 100,000 ~ 470,000 |
| | 250V | 3.0 ~ 8,200 | 12,000 ~ 1,200,000 | 100,000 ~ 470,000 |
| | 500V | 3.0 ~ 5,600 | 1,000 ~ 470,000 | —— |
| | 630V | 3.0 ~ 5,600 | 1,000 ~ 470,000 | —— |
| | 1000V | 3.0 ~ 1,800 | 1,000 ~ 100,000 | —— |
| | 2000V | 3.0 ~ 1,000 | 1,000 ~ 22,000 | —— |
| | 3000V | 3.0 ~ 680 | 1,000 ~ 10,000 | —— |
| | 4000V | 3.0 ~ 470 | 1,000 ~ 6,800 | —— |
| | 5000V | 3.0 ~ 82 | —— | —— |

## CCAA SERIES

| 尺寸规格 Size Code | 工作电压 Rated Voltage | 容量范围 Capacitance | | |
|---|---|---|---|---|
| | | NPO | X7R | Y5V |
| 2220 | 100V | 5.0 ~ 27,000 | 22,000 ~ 2,200,000 | 150,000 ~ 1,500,000 |
| | 200V | 5.0 ~ 12,000 | 22,000 ~ 1,200,000 | 100,000 ~ 1,000,000 |
| | 250V | 5.0 ~ 12,000 | 22,000 ~ 1,200,000 | 100,000 ~ 1,000,000 |
| | 500V | 5.0 ~ 6,800 | 1,500 ~ 470,000 | —— |
| | 630V | 5.0 ~ 6,800 | 1,500 ~ 470,000 | —— |
| | 1000V | 5.0 ~ 3,900 | 1,500 ~ 100,000 | —— |
| | 2000V | 5.0 ~ 1,000 | 1,500 ~ 47,000 | —— |
| | 3000V | 5.0 ~ 680 | 1,500 ~ 12,000 | —— |
| | 4000V | 5.0 ~ 560 | 1,500 ~ 8,200 | —— |
| | 5000V | 5.0 ~ 120 | —— | —— |
| 2225 | 100V | 5.0 ~ 27,000 | 2,200 ~ 2,200,000 | 250,000 ~ 3,300,000 |
| | 200V | 5.0 ~ 12,000 | 2,200 ~ 2,200,000 | 220,000 ~ 2,200,000 |
| | 250V | 5.0 ~ 12,000 | 2,200 ~ 2,200,000 | 220,000 ~ 2,200,000 |
| | 500V | 5.0 ~ 6,800 | 2,200 ~ 470,000 | —— |
| | 630V | 5.0 ~ 6,800 | 2,200 ~ 470,000 | —— |
| | 1000V | 5.0 ~ 3,900 | 2,200 ~ 100,000 | —— |
| | 2000V | 5.0 ~ 1,000 | 2,200 ~ 47,000 | —— |
| | 3000V | 5.0 ~ 680 | 2,200 ~ 15,000 | —— |
| | 4000V | 5.0 ~ 560 | 2,200 ~ 6,800 | —— |
| | 5000V | 5.0 ~ 120 | —— | —— |
| 3012 | 100V | 5.0 ~ 27,000 | 150 ~ 3,300,000 | 15,000 ~ 1,500,000 |
| | 200V | 5.0 ~ 12,000 | 150 ~ 2,200,000 | 15,000 ~ 1,000,000 |
| | 250V | 5.0 ~ 12,000 | 150 ~ 1,200,000 | —— |
| | 500V | 5.0 ~ 6,800 | 150 ~ 220,000 | —— |
| | 630V | 5.0 ~ 6,800 | 150 ~ 150,000 | —— |
| | 1000V | 5.0 ~ 3,900 | 150 ~ 47,000 | —— |
| | 2000V | 5.0 ~ 1,000 | 150 ~ 33,000 | —— |
| | 3000V | 5.0 ~ 1,000 | 150~10,000 | —— |
| | 4000V | 5.0 ~ 1,000 | 150~8,200 | —— |
| 3035 | 100V | 5.0 ~ 27,000 | 47,000 ~ 4,700,000 | 10,000 ~ 2,200,000 |
| | 200V | 5.0 ~ 12,000 | 47,000 ~ 2,200,000 | 10,000 ~ 2,200,000 |
| | 250V | 5.0 ~ 12,000 | 47,000 ~ 2,200,000 | 10,000 ~ 2,200,000 |
| | 500V | 5.0 ~ 6,800 | 5,600 ~ 1,000,000 | —— |
| | 630V | 5.0 ~ 6,800 | 5,600 ~ 470,000 | —— |
| | 1000V | 5.0 ~ 3,900 | 5,600 ~ 56,000 | —— |
| | 2000V | 5.0 ~ 1,500 | 5,600 ~ 47,000 | —— |
| | 3000V | 5.0 ~ 1,000 | 5,600 ~ 33,000 | —— |
| | 4000V | 5.0 ~ 820 | 5,600 ~ 22,000 | —— |
| | 5000V | 5.0 ~ 220 | 5,600 ~ 10,000 | —— |

## CCAA SERIES

### 中高压电容器介质耐电强度的测试方法:

Measurement method of dielectric withstanding voltage for high voltage MLCC

| 额定电压范围<br>Rated voltage range | 耐电性能的测试方法<br>Measuring Method |
|---|---|
| 100V≤Vr < 500V | 施加额定电压的 200%, 5 秒, 最大电流不超过 50mA<br>Force 200%Rated voltage for 5 second. Max..current should not exceed 50 mA. |
| 500V≤Vr≤1000V | 施加额定电压的 150%, 5 秒, 最大电流不超过 50mA<br>Force 150%Rated voltage for 5 second. Max..current should not exceed 50 mA. |
| 1000V < Vr≤2000V | 施加额定电压的 120%, 5 秒, 最大电流不超过 50mA<br>Force 120%Rated voltage for 5 seconds. Max..current should not exceed 50 mA. |
| 2000V < Vr≤5000V | 施加额定电压的 120%, 5 秒, 最大电流不超过 10mA<br>Force 120%Rated voltage for 5 seconds. Max..current should not exceed 10 mA. |

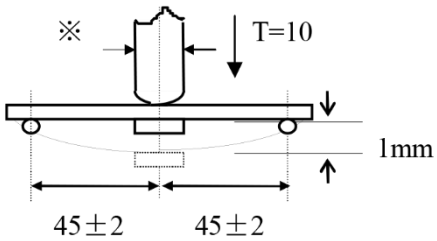
## 八、可靠性测试 Reliability Test

<table>
<tr><th>项目<br>Item</th><th colspan="2">技术规格<br>Technical Specification</th><th colspan="3">测 试 方 法<br>Test Method and Remarks</th></tr>
<tr><td rowspan="4">容量<br>Capacitance</td><td rowspan="3">Ⅰ类<br>Class Ⅰ</td><td rowspan="3">应符合指定的误差级别<br>Should be within the specified tolerance.</td><td>标称容量<br>Capacitance</td><td>测试频率<br>Measuring Frequency</td><td>测试电压<br>Measuring Voltage</td></tr>
<tr><td>≤1000pF</td><td>1MHz±10%</td><td rowspan="2">1.0±0.2Vrms</td></tr>
<tr><td>> 1000 pF</td><td>1KHz±10%</td></tr>
<tr><td>Ⅱ类<br>Class Ⅱ</td><td>应符合指定的误差级别<br>Should be within the specified tolerance.</td><td colspan="3">测试温度： 25℃±3℃<br>Test Temperature: 25℃±3℃<br>C≤10μF：测试频率: 1KHz±10%<br>测试电压: 1.0±0.2Vrms<br>Test Frequency: 1KHz±10%<br>Test Voltage: 1.0±0.2Vrms<br>C > 10μF<br>X7R、X5R、X7S、X6S、Y5V：<br>测试频率: 120±24 Hz<br>测试电压:0.5±0.1Vrms<br>Test Frequency: 120±24 Hz<br>Test Voltage: 0.5±0.1Vrms<br>Z5U：测试频率:1±0.1KHz<br>测试电压:0.5±0.05Vrms<br>Test Frequency: 1±0.1KHz<br>Test Voltage: 0.5±0.05Vrms</td></tr>
<tr><td rowspan="5">损耗角正切<br>(DF, tanδ)<br>Dissipation Factor</td><td rowspan="5">Ⅰ类<br>Class Ⅰ</td><td>DF</td><td>标称容量<br>Capacitance</td><td>测试频率<br>Measuring Frequency</td><td>测试电压<br>Measuring Voltage</td></tr>
<tr><td>≤0.56%</td><td>Cr < 5 pF</td><td>1MHz±10%</td><td rowspan="4">1.0±0.2Vrms</td></tr>
<tr><td>1.5[(150/Cr)+7]×10-4</td><td>5pF≤Cr < 50 pF</td><td>1MHz±10%</td></tr>
<tr><td>≤0.15%</td><td>50pF≤Cr≤1000 pF</td><td>1MHz±10%</td></tr>
<tr><td>≤0.15%</td><td>> 1000 pF</td><td>1KHz±10%</td></tr>
</table>

## CCAA SERIES

<table>
<tr><th>项目<br>Item</th><th colspan="8">技术规格<br>Technical Specification</th><th>测 试 方 法<br>Test Method and Remarks</th></tr>
<tr><td rowspan="6">损耗角正切(DF, tan δ)<br>Dissipation Factor</td><td rowspan="6">Ⅱ类<br>Class Ⅱ</td><td rowspan="2">X7R/ X5R X7S/ X6S (≥ 0402)</td><td>≥50V</td><td>25V</td><td>16V</td><td>10V</td><td>6.3V</td><td rowspan="6">C≤10μF<br>测试频率: 1KHz±10%<br>测试电压: 1.0±0.2Vrms<br>Test Frequency: 1KHz±10%<br>Test Voltage: 1.0±0.2Vrms<br>C > 10μF X7R、X5R、X7S、X6S、Y5V<br>测试频率: 120±24 Hz<br>测试电压:0.5±0.1Vrms<br>Test Frequency: 120±24 Hz<br>Test Voltage: 0.5±0.1Vrms Z5U:测试频率:1±0.1KHz<br>测试电压:0.5±0.05Vrms<br>Test Frequency: 1±0.1KHz<br>Test Voltage: 0.5±0.05Vrms</td></tr>
<tr><td>≤ 2.5%</td><td>≤3.5% ( C < 0.47μF) ≤10.0% ( C ≥ 0.47μF)</td><td>≤3.5% ( C < 0.47μF) ≤10.0% ( C ≥ 0.47μF)</td><td>≤5.0% ( C < 0.15μF) ≤10.0% ( C ≥ 0.15μF)</td><td>≤5.0% ( C < 0.15μF) ≤10.0% ( C ≥ 0.15μF)</td></tr>
<tr><td rowspan="2">X7R/ X5R X7S/ X6S ( < 0402)</td><td>≥50V</td><td>25V</td><td>16V</td><td>10V</td><td>6.3V</td></tr>
<tr><td>≤ 3.5%</td><td>≤5.0%</td><td>≤5.0% ( C < 0.047μF) ≤10% ( C ≥ 0.047μF)</td><td>≤7.5% ( C < 0.047μF) ≤10% ( C ≥ 0.047μF)</td><td>≤7.5% ( C < 0.047μF) ≤10% ( C ≥ 0.047μF)</td></tr>
<tr><td rowspan="2">Y5V Z5U</td><td colspan="2">≥25V</td><td>16V</td><td>10V</td><td>6.3V</td></tr>
<tr><td>≤7.0% (C < 1.0μF) ≤9.0% (C≥1.0μF)</td><td>≤15%</td><td>≤15%</td><td>≤15%</td></tr>
<tr><td rowspan="3">绝缘电阻(IR)<br>Insulation Resistance</td><td>Ⅰ类<br>Class Ⅰ</td><td colspan="5">C≤10 nF, Ri≥50000MΩ<br>C > 10 nF, Ri CR≥500S</td><td rowspan="3">测试电压：额定电压（最高 500V）<br>测试时间: 60±5 秒<br>测试湿度：≤75%<br>测试温度： 25℃±3℃<br>测试充放电电流：≤50mA<br>Measuring Voltage: Rated Voltage （Max 500V）<br>Duration: 60±5s<br>Test Humidity: ≤75%<br>Test Temperature: 25℃±3℃<br>Test Current: ≤50mA</td></tr>
<tr><td rowspan="2">Ⅱ类<br>Class Ⅱ</td><td>X7R/ X5R/ X7S/ X6S</td><td colspan="4">C≤25 nF, Ri≥10000MΩ<br>C > 25 nF, Ri CR > 100S</td></tr>
<tr><td>Y5V Z5U</td><td colspan="4">C≤25 nF, Ri≥4000MΩ<br>C > 25 nF, Ri CR > 100S</td></tr>
<tr><td>介质耐电强度(DWV)<br>Dielectric Withstanding Voltage</td><td colspan="6">不应有介质被击穿或损伤<br>No breakdown or damage.</td><td>测量电压:<br>Ⅰ类:300%额定电压 Ⅱ类:250%额定电压<br>时间：1～5 秒 充/放电电流：不应超过 50mA<br>(这部分说明不包括中高压 MLCC)<br>Measuring Voltage:<br>Class Ⅰ:300% Rated voltage<br>ClassⅡ:250% Rated voltage<br>Duration: 1～5s<br>Charge/ Discharge Current: 50mA max.<br>(This method excludes high-voltage MLCC)</td></tr>
</table>

## CCAA SERIES

<table>
<tr><th>项目<br>Item</th><th colspan="5">技术规格<br>Technical Specification</th><th>测 试 方 法<br>Test Method and Remarks</th></tr>
<tr><td>可焊性<br>Solderability</td><td colspan="5">上锡率应大于 95%<br>外观：无可见损伤.<br>At least 95% of the terminal electrode is covered by new solder.<br>Visual Appearance: No visible damage.</td><td>将电容在 80~120℃的温度下预热 10~30 秒.<br>Preheating conditions:80 to 120℃; 10~30s.<br>有铅焊料：(Sn/Pb：63/37)<br>浸锡温度: 235±5℃<br>浸锡时间: 2±0.5s<br>Solder Temperature: 235±5℃<br>Duration: 2±0.5s<br>无铅焊料：<br>浸锡温度: 245±5℃<br>浸锡时间: 2±0.5s<br>Solder Temperature: 245±5℃<br>Duration: 2±0.5s</td></tr>
<tr><td>耐焊接热<br>Resistance to Soldering Heat</td><td>项目<br>Item</td><td colspan="2">NPO至 SL<br>NPO to SL</td><td>X7R/X5R/<br>X7S/X6S</td><td>Y5V、<br>Z5U</td><td rowspan="5">将电容在 100~200℃的温度下预热 10±2 分钟.<br>浸锡温度: 265±5℃<br>浸锡时间: 10±1s<br>然后取出溶剂清洗干净，在 10 倍以上的显微镜底下观察.<br>放置时间：24±2 小时 放置条件：室温<br>Preheating conditions: 100 to 200℃; 10±2min.<br>Solder Temperature: 265±5℃<br>Duration: 10±1s<br>Clean the capacitor with solvent and examine it with a 10X(min.) microscope.<br>Recovery Time: 24±2h<br>Recovery condition: Room temperature</td></tr>
<tr><td></td><td>ΔC/C</td><td colspan="2">≤ ± 0.5% 或 ± 0.5PF，取较大值<br>≤±0.5% or ±0.5PF, whichever is larger</td><td>-5~+10%</td><td>-10~+20%</td></tr>
<tr><td></td><td>DF</td><td colspan="4">同初始标准<br>Same to initial value.</td></tr>
<tr><td></td><td>IR</td><td colspan="4">同初始标准<br>Same to initial value.</td></tr>
<tr><td></td><td colspan="5">外观：无可见损伤 上锡率：≥95%<br>Appearance：No visible damage.At least 95% of the terminal electrode is covered by new solder.</td></tr>
<tr><td>抗弯曲强度<br>Resistance to Flexure of Substrate (Bending Strength)</td><td colspan="5">外观：无可见损伤.<br>Appearance: No visible damage.</td><td rowspan="2">试验基板：Al2O3或 PCB<br>弯曲深度：1mm<br>施压速度：0.5mm/sec.<br>单位：mm<br>应在弯曲状态下进行测量。<br><br><br>Test Board: Al2O3 or PCB<br>Warp: 1mm<br>Speed: 0.5mm/sec.<br>Unit: mm<br>The measurement should be made with the board in the bending position.</td></tr>
<tr><td></td><td>ΔC/C</td><td colspan="4">≤±10%</td></tr>
</table>

## CCAA SERIES

<table>
<tr><th>项目<br>Item</th><th colspan="2">技术规格<br>Technical Specification</th><th>测 试 方 法<br>Test Method and Remarks</th></tr>
<tr><td>端头结合强度<br>Termination Adhesion</td><td colspan="2">外观无可见损伤<br>No visible damage.</td><td>施加的力：5N　　时间：10±1S<br>Applied Force: 5N Duration: 10±1S</td></tr>
<tr><td>温度循环<br>Temperature Cycle</td><td colspan="2">ΔC/C:<br>Ⅰ类：≤±1%或±1pF，<br>取两者中最大者<br>Ⅱ类:<br>B,X,K,Q: ≤±10%<br>M,F: ≤±20%<br>Class Ⅰ: ≤±1% or ±1pF,<br>whichever is larger.<br>ClassⅡ:<br>B,X,K,Q: ≤±10%<br>M,F: ≤±20%</td><td>预处理※ (2类)：上限类别温度，1小时 恢复：24±1h<br>初始测量<br>循环次数：5 次，一个循环分以下 4 步：<br>阶段 | 温度（℃） | 时间（分钟）<br>第 1 步 | 下限温度（NPO/X7R/X7S/X6S/X5R:-55 Y5V:-25 Z5U:+10） | 30<br>第 2 步 | 常温 (+20) | 2～3<br>第 3 步 | 上限温度（NPO/X7R/X7S: +125 Y5V/Z5U/X5R:+85 X6S:+105） | 30<br>第 4 步 | 常温 (+20) | 2～3<br>试验后放置（恢复）时间：24±2h<br>Preheating conditions: up-category temperature, 1h<br>Recovery time: 24±1h<br>Initial Measurement<br>Cycling Times: 5 times, 1 cycle, 4 steps:<br>Step | Temperature（℃） | Time (min.)<br>1 | Low- category temp (NPO/X7R/X7S/X6S/X5R:-55 Y5V:-25 Z5U:+10) | 30<br>2 | Normal temp. (+20) | 2～3<br>3 | Up- category temp. (NPO/X7R/X7S: +125 Y5V/Z5U/X5R:+85 X6S:+105) | 30<br>4 | Normal temp. (+20) | 2～3<br>Recovery time after test: 24±2h</td></tr>
<tr><td rowspan="4">潮湿试验<br>Moisture Resistance</td><td>Δ C/C</td><td>Ⅰ类: ≤±2%或±1pF,<br>取两者之中较大者<br>Ⅱ类: B,X,K,Q:≤±10%<br>M,F: ≤±30%<br>Class Ⅰ: ≤±2% or ±1pF,<br>whichever is larger.<br>ClassⅡ: B,X,K,Q:≤±10%<br>M,F: ≤±30%</td><td rowspan="4">温度：40±2℃<br>湿度：90~95%RH<br>时间：500 小时<br>放置条件：室温<br>放置时间：24 小时(Ⅰ类)；48 小时(Ⅱ类)<br>Temperature：40±2℃<br>Humidity：90~95%RH<br>Duration：500h<br>Recovery conditions：Room temperature<br>Recovery Time：24h (Class1) or 48h (Class2)</td></tr>
<tr><td>DF</td><td>≤2 倍初始标准<br>Not more than twice of initial value.</td></tr>
<tr><td rowspan="2">IR</td><td>Ⅰ类：Ri≥2500MΩ或 Ri CR≥25S<br>取两者之中较小者.<br>Class Ⅰ: Ri≥2500MΩ或 Ri CR≥<br>25S whichever is smaller.</td></tr>
<tr><td>Ⅱ类：Ri≥1000MΩ或 Ri CR≥25S<br>取两者之中较小者.<br>ClassⅡ: Ri≥1000MΩ或 Ri CR≥<br>25S whichever is smaller.</td></tr>
<tr><td colspan="2">外观：无损伤<br>Appearance: No visible damage.</td></tr>
</table>

## CCAA SERIES

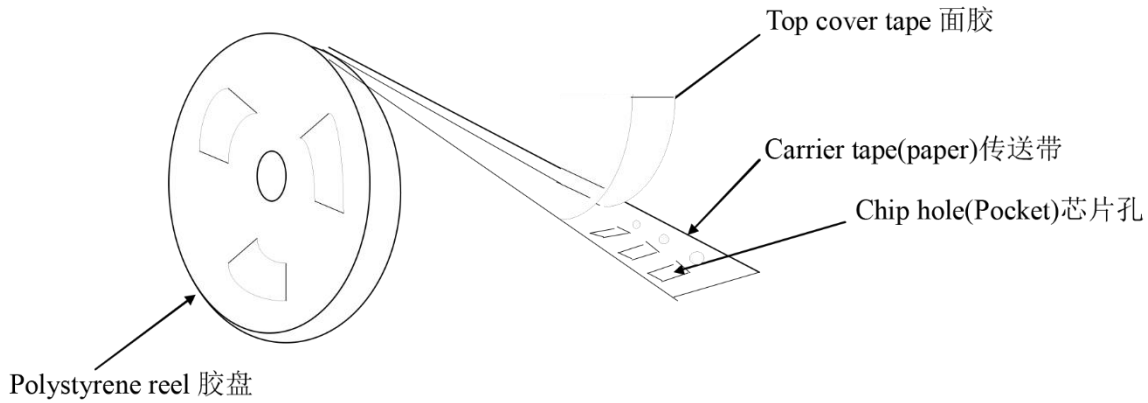
<table>
<tr><th>项目<br>Item</th><th colspan="2">技术规格<br>Technical Specification</th><th>测 试 方 法<br>Test Method and Remarks</th></tr>
<tr><td rowspan="4">寿命试验<br>Life Test</td><td>Δ<br>C/C</td><td>Ⅰ类：≤±2%或±1pF<br>取两者之中较大者<br>Ⅱ类：B,X,K,Q: ≤±20%<br>M,F: ≤±30%<br>Class Ⅰ:≤±2% or ±1pF,<br>whichever is larger.<br>ClassⅡ: B,X,K,Q: ≤±20%<br>M,F: ≤±30%</td><td rowspan="4">低压产品（＜100V）<br>电压：1.5 倍额定工作电压<br>时间：1000 小时<br>温度：125℃（NPO、X7R、X7S） 85℃（X5R、Y5V）105℃（X6S）<br>充电电流：不应超过 50mA<br>放置条件：室温<br>放置时间：24 小时（Ⅰ类），或 48 小时（Ⅱ类），<br>Low-Voltage（＜100V）<br>Applied Voltage: 1.5 × Rated Voltage<br>Duration: 1000h<br>Temperature：125℃(NPO、X7R、X7S) 85℃(X5R、Y5V）105℃（X6S）<br>Charge/ Discharge Current: 50mA max.<br>Recovery Conditions: Room Temperature<br>Recovery Time: 24h (Class 1), or 48h (Class2)</td></tr>
<tr><td>DF</td><td>≤2 倍初始标准<br>Not more than twice of initial value.</td></tr>
<tr><td rowspan="2">IR</td><td>Ⅰ类：Ri≥4000MΩ或 Ri CR≥40S<br>取两者之中较小者.<br>Class Ⅰ: Ri≥4000MΩ或 Ri CR≥<br>40S whichever is smaller.</td></tr>
<tr><td>Ⅱ类：Ri≥2000MΩ或 Ri CR≥50S<br>取两者之中较小者.<br>ClassⅡ: Ri≥2000MΩ或 Ri CR≥<br>50S whichever is smaller.</td></tr>
<tr><td colspan="2">外观：无损伤<br>Visual Appearance: No visible damage.</td></tr>
<tr><td rowspan="4">中高压产品<br>寿命试验<br>Middle<br>&high<br>voltage<br>Life Test</td><td>Δ<br>C/C</td><td>Ⅰ类: ≤±2%或±1pF,<br>取两者之中较大者<br>Ⅱ类: B,X,K,Q:≤±20%<br>M,F: ≤±30%<br>Class Ⅰ: ≤±2% or ±1pF,<br>whichever is larger.<br>ClassⅡ: B,X,K,Q:≤±20%<br>M,F: ≤±30%</td><td rowspan="4">中高压产品：<br>100V≤额定电压＜500V：2 倍工作电压<br>500V≤额定电压≤1000V：1.5 倍工作电压<br>额定电压＞1000V：1.2 倍工作电压<br>时间：1000 小时<br>充电电流：不应超过 50mA<br>温度：125℃（NPO X7R、X7S）；85℃（X5R、Y5V）105℃（X6S）<br>放置条件：室温<br>放置时间：24 小时（Ⅰ类），或 48小时（Ⅱ类），<br>Applied Voltage:<br>100V≤Rated Voltage＜500V：2 Multiple<br>500V≤Rated Voltage≤1000V：1.5 Multiple<br>＞1000V Rated Voltage：1.2 Multiple<br>Duration: 1000h<br>Charge/ Discharge Current: 50mA max.<br>Temperature：125℃（NPO X7R、X7S)；85℃(X5R、Y5V）105℃（X6S）<br>Recovery Conditions: Room Temperature<br>Recovery Time: 24h (Class 1), or 48h (Class2)</td></tr>
<tr><td>DF</td><td>≤2 倍初始标准<br>Not more than twice of initial value.</td></tr>
<tr><td rowspan="2">IR</td><td>Ⅰ类：Ri≥4000MΩ或 Ri CR≥40S<br>取两者之中较小者.<br>Class Ⅰ: Ri≥4000MΩ或 Ri CR≥<br>40S whichever is smaller.</td></tr>
<tr><td>Ⅱ类：Ri≥2000MΩ或 Ri CR≥50S<br>取两者之中较小者.<br>ClassⅡ: Ri≥2000MΩ或 Ri CR≥<br>50S whichever is smaller.</td></tr>
<tr><td colspan="2">外观：无损伤<br>Appearance: No visible damage.</td></tr>
</table>

注解：
专门预处理※ （仅对 2 类电容器）：
将电容器放在上限类别温度或按详细规范中可能规定的更高温度下经 1h 后，接着在试验的标准大气条件下恢复 24±1h。
Note：Pretreatment (only for class2 capacitor)
Pretreatment (only for class2 capacitor) is a method to treat the capacitor before measurement. First, place the capacitor in the up-category temperature or other specified higher temperature environment for 1hour. Then recovery the capacitor at standard pressure conditions for 24±1hours。

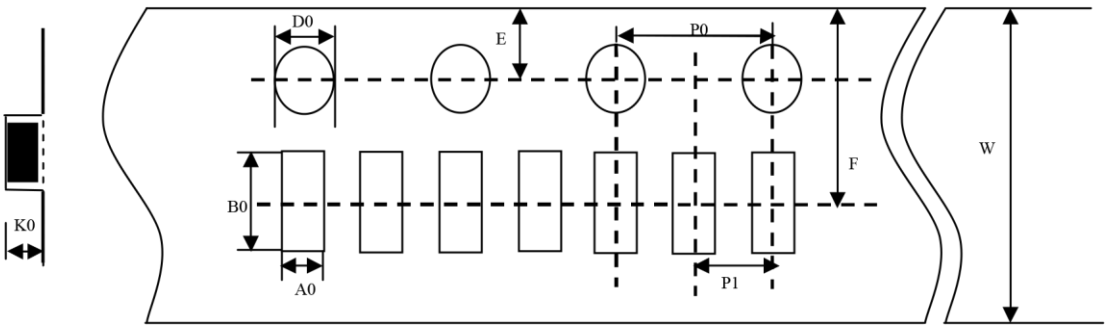
CCAA SERIES

## 九、包装 PACKAGE

● 塑料压纹带卷盘结构 EMBOSSED PLSATIC TAPING




※ 仅适用于 1005 规格，压纹带尺寸如下：
The emboss plastic applies only to 1005 type，the dimensions as follows:

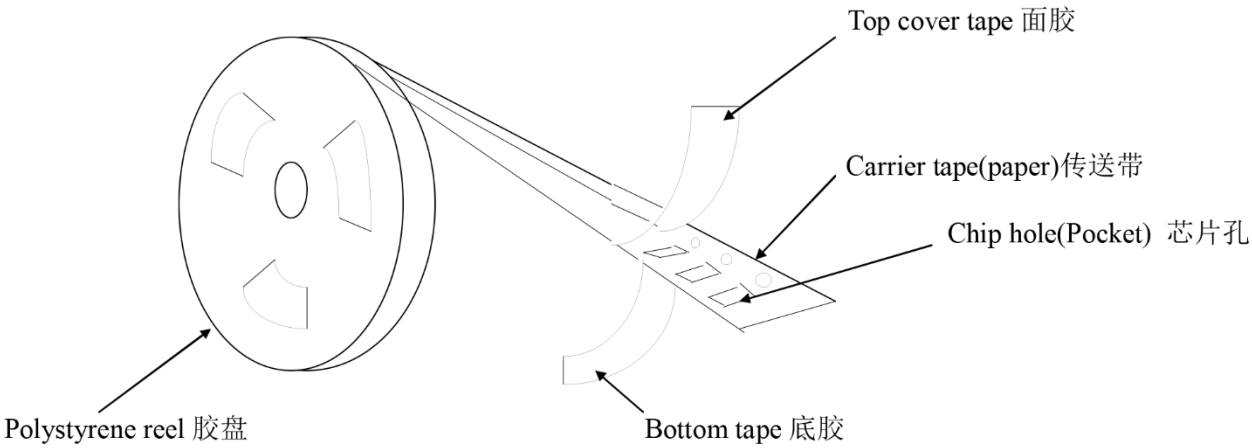



Unit：mm

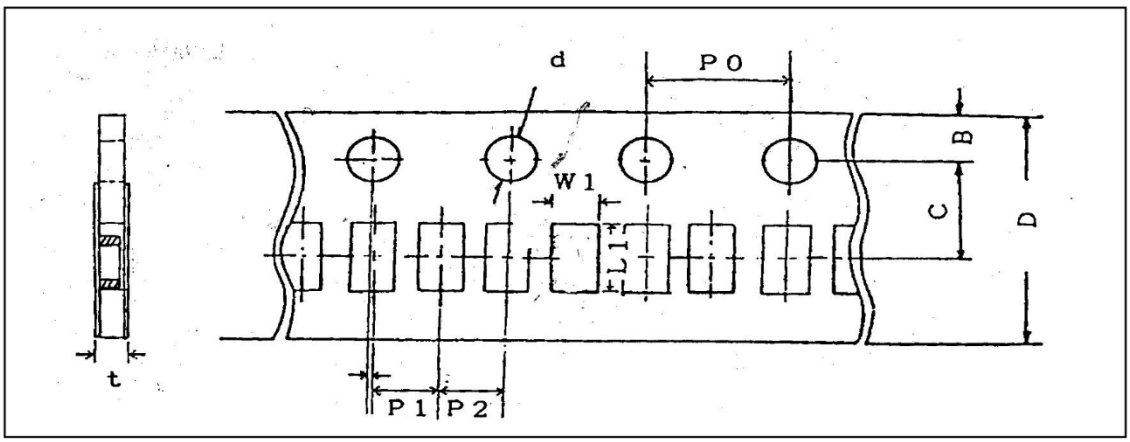
| W | P0 | P1 | E | F | D0 | A0 | B0 | K0 |
|---|---|---|---|---|---|---|---|---|
| 4±0.05 | 2±0.04 | 1±0.02 | 0.9±0.05 | 1.8±0.02 | 0.8±0.04 | 0.24±0.02 | 0.45±0.02 | 0.24±0.02 |

## CCAA SERIES

### ●纸带卷盘结构 PAPER TAPING



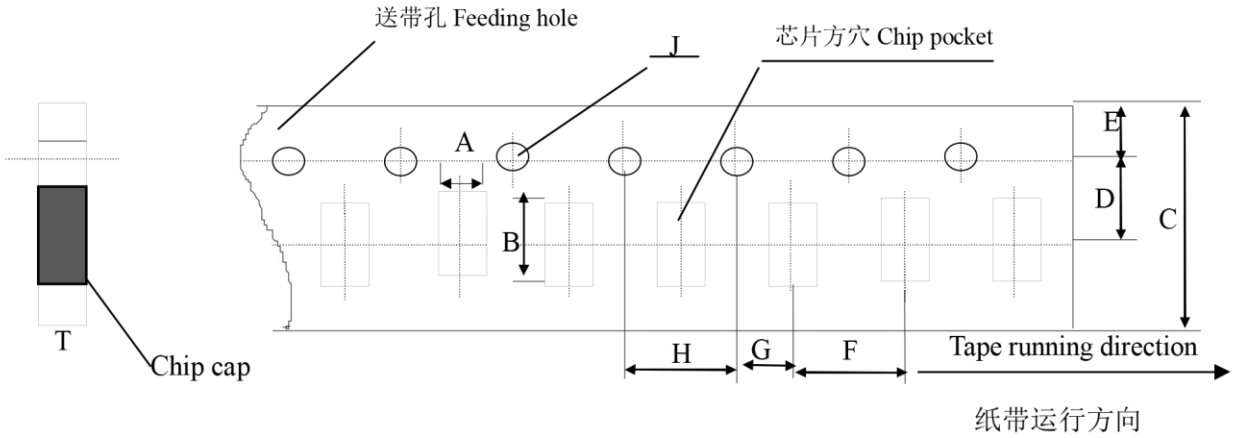

※ 1005、0201、0402 纸带编带尺寸大小
Dimensions of paper taping for 1005、0201、0402 type




| 代号 Code | W1 | L1 | D | C | B | P1 | P2 | P0 | d | t |
|---|---|---|---|---|---|---|---|---|---|---|
| 1005 | 0.24± 0.02 | 0.45± 0.02 | 8.00± 0.10 | 3.50± 0.05 | 1.75± 0.10 | 2.00± 0.05 | 2.00± 0.05 | 4.00± 0.10 | 1.50 -0/+0.10 | 0.30 Below |
| 0201 | 0.37± 0.10 | 0.67± 0.10 | 8.00± 0.10 | 3.50± 0.05 | 1.75± 0.10 | 2.00± 0.05 | 2.00± 0.05 | 4.00± 0.10 | 1.50 -0/+0.10 | 0.80 Below |
| 0402 | 0.65± 0.10 | 1.15± 0.10 | 8.00± 0.10 | 3.50± 0.05 | 1.75± 0.10 | 2.00± 0.05 | 2.00± 0.05 | 4.00± 0.10 | 1.50 -0/+0.10 | 0.80 Below |

## CCAA SERIES

※ 适合'0603，0805，1206'常规尺寸产品的纸带尺寸
Dimensions of paper taping for 0603，0805，1206 types.

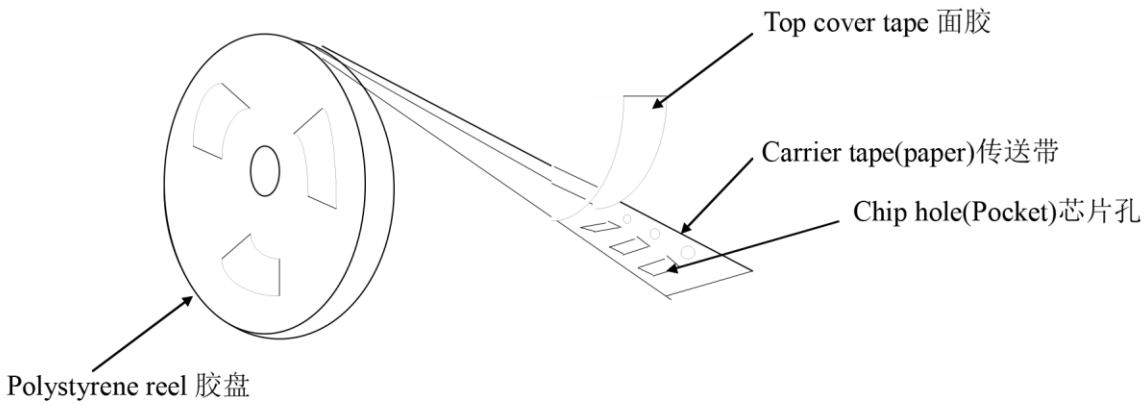



Unit：mm

| 代号Code / 纸带规格 paper size | A | B | C | D* | E | F | G* | H | J | T |
|---|---|---|---|---|---|---|---|---|---|---|
| 0603 | 1.10 ± 0.10 | 1.90 ± 0.10 | 8.00 ± 0.10 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 4.00 ± 0.10 | 1.50 -0/+0.10 | 1.10 Max |
| 0805 | 1.45 ± 0.15 | 2.30 ± 0.15 | 8.0 ± 0.15 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 4.00 ± 0.10 | 1.50 -0/+0.10 | 1.10 Max |
| 1206 | 1.80 ± 0.20 | 3.40 ± 0.20 | 8.00 ± 0.20 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 4.00 ± 0.10 | 1.50 -0/+0.10 | 1.10 Max |

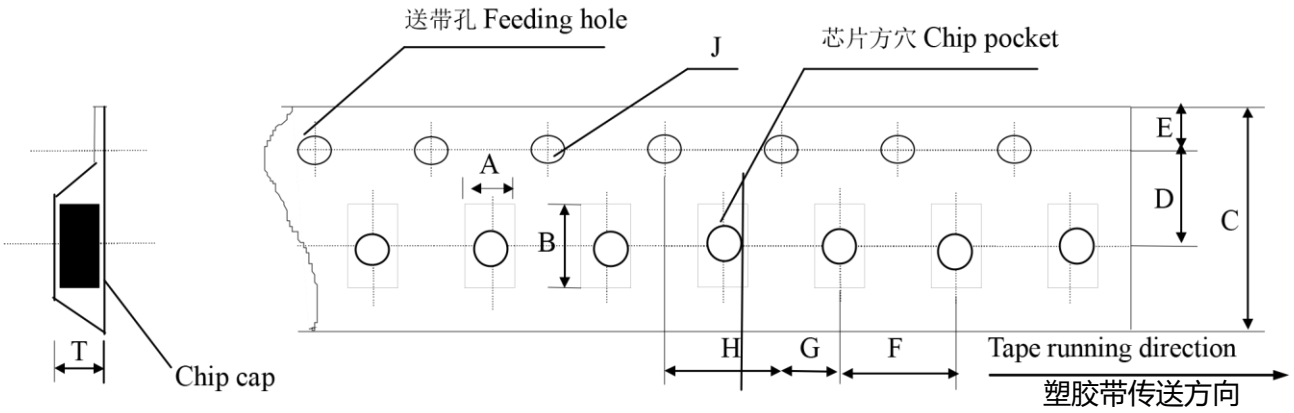
注意：*表示此处对尺寸的要求非常精确。
Note: The place with "*" means where needs exactly dimensions.

### ● 塑胶卷盘结构 EMBOSSED TAPING



## CCAA SERIES

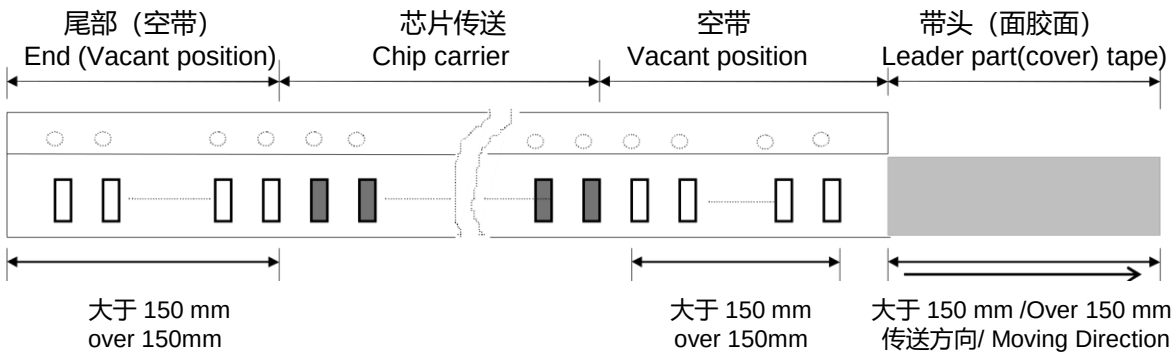
※ 塑胶带尺寸结构(适合'0805~1812'型产品)
Dimensions of embossed taping for 0805~1812 type




| 代号Code / 纸带规格 paper size | A | B | C | D* | E | F | G* | H | J | T |
|---|---|---|---|---|---|---|---|---|---|---|
| 0805 | 1.55 ± 0.20 | 2.35 ± 0.20 | 8.00 ± 0.20 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 4.00 ± 0.10 | 1.50 -0/+0.10 | 1.50 Max |
| 1206 | 1.95 ± 0.20 | 3.60 ± 0.20 | 8.00 ± 0.20 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 4.00 ± 0.1 | 1.50 -0/+0.10 | 1.85 Max |
| 1210 | 2.70 ± 0.10 | 3.42 ± 0.10 | 8.00 ± 0.10 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | 4.00 ± 0.10 | 1.55 -0/+0.10 | 3.2 Max |
| 1808 | 2.20 ± 0.10 | 4.95 ± 0.10 | 12.00 ± 0.10 | 5.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | 4.00 ± 0.10 | 1.50 -0/+0.10 | 3.0 Max |
| 1812 | 3.66 ± 0.10 | 4.95 ± 0.10 | 12.00 ± 0.10 | 5.50 ± 0.05 | 1.75 ± 0.10 | 8.00 ± 0.10 | 2.00 ± 0.05 | 4.00 ± 0.10 | 1.55 -0/+0.10 | 4.0 Max |

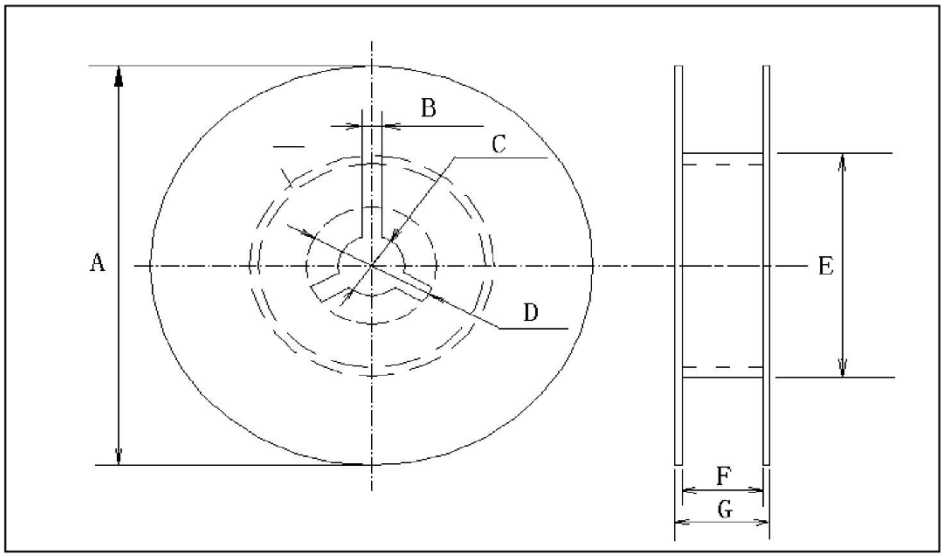
备注：*表示此处对尺寸的要求非常精确。
Note：The place with "*" means where needs exactly dimensions.

### ●传送带的前后结构 Structure of leader part and end part of the carrier paper



## CCAA SERIES

※ 卷盘尺寸 Reel Dimensions (unit: mm)



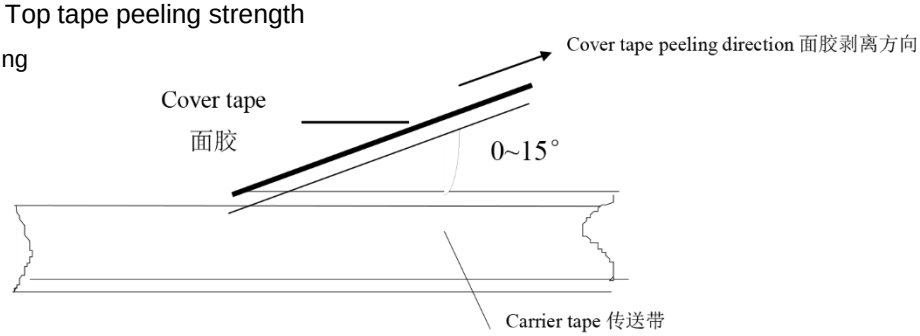

※ 尺寸代码（CODE）

| 卷盘型号 | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 7 ′ REEL | φ178±2.0 | 3.0 | φ13±0.5 | φ21±0.8 | φ50或更大<br>φ50 or more | 10.0±1.5 | 12max |
| 13′REEL | φ330±2.0 | 3.0 | φ13±0.5 | φ21±0.8 | φ50或更大<br>φ50 or more | 10.0±1.5 | 12max |

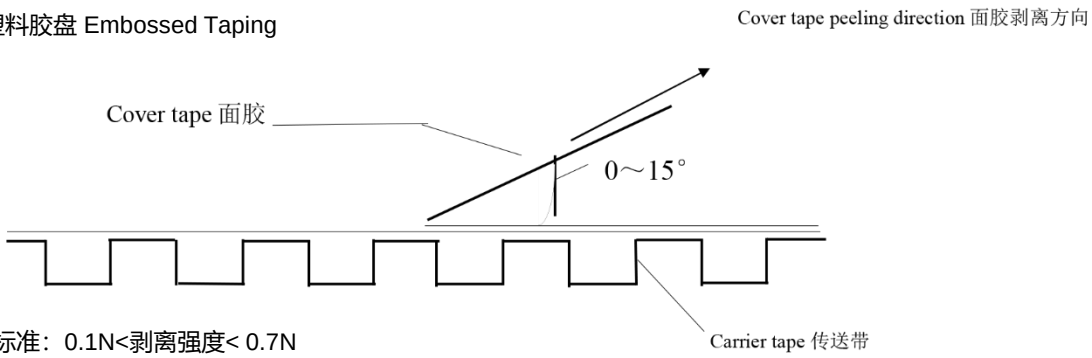
### ● 关于卷带的说明 Taping specification

※ 面胶剥离强度 Top tape peeling strength

(a)纸带 Paper Taping




(b) 塑料胶盘 Embossed Taping




标准：0.1N<剥离强度< 0.7N
Standard: 0.1N < peeling strength < 0.7N
在剥离时，纸带不能有纸碎, 也不能粘在底、面胶上。
No paper dirty remains on the scotch when peeling, and sticks to top and bottom tape

## CCAA SERIES

※ 塑料盒散包装 Bulk Case Package　　单位（unit）:mm

| Symbol | A | B | T | C | D | E |
|---|---|---|---|---|---|---|
| Dimension | 6.80±0.10 | 8.80±1.00 | 12.00±0.10 | 15.00+0.10/-0 | 2.00+0/-0.10 | 4.70±0.10 |
| Symbol | F | W | G | H | L | I |
| Dimension | 31.50+0.20/-0 | 36.00+0/-0.20 | 19.00±0.35 | 7.00±0.35 | 110.00±0.70 | 5.00±0.35 |

※ 包装数量 Packing Quantity

| 尺寸 (SIZE) | 包装形式和数量 ( PACKAGE STYLE & QUANTITY)　unit: pcs | | | | |
|---|---|---|---|---|---|
| | 塑料压纹带卷盘 (EPT) | 纸带卷盘 (PT) | 胶带卷盘（ET) | 塑料盒散装 (BC) | 一般散装 (BP) |
| 1005 | 40000 | 20000 | ------ | ------ | ------ |
| 0201 | ------ | 15000 | ------ | 20000 | 5000 |
| 0402 | ------ | 10000 | ------ | 20000 | 5000 |
| 0603 | ------ | 4000 | ------ | 15000 | 5000 |
| 0805 | ------ | 4000 | 3000 | 10000 | 5000 |
| 1206 | ------ | 4000 | T≤1.35mm 3000<br>T > 1.35mm 2000 | 5000 | 5000 |
| 1210 | ------ | ------ | T≤1.80mm 2000<br>T > 1.80mm 1000 | ------- | 2000 |
| 1410 | ------ | ------- | 2000 | ------- | ------- |
| 1808 | ------ | ------- | 2000 | ------- | 2000 |
| 1812 | ------ | -------- | T≤1.85mm 1000<br>T > 1.85mm 500 | -------- | 2000 |
| 1825、2220、2025、2225、3035 | ------ | -------- | 500 | -------- | 500 |

注意：包装的形式和数量可根据客户的要求来定。

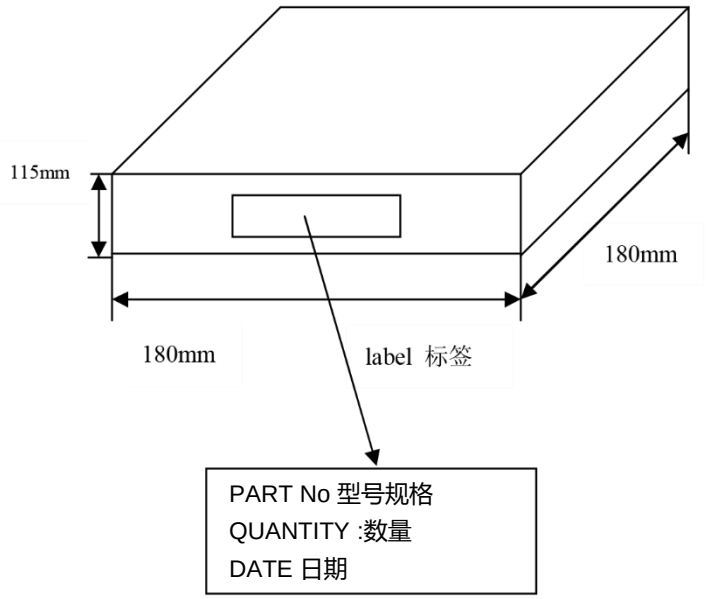
Note：We can choose packing style and quantity can be according to the customer's requirement.


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JINPEI

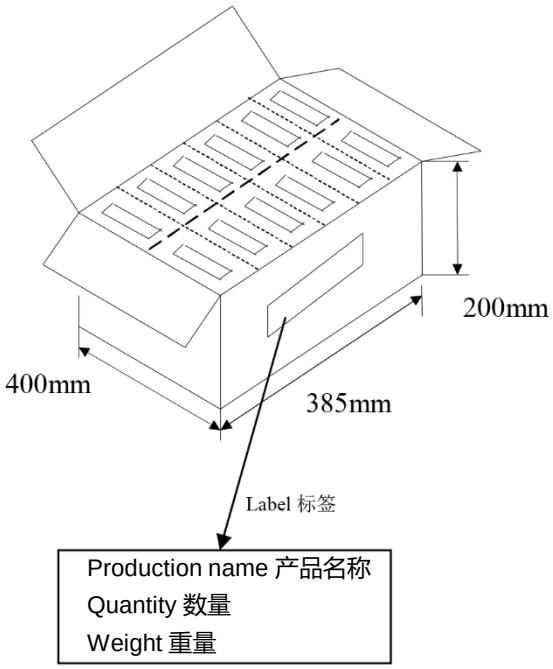
CCAA SERIES

## ●外包装 Outer packing

小包装 The first package
Quantity: 10 reels
数量： 10 卷




大包装 The second package
Quantity: 6 cases
数量：6 盒




## 十、储存方法 Storage Methods

确保芯片可焊性良好的贮存期限为 6 个月(在包装好已交付的情况下)。
The guaranteed period for solderability is 6 months (Under deliver package condition).
储存条件/Storage conditions：
储存温度/Temperature 5~40℃ 储存相对湿度/Relative Humidity 20~70%

## 十一、使用前的注意事项 Precautions For Use

多层片式瓷介电容器(MLCC)在短路或开路的电路中都有可能失效,在超出本承认书或相关说明书中所述使用频率的恶劣工作环境,或外界机械力超压作用下,电容芯片都有可能着火、燃烧甚至爆炸,所以在使用的时候,首先应考虑按本承认书的有关说明来进行,如有不明之处,请联系我们技术部、品管部或生产部.

The Multi-layer Ceramic Capacitors (MLCC) may fail in a short circuit modern in an open circuit mode when subjected to severe conditions of electrical environment and / or mechanical stress beyond the specified “rating” and specified “conditions” in the specification, which will result in burn out, flaming or glowing in the worst case. Following “precautions for “safety” and Application Notes shall be taken in your major consideration. If you have a question about the precautions for handling, please contact our engineering section or factory.

### 1. 焊接的条件与相关图表 Soldering Profile

为避免因温度的突然变化而引起的芯片开裂或局部爆炸的现象发生,请按有关温度曲线图表来进行.(请参考附页中的图表)

To avoid the crack problem by sudden temperature change, follow the temperature profile in the adjacent graph (refer to the graph in the enclosure page).

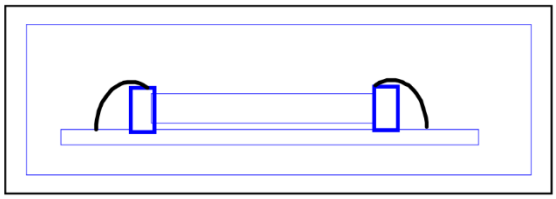
## 2. 手工焊接 Manual Soldering

手工焊接很容易因为芯片局部受热不均而引起瓷体微裂或局部爆炸的现象,在焊接时,如果操作者不小心,会使烙铁头直接同电容芯片的瓷体部分接触,这样很容易使电容芯片因热冲击而受损或出现其他意外.因此,使用电烙铁手工焊接时应仔细操作,并对电烙铁的尖端的选择和尖端温度控制应多加小心.

Manual soldering can pose a great risk of creating thermal cracks in capacitors. The hot soldering iron tip comes into direct contact with the end terminations, and operator's careless may cause the tip of the soldering iron to come into direct contact with the ceramic body of the capacitor. Therefore the soldering iron must be handled carefully, and pay much attention to the selection of the soldering iron tip and temperature contact of the tip.

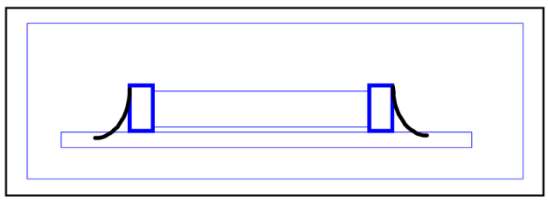
## 3. 适量的焊料 Optimum Solder Amount for Reflow Soldering

焊料过多
Too much solder



这样会因端头压力过大而可能引起芯片受损
Cracks tend to occur due to large stress.

焊料太少
Not enough solder

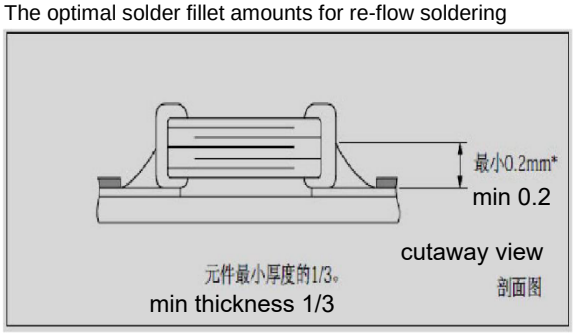


固定力量不足,可能会引起电容芯片与线路接触不良
Weak holding force may cause bad connection between the capacitor and PCB.

## 4. 推荐焊料用量 Recommended Soldering amounts

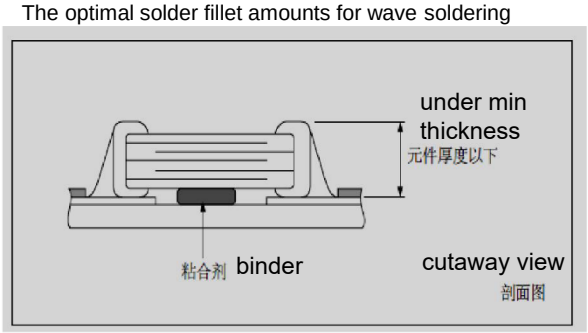
4.1 回流焊接的最佳焊料用量

The optimal solder fillet amounts for re-flow soldering



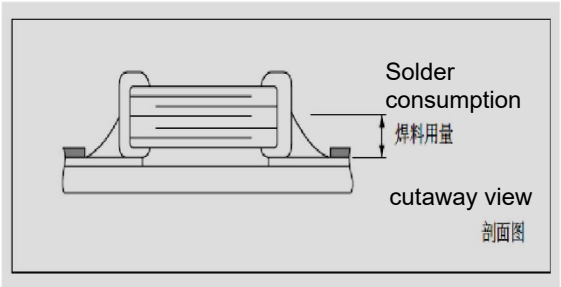

4.2 波峰焊接的最佳焊料用量

The optimal solder fillet amounts for wave soldering




4.3使用烙铁返修时的最佳焊料量

The optimal solder fillet amounts for reworking by using soldering iron



CCAA SERIES

## 十二、推荐焊接方式 Recommended Soldering Method

| 规格尺寸 Size | 温度特性 Temperature Characteristics | 额定电压 RatedVoltage | 容量范围 Capacitance | 焊接方式 Soldering Method |
|---|---|---|---|---|
| 1005 | NPO | / | / | R |
| | X7R/X5R/X7S/X6S | / | / | R |
| 0201 | NPO | / | / | R |
| | X7R/X5R/X7S/X6S | / | / | R |
| | Y5V | / | / | R |
| 0402 | NPO | / | / | R |
| | X7R/X5R/X7S/X6S | / | / | R |
| | Y5V | / | / | R |
| 0603 | NPO | / | / | R/W |
| | X7R/X5R/X7S/X6S | / | C≥1uf | R |
| | | | C<1uf | R/W |
| | Y5V | / | C≥1uf | R/W |
| | | | C<1uf | R |
| 0805 | NPO | / | / | R/W |
| | X7R/X5R/X7S/X6S | / | C≥4.7uf | R |
| | | | C < 4.7uf | R/W |
| | Y5V | / | C≥1uf | R |
| | | | C < 1uf | R/W |
| 1206 | NPO | / | / | R/W |
| | X7R/X5R/X7S/X6S | / | C≥10uf | R |
| | | | C < 10uf | R/W |
| | Y5V | / | C≥10uf | R |
| | | | C < 10uf | R/W |
| ≥1210 | NPO | / | / | R |
| | X7R/X5R/X7S/X6S | / | / | R |
| | Y5V | / | / | R |

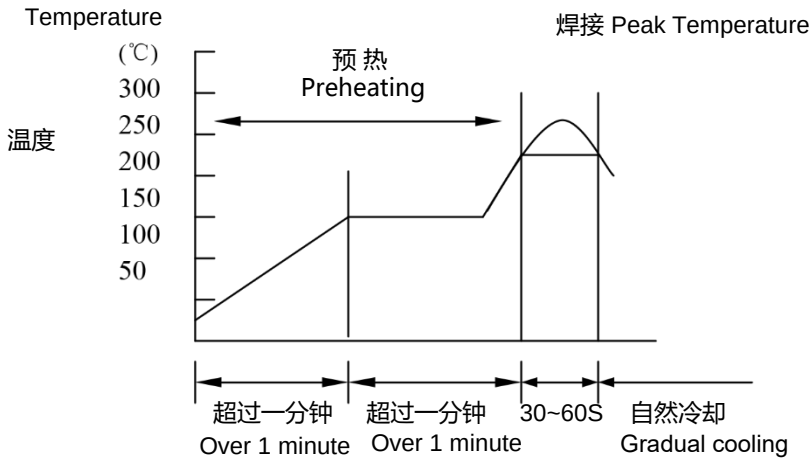
焊接方式 Soldering method：R—回流焊 Reflow Solering

W—波峰焊 Wave Soldering

CCAA SERIES

## 十三、推荐焊接温度曲线图 The temperature profile for soldering

### 回流焊接（Re-flow soldering ）

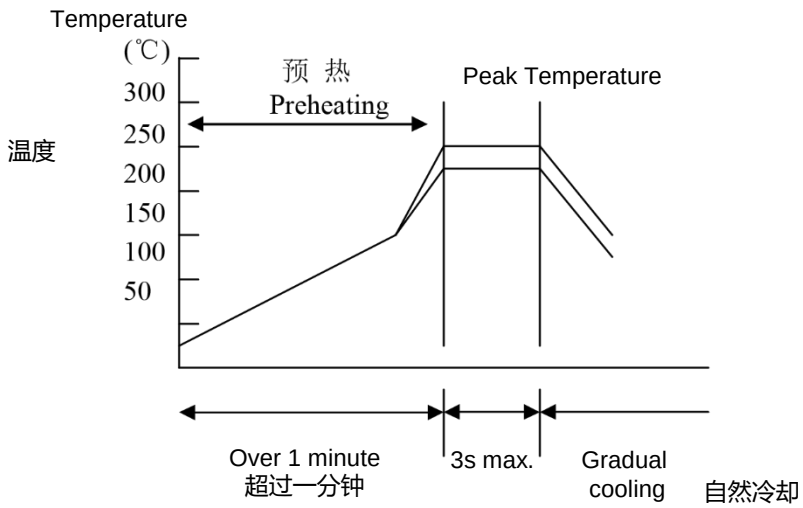



| | Pb-Sn 焊接<br>Pb-Sn soldering | 无铅焊接<br>Lead-free soldering |
|---|---|---|
| 尖峰温度<br>Peak temperature | 230℃～250℃ | 240℃～260℃ |

在预热时，请将焊接温度与芯片表面温度之间的温差维持在 T≤150℃。

While in preheating,please keep the temperature difference between soldering temperature and surface temperature of chips as: T≤150℃.

### 波峰焊接（Wave soldering）



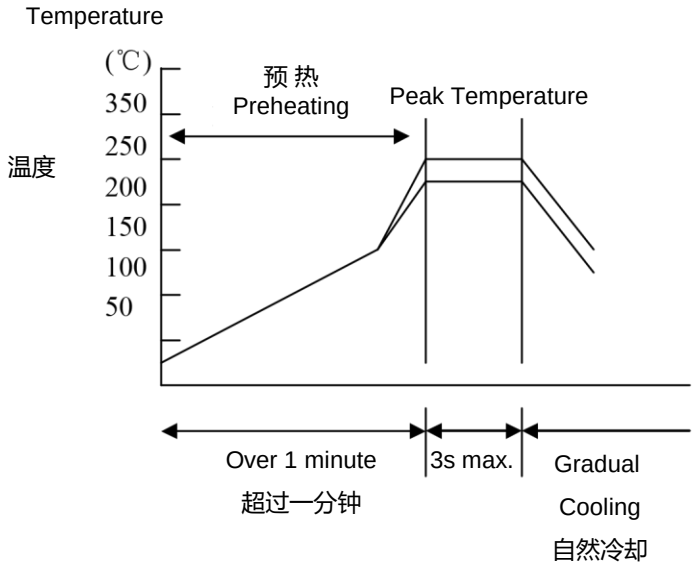

| | Pb-Sn 焊接<br>Pb-Sn soldering | 无铅焊接<br>Lead-free soldering |
|---|---|---|
| 尖峰温度<br>Peak temperature | 230℃～260℃ | 240℃～270℃ |

在预热时，请将焊接温度与芯片表面温度之间的温差维持在 T≤150℃。

While in preheating,please keep the temperature difference between soldering temperature and surface temperature of chips as: T≤150℃.

## CCAA SERIES

### 手工焊接（Hand soldering）




条件 Conditions：

| 预热 Preheating | 烙铁头温度 Temperature of soldering iron head | 烙铁功率 Power of soldering iron | 烙铁头直径 Diameter of soldering iron head | 焊接时间 Soldering time | 锡膏量 Solder paste amount | 限制条件 Restricted conditions |
|---|---|---|---|---|---|---|
| △≤130℃ | 最高350℃ Highest temperature:350℃ | 最大20W 20W at the highest | 建议1mm 1mm recommended | 最长3s 3s at the longest | ≤1/2芯片厚度 ≤1/2 chip thickness | 请勿使用烙铁头直接接触陶瓷元件 Please avoid the derect contact between soldering iron head and ceramic components |

# CCAB

## 1. INTRODUCTION

Jinpei Multilayer Ceramic Chip Capacitors supplied in bulk or tape & reel package are ideally suitable for thick-film hybrid circuits and automatic surface mounting on any printed circuit boards.

CCAB series use a special material between nickel-barrier and ceramic body. It provides excellent performance to against bending stress occurred during process and provide more security for PCB process.

The nickel-barrier terminations are consisted of a nickel barrier layer over the silver metallization and then finished by electroplated solder layer to ensure the terminations have good solderability. The nickel barrier layer in terminations prevents the dissolution of termination when extended immersion in molten solder at elevated solder temperature.

## 2. FEATURES

a. High performance to withstanding 3~5mm of substrate bending test guarantee.
b. A wide selection of sizes is available.
c. High capacitance in given case size.
d. Capacitor with lead-free termination (pure Tin).
e. Reduction in PCB bend failure.
f. High reliability and stability.
g. RoHS & Jinpei compliant.

## 3. APPLICATIONS

a. For general digital circuit.
b. For power supply bypass capacitors.
c. For consumer electronics.
d. For telecommunication.
e. DC to DC converter.



## 4. PART NUMBER EXAMPLE

| CCAB | 1210 | X | 225 | K | 2A | E | G | G |
|---|---|---|---|---|---|---|---|---|
| JINPEI Series No. | Size | Dielectric | Capacitance | Tolerance | Rated Voltage | Packaging | Thickness | Control Code |
| Table 1 | Table 2 | Table 3 | Table 4 | Table 5 | Table 6 | Table 7 | Table 8 | Table 9 |

**Table 1 Series No.**

| Code | Description |
|---|---|
| FP | Anti-Bend General Purpose Product |

**Table 2 General Purpose**

| Code | Description | Code | Description | Code | Description |
|---|---|---|---|---|---|
| 15 | 0402 (1005) | 32 | 1210 (3225) | 52 | 2211 (5728) |
| 18 | 0603 (1608) | 42 | 1808 (4520) | 55 | 2220 (5750) |
| 21 | 0805 (2012) | 43 | 1812 (4532) | 56 | 2225 (5763) |
| 31 | 1206 (3216) | 46 | 1825 (4563) | | |

**Table 3 Dielectric Material Characteristics**

| Code | Description | Code | Description |
|---|---|---|---|
| N | NPO | B | X7R |
| X | X5R | Y | Y5V |

**Table 4 Capacitance Rule Code**

| Code | Description | Code | Description |
|---|---|---|---|
| R47 | 0.47pF | 102 | $102=10x10^2=1000pF$ |
| 0R5 | 0.5pF | 104 | $104=10x10^4=100nF$ |
| 100 | $100=10x10^0=10pF$ | 106 | $106=10x10^6=10\mu F$ |

**Table 5 Tolerance**

| Code | Description | Code | Description | Code | Description |
|---|---|---|---|---|---|
| A | ±0.05 pF | I | -10% ~ 0% | Q | ±0.03 pF |
| B | ±0.10 pF | J | ±5 % | Z | -20% ~ +80% |
| C | ±0.25 pF | K | ±10 % | X | +10% ~ +20% |
| D | ±0.50 pF | L | 0% ~ +10% | | |
| F | ±1 % | M | ±20 % | | |
| G | ±2 % | N | -5% ~ +10% | | |
| H | ±3 % | P | ±0.02 pF | | |

**Table 6 Rated Voltage**

| Code | Description | Code | Description | Code | Description |
|---|---|---|---|---|---|
| 0J | 6.3Vdc | 2D | 200Vdc | 3R | 1500Vdc |
| 1A | 10Vdc | 2E | 250Vdc | 3D | 2000Vdc |
| 1C | 16Vdc | 2G | 400Vdc | 3U | 3000Vdc |
| 1E | 25Vdc | 2H | 500Vdc | 3G | 4000Vdc |
| 1H | 50Vdc | 2J | 630Vdc | 3H | 5000Vdc |
| 2A | 100Vdc | 3A | 1000Vdc | 3I | 6000Vdc |

**Table 7 Packaging Type**

| Code | Description | Code | Description |
|---|---|---|---|
| B | Bulk | T | Tray package |
| E | Tape and 7" Reel, Embossed Tape | P | Tape and 7" Reel, Paper Tape |
| K | Tape and 10" Reel, Embossed Tape | D | Tape and 10" Reel, Paper Tape |
| L | Tape and 13" Reel, Embossed Tape | G | Tape and 13" Reel, Paper Tape |

**Table 8 Thickness Description**

| Code | Description | Code | Description | Code | Description |
|---|---|---|---|---|---|
| A | 0.60 ± 0.10 mm | I | 1.25 ± 0.20 mm | Q | 0.50 +0.02/-0.05 mm |
| B | 0.8 + 0.15/-0.10mm | J | 1.15 ± 0.15 mm | R | 3.10 ± 0.30 mm |
| C | 1.25 ± 0.10 mm | K | 0.50 ± 0.20 mm | S | 0.80 ± 0.07 mm |
| D | 1.40 ± 0.15 mm | L | 0.30 ± 0.03 mm | T | 0.85 ± 0.10 mm |
| E | 1.60 ± 0.20 mm | M | 0.95 ± 0.10 mm | U | 0.50 ± 0.10 mm |
| F | 2.00 ± 0.20 mm | N | 0.50 ± 0.05 mm | V | 0.20 ± 0.02 mm |
| G | 2.50 ± 0.30 mm | O | 3.50 ± 0.20 mm | X | 0.80 ± 0.10 mm |
| H | 2.80 ± 0.30 mm | P | 1.60 +0.3/-0.10 mm | Z | 0.25 ± 0.03 mm |

**Table 9 Special Control Code**

| Code | Description | Code | Description |
|---|---|---|---|
| G | RoHS Compliant | H | High reliability |
| O | Gold plating (Size≥0603) | Q | Surface Coating (Size 1206~2225) |


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### 5. EXTERNAL DIMENSIONS

| Size Inch (mm) | L (mm) | W (mm) | Code / T (mm) | $M_B$ (mm) |
|---|---|---|---|---|
| 0402(1005) | 1.00±0.20 | 0.50±0.20 | See No.4 Reference Table 8 | 0.25 +0.05/-0.10 |
| 0603(1608) | 1.60±0.20 | 0.80±0.20 | | 0.40±0.15 |
| 0805(2012) | 2.10±0.20 | 1.25±0.20 | | 0.50±0.20 |
| 1206(3216) | 3.30±0.30 | 1.60±0.20<br>1.60 +0.30/-0.10# | | 0.60±0.20 |
| 1210(3225) | 3.30±0.40 | 2.50±0.30 | | 0.75±0.35 |
| 1808(4520) | 4.60±0.50 | 2.00±0.25 | | 0.75±0.35 |
| 1812(4532) | 4.60±0.50 | 3.20±0.30 | | 0.75±0.35 |
| 1825(4563) | 4.60±0.50 | 6.30±0.40 | | 0.75±0.35 |
| 2220(5750) | 5.70±0.50 | 5.00±0.40 | | 0.85±0.35 |
| 2225(5763) | 5.70±0.50 | 6.30±0.40 | | 0.85±0.35 |

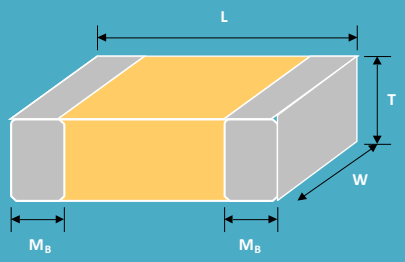



Fig. 5.1 The outline of MLCC

"#" For 1206 size P thickness products.

### 6. GENERAL ELECTRICAL DATA

| Dielectric | C0G | X7R |
|---|---|---|
| Size | 0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | 0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 |
| Rated voltage (WVDC) | 10V, 16V, 25V, 50V, 100V, 200V, 250V, 500V, 630V, 1KV, 1.5KV, 2KV, 3KV, 4KV | 6.3V, 10V, 16V, 25V, 50V, 100V, 200V, 250V, 500V, 630V, 1KV, 1.5KV, 2KV, 3KV, 4KV |
| Capacitance range | 0.1pF ~ 330nF | 100pF ~ 22µF |
| Capacitance tolerance | Reference to Table 5 | Reference to Table 5 |
| Tan δ | Cap. Range: Cap.<30pF — Q Spec.: Q≥400+20C; Cap. Range: Cap.≥30pF — Q Spec.: Q≥1000 | Reference to 8. RELIABILITY TECCAB CONDITIONS AND REQUIREMENTS |
| Capacitance & Tanδ Test condition | For 25°C at ambient temperature | Preconditioning for Class II MLCC : Perform a heat treatment at 150±10°C for 1 hour, then leave in ambient condition for 24±2 hours before measurement |
| | Cap. Range: Cap.≤1000pF — Test Condition: 1.0±0.2Vrms, 1.0MHz±10%; Cap. Range: Cap.>1000pF — Test Condition: 1.0±0.2Vrms, 1.0KHz±10% | |
| Insulation resistance | ≥10GΩ or RxC≥500Ω-F, whichever is smaller | ≥10GΩ or RxC≥100Ω-F, whichever is smaller |
| Operating temperature | -55°C to +125°C | -55°C to +125°C |
| Temperature coefficient | ±30ppm/°C | ±15% |
| Termination | Cu/Ag polymer/Ni/Sn(lead-free termination) | Cu/Ag polymer/Ni/Sn(lead-free termination) |

## CCAB

# 7. CAPACITANCE RANGE

## 7-1. NPO

| Dimension | | 0402 | | | | | 0603 | | | | | | | 0805 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 10V | 16V | 25V | 50V | 100V | 10V | 16V | 25V | 50V | 100V | 200V | 250V | 10V | 16V | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1000V |
| 0.1 | 0R1 | K | K | K | K | | | | | | | | | | | | | | | | | | |
| 0.2 | 0R2 | K | K | K | K | | | | | | | | | | | | | | | | | | |
| 0.3 | 0R3 | K | K | K | K | | S | S | S | S | | | | | | | | | | | | | |
| 0.4 | 0R4 | K | K | K | K | | S | S | S | S | | | | | | | | | | | | | |
| 0.5 | 0R5 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 0.6 | 0R6 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 0.7 | 0R7 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 0.8 | 0R8 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 0.9 | 0R9 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 1.0 | 1R0 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 1.2 | 1R2 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 1.5 | 1R5 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 1.8 | 1R8 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 2.2 | 2R2 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 2.7 | 2R7 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 3.3 | 3R3 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 3.9 | 3R9 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 4.7 | 4R7 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 5.0 | 5R0 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 5.6 | 5R6 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 6.8 | 6R8 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 8.2 | 8R2 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 10 | 100 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 12 | 120 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 15 | 150 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 18 | 180 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 22 | 220 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 27 | 270 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 33 | 330 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 39 | 390 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 47 | 470 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 56 | 560 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 68 | 680 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | A | A | C |
| 82 | 820 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | A | X | X | C |
| 100 | 101 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | X | X | X | C |
| 120 | 121 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | A | X | C | C | C |
| 150 | 151 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | X | X | C | C | C |
| 180 | 181 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | X | C | C | C | C |
| 220 | 221 | K | K | K | K | K | S | S | S | S | S | S | S | A | A | A | A | A | C | C | C | C | C |
| 270 | 271 | K | K | K | K | | S | S | S | S | S | B | B | A | A | A | A | A | C | C | C | C | C |
| 330 | 331 | K | K | K | K | | S | S | S | S | S | B | B | A | A | A | A | A | C | C | C | C | C |
| 390 | 391 | K | K | K | K | | S | S | S | S | S | B | B | X | X | X | X | X | C | C | C | C | C |
| 470 | 471 | K | K | K | K | | S | S | S | S | S | B | B | X | X | X | X | X | C | C | I | I | |
| 560 | 561 | K | K | K | K | | S | S | S | S | S | | | X | X | X | X | X | C | C | I | I | |
| 680 | 681 | K | K | K | K | | S | S | S | S | S | | | X | X | X | X | X | C | C | I | I | |
| 820 | 821 | K | K | K | K | | S | S | S | S | S | | | X | X | X | X | X | C | C | I | I | |
| 1000 | 102 | K | K | K | K | | S | S | S | S | S | | | X | X | X | X | X | C | C | I | I | |
| 1200 | 122 | | | | | | B | B | B | B | | | | X | X | X | X | X | C | C | | | |
| 1500 | 152 | | | | | | B | B | B | B | | | | X | X | X | X | X | C | C | | | |
| 1800 | 182 | | | | | | B | B | B | B | | | | X | X | X | X | X | C | C | | | |
| 2200 | 222 | | | | | | B | B | B | B | | | | X | X | X | X | X | C | C | | | |
| 2700 | 272 | | | | | | B | B | B | B | | | | C | C | C | C | C | C | C | | | |
| 3300 | 332 | | | | | | B | B | B | B | | | | C | C | C | C | C | | | | | |
| 3900 | 392 | | | | | | | | | | | | | C | C | C | C | C | | | | | |
| 4700 | 472 | | | | | | | | | | | | | C | C | C | C | C | | | | | |
| 5600 | 562 | | | | | | | | | | | | | C | C | C | C | C | | | | | |
| 6800 | 682 | | | | | | | | | | | | | C | C | C | C | C | | | | | |
| 8200 | 822 | | | | | | | | | | | | | C | C | C | C | | | | | | |
| 10000 | 103 | | | | | | | | | | | | | C | C | C | C | | | | | | |

## CCAB

## 7. CAPACITANCE RANGE

### 7-1. NPO

| Dimension | | 1206 | | | | | | | | | | 1210 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 10V 16V 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 10V 16V 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V |
| 1.0 | 1R0 | | X | | | | | | | | | | | | | | | | | | |
| 1.2 | 1R2 | X | X | X | | | X | | | | | | | | | | | | | | |
| 1.5 | 1R5 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 1.8 | 1R8 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 2.2 | 2R2 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 2.7 | 2R7 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 3.3 | 3R3 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 3.9 | 3R9 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 4.7 | 4R7 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 5.0 | 5R0 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 5.6 | 5R6 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 6.8 | 6R8 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 8.2 | 8R2 | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | |
| 10 | 100 | X | X | X | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M |
| 12 | 120 | X | X | X | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M |
| 15 | 150 | X | X | X | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M |
| 18 | 180 | X | X | X | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M |
| 22 | 220 | X | X | X | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M |
| 27 | 270 | X | X | X | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M |
| 33 | 330 | X | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M | M | M |
| 39 | 390 | X | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M | M | M |
| 47 | 470 | X | X | X | X | X | X | X | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 56 | 560 | X | X | X | X | X | X | X | M | C | C | M | M | M | M | M | M | M | M | C | C |
| 68 | 680 | X | X | X | X | X | X | X | M | C | C | M | M | M | M | M | M | M | M | C | C |
| 82 | 820 | X | X | X | X | X | X | X | C | C | C | M | M | M | M | M | M | M | M | C | C |
| 100 | 101 | X | X | X | X | X | X | X | C | C | C | M | M | M | M | M | M | M | C | C | C |
| 120 | 121 | X | X | X | X | X | X | X | C | E | E | M | M | M | M | M | M | M | C | C | C |
| 150 | 151 | X | X | X | X | X | X | X | C | E | E | M | M | M | M | M | M | M | C | E | E |
| 180 | 181 | X | X | X | X | X | X | X | E | E | E | M | M | M | M | M | M | M | C | E | E |
| 220 | 221 | X | X | X | X | X | X | X | E | E | E | M | M | M | M | M | M | M | E | E | E |
| 270 | 271 | X | X | X | X | M | M | M | E | P | P | M | M | M | M | M | M | M | E | F | F |
| 330 | 331 | X | X | X | X | M | M | M | E | P | P | M | M | M | M | M | M | M | E | F | F |
| 390 | 391 | X | X | X | X | M | M | M | E | P | P | M | M | M | M | M | M | M | E | G | G |
| 470 | 471 | X | X | X | M | M | M | M | E | | | M | M | M | M | M | M | M | E | G | G |
| 560 | 561 | X | X | X | M | C | C | C | E | | | M | M | M | M | M | M | M | E | | |
| 680 | 681 | X | X | X | M | C | C | C | E | | | M | M | M | M | M | M | M | E | | |
| 820 | 821 | X | X | X | M | E | E | E | E | | | M | M | M | M | M | M | M | E | | |
| 1000 | 102 | X | X | X | M | E | E | E | E | | | M | M | M | C | C | C | C | E | | |
| 1200 | 122 | X | X | X | M | E | E | E | | | | M | M | M | C | C | C | C | E | | |
| 1500 | 152 | X | X | X | C | E | E | E | | | | M | M | M | C | C | C | C | F | | |
| 1800 | 182 | X | X | X | C | E | E | E | | | | M | M | M | C | C | C | C | G | | |
| 2200 | 222 | X | X | X | C | E | E | E | | | | M | M | M | C | C | C | C | G | | |
| 2700 | 272 | X | X | X | C | E | E | E | | | | M | M | M | C | C | C | C | | | |
| 3300 | 332 | X | X | X | C | E | E | E | | | | M | M | M | C | C | C | C | | | |
| 3900 | 392 | X | X | X | E | E | E | E | | | | M | M | M | C | C | C | C | | | |
| 4700 | 472 | X | X | X | E | E | E | E | | | | M | M | M | E | E | E | E | | | |
| 5600 | 562 | X | X | X | E | E | E | | | | | M | M | C | E | E | E | E | | | |
| 6800 | 682 | M | M | M | E | E | E | | | | | M | M | C | E | E | E | E | | | |
| 8200 | 822 | C | C | C | E | E | | | | | | M | M | C | E | E | E | E | | | |
| 10000 | 103 | C | C | C | E | E | | | | | | M | M | E | F | F | F | F | | | |
| 12000 | 123 | P | P | P | | | | | | | | C | C | E | | | | | | | |
| 15000 | 153 | P | P | P | | | | | | | | C | C | F | | | | | | | |
| 18000 | 183 | P | P | P | | | | | | | | F | F | G | | | | | | | |
| 22000 | 223 | P | P | P | | | | | | | | F | F | G | | | | | | | |
| 27000 | 273 | P | P | | | | | | | | | G | G | | | | | | | | |
| 33000 | 333 | P | P | | | | | | | | | G | G | | | | | | | | |
| 39000 | 393 | P | P | | | | | | | | | G | G | | | | | | | | |
| 47000 | 473 | | | | | | | | | | | | | | | | | | | | |
| 56000 | 563 | | | | | | | | | | | | | | | | | | | | |
| 68000 | 683 | | | | | | | | | | | | | | | | | | | | |

## CCAB

## 7. CAPACITANCE RANGE

### 7-1. NPO

| Dimension | | 1808 | | | | | | | | | | 1812 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 25V 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 10V 16V | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 3000V |
| 1.0 | 1R0 | | | | | | | | | | | | | | | | | | | | | | |
| 1.2 | 1R2 | | | | | | | | | | | | | | | | | | | | | | |
| 1.5 | 1R5 | | | | | | | | | | | | | | | | | | | | | | |
| 1.8 | 1R8 | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 | 2R2 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 2.7 | 2R7 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 3.3 | 3R3 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 3.9 | 3R9 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 4.7 | 4R7 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 5.0 | 5R0 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 5.6 | 5R6 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 6.8 | 6R8 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 8.2 | 8R2 | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 10 | 100 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 12 | 120 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 15 | 150 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 18 | 180 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 22 | 220 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 27 | 270 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 33 | 330 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 39 | 390 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 47 | 470 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 56 | 560 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 68 | 680 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 82 | 820 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 100 | 101 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 120 | 121 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 150 | 151 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 180 | 181 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 220 | 221 | C | C | C | C | C | C | C | C | C | E | C | C | C | C | C | C | C | C | C | C | C | C |
| 270 | 271 | C | C | C | C | C | C | C | C | C | E | C | C | C | C | C | C | C | C | C | C | C | C |
| 330 | 331 | C | C | C | C | C | C | C | C | C | F | C | C | C | C | C | C | C | C | C | C | C | C |
| 390 | 391 | C | C | C | C | C | C | C | C | C | F | C | C | C | C | C | C | C | C | C | C | C | C |
| 470 | 471 | C | C | C | C | C | C | C | C | C | | C | C | C | C | C | C | C | C | C | C | C | E |
| 560 | 561 | C | C | C | C | C | C | C | C | C | | C | C | C | C | C | C | C | C | C | C | C | |
| 680 | 681 | C | C | C | C | C | C | C | C | C | | C | C | C | C | C | C | C | C | C | C | C | |
| 820 | 821 | C | C | C | C | C | C | C | C | C | | C | C | C | C | C | C | C | C | C | C | C | |
| 1000 | 102 | C | C | C | C | C | C | C | E | E | | C | C | C | C | C | C | C | C | C | C | C | |
| 1200 | 122 | C | C | C | C | C | C | E | | | | C | C | C | C | C | C | C | C | C | E | E | |
| 1500 | 152 | C | C | C | C | C | C | E | | | | C | C | C | C | C | C | C | C | C | E | E | |
| 1800 | 182 | C | C | C | C | C | C | F | | | | C | C | C | C | C | C | C | C | E | | | |
| 2200 | 222 | C | C | C | C | C | C | F | | | | C | C | C | C | C | C | C | C | E | | | |
| 2700 | 272 | C | C | C | C | C | C | | | | | C | C | C | C | C | C | C | C | F | | | |
| 3300 | 332 | C | C | C | C | C | C | | | | | C | C | C | C | C | C | C | C | F | | | |
| 3900 | 392 | C | C | C | C | | | | | | | C | C | C | C | C | C | C | C | G | | | |
| 4700 | 472 | C | C | C | C | | | | | | | C | C | C | C | C | C | C | C | | | | |
| 5600 | 562 | C | C | E | E | | | | | | | C | C | C | C | C | C | C | C | | | | |
| 6800 | 682 | C | C | E | E | | | | | | | C | C | C | C | C | C | C | C | | | | |
| 8200 | 822 | C | E | F | F | | | | | | | C | C | C | C | C | C | C | C | | | | |
| 10000 | 103 | C | E | F | F | | | | | | | C | C | C | C | C | C | C | C | | | | |
| 12000 | 123 | E | | | | | | | | | | C | C | C | C | E | E | E | E | | | | |
| 15000 | 153 | E | | | | | | | | | | C | C | C | C | E | E | E | E | | | | |
| 18000 | 183 | F | | | | | | | | | | C | C | C | E | F | F | F | F | | | | |
| 22000 | 223 | F | | | | | | | | | | C | C | C | E | F | F | F | F | | | | |
| 27000 | 273 | | | | | | | | | | | C | E | E | F | G | G | | | | | | |
| 33000 | 333 | | | | | | | | | | | C | E | E | F | | | | | | | | |
| 39000 | 393 | | | | | | | | | | | | F | F | G | | | | | | | | |
| 47000 | 473 | | | | | | | | | | | | F | F | G | | | | | | | | |
| 56000 | 563 | | | | | | | | | | | | G | G | | | | | | | | | |
| 68000 | 683 | | | | | | | | | | | | G | G | | | | | | | | | |
| 82000 | 823 | | | | | | | | | | | | G | G | | | | | | | | | |
| 100000 | 104 | | | | | | | | | | | | G | G | | | | | | | | | |
| 120000 | 124 | | | | | | | | | | | | | | | | | | | | | | |
| 150000 | 154 | | | | | | | | | | | | | | | | | | | | | | |

## CCAB

## 7. CAPACITANCE RANGE

### 7-1. NPO

| Dimension | | 1825 | | | | | | | | | | 2220 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 25V 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 25V 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 4000V |
| 10 | 100 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | F | F | |
| 12 | 120 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | F | F | |
| 15 | 150 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 18 | 180 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 22 | 220 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 27 | 270 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 33 | 330 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 39 | 390 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 47 | 470 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 56 | 560 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 68 | 680 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 82 | 820 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 100 | 101 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F |
| 120 | 121 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 150 | 151 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 180 | 181 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 220 | 221 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 270 | 271 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 330 | 331 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 390 | 391 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 470 | 471 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 560 | 561 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 680 | 681 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 820 | 821 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 1000 | 102 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | |
| 1200 | 122 | F | F | F | F | F | F | F | F | F | | F | F | F | F | F | F | F | F | F | F | |
| 1500 | 152 | F | F | F | F | F | F | F | F | F | | F | F | F | F | F | F | F | F | F | F | |
| 1800 | 182 | F | F | F | F | F | F | F | F | F | | F | F | F | F | F | F | F | F | F | | |
| 2200 | 222 | F | F | F | F | F | F | F | F | F | | F | F | F | F | F | F | F | F | F | | |
| 2700 | 272 | F | F | F | F | F | F | F | F | F | | F | F | F | F | F | F | F | F | F | | |
| 3300 | 332 | F | F | F | F | F | F | F | F | F | | F | F | F | F | F | F | F | F | F | | |
| 3900 | 392 | F | F | F | F | F | F | F | F | F | | F | F | F | F | F | F | F | F | F | | |
| 4700 | 472 | F | F | F | F | F | F | F | F | F | | F | F | F | F | F | F | F | F | F | | |
| 5600 | 562 | F | F | F | F | F | F | F | | | | F | F | F | F | F | F | F | | | | |
| 6800 | 682 | F | F | F | F | F | F | F | | | | F | F | F | F | F | F | F | | | | |
| 8200 | 822 | F | F | F | F | F | F | G | | | | F | F | F | F | F | F | G | | | | |
| 10000 | 103 | F | F | F | F | F | F | G | | | | F | F | F | F | F | F | G | | | | |
| 12000 | 123 | F | F | F | F | F | F | | | | | F | F | F | F | F | F | | | | | |
| 15000 | 153 | F | F | F | F | F | F | | | | | F | F | F | F | F | F | | | | | |
| 18000 | 183 | F | F | F | F | F | F | | | | | F | F | F | F | F | F | | | | | |
| 22000 | 223 | F | F | F | F | F | F | | | | | F | F | F | F | F | F | | | | | |
| 27000 | 273 | F | F | F | F | F | | | | | | F | F | F | F | F | | | | | | |
| 33000 | 333 | F | F | F | F | F | | | | | | F | F | F | F | F | | | | | | |
| 39000 | 393 | F | E | F | F | G | | | | | | F | F | F | F | F | | | | | | |
| 47000 | 473 | F | E | F | F | G | | | | | | F | F | G | G | G | | | | | | |
| 56000 | 563 | F | F | G | G | | | | | | | F | F | G | G | | | | | | | |
| 68000 | 683 | F | F | G | G | | | | | | | F | F | G | G | | | | | | | |
| 82000 | 823 | F | G | | | | | | | | | F | G | | | | | | | | | |
| 100000 | 104 | G | G | | | | | | | | | G | G | | | | | | | | | |
| 120000 | 124 | | | | | | | | | | | | | | | | | | | | | |
| 150000 | 154 | | | | | | | | | | | | | | | | | | | | | |
| 180000 | 184 | | | | | | | | | | | | | | | | | | | | | |
| 220000 | 224 | | | | | | | | | | | | | | | | | | | | | |
| 270000 | 274 | | | | | | | | | | | | | | | | | | | | | |
| 330000 | 334 | | | | | | | | | | | | | | | | | | | | | |

## CCAB

| Dimension | | 2225 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 25V 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 4000V |
| 10 | 100 | F | F | F | F | F | F | F | F | F | F | |
| 12 | 120 | F | F | F | F | F | F | F | F | F | F | |
| 15 | 150 | F | F | F | F | F | F | F | F | F | F | |
| 18 | 180 | F | F | F | F | F | F | F | F | F | F | |
| 22 | 220 | F | F | F | F | F | F | F | F | F | F | |
| 27 | 270 | F | F | F | F | F | F | F | F | F | F | F |
| 33 | 330 | F | F | F | F | F | F | F | F | F | F | F |
| 39 | 390 | F | F | F | F | F | F | F | F | F | F | F |
| 47 | 470 | F | F | F | F | F | F | F | F | F | F | F |
| 56 | 560 | F | F | F | F | F | F | F | F | F | F | F |
| 68 | 680 | F | F | F | F | F | F | F | F | F | F | F |
| 82 | 820 | F | F | F | F | F | F | F | F | F | F | F |
| 100 | 101 | F | F | F | F | F | F | F | F | F | F | F |
| 120 | 121 | F | F | F | F | F | F | F | F | F | F | |
| 150 | 151 | F | F | F | F | F | F | F | F | F | F | |
| 180 | 181 | F | F | F | F | F | F | F | F | F | F | |
| 220 | 221 | F | F | F | F | F | F | F | F | F | F | |
| 270 | 271 | F | F | F | F | F | F | F | F | F | F | |
| 330 | 331 | F | F | F | F | F | F | F | F | F | F | |
| 390 | 391 | F | F | F | F | F | F | F | F | F | F | |
| 470 | 471 | F | F | F | F | F | F | F | F | F | F | |
| 560 | 561 | F | F | F | F | F | F | F | F | F | F | |
| 680 | 681 | F | F | F | F | F | F | F | F | F | F | |
| 820 | 821 | F | F | F | F | F | F | F | F | F | F | |
| 1000 | 102 | F | F | F | F | F | F | F | F | F | F | |
| 1200 | 122 | F | F | F | F | F | F | F | F | F | | |
| 1500 | 152 | F | F | F | F | F | F | F | F | F | | |
| 1800 | 182 | F | F | F | F | F | F | F | F | F | | |
| 2200 | 222 | F | F | F | F | F | F | F | F | F | | |
| 2700 | 272 | F | F | F | F | F | F | F | F | F | | |
| 3300 | 332 | F | F | F | F | F | F | F | F | F | | |
| 3900 | 392 | F | F | F | F | F | F | F | F | F | | |
| 4700 | 472 | F | F | F | F | F | F | F | F | F | | |
| 5600 | 562 | F | F | F | F | F | F | F | F | F | | |
| 6800 | 682 | F | F | F | F | F | F | F | F | F | | |
| 8200 | 822 | F | F | F | F | F | F | F | G | G | | |
| 10000 | 103 | F | F | F | F | F | F | G | G | G | | |
| 12000 | 123 | F | F | F | F | F | F | | | | | |
| 15000 | 153 | F | F | F | F | F | F | | | | | |
| 18000 | 183 | F | F | F | F | F | F | | | | | |
| 22000 | 223 | F | F | F | F | F | F | | | | | |
| 27000 | 273 | F | F | F | F | F | F | | | | | |
| 33000 | 333 | F | F | F | F | F | F | | | | | |
| 39000 | 393 | F | F | F | F | F | F | | | | | |
| 47000 | 473 | F | F | F | F | F | F | | | | | |
| 56000 | 563 | F | F | G | G | G | G | | | | | |
| 68000 | 683 | F | F | G | G | G | G | | | | | |
| 82000 | 823 | F | F | G | G | G | | | | | | |
| 100000 | 104 | F | G | G | G | | | | | | | |
| 120000 | 124 | | | | | | | | | | | |
| 150000 | 154 | | | | | | | | | | | |
| 180000 | 184 | | | | | | | | | | | |
| 220000 | 224 | | | | | | | | | | | |
| 270000 | 274 | | | | | | | | | | | |
| 330000 | 334 | | | | | | | | | | | |


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## CCAB

## 7. CAPACITANCE RANGE(Con.)

### 7-2. X7R

| Dimension | | 0402 | | | | | | 0603 | | | | | | | | 0805 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 6.3V | 10V | 16V | 25V | 50V | 100V | 6.3V | 10V | 16V | 25V | 50V | 100V | 200V | 250V | 6.3V | 10V | 16V | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1000V |
| 100 | 101 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 120 | 121 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 150 | 151 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 180 | 181 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 220 | 221 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 270 | 271 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 330 | 331 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 390 | 391 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 470 | 471 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 560 | 561 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 680 | 681 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 820 | 821 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 1000 | 102 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 1200 | 122 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | X |
| 1500 | 152 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | C |
| 1800 | 182 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | C |
| 2200 | 222 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | C |
| 2700 | 272 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | |
| 3300 | 332 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | |
| 3900 | 392 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | X | X | |
| 4700 | 472 | | K | K | K | K | K | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | C | C | |
| 5600 | 562 | | K | K | K | K | | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | C | C | |
| 6800 | 682 | | K | K | K | K | | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | C | C | |
| 8200 | 822 | | K | K | K | K | | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | C | C | |
| 10000 | 103 | | K | K | K | K | | | S | S | S | S | S | B | B | | C | C | C | C | C | C | C | C | C | |
| 12000 | 123 | | K | K | K | | | | S | S | S | S | B | | | | C | C | C | C | C | C | C | C | C | |
| 15000 | 153 | | K | K | K | | | | S | S | S | S | B | | | | C | C | C | C | C | C | C | C | C | |
| 18000 | 183 | | K | K | K | | | | S | S | S | S | B | | | | C | C | C | C | C | C | C | C | C | |
| 22000 | 223 | | K | K | K | | | | S | S | S | S | B | | | | C | C | C | C | C | C | C | C | C | |
| 27000 | 273 | | K | K | K | | | | S | S | S | S | B | | | | C | C | C | C | C | C | C | C | C | |
| 33000 | 333 | | K | K | K | | | | S | S | S | B | B | | | | C | C | C | C | C | C | C | C | C | |
| 39000 | 393 | | K | K | K | | | | S | S | S | B | B | | | | C | C | C | C | C | C | C | | | |
| 47000 | 473 | | K | K | K | | | | S | S | S | B | B | | | | C | C | C | C | C | C | C | | | |
| 56000 | 563 | | K | K | | | | | S | S | S | B | B | | | | C | C | C | C | C | C | C | | | |
| 68000 | 683 | | K | K | | | | | S | S | S | B | B | | | | C | C | C | C | C | C | C | | | |
| 82000 | 823 | | K | K | | | | | S | S | S | B | B | | | | C | C | C | C | C | C | | | | |
| 100000 | 104 | K | K | K | | | | | S | S | S | B | B | | | | C | C | C | C | C | C | | | | |
| 120000 | 124 | | | | | | | | S | S | B | | | | | | C | C | C | C | I | | | | | |
| 150000 | 154 | | | | | | | | S | S | B | | | | | | C | C | C | C | I | | | | | |
| 180000 | 184 | | | | | | | | S | S | B | | | | | | C | C | C | C | I | | | | | |
| 220000 | 224 | | | | | | | | S | S | B | B | | | | | C | C | C | C | I | | | | | |
| 270000 | 274 | | | | | | | B | B | B | B | | | | | | I | I | I | I | | | | | | |
| 330000 | 334 | | | | | | | | B | B | B | | | | | | I | I | I | I | | | | | | |
| 390000 | 394 | | | | | | | | B | B | B | | | | | | I | I | I | I | | | | | | |
| 470000 | 474 | | | | | | | B | B | B | B | | | | | | I | I | I | I | I | | | | | |
| 560000 | 564 | | | | | | | | B | B | | | | | | | I | I | I | | | | | | | |
| 680000 | 684 | | | | | | | B | B | B | | | | | | | I | I | I | | | | | | | |
| 820000 | 824 | | | | | | | | B | B | | | | | | | I | I | I | | | | | | | |
| 1000000 | 105 | | | | | | | B | B | B | | | | | | | I | I | I | I | | | | | | |
| 1200000 | 125 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | | | | | | | | I | I | I | | | | | | | |
| 2200000 | 225 | | | | | | | | | | | | | | | I | I | I | I | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | | | I | | | | | | | | |

## CCAB

### 7. CAPACITANCE RANGE(Con.)

### 7-2. X7R

| Dimension | | 1206 | | | | | | | | | | | | | 1210 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 6.3V | 10V | 16V | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 10V | 16V | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V |
| 100 | 101 | | | | | | | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 120 | 121 | | | | | | | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 150 | 151 | | C | C | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 180 | 181 | | C | C | C | C | C | C | C | C | C | C | C | C | | | | | | | | | | | | |
| 220 | 221 | | C | C | C | C | C | C | C | C | C | C | C | C | | | M | M | M | M | M | M | M | M | M | M |
| 270 | 271 | | C | C | C | C | C | C | C | C | C | C | C | C | | | M | M | M | M | M | M | M | M | M | M |
| 330 | 331 | | C | C | C | C | C | C | C | C | C | C | C | C | | | M | M | M | M | M | M | M | M | M | M |
| 390 | 391 | | C | C | C | C | C | C | C | C | C | C | C | C | | | M | M | M | M | M | M | M | M | M | M |
| 470 | 471 | | C | C | C | C | C | C | C | C | C | C | C | C | | | M | M | M | M | M | M | M | M | M | M |
| 560 | 561 | | C | C | C | C | C | C | C | C | C | C | C | C | | | M | M | M | M | M | M | M | M | M | M |
| 680 | 681 | | C | C | C | C | C | C | C | C | C | C | C | C | | | M | M | M | M | M | M | M | M | M | M |
| 820 | 821 | | C | C | C | C | C | C | C | C | C | C | C | C | | | M | M | M | M | M | M | M | M | M | M |
| 1000 | 102 | | C | C | C | C | C | C | C | C | C | C | C | C | M | M | M | M | M | M | M | M | M | M | C | C |
| 1200 | 122 | | C | C | C | C | C | C | C | C | C | C | E | E | M | M | M | M | M | M | M | M | M | M | E | E |
| 1500 | 152 | | C | C | C | C | C | C | C | C | C | C | E | E | M | M | M | M | M | M | M | M | M | M | E | E |
| 1800 | 182 | | C | C | C | C | C | C | C | C | C | C | E | E | M | M | M | M | M | M | M | M | M | M | E | E |
| 2200 | 222 | | C | C | C | C | C | C | C | C | C | C | E | E | M | M | M | M | M | M | M | M | M | M | F | F |
| 2700 | 272 | | C | C | C | C | C | C | C | C | C | C | E | E | M | M | M | M | M | M | M | M | M | M | F | G |
| 3300 | 332 | | C | C | C | C | C | C | C | C | C | C | E | E | M | M | M | M | M | M | M | M | M | M | F | G |
| 3900 | 392 | | C | C | C | C | C | C | C | C | C | C | E | | M | M | M | M | M | M | M | M | M | M | G | G |
| 4700 | 472 | | C | C | C | C | C | C | C | C | C | C | E | | M | M | M | M | M | M | M | M | M | M | G | G |
| 5600 | 562 | | C | C | C | C | C | C | C | C | C | C | E | | M | M | M | M | M | M | M | M | M | M | G | G* |
| 6800 | 682 | | C | C | C | C | C | C | C | C | C | C | E | | M | M | M | M | M | M | M | M | M | M | G | G* |
| 8200 | 822 | | C | C | C | C | C | C | C | C | C | C | E | | M | M | M | M | M | M | M | M | M | M | G | G* |
| 10000 | 103 | | C | C | C | C | C | C | C | C | C | C | E | | M | M | M | M | M | M | M | M | M | C | | |
| 12000 | 123 | | C | C | C | C | C | C | C | C | C | E | | | M | M | M | M | M | M | M | M | M | C | | |
| 15000 | 153 | | C | C | C | C | C | C | C | C | C | E | | | M | M | M | M | M | M | M | M | M | E | | |
| 18000 | 183 | | C | C | C | C | C | C | C | C | C | | | | M | M | M | M | M | M | M | C | C | E | | |
| 22000 | 223 | | C | C | C | C | C | C | C | E | E | | | | M | M | M | M | M | M | M | C | C | E | | |
| 27000 | 273 | | C | C | C | C | C | C | C | E | E | | | | M | M | M | M | M | M | M | C | C | E | | |
| 33000 | 333 | | C | C | C | C | C | E | E | E | E | | | | M | M | M | M | M | M | M | E | E | E | | |
| 39000 | 393 | | C | C | C | C | C | E | E | E | E | | | | M | M | M | M | M | M | M | E | E | F | | |
| 47000 | 473 | | C | C | C | C | C | E | E | E | E | | | | M | M | M | M | M | C | C | E | E | G | | |
| 56000 | 563 | | C | C | C | C | C | E | E | E | E | | | | M | M | M | M | M | C | C | E | E | | | |
| 68000 | 683 | | C | C | C | C | C | E | E | | | | | | M | M | M | M | M | E | E | F | F | | | |
| 82000 | 823 | | C | C | C | C | C | E | E | | | | | | M | M | M | M | M | E | E | F | F | | | |
| 100000 | 104 | | C | C | C | C | C | E | E | | | | | | M | M | M | M | M | E | E | F | F | | | |
| 120000 | 124 | | C | C | C | C | C | | | | | | | | M | M | M | M | M | E | E | | | | | |
| 150000 | 154 | | M | M | M | M | E | | | | | | | | M | M | M | M | C | E | E | | | | | |
| 180000 | 184 | | M | M | M | M | E | | | | | | | | M | M | M | M | C | E | E | | | | | |
| 220000 | 224 | | M | M | M | M | E | | | | | | | | M | M | M | M | C | E | E | | | | | |
| 270000 | 274 | | M | M | M | C | E | | | | | | | | M | M | M | M | E | F | F | | | | | |
| 330000 | 334 | | M | M | M | C | E | | | | | | | | M | M | M | C | E | F | F | | | | | |
| 390000 | 394 | | M | M | J | P | E | | | | | | | | M | M | M | C | G | G | G | | | | | |
| 470000 | 474 | | J | J | J | P | E | | | | | | | | M | M | M | C | G | G | G | | | | | |
| 560000 | 564 | | J | J | J | P | P | | | | | | | | C | C | C | C | G | G | G | | | | | |
| 680000 | 684 | | J | J | J | P | P | | | | | | | | C | C | C | C | F | G | G | | | | | |
| 820000 | 824 | | J | J | J | P | P | | | | | | | | C | C | C | C | F | | | | | | | |
| 1000000 | 105 | | J | J | J | P | P | | | | | | | | C | C | C | C | F | | | | | | | |
| 1200000 | 125 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1500000 | 155 | J | J | J | P | P | | | | | | | | | | F | E | G | G | | | | | | | |
| 1800000 | 185 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2200000 | 225 | J | J | J | P | P | | | | | | | | | | F | E | G | G | | | | | | | |
| 2700000 | 275 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3300000 | 335 | | P | P | P | | | | | | | | | | | F | E | G | G | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4700000 | 475 | P | P | P | P | | | | | | | | | | F | F | F | G | | | | | | | | |
| 10000000 | 106 | P | P | P | P | | | | | | | | | | F | F | G | G | | | | | | | | |
| 22000000 | 226 | | P | | | | | | | | | | | | | G | | | | | | | | | | |

* Surface coating only.

## CCAB

### 7. CAPACITANCE RANGE(Con.)

### 7-2. X7R

| Dimension | | 1808 | | | | | | | 1812 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 4000V | 10V 16V | 25V 50V | 100V | 200V | 250V | 400V | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 4000V |
| 100 | 101 | | | | | | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | | | | | | |
| 150 | 151 | C | C | C | C | C | C | F* | | | | | | | | | | | | | |
| 180 | 181 | C | C | C | C | C | C | F* | | | | | | | | | | | | | |
| 220 | 221 | C | C | C | C | C | C | F* | | | | | | | | | | | | | |
| 270 | 271 | C | C | C | C | C | C | F* | | C | C | C | C | C | C | C | C | C | C | C | F* |
| 330 | 331 | C | C | C | C | C | C | F* | | C | C | C | C | C | C | C | C | C | C | C | F* |
| 390 | 391 | C | C | C | C | C | C | F* | | C | C | C | C | C | C | C | C | C | C | C | F* |
| 470 | 471 | C | C | C | C | C | C | F* | | C | C | C | C | C | C | C | C | C | C | C | F* |
| 560 | 561 | C | C | C | C | C | E | F* | | C | C | C | C | C | C | C | C | C | C | C | F* |
| 680 | 681 | C | C | C | C | C | E | F* | | C | C | C | C | C | C | C | C | C | C | C | F* |
| 820 | 821 | C | C | C | C | C | E | F* | | C | C | C | C | C | C | C | C | C | C | C | F* |
| 1000 | 102 | C | C | C | C | C | F | F* | C | C | C | C | C | C | C | C | C | C | C | E | F* |
| 1200 | 122 | C | C | C | C | C | F | | C | C | C | C | C | C | C | C | C | C | C | F | G* |
| 1500 | 152 | C | C | C | C | C | F | | C | C | C | C | C | C | C | C | C | C | C | F | G* |
| 1800 | 182 | C | C | C | C | C | F | | C | C | C | C | C | C | C | C | C | C | C | G | G* |
| 2200 | 222 | C | C | C | E | E | F | | C | C | C | C | C | C | C | C | C | C | C | G* | |
| 2700 | 272 | C | C | C | F | F | | | C | C | C | C | C | C | C | C | C | C | C | G* | |
| 3300 | 332 | C | C | C | F | F | | | C | C | C | C | C | C | C | C | C | E | E | G* | |
| 3900 | 392 | C | C | C | F | F | | | C | C | C | C | C | C | C | C | C | F | F | | |
| 4700 | 472 | C | C | C | F | F | | | C | C | C | C | C | C | C | C | C | F | F | | |
| 5600 | 562 | C | C | C | F | F | | | C | C | C | C | C | C | C | C | C | G | G | | |
| 6800 | 682 | C | C | C | F | F | | | C | C | C | C | C | C | C | C | C | G | G | | |
| 8200 | 822 | C | C | C | | | | | C | C | C | C | C | C | C | C | C | G | G | | |
| 10000 | 103 | C | C | C | | | | | C | C | C | C | C | C | C | C | C | G | G | | |
| 12000 | 123 | E | E | E | | | | | C | C | C | C | C | C | C | C | C | | | | |
| 15000 | 153 | E | E | E | | | | | C | C | C | C | C | C | C | C | C | | | | |
| 18000 | 183 | F | F | F | | | | | C | C | C | C | C | C | C | C | E | | | | |
| 22000 | 223 | F | F | F | | | | | C | C | C | C | C | C | C | C | E | | | | |
| 27000 | 273 | F | F | F | | | | | C | C | C | C | C | C | C | C | F | | | | |
| 33000 | 333 | F | F | F | | | | | C | C | C | C | C | C | C | C | F | | | | |
| 39000 | 393 | F | F | F | | | | | C | C | C | C | C | C | C | C | G | | | | |
| 47000 | 473 | F | F | F | | | | | C | C | C | C | C | C | C | C | G | | | | |
| 56000 | 563 | F | F | F | | | | | C | C | C | C | C | C | E | E | G | | | | |
| 68000 | 683 | F | F | | | | | | C | C | C | C | C | C | E | E | G | | | | |
| 82000 | 823 | F | F | | | | | | C | C | C | C | C | C | E | E | G | | | | |
| 100000 | 104 | | | | | | | | C | C | C | C | C | C | E | E | G | | | | |
| 120000 | 124 | | | | | | | | C | C | C | C | C | C | F | F | | | | | |
| 150000 | 154 | | | | | | | | C | C | C | C | C | C | F | F | | | | | |
| 180000 | 184 | | | | | | | | C | C | C | C | C | C | G | G | | | | | |
| 220000 | 224 | | | | | | | | C | C | C | C | C | C | G | G | | | | | |
| 270000 | 274 | | | | | | | | C | C | C | E | E | E | G | | | | | | |
| 330000 | 334 | | | | | | | | C | C | C | E | E | E | G | | | | | | |
| 390000 | 394 | | | | | | | | C | C | C | F | F | F | G | | | | | | |
| 470000 | 474 | | | | | | | | C | C | C | F | F | F | G | | | | | | |
| 560000 | 564 | | | | | | | | C | C | C | G | G | | | | | | | | |
| 680000 | 684 | | | | | | | | C | C | C | G | G | | | | | | | | |
| 820000 | 824 | | | | | | | | C | C | C | G | G | | | | | | | | |
| 1000000 | 105 | | | | | | | | C | C | C | G | G | | | | | | | | |
| 1200000 | 125 | | | | | | | | | C | C | | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | C | C | | | | | | | | | | |
| 1800000 | 185 | | | | | | | | | E | E | | | | | | | | | | |
| 2200000 | 225 | | | | | | | | | E | E | | | | | | | | | | |
| 2700000 | 275 | | | | | | | | | F | F | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | F | F | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | F | F | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | G | G | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | G | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | G | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | G | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | G | | | | | | | | | | | |

* Surface coating only.

## CCAB

### 7. CAPACITANCE RANGE(Con.)

### 7-2. X7R

| Dimension | | 1825 | | | | | | | | | | | 2220 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 25V 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 4000V | 25V 50V | 100V | 200V | 250V | 400V | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 4000V |
| 100 | 101 | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | | | | | | | | | | | | |
| 270 | 271 | | | | | | | | | | | F* | | | | | | | | | | | | F* |
| 330 | 331 | | | | | | | | | | | F* | | | | | | | | | | | | F* |
| 390 | 391 | | | | | | | | | | | F* | | | | | | | | | | | | F* |
| 470 | 471 | | | | | | | | | | | F* | | | | | | | | | | | | F* |
| 560 | 561 | | | | | | | | | | | F* | | | | | | | | | | | | F* |
| 680 | 681 | | | | | | | | | | | F* | | | | | | | | | | | | F* |
| 820 | 821 | | | | | | | | | | | F* | | | | | | | | | | | | F* |
| 1000 | 102 | F | F | F | F | F | F | F | F | F | F | F* | F | F | F | F | F | F | F | F | F | F | F | F* |
| 1200 | 122 | F | F | F | F | F | F | F | F | F | F | G* | F | F | F | F | F | F | F | F | F | F | F | G* |
| 1500 | 152 | F | F | F | F | F | F | F | F | F | F | G* | F | F | F | F | F | F | F | F | F | F | F | G* |
| 1800 | 182 | F | F | F | F | F | F | F | F | F | F | G* | F | F | F | F | F | F | F | F | F | F | F | G* |
| 2200 | 222 | F | F | F | F | F | F | F | F | F | F* | | F | F | F | F | F | F | F | F | F | F | F* | |
| 2700 | 272 | F | F | F | F | F | F | F | F | F | F* | | F | F | F | F | F | F | F | F | F | F | F* | |
| 3300 | 332 | F | F | F | F | F | F | F | F | F | F* | | F | F | F | F | F | F | F | F | F | F | F* | |
| 3900 | 392 | F | F | F | F | F | F | F | F | F | F* | | F | F | F | F | F | F | F | F | F | F | F* | |
| 4700 | 472 | F | F | F | F | F | F | F | F | F | F* | | F | F | F | F | F | F | F | F | F | F | F* | |
| 5600 | 562 | F | F | F | F | F | F | F | F | F | G* | | F | F | F | F | F | F | F | F | F | F | F* | |
| 6800 | 682 | F | F | F | F | F | F | F | F | F | G* | | F | F | F | F | F | F | F | F | F | F | G* | |
| 8200 | 822 | F | F | F | F | F | F | F | F | F | G* | | F | F | F | F | F | F | F | F | G | G | G* | |
| 10000 | 103 | F | F | F | F | F | F | F | F | F | G* | | F | F | F | F | F | F | F | F | G | G | G* | |
| 12000 | 123 | F | F | F | F | F | F | F | G | G | H* | | F | F | F | F | F | F | F | F | G | G | H* | |
| 15000 | 153 | F | F | F | F | F | F | F | G | G | H* | | F | F | F | F | F | F | F | F | G | G | H* | |
| 18000 | 183 | F | F | F | F | F | F | F | G | G | H* | | F | F | F | F | F | F | F | F | H | H | H* | |
| 22000 | 223 | F | F | F | F | F | F | F | G | G | | | F | F | F | F | F | F | F | F | H | H | | |
| 27000 | 273 | F | F | F | F | F | F | F | H | H | | | F | F | F | F | F | F | F | F | H | H | | |
| 33000 | 333 | F | F | F | F | F | F | F | H | H | | | F | F | F | F | F | F | F | F | H | H | | |
| 39000 | 393 | F | F | F | F | F | F | F | H | H | | | F | F | F | F | F | F | F | F | H | H | | |
| 47000 | 473 | F | F | F | F | F | F | F | H | H | | | F | F | F | F | F | F | F | F | H | H | | |
| 56000 | 563 | F | F | F | F | F | F | F | | | | | F | F | F | F | F | F | F | F | H | H | | |
| 68000 | 683 | F | F | F | F | F | F | F | | | | | F | F | F | F | F | F | F | F | | | | |
| 82000 | 823 | F | F | F | F | F | F | F | | | | | F | F | F | F | F | F | F | F | | | | |
| 100000 | 104 | F | F | F | F | F | F | G | | | | | F | F | F | F | F | F | F | G | | | | |
| 120000 | 124 | F | F | F | F | F | F | | | | | | F | F | F | F | F | F | F | G | | | | |
| 150000 | 154 | F | F | F | F | F | F | | | | | | F | F | F | F | F | F | F | H | | | | |
| 180000 | 184 | F | F | F | F | F | F | | | | | | F | F | F | F | F | F | F | H | | | | |
| 220000 | 224 | F | F | F | F | F | F | | | | | | F | F | F | F | F | F | F | H | | | | |
| 270000 | 274 | F | F | F | F | F | F | | | | | | F | F | F | F | F | F | F | | | | | |
| 330000 | 334 | F | F | F | F | F | F | | | | | | F | F | F | F | F | F | F | | | | | |
| 390000 | 394 | F | F | F | F | F | F | | | | | | F | F | F | F | F | F | F | | | | | |
| 470000 | 474 | F | F | F | F | F | F | | | | | | F | F | F | F | F | F | F | | | | | |
| 560000 | 564 | F | F | F | F | G | G | | | | | | F | F | F | F | | | | | | | | |
| 680000 | 684 | F | F | F | F | | | | | | | | F | F | F | F | | | | | | | | |
| 820000 | 824 | F | F | F | F | | | | | | | | F | F | F | F | | | | | | | | |
| 1000000 | 105 | F | F | F | F | | | | | | | | F | F | F | F | | | | | | | | |
| 1200000 | 125 | F | F | | | | | | | | | | F | F | G | G | | | | | | | | |
| 1500000 | 155 | F | F | | | | | | | | | | F | F | G | G | | | | | | | | |
| 1800000 | 185 | F | F | | | | | | | | | | F | F | G | G | | | | | | | | |
| 2200000 | 225 | F | F | | | | | | | | | | F | F | G | G | | | | | | | | |
| 2700000 | 275 | F | F | | | | | | | | | | F | F | | | | | | | | | | |
| 3300000 | 335 | F | F | | | | | | | | | | F | F | | | | | | | | | | |
| 3900000 | 395 | F | F | | | | | | | | | | F | F | | | | | | | | | | |
| 4700000 | 475 | F | F | | | | | | | | | | F | F | | | | | | | | | | |
| 5600000 | 565 | F | F | | | | | | | | | | F | F | | | | | | | | | | |
| 6800000 | 685 | F | F | | | | | | | | | | F | F | | | | | | | | | | |
| 8200000 | 825 | G | G | | | | | | | | | | G | G | | | | | | | | | | |
| 10000000 | 106 | G | G | | | | | | | | | | G | G | | | | | | | | | | |
| 12000000 | 126 | | | | | | | | | | | | H | | | | | | | | | | | |
| 15000000 | 156 | | | | | | | | | | | | H | | | | | | | | | | | |
| 18000000 | 186 | | | | | | | | | | | | H | | | | | | | | | | | |
| 22000000 | 226 | | | | | | | | | | | | H | | | | | | | | | | | |

* Surface coating only.

## CCAB

### 7. CAPACITANCE RANGE(Con.)

### 7-2. X7R

| Dimension | | 2225 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(pF) | Code | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1000V | 1500V | 2000V | 3000V | 4000V |
| 100 | 101 | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | |
| 270 | 271 | | | | | | | | | | | | F* |
| 330 | 331 | | | | | | | | | | | | F* |
| 390 | 391 | | | | | | | | | | | | F* |
| 470 | 471 | | | | | | | | | | | | F* |
| 560 | 561 | | | | | | | | | | | | F* |
| 680 | 681 | | | | | | | | | | | | F* |
| 820 | 821 | | | | | | | | | | | | F* |
| 1000 | 102 | F | F | F | F | F | F | F | F | F | F | F* | F* |
| 1200 | 122 | F | F | F | F | F | F | F | F | F | F | F* | G* |
| 1500 | 152 | F | F | F | F | F | F | F | F | F | F | F* | G* |
| 1800 | 182 | F | F | F | F | F | F | F | F | F | F | F* | G* |
| 2200 | 222 | F | F | F | F | F | F | F | F | F | F | F* | |
| 2700 | 272 | F | F | F | F | F | F | F | F | F | F | F* | |
| 3300 | 332 | F | F | F | F | F | F | F | F | F | F | F* | |
| 3900 | 392 | F | F | F | F | F | F | F | F | F | F | F* | |
| 4700 | 472 | F | F | F | F | F | F | F | F | F | F | F* | |
| 5600 | 562 | F | F | F | F | F | F | F | F | F | F | G* | |
| 6800 | 682 | F | F | F | F | F | F | F | F | F | F | G* | |
| 8200 | 822 | F | F | F | F | F | F | F | F | F | F | G* | |
| 10000 | 103 | F | F | F | F | F | F | F | F | F | F | G* | |
| 12000 | 123 | F | F | F | F | F | F | F | F | G | G | G* | |
| 15000 | 153 | F | F | F | F | F | F | F | F | G | G | G* | |
| 18000 | 183 | F | F | F | F | F | F | F | F | G | G | H* | |
| 22000 | 223 | F | F | F | F | F | F | F | F | G | G | | |
| 27000 | 273 | F | F | F | F | F | F | F | F | G | G | | |
| 33000 | 333 | F | F | F | F | F | F | F | F | G | G | | |
| 39000 | 393 | F | F | F | F | F | F | F | F | G | H | | |
| 47000 | 473 | F | F | F | F | F | F | F | F | G | H | | |
| 56000 | 563 | F | F | F | F | F | F | F | F | G | H | | |
| 68000 | 683 | F | F | F | F | F | F | F | F | G | | | |
| 82000 | 823 | F | F | F | F | F | F | F | F | G | | | |
| 100000 | 104 | F | F | F | F | F | F | F | G | G | | | |
| 120000 | 124 | F | F | F | F | F | F | F | H | | | | |
| 150000 | 154 | F | F | F | F | F | F | F | H | | | | |
| 180000 | 184 | F | F | F | F | F | F | F | H | | | | |
| 220000 | 224 | F | F | F | F | F | F | F | H | | | | |
| 270000 | 274 | F | F | F | F | F | F | F | | | | | |
| 330000 | 334 | F | F | F | F | F | F | F | | | | | |
| 390000 | 394 | F | F | F | F | F | F | F | | | | | |
| 470000 | 474 | F | F | F | F | F | F | F | | | | | |
| 560000 | 564 | F | F | F | F | F | F | F | | | | | |
| 680000 | 684 | F | F | F | F | F | | | | | | | |
| 820000 | 824 | F | F | F | F | F | | | | | | | |
| 1000000 | 105 | F | F | F | F | F | | | | | | | |
| 1200000 | 125 | F | F | F | G | G | | | | | | | |
| 1500000 | 155 | F | F | F | G | G | | | | | | | |
| 1800000 | 185 | F | F | F | G | G | | | | | | | |
| 2200000 | 225 | F | F | F | G | G | | | | | | | |
| 2700000 | 275 | F | F | F | G | G | | | | | | | |
| 3300000 | 335 | F | F | F | | | | | | | | | |
| 3900000 | 395 | F | F | F | | | | | | | | | |
| 4700000 | 475 | F | F | F | | | | | | | | | |
| 5600000 | 565 | F | F | F | | | | | | | | | |
| 6800000 | 685 | F | F | F | | | | | | | | | |
| 8200000 | 825 | G | G | G | | | | | | | | | |
| 10000000 | 106 | G | G | G | | | | | | | | | |
| 12000000 | 126 | | | | | | | | | | | | |
| 15000000 | 156 | | | | | | | | | | | | |
| 18000000 | 186 | | | | | | | | | | | | |
| 22000000 | 226 | | | | | | | | | | | | |

* Surface coating only.

## CCAB

# 8. RELIABILITY TECCAB CONDITIONS AND REQUIREMENTS

<table>
<tr><th>No.</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>1.</td><td>Visual and Dimensions</td><td>---</td><td>* No remarkable defect.<br>* Dimensions to confirm to individual specification sheet.</td></tr>
<tr><td>2.</td><td>Capacitance</td><td></td><td>* Shall not exceed the limits given in the detailed spec.</td></tr>
<tr><td rowspan="2">3.</td><td rowspan="2">Q/D.F. (Dissipation Factor)</td><td rowspan="2">* Class I :<br>Cap.≤1000pF, 1.0±0.2Vrms, 1MHz±10%.<br>Cap.>1000pF, 1.0±0.2Vrms, 1KHz±10%.<br>* Class II :<br>Cap.≤10μF, 1.0±0.2Vrms, 1KHz±10%**.<br>Cap.>10μF, 0.5±0.2Vrms, 120Hz±20%.<br>** Test condition : 0.5±0.2Vrms, 1KHz±10%.<br>X7R :<br>0805=106(6.3V&10V), 0603=475(6.3V).</td><td>* Class I :
<table>
<tr><th>Dielectric</th><th>Rated Vol.(V)</th><th>Q/D.F.</th><th>Remark</th></tr>
<tr><td rowspan="2">Class I</td><td rowspan="2">All</td><td>Q≥1000</td><td>Cap.≥30pF</td></tr>
<tr><td>Q≥400+20C</td><td>Cap.<30pF</td></tr>
</table>
* Class II :
<table>
<tr><th>Rated</th><th>D.F.≤</th><th>Exception of D.F.≤</th><th></th></tr>
<tr><td rowspan="3">≥100V</td><td rowspan="3">≤2.5%</td><td>≤3.5%</td><td>0603≥0.047μF, 0805=0.1μF, 1206≥0.47μF, 1812≥4.7μF, 1825≥4.7μF, 2220≥4.7μF, 2225≥4.7μF</td></tr>
<tr><td>≤5%</td><td>0603≥0.068μF, 0805>0.1μF, 1206>1μF, 1210≥2.2μF</td></tr>
<tr><td>≤10%</td><td>0805>0.22μF, 1210≥3.3μF</td></tr>
<tr><td rowspan="3">50V</td><td rowspan="3">≤2.5%</td><td>≤3.5%</td><td>0201(50V), 0603≥0.047μF, 0805≥0.1μF, 1206≥0.47μF, 1210≥2.2μF, 1812≥4.7μF, 1825≥4.7μF, 2220≥4.7μF, 2225≥4.7μF</td></tr>
<tr><td>≤5%</td><td>0201≥0.01uF, 1210≥4.7μF</td></tr>
<tr><td>≤10%</td><td>0402≥0.1μF, 0603>0.1μF, 0805≥1μF, 1206≥2.2μF, 1210≥10μF</td></tr>
<tr><td>35V</td><td>≤3.5%</td><td>≤10%</td><td>0603≥1μF, 0805≥2.2μF, 1206≥2.2μF, 1210≥10μF</td></tr>
<tr><td rowspan="3">25V</td><td rowspan="3">≤3.5%</td><td>≤5%</td><td>0201≥0.01μF, 0805≥1μF, 1210≥10μF</td></tr>
<tr><td>≤7%</td><td>0603≥0.33μF, 1206≥4.7μF</td></tr>
<tr><td>≤10%</td><td>0201≥0.1μF, 0402≥0.10μF, 0603≥0.47μF, 0805≥2.2μF, 1206≥6.8μF, 1210≥22μF</td></tr>
<tr><td rowspan="2">16V</td><td rowspan="2">≤3.5%</td><td>≤12.5%</td><td>0402≥0.47μF</td></tr>
<tr><td>≤5%</td><td>0201≥0.01μF, 0402≥0.033μF, 0603≥0.15μF, 0805≥0.68μF, 1206≥2.2μF, 1210≥4.7μF</td></tr>
<tr><td rowspan="2">10V</td><td rowspan="2">≤5%</td><td>≤10%</td><td>0201≥0.1uF(0201/X7R≥0.022μF), 0402≥0.22uF, 0603≥0.68μF, 0805≥2.2μF, 1206≥4.7μF, 1210≥22μF</td></tr>
<tr><td>≤15%</td><td>0201≥0.012μF, 0402≥0.33μF(0402/X7R≥0.22μF), 0603≥0.33μF, 0805≥2.2μF, 1206≥2.2μF, 1210≥22μF</td></tr>
<tr><td rowspan="2">6.3V</td><td rowspan="2">≤10%</td><td>≤15%</td><td>0201≥0.1μF, 0402≥1μF, 0603≥10μF, 0805≥4.7μF, 1206≥47μF, 1210≥100μF</td></tr>
<tr><td>≤20%</td><td>0402≥2.2μF</td></tr>
<tr><td>4V</td><td>≤15%</td><td>---</td><td>---</td></tr>
</table></td></tr>
<tr><td>4.</td><td>Temperature Coefficient</td><td>* With no electrical load.
<table>
<tr><th>T.C.</th><th>Operating Temp.</th></tr>
<tr><td>C0G</td><td>-55~125°C at 25°C</td></tr>
<tr><td>X7R</td><td>-55~125°C at 25°C</td></tr>
</table>
* Measurement voltage for Class II :
<table>
<tr><th>Size</th><th>Cap. Range</th><th>Condition</th></tr>
<tr><td rowspan="3">0201</td><td>Cap.<0.1μF</td><td>1V</td></tr>
<tr><td>0.1μF≤Cap.<1μF</td><td>0.2V</td></tr>
<tr><td>Cap.≥1μF</td><td>0.1V</td></tr>
<tr><td rowspan="4">0402</td><td>Cap.<0.1μF</td><td>1V</td></tr>
<tr><td>Cap.=1μF</td><td>0.5V</td></tr>
<tr><td>1μF<Cap.<10μF</td><td>0.2V</td></tr>
<tr><td>Cap.≥10μF</td><td>0.1V</td></tr>
<tr><td rowspan="3">0603</td><td>Cap.≤1μF</td><td>1V</td></tr>
<tr><td>1μF<Cap.≤4.7μF</td><td>0.5V</td></tr>
<tr><td>Cap.>4.7μF</td><td>0.2V</td></tr>
<tr><td rowspan="3">0805</td><td>Cap.<10μF</td><td>1V</td></tr>
<tr><td>Cap.=10μF</td><td>0.5V</td></tr>
<tr><td>Cap.>10μF</td><td>0.2V</td></tr>
<tr><td rowspan="3">1206/1210</td><td>Cap.≤10μF</td><td>1V</td></tr>
<tr><td>10μF<Cap.≤100μF</td><td>0.5V</td></tr>
<tr><td>Cap.>100μF</td><td>0.2V</td></tr>
</table></td><td>
<table>
<tr><th>T.C.</th><th>Capacitance Change</th></tr>
<tr><td>C0G</td><td>Within ±30ppm/°C</td></tr>
<tr><td>X7R</td><td>Within ±15%</td></tr>
</table></td></tr>
</table>

## CCAB

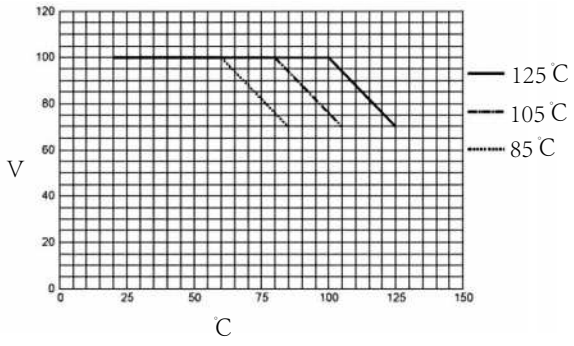
<table>
<tr><th>No.</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>5.</td><td>Insulation Resistance</td><td>
<table>
<tr><th>Rated Vol.(V)</th><th>Apply Voltage</th><th>Charge Time</th></tr>
<tr><td>≤100</td><td>1 times of $U_R$</td><td>Max. 120 sec.</td></tr>
<tr><td>100<V≤500</td><td>1 times of $U_R$</td><td>60 sec.</td></tr>
<tr><td>>500</td><td>500Vdc</td><td>60 sec.</td></tr>
</table>
</td><td>
<table>
<tr><th>Dielectric</th><th>Capacitance Change</th></tr>
<tr><td>Class I</td><td>≥10GΩ or RxC≥500Ω-F, whichever is smaller</td></tr>
<tr><td>Class II</td><td>≥10GΩ or RxC≥100Ω-F, whichever is smaller</td></tr>
</table>
* Except (Class II) :
<table>
<tr><th>Rated voltage (X7R)</th><th>I.R.</th></tr>
<tr><td>≥100V : All X7R<br>~~50V : 0402>0.01μF, 0603≥1μF, 0805≥1μF, 1206≥4.7μF,~~<br>1210≥4.7μF, 1812≥10μF, 2220≥22μF</td><td rowspan="6">≥10GΩ or RxC≥100Ω-F, whichever is smaller</td></tr>
<tr><td>35V : 0805≥2.2μF, 1206≥2.2μF, 1210≥10μF</td></tr>
<tr><td>25V : 0402≥1μF, 0603≥2.2μF, 0805≥2.2μF, 1206≥10μF, 1210≥10μF</td></tr>
<tr><td>16V : 0201≥0.1μF, 0402≥0.22μF, 0603≥1μF, 0805≥2.2μF, 1206≥10μF, 1210≥47μF</td></tr>
<tr><td>10V : 0201≥47nF, 0402≥0.47μF, 0603≥0.47μF, 0805≥2.2μF, 1206≥4.7μF, 1210≥47μF</td></tr>
<tr><td>6.3V; 4V</td></tr>
</table>
<table>
<tr><th>Rated voltage (X7R)</th><th>I.R.</th></tr>
<tr><td>100V : 1210≥3.3μF</td><td rowspan="8">RxC≥50Ω-F</td></tr>
<tr><td>50V : 0402≥0.1μF, 0603≥2.2μF, 0805≥10μF, 1206≥10μF</td></tr>
<tr><td>35V : 0603≥1μF</td></tr>
<tr><td>25V : 0201≥0.1μF, 0402≥2.2μF, 0603≥10μF, 0805≥10μF, 1206≥22μF</td></tr>
<tr><td>16V : 0603≥10μF, 0402≥1μF, 0201≥0.22μF</td></tr>
<tr><td>10V : 0201>0.1μF, 0402≥1μF, 0603≥10μF, 0805≥47μF</td></tr>
<tr><td>6.3V : 0201≥0.1μF, 0603>4.7μF, 0805≥47μF, 1206≥10μF</td></tr>
<tr><td>4V : 0603≥22μF, 0805≥47μF, 1206≥100μF</td></tr>
</table>
</td></tr>
<tr><td>6.</td><td>Dielectric Strength</td><td>
<table>
<tr><th>Rated Voltage</th><th>Condition</th></tr>
<tr><td>≤100</td><td>2.5 times of $U_R$</td></tr>
<tr><td>100<V≤250</td><td>2.0 times of $U_R$</td></tr>
<tr><td>250<V≤500</td><td>1.5 times of $U_R$</td></tr>
<tr><td>630≤V≤3000V</td><td>1.2 times of $U_R$</td></tr>
<tr><td>3000<V≤5000V</td><td>1.1 times of $U_R$</td></tr>
<tr><td>>5000V</td><td>1.0 times of $U_R$</td></tr>
</table>
* Duration : 1 to 5 sec.<br>* Charge and discharge current less than 50mA.<br>* Test in insulating fluid for rated voltage ≥1KV products.
</td><td>* No evidence of damage or flash over during test.</td></tr>
<tr><td>7.</td><td>Solderability</td><td>* Solder temperature : 235±5°C for (0402~1210).<br>* Solder temperature : 245±5°C for (1808~2225).<br>* Dipping time : 2±0.5 sec.</td><td>* 75% min. coverage of all metalized area.</td></tr>
<tr><td>8.</td><td>Resistance to Soldering Heat</td><td>* Solder temperature : 260±5°C.<br>* Dipping time : 10±1 sec.<br>* Preheating : 120 to 150°C for 1 minute before immerse the capacitor in a eutectic solder.<br>* Before initial measurement (Class II only) : To apply de-aging at 150°C for 1hr then set for 24±2 hrs at room temp.<br>* Measurement to be made after keeping at room temp. for 24±2 hrs (Class I) or 48±4 hrs (Class II).</td><td>* No remarkable damage.<br>* Cap. change :<br>C0G : Within ±2.5% or ±0.25pF, whichever is larger.<br>X7R : Within ±7.5%.<br>* D.F./Q, I.R. and dielectric strength : To meet initial requirements.<br>* 25% max. leaching on each edge.</td></tr>
<tr><td>9.</td><td>Temperature Cycle</td><td>* Conduct the five cycles according to the temperatures and time.
<table>
<tr><th>Step</th><th>Temp.(°C)</th><th>Time(min.)</th></tr>
<tr><td>1</td><td>Min. operating temp. +0/-3</td><td>30±3</td></tr>
<tr><td>2</td><td>Room temp.</td><td>2~3</td></tr>
<tr><td>3</td><td>Max. operating temp. +3/-0</td><td>30±3</td></tr>
<tr><td>4</td><td>Room temp.</td><td>2~3</td></tr>
</table>
* Before initial measurement (Class II only) : To apply de-aging at 150°C for 1hr then set for 24±2 hrs at room temp.<br>* Measurement to be made after keeping at room temp. for 24±2 hrs (Class I) or 48±4 hrs (Class II).</td><td>* No remarkable damage.<br>* Cap. change :<br>C0G : Within ±2.5% or ±0.25pF, whichever is larger.<br>X7R : Within ±7.5%.<br>* D.F./Q :<br>C0G : Q≥100% of initial requirements.<br>X7R : D.F.≤150% of initial requirement.<br>* I.R. : ≥100% of initial requirement.</td></tr>
</table>

## CCAB

<table>
<tr><th>No.</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>10.</td><td>Humidity<br>(Damp Heat)<br>Steady State</td><td>* Test temp. : 40±2°C.<br>* Humidity : 90~95%RH.<br>* Test time : 500 +24/-0hrs.<br>* Before initial measurement (Class II only) : To apply de-aging at 150°C for 1hr then set for 24±2 hrs at room temp.<br>* Measurement to be made after keeping at room temp. for 24±2 hrs (Class I) or 48±4 hrs (Class II).</td><td>* No remarkable damage.<br>* Cap. change :<br>C0G : Within ±5.0% or ±0.5pF, whichever is larger. X7R :<br>Within ±12.5% for ≥10V**, within ±25% for 6.3V.<br>**10V : Within ±25% for 0603≥4.7μF, 0402≥1μF.<br>* D.F./Q :<br>C0G : Q≥350 for Cap.>30pF, Q≥275+2.5C for 10pF≤Cap.≤30pF,<br>Q≥200+10C for Cap.<10pF.<br>X7R : D.F.≤200% of initial requirement.<br>* I.R. : ≥10V, ≥1GΩ or RxC≥50Ω-F, whichever is smaller. Except :<br><table><tr><th>Rated voltage</th><th>I.R.</th></tr><tr><td>100V : All X7R; 1210≥3.3μF</td><td rowspan="11">≥1GΩ or RxC≥10Ω-F, whichever is smaller</td></tr><tr><td>50V : 0402>0.01μF, 0603≥1μF, 0805≥1μF, 1206≥4.7μF,<br>1210≥4.7μF</td></tr><tr><td>35V : 0603≥1μF, 0805≥2.2μF, 1206≥2.2μF, 1210≥10μF</td></tr><tr><td>25V : 0201≥0.1uF, 0402≥0.22μF, 0603≥2.2μF, 0805≥2.2μF,<br>1206≥10μF, 1210≥10μF</td></tr><tr><td>16V : 0201≥0.1uF, 0402≥0.22μF, 0603≥1μF, 0805≥2.2μF,<br>1206≥10μF, 1210≥47μF</td></tr><tr><td>10V : 0201≥47nF, 0402≥0.47μF, 0603≥0.47μF, 0805≥2.2μF,<br>1206≥4.7μF, 1210≥47μF</td></tr><tr><td>6.3V; 4V; Size≥1812</td></tr></table></td></tr>
<tr><td>11.</td><td>Humidity<br>(Damp Heat)<br>Load</td><td>* Reflow solder the capacitors on a P.C. Board before test.<br>* Test temp. : 40±2°C (85±3°C for control code H).<br>* Humidity : 90~95% RH (85±5% for control code H).<br>* Test time : 500 +24/-0hrs.<br>* To apply voltage : Rated voltage ( 500Vdc max. for general purpose and 100Vdc max. for control code H)<br>* Measurement to be made after keeping at room temp. for 24±2 hrs (Class I) or 48±4 hrs (Class II).</td><td>* No remarkable damage.<br>* Cap. change :<br>C0G : Within ±7.5% or ±0.75pF, whichever is larger. X7R :<br>Within ±12.5% for ≥10V**, within ±25% for 6.3V.<br>**10V : Within ±25% for 0603≥4.7μF, 0402≥1μF.<br>* D.F./Q :<br>C0G : Q≥350 for Cap.>30pF, Q≥275+2.5C for 10pF≤Cap.≤30pF,<br>Q≥200+10C for Cap.<10pF.<br>X7R : ≤200% of initial requirement.<br>* I.R. : ≥10V, ≥500MΩ or RxC≥25Ω-F, whichever is smaller. Except :<br><table><tr><th>Rated voltage</th><th>I.R.</th></tr><tr><td>≥100V : All X7R; 1210≥3.3μF</td><td rowspan="11">≥500MΩ or RxC≥5Ω-F, whichever is smaller</td></tr><tr><td>50V : 0402>0.01μF, 0603≥1μF, 0805≥1μF, 1206≥4.7μF,<br>1210≥4.7μF</td></tr><tr><td>35V : 0603≥1μF, 0805≥2.2μF, 1206≥2.2μF, 1210≥10μF</td></tr><tr><td>25V : 0201≥0.1uF, 0402≥0.22μF, 0603≥2.2μF, 0805≥2.2μF,<br>1206≥10μF, 1210≥10μF</td></tr><tr><td>16V : 0201≥0.1uF, 0402≥0.22μF, 0603≥1μF, 0805≥2.2μF,<br>1206≥10μF, 1210≥47μF</td></tr><tr><td>10V : 0201≥47nF, 0402≥0.47μF, 0603≥0.47μF, 0805≥2.2μF,<br>1206≥4.7μF, 1210≥47μF</td></tr><tr><td>6.3V; 4V; Size≥1812</td></tr></table></td></tr>
</table>

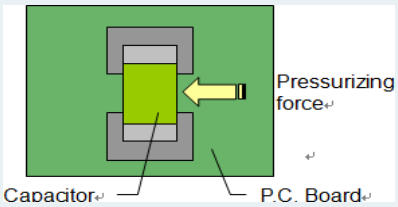
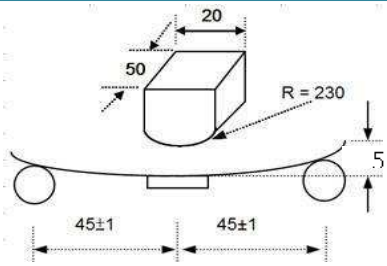

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<table>
<tr><th>No.</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>12.</td><td>High Temperature Load (Endurance)</td><td>
* Test temp. : 125±3°C.<br>
* To apply voltage :<br>
(1) ≤6.3V or Cap.≥10μF : 150% of rated voltage.<br>
(2) 10V≤Ur<500V : 200% of rated voltage.<br>
(3) 500V : 150% of rated voltage.<br>
(4) Ur≥630V : 120% of rated voltage.<br>
(5) 100% of rated voltage for below range :
<table>
<tr><th>Size</th><th>Dielectric</th><th>Rated</th><th>Capacitance</th></tr>
<tr><td>0201</td><td>X7R</td><td>≤10V</td><td>C≥0.1μF</td></tr>
<tr><td></td><td></td><td>≥16V</td><td>C>0.1μF</td></tr>
<tr><td>0402</td><td>X7R</td><td>6.3V, 10V, 16V, 25V</td><td>C≥1.0μF</td></tr>
<tr><td>0603</td><td>X7R</td><td>4V</td><td>C≥22μF</td></tr>
<tr><td></td><td></td><td>6.3V,10V</td><td>C≥4.7μF</td></tr>
<tr><td></td><td></td><td>25V, 35V</td><td>C≥1.0μF</td></tr>
<tr><td>0805</td><td>X7R</td><td>4V</td><td>C≥47μF</td></tr>
<tr><td></td><td></td><td>6.3V</td><td>C≥22μF</td></tr>
<tr><td></td><td></td><td>10V~50V</td><td>C≥10μF</td></tr>
<tr><td>1206</td><td>X7R</td><td>≤6.3V</td><td>C≥47μF</td></tr>
<tr><td>1210</td><td>X7R</td><td>16V</td><td>C≥47μF</td></tr>
<tr><td></td><td>X7R</td><td>≥100V</td><td>C≥3.3μF</td></tr>
</table>
(6) 150% of rated voltage for below range :
<table>
<tr><th>Size</th><th>Dielectric</th><th>Rated Voltage</th><th>Capacitance</th></tr>
<tr><td>0201</td><td>X7R</td><td>16V</td><td>C≥0.022μF</td></tr>
<tr><td>0402</td><td>X7R</td><td>50V</td><td>C≥0.1μF</td></tr>
<tr><td></td><td></td><td>10~25V</td><td>C≥0.22μF</td></tr>
<tr><td>0603</td><td>X7R</td><td>≥50V</td><td>C≥0.082μF</td></tr>
<tr><td></td><td>X7R</td><td>10V,16V, 50V</td><td>C≥1.0μF</td></tr>
<tr><td>0805</td><td>X7R</td><td>10~50V</td><td>C≥4.7μF</td></tr>
<tr><td></td><td>X7R</td><td>50V</td><td>C≥0.47μF</td></tr>
<tr><td></td><td></td><td>≥100V</td><td>C≥0.12μF</td></tr>
<tr><td>1206</td><td>X7R</td><td>≥50V</td><td>C≥1.0μF</td></tr>
<tr><td>1210</td><td>X7R</td><td>≤100V</td><td>C≥1.0μF</td></tr>
<tr><td></td><td>X7R</td><td>>100V</td><td>C≥0.22μF</td></tr>
<tr><td>1812</td><td>X7R</td><td>≤50V</td><td>C≥4.7μF</td></tr>
<tr><td></td><td></td><td>100V</td><td>C≥1.0μF</td></tr>
<tr><td></td><td></td><td>200V~250V</td><td>C≥0.47μF</td></tr>
<tr><td>1825<br>2220<br>2225</td><td>X7R</td><td>≥100V</td><td>C≥1.0μF</td></tr>
</table>
(7) 120% of rated voltage for below range :
<table>
<tr><th>Size</th><th>Dielectric</th><th>Rated Voltage</th><th>Capacitance</th></tr>
<tr><td>2220</td><td>X7R</td><td>≥100V</td><td>C≥15μF</td></tr>
</table>
* Test time : 1000 +24/-0 hrs.<br>
* Before initial measurement (Class Ⅱ only) : To apply de-aging at 150°C for 1hr then set for 24±2 hrs at room temp.<br>
* Measurement to be made after keeping at room temp. for 48±4 hrs (Class Ⅱ).<br>
** De-rating conditions :


</td><td>
* No remarkable damage.<br>
* Cap. change :<br>
C0G : Within ±5.0% or ±0.5pF, whichever is larger.<br>
X7R : Within ±12.5% for ≥10V**, within ±25% for 6.3V.<br>
**10V : Within ±25% for 0603≥4.7μF, 0402≥1μF.<br>
* D.F./Q :<br>
C0G : Q≥350 for Cap.>30pF, Q≥275+2.5C for 10pF≤Cap.≤30pF, Q≥200+10C for Cap.<10pF.<br>
X7R : D.F.≤200% of initial requirement.<br>
* I.R. : ≥10V, ≥1GΩ or R×C≥50Ω-F, whichever is smaller.<br>
Except :
<table>
<tr><th>Rated voltage</th><th>I.R.</th></tr>
<tr><td>100V : All X7R; 1210≥3.3μF</td><td rowspan="11">≥1GΩ or RxC≥10Ω-F, whichever is smaller</td></tr>
<tr><td>50V : 0402>0.01μF, 0603≥1μF, 0805≥1μF, 1206≥4.7μF, 1210≥4.7μF</td></tr>
<tr><td>35V : 0603≥1μF, 0805≥2.2μF, 1206≥2.2μF, 1210≥10μF</td></tr>
<tr><td>25V : 0201≥0.1uF, 0402≥0.22μF, 0603≥2.2μF, 0805≥2.2μF, 1206≥10μF, 1210≥10μF</td></tr>
<tr><td>16V : 0201≥0.1uF, 0402≥0.22μF, 0603≥1μF, 0805≥2.2μF, 1206≥10μF, 1210≥47μF</td></tr>
<tr><td>10V : 0201≥47nF, 0402≥0.47μF, 0603≥0.47μF, 0805≥2.2μF, 1206≥4.7μF, 1210≥47μF</td></tr>
<tr><td>6.3V; 4V; Size≥1812</td></tr>
</table>
</td></tr>
</table>

## CCAB

<table>
<tr><th>No.</th><th>Item</th><th>Test Condition</th><th>Requirements</th></tr>
<tr><td>13.</td><td>Adhesive Strength of Termination</td><td>* Capacitors mounted on a substrate. A force of 5N(≤0603) or 10N(>0603) applied perpendicular to the place of substrate and parallel the line joining the center of terminations for 10±1second.<br>
</td><td>* No remarkable damage or removal of theterminations.</td></tr>
<tr><td></td><td></td><td>* The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1mm per second until the deflection becomes 5mm for product size < 1808, 3mm for product size ≥ 1808.</td><td></td></tr>
<tr><td></td><td></td><td></td><td>* No remarkable damage.</td></tr>
<tr><td>14.</td><td>Bending Test</td><td>

Unit : mm</td><td><table><tr><th>Dielectric</th><th>Cap. Change</th></tr><tr><td>Class I (C0G)</td><td>Within ±5.0% or ±0.5pF, whichever is larger</td></tr><tr><td>Class II (X7R)</td><td>Within ±12.5%</td></tr></table>
(This capacitance change means the change of capacitance under specified flexure of substrate from the capacitance measured before the test)</td></tr>
<tr><td>15.</td><td>Vibration Resistance</td><td>* Vibration frequency : 10~55 Hz/min.<br>* Total amplitude : 1.5mm.<br>* Test time : 6 hrs. (Two hrs each in three mutually perpendicular directions)<br>* Before initial measurement (Class II only) : To apply de-aging at 150°C for 1hr then set for 24±2 hrs at room temp.<br>* Measurement to be made after keeping at room temp. for 24±2 hrs (Class I) or 48±4 hrs (Class II).</td><td>* No remarkable damage.<br>* Cap. change and D.F./Q : To meet initial spec.</td></tr>
</table>

## CCAB

### 9. PACKAGE DIMENSION AND QUANTITY

| Size | Thickness (mm) | Paper tape | | Plastic tape | |
|---|---|---|---|---|---|
| | | 7" reel | 13" reel | 7" reel | 13" reel |
| 0402(1005) | 0.50±0.05 | 10k | 50k | - | - |
| | 0.50 +0.02/-0.05 | 10k | 50k | - | - |
| | 0.50±0.20 | 10k | - | - | - |
| 0603(1608) | 0.50±0.10 | 4k | - | - | - |
| | 0.80±0.07 | 4k | 15k | - | - |
| | 0.80 +0.15/-0.10 | 4k | 15k | - | - |
| 0805(2012) | 0.50±0.10 | 4k | 15k | - | - |
| | 0.60±0.10 | 4k | 15k | - | - |
| | 0.80±0.10 | 4k | 15k | - | - |
| | 0.85±0.10 | 4k | 15k | - | - |
| | 1.25±0.10 | - | - | 3k | 10k |
| | 1.25±0.20 | - | - | 3k | 10k |
| 1206(3216) | 0.80±0.10 | 4k | 15k | - | - |
| | 0.85±0.10 | 4k | 15k | - | - |
| | 0.95±0.10 | - | - | 3k | 10k |
| | 1.15±0.15 | - | - | 3k | 10k |
| | 1.25±0.10 | - | - | 3k | 10k |
| | 1.60±0.20 | - | - | 2k | 10k |
| | 1.60 +0.30/-0.10 | - | - | 2k | 9k |
| 1210(3225) | 0.85±0.10 | - | - | 3k | 10k |
| | 0.95±0.10 | - | - | 3k | 10k |
| | 1.25±0.10 | - | - | 3k | 10k |
| | 1.60±0.20 | - | - | 2k | - |
| | 2.00±0.20 | - | - | 1k | 6k |
| | 2.50±0.30 | - | - | 1k | 6k |
| 1808(4520) | 1.25±0.10 | - | - | 2k | 10k |
| | 1.60±0.20 | - | - | 2k | 8k |
| | 2.00±0.20 | - | - | 1k | 6k |
| 1812(4532) | 1.25±0.10 | - | - | 1k | 5k |
| | 1.60±0.20 | - | - | 1k | - |
| | 2.00±0.20 | - | - | 1k | - |
| | 2.50±0.30 | - | - | 0.5k | 3k |
| | 2.80±0.30 | - | - | 0.5k | - |
| 1825(4563) | 1.60±0.20 | - | - | 1k | - |
| | 2.00±0.20 | - | - | 1k | - |
| | 2.50±0.30 | - | - | 0.5k | - |
| | 2.80±0.30 | - | - | 0.5k | - |
| 2220(5750) | 1.60±0.20 | - | - | 1k | - |
| | 2.00±0.20 | - | - | 1k | - |
| | 2.50±0.30 | - | - | 0.5k | - |
| | 2.80±0.30 | - | - | 0.5k | - |
| 2225(5763) | 1.60±0.20 | - | - | 1k | - |
| | 2.00±0.20 | - | - | 1k | - |
| | 2.50±0.30 | - | - | 0.5k | - |
| | 2.80±0.30 | - | - | 0.5k | - |

Unit : pcs

## CCAB

## 9. PACKAGE DIMENSION AND QUANTITY

### 9.1. EMBOSSED TAPE DIMENSIONS

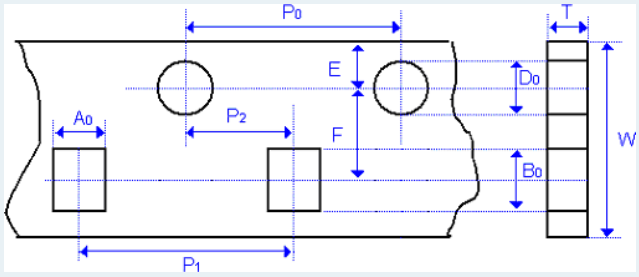



Fig. 9.1 The dimension of paper tape

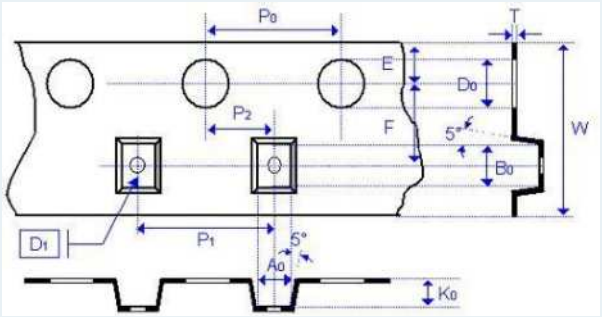



Fig. 9.2 The dimension of plastic tape

| Size | 0402 | | 0603 | | 0805 | |
|---|---|---|---|---|---|---|
| Chip Thickness | 0.50±0.05 | 0.50±0.10 | 0.80±0.07 | 0.80 +0.15/-0.1 | 0.80±0.10 | 1.25±0.10<br>1.25±0.20 |
| $A_0$ | 0.70±0.20 | 0.70±0.20 | 1.00 +0.05/-0.1 | 1.02 +0.05/-0.1 | 1.50±0.10 | <1.65 |
| $B_0$ | 1.20±0.20 | 1.20±0.20 | 1.80±0.10 | 1.80±0.10 | 2.30±0.10 | <2.40 |
| T | ≤0.80 | ≤0.80 | 0.95±0.05 | 0.97±0.05 | 0.95±0.05 | 0.23±0.05 |
| $K_0$ | - | - | - | - | - | <2.50 |
| W | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 |
| $P_0$ | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 |
| $10xP_0$ | 40.00±0.10 | 40.00±0.10 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 |
| $P_1$ | 2.00±0.05 | 2.00±0.05 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 |
| $P_2$ | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 |
| $D_0$ | 1.55±0.05 | 1.55±0.05 | 1.55±0.05 | 1.55±0.05 | 1.55±0.05 | 1.50 +0.10/-0 |
| $D_1$ | - | - | - | - | - | 1.00±0.10 |
| E | 1.75±0.05 | 1.75±0.05 | 1.75±0.05 | 1.75±0.05 | 1.75±0.05 | 1.75±0.10 |
| F | 3.50±0.05 | 3.50±0.05 | 3.50±0.05 | 3.50±0.05 | 3.50±0.05 | 3.50±0.05 |
| Unit : | mm | mm | mm | mm | mm | mm |

| Size | 1206 | | | 1210 | | 1812 | |
|---|---|---|---|---|---|---|---|
| Chip Thickness | 0.80±0.10 | 0.95±0.10<br>1.25±0.10 | 1.60±0.20<br>1.60+0.3/-0/1 | 0.95±0.10<br>1.25±0.10<br>1.60±0.20 | 2.50±0.30 | 1.25±0.10<br>1.60±0.20<br>2.00±0.20 | 2.50±0.30 |
| $A_0$ | 2.00±0.10 | <2.00 | <2.00 | <3.05 | <3.10 | <3.90 | <3.90 |
| $B_0$ | 3.50±0.10 | <3.60 | <3.70 | <3.80 | <4.00 | <5.30 | <5.30 |
| T | 0.95±0.05 | 0.23±0.05 | 0.23±0.05 | 0.23±0.05 | 0.23±0.05 | 0.25±0.05 | 0.25±0.05 |
| $K_0$ | - | <2.50 | <2.50 | <2.50 | <3.50 | <2.50 | <3.00 |
| W | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 12.00±0.20 | 12.00±0.20 |
| $P_0$ | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 |
| $10xP_0$ | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 |
| $P_1$ | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 8.00±0.10 | 8.00±0.10 |
| $P_2$ | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 |
| $D_0$ | 1.55±0.05 | 1.50+0.10/-0 | 1.50+0.10/-0 | 1.50 +0.10/-0 | 1.50 +0.10/-0 | 1.50 +0.10/-0 | 1.50 +0.10/-0 |
| $D_1$ | - | 1.00±0.10 | 1.00±0.10 | 1.00±0.10 | 1.00±0.10 | 1.50±0.10 | 1.50±0.10 |
| E | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 |
| F | 3.50±0.05 | 3.50±0.05 | 3.50±0.05 | 3.50±0.05 | 3.50±0.05 | 5.50±0.05 | 5.50±0.05 |
| Unit : | mm | mm | mm | mm | mm | mm | mm |

## CCAB

### 9. PACKAGE DIMENSION AND QUANTITY

| Size | 1825 | | 2220 | | 2225 | |
|---|---|---|---|---|---|---|
| Chip Thickness | 1.60±0.20<br>2.00±0.20 | 2.50±0.30 | 1.40±0.15<br>1.60±0.20<br>2.00±0.20 | 2.50±0.30 | 1.60±0.20<br>2.00±0.20 | 2.50±0.30 |
| $A_0$ | <6.80 | <6.80 | <5.80 | <5.80 | <6.80 | <6.80 |
| $B_0$ | <5.30 | <5.30 | <6.50 | <6.50 | <6.50 | <6.50 |
| T | 0.30±0.10 | 0.30±0.10 | 0.30±0.10 | 0.30±0.10 | 0.30±0.10 | 0.30±0.10 |
| $K_0$ | <2.50 | <3.10 | <2.50 | <3.10 | <2.50 | <3.10 |
| W | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 |
| $P_0$ | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 |
| $10xP_0$ | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 |
| $P_1$ | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 |
| $P_2$ | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 |
| $D_0$ | 1.50 +0.10/-0 | 1.50 +0.10/-0 | 1.50 +0.10/-0 | 1.50 +0.10/-0 | 1.50 +0.10/-0 | 1.50 +0.10/-0 |
| $D_1$ | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 |
| E | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 |
| F | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 |
| Unit : | mm | mm | mm | mm | mm | mm |

### 9.2. REEL DIMENSIONS

| Size | 0402, 0603, 0805, 1206, 1210 | | | 1808, 1812, 1825, 2220, 2225 |
|---|---|---|---|---|
| Reel size | 7” | 7” | 13” | 7” |
| C | 13.0<br>+0.5/-0.2 | 13.0<br>+0.5/-0.2 | 13.0<br>+0.5/-0.2 | 13.0<br>+0.5/-0.2 |
| $W_1$ | 8.4<br>+1.5/-0 | 12.4<br>+2.0/-0 | 8.4<br>+1.5/-0 | 8.4<br>+1.5/-0 |
| A | 178.0<br>±0.10 | 178.0<br>±0.10 | 330.0<br>±1.0 | 178.0<br>±0.10 |
| N | 60.0<br>+1.0/-0 | 80.0<br>±1.0 | 100<br>±1.0 | 60.0<br>+1.0/-0 |

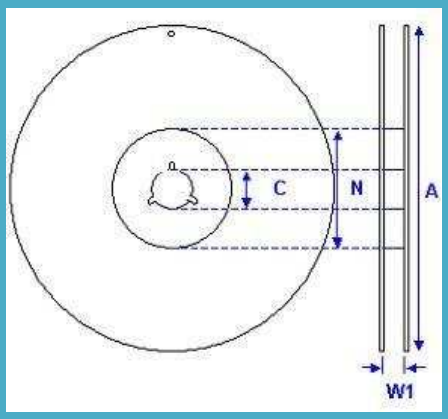



Fig. 9.3 The dimension of reel

**CCAB**

10. APPLICATION NOTES

## CCABORAGE

To prevent the damage of solderability of terminations, the following storage conditions are recommended :
Indoors under 5 ~ 40°C and 20% ~ 70% RH.
No harmful gases containing sulfuric acid, ammonia, hydrogen sulfide or chlorine.
Packaging should not be opened until the capacitors are required for use. If opened, the pack should be re-sealed as soon as is practicable. Taped product should be stored out of direct sunlight, which might promote deterioration in tape or adhesion performance. The product is recommended to be used within 12 months after shipment and checked the solderability before use.

## HANDLING

Chip capacitors are dense, hard, brittle, and abrasive materials. They are liable to suffer mechanical damage, in the form of cracks or chips. Chip Capacitors should be handled with care to avoid contamination or damage. To use vacuum or plastic tweezers to pick up or plastic tweezers is recommended for manual placement. Tape and reeled packages are suitable for automatic pick and placement machine.

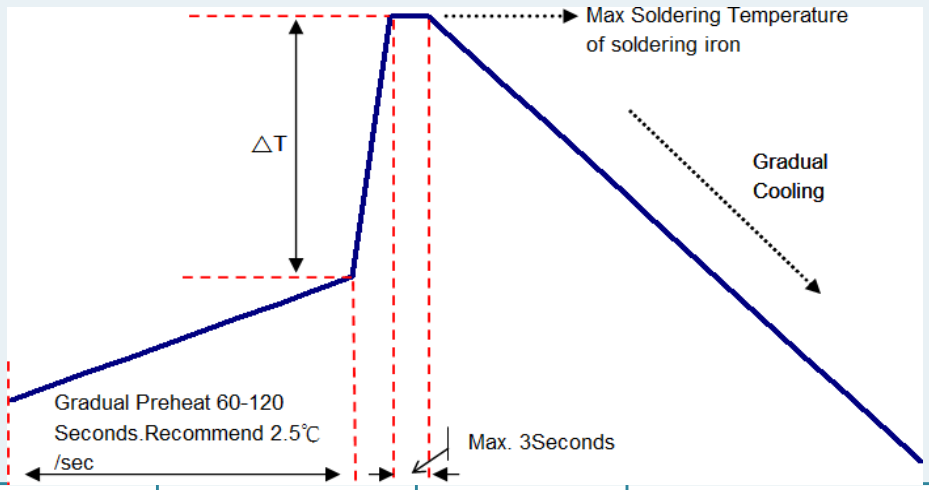
## PREHEAT

In order to minimize the risk of thermal shock during soldering, a carefully controlled preheat is required. The rate of preheat should not exceed 3°C per second.

## SOLDERING

Use middy activated rosin RA and RMA fluxes do not use activated flux. The amount of solder in each solder joint should be controlled to prevent the damage of chip capacitors caused by the stress between solder, chips, and substrate.
a.) Hand soldering :

**Fig. 10.1 Hand Soldering Profile**




| Chip Size | Pre-Heat temp. | ΔT | Max. soldering iron temp. |
|---|---|---|---|
| ≤1206 | ≥150°C | ≤150°C | ≤350°C |
| 1210~2225 | ≥150°C | ≤130°C | ≤280°C |

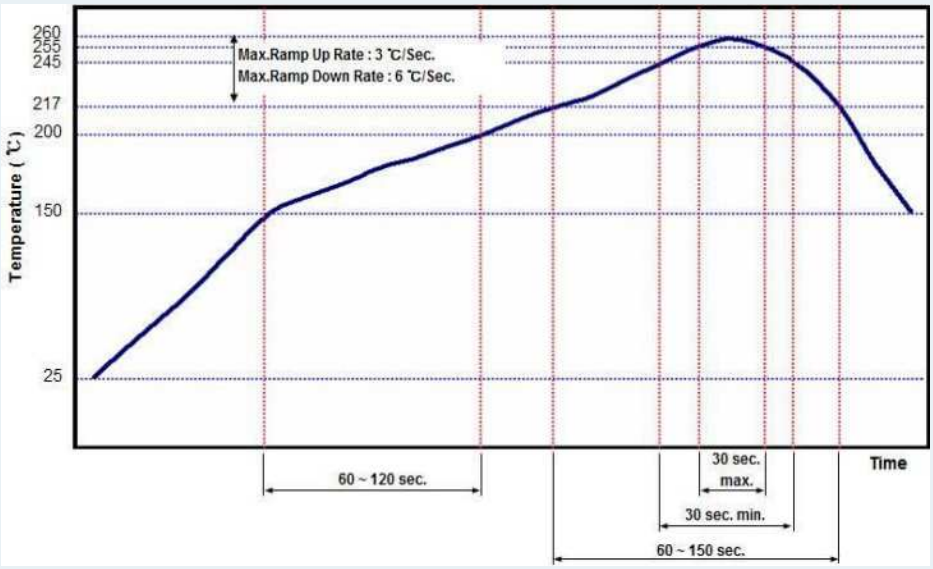
* Soldering iron tip diameter ≤1.0 mm and wattage max. 20W.
* The Capacitors shall be pre-heated and that the temperature gradient between the devices and the tip of the soldering iron.
* The required amount of solder shall be melted on the soldering tip.
* The tip of iron should not contact the ceramic body directly.
* The Capacitors shall be cooled gradually at room temperature after soldering.
* Forced air cooling is not allowed.

## CCAB

10. APPLICATION NOTES

b.) Reflow soldering :

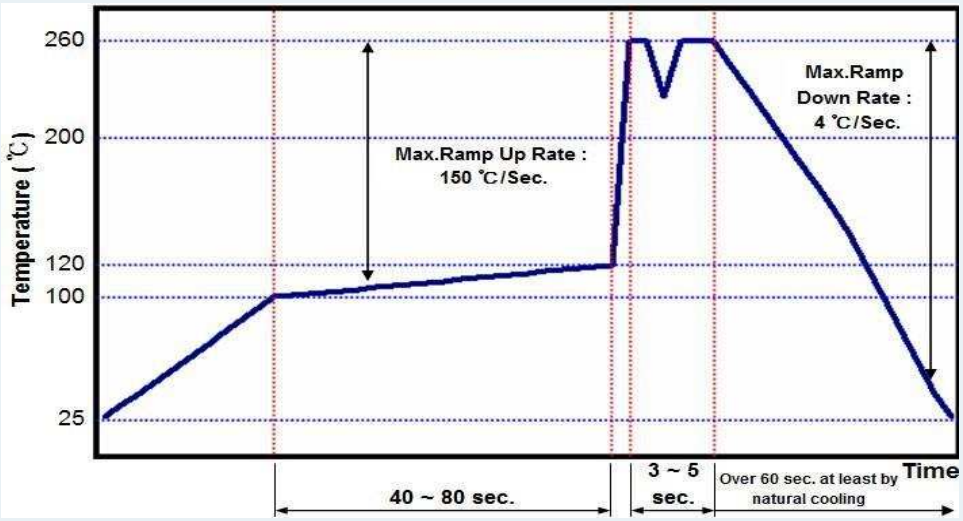
Fig. 10.2 Reflow soldering profile




For Sn/Ag/Cu Series solder paste (Pb-Free)

c.) Wave soldering :

Fig. 10.3 Wave soldering profile




For Sn/Ag/Cu Series solder paste (Pb-Free)

Soldering conditions :

Class I :

| Size Inch (mm) | Temper. Cher. | Capacitance | Condition | |
|---|---|---|---|---|
| | | | Wave | Reflow |
| ≤0402 (1005) | All Class I | All | X | O |
| 0603 (1608) | All Class I | All | Not recommended | O |
| 0805 (2012) | All Class I | All | Not recommended | O |
| 1206 (3216) | All Class I | All | Not recommended | O |
| ≥1210 (3225) | All Class I | All | X | O |

## CCAB

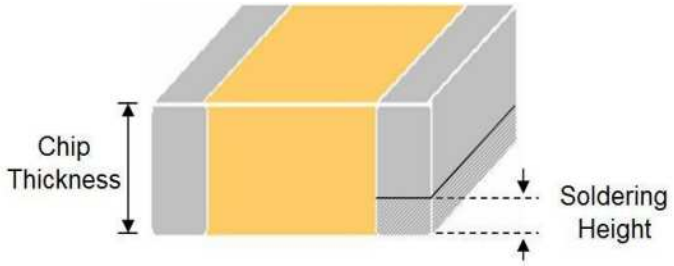
10. APPLICATION NOTES

Soldering conditions :

Class II :

| Size Inch (mm) | Temper. Cher. | Capacitance | Condition | |
|---|---|---|---|---|
| | | | Wave | Reflow |
| ≤0402 (1005) | All Class II | All | X | O |
| 0603 (1608) | All Class II | Cap. <2.2μF | Not recommended | O |
| | | Cap. ≥2.2μF | X | O |
| 0805 (2012) | All Class II | Cap. <4.7μF | Not recommended | O |
| | | Cap. ≥4.7μF | X | O |
| 1206 (3216) | All Class II | Cap. <4.7μF | Not recommended | O |
| | | Cap. ≥4.7μF | X | O |
| ≥1210 (3225) | All Class II | All | X | O |

Soldering height :

| | |
|---|---|
| The solder climbing minimum height is suggesting to 25% of chip thickness or 500um whichever is less. (Reference from IPC-610E) |   |

## COOLING

After soldering, cool the chips and the substrate gradually to room temperature. Natural cooling in air is recommended to minimize stress in the solder joint.

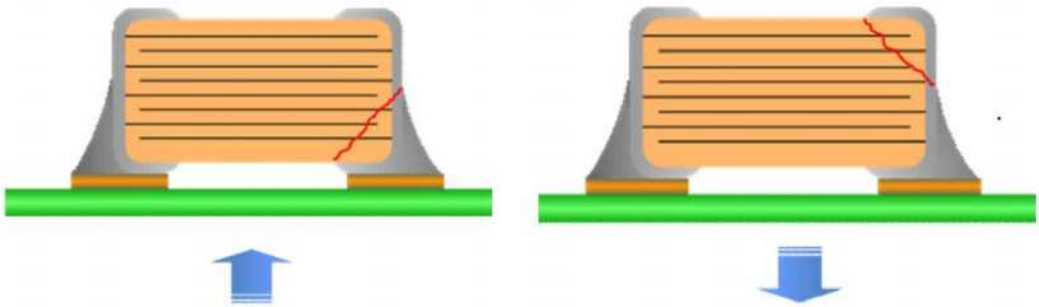
## CLEANING

All flux residues must be removed by using suitable electronic-grade vapor-cleaning solvents to eliminate contamination that could cause electrolytic surface corrosion. Good results can be obtained by using ultrasonic cleaning of the solvent. The choice of the proper system is depends upon many factors such as component mix, flux, and solder paste and assembly method. The ability of the cleaning system to remove flux residues and contamination from under the chips is very important.

**CCAB**

11. Typical Bending Cracks of MLCC

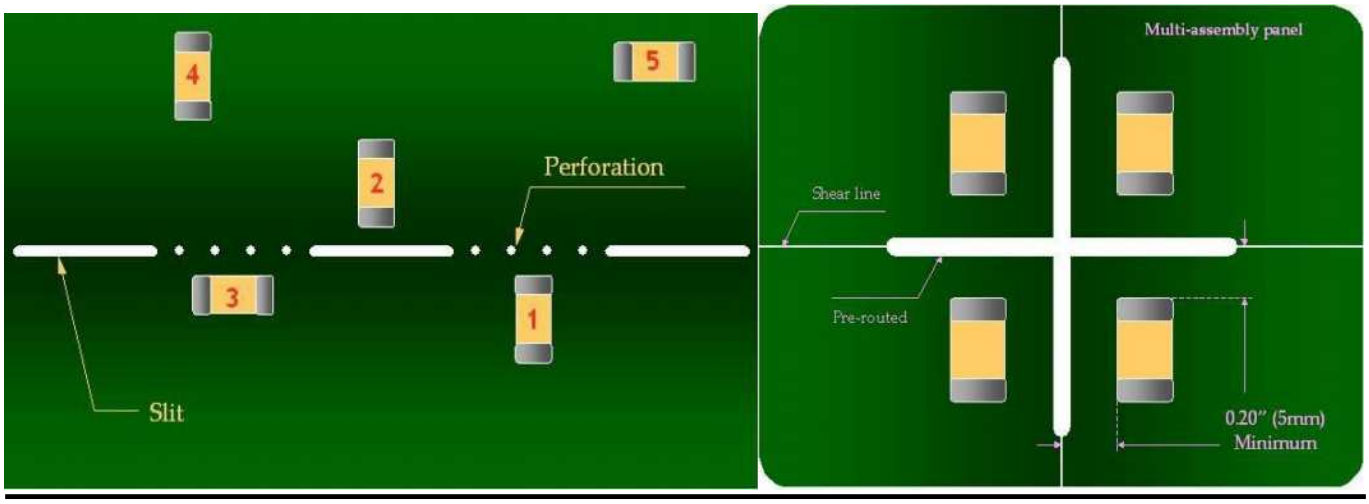
MLCC ceramic body is consisted of rigidity material. It will be suffered compressive and tensional stress when the carried board is bended. If the suffered stress is over ceramic body strength, the bending crack is occurred. Therefore, the bending crack will be only occurred after soldering process.



force force

12. The stress v.s. position on PCB during bending

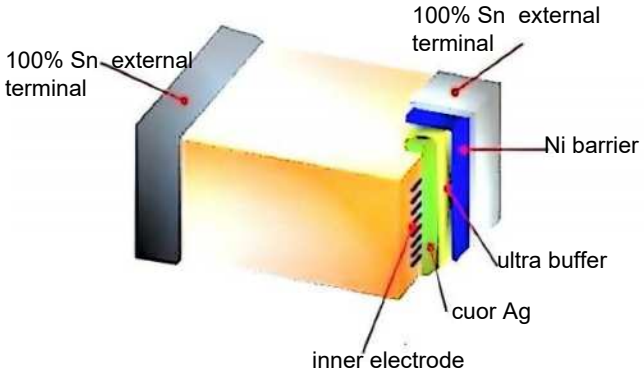
Chip mounting close to board separation point

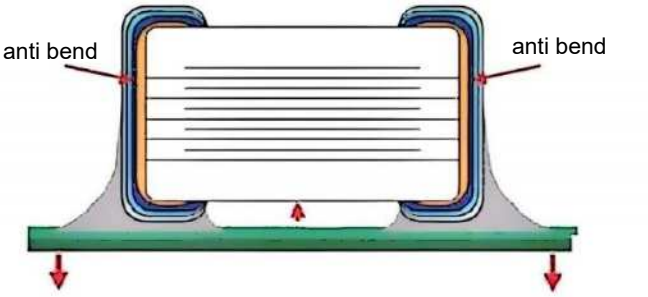



**Magnitude of stress 1 > 2 3 > 4 > 5**

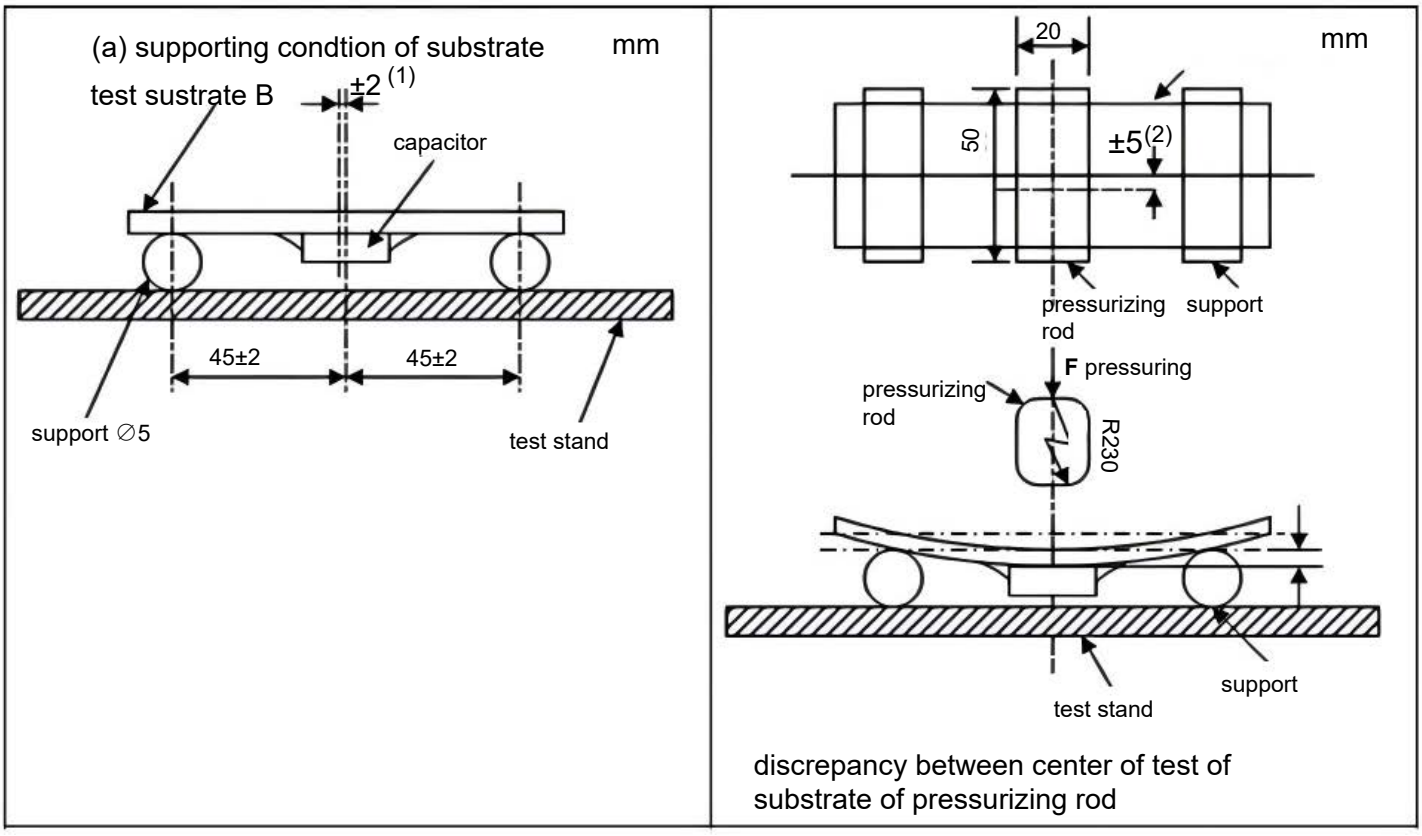
## CCAB

13. Structure




14. Illustration of Bending Test



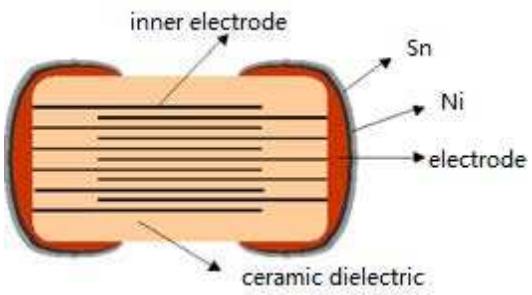
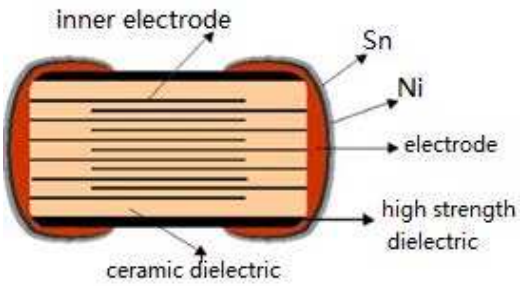
CCAG



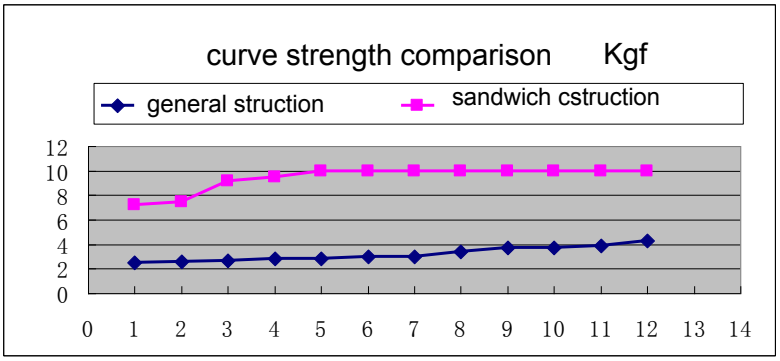
| High Strength MLCC |
|---|
| Product features:<br>This kind of products improves the fracture problem of the II medium-X7R structurally. Compared with increasing the product thickness and the number of internal electrode layers to enhance the anti-external stress effect of MLCC, it is more significant, and the cost is more advantageous than "soft terminal". At present, this kind of products has been widely used in lighting industry and home appliance industry |

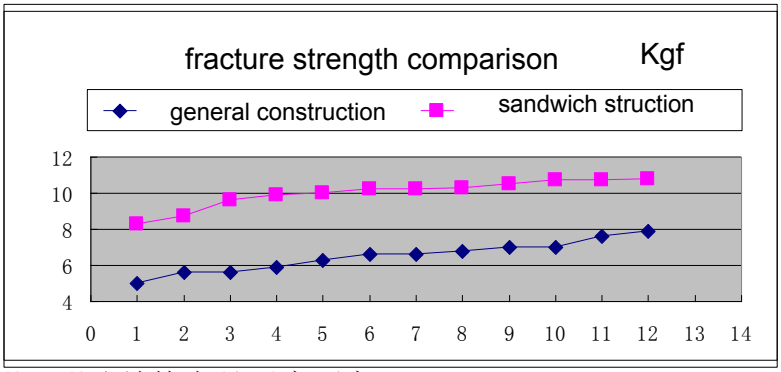
## 1. 产品优势 Advantages

### 1.1 产品结构对比 Structure

| 传统产品结构<br>Structure of traditional product | 三明治产品结构<br>Structure of the sandwich-structure product |
|---|---|
|  |  |
| 相对传统产品，三明治机构产品增加了高强度介质层。<br>The new product called sandwich-structure add high intensity layers . | |

### 1.2 产品强度对比 Product Intensity Comparison




以上对比，表明三明治结构产品强度更高 Above all , the sandwich-structure products are more stronger .

**2．产品应用 Product Application**

三明治结构产品用于替代低容值常规 X7R 产品，如节能灯、LED 灯、通用电源、工业控制、家电等要求元件具有较好抗折强度以保证产品可靠性的领域。

With better flexural strength to ensure product reliability, Sandwich MLCC is used to replace normal low capacitance X7 R MLCCs, which applied to ESL,LED lamp, Power supply, Industrial control, Home appliance fields.

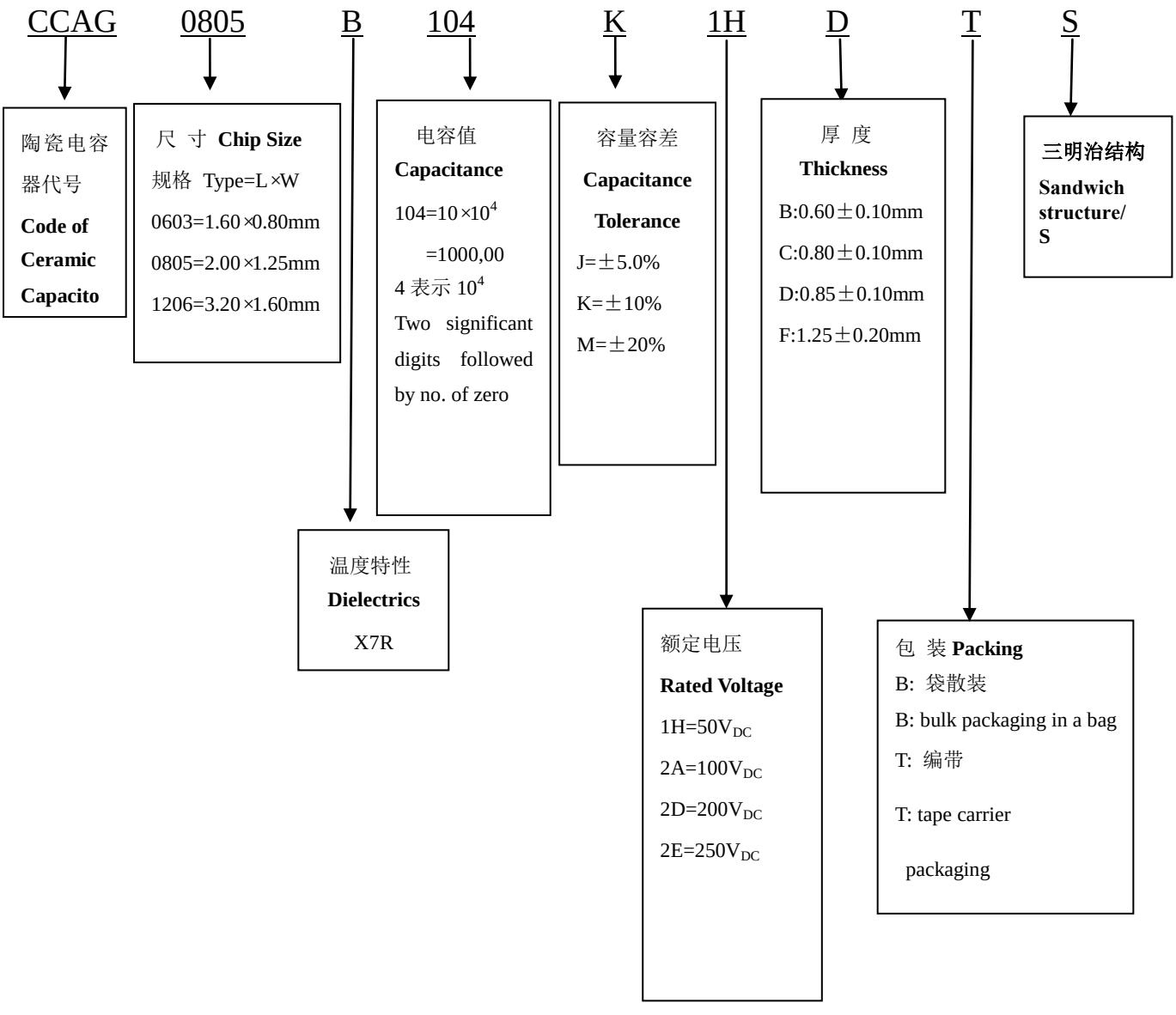
**3．电容器及介质分类 Types of Capacitor and Dielectric Material**

※X7R：此类介质材料的电容器为Ⅱ类电容器，具有较高的介电常数，容量比Ⅰ类电容器高，具有较稳定的温度特性，适用于容量范围广，稳定性要求不高的电路中，如隔直、耦合、旁路、鉴频等电路中。

※ X7R： material is a kind of material has high dielectric constant. The capacitor made of this kind material is considered as Class Ⅱ capacitor whose capacitance is higher than that of class Ⅰ. These capacitors are classified as having a semi-stable temperature characteristic and used over a wide temperature range, such in these kinds of circuits, DC-blocking, decoupling, bypassing, frequency discriminating etc.

**4．产品命名 Product Parts Number**

(例) (example)



## 5. 产品容量范围 Product Capacitance Range

CCAG

| SIZE | 25V | 50V | 100V | 200V | 250V |
|---|---|---|---|---|---|
| 0603 | / | 220pF~100nF | 220pF~18nF | 220pF~6.8nF | 220pF~6.8nF |
| 0805 | 220pF~luF | 220pF~330nF | 220pF~100nF | 220pF~47nF | 220pF~33nF |
| 1206 | 220pF~470nF | 220pF~470nF | 220pF~470nF | 220pF~100nF | 220pF~100nF |

| SIZE | 500V | 630V | 1000V | 2000V |
|---|---|---|---|---|
| 0603 | / | / | / | / |
| 0805 | 220pF~10nF | / | / | / |
| 1206 | 220pF~22nF | 220pF~10nF | 220pF~10nF | 220pF~1nF |

| | |
|---|---|
| Capacitance range | 220pF~1uF |
| Tolerance | ±10%, ±20% |
| Operating temperature | -55℃~+125℃ |
| Temperature coefficient | ±15% |
| Rated voltage | 50V/100V/200V/250V/500V/630V/1000V/2000 |
| Wear and tear | Refer to the X7R Loss Standard Table |
| Insulation resistance | 10 GΩ or 100 Ω.F or more, whichever is smaller |
| Pressure-resistant | $U_R$≤50V，2.5*$U_R$（rated voltage）<br>100≤$U_R$ <500V，2* $U_R$（rated voltage）<br>500≤$U_R$ <2000V，1.5* $U_R$（rated voltage）<br>2000≤$U_R$，1.2* $U_R$（rated voltage） |
| Test voltage | 1.0±0.2Vrms |
| Frequency of testing | Cp ≤ 10μF, 1KHz ± 10%<br>Cp>10μF，120Hz±24Hz |

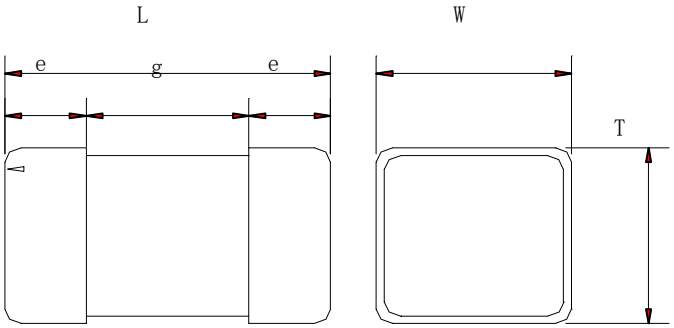
**X7R/DF**

| specifications | $U_R$ | Capacity range | DF |
|---|---|---|---|
| 0603 | ≤25V | C≤0.47μF | ≤7% |
| | | C≥0.47μF | ≤10% |
| | >25V | C≤0.1μF | ≤5% |
| | | 0.1μF<C≤0.22μF | ≤7% |
| | | C>0.22μF | ≤10% |
| 0805 | ≤25V | C≤1μF | ≤7% |
| | | C>1μF | ≤10% |
| | >25V | C≤0.47μF | ≤7% |
| | | C>0.47μF | ≤10% |
| 1206 | ≤25V | C<2.2μF | ≤7% |
| | | 2.2μF≤C≤47μF | ≤10% |
| | >25V | C<1μF | ≤7% |
| | | 1μF≤C≤47μF | ≤10% |

## 6. 产品尺寸 Dimensions

规格： 0603、0805、1206。

Chip Size： 0603、0805、1206。




| 规格 Type | L (mm) | W (mm) | e (mm) | g min (mm) | T (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0603 | 1.60±0.10 | 0.80±0.10 | 0.2~0.5 | 0.5 | 0.80±0.10 | —— | —— | —— | —— |
| 0805 | 2.00±0.10 | 1.25±0.10 | 0.2~0.7 | 0.7 | 0.60±0.10 | 0.85±0.10 | 1.25±0.20 | —— | —— |
| 1206 | 3.20±0.20 | 1.60±0.20 | 0.3~0.8 | 1.6 | 0.85±0.10 | 1.25±0.20 | —— | —— | —— |

## 7. 技术要求和测试条件 Specification and Test Condition

### 7.1 外观 Appearance

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 无损伤或异常<br>No defects or abnormalities | 目视检查<br>Visual inspection. |

### 7.2 尺寸 Dimensions

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 在要求的范围内<br>Within the specified dimensions | 用千分尺<br>Using calipers on micrometer |

### 7.3 容量 Capacitance

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 在要求的容值容差范围内<br>Within the specified tolerance<br>J: ±5%； K: ±10%； M: ±20% | 1.0±0.2Vrms, 1KHz±10% |
| 备注：测试温度：25℃±3℃，测试湿度：＜70%RH. | | |

### 7.4 损耗 Dissipation Factor

| 类型 Dielectrics | 技术要求 Specification | 测试条件 TestingCondition |
|---|---|---|
| X7R | DF≤2.5% | 1.0±0.2Vrms, 1KHz±10%, |
| 备注：测试温度：25℃±3℃，测试湿度：＜70%RH. | | |

## 7.5 绝缘电阻 Insulation Resistance

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | $U_R$ ≤ 50V， 大于 10 GΩ 或 500Ω-F(大于其中较小的数值)<br>$U_R$≤50V ， More than 10 GΩ or 500Ω·F, whichever is smaller. | $U_R$≤50V $U_{测}$=$U_R$ ；<br>充电时间:60±5 秒<br>温度:25℃<br>Charge Time:60±5sec<br>Temperture:25℃ |
| | $U_R$＞50V，大于 4GΩ 或 100s (大于其中较小的数值)<br>$U_R$＞50V，More than 4 GΩ or 100s , whichever is smaller. | $U_R$≤400V $U_{测}$=$U_R$<br>$U_R$＞400V $U_{测}$=400V；<br>充电时间:60±5 秒<br>温度:25℃<br>Charge Time:60±5sec<br>Temperture:25℃ |
| 备注：测试温度：25℃±3℃，测试湿度：＜70%RH. | | |

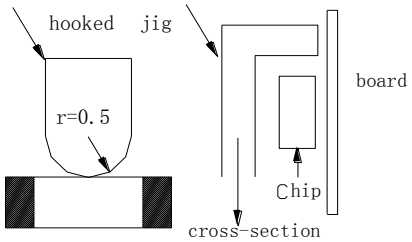
## 7.6 耐电压 Dielectric Strength

| 类型 Dielectrics | 额定电压范围<br>Rated voltage range | 耐电压性能测试方法<br>Measuring Method |
|---|---|---|
| X7R | $U_R$≤50V | 施加额定电压的 250%,5 秒,最大电流不超过 50mA<br>Force 300%Rated voltage for 5second. Max..current should not exceed 50 mA. |
| | 100V≤$U_R$＜500V | 施加额定电压的 200%,5 秒,最大电流不超过 50mA<br>Force 200%Rated voltage for 5second. Max..current should not exceed 50 mA. |
| | 500V≤$U_R$＜1000V | 施加额定电压的 150%+100V,5 秒,最大电流不超过 50mA<br>Force 150%+100V Rated voltage for 5second. Max..current should not exceed 50 mA. |
| | 1000V≤$U_R$＜2000V | 施加额定电压的 150%,5 秒,最大电流不超过 50mA<br>Force 150%Rated voltage for 5second. Max..current should not exceed 50 mA. |
| | $U_R$≥2000V | 施加额定电压的 120%,5 秒,最大电流不超过 30mA<br>Force 120%Rated voltage for 5second. Max..current should not exceed 30 mA. |

## 7.7 静电容量温度特性 Temperature Coefficient of Capacitance

<table>
<tr><th>类型<br>Dielectrics</th><th>技术要求 Specification</th><th>测试条件 Testing Condition</th></tr>
<tr><td>X7R</td><td>容 量 变 化 在 ±15% 以 内<br>Capacitance change within ±15%</td><td>按系列温度顺序测试电容容量<br>Measure capacitance under follow table list temperature:
<table>
<tr><th>步骤<br>STEP</th><th>X7R</th></tr>
<tr><td>1</td><td>25 ±2</td></tr>
<tr><td>2</td><td>-55±3</td></tr>
<tr><td>3</td><td>25 ±2</td></tr>
<tr><td>4</td><td>125±3</td></tr>
<tr><td>5</td><td>25 ±2</td></tr>
</table>
与 25℃时的电容容量相比较，电容容量在温度范围内的变化在要求的范围之内。<br>The ranges of capacitance change compared within the above 25℃ value over the temperature ranges shall be within the specified ranges.</td></tr>
</table>

## 7.8 附着力 Adhesion

<table>
<tr><th>类型 Dielectrics</th><th>技术要求 Specification</th><th>测试条件 Testing Condition</th></tr>
<tr><td>X7R</td><td>端电极无松动，也无其它不良现象<br>No removal of the terminations or other defect shall occur.</td><td>施加 6N 的压力，并保持 10±1 秒<br>The pressurizing force shall be 6N (=600g*f) and the duration of application shall be 10±1sec.<br>
</td></tr>
</table>

## 7.9 可焊性 Solderability of Termination

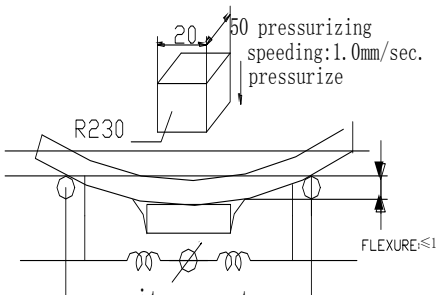
CCAG

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 端电极挂锡面积不小于 95%，针孔或粗糙面积小于 5%<br>95% min. coverage of both terminal electrodes and less than 5% have pin holes or rough spots. | 锡炉温度：245±5℃<br>浸入时间：2±1 秒<br>两侧端电极完全浸入焊锡炉<br>Solder temperature: 245±5℃<br>Dipping time: 2±1 seconds.<br>Completely soak both terminal electrodes in solder |

## 7.10 耐焊性 Resistance to leaching

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 端电极挂锡面积不小于 95%，针孔或粗糙面积小于 5%,外观无开裂<br>95% min. coverage of both terminal electrodes and less than 5% have pin holes or rough spots.<br>No remarkable visual damage. | 预热：120℃~150℃/60 秒<br>锡炉温度：270±5℃<br>浸入时间： 10±1 秒<br>两侧端电极完全浸入焊锡炉<br>Solder temperature: 270±5℃<br>preheated: 120℃~150℃/60sec<br>Dipping time: 10±1 seconds.<br>Completely soak both terminal electrodes in solder |

## 7.11 端电极结合强度 Bending

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 无可见损伤；<br>容量变化小于等于±12.5%<br><br>No remarkable visual damage<br>Cp change ≤±12.5% | 将片状电容器安装在测试夹具上，按图所示方向以 1.0mm/s 的速率施加压力，弯曲 1mm。<br>Solder the capacitor on testing substrate and put it on testing stand. The middle part of substrate shall successively be pressurized by pressuring rod at a rated of about 1.0mm/sec. Until the deflection<br><br> |

### 7.12 耐焊接热 Resistance to Soldering Heat

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 无明显可见损伤<br>容量变化在±7.5%以内<br>DF 满足产品初始值的要求<br>IR 满足产品初始值的要求<br><br>No remarkable visual damage<br>Cp change within ±7.5%<br>DF meets initial standard value.<br>IR meets initial standard value. | 焊接温度: 270±5℃<br>预热: 120~150℃ 60 秒<br>浸入时间: 10±1 秒<br>在室温下放置 24±2 (COG) 或 48±4(X7R) 小时以后测量<br>试验后在标准条件下恢复<br><br>Soldering temperature: 270±5℃<br>Preheating: 120~150℃ 60sec.<br>Dipping time: 10±1 seconds.<br>Measurement to be made after being kept at room temperature for 48±4(X7R) hours.<br>Recov ery for the following period under the standard condition after test. |

### 7.13 温度快速循环 Temperature Cycle

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 无明显可见损伤<br>容量变化在±7.5%以内<br><br>No remarkable visual damage<br>Cp change within ±7.5% | 按下列步骤进行 5 次循环:<br>To perform 5 cycles of the stated environment |

| 步骤 Step | 温度 Temperature | 时间 Time |
|---|---|---|
| 1 | 下限类别温度 +0/-3℃ Min. operating Temp.+0/-3℃ | 30min |
| 2 | 25℃ | 2~3 in |
| 3 | 上限类别温度 +3/-0℃ Max. operating Temp.+3/-0℃ | 30 min |
| 4 | 25℃ | 2~3 min |

在室温下放置 48±4(X7R) 小时以后测量

Measurement to be made after being kept at room temperature for 48±4hrs (X7R) at room temperature, then measure.


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### 7.14 稳态湿热 Moisture Resistance ,steady state

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 外观无明显可见损伤<br>容量变化在±12.5%以内<br>DF 为初始值的 2 倍以下<br>IR:大于 1000MΩ 或 50Ω-F(取较小值)<br><br>Cp change within ±12.5%<br>DF:Not more than 2 times of initial value<br>R*C≥1000MΩ or 50Ω·F, whichever is smaller | 测试温度: 40±2℃<br>湿度: 90~95% RH<br>测试时间: 500 ±12hrs<br>在室温下放置 48±4 小时以后测量<br><br>Test temperature: 40±2℃<br>Humidity: 90~95% RH<br>Testing time: 500 ±12hrs<br>Measurement to be made after being kept at room temperature for 48±4hrs |

### 7.15 耐湿负荷 Damp heat with load

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 外观无明显可见损伤<br>容量变化在±12.5%以内<br>DF 为初始值的 2 倍以下<br>IR: 大于 500MΩ 或 25Ω-F(取较小值)<br>No remarkable visual damage<br>Cp change≤±12.5%<br>DF:Not more than 2 times of initial value<br>R*C≥500MΩ or 25Ω·F, whichever is smaller | 测试温度: 40±2℃<br>湿度: 90~95% RH<br>电压: 额定电压<br>测试时间: 500 ±12hrs<br>在室温下放置 48±4(X7R) 小时以后测量<br>*在 40±2℃温度下，将电容器加额定直流电压 1hrs.<br>去掉电压，将电容器在室温下放置 48±4hrs<br>测量初始电容值。<br><br>Test temperature: 40±2℃<br>Humidity: 90~95% RH<br>Voltage: 100% of the rated voltage<br>Testing time: 500 ±12hrs<br>Measurement to be made after being kept at room temperature for 48±4hrs (X7R)<br>*Apply the rated DC voltage for 1 hour at 40±2℃.<br>Remove and let sit for 48±4hrs at room temperature.<br>Perform the initial measurement. |
| 备注 remark：仅适用于常规产品，不适用于中高压产品 only general specification | | |

## 7.16 耐久性 Life Test

| 类型 Dielectrics | 技术要求 Specification | 测试条件 Testing Condition |
|---|---|---|
| X7R | 外观无明显可见损伤<br>容量变化在 12.5%以内<br>DF 为初始值的 2 倍以下<br>IR:大于 1000MΩ 或 50Ω-F(取较小值)<br>No remarkable visual damage<br>Cp change≤±12.5%<br>DF:Not more than 2 times of initial value<br>R*C≥1000MΩ or 50Ω·F, whichever is smaller | 测试温度：上限类别温度±3℃<br>电压：<br>UR＜100V 2 倍额定电压<br>100V≤UR＜500V 1.5 倍额定电压<br>测试时间: 1000 小时<br><br>在室温下放置 48±4(X7R) 小时以后测量<br><br>Test temperature:<br>Max. Operating Temp. ±3℃<br>Voltage:<br>UR＜100V 200% of the rated voltage<br>100V≤UR＜500V 150% of the rated voltage<br>500V≤UR＜1000V 120% of the rated voltage<br>1000V≤UR 100% of the rated voltage<br>Testing time: 1000 hrs<br><br>Measurement to be made after being kept at room temperature for 48±4hrs (X7R) |
| | | |

SMD MLCC



# 1. INTRODUCTION

JINPEI safety multilayer ceramic chip capacitor（SMD MLCC) are designed for surge or lightning immunity in modem facsimile and other equipments. The capacitors of CCAC series are class X1/Y2 compliant, and the capacitors of CCAD series are class X2 compliant respectively.

The green type capacitors in CCAC/CCAD series are manufactured by using environmentally friendly materials without lead or cadmium.

The terminations are composed of plated nickel and pure tin to feature the superior leaching resistance during soldering.

# 2. FEATURES

a. High reliability and stability.
b. Small size and high capacitance.
c. Safety standard :
EN 60384-14 : 2013/A1 : 2016
IEC 60384-14 : 2013/AMD1 : 2016
UL 60384-14 (Ed 2.0) UL 62368-1 (2nd Edition)

# 3. APPLICATIONS

a. Modem.
b. Facsimile.
c. Telephone.
d. Other electronic equipment for lighting or surge protection and isolation.

# 4. PART NUMBER

| CCAC | 1808 | B | 102 | K | 3H | T | F | Q |
|---|---|---|---|---|---|---|---|---|
| JINPEI Series | Size | Dielectric | Capacitance | Tolerance | Impulse Voltage | Packaging | Thickness | Customer Code |
| Table 1 | Table 2 | Table 3 | Table 4 | Table 5 | Table 6 | Table 7 | Table 8 | Table 9 |

| Table 1 | JINPEI Family |
|---|---|
| Code | Description |
| CCAC | Safety X1 & Y2 |
| CCAD | Safety X2 |

| Table 2 | Size | | | | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| 06 | 1206 (3216) | 12 | 1812 (4532) | 20 | 2220 (5750) |
| 08 | 1808 (4520) | 21 | 2211 (5728) | | |

| Table 3 | Dielectric Material Characteristics | | |
|---|---|---|---|
| Code | Description | Code | Description |
| N | NPO/C0G | B | X7R |

| Table 4 | Capacitance Rule Code | | |
|---|---|---|---|
| Code | Description | Code | Description |
| 0R5 | 0.5pF | 104 | 104=10x104=100nF |

| Table 5 | Tolerance | | | | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| D | ±0.50pF | G | ±2% | K | ±10% |
| F | ±1% | J | ±5% | M | ±20% |

| Table 6 | Impulse Voltage | | | | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| 2E | 2.5KV | 3000V 3U | 2.5KV | 3H | 5KV |
| | | | | 3I | 6KV |

| Table 7 | Packaging Type | | |
|---|---|---|---|
| Code | Description | Code | Description |
| B | Bulk | T | Embossed Tape |

| Table 8 | Thickness Description | | | | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| C | 1.25±0. 10 mm | E | 1.60±0.20 mm | G | 2.50±0.30 mm |
| D | 1.40±0. 15 mm | F | 2.00±0.20 mm | H | 2.80±0.30 mm |

| Table 9 | Customer Code | | | | |
|---|---|---|---|---|---|
| Code | Description | Code | Description | Code | Description |
| G | RoHscompliant | Q | Anti-Arcing | E | Anti-Bending |
| H | High reliability | Z | Anti-Arcing+Anti-Bending | | |

# 5. EXTERNAL DIMENSIONS

| Size Inch (mm) | L (mm) | W (mm) | Code / T (mm) | MB (mm) |
|---|---|---|---|---|
| 1206（3216） | 3.30±0.40 | 1.60±0.20 | See No.4 Reference Table 8 | 0.50±0.25 |
| 1808（4520） | 4.50+0.6/-0.3 | 2.00±0.30 | | 0.50±0.25 |
| 1812（4532） | 4.50+0.6/-0.3 | 3.20±0.40 | | 0.50±0.25 |
| 2211（5728） | 5.70±0.50 | 2.80±0.40 | | 0.60±0.30 |
| 2220（5750） | 5.70±0.50 | 5.00±0.50 | | 0.60±0.30 |

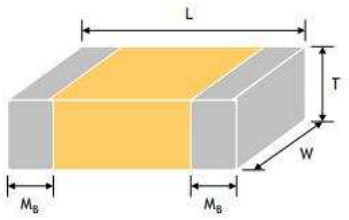



Fig. 5.1 The outline of MLCC

# 6. GENERAL ELECTRICAL DATA

| | | | |
|---|---|---|---|
| **Dielectric** | C0G | X7R | |
| **Size** | 1808, 1812, 2211 | 1808, 1812, 2211, 2220 | 1206 |
| **Rated voltage** | 250Vac | | 2.5KVdc |
| **Capacitance range** | X1/Y2 Class (Impulse 6KV) : 4pF ~ 100pF<br>X1/Y2 Class (Impulse 5KV) : 3pF ~ 720pF<br>X2 Class : 3pF ~ 1000pF | X1/Y2 Class : 100pF ~ 4700pF<br>X2 Class : 100pF ~ 56000pF | 100pF ~ 1000pF |
| **Capacitance tolerance** | Cap. Rang: Cap.<10pF — D (±0.5pF); 10pF≤Cap. — F (±1%), G (±2%), J (±5%), K (±10%), M (±20%) | J (±5%)<br>K (±10%)<br>M (±20%) | |
| **Tan δ** | Cap. Range: Cap.<30pF — Q≥400+20C; Cap.≥30pF — Q≥1000 | ≤2.5% | |
| **Capacitance & Tan δ Test condition** | Measured at the condition of 30~70% related humidity | | |
| | For 25°C at ambient temperature | Preconditioning for Class II MLCC : Perform a heat treatment at 150±10°C for 1 hour, then leave in ambient condition for 24±2 hours before measurement | |
| | Cap. Rang: Cap.≤1000pF — 1.0±0.2Vrms, 1.0MHz±10%; Cap.>1000pF — 1.0±0.2Vrms, 1.0KHz±10% | 1.0±0.2Vrms, 1.0KHz±10%, at 25°C ambient temperature | |
| **Insulation resistance** | ≥100GΩ or RxC≥1000Ω-F, whichever is smaller | ≥10GΩ or RxC≥500Ω-F, whichever is smaller | |
| **Operating temperature** | -55°C to +125°C | | |
| **Temperature coefficient** | ±30ppm /°C | ±15% | |
| **Termination** | Cu or Ag/Ni/Sn (lead-free termination) | | |

# 7. PACKAGE DIMENSION AND QUANTITY

| Size | Thickness (mm) | Plastic tape | |
|---|---|---|---|
| | | 7" reel | 13" reel |
| 1206(3216) | 1.25±0. 10 | 3k | 10k |
| 1808(4520) | 1.25±0. 10 | 2k | 10k |
| | 1.40±0. 15 | 2k | 10k |
| | 1.60±0.20 | 2k | 8k |
| | 2.00±0.20 | 1k | 6k |
| 1812(4532) | 1.25±0. 10 | 1k | - |
| | 1.60±0.20 | 1k | - |
| | 2.00±0.20 | 1k | - |
| | 2.50±0.30 | 0.5k | 3k |
| 2211(5728) | 1.60±0.20 | 1k | - |
| | 2.00±0.20 | 1k | - |
| | 2.50±0.30 | 0.5k | - |
| | 2.80±0.30 | 0.5k | - |
| 2220(5750) | 2.00±0.20 | 1k | - |
| | 2.50±0.30 | 0.5k | 2k |

| REEL DIMENSIONS | | |
|---|---|---|
| Size | 1206 | 1808, 1812, 2211, 2220 |
| Reel size | 7" | 7" |
| C | 13.0 +0.5/-0.2 | 13.0 +0.5/-0.2 |
| W1 | 8.4 +1.5/-0 | 12.4 +2.0/-0 |
| A | 178.0 ±0. 1 | 178.0 ±0. 1 |
| N | 60.0 +1.0/-0 | 60.0 +1.0/-0 |

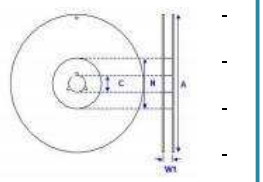


Fig. 7.1 The dimension of reel

## 7.1. EMBOSSED TAPE DIMENSIONS

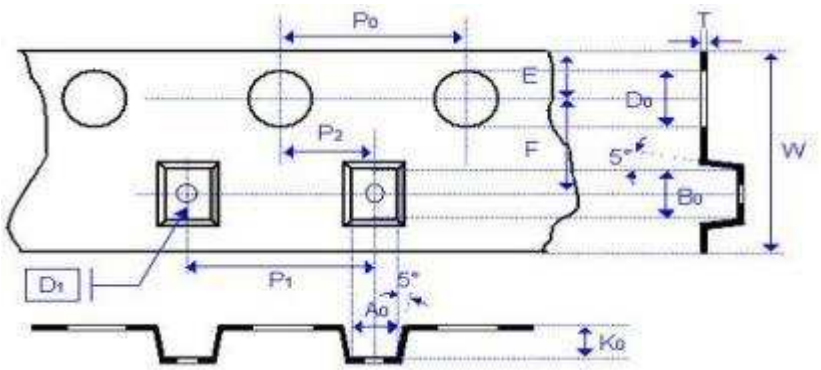



Fig. 7.2 The dimension of plastic tape

| Size | 1206 | 1808 | | 1812 | | 2211 | | 2220 | |
|---|---|---|---|---|---|---|---|---|---|
| Chip Thickness | 1.25±0.10 | 1.25±0.10<br>1.40±0.15<br>1.60±0.20 | 2.00±0.20 | 1.25±0.10<br>1.60±0.20<br>2.00±0.20 | 2.50±0.30 | 1.60±0.20<br>2.00±0.20 | 2.50±0.30<br>2.80±0.30 | 2.00±0.20 | 2.50±0.30<br>2.80±0.30 |
| $A_0$ | <2.00 | <2.50 | <2.50 | <3.90 | <3.90 | <3.30 | <3.30 | <5.80 | <5.80 |
| $B_0$ | <3.60 | <5.30 | <5.30 | <5.30 | <5.30 | <6.50 | <6.50 | <6.50 | <6.50 |
| T | 0.23±0.05 | 0.25±0.05 | 0.25±0.05 | 0.25±0.05 | 0.25±0.05 | 0.30±0.10 | 0.30±0.10 | 0.30±0.10 | 0.30±0.10 |
| $K_0$ | <2.50 | <2.50 | <2.50 | <2.50 | <3.00 | <2.50 | <3.10 | <2.50 | <3.10 |
| W | 8.00±0.10 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 |
| P0 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 |
| 10xP0 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 | 40.00±0.20 |
| P1 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 | 8.00±0.10 |
| P2 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 |
| D0 | 1.50+0.10/-0 | 1.50+0.10/-0 | 1.50+0.10/-0 | 1.50+0.10/-0 | 1.50+0.10/-0 | 1.50+0.10/-0 | 1.50+0.10/-0 | 1.50+0.10/-0 | .50+0.10/-0 |
| D1 | 1.00±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 | 1.50±0.10 |
| E | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 |
| F | 3.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 |
| Unit : | mm | mm | mm | mm | mm | mm | mm | mm | mm |

# 8. APPLICATION NOTES

## STORAGE

To prevent the damage of solderability of terminations, the following storage conditions are recommended :
Indoors under 5 ~ 40°C and 20% ~ 70% RH.
No harmful gases containing sulfuric acid, ammonia, hydrogen sulfide or chlorine.
Packaging should not be opened until the capacitors are required for use. If opened, the pack should be re-sealed as soon as is practicable. Taped product should be stored out of direct sunlight, which might promote deterioration in tape or adhesion performance. The product is recommended to be used within 12 months after shipment and checked the solderability before use.

## HANDLING

Chip capacitors are dense, hard, brittle, and abrasive materials. They are liable to suffer mechanical damage, in the form of cracks or chips. Chip Capacitors should be handled with care to avoid contamination or damage. To use vacuum or plastic tweezers to pick up or plastic tweezers is recommended for manual placement. Tape and reeled packages are suitable for automatic pick and placement machine.

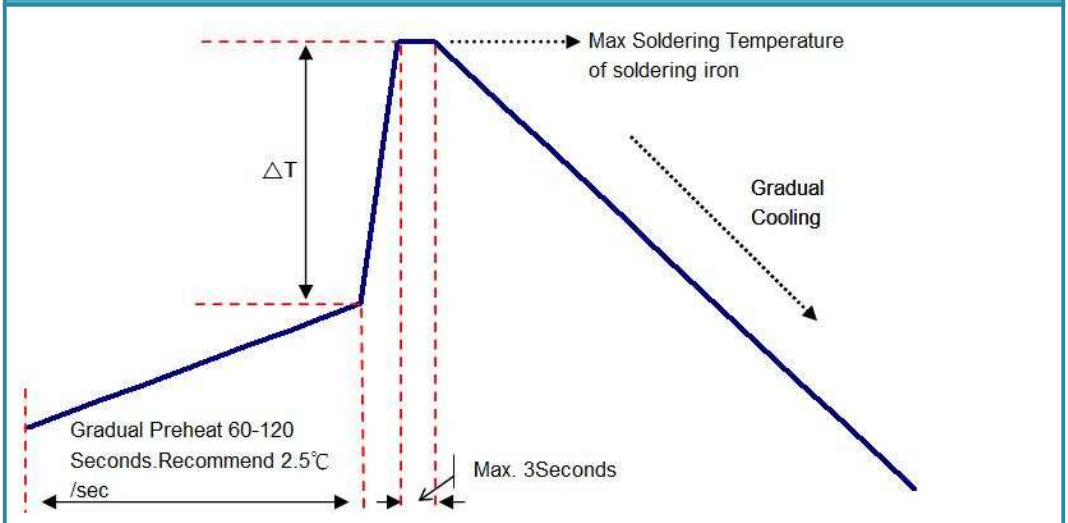
## PREHEAT

In order to minimize the risk of thermal shock during soldering, a carefully controlled preheat is required. The rate of preheat should not exceed 3°C per second.

## SOLDERING

Use middy activated rosin RA and RMA fluxes do not use activated flux. The amount of solder in each solder joint should be controlled to prevent the damage of chip capacitors caused by the stress between solder, chips, and substrate.
a.) Hand soldering :

**Fig. 8.1 Hand Soldering Profile**

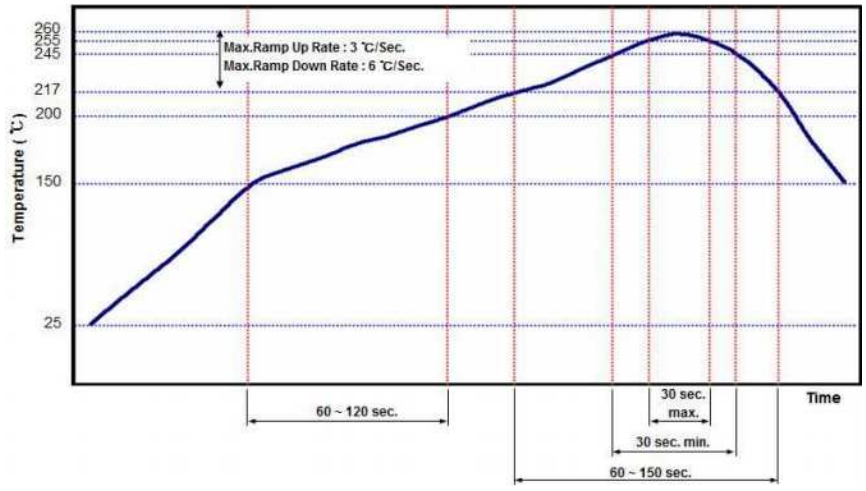



| Chip Size | Pre-Heat temp. | △T | Max.soldering iron temp. |
|---|---|---|---|
| ≤1206 | ≥150°C | ≤150°C | ≤350C |
| 1210~2225 | ≥150°C | ≤130°C | ≤280°C |

* Soldering iron tip diameter ≤1.0 mm and wattage max. 20W.
* The Capacitors shall be pre-heated and that the temperature gradient between the devices and the tip of the soldering iron.
* The required amount of solder shall be melted on the soldering tip.
* The tip of iron should not contact the ceramic body directly.
* The Capacitors shall be cooled gradually at room temperature after soldering.
* Forced air cooling is not allowed.

b.) Reflow soldering :

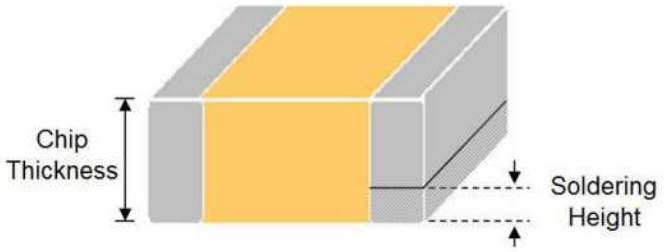
**Fig. 8.2 Reflow soldering profile**




For Sn/Ag/Cu Series solder paste (Pb-Free)

c.) Wave soldering :
Do not apply wave soldering for size >1206 products, the condition for FH06X series products please contactwith our sales representative.

Soldering height :

| | |
|---|---|
| The solder climbing minimum height is suggesting to 25% of chip thickness or 500um whichever is less. (Reference from IPC-610E) |  |

## COOLING

After soldering, cool the chips and the substrate gradually to room temperature. Natural cooling in air is recommended to minimize stress in the solder joint.

## CLEANING

All flux residues must be removed by using suitable electronic-grade vapor-cleaning solvents to eliminate contamination that could cause electrolytic surface corrosion. Good results can be obtained by using ultrasonic cleaning of the solvent. The choice of the proper system is depends upon many factors such as component mix, flux, and solder paste and assembly method. The ability of the cleaning system to remove flux residues and contamination from under the chips is very important.

# CCAH AEC-Q200

For General Automotive Grade



| dielectric | COG/NPO CG/ N | X7R / B | X7S / K |
|---|---|---|---|
| temperature | -55℃--125℃ | -55℃--125℃ | -55℃--125℃ |
| coefficient | ±30ppm/℃ | ±15% | ±22% |

## Use precautions

Please be sure to attach the purchase specification before using this product.

## Safety precautions

When using this product, please pay attention to safety matters.

### Application restrictions

Before using our products, please contact us with the following applications that require high reliability in particular to prevent defects that may directly cause damage to the life, body or property of a third party.

① Aircraft equipment ② Aerospace equipment ③ Underwater equipment ④ Power plant control equipmentt
⑤ Medical equipment ⑥ Transportation equipment (vehicles, trains, ships, etc.) ⑦ Traffic signal equipment
⑧ disaster prevention/crime prevention equipment ⑨ Data processing equipment
⑩ Complexity and/or reliability requirements similar to those of the above applications.

## Transportation and storage methods

1. Transport

The packaging products are suitable for modern transportation, and should be protected from rain and acid and alkali corrosion during transportation. They shall not be thrown by gravity or squeezed violently.

2. Storage (Refer to IEC 61760-2, Clause 6 Storage conditions/IEC 60721-3-1: 2018, class 1K21)

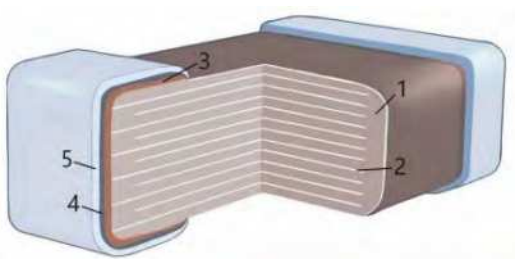
The storage period of the product with good weldability is: two years from the date of production. Do not open the tape before using the product (in the case of well packed and delivered), and the product should be used within three months after opening the tape.

Storage temperature: 5℃~40℃ Storage temperature: 5℃~40℃
Storage relative humidity: 10%~75% Storage relative humidity: 10%~75%
Environment: Harmless chemical environment Environment: Harmless chemical environment
Packaging: original packaging of core sound Packaging: original packaging of core sound
Solar radiation: 700 W/m², direct light should be avoided Solar radiation: 700 W/m², direct light should be avoided

## Characteristic

- Complies with AEC-Q200 standard
- Complies with MSL 1 standard
- Complies with J-STD-020D standard
- High reliability and equipment reliability
- Passed 100% six-sided appearance inspection test

## Structure diagram




| No. | name |
|---|---|
| 1 | dielectric |
| 2 | Internal electrode (nickel) |
| 3 | External electrodes (copper) |
| 4 | nickel layer |
| 5 | The tin layer |

## Application

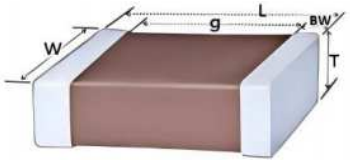
- Car audio and video
- Body electronics
- High reliability
- Industrial applications

## Part number example

| CCAH | 0603 | B | 104 | K | 1H | G | T |
|---|---|---|---|---|---|---|---|
| ( 1 ) | ( 2 ) | ( 3 ) | ( 4 ) | ( 5 ) | ( 6 ) | ( 7 ) | ( 8 ) |

| No. | size code | | | | | |
|---|---|---|---|---|---|---|
| (1) Application | CCAH: General purpose for automobiles | | | | | |
| ( 2 ) size | code | inch | the metric system (mm) | | | |
| | 00R4 | 008004 | 0201 | | | |
| | 01R5 | 01005 | 0402 | | | |
| | 0201 | 0201 | 0603 | | | |
| | 0402 | 0402 | 1005 | | | |
| | 0603 | 0603 | 1608 | | | |
| | 0805 | 0805 | 2012 | | | |
| | 1206 | 1206 | 3216 | | | |
| | 1210 | 1210 | 3225 | | | |
| | 1808 | 1808 | 4520 | | | |
| | 1812 | 1812 | 4532 | | | |
| | 2220 | 2220 | 5750 | | | |
| ( 3 ) temperature characteristic | Class I：C0G<br>Class II：X7R X7S | | | | | |
| ( 4 ) Capacitance value | The expression of capacitance value>= 10pF:<br>First 2×10^3<br>104=10×10^4=100nF<br>123=12×10^3=12nF<br>The expression of capacitance value <10pF: R30=0.3pF, 1R0=1pF | | | | | |
| ( 5 ) Capacitance tolerance | A：±0.05pF | B：±0.1pF | C：±0.25pF | D：±0.5pF | F：±1.0% | G：±2% |
| | J：±5% | K：±10% | M：±20% | | | |
| ( 6 ) Rated voltage (Vdc) | 0E：2.5 | 0G：4.0 | 0J：6.3 | 1A：10 | 2C：16 | 2E：25 |
| | 1V：35 | 1H：50 | 1J：63 | 2A：100 | 2D：200 | 2E：250 |
| | 2W：450 | 2H：500 | 2J：630 | 3A：1000 | 3D：2000 | 3E：2500 |
| | 3U：3000 | 3G：4000 | | | | |
| ( 7 ) Product thickness (mm) | A：0.10 | B：0.13 | C：0.18 | D：0.20 | E：0.30 | F：0.45 |
| | G：0.50 | H：0.60 | J：0.80 | K：0.85 | L：1.15 | M：1.25 |
| | N：1.60 | P：1.90 | Q：2.00 | S：2.30 | R：2.50 | |
| (8) Packaging method | T: Finished packaging (7"Reel) | | | | | |

# CCAH AEC-Q200




## Size & packing specifications

In general, φ180mm (7") trays are used for packaging.
Five discs are packaged in one box and twelve boxes are a whole box.

| specifications | size (mm) | | | | Packaging (7") | |
|---|---|---|---|---|---|---|
| | Length | Width | Thickness | g | Packaging quantity (pieces) | manner of packing |
| 01R5 | 0.40±0.02 | 0.20±0.02 | 0.20±0.02 | 0.13 | 20,000 | paper tape |
| 0201 | 0.60±0.03 | 0.30±0.03 | 0.30±0.03 | 0.20 | 15,000 | paper tape |
| | 0.60+0.10/-0.03 | 0.30+0.10/-0.03 | 0.30+0.10/-0.03 | | | |
| 0402 | 1.00±0.05 | 0.50±0.05 | 0.50±0.05 | 0.30 | 10,000 | paper tape |
| | 1.00±0.07 | 0.50±0.07 | 0.50±0.07 | | | |
| | 1.00±0.10 | 0.50±0.10 | 0.50±0.10 | | | |
| | 1.00+0.20/-0.05 | 0.50+0.20/-0.05 | 0.50+0.20/-0.05 | | | |
| 0603 | 1.60±0.10 | 0.80±0.10 | 0.80±0.10 | 0.60 | 4,000 | paper tape |
| | 1.60±0.20 | 0.80±0.20 | 0.80±0.20 | | | |
| specifications | size (mm) | | | | Packaging (7") | |
| | Length | Width | Thickness | g | Packaging quantity (pieces) | manner of packing |
| 0805 | 2.00±0.10 | 1.25±0.10 | 0.60±0.10 | 0.70 | 4,000 | paper tape |
| | | | 0.85±0.10 | | | |
| | 2.00±0.20 | 1.25±0.20 | 1.25±0.20 | | 3,000/2,000 | Plastic strips |
| 1206 | 3.20±0.20 | 1.60±0.20 | 0.85±0.10 | 1.50 | 4,000 | paper tape |
| | | | 1.25±0.20 | | 3,000/2,000 | Plastic strips |
| | | | 1.60±0.20 | | 2,000 | Plastic strips |
| | 3.20±0.30 | 1.60±0.30 | 1.60±0.30 | | 2,000 | Plastic strips |
| 1210 | 3.20±0.30 | 2.50±0.20 | 0.85±0.10 | 1.50 | 2,000 | Plastic strips |
| | | | 1.25±0.20 | | 2,000 | Plastic strips |
| | | | 1.60±0.20 | | 2,000 | Plastic strips |
| | | | 2.00±0.20 | | 2,000/1,000 | Plastic strips |
| | 3.20±0.40 | 2.50±0.30 | 2.50±0.30 | | 2,000/1,000 | Plastic strips |
| 1808 | 4.50±0.40 | 2.00±0.30 | 1.25±0.20 | | 2,000 | Plastic strips |
| | | | 1.60±0.20 | | 2,000 | Plastic strips |
| | | | 2.00±0.20 | | 1,000 | Plastic strips |
| 1812 | 4.50±0.30 | 3.2±0.30 | 1.25±0.20 | 2.50 | 1,000 | Plastic strips |
| | | | 1.60±0.20 | | 1,000 | Plastic strips |
| | 4.50±0.40 | 3.2±0.40 | 2.00±0.20 | | 1,000 | Plastic strips |
| | | | 2.50±0.30 | | 500/1,000 | Plastic strips |
| 2220 | 5.70±0.40 | 5.0±0.40 | 1.25±0.2 | 3.50 | 1,000 | Plastic strips |
| | | | 1.60±0.20 | | 700 | Plastic strips |
| | | | 2.00±0.20 | | 700 | Plastic strips |
| | | | 2.50±0.3 | | 700 | Plastic strips |

* Please refer to the specification of a single particle for details


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JINPEI

# CCAH AEC-Q200

**Capacitance range** 【C0G】0402~0805

| Size (inch) | thickness (Code) | RV | COG | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | R20 | R30 | 1R0 | 2R2 | 4R7 | 100 | 150 | 220 | 330 | 470 | 680 | 101 | 151 | 221 | 331 | 471 | 681 | 102 | 152 | 222 | 332 | 472 | 682 | 103 | 333 |
| 0402 | 0.50 (G) | 25 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| | | 50 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| 0603 | 0.80 (J) | 25 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | | 50 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | | 100 | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| 0805 | 0.60 (H) | 25 | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| | | 50 | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| | 1.25 (M) | 25 | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | |
| | | 50 | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | |
| 1206 | 1.60(N) | 630 | | | | | | | | | | | | | | | | | | | | | | | | ■ | |
| 1210 | 2.50 (R) | 500 | | | | | | | | | | | | | | | | | | | | | | | | | ■ |
| | | 630 | | | | | | | | | | | | | | | | | | | | | | | | | ■ |

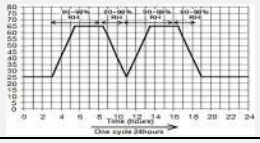
【X7R/X7S】0201~1210

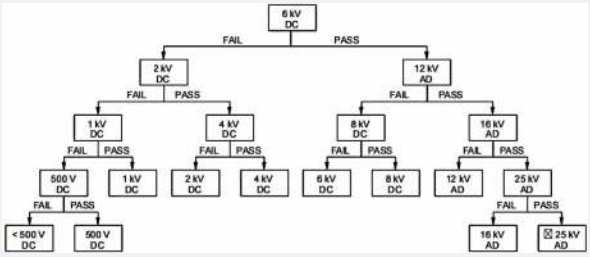
| Size (inch) | thickness (Code) | RV (Vdc) | X7R/X7S/X7T | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 151 | 221 | 471 | 102 | 152 | 222 | 472 | 103 | 223 | 473 | 104 | 224 | 474 | 105 | 225 | 475 | 106 | 226 |
| 0201 | 0.30 (E) | 16 | | | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | |
| | | 25 | | | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | |
| 0402 | 0.50(G) | 6.3 | | | | | | | | | | | | | | X7S | | | | |
| | | 10 | | | | | | | | | | ■ | | | | X7S | | | | |
| | | 16 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| | | 25 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| | | 50 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| | | 100 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | |
| 0603 | 0.80 (J) | 6.3 | | | | | | | | | | | | | | | | | X7T | |
| | | 10 | | | | | | | | | | | | | | ■ | | | | |
| | | 16 | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | |
| | | 25 | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | |
| | | 50 | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | | | |
| | | 100 | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| 0805 | 0.85 (K) | 16 | | | | | | | | | | ■ | ■ | ■ | | | | | | |
| | | 25 | | | | | | | | | | ■ | ■ | ■ | | | | | | |
| | | 50 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| | | 100 | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | |
| | | 250 | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | |
| | 1.25 (M) | 6.3 | | | | | | | | | | | | | | | | | ■ | |
| | | 10 | | | | | | | | | | | | | | | ■ | ■ | | |
| | | 16 | | | | | | | | | | | | | ■ | ■ | ■ | | X7S | |
| | | 25 | | | | | | | | | | | | | ■ | | | X7S | X7S | |

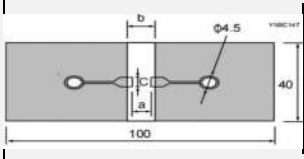
| Size (inch) | Thick (Code) | RV (Vdc) | X7R/X7S/X7T | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 151 | 221 | 471 | 102 | 152 | 222 | 472 | 103 | 223 | 473 | 104 | 224 | 474 | 105 | 225 | 475 | 106 | 226 |
| 0805 | 1.25 (M) | 50 | | | | | | | | | | | | | | | | X7S | | |
| | | 100 | | | | | | | | | | | | | | X7S | | | | |
| | | 250 | | | | | | | | | | | | | | | | | | |
| 1206 | 0.85 | 50 | | | | | | | | | | | | | | | | | | |
| | 1.25 (M) | 100 | | | | | | | | | | | | | | | | | | |
| | | 500 | | | | | | | | | | | | | | | | | | |
| | | 630 | | | | | | | | | | | | | | | | | | |
| | 1.60 (N) | 10 | | | | | | | | | | | | | | | | | | |
| | | 16 | | | | | | | | | | | | | | | | | X7S | |
| | | 25 | | | | | | | | | | | | | | | | | | |
| | | 50 | | | | | | | | | | | | | | | | | X7S | |
| | | 100 | | | | | | | | | | | | | | | X7S | | | |
| | | 250 | | | | | | | | | | | | | | | | | | |
| 1210 | 2.00 (Q) | 50 | | | | | | | | | | | | | | | | | | |
| | | 100 | | | | | | | | | | | | | | | | | | |
| | 2.50 (R) | 16 | | | | | | | | | | | | | | | | | | |
| | | 25 | | | | | | | | | | | | | | | | | | |
| | | 50 | | | | | | | | | | | | | | | | | | |
| 2220 | 2.30(S) | 100 | | | | | | | | | | | | | | | | | X7S | |

## Specifications and test methods

| No | item | Test specifications | | Test method (Reference standard: AEC-Q200-Rev E) | |
|---|---|---|---|---|---|
| 1 | Pre-and-Post-Stress Electrical Test | -- | | -- | |
| 2 | High Temperature Exposure(Storage) | surface | No defects or anomalies. | method of erection | Weld the capacitor to the test substrate |
| | | Capacitance changes | C0G: ±2.5% or ±0.25pF (whichever is greater)<br>X7R/X7S：±10% | Test temperature | 150+/-3℃ |
| | | Q or D.F. | Same as the initial specification value | testing time | 1000 +/-12 hours |
| | | I.R. | Same as the initial specification value | reprocessing | Leave at room temperature for 24 +/-2 hours, then measure |
| 3 | Temperature Cycling | surface | No defects or anomalies | method of erection | Weld the capacitor to the test substrate |
| | | Capacitance changes | C0G: ±2.5% or ±0.25pF (whichever is greater)<br>X7R/X7S：±10% | pretreatment | Heat treatment for 1 hour at 150+/-0/-10℃, then leave at room temperature for 24+/-2 hours before measurement |
| | | Q or D.F. | Same as initial specification value | period: | 15 minutes |
| | | I.R. | Same as initial specification value | temperature cycle | step 1: Minimum operating temperature +0/-3 — 15+/-32<br>step 2: room temperature — 1<br>step 3: Maximum operating temperature +3/-0 — 15+/-3<br>step 4: room temperature — 1 |
| | | | | reprocessing | Leave at room temperature for 24 +/-2 hours before measuring |
| 4 | (DPA) | surface | No defects or anomalies | No defects or anomalies | |
| 5 | Moisture Resistance | surface | No defects or anomalies | method of erection | Weld the capacitor to the test substrate |
| | | Capacitance changes | C0G: ±3% or ±0.3pF (whichever is greater)<br>X7R/X7S：±15% | Test temperature | +25℃ to +65℃ |
| | | | | Test humidity | 80% to 98% R.H. |
| | | Q or D.F. | Same as initial specification value | testing time | Test 10 times for 24 hours (see figure below) |

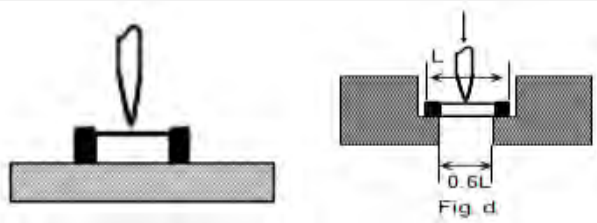
| No | item | Test specifications | | Test method (Reference standard: AEC-Q200-Rev E) | |
|---|---|---|---|---|---|
| 5 | Moisture Resistance | I.R. | Same as initial specification value | Temperature and humidity cycles |  |
| | | | | reprocessing: | Leave at room temperature for 24 +/-2 hours before measuring |
| 6 | Biased Humidity | surface | No defects or anomalies | method of erection | Weld the capacitor to the test substrate |
| | | Capacitance changes | C0G: ±2% or ±1pF (the larger value is taken as the standard) X7R/X7S: ±15% | Test temperature | 85+/-3℃ |
| | | | | Test humidity | 80% to 85% R.H. |
| | | Q or D.F. | Please refer to the specification sheet for a single particle | testing time | 1000 +/-12 hours |
| | | I.R. | Please refer to the specification sheet for a single particle | test voltage | Connect 100KΩ resistor and apply 150% R.V.<br>Rated voltage (not exceeding 630V) |
| | | | | Charging/discharge current | Maximum 50mA |
| | | | | reprocessing | Leave at room temperature for 24 +/-2 hours, then measure |
| 7 | Operational Life | surface | No defects or anomalies | method of erection | Weld the capacitor to the test substrate |
| | | Capacitance changes | C0G: ±2% or ±1pF (whichever is greater) X7R/X7S：±15% | Test temperature | Maximum operating temperature +/-3℃ |
| | | | | testing time | 1000+/-12h |
| | | Q or D.F. | Please refer to the specification sheet for a single particle | test voltage | Please refer to the specification sheet for a single particle |
| | | I.R. | Please refer to the specification sheet for a single particle | Charging/discharge current | Maximum 50mA |
| | | | | reprocessing: | Leave at room temperature for 24 +/-2 hours, then measure |
| 8 | Appearance | No defects or anomalies | | Visual (microscopic) examination | |
| 9 | Size Dimension | In terms of size | | Use a size measuring instrument | |
| 10 | Resistance to Solvents | surface | No defects or anomalies | According to MIL-STD-202 Method 215 | |
| | | Capacitance changes | Same as the initial specification value | | |
| | | Q or D.F. | Same as the initial specification value | | |
| | | I.R. | Same as the initial specification value | | |
| 11 | Mechanical Shock | surface | No defects or anomalies | method of erection | Weld the capacitor to the test substrate |
| | | Capacitance changes | Same as the initial specification value | wave form | Half sine |
| | | Q or D.F. | Same as the initial specification value | peak value | 1500g |
| | | I.R. | Same as the initial specification value | holding time | 0.5ms |
| | | | | velocity change | 4.7m/s |
| | | | | Direction and time of impact | Each direction should be impacted three times (18 impacts) along the three mutually perpendicular axes of the specimen |
| 12 | Mechanical Vibration | surface | No defects or anomalies | method of erection | Weld the capacitor to the test substrate |
| | | Capacitance changes | Same as the initial specification value | Vibration type | A 10Hz~2000Hz~10Hz |
| | | Q or D.F. | Same as the initial specification value | Vibration time | 20 minutes |
| | | I.R. | Same as the initial specification value | total amplitude | 1.5mm |
| | | | | Direction and time of vibration | Do 12 items (36 times in total) for every 3 mutually perpendicular directions |
| 13 | Resistance to Soldering Heat | surface | No defects or anomalies | test method | Solder bath method |
| | | Capacitance changes | Same as initial specification value | Welding material type | Sn-3.0Ag-0.5Cu（Lead Free Solder） |
| | | Q or D.F. | Same as initial specification value | Test temperature | 260+/-5℃ |
| | | I.R. | Same as the initial specification value | testing time | 10+/-1s |
| | | | | reprocessing | Leave at room temperature for 24 +/-2 hours, then measure |

<table>
<tr><th>No</th><th>item</th><th colspan="2">Test specifications</th><th colspan="2">Test method (Reference standard: AEC-Q200-Rev E)</th></tr>
<tr><td rowspan="4">14</td><td rowspan="4">Electrical static testing (ESD)</td><td>surface</td><td>No defects or anomalies</td><td colspan="2" rowspan="4">

Note: classified according to the highest electrostatic voltage level that can be withstand during electrostatic testing. Passive component HBM anti-static test flow chart (DC= direct contact discharge, AD= air discharge)</td></tr>
<tr><td></td><td></td><td>Capacitance changes</td><td>Same as initial specification value</td></tr>
<tr><td></td><td></td><td>Q or D.F.</td><td>Same as initial specification value</td></tr>
<tr><td></td><td></td><td>I.R.</td><td>Same as the initial specification value</td></tr>
<tr><td rowspan="5">15</td><td rowspan="5">solderability<br>Solderability（a）</td><td colspan="2" rowspan="5">Ninety-five percent of the terminals should be welded continuously and evenly</td><td>pretreatment</td><td>Heat treatment for 4 hours at 155℃</td></tr>
<tr><td>flux</td><td>Solution of rosin ethanol 25（mass）%</td></tr>
<tr><td>Type of solder</td><td>Sn-3.0Ag-0.5Cu（Lead Free Solder）</td></tr>
<tr><td>welding temperature</td><td>245+/-5℃</td></tr>
<tr><td>soak period<br>Infiltration rate and reproduction rate</td><td>5+0/-0.5s<br>25+/-5mm/s</td></tr>
<tr><td rowspan="5">16</td><td rowspan="5">electrical character<br>Electrical Characterization</td><td>Capacity</td><td>Within the specified tolerance</td><td>Test temperature</td><td>25℃</td></tr>
<tr><td>D.F.</td><td>Please refer to the specification sheet for a single particle</td><td></td><td>
<table>
<tr><th>material quality</th><th></th><th>Capacity</th><th>frequency</th><th>voltage</th></tr>
<tr><td rowspan="2">Class I</td><td rowspan="2">C0G</td><td>C≤1000pF</td><td>1.0±0.1MHz</td><td>0.5-5.0Vrms</td></tr>
<tr><td>C>1000pF</td><td>1.0±0.1KHz</td><td>1.0±0.2Vrms</td></tr>
<tr><td rowspan="2">Class II</td><td rowspan="2">X7R/ X7S</td><td>C>10uF</td><td>120Hz±24Hz</td><td>0.5V±0.1Vrms</td></tr>
<tr><td>C≤10uF</td><td>1.0±0.1KHz</td><td>1.0±0.2Vrms</td></tr>
</table>
</td></tr>
<tr><td>I.R.</td><td>Please refer to the specification sheet for a single particle</td><td>Test temperature<br>test voltage<br>charging interval<br>Charging/discharge current</td><td>25℃<br>rated voltage<br>Two minutes<br>Maximum 50mA</td></tr>
<tr><td>withstand voltage</td><td>Can withstand the test voltage without defects or abnormalities</td><td>Charging/discharge current</td><td>
<table>
<tr><th>Rated voltage (R.V.)</th><th>test voltage</th></tr>
<tr><td>R.V.≤100V</td><td>250% RV</td></tr>
<tr><td>100V < R.V.≤200V</td><td>150% RV+100</td></tr>
<tr><td>200V < R.V.≤500V</td><td>130% RV+100</td></tr>
<tr><td>R.V. > 500V</td><td>130% RV</td></tr>
<tr><td>R.V.≥1000V</td><td>120% RV</td></tr>
</table>
Maximum 50mA</td></tr>
<tr><td rowspan="4">17</td><td rowspan="4">Flat board test<br>Board Flex</td><td>surface</td><td>No defects or anomalies</td><td>method of erection</td><td>Weld the capacitor to the test substrate</td></tr>
<tr><td>Capacitance changes</td><td>C0G: ±1% or ±0.5pF (whichever is greater)<br>X7R/X7S：±10%</td><td>test method</td><td>The force is applied at a speed of 1mm/s to bend it, and the fixture radius is 340 mm</td></tr>
<tr><td>Q or D.F.</td><td>Same as initial specification value</td><td>The amplitude of bending</td><td>C0G：3mm<br>X7R/X7S：2mm</td></tr>
<tr><td>I.R.</td><td>Same as the initial specification value</td><td>duration</td><td>60s</td></tr>
<tr><td colspan="4"></td><td colspan="2">

<table>
<tr><th>size</th><th>a</th><th>b</th><th>c</th></tr>
<tr><td>0201</td><td>0.3</td><td>0.9</td><td>0.3</td></tr>
<tr><td>0402</td><td>0.5</td><td>1.5</td><td>0.6</td></tr>
<tr><td>0603</td><td>0.6</td><td>2.2</td><td>0.9</td></tr>
<tr><td>0805</td><td>0.8</td><td>3.0</td><td>1.3</td></tr>
<tr><td>1206</td><td>2.0</td><td>4.4</td><td>1.7</td></tr>
<tr><td>1210</td><td>2.0</td><td>4.4</td><td>2.6</td></tr>
</table>
unit:mm</td></tr>
<tr><td rowspan="4">18</td><td rowspan="4">Thrust test<br>Terminal Strength</td><td>surface</td><td>No defects or anomalies</td><td>method of erection</td><td>Weld the capacitor to the test substrate</td></tr>
<tr><td>Capacitance changes</td><td>Same as initial specification value</td><td rowspan="2">acting force</td><td rowspan="2">Apply a continuous force of 17.7N (1.8Kg)<br>*0402 Apply a force of 2N<br>*0201 Apply a force of 1N<br>Note: Apply force gradually to avoid impact on the measuring part</td></tr>
<tr><td>Q or D.F.</td><td>Same as initial specification value</td></tr>
<tr><td>I.R.</td><td>Same as the initial specification value</td><td>duration</td><td>60+1s</td></tr>
</table>

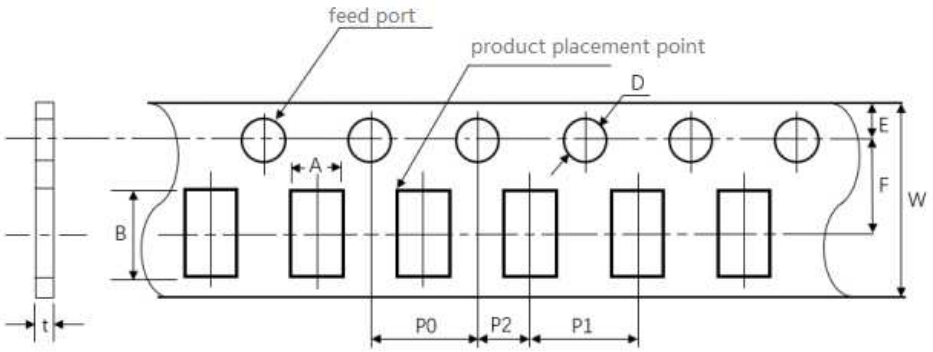

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<table>
<tr><td>No</td><td>item</td><td colspan="2">Test specifications</td><td colspan="3">Test method (Reference standard: AEC-Q200-Rev E)</td></tr>
<tr><td>19</td><td>Load testing<br>Beam Load Test</td><td>The allowable value should exceed the following values</td><td>Product L size is less than 2.5mm<br>Product T thickness> 0.5mm: 20N<br><br>Product L size> = 3.2mm<br>Product T thickness> = 1.25mm: 54N</td><td colspan="3">The pressure load provides a speed of 0.1mm/s<br>Location diagram: [Product L size ≤ 2.5mm][Product L size ≥ 3.2mm]<br><br><br>Fig. d</td></tr>
<tr><td rowspan="4">20</td><td rowspan="4">Temperature characteristics<br>Temperature Characteristics of Capacitance</td><td rowspan="2">change in capacitance</td><td rowspan="2">The nominal value of the temperature coefficient is shown in the rated value. The change of capacitance at reference temperature is shown in Table A.</td><td colspan="3">The capacitance change should be measured after 5 minutes at each specified temperature stage.<br>The capacitance value is used as a reference value and is the step value marked with "*".</td></tr>
<tr><td>Capacitance changes</td><td colspan="2">The value of the change is calculated by dividing the difference between the maximum and minimum values</td></tr>
<tr><td rowspan="2">Capacitance changes</td><td rowspan="2">C0G：±30ppm/℃<br>X7R/X7S：±15%</td><td>test voltage</td><td colspan="2">Less than 1.0Vrms</td></tr>
<tr><td>Temperature step (A)</td><td colspan="2"><table><tr><td>step</td><td>temperature</td></tr><tr><td>1</td><td>Reference temperature +/-2</td></tr><tr><td>2</td><td>Minimum operating temperature +/-3</td></tr><tr><td>3*</td><td>Reference temperature +/-2</td></tr><tr><td>4</td><td>Maximum operating temperature +/-3</td></tr><tr><td>5</td><td>Reference temperature +/-2</td></tr></table></td></tr>
</table>

## product packaging

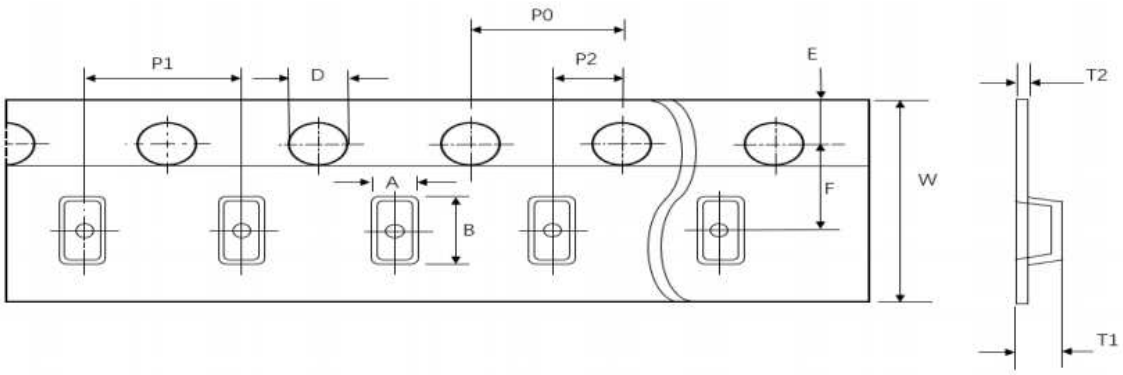
The tape reel packaging is the most common packaging method at present. A reel with a diameter of 180mm (7") can contain 1000~20000 capacitors, and can also be packaged according to customer requirements.

1. Tape size



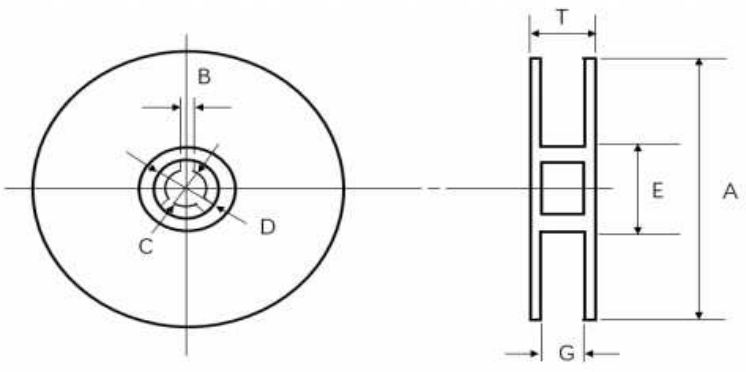

| | 01005（0402） | 0201（0603） | 0402（1005） | 0603（1608） | 0805（2012） | 1206（3216） |
|---|---|---|---|---|---|---|
| P1 | 2.00±0.05（1.0±0.05） | | | 4.00±0.10 | | |
| P0 | 4.00±0.10 | | | 4.00±0.10 | | |
| P2 | 2.00±0.05 | | | 2.00±0.05 | | |
| A | 0.25±0.02 | 0.38±0.03 | 0.62±0.05 | 1.00±0.01 | 1.55±0.10 | 2.05±0.10 |
| B | 0.46±0.02 | 0.68±0.03 | 1.12±0.05 | 1.90±0.10 | 2.30±0.10 | 3.60±0.10 |
| W | 8.00±0.30 | | | 8.00±0.30 | | |
| E | 1.75±0.10 | | | 1.75±0.10 | | |
| F | 3.50±0.05 | | | 3.50±0.05 | | |
| D | φ1.50+0.10/-0.03 | | | φ1.50+0.10/-0 | | |
| t | 0.25±0.02 | 0.35±0.03 | 0.60±0.05 | 1.1Below | | |

2. Size of plastic bags




| | 0805 ( 2012 ) | 1206 ( 3216 ) | 1210 ( 3225 ) | 1808 ( 4520 ) | 1812 ( 4532 ) | 2220 ( 5750 ) |
|---|---|---|---|---|---|---|
| P0 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 |
| P1 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 4.00±0.10 | 8.00±0.10 | 8.00±0.10 |
| P2 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 | 2.00±0.05 |
| A | <1.80 | <2.50 | <3.20 | <2.50 | <3.90 | <6.80 |
| B | <2.70 | <4.00 | <4.00 | <5.30 | <5.30 | <6.50 |
| W | 8.00±0.20 | 8.00±0.20 | 8.00±0.20 | 12.00±0.20 | 12.00±0.20 | 12.00±0.20 |
| E | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 | 1.75±0.10 |
| F | 3.5±0.05 | 3.5±0.05/5.50±0.05 | 3.5±0.05/5.50±0.05 | 5.50±0.05 | 5.50±0.05 | 5.50±0.05 |
| D | 1.5 ( +0.1/-0.0 ) | 1.5 ( +0.1/-0.0 ) | 1.5 ( +0.1/-0.0 ) | 1.5 ( +0.1/-0.0 ) | 1.5 ( +0.1/-0.0 ) | 1.5 ( +0.1/-0.0 ) |
| T1 | 2.5max. | 2.5max. | 3.5max. | 2.5max. | 3.0max. | 3.1max. |
| T2 | 0.23±0.05 | 0.23±0.05/0.95±0.05 | 0.23±0.05 | 0.30±0.1 | 0.30±0.1 | 0.30±0.1 |

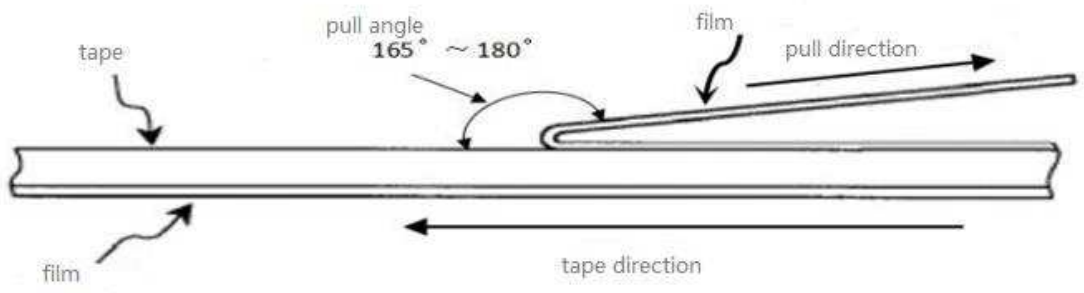
3. Disk size




| Disc size | A ( mm ) | B ( mm ) | C ( mm ) | D ( mm ) | E ( mm ) | G ( mm ) | T ( mm ) |
|---|---|---|---|---|---|---|---|
| 7"Reel | φ178±2.0 | 2.0±0.5 | φ13±1.0 | φ21±0.8 | φ 50 or more | 10±1.0 | 13±1.0 |

4. Instructions for use of roll tape

When the finished product is used, the upper belt (membrane) is peeled at a speed of 300±10mm/min and an Angle of 165°~180° (as shown in the figure below), with a peel strength of 0.1N~0.7N(10g.f≤peel force≤70g.f).

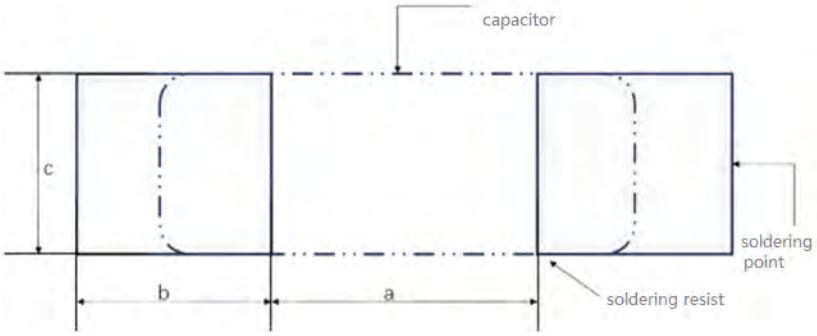




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5. Welded plate size

Please confirm the appropriate size by evaluating the actual SET/PCB.




wave-soldering

| Size (Unit: mm) | | a | b | c |
|---|---|---|---|---|
| 0603 | 1.60*0.80mm | 0.6~1.0 | 0.8~0.9 | 0.6~0.8 |
| 0805 | 2.00*1.25mm | 1.0~1.2 | 0.9~1.0 | 0.8~1.1 |
| 1206 | 3.20*1.60mm | 2.2~2.6 | 1.0~1.1 | 1.0~1.4 |

reflow soldering

| Size (Unit: mm) | | a | b | c |
|---|---|---|---|---|
| 0201 | 0.60*0.30mm | 0.2~0.3 | 0.2~0.35 | 0.25~0.4 |
| 0402 | 1.00*0.50mm | 0.3~0.6 | 0.35~0.5 | 0.4~0.7 |
| 0603 | 1.60*0.80mm | 0.6~0.9 | 0.6~0.8 | 0.6~1.0 |
| 0805 | 2.00*1.25mm | 1.0~1.4 | 0.6~0.8 | 1.2~1.4 |
| 1206 | 3.20*1.60mm | 1.8~2.1 | 1.9~1.3 | 1.5~1.9 |
| 1210 | 3.20*2.50mm | 2.0~2.4 | 1.0~1.2 | 1.8~2.3 |

## Use precautions

Multilayer ceramic chip capacitors (MLCCs) may experience short circuits, open circuits, or even smoke, burn, or explode under harsh working conditions exceeding the usage frequency specified in this acceptance document or related manuals, or when subjected to excessive external mechanical forces. Therefore, when using them, please first refer to the relevant instructions in this acceptance document. If you have any questions, please contact our Technical Department, Quality Control Department, or Production Department.

1. The amount of solder used in welding

A. Too much solder can cause damage to the capacitor due to excessive pressure at the end of the capacitor.



B. Too little solder and insufficient fixing force may cause poor contact between the capacitor chip and the line.

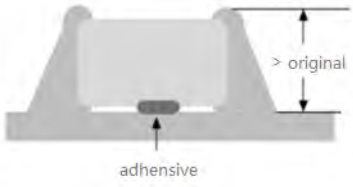


## 2. Recommended solder usage:

A. Optimal solder quantity for reflow welding




B. Optimal solder usage for peak welding




C. The best amount of solder to use when using a soldering iron for repair




## 3. Precautions for printing PCB board

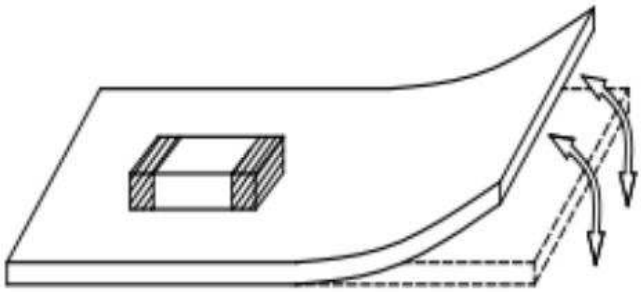
After the MLCC is installed on the PCB, do not apply any stress to the MLCC, such as bending or twisting the board.

· Stress as shown in the figure may cause cracks in MLCC when cutting the board.

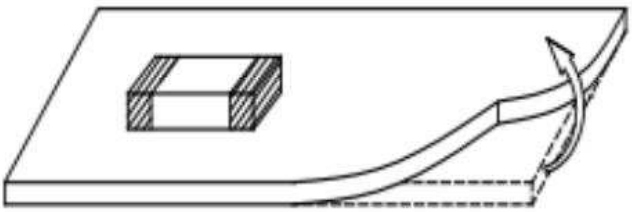
· MLCC cracking may lead to a decrease in insulation resistance, resulting in a short circuit.

· Avoid applying these types of stress to MLCC.

[Curving] [Twisting]



[Curving] [Twisting]



### 3.1 Precautions for cutting PCB board

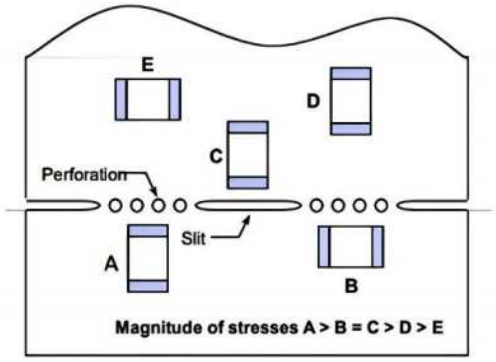
Check the PCB cutting method in advance.

The high density board is divided into many separate boards after welding. If the board bends or deforms during separation, the MLCC may break.

Carefully select a separation method to minimize PCB deformation

### 3.2 Product layout and chip PCB

When breaking a PCB, the layout should pay attention to mechanical stress depending on the position of the capacitor. The following example shows suggestions for better design.



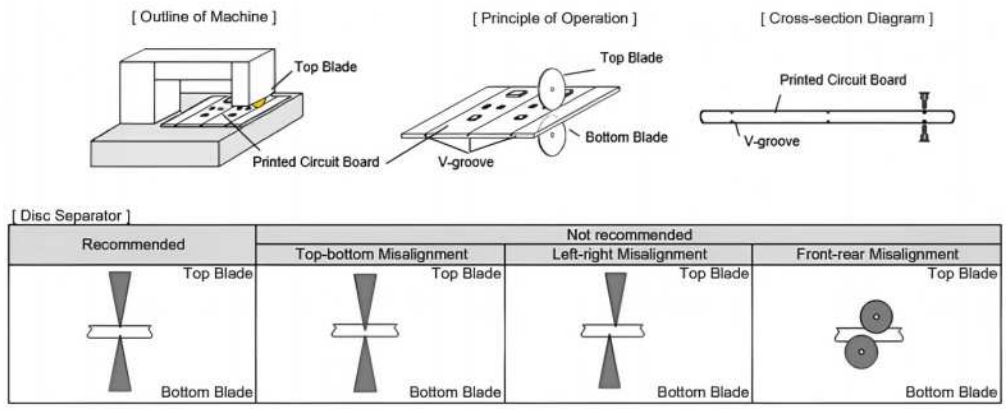

3.3 An example of a disk separator

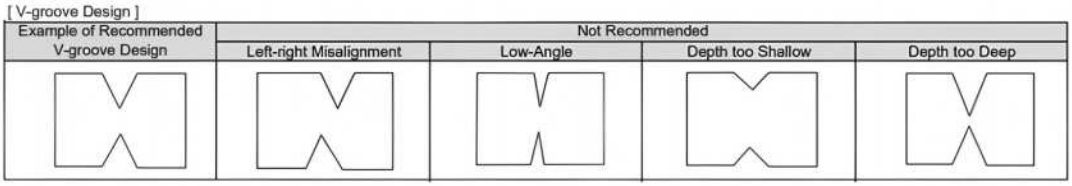
The contour of the disc separator is shown below. As shown in the working principle, the upper and lower blades align with the ν-shaped groove on the printed circuit board to separate it. In the following cases, bending stress will be applied to the board surface and cause cracks in the capacitor.

(1) The upper and lower blades are misaligned, such as the upper and lower, left and right, front and back directions

(2) The Angle of the V-shaped groove is too low, the depth of the V-shaped groove is too shallow, or the V-shaped groove is misaligned

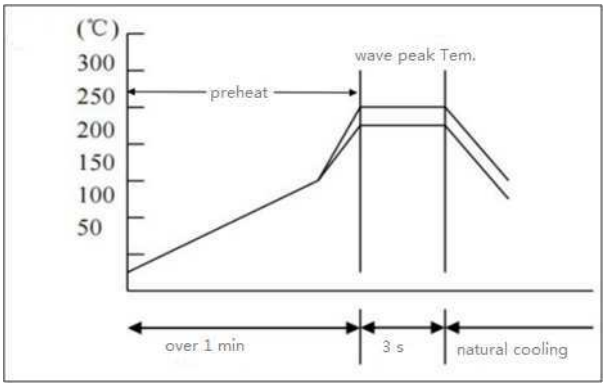
If the V slot is too deep, it may brake during handling. Take into account the strength of the PCB material and carefully design the depth of the V slot.



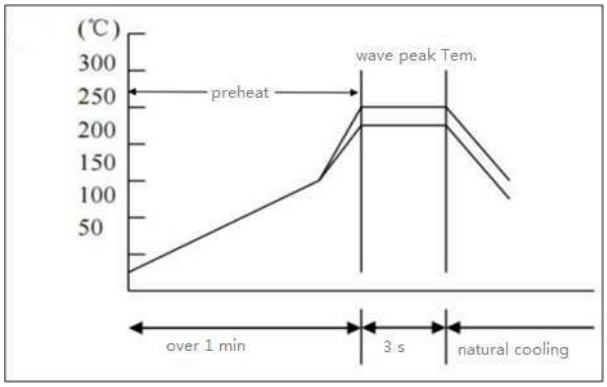

4. Recoı

| Welding mode | ≤0402 | 0603 | 0805 | 1206 | ≥1210 |
|---|---|---|---|---|---|
| reflow soldering | All specifications | >1.0μF | >2.2μF | >4.7μF | All specifications |
| Return/wave soldering | | ≤1.0μF | ≤2.2μF | ≤4.7μF | |




| Type of solder | Pb-Sn weld | lead-free soldering |
|---|---|---|
| Peak temperatures | 230℃~250℃ | 240℃~260℃ |
| Peak time | 3s~10s | 3s~10s |

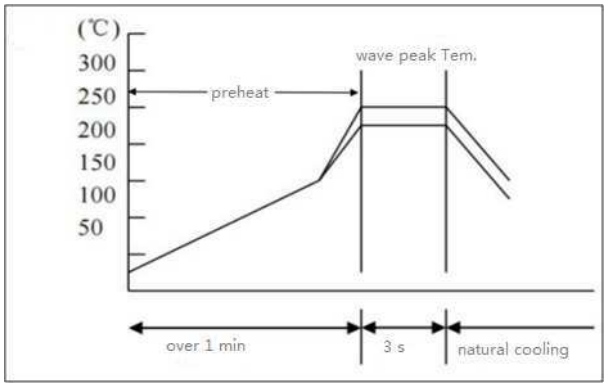
Boltzman distribution law




| Type of solder | Pb-Sn weld | lead-free soldering |
|---|---|---|
| Peak temperatures | 230℃~260℃ | 240℃~270℃ |
| Peak time | Within 3 seconds | Within 3 seconds |

manual welding

Manual welding is easy to cause micro-cracking or local bursting of porcelain body because of uneven heating of the capacitor. Therefore, when using soldering iron for manual welding, it should be carefully operated, and more care should be taken in the selection of the tip of the soldering iron and the control of the tip temperature.




| preheat | The temperature of the soldering iron | Wattage of the soldering iron | Diameter of the soldering iron head | weld period | The amount of ointment | matters need attention |
|---|---|---|---|---|---|---|
| △≤ 130℃ | ≤350℃ | ≤20W | Suggest 1mm | ≤3s | Less than 1/2 capacitance height | Do not touch the ceramic body directly with the iron head |


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# CCAI AEC-Q200

For Automotive Power Grade



| Dielectric | X7R \| B | NPO\|COG N\|CG |
|---|---|---|
| Tem.range | -55℃--125℃ | -55℃--125℃ |
| Tem.coefficient | ±15% | ±30ppm/℃ |

## Use precautions

Please be sure to attach the purchase specification before using this product.

## Safety precautions

When using this product, please pay attention to safety matters.

## Application restrictions

Before using our products, please contact us with the following applications that require high reliability in particular to prevent defects that may directly cause damage to the life, body or property of a third party.

① Aircraft equipment ② Aerospace equipment ③ Underwater equipment ④ Power plant control equipment
⑤ Medical equipment ⑥ Transportation equipment (vehicles, trains, ships, etc.) ⑦ Traffic signal equipment
⑧ disaster prevention/crime prevention equipment ⑨ Data processing equipment
⑩ Complexity and/or reliability requirements similar to those of the above applications.

## Transportation and storage methods

1. Transport

The packaging products are suitable for modern transportation, and should be protected from rain and acid and alkali corrosion during transportation. They shall not be thrown by gravity or squeezed violently.

2. Storage:

The storage period of the product with good weldability is one year from the date of production. Do not open the tape before using the product (in the case of well packed and delivered), and the product should be used within three months after opening the tape.

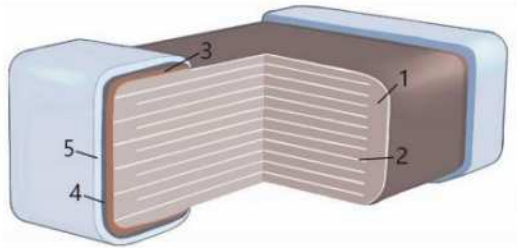
Storage temperature: 0℃~35℃

Storage relative humidity <70%

## characteristic

- Complies with AEC-Q200 standard
- Complies with MSL 1
- Complies with J-STD-020D
- High reliability and equipment reliability
- Passed 100% six-sided appearance inspection test

## Structure diagram




| No. | name |
|---|---|
| 1 | dielectric ceramic |
| 2 | Inner electrode (nickel) |
| 3 | External electrodes (copper) |
| 4 | nickel dam |
| 5 | The tin layer |

## Application

- Automotive safety equipment
- Automotive powertrain
- Smooth and decoupling applications of electric lines in automobiles

# CCAI AEC-Q200

## Part number example

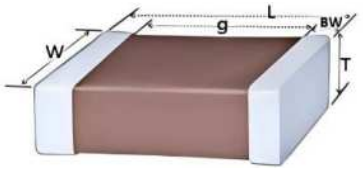
**CCA I 0603 B 104 K 500 G T**

( 1 ) ( 2 ) ( 3 ) ( 4 ) ( 5 ) ( 6 ) ( 7 ) ( 8 )

| No. | Size code | | | | | |
|---|---|---|---|---|---|---|
| (1) Application | CCAI: Vehicle specification (safety parts) | | | | | |
| ( 2 ) Product size (L * W) | encoding | British system (inch) | the metric system (mm) | | | |
| | 00R4 | 008004 | 0201 | | | |
| | 01R5 | 01005 | 0402 | | | |
| | 0201 | 0201 | 0603 | | | |
| | 0402 | 0402 | 1005 | | | |
| | 0603 | 0603 | 1608 | | | |
| | 0805 | 0805 | 2012 | | | |
| | 1206 | 1206 | 3216 | | | |
| | 1210 | 1210 | 3225 | | | |
| | 1808 | 1808 | 4520 | | | |
| | 1812 | 1812 | 45332 | | | |
| (3 Temperature characteristics | C0G X7R | | | | | |
| ( 4 ) Capacitance value | The expression of capacitance value>= 10pF:<br>First Two×10^ third<br>104=10×10^4=100nF<br>123=12×10^3=12nF<br>The expression of capacitance value <10pF: R30=0.3pF, 1R0=1pF | | | | | |
| ( 5 ) Capacitance tolerance | A：±0.05pF | B：±0.1pF | C：±0.25pF | | D：±0.5pF | F：±1.0% |
| | G：±2% | J：±5% | K：±10% | | M：±20% | Z：80/-20% |
| ( 6 ) rated voltage Vdc | 0E：2.5 | 0G：4.0 | 0J：6.3 | 1A：10 | 1C：16 | 1E：25 |
| | 1V：35 | 1H：50 | 1J：63 | 1K：80 | 2A：100 | 2D：200 |
| | 2E：250 | 2G：400 | 2W：450 | 2H：500 | 2J：630 | 3A：1000 |
| | 3D：2000 | 3E：2500 | 3U：3000 | 3G：4000 | | |
| ( 7 ) Product thickness (mm) | A：0.10 | B：0.13 | C：0.18 | D：0.20 | E：0.30 | F：0.45 |
| | G：0.50 | H：0.60 | J：0.80 | K：0.85 | L：1.15 | M：1.25 |
| | N：1.60 | P：1.90 | Q：2.00 | R：2.50 | | |
| (8) Packaging method | T: Finished packaging (7"Reel) | | | | | |

## packing specifications

In general, φ180mm (7") trays are used for packaging.
Five discs are packaged in one box and twelve boxes are a whole box.




| specifications | size (mm) | | | | Packaging (7") | |
|---|---|---|---|---|---|---|
| | Length | Width | Thickness | g | Packaging quantity (pieces) | manner of packing |
| 0201 | 0.60±0.03 | 0.30±0.03 | 0.30±0.03 | 0.20 | 15,000 | paper tape |
| 0402 | 1.00±0.05 | 0.50±0.05 | 0.50±0.05 | 0.30 | 10,000 | paper tape |
| 0603 | 1.60±0.10 | 0.80±0.10 | 0.80±0.10 | 0.30 | 4,000 | paper tape |
| 0805 | 2.00±0.20 | 1.25±0.20 | 0.85±0.20 | 0.50 | 4,000 | Plastic strips |
| | | | 1.25±0.20 | | 3,000/2,000 | |
| 1206 | 3.20±0.20 | 1.60±0.20 | 0.85±0.20 | 1.00 | 4,000 | paper tape |
| | | | 1.25±0.20 | | 3,000/2,000 | Plastic strips |
| | | | 1.60±0.20 | | 2,000 | |
| 1210 | 3.20±0.30 | 2.50±0.20 | 1.25±0.20 | 1.00 | 3,000 | Plastic strips |
| | | | 1.60±0.20 | | 2,000 | |
| | | | 2.50±0.20 | | 1,000 | |

# CCAI AEC-Q200

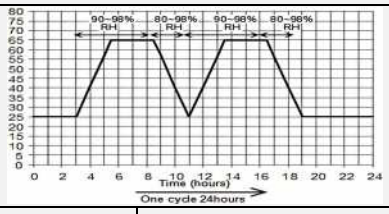
**Capacitance range**【C0G】0402~0805

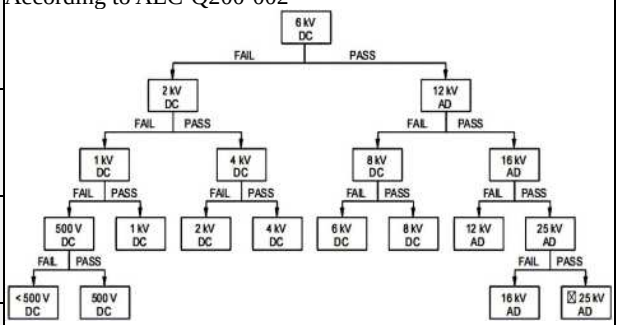
| Size (inch) | Thick (Code) | RV (Vdc) | 1pF | | | 10pF | | | | | | 100pF | | | | | | 1nF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1R0 | 2R2 | 4R7 | 100 | 150 | 220 | 330 | 470 | 680 | 101 | 151 | 221 | 331 | 471 | 681 | 102 |
| 0402 | 0.50 (G) | 25 | | ■ | ■ | | | | | | | | | | | | | |
| | | 50 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 0603 | 0.80 (J) | 50 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 100 | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 0805 | 0.60 (H) | 50 | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

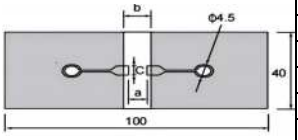
【X7R】0201~1206

| Size (inch) | Thick (Code) | RV (Vdc) | 220pF | | 1nF | | | | 10nF | | | 100nF | | | 1uF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 221 | 471 | 102 | 152 | 222 | 472 | 103 | 223 | 473 | 104 | 224 | 474 | 105 |
| 0201 | 0.30 (E) | 25 | | | ■ | ■ | ■ | ■ | ■ | | | | | | |
| 0402 | 0.50 (G) | 16 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| | | 25 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| | | 50 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| | | 100 | ■ | ■ | ■ | ■ | | | | | | | | | |
| 0603 | 0.80 (J) | 10 | | | | | | | | | | | | | ■ |
| | | 16 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 25 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 50 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | | 100 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| 0805 | 0.85 (K) | 16 | | | | | | | | | ■ | ■ | ■ | | |
| | | 25 | | | | | | | | | ■ | ■ | ■ | | |
| | | 50 | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| | | 100 | | | ■ | ■ | ■ | ■ | ■ | ■ | | | | | |
| | | 250 | | | ■ | ■ | ■ | ■ | | | | | | | |
| | 1.25 (M) | 16 | | | | | | | | | | | | ■ | ■ |
| | | 25 | | | | | | | | | | | | ■ | ■ |
| | | 50 | | | | | | | | | | | ■ | ■ | ■ |
| | | 100 | | | | | | | | | ■ | ■ | | | |
| | | 250 | | | | | | | ■ | ■ | | | | | |
| 1206 | 1.60 (N) | 50 | | | | | | | | | | | | | ■ |

## Test methods

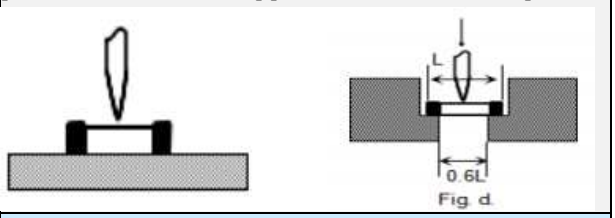
| No | Item | Test specifications | | Test method (refer to AEC-Q200) | | |
|---|---|---|---|---|---|---|
| 1 | Pre-treatment/post-treatment Pre-and-Post-Stress Electrical Test | -- | | -- | | |
| 2 | high-temperature storage High Temperature Exposure(Storage) | surface | No defects or anomalies. | method of erection | Weld the capacitor to the test substrate | |
| | | Capacitance changes | Refer to the specification sheet for a single unit | Test temperature | 150+/-3℃ | |
| | | Quality factor/dissipation coefficient | To the initial value. | testing time | 1000 +/-12 hours | |
| | | Insulation impedance | To the initial value. | reprocessing | Leave at room temperature for 24 +/-2 hours, then measure | |
| 3 | temperature cycle Temperature Cycling | surface | No defects or anomalies. | method of erection | Weld the capacitor to the test substrate | |
| | | | | pretreatment | Heat treatment for 1 hour at 150+/-0/-10℃, then leave at room temperature for 24+/-2 hours before measurement. | |
| | | Capacitance changes | Please refer to the specification sheet for a single particle | period | 1000 cycles | |
| | | | | temperature cycle: | | |
| | | | | step | temperature (℃) | Time (minutes) |
| | | Quality factor/dissipation coefficient | To the initial value. | 1 | Minimum operating temperature +0/-3 | 130+/-3 |
| | | | | 2 | room temperature | 1 |
| | | | | 3 | Maximum operating temperature +3/-0 | 30+/-3 |
| | | Insulation impedance | To the initial value. | 4 | room temperature | 1 |
| | | | | reprocessing | Leave at room temperature for 24 +/-2 hours, then measure | |
| 4 | Destructive Physical Analysis (DPA) | surface | No defects or anomalies. | Per EIA-469 | | |
| 5 | moisture resistance Moisture Resistance | surface | No defects or anomalies. | method of erection | Weld the capacitor to the test substrate | |
| | | | | Test temperature | +25℃ to +65℃ | |
| | | | | Test humidity | 80% to 98% R.H. | |
| | | Capacitance changes | Please refer to the specification sheet for a single particle | testing time | Test 10 times for 24 hours (see figure below) | |
| | | | | Temperature and humidity cycle: | | |
| | | Quality factor/dissipation coefficient | To the initial value. |  | | |
| | | Insulation impedance | To the initial value. | reprocessing | Leave at room temperature for 24±2 hours, then measure | |
| 6 | High temperature and humidity Biased Humidity | surface | No defects or anomalies. | method of erection | Weld the capacitor to the test substrate | |
| | | | | Test temperature | 85+/-3℃ | |
| | | Capacitance changes | Please refer to the specification sheet for a single particle | Test humidity | 80% to 85% R.H. | |
| | | | | testing time | 1000 +/-12 hours | |
| | | Quality factor/dissipation coefficient | To the initial value. | test voltage | 1. Rated voltage (not exceeding 630V)<br>2. Apply 1.5V (silver electrode)<br>Connect 100KΩ resistor | |
| No | project | Test specifications | | Test method (refer to AEC-Q200) | | |
| | | | | Charging/discharge current | Maximum 50mA | |
| | | Insulation impedance | To the initial value. | reprocessing | Leave at room temperature for 24 +/-2 hours, then measure | |
| 7 | DURABILITY TESTING Operational Life | surface | No defects or anomalies. | method of erection | Weld the capacitor to the test substrate | |
| | | Capacitance changes | Please refer to the specification sheet for a single particle | Test temperature | Maximum operating temperature +/-3℃ | |
| | | quality factor / | To the initial value. | testing time | 1000+/-12h | |
| | | | | Test voltage (R.V.) | Please refer to the specification sheet for a | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | single particle |
| | | Insulation impedance | To the initial value. | Charging /discharge current | Maximum 50mA |
| | | | | reprocessing | Leave at room temperature for 24 +/-2 hours, then measure |
| 8 | Appearance Appearance | No defects or anomalies. | | Visual (microscopic) examination | |
| 9 | Size Dimension | In terms of size | | Use a size measuring instrument | |
| 10 | Resistant to solvents Resistance to Solvents | surface | No defects or anomalies. | According to MIL-STD-202 Method 215 (for points with a Mark only) | |
| | | Capacitance changes | To the initial value. | | |
| | | Quality factor/dissipation coefficient | To the initial value. | | |
| | | Insulation impedance | To the initial value. | | |
| 11 | mechanical shock Mechanical Shock | surface | No defects or anomalies. | method of erection | Weld the capacitor to the test substrate |
| | | | | wave form | Half sine |
| | | Capacitance changes | To the initial value. | peak value | 1500g |
| | | Quality factor/dissipation coefficient | To the initial value. | holding time | 0.5ms |
| | | | | velocity change | 4.7m/s |
| | | Insulation impedance | To the initial value. | Direction and time of impact | Each direction should be subjected to three impacts (18 impacts) along the three mutually perpendicular axes of the specimen |
| 12 | mechanical vibration Mechanical Vibration | surface | No defects or anomalies. | method of erection | Weld the capacitor to the test substrate |
| | | Capacitance changes | To the initial value. | Vibration type | A 10Hz ~2000Hz~10Hz |
| | | Quality factor/dissipation coefficient | To the initial value. | Vibration time | 20 minutes |
| | | | | total amplitude | 1.5mm |
| | | Insulation impedance | To the initial value. | Direction and time of vibration | Do 12 items (36 times in total) for every 3 mutually perpendicular directions |
| 13 | Resistant to welding heat Resistance to Soldering Heat | surface | No defects or anomalies. | test method | Solder bath method |
| | | Capacitance changes | To the initial value. | Welding material type | Sn-3.0Ag-0.5Cu（Lead Free Solder） |
| | | quality factor / | To the initial value. | Test temperature | 260+/-5℃ |
| | | Insulation impedance | To the initial value. | testing time | 10+/-1s |
| | | | | reprocessing | Leave at room temperature for 24 +/-2 hours, then measure |
| 14 | Electrical static testing (ESD) | surface | No defects or anomalies. | According to AEC-Q200-002   Note: classified according to the highest electrostatic voltage level that can be withstand during electrostatic testing. Passive component HBM anti-static test flow chart (DC= direct contact discharge, AD= air discharge) | |
| | | Capacitance changes | To the initial value. | | |
| | | Quality factor/dissipation coefficient | To the initial value. | | |
| | | Insulation impedance | To the initial value. | | |

<table>
<tr><th>No</th><th>Item</th><th colspan="2">Test specifications</th><th colspan="3">Test method (refer to AEC-Q200)</th></tr>
<tr><td rowspan="6">15</td><td rowspan="6">solderability<br>Solderability（a）</td><td colspan="2" rowspan="6">Ninety-five percent of the terminals should be welded continuously and evenly</td><td>pretreatment</td><td colspan="2">Heat treatment for 4 hours at 155℃</td></tr>
<tr><td>flux</td><td colspan="2">Solution of rosin ethanol 25（mass）%</td></tr>
<tr><td>Welding material type</td><td colspan="2">Sn-3.0Ag-0.5Cu（Lead Free Solder）</td></tr>
<tr><td>welding temperature</td><td colspan="2">Sn-3.0Ag-0.5Cu solder solution at245+/-5℃</td></tr>
<tr><td>soak period</td><td colspan="2">5+0/-0.5s</td></tr>
<tr><td>Infiltration rate and reproduction rate</td><td colspan="2">25+/-5mm/s</td></tr>
<tr><td rowspan="13">16</td><td rowspan="13">electrical character<br>Electrical Characterization</td><td>Capacitance value<br>Capacitance</td><td>See rated value</td><td colspan="2">Test temperature</td><td>25℃</td></tr>
<tr><td rowspan="2">Quality factor/dissipation coefficient Q/D.F.</td><td rowspan="2">Please refer to the specification sheet for a single particle</td><td colspan="2">Frequency of testing</td><td>1.0+/-0.1MHz</td></tr>
<tr><td colspan="2">test voltage</td><td>1.0±0.2Vrms</td></tr>
<tr><td rowspan="4">Insulation impedance<br>Insulation Resistance(I.R.)</td><td rowspan="4">To the initial value.</td><td colspan="2">Test temperature</td><td>25℃</td></tr>
<tr><td colspan="2">test voltage</td><td>rated voltage</td></tr>
<tr><td colspan="2">charging interval</td><td>One minute</td></tr>
<tr><td colspan="2">Charging/discharge current</td><td>Maximum 50mA</td></tr>
<tr><td rowspan="9">withstand voltage<br>Voltage proof</td><td rowspan="9">No defects or anomalies.</td><td>material quality</td><td>rated voltage</td><td>test voltage</td></tr>
<tr><td rowspan="5">C0G</td><td>RV≤50V</td><td>300% RV</td></tr>
<tr><td>50V < RV≤100V</td><td>250% RV</td></tr>
<tr><td>100V < RV≤250V</td><td>200% RV</td></tr>
<tr><td>250V < RV≤500V</td><td>150% RV</td></tr>
<tr><td>500V < RV≤1000V</td><td>130% RV</td></tr>
<tr><td rowspan="4">X7R</td><td>RV≤100V</td><td>250% RV</td></tr>
<tr><td>100V < RV≤250V</td><td>200% RV</td></tr>
<tr><td>250V < RV≤630V</td><td>150% RV</td></tr>
<tr><td>630V < RV≤1000V</td><td>120% RV</td></tr>
<tr><td rowspan="5">17</td><td rowspan="5">Flat board test<br>Board Flex</td><td>surface</td><td>No defects or anomalies.</td><td>method of erection</td><td colspan="2">Weld the capacitor to the test substrate</td></tr>
<tr><td rowspan="2">Capacitance changes</td><td rowspan="2">Please refer to the specification sheet for a single particle</td><td>test method</td><td colspan="2">The force is applied at a speed of 1mm/s to bend it, and the fixture radius is 340 mm</td></tr>
<tr><td>The amplitude of bending</td><td colspan="2">COG：3mm X7R：2mm</td></tr>
<tr><td>Quality factor/dissipation coefficient</td><td>To the initial value.</td><td>duration</td><td colspan="2">60s</td></tr>
<tr><td>Insulation impedance</td><td>To the initial value.</td><td colspan="3" rowspan="2">

<table>
<tr><th>size</th><th>a</th><th>b</th><th>c</th></tr>
<tr><td>0201</td><td>0.3</td><td>0.9</td><td>0.3</td></tr>
<tr><td>0402</td><td>0.5</td><td>1.5</td><td>0.6</td></tr>
<tr><td>0603</td><td>0.6</td><td>2.2</td><td>0.9</td></tr>
<tr><td>0805</td><td>0.8</td><td>3</td><td>1.3</td></tr>
<tr><td>1206</td><td>2</td><td>4.4</td><td>1.7</td></tr>
<tr><td>1210</td><td>2</td><td>4.4</td><td>2.6</td></tr>
</table>
unit:mm</td></tr>
<tr><td rowspan="4">18</td><td rowspan="4">Thrust test<br>Terminal Strength</td><td>surface</td><td>No defects or anomalies.</td><td>method of erection</td><td colspan="2">Weld the capacitor to the test substrate</td></tr>
<tr><td>Capacitance changes</td><td>To the initial value.</td><td rowspan="2">acting force</td><td colspan="2" rowspan="2">Apply a continuous force of 17.7N (1.8Kg)<br>*0402 Apply a force of 2N<br>*0201 Apply a force of 1N<br>Note: Apply force gradually to avoid impact on the measuring part</td></tr>
<tr><td>Quality factor/dissipation coefficient</td><td>To the initial value.</td></tr>
<tr><td>Insulation impedance</td><td>To the initial value.</td><td>duration</td><td colspan="2">60+1s</td></tr>
</table>

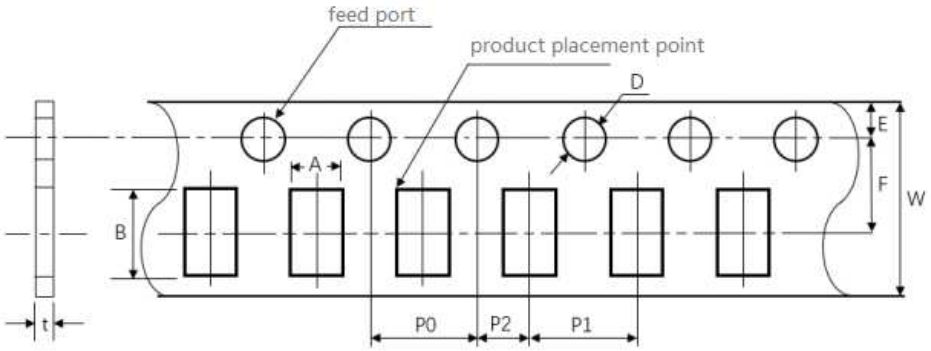

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<table>
<tr><th>No</th><th>Item</th><th colspan="2">Test specifications</th><th colspan="2">Test method (refer to AEC-Q200)</th></tr>
<tr><td rowspan="2">19</td><td rowspan="2">Load testing<br>Beam Load Test</td><td colspan="2" rowspan="2">The allowable value shall exceed the following values:<br>Product L size is less than 2.5mm Product L size is more than 3.2mm Product L size is less than 2.5mm Product L size is more than 3.2mm<br>Product T thickness>0.5mm: 20N Product T thickness ≥1.25mm: 54N Product T thickness>0.5mm: 20N Product T thickness ≥1.25mm: 54N<br>Product T thickness <0.5mm: 8N Product T thickness <1.25mm: 15N Product T thickness <0.5mm: 8N Product T thickness <1.25mm: 15N</td><td colspan="2">The pressure load provides a speed of 0.1mm/s</td></tr>
<tr><td colspan="2">Location diagram: [Product L size ≤ 2.5mm] [Product L size ≥ 3.2mm] Location diagram: [Product L size ≤ 2.5mm] [Product L size ≥ 3.2mm]<br>
</td></tr>
<tr><td rowspan="5">20</td><td rowspan="5">Temperature characteristics<br>Temperature Characteristics of Capacitance</td><td rowspan="2">change in capacitance</td><td rowspan="2">The nominal value of the temperature coefficient is shown in the rated value. The change of capacitance at reference temperature is shown in Table A.</td><td colspan="2">The capacitance change should be measured after 5 minutes at each specified temperature stage.</td></tr>
<tr><td colspan="2">The capacitance value is used as a reference value and is the step value marked with "*".</td></tr>
<tr><td colspan="2" rowspan="3">Capacitance change: C0G: ±30ppm/℃<br>X7R：±15%</td><td>Capacitance changes</td><td>The value of the change is calculated by dividing the difference between the maximum and minimum values</td></tr>
<tr><td>test voltage</td><td>Less than 1.0Vrms (refer to individual data sheets)</td></tr>
<tr><td colspan="2">Temperature steps:(A)</td></tr>
<tr><td>step</td><td>temperature</td></tr>
<tr><td>1</td><td>Reference temperature +/-2</td></tr>
<tr><td>2</td><td>Minimum operating temperature +/-3</td></tr>
<tr><td>3*</td><td>Reference temperature +/-2</td></tr>
<tr><td>4</td><td>Maximum operating temperature +/-3</td></tr>
<tr><td>5</td><td>Reference temperature +/-2</td></tr>
</table>

## product packaging

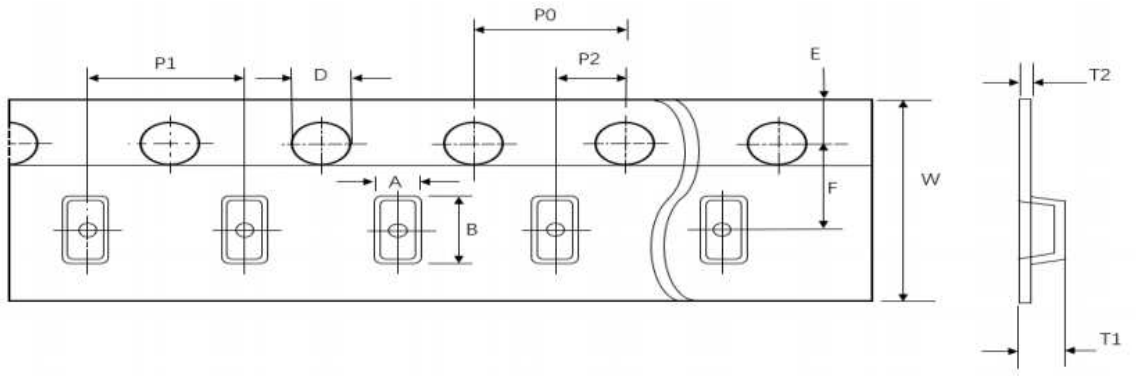
The tape reel packaging is the most common packaging method at present. A reel with a diameter of 180mm (7") can contain 1000~20000 capacitors, and can also be packaged according to customer requirements.

1. Tape size



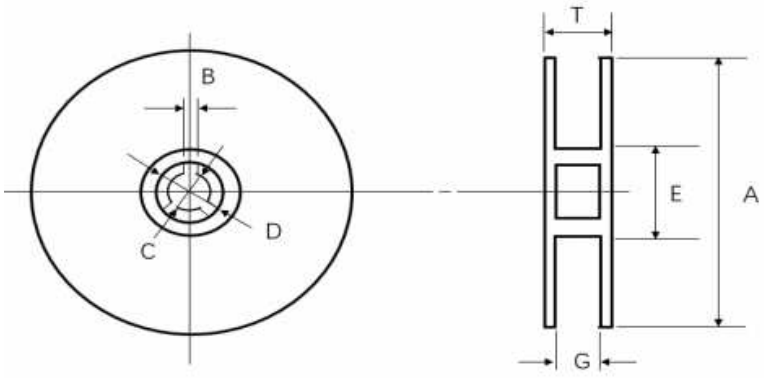

| No. | 01005（0402） | 0201（0603） | 0402（1005） | 0603（1608） | 0805（2012） | 1206（3216） |
|---|---|---|---|---|---|---|
| P1 | 2.00±0.05（1.0±0.05） | | | 4.00±0.10 | | |
| P0 | 4.00±0.10 | | | 4.00±0.10 | | |
| P2 | 2.00±0.05 | | | 2.00±0.05 | | |
| A | 0.25±0.02 | 0.38±0.03 | 0.62±0.05 | 1.00±0.01 | 1.55±0.10 | 2.05±0.10 |
| B | 0.46±0.02 | 0.68±0.03 | 1.12±0.05 | 1.90±0.10 | 2.30±0.10 | 3.60±0.10 |
| W | 8.00±0.30 | | | 8.00±0.30 | | |
| E | 1.75±0.10 | | | 1.75±0.10 | | |
| F | 3.50±0.05 | | | 3.50±0.05 | | |
| D | φ1.50+0.10/-0.03 | | | φ1.50+0.10/-0 | | |
| t | 0.25±0.02 | 0.35±0.03 | 0.60±0.05 | 1.1Below | | |

2. Size of plastic bags




| | 0603 ( 1608 ) | 0805 ( 2012 ) | 1206 ( 3216 ) | 1210 ( 3225 ) |
|---|---|---|---|---|
| P1 | 4±0.1 | 4±0.1 | 4±0.1 | 4±0.1 |
| P0 | 4±0.1 | 4±0.1 | 4±0.1 | 4±0.1 |
| P2 | 2±0.05 | 2±0.05 | 2±0.05 | 2±0.05 |
| A | 1.2±0.2 | 1.45±0.2 | 1.9±0.2 | 2.8±0.2 |
| B | 2.0±0.2 | 2.3±0.2 | 3.5±0.2 | 3.6±0.2 |
| W | 8±0.3 | 8±0.2 | 8±0.2 | 8±0.2 |
| E | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 | 1.75±0.1 |
| F | 3.5±0.05 | 3.5±0.05 | 3.5±0.05 | 3.5±0.05 |
| D | 1.5 ( +0.1/-0.0 ) | 1.5 ( +0.1/-0.0 ) | 1.5 ( +0.1/-0.0 ) | 1.5 ( +0.1/-0.0 ) |
| T1 | 1.4max | 2.5max. | 2.5max. | 2.5max. |
| T2 | 0.25±0.1 | 0.305±0.1 | 0.30±0.1 | 0.30±0.1 |

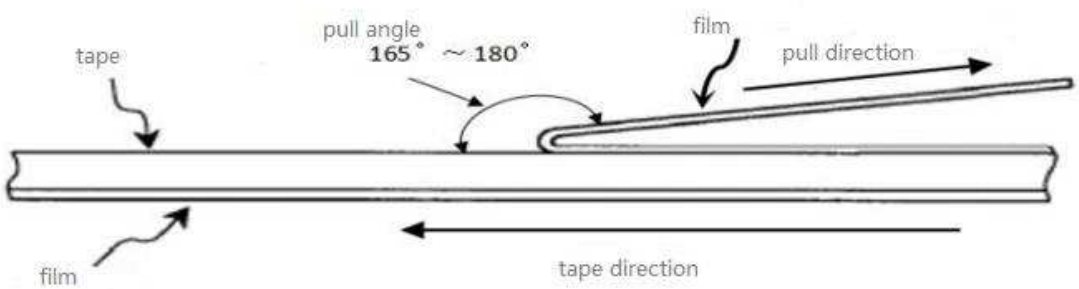
3. Disk size




| Disc size | A ( mm ) | B ( mm ) | C ( mm ) | D ( mm ) | E ( mm ) | G ( mm ) | T ( mm ) |
|---|---|---|---|---|---|---|---|
| 7"Reel | φ178±2.0 | 2.0±0.5 | φ13±1.0 | φ21±0.8 | φ 50 or more | 10±1.0 | 13±1.0 |

4. Instructions for use of roll tape

When the finished product is used, the tape (membrane) is peeled at a speed of 3300±10mm/min and an Angle of 165°~180° (as shown in the figure below), with a peel strength of 0.1N~0.7N(10g.f≤peel force≤70g.f).




## Use precautions

Multilayer ceramic chip capacitors (MLCCs) may experience short circuits, open circuits, or even smoke, burn, or explode under harsh

working conditions exceeding the usage frequency specified in this acceptance document or related manuals, or when subjected to excessive external mechanical forces. Therefore, when using them, please first refer to the relevant instructions in this acceptance document. If you have any questions, please contact our Technical Department, Quality Control Department, or Production Department.

## 1. The amount of solder used in welding

A. Too much solder can cause damage to the capacitor due to excessive pressure at the end of the capacitor.



B. Too little solder and insufficient fixing force may cause poor contact between the capacitor chip and the circuit.

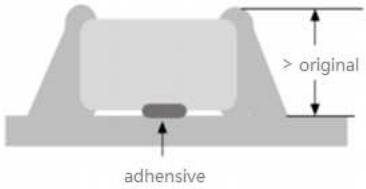


## 2. Recommended solder usage:

A. Optimal solder quantity for reflow welding




B. Optimal solder usage for peak welding

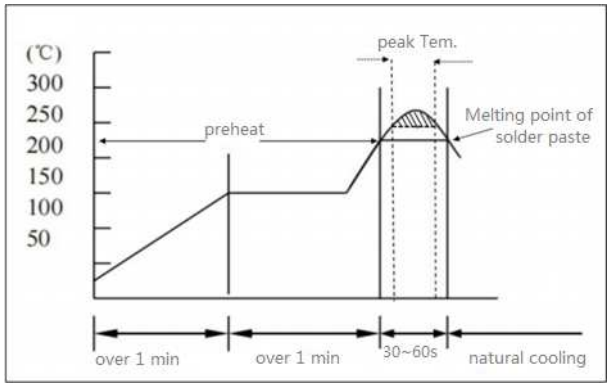



C. The best amount of solder to use when using a soldering iron for repair



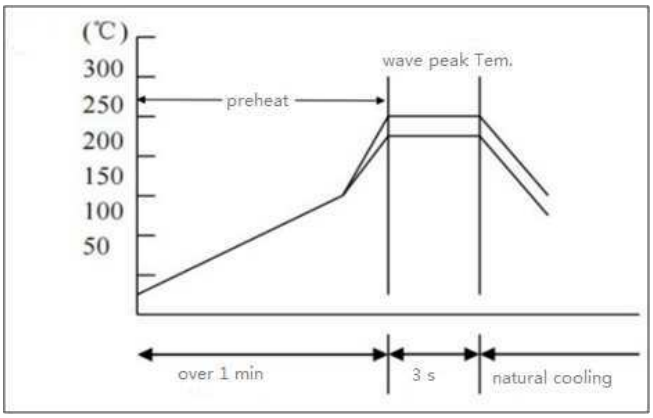

## 3. Recommended welding temperature curve:

reflow soldering




| Type of solder | Pb-Sn weld | lead-free soldering |
|---|---|---|
| Peak temperatures | 230℃~250℃ | 240℃~260℃ |
| Peak time | 3s~10s | 3s~10s |

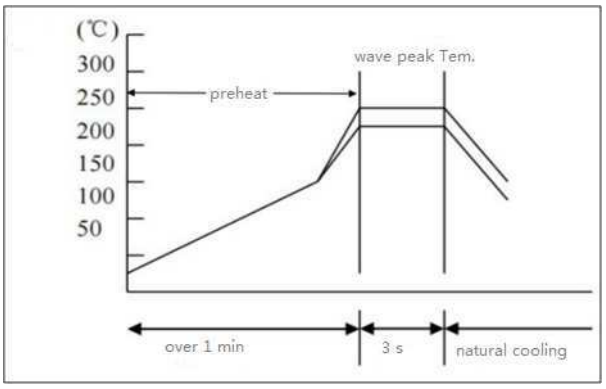
Boltzman distribution law




| Type of solder | Pb-Sn weld | lead-free soldering |
|---|---|---|
| Peak temperatures | 230℃~260℃ | 240℃~270℃ |
| Peak time | Within 3 seconds | Within 3 seconds |

manual welding

Manual welding is easy to cause micro-cracking or local bursting of porcelain body because of uneven heating of the capacitor. Therefore, when using soldering iron for manual welding, it should be carefully operated, and more care should be taken in the selection of the tip of the soldering iron and the control of the tip temperature.



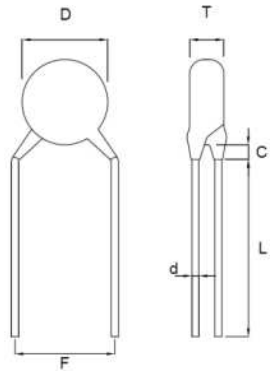

| preheat | The temperature of the soldering iron | Wattage of the soldering iron | Diameter of the soldering iron head | weld period | The amount of ointment | matters need attention |
|---|---|---|---|---|---|---|
| △≤ 130℃ | ≤350℃ | ≤20W | Suggest 1mm | ≤3s | Less than 1/2 capacitance height | Do not touch the ceramic body directly with the iron head |


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Fixed capacitors for the suppression of electromagnetic interference from power sources

# CCDG

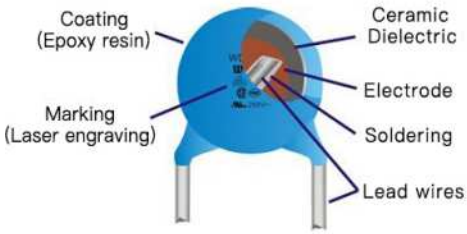
## ■ Outline Drawing







## Features




●Operating temperature Range Guaranteed up to 125℃(UI:85℃ )

●Dielectric strength: AC 4000V

● X1/Y2 class capacitors certified by VDE/ENEC/UL/CQC/KC

●Flame retardant epoxy coating (in accordance with UL94 V-0 specification)

●Automatic insertion is cost-effective

●Products available for RoHS/SVHC/Halogen Free restrictions

●Ideal for use as X/Y cap acitors for AC line filter and primary-secondary coupling on switching Power supplies and AC adapters.

●Ideal for use on D-A isolation and noise absorption For DAA modems without transformers.

●By Pass

## • Specifications

| | |
|---|---|
| Safety class | X1、Y1 |
| Reference Standard | GB/T 6346-14:2015 (IEC 60384-14) |
| Climatic Category | 21/125/21 |
| Passlve Flammability Category | C |
| Rated temperature | -25～+85℃ |
| Operating temperature | -40℃~125℃ |
| Temperature Characteristic | Y5P ( ΔC/C: ≤10% @ -25°C ~ +85°C )<br>Y5U ( ΔC/C: ≤+22%/-56% @ -25°C ~ +85°C )<br>Y5V ( ΔC/C: ≤+22%/-82% @ -25°C ~ +85°C ) |
| Rated Voltage | X1:500V Y1: AC 250V/300V/400V/500V |
| Capacitance Range | 10PF ~ 4700PF |
| Capacitance Tolerance | ±10% (K), ±20% (M) |
| Voltage Proof | 4000VAC (60s) |
| Dissipation Factor | ≤0.025 (20℃, 1kHz) |
| Insulation Resistance | ≥10 000MΩ, (20℃,100V,1min) |
| Marking |  |

## ■ Dimensions (mm)

### Y5P

| Part number | ( VAC) | T.C. | ( PF ) | % | D ( MAX ) | T ( MAX ) | C ( MAX ) | F(±1) | Φd(±0.1) |
|---|---|---|---|---|---|---|---|---|---|
| CCDGP100K*100*** | 250/300/400/500 | Y5P | 10 | ± 10 | 6.0 | 3.5 | 2.0 | 10 | 0.6 |
| CCDGP150K*100*** | 250/300/400/500 | Y5P | 15 | ± 10 | 6.0 | 3.5 | 2.0 | 10 | 0.6 |
| CCDEP220K*100*** | 250/300/400/500 | Y5P | 22 | ± 10 | 7.0 | 3.5 | 2.0 | 10 | 0.6 |
| CCDGP330K*100*** | 250/300/400/500 | Y5P | 33 | ± 10 | 6.0 | 3.5 | 2.0 | 10 | 0.6 |
| CCDGP470K*100*** | 250/300/400/500 | Y5P | 47 | ± 10 | 7.0 | 3.5 | 2.0 | 10 | 0.6 |
| CCDGP560K*100*** | 250/300/400/500 | Y5P | 56 | ± 10 | 7.0 | 3.5 | 2.0 | 10 | 0.6 |
| CCDGP680K*100*** | 250/300/400/500 | Y5P | 68 | ± 10 | 8.2 | 3.5 | 2.0 | 10 | 0.6 |
| CCDGP820K*100*** | 250/300/400/500 | Y5P | 82 | ± 10 | 9.5 | 3.5 | 2.0 | 10 | 0.6 |
| CCDGP101K*100*** | 250/300/400/500 | Y5P | 100 | ± 10 | 6.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGP151K*100*** | 250/300/400/500 | Y5P | 150 | ± 10 | 6.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGP221K*100*** | 250/300/400/500 | Y5P | 220 | ± 10 | 6.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGP331K*100*** | 250/300/400/500 | Y5P | 330 | ± 10 | 7.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGP471K*100*** | 250/300/400/500 | Y5P | 470 | ± 10 | 7.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGP561K*100*** | 250/300/400/500 | Y5P | 560 | ± 10 | 9.0 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGP681K*100*** | 250/300/400/500 | Y5P | 680 | ± 10 | 9.0 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGP821K*100*** | 250/300/400/500 | Y5P | 820 | ± 10 | 10.0 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGP102K*100*** | 250/300/400/500 | Y5P | 1000 | ± 10 | 10.5 | 4.5 | 2.0 | 10 | 0.6 |

### Y5U

| Part number | ( VAC) | T.C. | ( PF ) | % | D ( MAX ) | T ( MAX ) | C ( MAX ) | F(±1) | Φd(±0.1) |
|---|---|---|---|---|---|---|---|---|---|
| CCDGE471M*100*** | 250/300/400/500 | Y5U | 470 | ± 20 | 6.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE561M*100*** | 250/300/400/500 | Y5U | 560 | ± 20 | 6.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE681M*100*** | 250/300/400/500 | Y5U | 680 | ± 20 | 7.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE821M*100*** | 250/300/400/500 | Y5U | 820 | ± 20 | 7.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE102M*100*** | 250/300/400/500 | Y5U | 1000 | ± 20 | 7.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE152M*100*** | 250/300/400/500 | Y5U | 1500 | ± 20 | 8.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE222M*100*** | 250/300/400/500 | Y5U | 2200 | ± 20 | 10.0 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE332M*100*** | 250/300/400/500 | Y5U | 3300 | ± 20 | 12.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE392M*100*** | 250/300/400/500 | Y5U | 3900 | ± 20 | 13.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGE472M*100*** | 250/300/400/500 | Y5U | 4700 | ± 20 | 14.5 | 4.5 | 2.0 | 10 | 0.6 |

### Y5V

| Part number | ( VAC) | T.C. | ( PF ) | % | D ( MAX ) | T ( MAX ) | C ( MAX ) | F(±1) | Φd(±0.1) |
|---|---|---|---|---|---|---|---|---|---|
| CCDGF102M*100*** | 250/300/400/500 | Y5V | 1000 | ± 20 | 6.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGF152M*100*** | 250/300/400/500 | Y5V | 1500 | ± 20 | 7.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGF222M*100*** | 250/300/400/500 | Y5V | 2200 | ± 20 | 8.2 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGF332M*100*** | 250/300/400/500 | Y5V | 3300 | ± 20 | 9.5 | 4.5 | 2.0 | 10 | 0.6 |
| CCDGF392M*100*** | 250/300/400/500 | Y5V | 3900 | ± 20 | 11.0 | 3.5 | 2.0 | 10 | 0.6 |
| CCDGF472M*100*** | 250/300/400/500 | Y5V | 4700 | ± 20 | 11.0 | 3.5 | 2.0 | 10 | 0.6 |

## HOW TO ORDER

| CCDG | F | 472 | M | 3E | 10 | Y | 5 |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |

**1. Type Code:** CCDG class X1-Y2 ; CCDF class X1-Y1

**2. Temperature Characteristic**:

| Code | Temp. Coefficient | Code | Temp. Coefficient | Code | Temp. Coefficient |
|---|---|---|---|---|---|
| C\|N | C0G \|NPO | P | Y5P | E | Y5U |
| L | SL | B | X7R | F | Y5V |

**3. Nominal capacitance**:

Expressed by three-digit alphanumeric. The unit is pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two numbers. If there is a decimal point in between first two figures, it is expressed by the capital letter “R”. See below examples:

| Code | Capacitance | Code | Capacitance | Code | Capacitance |
|---|---|---|---|---|---|
| 5R1 | 5.1pF | 100 | 10pF | 472 | 4700pF |
| 8R0 | 8pF | 101 | 100pF | 103 | 0.01uF |

**4. Capacitance Tolerance Code**

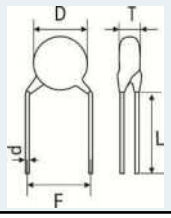
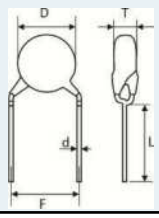
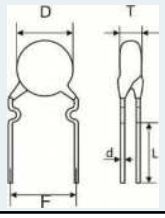
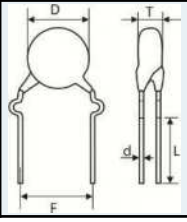
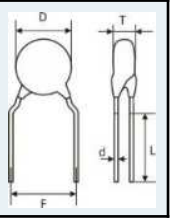
| Code | Tolerance | Code | Tolerance | Code | Tolerance |
|---|---|---|---|---|---|
| C | ± 0.25pF | J | ± 5% | M | ± 20% |
| D | ± 0.50pF | K | ± 10% | Z | +80/-20% |

**5. Minimum Test Voltage (AC) :** X1Y2 = AC2K5 3E , X1Y1 = AC4KV 3G

**6. Lead Spacing (F)**

| Code | Lead spacing (F) | Code | Lead spacing (F) |
|---|---|---|---|
| 050 | 5.0±0.8mm | 075 | 7.5±0.8mm |
| 063 | 6.35±0.8mm | 100 | 10.0±0.8mm |

**7. Lead style**

| Code | S | Y | X | W | Z |
|---|---|---|---|---|---|
| Lead Style |  |  |  |  |  |

**8. Lead length & package style:**

Omitted for un-cut bulk pack

5 = 5+/-1mm, bulk pack, 6 = 6+/-1mm ... etc.

TB = Ammo, TR = Reel

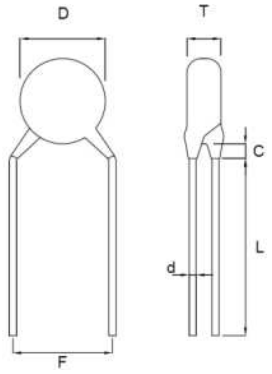


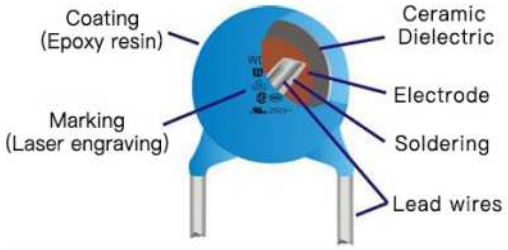
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Fixed capacitors for the suppression of electromagnetic interference from power sources

# CCDF

## ■ Outline Drawing







## Features

- Operating temperature Range Guaranteed up to
- 125°C(UI:85°C )
- Dielectric strength: AC 2600V
- X1/Y2 Class capacitors certified by VDE/ENEC/UL/CQC
- Flame retardant epoxy coating (in accordance with UL94 V-0 specification)
- Automatic insertion is cost-effective
- Products available for RoHS/SVHC/Halogen Free restrictions

- Ideal for use as X/Y cap acitors for AC line filter and primary-secondary coupling on switching Power supplies and AC adapters.
- Ideal for use on D-A isolation and noise absorption For DAA modems without transformers.
- By Pass

## • Specifications

| | |
|---|---|
| Safety class | X1. Y2 |
| Reference Standard | GB/T 6346-14:2015 (IEC 60384-14) |
| Climatic Category | 21/125/21 |
| Passive Flammability Category | C |
| Rated temperature | -25～+85 |
| Operating temperature | -40℃~125℃ |
| Temperature Charactrtistic | Y5P ( ΔC/C: ≤10% @ -25°C ~ +85°C )<br>Y5U ( ΔC/C: ≤+22%/-56% @ -25°C ~ +85°C )<br>Y5V ( ΔC/C: ≤+22%/-82% @ -25°C ~ +85°C ) |
| Rated Voltage | X1:400V Y2: 125V/250V/300V |
| Capacitance Range | 100PF ~ 10000PF |
| Capacitance Tolerance | ±10% (K), ±20% (M) |
| Voltage Proof | 2500VAC (60s) |
| Dissipation Factor | ≤0.025 (20℃, 1kHz) |
| Insulation Resistance | ≥10 000MΩ, (20℃,100V,1min) |
| Marking |  |

## ■ Dimensions (mm)

### Y5P

| Part number | ( VAC ) | T.C. | ( PF ) | % | D ( MAX ) | T ( MAX ) | C ( MAX ) | F(±1) | Φd(±0.1) |
|---|---|---|---|---|---|---|---|---|---|
| CCDFP101K*075*** | 125/250/300 | Y5P | 100 | ± 10 | 6.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFP151K*075*** | 125/250/300 | Y5P | 150 | ± 10 | 6.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFP221K*075*** | 125/250/300 | Y5P | 220 | ± 10 | 6.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFP331K*075*** | 125/250/300 | Y5P | 330 | ± 10 | 6.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFP471K*075*** | 125/250/300 | Y5P | 470 | ± 10 | 7.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFP561K*075*** | 125/250/300 | Y5P | 560 | ± 10 | 7.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFP681K*075*** | 125/250/300 | Y5P | 680 | ± 10 | 7.5 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFP821K*075*** | 125/250/300 | Y5P | 820 | ± 10 | 8.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFP102K*075*** | 125/250/300 | Y5P | 1000 | ± 10 | 9.0 | 3.5 | 2.0 | 7.5 | 0.6 |

### Y5U

| Part number | ( VAC ) | T.C. | ( PF ) | % | D ( MAX ) | T ( MAX ) | C ( MAX ) | F(±1) | Φd(±0.1) |
|---|---|---|---|---|---|---|---|---|---|
| CCDFE102K*075*** | 125/250/300 | Y5U | 1000 | ± 20 | 7.5 | 4.5 | 2.0 | 7.5 | 0.6 |
| CCDFE152K*075*** | 125/250/300 | Y5U | 1500 | ± 20 | 7.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFE222K*075*** | 125/250/300 | Y5U | 2200 | ± 20 | 9.5 | 4.5 | 2.0 | 7.5 | 0.6 |
| CCDFE332K*075*** | 125/250/300 | Y5U | 3300 | ± 20 | 10.5 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFE392K*075*** | 125/250/300 | Y5U | 3900 | ± 20 | 11.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFE472K*075*** | 125/250/300 | Y5U | 4700 | ± 20 | 13.0 | 3.5 | 2.0 | 7.5 | 0.6 |

### Y5V

| Part number | ( VAC ) | T.C. | ( PF ) | % | D ( MAX ) | T ( MAX ) | C ( MAX ) | F(±1) | Φd(±0.1) |
|---|---|---|---|---|---|---|---|---|---|
| CCDFF102K*075*** | 125/250/300 | Y5V | 1000 | ± 20 | 6.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFF152K*075*** | 125/250/300 | Y5V | 1500 | ± 20 | 7.5 | 4.5 | 2.0 | 7.5 | 0.6 |
| CCDFF222K*075*** | 125/250/300 | Y5V | 2200 | ± 20 | 8.0 | 4.5 | 2.0 | 7.5 | 0.6 |
| CCDFF332K*075*** | 125/250/300 | Y5V | 3300 | ± 20 | 9.5 | 4.5 | 2.0 | 7.5 | 0.6 |
| CCDFF392K*075*** | 125/250/300 | Y5V | 3900 | ± 20 | 10.5 | 4.5 | 2.0 | 7.5 | 0.6 |
| CCDFF472K*075*** | 125/250/300 | Y5V | 4700 | ± 20 | 10.5 | 4.5 | 2.0 | 7.5 | 0.6 |
| CCDFF562K*075*** | 125/250/300 | Y5V | 5600 | ± 20 | 10.5 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFF682K*075*** | 125/250/300 | Y5V | 6800 | ± 20 | 11.0 | 3.5 | 2.0 | 7.5 | 0.6 |
| CCDFF103K*075*** | 125/250/300 | Y5V | 10000 | ± 20 | 13.5 | 3.5 | 2.0 | 7.5 | 0.6 |

## HOW TO ORDER

| CCDF | F | 472 | M | 3E | 10 | Y | 5 |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |

**1. Type Code:** CCDG class X1-Y2 ; CCDF class X1-Y1

**2. Temperature Characteristic**:

| Code | Temp. Coefficient | Code | Temp. Coefficient | Code | Temp. Coefficient |
|---|---|---|---|---|---|
| C\|N | C0G \|NPO | P | Y5P | E | Y5U |
| L | SL | B | X7R | F | Y5V |

**3. Nominal capacitance**:

Expressed by three-digit alphanumeric. The unit is pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two numbers. If there is a decimal point in between first two figures, it is expressed by the capital letter "R". See below examples:

| Code | Capacitance | Code | Capacitance | Code | Capacitance |
|---|---|---|---|---|---|
| 5R1 | 5.1pF | 100 | 10pF | 472 | 4700pF |
| 8R0 | 8pF | 101 | 100pF | 103 | 0.01uF |

**4. Capacitance Tolerance Code**

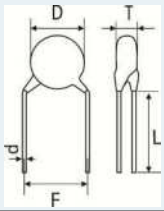
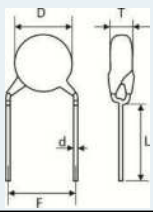
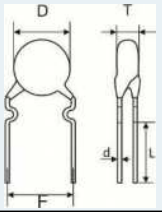
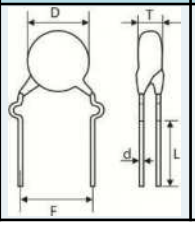
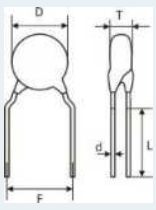
| Code | Tolerance | Code | Tolerance | Code | Tolerance |
|---|---|---|---|---|---|
| C | ± 0.25pF | J | ± 5% | M | ± 20% |
| D | ± 0.50pF | K | ± 10% | Z | +80/-20% |

**5. Minimum Test Voltage (AC) :** X1Y2 = AC2K5 3E , X1Y1 = AC4KV 3G

**6. Lead Spacing (F)**

| Code | Lead spacing (F) | Code | Lead spacing (F) |
|---|---|---|---|
| 050 | 5.0±0.8mm | 075 | 7.5±0.8mm |
| 063 | 6.35±0.8mm | 100 | 10.0±0.8mm |

**7. Lead style**

| Code | S | Y | X | W | Z |
|---|---|---|---|---|---|
| Lead Style |  |  |  |  |  |

**8. Lead length & package style:**

Omitted for un-cut bulk pack

5 = 5+/-1mm, bulk pack, 6 = 6+/-1mm ... etc.

TB = Ammo, TR = Reel

## CCDC SERIES:




### INTRODUCTION

Single layer metalized ceramic disc with resin coating (wax impregnated).

CCDCis suitable for low voltage application and offers larger capacitance values

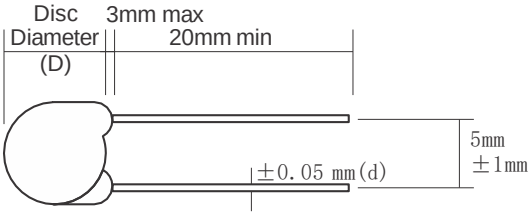
### APPLICATION

- Transistorized Circuits
- Low Voltage-by-pass, Coupling.
- Frequency determination where Dielectric losses, Hi-IR and Cap. stability are not of major importance.

### PART NUMBER EXAMPLE

**CCDC F 473 M 1B A54 B**

- Series
- Temperature Coefficient
- Capacitance Code
- Tolerance Code
- Voltage Code
- Lead Code
- Packing code




### DIMENSIONS (mm) & CAPACITANCE RANGE

(F:Standard Lead Spacing. Other lead spacing may be available upon request.)

| Capacitance (μF) | Code | 12V 1B, 16V 1C | | 25V 1E | | | 50V 1H | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Y5U E | Y5V F | Y5P P | Y5U E | Y5V F | Y5P P | Y5U E | Y5V F |
| 0.01 | 103 | | | 4.5 F=5.0 | 4.5 F=5.0 | 4.5 F=5.0 | | | 4.5 F=5.0 |
| 0.022 | 233 | | | 7 F=5.0 | 7 F=5.0 | | F=5.0 | | |
| 0.033 | 333 | | | | | | 9 F=6.35 | 6 F=5.0 | 5.5 F=5.0 |
| 0.047 | 473 | | | 9 F=6.35 | 8 F=5.0 | 7 F=5.0 | 13.5 F=9.5 | 9 F=6.35 | 7 F=5.0 |
| 0.068 | 683 | | | | | | | | |
| 0.1 | 104 | 7 F=5.0 | 7 F=5.0 | 11 F=6.35 | | | | | |
| 0.22 | 224 | | 9 F=6.35 | | | | | | |
| 0.47 | 474 | | | | | | | | |

### ELECTRICAL CHARACTERISTICS

| Technical Data | Condition | Specification |
|---|---|---|
| Capacitance | Measured at 1KHz 0.05 VRMS, 25°C ± 2°C | 0.01uF-0.47uF |
| Operating Temperature | Y5U, Y5V, Y5P | -30°C ~ + 85°C |
| Dissipation Factor (tanS) | Y5U, Y5V, Y5P | < 0.05 |
| Insulation Resistance | rated voltage at 25°C ± >°C and 70% R.H max 16Vdc, product voltage is 25Vdc | >1GΩ or 20MΩ Farad, whichever is less |
| Encapsulation | Standard | Phenolic Wax Epoxy Coating |
| Solderability of Leads | at least 75 % covered | Solder temperature 250°C ± 5°C Dipping: 3±0.5 sec (Flur shall be used) |

# CERAMIC DISC CAPACITORS

## CCDC SERIES: Semi-Conducting

### TEMPERATURE COEFFICIENT CODE

| Temperature Characteristics | | | | |
|---|---|---|---|---|
| Code | EIA Code | Characteristics. | | |
| P | Y5P | ±10 % | -30°C to | +85°C |
| E | Y5U | +22 to -56% | -30°C to | +85°C |
| F | Y5V | +22 to -82% | -30°C to | +85°C |

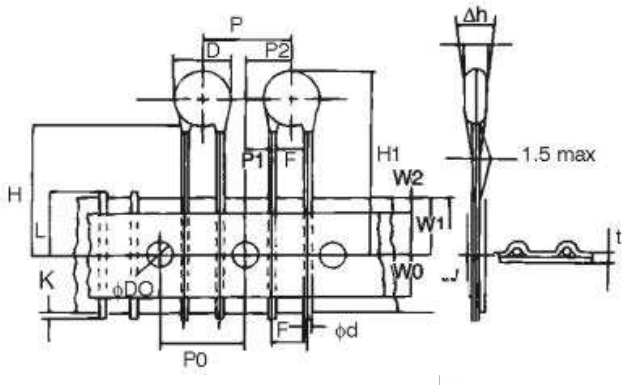
### TOLERANCE CODE

| Code | Tolerance |
|---|---|
| C | ±0.25pF |
| D | ±0.5pF |
| F | ±1%pF |
| G | ±2% |
| J | ±5% |
| K | ±10% |
| M | ±20% |

### VOLTAGE CODE EXAMPLE

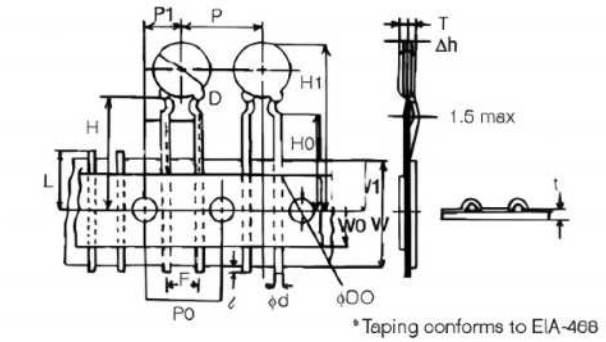
| Code | 1B | 1H |
|---|---|---|
| WVDC | 12V | 50V |

### RADIAL STRAIGHT-LEAD ON TAPE (S56 LEAD CODE)




### RADIAL KINK-IN ON TAPE (K56 LEAD CODE)

*Most Popular



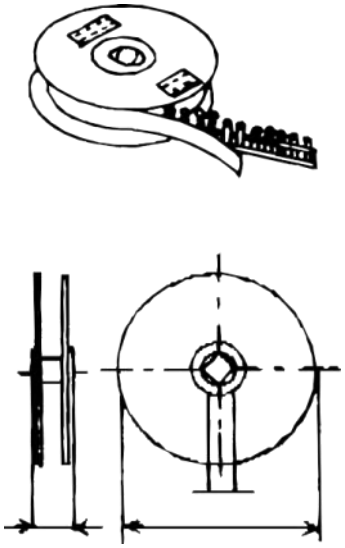

| Code | Dimensions |
|---|---|
| D | 11.0 max |
| d | 0.6 ±0.05 |
| P | 12.7 ±1.0 |
| P0 | 12.7 ±0.3 |
| P1 | 3.85 ±0.7 |
| P2 | 6.35 ±1.3 |
| F | 5.0 +0.8 -0.2 |
| Dh | 0 ±2.0 |
| W | 18.0 +1.0 -0.5 |
| W1 | 9.0 +0.75 -0.5 |
| W2 | 3.0 max |
| H | 18.0 +3.0 -0 |
| H0 | 16.0 ±0.5 |
| H1 | 32.25 max |
| K | 1.0 max |
| D0 | 4.0 ±0.2 |
| t | 0.7 ±0.2 |
| L | 11.0 max |


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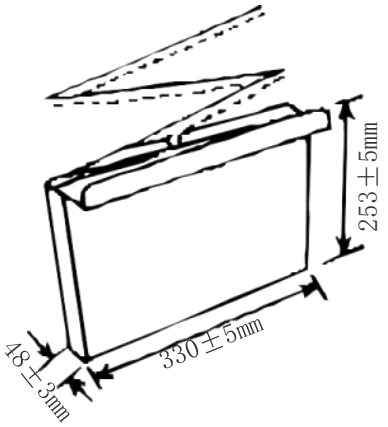
# CERAMIC DISC CAPACITORS

## CCDC SERIES: Semi-Conducting

### REEL PACK (R SUFFIX)



### AMMO PACK (A SUFFIX)




### LEAD CODES FOR BULK PACK (CERAMIC DISC ONLY)

| Lead Type | | |
|---|---|---|
| A-Straight | C-Kink In | D-Kink Out |
| 3.0mm | 4.8mm max<br>4.8±1mm | 4.8mm max<br>4.8±1mm |
| F-Special Length | Y-Y Formed | S & K-Taped |
| Per Customer Specification | 4.0 mm max<br>4.8 ±1.0 mm | See taping specifications above. |

| Lead Spacing (±1.00) in mm | | Wire dia. (±0.05) in mm | |
|---|---|---|---|
| Code | P | Code | d |
| 2 | 2.5 | 4 | 0.48 |
| 5 | 5 | 6 | 0.6 |
| 6 | 6.35 | 7 | 0.65 |
| 7 | 7.5 | 8 | 0.8 |
| 9 | 10.0 | 9 | 1.0 |
| 0 | 12.7 | | |
| A | 15.0 | | |

### HOW TO MAKE THE LEAD CODE FOR CERAMIC DISC (FOR BULK PACK ONLY)

A 6 7 B
- B — Bulk
- 7 — Wire Dia.
- 6 — Lead Spacing
- A — Lead Type

## CCDC SERIES:




### INTRODUCTION

Single layer metalized ceramic disc with resin coating (wax impregnated).

CCDCis suitable for low voltage application and offers larger capacitance values

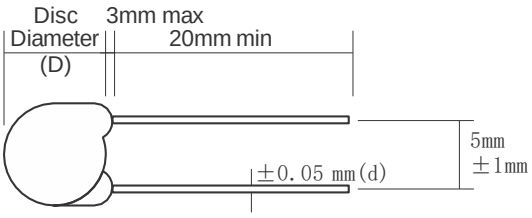
### APPLICATION

- Transistorized Circuits
- Low Voltage-by-pass, Coupling.
- Frequency determination where Dielectric losses, Hi-IR and Cap. stability are not of major importance.

### PART NUMBER EXAMPLE

**CCDC F 473 M 1B A54 B**

- Series
- Temperature Coefficient
- Capacitance Code
- Tolerance Code
- Voltage Code
- Lead Code
- Packing code




### DIMENSIONS (mm) & CAPACITANCE RANGE

(F:Standard Lead Spacing. Other lead spacing may be available upon request.)

| Capacitance | Voltage | 12V 1B, 16V 1C | | 25V 1E | | | 50V 1H | | |
|---|---|---|---|---|---|---|---|---|---|
| (μF) | Code | Y5U E | Y5V F | Y5P P | Y5U E | Y5V F | Y5P P | Y5U E | Y5V F |
| 0.01 | 103 | | | 4.5 F=5.0 | 4.5 F=5.0 | 4.5 F=5.0 | | | 4.5 F=5.0 |
| 0.022 | 233 | | | 7 F=5.0 | 7 F=5.0 | | F=5.0 | | |
| 0.033 | 333 | | | | | | 9 F=6.35 | 6 F=5.0 | 5.5 F=5.0 |
| 0.047 | 473 | | | 9 F=6.35 | 8 F=5.0 | 7 F=5.0 | 13.5 F=9.5 | 9 F=6.35 | 7 F=5.0 |
| 0.068 | 683 | | | | | | | | |
| 0.1 | 104 | 7 F=5.0 | 7 F=5.0 | 11 F=6.35 | | | | | |
| 0.22 | 224 | | 9 F=6.35 | | | | | | |
| 0.47 | 474 | | | | | | | | |

### ELECTRICAL CHARACTERISTICS

| Technical Data | Condition | Specification |
|---|---|---|
| Capacitance | Measured at 1KHz 0.05 VRMS, 25°C ± 2°C | 0.01uF-0.47uF |
| Operating Temperature | Y5U, Y5V, Y5P | -30°C ~ + 85°C |
| Dissipation Factor (tanS) | Y5U, Y5V, Y5P | <0.05 |
| Insulation Resistance | rated voltage at 25°C ± >°C and 70% R.H max 16Vdc, product voltage is 25Vdc | >1GΩ or 20MΩ Farad, whichever is less |
| Encapsulation | Standard | Phenolic Wax Epoxy Coating |
| Solderability of Leads | at least 75 % covered | Solder temperature 250°C ± 5°C Dipping: 3±0.5 sec (Flur shall be used) |



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# CERAMIC DISC CAPACITORS

## CCDC SERIES: Semi-Conducting

### TEMPERATURE COEFFICIENT CODE

| Temperature Characteristics | | | | |
|---|---|---|---|---|
| Code | EIA Code | Characteristics. | | |
| P | Y5P | ±10 % | -30°C to | +85°C |
| E | Y5U | +22 to -56% | -30°C to | +85°C |
| F | Y5V | +22 to -82% | -30°C to | +85°C |

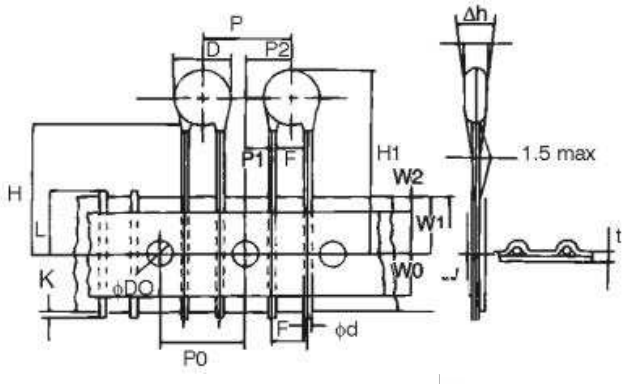
### TOLERANCE CODE

| Code | Tolerance |
|---|---|
| C | ±0.25pF |
| D | ±0.5pF |
| F | ±1%pF |
| G | ±2% |
| J | ±5% |
| K | ±10% |
| M | ±20% |

### VOLTAGE CODE EXAMPLE

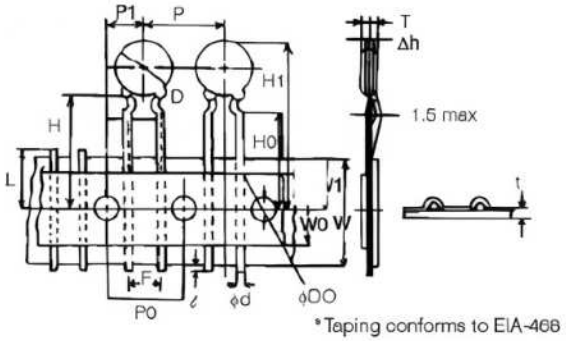
| Code | 1B | 1H |
|---|---|---|
| WVDC | 12V | 50V |

### RADIAL STRAIGHT-LEAD ON TAPE (S56 LEAD CODE)




### RADIAL KINK-IN ON TAPE (K56 LEAD CODE)

*Most Popular

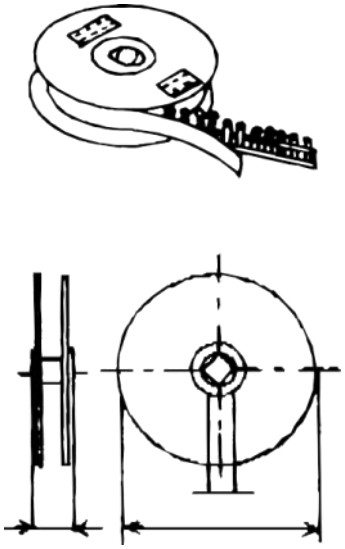



| Code | Dimensions |
|---|---|
| D | 11.0 max |
| d | 0.6 ±0.05 |
| P | 12.7 ±1.0 |
| P0 | 12.7 ±0.3 |
| P1 | 3.85 ±0.7 |
| P2 | 6.35 ±1.3 |
| F | 5.0 +0.8 -0.2 |
| Dh | 0 ±2.0 |
| W | 18.0 +1.0 -0.5 |
| W1 | 9.0 +0.75 -0.5 |
| W2 | 3.0 max |
| H | 18.0 +3.0 -0 |
| H0 | 16.0 ±0.5 |
| H1 | 32.25 max |
| K | 1.0 max |
| D0 | 4.0 ±0.2 |
| t | 0.7 ±0.2 |
| L | 11.0 max |

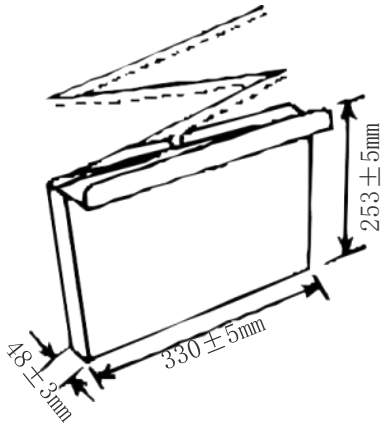
# CERAMIC DISC CAPACITORS

## CCDC SERIES: Semi-Conducting

### REEL PACK (R SUFFIX)



### AMMO PACK (A SUFFIX)




### LEAD CODES FOR BULK PACK (CERAMIC DISC ONLY)

| Lead Type | | |
|---|---|---|
| A-Straight | C-Kink In | D-Kink Out |
| 3.0mm | 4.8mm max<br>4.8±1mm | 4.8mm max<br>4.8±1mm |
| F-Special Length | Y-Y Formed | S & K-Taped |
| Per Customer Specification | 4.0 mm max<br>4.8 ±1.0 mm | See taping specifications above. |

| Lead Spacing (±1.00) in mm | | Wire dia. (±0.05) in mm | |
|---|---|---|---|
| Code | P | Code | d |
| 2 | 2.5 | 4 | 0.48 |
| 5 | 5 | 6 | 0.6 |
| 6 | 6.35 | 7 | 0.65 |
| 7 | 7.5 | 8 | 0.8 |
| 9 | 10.0 | 9 | 1.0 |
| 0 | 12.7 | | |
| A | 15.0 | | |

### HOW TO MAKE THE LEAD CODE FOR CERAMIC DISC (FOR BULK PACK ONLY)

A 6 7 B
- B — Bulk
- 7 — Wire Dia.
- 6 — Lead Spacing
- A — Lead Type

## CCDD SERIES: Spark Gap (DISCONTINUED)

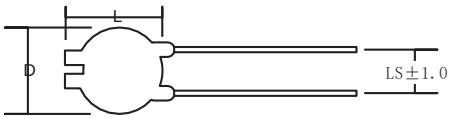


### INTRODUCTION

Spark Gap capacitors are designed to provide a reliable discharge path for stray, transient overvoltages and static voltage build-up. The construction of spark gap may enable the circuit designer to reduce costs by specifying lower voltage components.

### FEATURES

- Limited values
- Designed especially for spark gap application




### DIMENSIONS (mm) maximum

| Cap | Code | Voltage (V) | Lead Spacing (LS) | Diameter (D) | Length L | Thickness (T) |
|---|---|---|---|---|---|---|
| 0.75pF | R75 | 1KV 1.5KV 2KV | 6.35 | 9 | 13 | 6.35 |
| .001µF | 102 | 2KV | 9.50 | 12 | 26 | 6.35 |
| .01µF | 103 | 1.5KV 2KV 2.5KV | 9.50 | 20 | 26 | 6.35 |
| .02µF | 203 | 1KV | 9.50 | 24 | 27 | 6.35 |

### ELECTRICAL CHARACTERISTICS

| Technical Data | Condition | Specification |
|---|---|---|
| Capacitance | Measured at 1KHz 1VRMS at 25℃ | 0.75pF ~ 0.02µF |
| Dissipation Factor tan δ | | 2.5% max |
| Encapsulation | Standard | Phenolic Wax |
| Insulation Resistance | Measured at 500Vdc | 7500MΩ or R x C > 75Ω x F |
| Operating Temperature | Z5U<br>Y5P | +10℃ ~ +85℃<br>-30℃ ~+85℃ |
| Available Tolerance | | ±10% (K), ±20% (M)<br>Guarantied max value (U)<br>Guarantied min value (V) |

### PART NUMBER EXAMPLE

**CCDD P R75 V 102 A67 B**

- CCDD — Series
- P — Temperature Coefficient
- R75 — Capacitance Code
- V — Tolerance Code
- 102 — Voltage Code
- A67 — Lead Code
- B — Packing Code

### TEMPERATURE COEFFICIENT CODE

| Code | EIA Code | Temperature Characteristics | |
|---|---|---|---|
| M | Z5U | +22 to -56% | +10°C to +85°C |
| P | Y5P | ±10% | -30°C to +85°C |

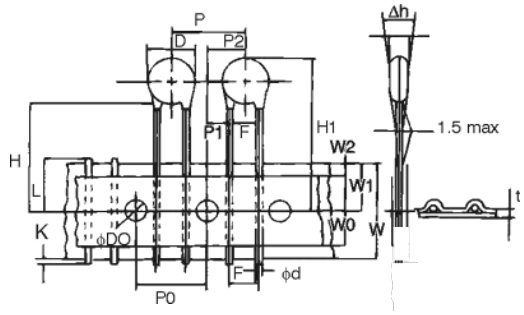
### VOLTAGE CODE EXAMPLE

| Code | 3A | 3R |
|---|---|---|
| WVDC | 1KV | 1.5KV |

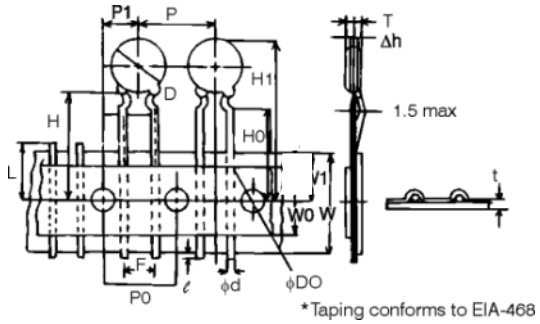
# CERAMIC DISC SPARK GAP CAPACITORS

## CCDD SERIES: Spark Gap

### RADIAL STRAIGHT-LEAD ON TAPE
(S56 LEAD CODE)

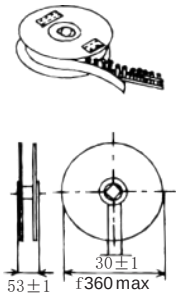



### RADIAL KINK-IN ON TAPE
(K56 LEAD CODE)
*Most Popular

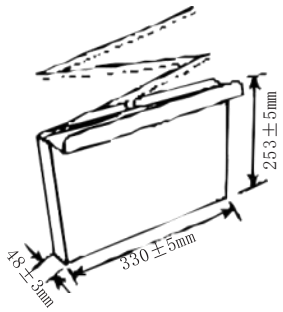



*Taping conforms to EIA-468

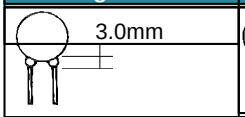
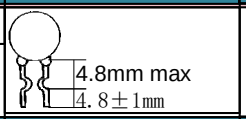
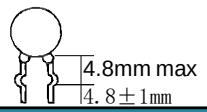
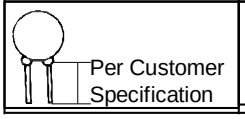
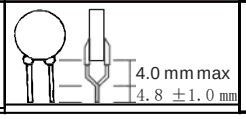
### REEL PACK (R SUFFIX)




### AMMO PACK (A SUFFIX)




### LEAD CODES FOR BULK PACK (CERAMIC DISC ONLY)

| Lead Type | | |
|---|---|---|
| **A**-Straight | **C**-Kink In | **D**-Kink Out |
|   |   |   |
| **F**-Special Length | **Y**-Y Formed | **S** & **K**-Taped |
|   |   | See taping specifications above. |

| Code | Dimensions |
|---|---|
| D | 11.0 max |
| d | 0.6 ±0.05 |
| P | 12.7 ±1.0 |
| P0 | 12.7 ±0.3 |
| P1 | 3.85 ±0.7 |
| P2 | 6.35 ±1.3 |
| F | 5.0 +0.8 -0.2 |
| Dh | 0 ±2.0 |
| W | 18.0 +1.0 -0.5 |
| W1 | 9.0 +0.75 -0.5 |
| W2 | 3.0 max |
| H | 18.0 +3.0 -0 |
| H0 | 16.0 ±0.5 |
| H1 | 32.25 max |
| K | 1.0 max |
| D0 | 4.0 ±0.2 |
| t | 0.7 ±0.2 |
| L | 11.0 max |

| Lead Spacing (±1.00) in mm | | Wire dia. (±0.05) in mm | |
|---|---|---|---|
| Code | P | Code | df |
| 2 | 2.5 | 4 | 0.48 |
| 5 | 5 | 6 | 0.6 |
| 6 | 6.35 | 7 | 0.65 |
| 7 | 7.5 | 8 | 0.8 |
| 9 | 10.0 | 9 | 1.0 |
| 0 | 12.7 | | |
| A | 15.0 | | |

### HOW TO MAKE THE LEAD CODE FOR CERAMIC DISC (FOR BULK PACK ONLY)

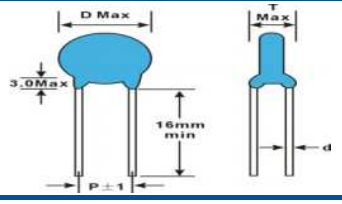
A 6 7 B
- B — Bulk
- 7 — Wire Dia.
- 6 — Lead Spacing
- A — Lead Type

# HIGH VOLTAGE CERAMIC DISC CAPACITOR

# CCDE

## FEATURES

- Use for coupling, and by-pass circuit there are a stable and high reliability products

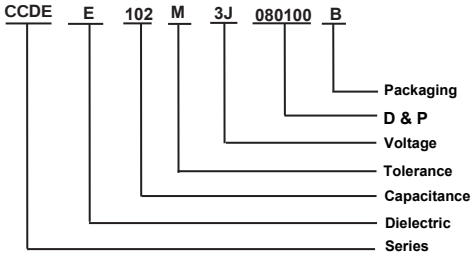



## SPECIFICATIONS

| | |
|---|---|
| OPERATING CONDITION RANGE | –25℃ to +85℃/-30℃to 105℃Y6P |
| RATED WORKING VOLTAGE | 1 KV– 50KVDC |
| CAPACITANCE RANGETEST VOLTAGE | 100pF–10,000pF |
| DISSIPATION FACTOR (tan δ) | 2 times of the rated voltage. |
| Y5P,**Y6P**, Z5U ·····: tan δ ≤2.5% | at 1 KHz, 1±0.2 Vrms. 25℃ |
| Z5V ·····: tan δ ≤5% | |
| INSULATION RESISTANCE | 10,000 MΩ or 200 MΩ whichever is the smaller |




**PART NUMBER EXAMPLE**




| RATED W. V | NPO(N) | SL(L) | Y5P(P)\|Y6P(PA) | Y5U(E) | Y5V(F) | DIMENSION | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | D | P | T | d |
| 1KV 3A | 010~100 | 220~121 | 221~681 | 102 | 332 | 7 | 5 | 4 | 0.5 |
| | | | 102 | 152~332 | 472 | 8 | 5 | | 0.5 |
| | | | 152 | 472 | | 9 | 5 | | 0.5 |
| | | | 222 | | 682~223 | 10 | 5 | | 0.5 |
| | | | | 682 | | 11 | 7.5 | | 0.6 |
| | | | 332 | | | 12 | 7.5 | | 0.6 |
| | | | 472 | 103 | | 13 | 7.5 | | 0.6 |
| | | | | | 203~223 | 14 | 7.5 | | 0.6 |
| | | | | | 473 | 18 | 7.5 | | 0.6 |
| 2KV 3D | 010~100 | 220~820 | 221~471 | | | 7 | 5 | 4 | 0.5 |
| | | | | 102 | | 7.5 | 5 | 4.5 | 0.5 |
| | | 101~121 | 561~681 | 152 | 332 | 8 | 5 | 4 | 0.5 |
| | | | 102 | 222 | | 9 | 5 | | 0.5 |
| | | | | | 472 | 9 | 7.5 | | 0.6 |
| | | | | 332 | | 10 | 7.5 | | 0.6 |
| | | | 152 | 472 | 682 | 11 | 7.5 | | 0.6 |
| | | | 222 | | 103 | 12 | 7.5 | | 0.6 |
| | | | | 682 | | 13 | 7.5 | | 0.6 |
| | | | 332 | | | 14 | 7.5 | | 0.6 |
| | | | 472 | 103 | 203~223 | 16 | 10 | 5 | 0.6 |
| 3KV 3U | 010~100 | 150~680 | | | | 7 | 7.5 | 4 | 0.6 |
| | | | | 102 | | 7.5 | 7.5 | 5 | 0.6 |
| | | 101 | 221~471 | | | 8 | 7.5 | 4 | 0.6 |
| | | | | | 152 | 8 | 7.5 | 5 | 0.6 |
| | | | 681~102 | | 222 | 9 | 7.5 | | 0.6 |
| | | | | 152 | 332 | 10 | 7.5 | | 0.6 |
| | | | | 222 | | 11 | 7.5 | | 0.6 |
| | | | | | 472 | 12 | 7.5 | | 0.6 |
| | | | | 332 | 682 | 13 | 10 | | 0.6 |
| | | | | 472 | | 14 | 10 | | 0.7 |
| | | | | | 103 | 15 | 10 | | 0.7 |
| 4KV 3G | | | 471 | 102 | | 7 | 10 | 5 | 0.6 |
| | | 680 | 561 | 152 | 272 | 8 | 10 | | 0.6 |
| | | | 102 | 272 | | 10 | 10 | | 0.6 |
| | | | 152 | | | 13 | 10 | | 0.8 |
| | | | 222 | | | 16 | 10 | | 0.8 |
| 6. 3KV 3J | | 390 | 391 | 102 | | 8 | 10 | 7 | 0.6 |
| | | | | 202 | | 10 | 10 | | 0.8 |
| | | | | 302 | | 12 | 10 | | 0.8 |
| | | | | 402 | | 14 | 10 | | 0.8 |
| 10KV 4A | | | 201 | | | 10 | 10 | 7 | 0.6 |
| | | | 391 | 102 | 152 | 12 | 10 | 8 | 0.8 |
| | | | 681 | 152 | 22 | 14 | 10 | | 0.8 |
| | | | 102 | 222 | | 17 | 10 | | 0.8 |
| 15KV 4R | | | 221 | 122 | | 8 | 10 | 9 | 0.8 |
| | | | 471 | 272 | | 12 | 10 | | 0.8 |
| | | | 681 | | | 14 | 10 | | 0.8 |
| | | | 102 | | | 17 | 10 | | 0.8 |
| 20KV 4D | | 10~30 | 201~271 | | | 10 | 10 | 8 | 0.6 |
| | | | 331~511 | | | 14 | 10 | 8 | 0.8 |
| | | | 102 | | | 18 | 12.5 | 9 | 0.8 |
| | | | | 472 | 103 | 24 | 12.5 | 9 | 0.8 |
| 30KV 4U | | | 102 | 472 | 103 | 30 | 15 | 12 | 1.5 |
| 40KV 4G | | | 102 | | | 30 | 15 | 20 | 1.5 |
| 50KV 4H | | | 102 | | | 30 | 15 | 22 | 1.5 |

## CCDB SERIES: High K




### INTRODUCTION

Single layer metalized ceramic disc with resin coating (wax impregnated) below 1KV or epoxy coated 1KV up.

Range of values extends to much higher values than CBDA

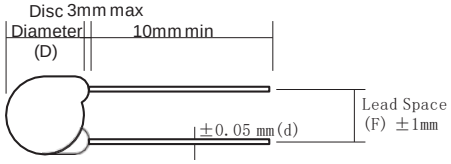
### APPLICATION

- By-Pass & Coupling
- Frequency Discriminating Circuits where Q and capacitance stability is not of major importance.
- Filtering, Blocking & Timing

### PART NUMBER EXAMPLE

**CCDB E 103 M 2H A57 B**

- Series
- Temperature Coefficient
- Capacitance Code
- Tolerance Code
- Voltage Code
- Lead Code
- Packing Code




### DIMENSIONS (mm) & CAPACITANCE RANGE (Reference)

(F:Standard Lead Spacing. Other lead spacing may be available upon request.)

| Thickness | 4.0 mm max. | | | | | | | | 5.0 | | 6.5 | | 8.0 | | 14.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 50V 1H/100V 2A | | | 500V 2H/630V 2J | | | 1KV 3A | | 2KV 3D | | 3KV 3U | | 5KV 3H/6KV 3I | | 10KV 4A |
| Cap (pf) Code | Y5E Y5F Y5P Z5F | Z5U Y5U | Z5V | Y5E Y5F Y5P Z5F | Z5U Y5U | Z5V | Y5E Y5F Y5P Z5F | Z5U Y5U | Y5E Y5F Y5P Z5F | Z5U | Y5E Y5F Y5P Z5F | Z5U | Y5P | Z5U | Y5P |
| 82 820 | D=5.5 F=2.5 | | | D=6 F=5.0 | | | D=6 F=6.35 | | D=6 F=6.35 | | D=6 F=6.35 | | D=8 F=6.35 | | D=9 F=10 |
| 100 101 | | | | | | | | | | | | | | | |
| 120 121 | | | | | | | | | | | | | | | D=13 F=12.7 |
| 180 181 | | | | | | | | | | | | | | | |
| 200 201 | | | | | | | | | | | | | | | |
| 220 221 | | | | | | | | | | | | | | | |
| 240 241 | | | | | | | | | | | | | | | |
| 300 301 | | | | | | | | | | | | | | | |
| 330 331 | | | | | | | | | | | | | | | |
| 390 391 | | | | | | | | | | | | | | | D=15 F=12.7 |
| 470 471 | | | | | | | | | | | | | D=10 F=10 | | |
| 500 501 | | | | | | | | | D=7 F=6.35 | | D=7 F=6.35 | | | | |
| 560 561 | | | | D=7.5 F=6.35 | | | D=8 F=6.35 | | | | | | | | |
| 680 681 | | | | | | | | | | | | | | | |
| 750 751 | | D=5 F=2.5 | | | D=6 F=5.0 | | | D=7 F=6.35 | | | | | D=14 F=12.7 | | |
| 820 821 | | | | | | | | | D=8 F=6.35 | D=6 F=6.35 | D=10 F=6.35 | D=6 F=6.35 | | D=12 F=10 | |
| 1000 102 | | | | | | | | | | | | | | | |
| 1200 122 | | | | | | | | | | | | | | | |
| 1500 152 | D=6.5 F=5.0 | | | D=8.5 F=6.35 | | | D=10 F=6.35 | | D=10 F=10 | D=7 F=6.35 | D=7 F=6.35 | | | | |
| 1800 182 | | | | | | | | | | | | | | | |
| 2000 202 | | | | | D=8.5 F=6.35 | | | D=9 F=6.35 | | | D=15 F=10 | | | | |
| 2200 222 | | | | | | | | | | | | | | | |
| 2500 252 | D=7.5 F=5.0 | D=6 F=5.0 | | | | D=6.5 F=5.0 | | | D=13 F=10 | D=8 F=6.35 | | D=10 F=6.35 | | D=16 F=12.7 | |
| 2700 272 | | | | | | | | | | | | | | | |
| 3000 302 | | | D=5.5 F=2.5 | D=10 F=6.35 | | | D=11 F=10 | | | | | | | | |
| 3300 332 | | | | | | | | | | | | | | | |
| 3900 392 | | | | | D=10 F=6.35 | D=8 F=6.35 | | | | D=10 F=6.35 | | D=15 F=10 | | | |
| 4700 472 | D=10 F=5.0 | | | D=14 F=10 | | | D=15 F=10 | D=10 F=10 | D=15 F=10 | | | | | | |
| 5600 562 | | | | | | | | | | | | | | | |
| 6800 682 | | D=8 F=5.0 | D=7 F=5.0 | D=15 F=10 | D=12 F=10 | D=10.5 F=6.35 | D=18 F=10 | D=14 F=10 | | D=14 F=10 | | | | | |
| 7500 752 | D=11.5 F=5.0 | | | | | | | | | | | | | | |
| 8200 822 | | | | | | D=12 F=10 | | | | | | | | | |
| 10000 103 | | | | | | | | | | | | | | | |
| 15000 153 | D=15 F=5.0 | D=10 F=5.0 | | | D=17 F=10 | D=13 F=10 | | D=18 F=10 | | | | | | | |
| 20000 203 | | | D=9.5 F=5.0 | | | | | | | | | | | | |
| 22000 223 | | | | | | | | | | | | | | | |
| 33000 333 | D=17 F=10 | D=12.5 | | | D=23 F=10 | | | D=25 F=10 | | | | | | | |
| 47000 473 | | D=16 F=10 | D=11 | | | D=15 F=10 | | | | | | | | | |
| 56000 563 | | | D=13 | | | | | | | | | | | | |
| 100000 104 | | D=20 | D=17 | | | D=23 | | | | | | | | | |



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# HIGH VOLTAGECERAMIC DISC CAPACITORS

## CCDB SERIES: High K

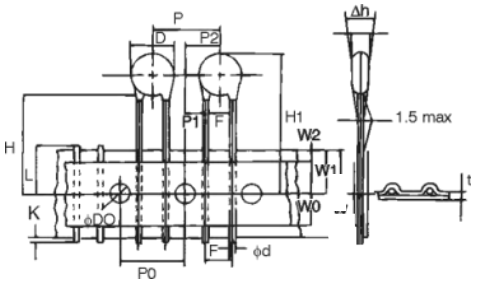
### ELECTRICAL CHARACTERISTICS

| Technical Data | Condition | Specification |
|---|---|---|
| Capacitance | Measured at 1KHz 1.0 ~ 5.0 VRMS, 25°C | 80pF ~ 0.1μF |
| Operating Temperature | X7R | -55°C ~ +125°C |
| | Y5E, Y5P | -30°C ~ +85°C |
| | Z5U, Z5V | -10°C ~ +85°C |
| Dissipation Factor (tan S) | X7R, Y5E, Y5P, Z5U | ≤ 0.025 |
| | Z5V | < 0.05 |
| Insulation Resistance | Rated Voltage at 25°C ± >°C and 70% R.H. max | >10GΩ or 200MΩ Farad, whichever is less |
| Encapsulation | Standard 1KV and higher | Phenolic Wax Epoxy Coating |
| Solderability of Leads | at least 75% is covered | Solder Temperature 250°C ± 5°C Dipping: 3±0.5 sec (Flur shall be used) |

### TEMPERATURE COEFFICIENT CODE

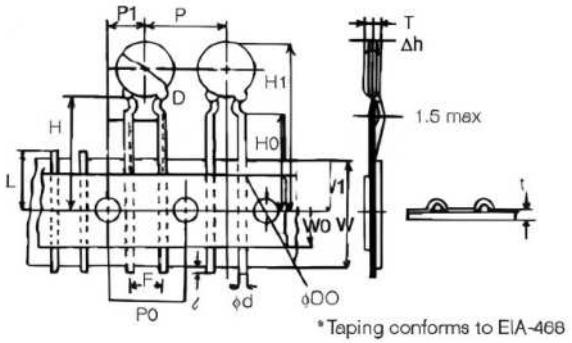
| Temperature Characteristics | | |
|---|---|---|
| Code | EIA Code | Characteristics |
| M | Z5U | +22 to -56% +10 °C to +85°C |
| V | Z5V | +22 to -82% +10 °C to +85°C |
| G | Y5E | ±4.7% -30 °C to+85°C |
| P | Y5P | ±10% -30 °C to+85°C |
| E | Y5U | +22 to -56% -30 °C to +85°C |

### RADIAL STRAIGHT-LEAD ON TAPE (S56 LEAD CODE)




### RADIAL KINK-IN ON TAPE (K56 LEAD CODE)

*Most Popular




| Code | Dimensions |
|---|---|
| D | 11.0 max |
| d | 0.6 ±0.05 |
| P | 12.7 ±1.0 |
| P0 | 12.7 ±0.3 |
| P1 | 3.85 ±0.7 |
| P2 | 6.35 ±1.3 |
| F | 5.0 +0.8 -0.2 |
| h | 0 ±2.0 |
| W | 18.0 +1.0 -0.5 |
| W1 | 9.0 +0.75 -0.5 |
| W2 | 3.0 max |
| H | 18.0 +3.0 -0 |
| H0 | 16.0 ±0.5 |
| H1 | 32.25 max |
| K | 1.0 max |
| D0 | 4.0 ±0.2 |
| t | 0.7 ±0.2 |
| L | 11.0 max |

# HIGH VOLTAGECERAMIC DISC CAPACITORS

## CCDB SERIES: High K

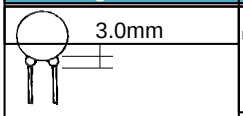
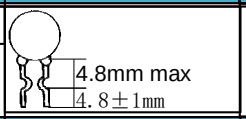
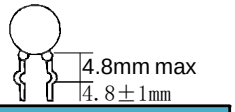
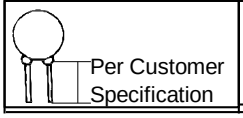
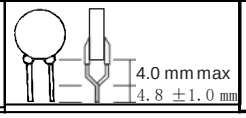
### TOLERANCE CODE

| Code | Tolerance |
|---|---|
| C | ±0.25pF |
| D | ±0.5pF |
| F | ±1% |
| G | ±2% |
| J | ±5% |
| K | ±10% |
| M | ±20% |

### VOLTAGE CODE EXAMPLE

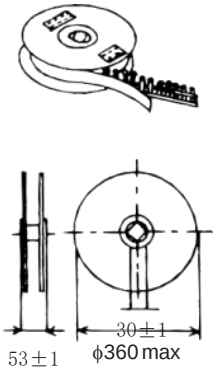
| Code | 1H | 2H | 3H | 4A |
|---|---|---|---|---|
| WVDC | 50V | 500V | 5KV | 10KV |

### LEAD CODES FOR BULK PACK (CERAMIC DISC ONLY)

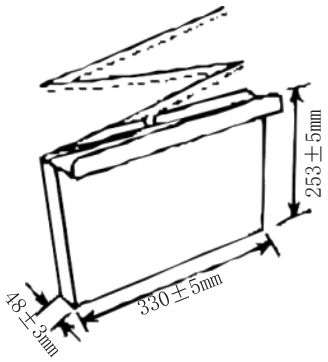
| Lead Type | | |
|---|---|---|
| **A**-Straight | **C**-Kink In | **D**-Kink Out |
|  |  |  |
| **F**-Special Length | **Y**-Y Formed | **S** & **K**-Taped |
|  |  | See taping specifications above. |

| Lead Spacing (±1.00) in mm | | Wire dia. (±0.05) in mm | |
|---|---|---|---|
| Code | F | Code | d |
| 2 | 2.5 | 4 | 0.48 |
| 5 | 5 | 6 | 0.6 |
| 6 | 6.35 | 7 | 0.65 |
| 7 | 7.5 | 8 | 0.8 |
| 9 | 10.0 | 9 | 1.0 |
| 0 | 12.7 | | |
| A | 15.0 | | |

### REEL PACK (R SUFFIX)




### AMMO PACK (A SUFFIX)




### HOW TO MAKE THE LEAD CODE FOR CERAMIC DISC (FOR BULK PACK ONLY - B SUFFIX)

A 6 7 B

- B — Bulk
- 7 — Wire Dia.
- 6 — Lead Spacing
- A — Lead Type

## CCDH SERIES DOORKNOB HV CAPACITOR

### ■ Feature

- Excellent temperature characteristics
- Low dissipation
- High insulation resistance
- High breakdown strength
- Fully symmetric full copper electrode
- Epoxy coating
- Screw terminal mounting

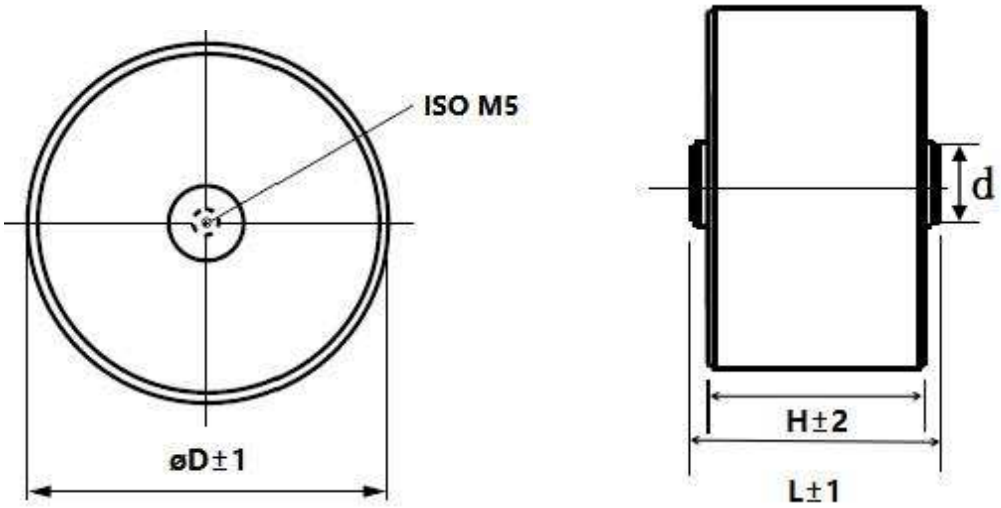



### ■ Application

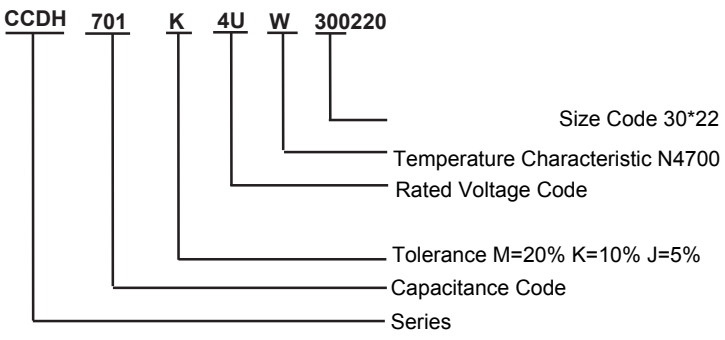
- Smart grid
- High voltage power supplies
- $CO_2$ lasers
- X-ray equipment
- Welding equipment

### ■ Range Of Capacity 10 pF to 10,000pF

### ■ Dimensional Drawing




**PART NUMBER EXAMPLE**



## CCDH SERIES DOORKNOB HV CAPACITOR

### ■ Specification

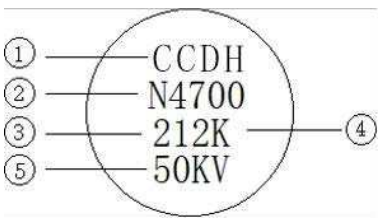
| Type | Rated Voltage kVdc | Test Voltage kVdc | Corona Inception Voltage (kVrms) (<10pc) | Capacitance (pF) | Dimensions millimeters (mm) | | | | Terminal Type |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | D ± 1 | L ±1 | H ± 2 | d | |
| CCDH701K4UW300220 | 30 | 45 | 12 | 700 | 30 | 22 | 17 | 12 | ISO M5 |
| CCDH102K4UW300220 | | | | 1000 | 30 | | | 12 | |
| CCDH122K4UW400220 | | | | 1200 | 40 | | | 14.5 | |
| CCDH152K4UW400220 | | | | 1500 | 40 | | | 14.5 | |
| CCDH472K4UW550220 | | | | 4700 | 55 | | | 14.5 | |
| CCDH781K4UW300250 | | | | 780 | 30 | 25 | 20 | 12 | |
| CCDH102K4UW400250 | | | | 1000 | 40 | | | 12 | |
| CCDH112K4UW400250 | | | | 1100 | 40 | | | 14.5 | |
| CCDH172K4UW450250 | | | | 1700 | 45 | | | 14.5 | |
| CCDH182K4UW450250 | | | | 1800 | 45 | | | 14.5 | |
| CCDH202K4UW500250 | | | | 2000 | 50 | | | 14.5 | |
| CCDH252K4UW550250 | | | | 2500 | 55 | | | 14.5 | |
| CCDH272K4UW550250 | | | | 2700 | 55 | | | 14.5 | |
| CCDH302K4UW550250 | | | | 3000 | 55 | | | 14.5 | |
| CCDH332K4UW550250 | | | | 3300 | 55 | | | 14.5 | |
| CCDH362K4UW600250 | | | | 3600 | 60 | | | 14.5 | |
| CCDH103K4UW900250 | | | | 10000 | 90 | | | 14.5 | |
| CCDH591K4UW330280 | | | | 590 | 30 | 28 | 23 | 12 | |
| CCDH941K4UW400280 | | | | 940 | 40 | | | 14.5 | |
| CCDH172K4UW500280 | | | | 1700 | 50 | | | 14.5 | |
| CCDH401K4GW300350 | 40 | 60 | 16 | 400 | 30 | 30 | 25 | 12 | ISO M5 |
| CCDH202K4GW600350 | | | | 2000 | 60 | | | 14.5 | |
| CCDH441K4GW300300 | | | | 440 | 30 | 30 | 25 | 12 | |
| CCDH571K4GW300300 | | | | 570 | 30 | | | 12 | |
| CCDH751K4GW400300 | | | | 750 | 40 | | | 14.5 | |
| CCDH102K4GW500300 | | | | 1000 | 50 | | | 14.5 | |
| CCDH122K4GW450300 | | | | 1200 | 45 | | | 14.5 | |
| CCDH142K4GW500300 | | | | 1400 | 50 | | | 14.5 | |
| CCDH172K4GW550300 | | | | 1700 | 55 | | | 14.5 | |
| CCDH202K4GW550300 | | | | 2000 | 55 | | | 14.5 | |
| CCDH242K4GW600300 | | | | 2400 | 60 | | | 14.5 | |
| CCDH272K4GW600300 | | | | 2700 | 60 | | | 14.5 | |
| CCDH332K4GW700300 | | | | 3300 | 70 | | | 14.5 | |

# SCREW TERMINAL CERAMIC DISC CAPACITOR

## CCDH SERIES DOORKNOB HV CAPACITOR

| Type | Rated Voltage kVdc | Test Voltage kVdc | Corona Inception Voltage (kVrms) (<10pc) | Capacitance (pF) | Dimensions millimeters (mm) | | | | Terminal Type |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | D ± 1 | L ±1 | H ± 2 | d | |
| CCDH281K4HW300370 | 50 | 75 | 20 | 280 | 30 | 37 | 32 | 12 | ISO M5 |
| CCDH341K4HW300330 | | | | 340 | 30 | 33 | 28 | 12 | |
| CCDH561K4HW400330 | | | | 560 | 40 | | | 14.5 | |
| CCDH851K4HW400330 | | | | 850 | 40 | | | 14.5 | |
| CCDH102K4HW450330 | | | | 1000 | 45 | | | 14.5 | |
| CCDH212K4HW600330 | | | | 2100 | 60 | | | 14.5 | |
| CCDH221K4HW600330 | 50 | 75 | 20 | 2200 | 60 | 33 | 28 | 14.5 | ISO M5 |
| CCDH332K4HW700330 | | | | 3000 | 70 | | | 14.5 | |
| CCDH602K4HW800800 | | | | 6000 | 80 | 80 | 75 | 14.5 | |
| CCDH501K4IW400400 | 60 | 90 | 24 | 500 | 40 | 40 | 35 | 14.5 | ISO M5 |
| CCDH701K4IW450400 | | | | 700 | 45 | | | 14.5 | |
| CCDH851K4IW500400 | | | | 850 | 50 | | | 14.5 | |
| CCDH102K4IW450400 | | | | 1000 | 45 | | | 14.5 | |
| CCDH122K4IW550400 | | | | 1200 | 55 | | | 14.5 | |
| CCDH202K4LW600400 | 70 | 100 | 28 | 2000 | 60 | 40 | 35 | 14.5 | ISO M5 |
| CCDH751K5AW600460 | 100 | 150 | 40 | 750 | 60 | 46 | 41 | 14.5 | ISO M5 |
| CCDH102K5AW600460 | | | | 1000 | 60 | | | 14.5 | |
| CCDH102K5BW600530 | 120 | 180 | 48 | 1000 | 60 | 53 | 48 | 14.5 | ISO M5 |
| CCDH251K5RW300530 | 150 | 220 | 60 | 250 | 30 | 53 | 48 | 12 | ISO M5 |
| CCDH801K5RW600530 | | | | 800 | 60 | | | 14.5 | |

## ■ Marking




| |
|---|
| ①Manufacturer Marking |
| ②Temperature Characteristic |
| ③Rated Capacitance |
| ④Tolerance of Capacitance |
| ⑤Rated Voltage |

## CCDH SERIES DOORKNOB HV CAPACITOR

### ■ Specification and Test Method

<table>
<tr><th colspan="2">Item</th><th>Specifications</th><th colspan="6">Testing Method</th></tr>
<tr><td rowspan="4">Appear ance</td><td>1 Appearance and Dimensions</td><td>No marked defect</td><td colspan="6">Shall be visually examined or Venire calipers.</td></tr>
<tr><td>2 Marking</td><td>To be easily legible</td><td colspan="6">Shall be visually examined.</td></tr>
<tr><td>3 Material</td><td colspan="7">Capacitor elements made from N4700 ceramic in a molded epoxy case. Screw terminals: Terminals silver-plated.</td></tr>
<tr><td>4 Thread</td><td>ISO M5</td><td colspan="6">Check with ISO M5 bolts</td></tr>
<tr><td rowspan="6">Electr- ical perfor- mance</td><td>5 Capacitance</td><td>Within the specified tolerance</td><td colspan="6">The capacitance shall be measured at 20℃ with 1 ±0.2kHz and AC5V(r.m.s) max..</td></tr>
<tr><td>6 Dissipation Factor (D.F)</td><td>0.2%Max.</td><td colspan="6">The capacitance shall be measured at 20℃ with 1 ±0.2kHz and AC5V(r.m.s) max.</td></tr>
<tr><td>7 Insulation Resistance (I.R)</td><td>200,000MΩ.min.</td><td colspan="6">The insulation resistance shall be measured with DC 500V within 60±2 s. of charging.</td></tr>
<tr><td>8 Power frequency withstand voltage</td><td>Between terminal</td><td colspan="6">150% of rated voltage (In oil) ,1min.</td></tr>
<tr><td rowspan="3">9 Temperature Characteristics</td><td rowspan="3">-4700±1000ppm/℃</td><td colspan="6">The capacitance should be measured at each step as below table.</td></tr>
<tr><td>Step</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td></td><td>20±2℃</td><td>-40±2℃</td><td>20±2℃</td><td>70±2℃</td><td>20±2℃</td></tr>
<tr><td>10 Corona limit</td><td><10pC</td><td colspan="6">at 40% rated AC voltage (In oil).</td></tr>
</table>


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JINPEI

## CCDH SERIES DOORKNOB HV CAPACITOR

<table>
<tr><th colspan="2">Item</th><th colspan="2">Specifications</th><th>Testing Method</th></tr>
<tr><td rowspan="5">Climatic Tests</td><td rowspan="3">11 Humidity (under Steady State)</td><td>Capacitance</td><td>≤10%</td><td rowspan="3">Set the capacitor for 100h at 40±2℃ in 90 to 95% humidity.</td></tr>
<tr><td>D.F</td><td><1%</td></tr>
<tr><td>I.R</td><td>>10⁹Ω</td></tr>
<tr><td>12 Temperature cycle test</td><td colspan="2">The Capacitor should be normal, the requirement in item 5 to10 of the table shall be met.</td><td>Pass through the atmosphere -40℃, 1h→RT, 0.5h→+80℃, 1h; 10 cycles.</td></tr>
<tr><td rowspan="3">13 Life Test</td><td>Capacitance change</td><td>±5%</td><td rowspan="3">Apply a DC voltage of 125% of the rated voltage for 100+24/-0 h in oil at 85±2℃.Post-treatment : capacitor shall be stored for 24±2h at room condition. (charge/discharge current:50mA max.)</td></tr>
<tr><td>D.F</td><td>1.0%max.</td></tr>
<tr><td>I.R</td><td>1,000M</td></tr>
<tr><td rowspan="4">Mechanical Performance Test</td><td rowspan="4">14 Strength of Terminal</td><td>Torque strength</td><td>Capacitor shall not be broken.</td><td>When mounting the capacitors on equipment, be sure to mount them within the torque strength values shown in the table below.<br>size | torque (N • m)<br>M5 | 1.5</td></tr>
<tr><td>pull</td><td>No unusual</td><td>Fix the body of capacitor apply a tensile weight gradually to each terminal in the radial direction of capacitor up to table below.<br>size | pull (N)<br>M5 | 5.0</td></tr>
</table>

**CCDH SERIES** DOORKNOB HV CAPACITOR

# Announcements:

（1） Handing and storage

Please avoid handing and storage in high temperature,humidity and rain.

Collision avoidance.

Do not expose to $H_2SO_4$, HCL, $HNO_3$ and other toxic gases.

(2) Operating Collision avoidance.

Please do not get sweat and other electrolytes. Please do not operate with bare hands.

Do not weld on the screw terminals.

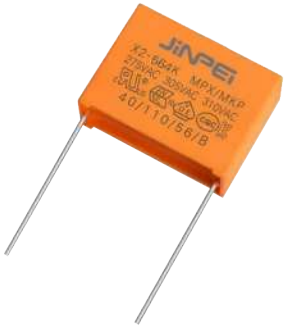
Do not rework the terminals.

(3) Using

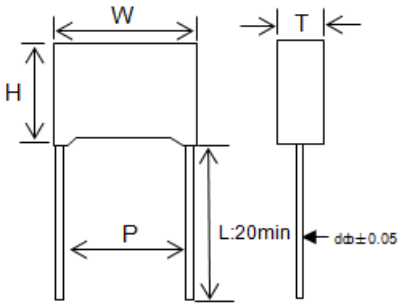
Avoid as much as possible the transfer of radioactive heat from mechanical piping, etc., to the capacitor.

# CDCA

film interference suppression



## ■ Outline Drawing




## ▪Features

- Metallized polypropylene structure
- Withstanding overvoltage stressing
- Excellent active and passive flame resistant abilities
- Widely used in across-the-line, interference suppression circuit, etc.

## • Specifications

| | | | |
|---|---|---|---|
| class | X2 | | |
| Climatic Category/Passive Flammability Category | 40/110/56/B | | |
| Operating temperature | -40℃~110℃ | | |
| Rated Voltage | 310VAC,50/60Hz<br>Mains voltage can't be higher than 250Vac,50/60Hz | | |
| Maximum continuous DC voltage | 630Vdc | | |
| Capacitance Range | 0.0010 ~ 10.0μF | | |
| Capacitance Tolerance | ±10% (K), ±20% (M) | | |
| Voltage Proof | Between Terminals: | 4.3$U_R$(DC) (5S) | |
| | Between Terminals To Case: | 2 120Vac (1min) | |
| Dissipation Factor | 0.0010μF ≤ $C_R$ ≤ 0.47μF | 0.47μF < $C_R$ ≤ 1.0μF | 1.0μF < $C_R$ ≤ 10μF |
| | ≤15×$10^{-4}$ (1kHz,20℃) | ≤20×$10^{-4}$(1kHz,20℃) | ≤30×$10^{-4}$(1kHz,20℃) |
| | ≤20×$10^{-4}$(10kHz,20℃) | ≤40×$10^{-4}$(10kHz,20℃) | ---------- |
| Insulation Resistance | ≥15 000MΩ, $C_R$≤0.33μF<br>≥5 000s, $C_R$>0.33μF (20℃,100V,1min) | | |

# CDCA

## STRAIGHT LEAD SPACING（P）

* Leads pace is straight lead non-formed original leads pace.

| mm | 10 | 15 | 22.5 |
|---|---|---|---|
| Code | 100 | 150 | 225 |

## LEAD LENGTH FROM SEATING PLANE

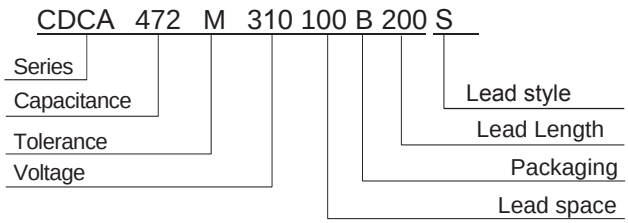
| mm | 10 | 10 | 15 |
|---|---|---|---|
| Code | 100 | 100 | 150 |

## LEAD STYLE

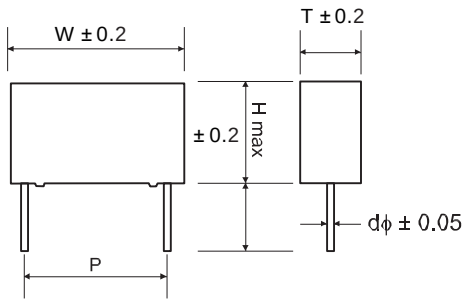
| CODE | STYLE |
|---|---|
| S | Straight |
| K | Kink-In (Stand off) |
| F | Form out** |
| I | Form in** |

** For Bulk packaging with formed leads, add an additional 3 digit lead spacing code at end of part number.

## PART NUMBER EXAMPLE




* Lead space is straight lead non-formed original leadspace.




## ■ Dimensions (mm)

| 310Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.0010 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA102*310075*** |
| 0.0012 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA122*310075*** |
| 0.0015 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA152*310075*** |
| 0.0018 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA182*310075*** |
| 0.0022 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA222*310075*** |
| 0.0027 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA272*310075*** |
| 0.0033 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA332*310075*** |
| 0.0039 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA392*310075*** |
| 0.0047 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA472*310075*** |
| 0.0056 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA562*310075*** |
| 0.0068 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA682*310075*** |
| 0.0082 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA822*310075*** |
| 0.01 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA103*310075*** |
| 0.012 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA123*310075*** |
| 0.015 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA153*310075*** |
| 0.018 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA183*310075*** |
| 0.022 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCA223*310075*** |
| 0.027 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCA273*310075*** |
| 0.033 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCA333*310075*** |
| 0.039 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | CDCA393*310075*** |
| 0.047 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | CDCA473*310075*** |
| 0.068 | 10.5 | 13.0 | 7.0 | 7.5 | 0.6 | CDCA683*310075*** |
| 0.1 | 10.5 | 14.0 | 8.0 | 7.5 | 0.6 | CDCA104*310075*** |
| 0.0047 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCA472*310100*** |
| 0.0056 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCA562*310100*** |
| 0.0068 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCA682*310100*** |
| 0.0082 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCA822*310100*** |
| 0.01 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCA103*310100*** |
| 0.01 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA103*310100*** |
| 0.012 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA123*310100*** |
| 0.015 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCA153*310100*** |
| 0.018 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA183*310100*** |
| 0.022 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCA103*310100*** |
| 0.022 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA103*310100*** |
| 0.027 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA273*310100*** |
| 0.033 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCA333*310100*** |
| 0.033 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA333*310100*** |
| 0.039 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA393*310100*** |
| 0.047 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA473*310100*** |
| 0.056 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCA563*310100*** |
| 0.068 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCA683*310100*** |
| 0.082 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCA823*310100*** |
| 0.1 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCA104*310100*** |
| 0.12 | 13.0 | 13.0 | 7.0 | 10.0 | 0.6 | CDCA124*310100*** |
| 0.15 | 13.0 | 14.0 | 8.0 | 10.0 | 0.6 | CDCA154*310100*** |
| 0.18 | 13.0 | 16.0 | 9.0 | 10.0 | 0.6 | CDCA184*310100*** |
| 0.22 | 13.0 | 16.0 | 9.0 | 10.0 | 0.6 | CDCA224*310100*** |
| 0.33 | 13.0 | 20.0 | 10.0 | 10.0 | 0.6 | CDCA334*310100*** |
| 0.47 | 13.0 | 22.0 | 12.0 | 10.0 | 0.6 | CDCA474*310100*** |

# CDCA

## ■ Dimensions (mm)

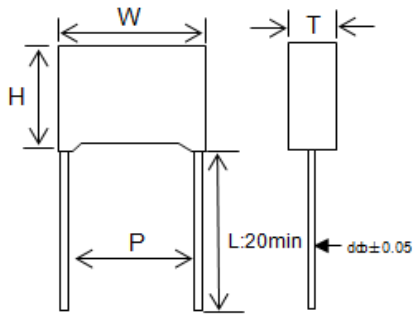
| 310Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.01 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA103*310150*** |
| 0.012 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA123*310150*** |
| 0.015 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA153*310150*** |
| 0.018 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA183*310150*** |
| 0.022 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA223*310150*** |
| 0.027 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA273*310150*** |
| 0.033 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA333*310150*** |
| 0.039 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA393*310150*** |
| 0.047 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA473*310150*** |
| 0.056 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA563*310150*** |
| 0.068 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA683*310150*** |
| 0.082 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA823*310150*** |
| 0.1 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCA104*310150*** |
| 0.1 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCA104*310150*** |
| 0.12 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCA124*310150*** |
| 0.15 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCA154*310150*** |
| 0.15 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | CDCA154*310150*** |
| 0.18 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCA184*310150*** |
| 0.18 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | CDCA184*310150*** |
| 0.22 | 18.0 | 13.0 | 7.0 | 15.0 | 0.8 | CDCA224*310150*** |
| 0.22 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | CDCA224*310150*** |
| 0.27 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | CDCA274*310150*** |
| 0.33 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | CDCA334*310150*** |
| 0.33 | 18.0 | 15.5 | 9.5 | 15.0 | 0.8 | CDCA334*310150*** |
| 0.39 | 18.0 | 17.0 | 8.0 | 15.0 | 0.8 | CDCA394*310150*** |
| 0.47 | 18.0 | 16.0 | 10.0 | 15.0 | 0.8 | CDCA474*310150*** |
| 0.47 | 18.0 | 17.5 | 9.0 | 15.0 | 0.8 | CDCA474*310150*** |
| 0.47 | 18.0 | 18.5 | 11.0 | 15.0 | 0.8 | CDCA474*310150*** |
| 0.56 | 18.0 | 19.0 | 10.0 | 15.0 | 0.8 | CDCA564*310150*** |
| 0.56 | 18.0 | 19.0 | 11.0 | 15.0 | 0.8 | CDCA564*310150*** |
| 0.68 | 18.0 | 19.0 | 11.0 | 15.0 | 0.8 | CDCA684*310150*** |
| 0.82 | 18.0 | 26.0 | 16.0 | 15.0 | 0.8 | CDCA824*310150*** |
| 0.1 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCA104*310220*** |
| 0.15 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCA154*310220*** |
| 0.18 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCA184*310220*** |
| 0.22 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCA224*310220*** |
| 0.22 | 26.5 | 16.5 | 7.0 | 22.0 | 0.8 | CDCA224*310220*** |
| 0.27 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCA274*310220*** |
| 0.33 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCA334*310220*** |
| 0.33 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCA334*310220*** |
| 0.33 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCA334*310220*** |
| 0.39 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCA394*310220*** |
| 0.47 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCA474*310220*** |
| 0.47 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCA474*310220*** |
| 0.56 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCA564*310220*** |
| 0.56 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCA564*310220*** |
| 0.68 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCA684*310220*** |
| 0.68 | 26.5 | 17.0 | 10.0 | 22.0 | 0.8 | CDCA684*310220*** |
| 0.68 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCA684*310220*** |
| 0.82 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCA824*310220*** |
| 1.0 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCA105*310220*** |
| 1.0 | 26.5 | 20.0 | 11.0 | 22.0 | 0.8 | CDCA105*310220*** |
| 1.0 | 26.0 | 21.5 | 12.0 | 22.0 | 0.8 | CDCA105*310220*** |
| 1.2 | 26.5 | 20.0 | 11.0 | 22.0 | 0.8 | CDCA125*310220*** |
| 1.5 | 26.5 | 22.0 | 12.0 | 22.0 | 0.8 | CDCA155*310220*** |
| 1.8 | 26.5 | 24.5 | 15.5 | 22.0 | 0.8 | CDCA185*310220*** |
| 2.2 | 26.5 | 24.5 | 15.5 | 22.0 | 0.8 | CDCA225*310220*** |
| 2.2 | 26.5 | 25.0 | 16.5 | 22.0 | 0.8 | CDCA225*310220*** |
| 2.2 | 26.5 | 29.5 | 14.5 | 22.0 | 0.8 | CDCA225*310220*** |

| 310Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.47 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCA474*310270*** |
| 0.47 | 31.5 | 19.5 | 9.0 | 27.0 | 0.8 | CDCA474*310270*** |
| 0.56 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCA564*310270*** |
| 0.68 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCA684*310270*** |
| 0.68 | 31.5 | 19.5 | 11.0 | 27.0 | 0.8 | CDCA684*310270*** |
| 0.82 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCA824*310270*** |
| 0.82 | 31.5 | 19.5 | 9.0 | 27.0 | 0.8 | CDCA824*310270*** |
| 1.0 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCA105*310270*** |
| 1.0 | 31.5 | 19.5 | 11.0 | 27.0 | 0.8 | CDCA105*310270*** |
| 1.2 | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | CDCA125*310270*** |
| 1.5 | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | CDCA155*310270*** |
| 1.8 | 32.0 | 22.0 | 13.0 | 27.0 | 0.8 | CDCA185*310270*** |
| 2.2 | 32.0 | 25.0 | 13.0 | 27.0 | 0.8 | CDCA225*310270*** |
| 2.2 | 32.0 | 25.0 | 15.0 | 27.0 | 0.8 | CDCA225*310270*** |
| 2.7 | 32.0 | 28.0 | 14.0 | 27.0 | 0.8 | CDCA275*310270*** |
| 3.3 | 32.0 | 28.0 | 17.0 | 27.0 | 0.8 | CDCA335*310270*** |
| 3.3 | 31.5 | 32.0 | 16.0 | 27.0 | 0.8 | CDCA335*310270*** |
| 3.3 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCA335*310270*** |
| 3.9 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCA395*310270*** |
| 4.7 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCA475*310270*** |
| 4.7 | 31.5 | 31.0 | 21.0 | 27.0 | 0.8 | CDCA475*310270*** |
| 5.6 | 32.0 | 37.0 | 22.0 | 27.0 | 0.8 | CDCA565*310270*** |
| 1.5 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCA155*310270*** |
| 1.8 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCA185*310370*** |
| 2.2 | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCA225*310370*** |
| 2.2 | 41.0 | 25.0 | 14.0 | 37.0 | 1.0 | CDCA225*310370*** |
| 2.7 | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCA275*310370*** |
| 3.3 | 41.0 | 26.0 | 15.0 | 37.0 | 1.0 | CDCA335*310370*** |
| 3.3 | 41.5 | 28.5 | 16.0 | 37.0 | 1.0 | CDCA335*310370*** |
| 3.3 | 41.0 | 30.0 | 15.0 | 37.0 | 1.0 | CDCA335*310370*** |
| 3.9 | 41.0 | 30.0 | 16.0 | 37.0 | 1.0 | CDCA395*310370*** |
| 4.7 | 41.0 | 30.0 | 16.0 | 37.0 | 1.0 | CDCA475*310370*** |
| 4.7 | 41.0 | 32.0 | 19.0 | 37.0 | 1.0 | CDCA475*310370*** |
| 4.7 | 41.5 | 32.5 | 18.0 | 37.0 | 1.0 | CDCA475*310370*** |
| 5.6 | 41.0 | 33.5 | 18.5 | 37.0 | 1.0 | CDCA565*310370*** |
| 6.8 | 41.0 | 33.5 | 19.5 | 37.0 | 1.0 | CDCA685*310370*** |
| 6.8 | 41.5 | 39.5 | 20.0 | 37.0 | 1.0 | CDCA685*310370*** |
| 8.2 | 41.0 | 37.0 | 22.0 | 37.0 | 1.0 | CDCA825*310370*** |
| 10.0 | 41.0 | 41.0 | 26.0 | 37.0 | 1.0 | CDCA106*310370*** |
| 10.0 | 41.5 | 42.5 | 28.0 | 37.0 | 1.0 | CDCA106*310370*** |
| 10.0 | 41.0 | 45.0 | 30.0 | 37.0 | 1.0 | CDCA106*310370*** |

# CDCB compact size interference suppression



## ■ Outline Drawing




STRAIGHT LEAD SPACING（P）
lead space is straight non-formed

| mm | 10 | 15 | 22.5 |
|---|---|---|---|
| Code | 100 | 150 | 225 |

LEAD LENGTH FROM SEATING PLANE

| mm | 10 | 10 | 15 |
|---|---|---|---|
| Code | 100 | 100 | 150 |

LEAD STYLE

| CODE | STYLE |
|---|---|
| S | Straight |
| K | Kink-In (Stand off) |
| F | Form out** |
| I | Form in** |

** For Bulk packaging with formed leads, add an additional 3 digit lead spacing code at end of part number.

## ▪Features

- Metallized polypropylene structure
- Compact size
- Withstanding overvoltage stressing
- Excellent active and passive flame resistant abilities
- Widely used in across-the-line, interference suppression circuit, etc.

PART NUMBER EXAMPLE

CDCB 472 M 310 100 B 200 S

Series
Capacitance
Tolerance
Voltage
Lead style
Lead Length
Packaging
Lead space

## ▪Specifications

| | | | |
|---|---|---|---|
| class | X2 | | |
| Climatic Category/Passive Flammability Class | 40/110/56/B | | |
| Operating temperature | -40℃ ~ +110℃ | | |
| Rated Voltage | 310Vac / 330Vac / 440Vac / 480Vac，50/60Hz | | |
| Maximum continuous AC voltage | 525Vac，50/60Hz | | |
| Maximum continuous DC voltage | 1000Vdc | | |
| Capacitance Range | 0.0010μF~10.0μF | | |
| Capacitance Tolerance | ±10% (K), ±20% (M) | | |
| Voltage Proof | Between Terminals: | 4.3UR（dc）， 2s | |
| | Between Terminals To Case: | 2 560Vac (1min) | |
| Dissipation Factor | 0.0010μF<$C_N$≤0.47μF | ≤25×$10^{-4}$(1kHz,20℃) | ≤25×$10^{-4}$(10kHz,20℃) |
| | 0.47μF<$C_N$≤1.0μF | ≤20×$10^{-4}$(1kHz,20℃) | ≤40×$10^{-4}$(10kHz,20℃) |
| | 1.0μF<$C_N$ | ≤30×$10^{-4}$(1kHz,20℃) | ---------- |
| Insulation Resistance | R≥15 000MΩ , RC$_N$≥5 000s, | $C_N$≤0.33μF<br>$C_N$>0.33μF | (20℃, 100V ,1min) |


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# CDCB

## ■ Dimensions (mm)

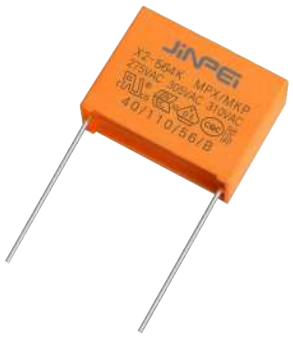
| 310Vac /330Vac/440Vac /480Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.0010 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB102****075*** |
| 0.0012 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB122****075*** |
| 0.0015 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB152****075*** |
| 0.0018 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB182****075*** |
| 0.0022 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB222****075*** |
| 0.0027 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB272****075*** |
| 0.0033 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB332****075*** |
| 0.0039 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB392****075*** |
| 0.0047 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB472****075*** |
| 0.0056 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCB562****075*** |
| 0.0068 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCB682****075*** |
| 0.0082 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCB822****075*** |
| 0.010 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCB103****075*** |
| 0.012 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | CDCB123****075*** |
| 0.015M | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | CDCB153M***075*** |
| 0.0047 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCB472****100*** |
| 0.0056 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCB562****100*** |
| 0.0068 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCB682****100*** |
| 0.0082 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCB822****100*** |
| 0.010 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCB103****100*** |
| 0.012 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCB123****100*** |
| 0.015 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCB153****100*** |
| 0.018 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCB183****100*** |
| 0.022 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCB223****100*** |
| 0.027 | 13.0 | 13.0 | 7.0 | 10.0 | 0.6 | CDCB273****100*** |
| 0.033 | 13.0 | 13.0 | 7.0 | 10.0 | 0.6 | CDCB333****100*** |
| 0.039 | 13.0 | 14.0 | 8.0 | 10.0 | 0.6 | CDCB393****100*** |
| 0.047M | 13.0 | 14.0 | 8.0 | 10.0 | 0.6 | CDCB473M***100*** |
| 0.047K | 13.0 | 14.0 | 8.0 | 10.0 | 0.6 | CDCB473K***100*** |
| 0.056 | 13.0 | 16.5 | 9.0 | 10.0 | 0.6 | CDCB563****100*** |
| 0.010 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCB103****150*** |
| 0.012 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCB123****150*** |
| 0.015 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCB153****150*** |
| 0.018 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCB183****150*** |
| 0.022 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCB223****150*** |
| 0.027 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCB273****150*** |
| 0.033 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCB333****150*** |
| 0.039 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCB393****150**** |
| 0.047 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCB473****150**** |
| 0.056M | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCB563M***150**** |
| 0.056K | 18.0 | 13.0 | 7.0 | 15.0 | 0.6 | CDCB563K***150**** |
| 0.068 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | CDCB683****150**** |
| 0.082 | 18.0 | 14.0 | 8.0 | 15.0 | 0.6 | CDCB823****150**** |
| 0.10M | 18.0 | 14.0 | 8.0 | 15.0 | 0.6 | CDCB104M***150**** |
| 0.10 | 18.0 | 14.5 | 8.4 | 15.0 | 0.6 | CDCB104****150**** |
| 0.12 | 18.0 | 16.0 | 10.3 | 15.0 | 0.8 | CDCB124****150**** |
| 0.15M | 18.0 | 16.0 | 10.3 | 15.0 | 0.8 | CDCB154M***150**** |
| 0.15K | 18.0 | 19.0 | 10.8 | 15.0 | 0.8 | CDCB154K***150**** |

| 310Vac /330Vac/440Vac /480Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.18 | 18.0 | 19.0 | 10.8 | 15.0 | 0.8 | CDCB184****150**** |
| 0.068 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCB683****220**** |
| 0.082 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCB823****220**** |
| 0.10 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCB104****220**** |
| 0.12 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCB124****220**** |
| 0.15 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCB154****220**** |
| 0.18 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCB184****220**** |
| 0.22 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCB224****220**** |
| 0.27 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCB274****220**** |
| 0.33 | 26.0 | 20.0 | 11.0 | 22.0 | 0.8 | CDCB334****220**** |
| 0.39 | 26.5 | 20.0 | 11.0 | 22.0 | 0.8 | CDCB394****220**** |
| 0.47M | 26.0 | 22.0 | 12.0 | 22.0 | 0.8 | CDCB474M***220**** |
| 0.47K | 26.5 | 23.0 | 13.5 | 22.0 | 0.8 | CDCB474K***220**** |
| 0.56M | 26.5 | 23.0 | 13.5 | 22.0 | 0.8 | CDCB564M***220**** |
| 0.56K | 26.5 | 24.5 | 15.5 | 22.0 | 0.8 | CDCB564K***220**** |
| 0.68M | 26.5 | 24.5 | 15.5 | 22.0 | 0.8 | CDCB684M***220**** |
| 0.68M | 32.0 | 23.0 | 13.0 | 27.0 | 0.8 | CDCB684M***270**** |
| 0.68K | 32.0 | 24.5 | 15.0 | 27.0 | 0.8 | CDCB684K***270**** |
| 0.82M | 32.0 | 25.0 | 13.0 | 27.0 | 0.8 | CDCB824M***270**** |
| 0.82K | 32.0 | 28.0 | 14.0 | 27.0 | 0.8 | CDCB824K***270**** |
| 1.0 | 32.0 | 28.0 | 17.0 | 27.0 | 0.8 | CDCB105****270**** |
| 1.2M | 32.0 | 28.0 | 17.0 | 27.0 | 0.8 | CDCB125M***270**** |
| 1.2K | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCB125K***270**** |
| 1.5 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCB155****270**** |
| 1.8 | 32.0 | 37.0 | 22.0 | 27.0 | 0.8 | CDCB185****270**** |
| 2.2M | 32.0 | 37.0 | 22.0 | 27.0 | 0.8 | CDCB225M***270**** |
| 0.33 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCB334****370**** |
| 0.39 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCB394****370**** |
| 0.47 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCB474****370**** |
| 0.56 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCB564****370**** |
| 0.68 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCB684****370**** |
| 0.82M | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCB824M***370**** |
| 0.82K | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCB824K***370**** |
| 1.0 | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCB105****370**** |
| 1.2 | 41.0 | 26.0 | 15.0 | 37.0 | 1.0 | CDCB125****370**** |
| 1.2 | 42.0 | 28.0 | 14.0 | 37.0 | 1.0 | CDCB125****370**** |
| 1.5M | 41.0 | 26.0 | 15.0 | 37.0 | 1.0 | CDCB155M***370**** |
| 1.5M | 42.0 | 28.0 | 14.0 | 37.0 | 1.0 | CDCB155M****370**** |
| 1.5K | 41.0 | 30.0 | 16.0 | 37.0 | 1.0 | CDCB155K****370**** |
| 1.8M | 41.0 | 30.0 | 16.0 | 37.0 | 1.0 | CDCB185M***370**** |
| 1.8K | 41.0 | 32.0 | 17.0 | 37.0 | 1.0 | CDCB185K***370**** |
| 2.2M | 41.0 | 32.0 | 17.0 | 37.0 | 1.0 | CDCB225M***370**** |
| 2.2 | 41.0 | 33.5 | 18.5 | 37.0 | 1.0 | CDCB225****370**** |
| 2.7 | 41.0 | 37.0 | 22.0 | 37.0 | 1.0 | CDCB275****370**** |
| 3.3M | 41.0 | 37.0 | 22.0 | 37.0 | 1.0 | CDCB335M***370**** |
| 3.3K | 41.5 | 37.5 | 27.5 | 37.0 | 1.0 | CDCB335K***370**** |
| 3.9 | 41.0 | 41.0 | 26.0 | 37.0 | 1.0 | CDCB395****370**** |
| 3.9 | 41.5 | 37.5 | 27.5 | 37.0 | 1.0 | CDCB395****370**** |
| 4.7M | 41.0 | 43.0 | 28.0 | 37.0 | 1.0 | CDCB475M****370**** |
| 4.7K | 42.0 | 45.0 | 30.0 | 37.0 | 1.0 | CDCB475K***370**** |
| 4.7 | 57.0 | 38.0 | 24.0 | 52.5 | 1.2 | CDCB125****525**** |
| 5.6 | 57.0 | 45.0 | 30.0 | 52.5 | 1.2 | CDCB565****525**** |
| 6.8 | 57.0 | 45.0 | 30.0 | 52.5 | 1.2 | CDCB685****525**** |
| 8.2 | 57.0 | 50.0 | 35.0 | 52.5 | 1.2 | CDCB825****525**** |
| 10.0 | 57.0 | 50.0 | 35.0 | 52.5 | 1.2 | CDCB106****525**** |

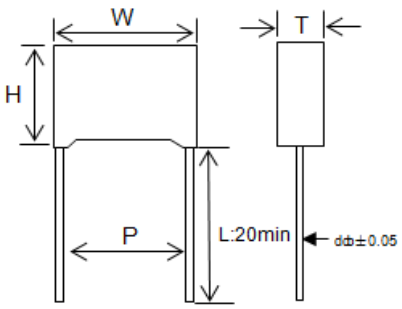
# CDCC

interference suppression

THB/ temperature humidy bais



## ■ Outline Drawing




## ▪Features

- Metallized polypropylene structure
- Withstanding overvoltage stressing
- Excellent active and passive flame resistant abilities
- Widely used in across-the-line, interference suppression circuit, etc.
- High stability of capacitance under severe ambient condition, such as high temperature and high humidity

## •Specifications

| | | | |
|---|---|---|---|
| class | X2 | | |
| Climatic Category/Passive Flammability Category | 40/110/56/B | | |
| Operating temperature | -40℃~110℃ | | |
| Rated Voltage | 310VAC,50/60Hz<br>Mains voltage can't be higher than 250Vac,50/60Hz | | |
| Maximum continuous DC voltage | 630Vdc | | |
| Capacitance Range | 0.0010 ~ 10.0μF | | |
| Capacitance Tolerance | ±10% (K), ±20% (M) | | |
| Voltage Proof | Between Terminals: | 4.3$U_R$(DC) (5S) | |
| | Between Terminals To Case: | 2 120Vac (1min) | |
| Dissipation Factor | 0.0010μF ≤ $C_R$ ≤ 0.47μF | 0.47μF < $C_R$ ≤ 1.0μF | 1.0μF < $C_R$ ≤ 10μF |
| | ≤15×$10^{-4}$ (1kHz,20℃) | ≤20×$10^{-4}$(1kHz,20℃) | ≤30×$10^{-4}$(1kHz,20℃) |
| | ≤20×$10^{-4}$(10kHz,20℃) | ≤40×$10^{-4}$(10kHz,20℃) | ---------- |
| Insulation Resistance | ≥15 000MΩ, $C_R$≤0.33μF<br>≥5 000s, $C_R$>0.33μF (20℃,100V,1min) | | |
| THB test(Damp heat test with loading) | Temperature: 85℃±2℃ ; Humidity: 85 +2/-3 %<br>Voltage setting: 240VAC 50Hz ; Time Duration: 1000H<br>Capacitance change: Δ C/C : ≤ ± 10%<br>DF Change: C R ≤1.0μF Δtan δ : ≤ 0.8% at 1 KHZ<br>C R >1.0μF Δtan δ : ≤ 0.5% at 1 KHZ | | |



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# CDCC

## STRAIGHT LEAD SPACING（P）

* Leads pace is straight lead non-formed original leads pace.

| mm | 10 | 15 | 22.5 |
|---|---|---|---|
| Code | 100 | 150 | 225 |

## LEAD LENGTH FROM SEATING PLANE

| mm | 10 | 10 | 15 |
|---|---|---|---|
| Code | 100 | 100 | 150 |

## LEAD STYLE

| CODE | STYLE |
|---|---|
| S | Straight |
| K | Kink-In (Stand off) |
| F | Form out** |
| I | Form in** |

** For Bulk packaging with formed leads, add an additional 3 digit lead spacing code at end of part number.

## PART NUMBER EXAMPLE

CDCC 472 M 310 100 B 200 S

- Series
- Capacitance
- Tolerance
- Voltage
- Lead space
- Packaging
- Lead Length
- Lead style

* Lead space is straight lead non-formed original leadspace.

## ■ Dimensions (mm)

| 310Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.0010 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC102*310075*** |
| 0.0012 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC122*310075*** |
| 0.0015 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC152*310075*** |
| 0.0018 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC182*310075*** |
| 0.0022 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC222*310075*** |
| 0.0027 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC272*310075*** |
| 0.0033 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC332*310075*** |
| 0.0039 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC392*310075*** |
| 0.0047 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC472*310075*** |
| 0.0056 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC562*310075*** |
| 0.0068 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC682*310075*** |
| 0.0082 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC822*310075*** |
| 0.01 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC103*310075*** |
| 0.012 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC123*310075*** |
| 0.015 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC153*310075*** |
| 0.018 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC183*310075*** |
| 0.022 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCC223*310075*** |
| 0.027 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCC273*310075*** |
| 0.033 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCC333*310075*** |
| 0.039 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | CDCC393*310075*** |
| 0.047 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | CDCC473*310075*** |
| 0.068 | 10.5 | 13.0 | 7.0 | 7.5 | 0.6 | CDCC683*310075*** |
| 0.1 | 10.5 | 14.0 | 8.0 | 7.5 | 0.6 | CDCC104*310075*** |
| 0.0047 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCC472*310100*** |
| 0.0056 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCC562*310100*** |
| 0.0068 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCC682*310100*** |
| 0.0082 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCC822*310100*** |
| 0.01 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCC103*310100*** |
| 0.01 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCC103*310100*** |
| 0.012 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCC123*310100*** |
| 0.015 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCC153*310100*** |
| 0.018 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCC183*310100*** |
| 0.022 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCC223*310100*** |
| 0.022 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCC223*310100*** |
| 0.027 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCC273*310100*** |
| 0.033 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCC333*310100*** |
| 0.033 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCC333*310100*** |
| 0.039 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCC393*310100*** |
| 0.047 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | W42Q3473-K6******* |
| 0.056 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCC563*310100*** |
| 0.068 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCC683*310100*** |
| 0.082 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCC823*310100*** |
| 0.1 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCC104*310100*** |
| 0.12 | 13.0 | 13.0 | 7.0 | 10.0 | 0.6 | CDCC124*310100*** |
| 0.15 | 13.0 | 14.0 | 8.0 | 10.0 | 0.6 | CDCC154*310100*** |
| 0.18 | 13.0 | 16.0 | 9.0 | 10.0 | 0.6 | CDCC184*310100*** |
| 0.22 | 13.0 | 16.0 | 9.0 | 10.0 | 0.6 | CDCC224*310100*** |
| 0.33 | 13.0 | 20.0 | 10.0 | 10.0 | 0.6 | CDCC334*310100*** |
| 0.47 | 13.0 | 22.0 | 12.0 | 10.0 | 0.6 | CDCC474*310100*** |

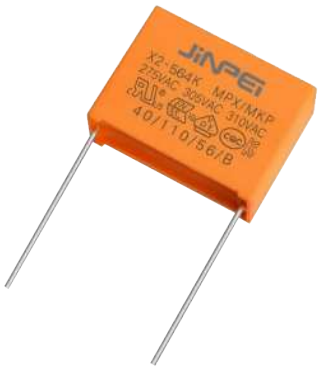
# CDCC

## ■ Dimensions (mm)

| 310Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.01 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC103*310150*** |
| 0.012 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC123*310150*** |
| 0.015 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC153*310150*** |
| 0.018 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC183*310150*** |
| 0.022 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC223*310150*** |
| 0.027 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC273*310150*** |
| 0.033 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC333*310150*** |
| 0.039 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC393*310150*** |
| 0.047 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC473*310150*** |
| 0.056 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC563*310150*** |
| 0.068 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC683*310150*** |
| 0.082 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC823*310150*** |
| 0.1 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCC104*310150*** |
| 0.1 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCC104*310150*** |
| 0.12 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCC124*310150*** |
| 0.15 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCC154*310150*** |
| 0.15 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | CDCC154*310150*** |
| 0.18 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCC184*310150*** |
| 0.18 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | CDCC184*310150*** |
| 0.22 | 18.0 | 13.0 | 7.0 | 15.0 | 0.8 | CDCC224*310150*** |
| 0.22 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | CDCC224*310150*** |
| 0.27 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | CDCC274*310150*** |
| 0.33 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | CDCC334*310150*** |
| 0.33 | 18.0 | 15.5 | 9.5 | 15.0 | 0.8 | CDCC334*310150*** |
| 0.39 | 18.0 | 17.0 | 8.0 | 15.0 | 0.8 | CDCC394*310150*** |
| 0.47 | 18.0 | 16.0 | 10.0 | 15.0 | 0.8 | CDCC474*310150*** |
| 0.47 | 18.0 | 17.5 | 9.0 | 15.0 | 0.8 | CDCC474*310150*** |
| 0.47 | 18.0 | 18.5 | 11.0 | 15.0 | 0.8 | CDCC474*310150*** |
| 0.56 | 18.0 | 19.0 | 10.0 | 15.0 | 0.8 | CDCC564*310150*** |
| 0.56 | 18.0 | 19.0 | 11.0 | 15.0 | 0.8 | CDCC564*310150*** |
| 0.68 | 18.0 | 19.0 | 11.0 | 15.0 | 0.8 | CDCC684*310150*** |
| 0.82 | 18.0 | 26.0 | 16.0 | 15.0 | 0.8 | CDCC824*310150*** |
| 0.1 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCC104*310220*** |
| 0.15 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCC154*310220*** |
| 0.18 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCC184*310220*** |
| 0.22 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCC224*310220*** |
| 0.22 | 26.5 | 16.5 | 7.0 | 22.0 | 0.8 | CDCC224*310220*** |
| 0.27 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCC274*310220*** |
| 0.33 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCC334*310220*** |
| 0.33 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCC334*310220*** |
| 0.33 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCC334*310220*** |
| 0.39 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCC394*310220*** |
| 0.47 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCC474*310220*** |
| 0.47 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCC474*310220*** |
| 0.56 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCC564*310220*** |
| 0.56 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCC564*310220*** |
| 0.68 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCC684*310220*** |
| 0.68 | 26.5 | 17.0 | 10.0 | 22.0 | 0.8 | CDCC684*310220*** |
| 0.68 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCC684*310220*** |
| 0.82 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCC824*310220*** |
| 1.0 | 26.5 | 19.0 | 10.0 | 22.0 | 0.8 | CDCC105*310220*** |
| 1.0 | 26.5 | 20.0 | 11.0 | 22.0 | 0.8 | CDCC105*310220*** |
| 1.0 | 26.0 | 21.5 | 12.0 | 22.0 | 0.8 | CDCC105*310220*** |
| 1.2 | 26.5 | 20.0 | 11.0 | 22.0 | 0.8 | CDCC125*310220*** |
| 1.5 | 26.5 | 22.0 | 12.0 | 22.0 | 0.8 | CDCC125*310220*** |
| 1.8 | 26.5 | 24.5 | 15.5 | 22.0 | 0.8 | CDCC185*310220*** |
| 2.2 | 26.5 | 24.5 | 15.5 | 22.0 | 0.8 | CDCC225*310220*** |
| 2.2 | 26.5 | 25.0 | 16.5 | 22.0 | 0.8 | CDCC225*310220*** |
| 2.2 | 26.5 | 29.5 | 14.5 | 22.0 | 0.8 | CDCC225*310220*** |

| 310Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.47 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCC474*310270*** |
| 0.47 | 31.5 | 19.5 | 9.0 | 27.0 | 0.8 | CDCC474*310270*** |
| 0.56 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCC564*310270*** |
| 0.68 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCC684*310270*** |
| 0.68 | 31.5 | 19.5 | 11.0 | 27.0 | 0.8 | CDCC684*310270*** |
| 0.82 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCC824*310270*** |
| 0.82 | 31.5 | 19.5 | 9.0 | 27.0 | 0.8 | CDCC824*310270*** |
| 1.0 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCC105*310270*** |
| 1.0 | 31.5 | 19.5 | 11.0 | 27.0 | 0.8 | CDCC105*310270*** |
| 1.2 | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | CDCC125*310270*** |
| 1.5 | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | CDCC155*310270*** |
| 1.8 | 32.0 | 22.0 | 13.0 | 27.0 | 0.8 | CDCC185*310270*** |
| 2.2 | 32.0 | 25.0 | 13.0 | 27.0 | 0.8 | CDCC225*310270*** |
| 2.2 | 32.0 | 25.0 | 15.0 | 27.0 | 0.8 | CDCC225*310270*** |
| 2.7 | 32.0 | 28.0 | 14.0 | 27.0 | 0.8 | CDCC275*310270*** |
| 3.3 | 32.0 | 28.0 | 17.0 | 27.0 | 0.8 | CDCC335*310270*** |
| 3.3 | 31.5 | 32.0 | 16.0 | 27.0 | 0.8 | CDCC335*310270*** |
| 3.3 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCC335*310270*** |
| 3.9 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCC395*310270*** |
| 4.7 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCC475*310270*** |
| 4.7 | 31.5 | 31.0 | 21.0 | 27.0 | 0.8 | CDCC475*310270*** |
| 5.6 | 32.0 | 37.0 | 22.0 | 27.0 | 0.8 | CDCC565*310270*** |
| 1.5 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCC155*310370*** |
| 1.8 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCC185*310370*** |
| 2.2 | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCC225*310370*** |
| 2.2 | 41.0 | 25.0 | 14.0 | 37.0 | 1.0 | CDCC225*310370*** |
| 2.7 | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCC275*310370*** |
| 3.3 | 41.0 | 26.0 | 15.0 | 37.0 | 1.0 | CDCC335*310370*** |
| 3.3 | 41.5 | 28.5 | 16.0 | 37.0 | 1.0 | CDCC335*310370*** |
| 3.3 | 41.0 | 30.0 | 15.0 | 37.0 | 1.0 | CDCC335*310370*** |
| 3.9 | 41.0 | 30.0 | 16.0 | 37.0 | 1.0 | CDCC395*310370*** |
| 4.7 | 41.0 | 30.0 | 16.0 | 37.0 | 1.0 | CDCC475*310370*** |
| 4.7 | 41.0 | 32.0 | 19.0 | 37.0 | 1.0 | CDCC475*310370*** |
| 4.7 | 41.5 | 32.5 | 18.0 | 37.0 | 1.0 | CDCC475*310370*** |
| 5.6 | 41.0 | 33.5 | 18.5 | 37.0 | 1.0 | CDCC565*310370*** |
| 6.8 | 41.0 | 33.5 | 19.5 | 37.0 | 1.0 | CDCC685*310370*** |
| 6.8 | 41.5 | 39.5 | 20.0 | 37.0 | 1.0 | CDCC685*310370*** |
| 8.2 | 41.0 | 37.0 | 22.0 | 37.0 | 1.0 | CDCC825*310370*** |
| 10.0 | 41.0 | 41.0 | 26.0 | 37.0 | 1.0 | CDCC106*310370*** |
| 10.0 | 41.5 | 42.5 | 28.0 | 37.0 | 1.0 | CDCC106*310370*** |
| 10.0 | 41.0 | 45.0 | 30.0 | 37.0 | 1.0 | CDCC106*310370*** |

# CDCD nterference suppression



## ▪Features

- Metallized polypropylene structure
- Withstanding overvoltage stressing
- Excellent active and passive flame resistant abilities
- Widely used in line to ground, line-by-pass, antenna coupling interference suppression circuit, etc.

## • Specifications

| | | | |
|---|---|---|---|
| class | Y2 | | |
| Climatic Category/Passive Flammability Category | 40/110/56/B | | |
| Operating temperature | -40℃~+110℃ | | |
| Rated Voltage | 300VAC, 50/60Hz | | |
| Maximum continuous AC voltage | 500VAC, 50/60Hz | | |
| Maximum continuous DC voltage | 1000VDC | | |
| Capacitance Range | 0.0010 ~ 1.0μF | | |
| Capacitance Tolerance | ±10% (K), ±20% (M) | | |
| Voltage Proof | Between Terminals: | 2000Vac(2S) or | 4000Vdc(2S) $C_R$≤0.33μF<br>3700Vdc(2S) $C_R$>0.33μF |
| | Between Terminals To Case: | 2 500Vac (1min) | |
| Dissipation Factor | ≤ 30 ×$10^{-4}$ (1KHz,20℃) | ≤ 40 ×$10^{-4}$ (10KHz,20℃) | |
| Insulation Resistance | ≥15 000MΩ, $C_R$≤0.33μF<br>≥5 000s, $C_R$>0.33μF (20℃,100V,1min) | | |

### STRAIGHT LEAD SPACING（P）

* Lead space is straight lead non-formed originalleadspace.

| mm | 10 | 15 | 22.5 |
|---|---|---|---|
| Code | 100 | 150 | 225 |

| mm | 10 | 10 | 15 |
|---|---|---|---|
| Code | 100 | 100 | 150 |

### LEAD STYLE

| CODE | STYLE |
|---|---|
| S | Straight |
| K | Kink-In (Stand off) |
| F | Form out** |
| I | Form in** |

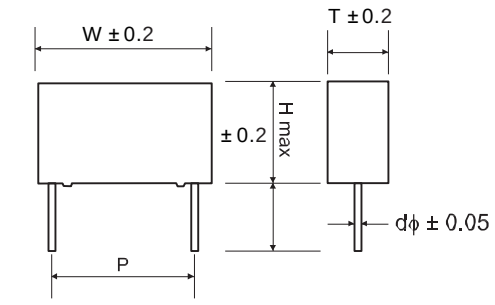
** For Bulk packaging with formed leads, add an additional 3 digit lead spacing code at end of part number.

### LEAD LENGTH FROM SEATING PLANE

CDCD 472 M 310 100 B 200 S

Series
Capacitance
Tolerance
Voltage
Lead style
Lead Length
Packaging
Lead space

* Lead space is straight lead non-formed original leadspace.



# CDCD

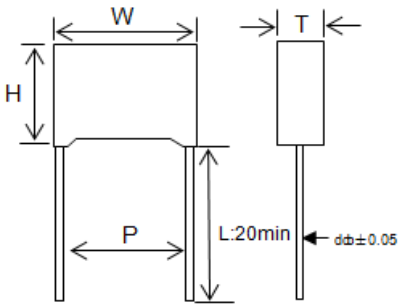
## ■ Dimensions (mm)

| 300Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.0010 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCD102*300075*** |
| 0.0012 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCD122*300075*** |
| 0.0015 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCD152*300075*** |
| 0.0018 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCD182*300075*** |
| 0.0022 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCD222*300075*** |
| 0.0027 | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 | CDCD272*300075*** |
| 0.0033 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCD332*300075*** |
| 0.0039 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 | CDCD392*300075*** |
| 0.0047 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | CDCD472*300075*** |
| 0.0056 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | CDCD562*300075*** |
| 0.0010 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCD102*300100*** |
| 0.0012 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCD122*300100*** |
| 0.0015 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCD152*300100*** |
| 0.0018 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCD182*300100*** |
| 0.0022 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCD222*300100*** |
| 0.0027 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCD272*300100*** |
| 0.0033 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCD332*300100*** |
| 0.0039 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | CDCD392*300100*** |
| 0.0047 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCD472*300100*** |
| 0.0056 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCD562*300100*** |
| 0.0068 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | CDCD682*300100*** |
| 0.0068 | 13.0 | 7.5 | 9.5 | 10.0 | 0.6 | CDCD682*300100*** |
| 0.0082 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCD822*300100*** |
| 0.010 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | CDCD103*300100*** |
| 0.0022 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD222*300150*** |
| 0.0027 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD272*300150*** |
| 0.0033 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD332*300150*** |
| 0.0039 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD392*300150*** |
| 0.0047 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD472*300150*** |
| 0.0056 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD562*300150*** |
| 0.0068 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD682*300150*** |
| 0.0082 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD822*300150*** |
| 0.010 | 18.0 | 9.5 | 5.0 | 15.0 | 0.6 | CDCD103*300150*** |
| 0.012 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCD123*300150*** |
| 0.015 | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCD153*300150*** |
| 0.018M | 18.0 | 11.0 | 5.0 | 15.0 | 0.6 | CDCD183M300150*** |
| 0.018K | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCD183K300150*** |
| 0.022 | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCD223*300150*** |
| 0.027M | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCD273M300150*** |
| 0.027K | 18.0 | 12.0 | 6.0 | 15.0 | 0.6 | CDCD273K300150*** |
| 0.033 | 18.0 | 13.5 | 7.5 | 15.0 | 0.6 | CDCD333*300150*** |
| 0.033 | 18.0 | 12.5 | 9.0 | 15.0 | 0.6 | CDCD333*300150*** |
| 0.039 | 18.0 | 13.5 | 7.5 | 15.0 | 0.6 | CDCD393*300150*** |
| 0.039 | 18.0 | 12.5 | 9.0 | 15.0 | 0.6 | CDCD393*300150*** |
| 0.047 | 18.0 | 14.5 | 8.5 | 15.0 | 0.6 | CDCD473*300150*** |
| 0.047 | 18.0 | 12.0 | 13.0 | 15.0 | 0.8 | CDCD473*300150*** |
| 0.056 | 18.0 | 16.0 | 10.0 | 15.0 | 0.8 | CDCD563*300150*** |
| 0.068 | 18.0 | 16.0 | 10.0 | 15.0 | 0.8 | CDCD683*300150*** |
| 0.082 | 18.0 | 19.0 | 11.0 | 15.0 | 0.8 | CDCD823*300150*** |
| 0.033 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCD333*300220*** |
| 0.039 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCD393*300220*** |
| 0.047 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCD473*300220*** |
| 0.056 | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCD563*300220*** |
| 0.068M | 26.5 | 15.0 | 6.0 | 22.0 | 0.8 | CDCD683M300220*** |
| 0.068K | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCD683K300220*** |
| 0.082 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCD823*300220*** |

| 300Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.010 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCD103*300220*** |
| 0.012 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCD123*300220*** |
| 0.015 | 26.5 | 18.5 | 10.0 | 22.0 | 0.8 | CDCD153*300220*** |
| 0.018 | 26.5 | 20.0 | 11.0 | 22.0 | 0.8 | CDCD183*300220*** |
| 0.022 | 26.5 | 22.0 | 12.0 | 22.0 | 0.8 | CDCD223*300220*** |
| 0.027 | 26.5 | 23.0 | 13.5 | 22.0 | 0.8 | CDCD273*300220*** |
| 0.033 | 26.5 | 24.5 | 15.5 | 22.0 | 0.8 | CDCD333*300220*** |
| 0.033 | 26.5 | 29.5 | 14.5 | 22.0 | 0.8 | CDCD333*300220*** |
| 0.039M | 26.5 | 29.5 | 14.5 | 22.0 | 0.8 | CDCD393M300220*** |
| 0.10 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCD104*300270*** |
| 0.12 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCD124*300270*** |
| 0.15 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCD154*300270*** |
| 0.15 | 32.0 | 12.0 | 18.0 | 27.0 | 0.8 | CDCD154*300270*** |
| 0.18 | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | CDCD184*300270*** |
| 0.22 | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | CDCD224*300270*** |
| 0.22M | 32.0 | 12.0 | 18.0 | 27.0 | 0.8 | CDCD124M300270*** |
| 0.22K | 32.0 | 12.0 | 22.0 | 27.0 | 0.8 | CDCD224K300270*** |
| 0.27M | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | CDCD274M300270*** |
| 0.27K | 32.0 | 22.0 | 13.0 | 27.0 | 0.8 | CDCD274K300270*** |
| 0.33M | 32.0 | 22.0 | 13.0 | 27.0 | 0.8 | CDCD334M300270*** |
| 0.33K | 32.0 | 25.0 | 13.0 | 27.0 | 0.8 | CDCD334K300270*** |
| 0.33K | 32.0 | 24.5 | 15.0 | 27.0 | 0.8 | CDCD334K300270*** |
| 0.33M | 32.0 | 12.0 | 22.0 | 27.0 | 0.8 | CDCD334M300270*** |
| 0.39 | 32.0 | 24.5 | 15.0 | 27.0 | 0.8 | CDCD394*300270*** |
| 0.39 | 32.0 | 28.0 | 14.0 | 27.0 | 0.8 | CDCD394*300270*** |
| 0.47M | 32.0 | 24.5 | 15.0 | 27.0 | 0.8 | CDCD474M300270*** |
| 0.47M | 32.0 | 28.0 | 14.0 | 27.0 | 0.8 | CDCD474M300270*** |
| 0.47K | 32.0 | 30.0 | 16.0 | 27.0 | 0.8 | CDCD474K300270*** |
| 0.47K | 32.0 | 28.0 | 17.0 | 27.0 | 0.8 | CDCD474K300270*** |
| 0.47 | 32.0 | 16.0 | 27.5 | 27.0 | 0.8 | CDCD474*300270*** |
| 0.56 | 32.0 | 30.0 | 16.0 | 27.0 | 0.8 | CDCD564*300270*** |
| 0.56 | 32.0 | 28.0 | 17.0 | 27.0 | 0.8 | CDCD564*300270*** |
| 0.68M | 32.0 | 29.0 | 19.0 | 27.0 | 0.8 | CDCD684M300270*** |
| 0.68K | 32.0 | 30.0 | 21.0 | 27.0 | 0.8 | CDCD684K300270*** |
| 0.68 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCD684*300270*** |
| 0.68 | 32.0 | 18.5 | 31.0 | 27.0 | 0.8 | CDCD684*300270*** |
| 0.82M | 32.0 | 18.5 | 31.0 | 27.0 | 0.8 | CDCD824M300270*** |
| 0.82M | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCD824M300270*** |
| 0.82K | 32.0 | 37.0 | 22.0 | 27.0 | 0.8 | CDCD824K300270*** |
| 1.0 | 32.0 | 37.0 | 22.0 | 27.0 | 0.8 | CDCD105*300270*** |
| 0.33 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCD334*300370*** |
| 0.39M | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCD394M300370*** |
| 0.39K | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCD394K300370*** |
| 0.47 | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCD474*300370*** |
| 0.47 | 42.0 | 15.0 | 24.0 | 37.0 | 1.0 | CDCD474*300370*** |
| 0.56 | 41.0 | 26.0 | 15.0 | 37.0 | 1.0 | CDCD564*300370*** |
| 0.56 | 42.0 | 28.0 | 14.0 | 37.0 | 1.0 | CDCD564*300370*** |
| 0.68M | 41.0 | 26.0 | 15.0 | 37.0 | 1.0 | CDCD684M300370*** |
| 0.68M | 42.0 | 28.0 | 14.0 | 37.0 | 1.0 | CDCD684M300370*** |
| 0.68K | 41.0 | 30.0 | 16.0 | 37.0 | 1.0 | CDCD684K300370*** |
| 0.68M | 42.0 | 15.0 | 24.0 | 37.0 | 1.0 | CDCD684M300370*** |
| 0.82 | 41.0 | 30.0 | 16.0 | 37.0 | 1.0 | CDCD824*300370*** |
| 0.82 | 42.0 | 19.0 | 24.0 | 37.0 | 1.0 | CDCD824*300370*** |
| 1.0 M | 41.0 | 32.0 | 17.0 | 37.0 | 1.0 | CDCD105M300370*** |
| 1.0 K | 41.0 | 33.5 | 18.5 | 37.0 | 1.0 | CDCD105K300370*** |

# CDCE interference suppression capacitor/**X2**

## ■ Outline Drawing



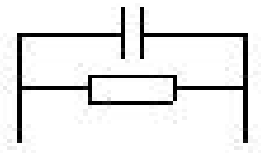




## ▪Features

- ●Internal parallel connection from X2 cap to dischange resistor
- ●S Excellent active and passive flame resistant abilities
- ●Widely used in across-the-line, interference suppression circuit, etc.

## ▪ Electrical Connection



## • Specifications

| | | | |
|---|---|---|---|
| class | X2 | | |
| Climatic Category/Passive Flammability Category | 40/110/56/B | | |
| Operating temperature | -40℃~110℃ | | |
| Rated Voltage | 310VAC ,50/60Hz | | |
| Maximum continuous DC voltage | 630Vdc | | |
| Capacitance Range | 0.22 ~ 10.0μF | | |
| Capacitance Tolerance | ±10% (K), ±20% (M) | | |
| Voltage Proof | Between Terminals: | 4.3$U_R$(DC) (5S) | |
| | Between Terminals To Case: | 2 120Vac (1min) | |
| Dissipation Factor | 0.22μF ≤ $C_R$ ≤ 0.47μF | 0.47μF < $C_R$ ≤ 1.0μF | 1.0μF < $C_R$ ≤ 10μF |
| | ≤25×$10^{-4}$ (1kHz,20℃) | ≤20×$10^{-4}$(1kHz,20℃) | ≤30×$10^{-4}$(1kHz,20℃) |
| | ≤20×$10^{-4}$(10kHz,20℃) | ≤40×$10^{-4}$(10kHz,20℃) | ---------- |
| Resistance range/Tolerance | 470 kΩ ~ 20 MΩ , ±10% | | |

# CDCE

## STRAIGHT LEAD SPACING（P）

* Lead space is straight lead non-formed originalleadspace.

| mm | 10 | 15 | 22.5 |
|---|---|---|---|
| Code | 100 | 150 | 225 |

## LEAD LENGTH FROM SEATING PLANE

| mm | 10 | 10 | 15 |
|---|---|---|---|
| Code | 100 | 100 | 150 |

## LEAD STYLE

| CODE | STYLE |
|---|---|
| S | Straight |
| K | Kink-In (Stand off) |
| F | Form out** |
| I | Form in** |

** For Bulk packaging with formed leads, add an additional 3 digit lead spacing code at end of part number.

## PART NUMBER EXAMPLE

CDCE 472 M 310 100 B 200 S

- Series
- Capacitance
- Tolerance
- Voltage
- Lead space
- Packaging
- Lead Length
- Lead style

## ■ Dimensions (mm)

| 310Vac | | | | | | |
|---|---|---|---|---|---|---|
| Cn (μF) | W max | H max | T max | P | d | Part number |
| 0.22 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCE224*310220**** |
| 0.33 | 26.5 | 17.0 | 8.5 | 22.0 | 0.8 | CDCE334*310220**** |
| 0.47 | 26.5 | 18.5 | 10.0 | 22.0 | 0.8 | CDCE474*310220**** |
| 0.68 | 26.5 | 20.0 | 11.0 | 22.0 | 0.8 | CDCE684*310220**** |
| 1.0 | 26.5 | 22.0 | 12.0 | 22.0 | 0.8 | CDCE105*310220**** |
| 0.47 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCE474*310270**** |
| 0.68 | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | CDCE684*310270**** |
| 1.0 | 32.0 | 22.0 | 13.0 | 27.0 | 0.8 | CDCE105*310270**** |
| 1.5 | 32.0 | 22.0 | 13.0 | 27.0 | 0.8 | CDCE155*310270**** |
| 2.2 | 32.0 | 28.0 | 14.0 | 27.0 | 0.8 | CDCE225*310270**** |
| 3.3 | 32.0 | 33.0 | 18.0 | 27.0 | 0.8 | CDCE335*310270**** |
| 4.7 | 32.0 | 37.0 | 22.0 | 27.0 | 0.8 | CDCE475*310270**** |
| 1.5 | 41.0 | 22.0 | 11.0 | 37.0 | 1.0 | CDCE155*310370**** |
| 2.2 | 41.0 | 24.0 | 13.0 | 37.0 | 1.0 | CDCE225*310370**** |
| 3.3 | 42.0 | 28.0 | 14.0 | 37.0 | 1.0 | CDCE335*310370**** |
| 4.7 | 41.0 | 32.0 | 17.0 | 37.0 | 1.0 | CDCE475*310370**** |
| 6.8 | 41.0 | 37.0 | 22.0 | 37.0 | 1.0 | CDCE685*310370**** |
| 10.0 | 41.0 | 41.0 | 26.0 | 37.0 | 1.0 | CDCE106*310370**** |

## R code

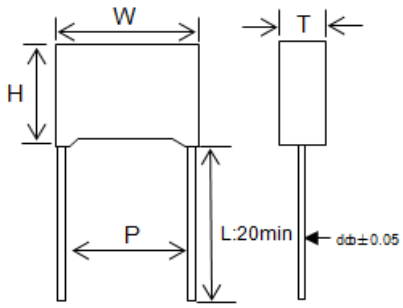
| R | 470KΩ | 680KΩ | 820KΩ | 1MKΩ | 1.2MKΩ | 1.5MKΩ | 2.2MKΩ | 3.3MKΩ | 4.7MKΩ | 6.8MKΩ | 10MKΩ | 20MKΩ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| code | A | B | C | D | E | F | H | L | N | P | S | T |


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# CDCF

Discharge resistance 300VAC  Interference suppression

## ■ Outline Drawing



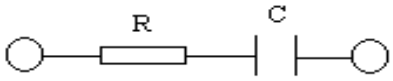




## ▪Features

- Metallized polypropylene structure
- Withstanding overvoltage stressing
- Excellent active and passive flame resistant abilities
- Excellent active noise suppression, absorbing peak and energy, damp

## ▪Electrical Connection




## Specifications

| | | |
|---|---|---|
| class | X2 | |
| Climatic Category/Passive Flammability Category | 40/085/56/B | |
| Operating temperature | -40℃~85℃ | |
| Rated Voltage | 300Vac , 50/60Hz | |
| Capacitance Range | 0.01 ~ 1.0μF, ±20% (M) | |
| Capacitance Tolerance | ±20% (M) | |
| Voltage Proof | Between Terminals: | 4.3$U_R$(DC) (5S) |
| | Between Terminals To Case: | 2 100Vac (1min) |
| Insulation Resistance | ≥15 000MΩ , $C_R$≤0.33μF<br>≥5 000s, $C_R$>0.33μF (20℃, 100V ,1min) | |
| Resistance range/Tolerance | 10.0Ω ~ 1000.0Ω , ±30% | $C_NR_N$<50μs,100KHz<br>$C_NR_N$≥50μs,1KHz |

# CDCF

## STRAIGHT LEAD SPACING（P）

* Lead space is straight lead non-formed originalleadspace.

| mm | 10 | 15 | 22.5 |
|---|---|---|---|
| Code | 100 | 150 | 225 |

## LEAD LENGTH FROM SEATING PLANE

| mm | 10 | 10 | 15 |
|---|---|---|---|
| Code | 100 | 100 | 150 |

## LEAD STYLE

| CODE | STYLE |
|---|---|
| S | Straight |
| K | Kink-In (Stand off) |
| F | Form out** |
| I | Form in** |

** For Bulk packaging with formed leads, add an additional 3 digit lead spacing code at end of part number.

## ■ Dimensions (mm)

| 300Vac | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cn (μF) | R (Ω) | W max | H max | T max | P | d | Part number |
| 0.01 | 10.0 ~ 470.0 | 18.0 | 14.0 | 5.0 | 14.0 | 0.6 | CDCF103*300140**** |
| 0.015 | 10.0 ~ 470.0 | 18.0 | 14.0 | 5.0 | 14.0 | 0.6 | CDCF153*300140**** |
| 0.022 | 10.0 ~ 470.0 | 18.0 | 14.0 | 5.0 | 14.0 | 0.6 | CDCF223*300140**** |
| 0.033 | 10.0 ~ 470.0 | 18.0 | 14.0 | 5.0 | 14.0 | 0.6 | CDCF333*300140**** |
| 0.047 | 10.0 ~ 470.0 | 18.0 | 14.0 | 5.0 | 14.0 | 0.6 | CDCF473*300140**** |
| 0.068 | 10.0 ~ 470.0 | 22.0 | 14.0 | 6.0 | 18.0 | 0.6 | CDCF683*300180**** |
| 0.10 | 10.0 ~ 470.0 | 22.0 | 14.0 | 6.0 | 18.0 | 0.6 | CDCF104*300180**** |
| 0.15 | 10.0 ~ 220.0 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCF154*300220**** |
| 0.20 | 10.0 ~ 220.0 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCF204*300220**** |
| 0.22 | 10.0 ~ 220.0 | 26.5 | 16.0 | 7.0 | 22.0 | 0.8 | CDCF224*300220**** |
| 0.25 | 10.0 ~ 120.0 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | CDCF254*300270**** |
| 0.30 | 10.0 ~ 120.0 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | DCF304*300270**** |
| 0.33 | 10.0 ~ 120.0 | 32.0 | 18.0 | 9.0 | 27.0 | 0.8 | DCF334*300270**** |
| 0.47 | 10.0 ~ 100.0 | 32.0 | 20.0 | 11.0 | 27.0 | 0.8 | DCF474*300270**** |

## PART NUMBER EXAMPLE

CDCF 472 M 300 100 B 200 A S

- Series
- Capacitance
- Tolerance
- Voltage
- Lead space
- Packaging
- Lead Length
- Resistance code
- Lead style

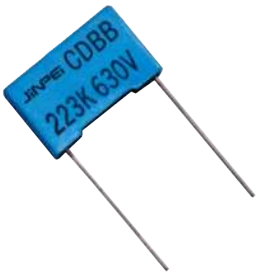
## R code:

| R | 10Ω | 22Ω | 27Ω | 47Ω | 51Ω | 68Ω | 100Ω | 120Ω | 220Ω | 470 Ω | 1000 Ω |
|---|---|---|---|---|---|---|---|---|---|---|---|
| code | L | N | P | A | B | S | C | D | E | F | H |



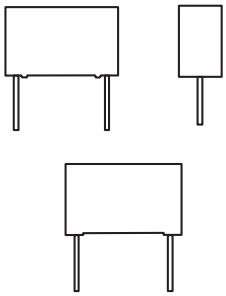
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## CDBB: High Frequency & Pulse




## FEATURES

- High moisture resistance
- Rated voltage : 250~2000Vdc (180~700Vac)
- Capacitance range : 0.00022 ~3.9 uF
- Flame-retardant epoxy resin (Compliant to UL 94V-0)
- RoHS Compliant and lead-free terminations
- For high dv/dt application



## PART NUMBER EXAMPLE

CDBB 104 K 2E 150 B 200 S

- CDBB — Series
- 104 — Capacitance
- K — Tolerance
- 2E — Voltage
- 150 — Lead space*
- B — Packaging
- 200 — Lead Length
- S — Straight

* Leadspace is straight lead non-formed original leadspace.

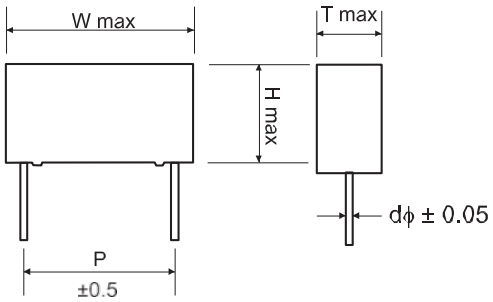
## ELECTRICAL CHARACTERISTICS

| Items | Performance |
|---|---|
| Operating Voltage Range | 250Vdc ~ 2,000Vdc |
| Rated Temperature | -40°C ~ +105°C (Derates over 85°C at 1.25% per °C) |
| Climatic Category | 40 / 105 / 56 |
| Capacitance Range | 0.00022 µF ~ 3.9 µF |
| Capacitance Tolerance | ±5% (J), ±10% (K), other tolerances on request |
| Dissipation Factor (tan fiÅ | See table below |
| Insulation Resistance | See table below |

| | C ≤0.1µF | 0.1µF < C ≤ 1.0µF | C > 1.0µF |
|---|---|---|---|
| 1KHz, 20°C | 0.0003 | 0.0003 | 0.0003 |
| 1KHz, 20°C | 0.0004 | 0.0006 | --- |
| 100KHz, 20°C | 0.0015 | --- | --- |

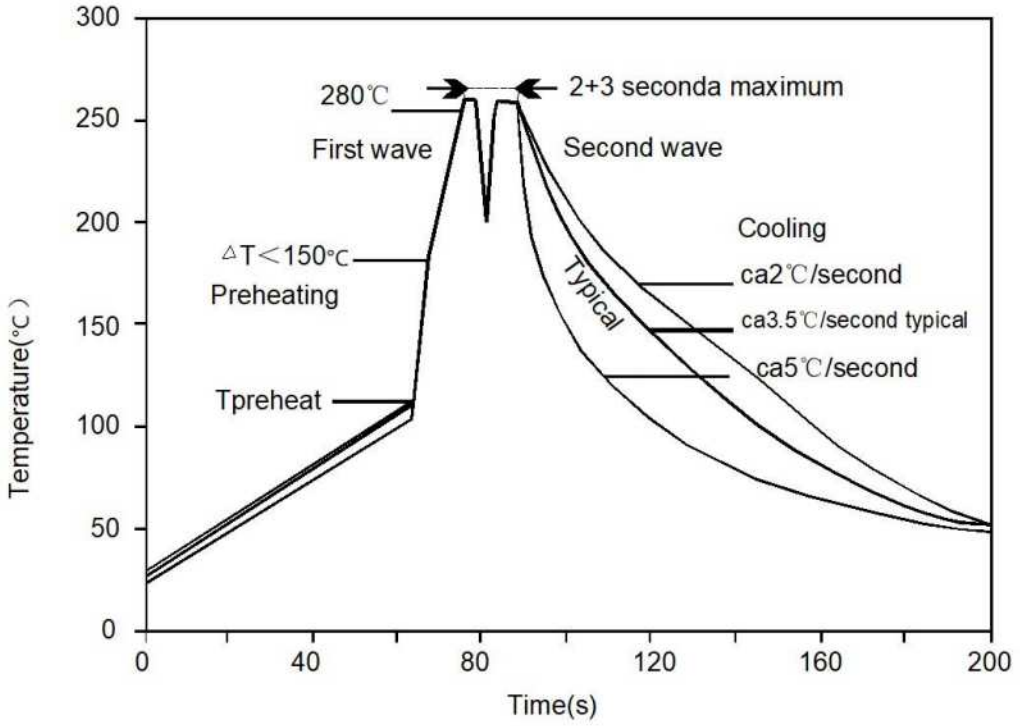
Measured at 20°C, 100Vdc for 1 minute

| Minimum Value Between Terminals | |
|---|---|
| Cr ≤ 0.33 µF | IR ≥ 100,000 MΩ |
| Cr > 0.33 µF | IR ≥ 30,000 MΩ • µF |
| Minimum Value Between Terminals and Case | |
| | IR ≥ 30,000 MΩ |



# DOUBLE METALIZED POLYPROPYLENE CAPACITOR

## Wave Soldering Recommendations




## RATINGS & DIMENSIONS (mm)

| (μF) | Working Voltage | 250Vdc (2E) | | | | | | 400Vdc (2G) | | | | | | 630Vdc (2J) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 180Vac | | | | | | 250Vac | | | | | | 400Vac | | | | | |
| | Code | W | H | T | P | dø | dv/dt | W | H | T | P | dø | dv/dt | W | H | T | P | dø | dv/dt |
| 0.01 | 103 | | | | | | | | | | | | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 3,000 |
| 0.012 | 123 | | | | | | | | | | | | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 3,000 |
| 0.015 | 153 | | | | | | | | | | | | | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 3,000 |
| 0.018 | 183 | | | | | | | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 2,500 |
| 0.022 | 223 | | | | | | | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 2,500 |
| 0.027 | 273 | | | | | | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 1,400 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 2,500 |
| 0.033 | 333 | | | | | | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 1,400 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 2,500 |
| 0.039 | 393 | | | | | | | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 1,400 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 2,500 |
| 0.047 | 473 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 1,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 1,000 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 2,500 |
| 0.056 | 563 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 1,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 1,000 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 1,800 |
| 0.068 | 683 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 1,000 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 1,000 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 1,800 |
| 0.082 | 823 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 600 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 1,000 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 1,800 |
| 0.1 | 104 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 600 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 1,000 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 1,800 |
| 0.12 | 124 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 600 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 1,000 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 1,800 |
| 0.15 | 154 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 600 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 600 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | 1,800 |
| 0.18 | 184 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 600 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 600 | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 | 1,100 |
| 0.22 | 224 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 600 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 600 | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 | 1,100 |
| 0.27 | 274 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | 600 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | 600 | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 | 1,100 |
| 0.33 | 334 | 18.0 | 16.0 | 10.0 | 15.0 | 0.8 | 600 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | 600 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 1,100 |
| 0.39 | 394 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 400 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 600 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 1,100 |
| 0.47 | 474 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 400 | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 | 500 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 1,100 |
| 0.56 | 564 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | 400 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 500 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 1,100 |
| 0.68 | 684 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 400 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 500 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 1,100 |
| 0.82 | 824 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 400 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 500 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 | 1,100 |
| 1 | 105 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 300 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 500 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 1,100 |
| 1.2 | 125 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 300 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 500 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 1,100 |
| 1.5 | 155 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 300 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 500 | | | | | | |
| 1.8 | 185 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 300 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 500 | | | | | | |
| 2.2 | 225 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 300 | | | | | | | | | | | | |
| 2.7 | 275 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 300 | | | | | | | | | | | | |
| 3.3 | 335 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 300 | | | | | | | | | | | | |
| 3.9 | 395 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 300 | | | | | | | | | | | | |

continue ……

# DOUBLE METALIZED POLYPROPYLENE CAPACITOR

**CDBB:** High Frequency & Pulse

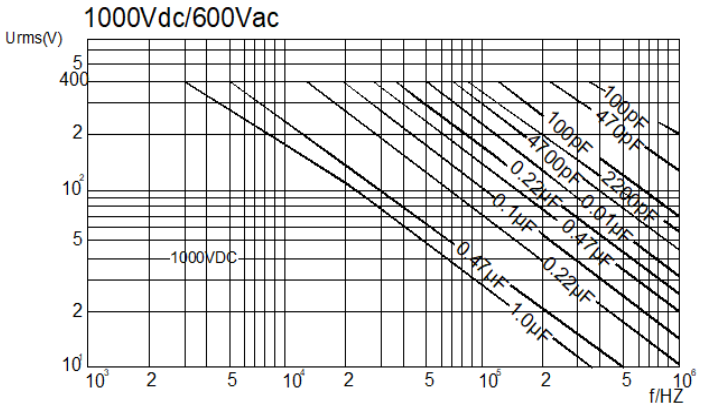
## RATINGS & DIMENSIONS (mm)

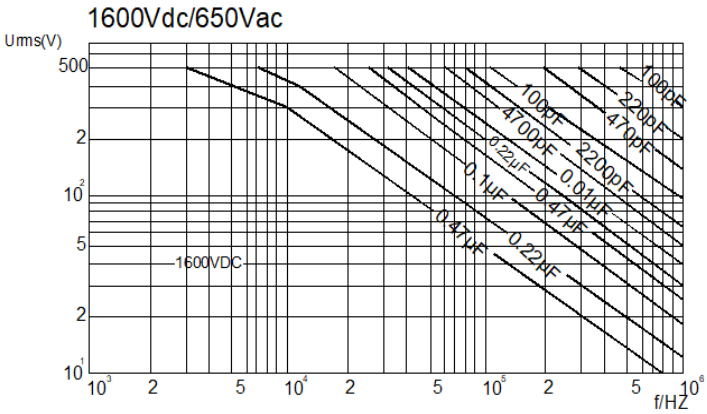
| ( F) | Working Voltage | 1000VDC(3A) | | | | | | 1600Vdc (3C) | | | | | | 2000Vdc (3D) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 600Vac | | | | | | 650Vac | | | | | | 700Vac | | | | | |
| | Code | W | H | T | P | dø | dv/dt | W | H | T | P | dø | dv/dt | W | H | T | P | dø | dv/dt |
| 0.00022 | 221 | | | | | | | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.00027 | 271 | | | | | | | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.00033 | 331 | | | | | | | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.00047 | 471 | | | | | | | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.00056 | 561 | | | | | | | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.00068 | 681 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.00082 | 821 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.001 | 102 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0012 | 122 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0015 | 152 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0018 | 182 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0022 | 222 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0027 | 272 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0033 | 332 | | | | | | | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0039 | 392 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0047 | 472 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 10,000 |
| 0.0056 | 562 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 10,000 |
| 0.0068 | 682 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 6,000 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 6,000 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 10,000 |
| 0.0082 | 822 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 3,300 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 6,000 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 5,000 |
| 0.01 | 103 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 3,300 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 6,000 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 5,000 |
| 0.012 | 123 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 3,300 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 6,000 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 5,000 |
| 0.015 | 153 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 3,300 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 6,000 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 5,000 |
| 0.018 | 183 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 3,300 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | 6,000 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 5,000 |
| 0.022 | 223 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 3,300 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | 6,000 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | 5,000 |
| 0.027 | 273 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | 3,300 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 3,000 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 5,000 |
| 0.033 | 333 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 2,100 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 3,000 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 5,000 |
| 0.039 | 393 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 2,100 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | 3,000 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 | 5,000 |
| 0.047 | 473 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 2,100 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 3,000 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 2,200 |
| 0.056 | 563 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 2,100 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 3,000 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 2,200 |
| 0.068 | 683 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | 2,100 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 | 3,000 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 2,200 |
| 0.082 | 823 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 2,100 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 2,000 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 2,200 |
| 0.1 | 104 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 2,100 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 2,000 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 | 2,200 |
| 0.12 | 124 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 1,300 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 2,000 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 2,200 |
| 0.15 | 154 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 | 1,300 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 2,000 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 2,200 |
| 0.18 | 184 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 1,300 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 2,000 | | | | | | |
| 0.22 | 224 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | 1,300 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 2,000 | | | | | | |
| 0.27 | 274 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 | 1,300 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 2,000 | | | | | | |
| 0.33 | 334 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 | 1,300 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 2,000 | | | | | | |
| 0.39 | 394 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 1,300 | | | | | | | | | | | | |
| 0.47 | 474 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 | 1,300 | | | | | | | | | | | | |

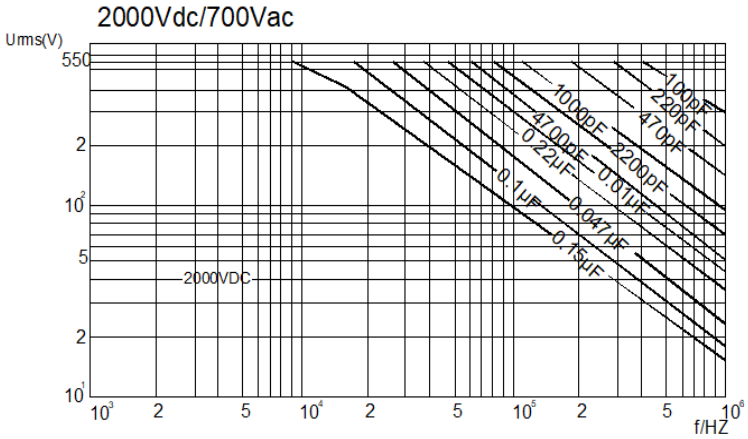
# DOUBLE METALIZED POLYPROPYLENE CAPACITOR

## CDBB: High Frequency & Pulse

### Vrms vs. Frequency, typical value




### RADIAL TAPING CODE DIAGRAM

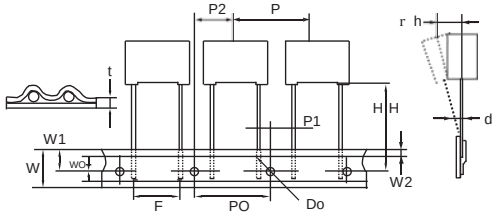



Fig. 4 Box or Expoxy Coated
F=10 = Ammo Only
F=15 Every other space skipped because of Larger body - Ammo Only
(RT3 or RT4)

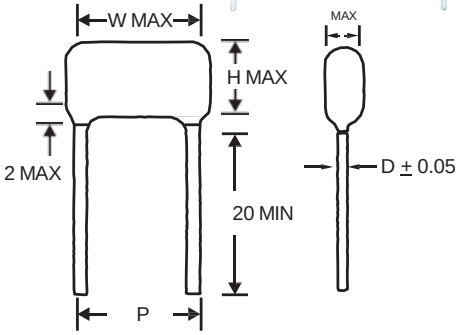
| Description | Letter | Dimension (mm) | |
|---|---|---|---|
| | | RT4 | Tol. |
| Lead Wire Diameter | d | 0.6 / 0.8 | ± 0.05 |
| Tape Pitch | P | 25.4 | ± 1 |
| Feed Hole Pitch | PO | 12.7 | ± 0.2 |
| Centering of the Lead Wire | P1 | 5.2 | ± 0.7 |
| Centering of the Body | P2 | 12.7 | ± 1.3 |
| Lead Spacing (Pitch) | F | 15 | + 0.6; -0.1 |
| Component Alignment | Δh | 0 | ± 2 |
| Height of Componenet from Tape Center | H | 18.5 | ± 0.5 |
| Carrier Tape Width | W | 18 | + 1; -0.5 |
| Hold Down Tape Width | WO | 10 | Min |
| Hole Position | W1 | 9 | ± 0.5 |
| Hold Down Tape Position | W2 | 3 | Max |
| Feed Hole Diameter | Do | 4 | ± 0.2 |
| Tape Thickness | t | 0.5 | ± 0.2 |
| Figure | fig | 4 | |

Remark: *Allowance of accumulated pitch less than 1mm at the sum of 20 pitches.
*Continuous empty component less than 3 consecutive pieces.
*Total empty on one reel less than 1%.


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JINPEI

## CDBC SERIES: Radial Dipped




(Can be box encapsulated. See MPB series.)

## INTRODUCTION

CDBC series are constructed with metalized polypropylene film dielectric, copperply lead and flame retardant epoxy resin coating. Suitable blocking, by-pass, coupling, decoupling, filtering, timing, tuning, temperature compensation and ideal for use in ballasts, switching power supplies, telecommunication equipment, industrial instruments, automatic control systems and other general electronic equipment.

## FEATURES

- Low dissipation factor at high frequency
- High capacitance and dissipation factor stability
- Non-inductive construction
- Self-healing
- Flame retardant epoxy resin coating (compliant to UL 94V-0)

## SPECIFICATIONS

| Items | Performance | | | | | | |
|---|---|---|---|---|---|---|---|
| Operating Voltage Range | 100Vdc, 250Vdc, 400Vdc, 630Vdc | | | | | | |
| Rated Temperature | -40 ˚C ~ +85ºC | | | | | | |
| Usable Upper Category Temperature | +105ºC<br>(Derating ratio of rated voltage over +85˚C ~ +110º C: 1.5% per ºC of RatedVoltage) | | | | | | |
| Capacitance Range | 0.01 µF ~ 10 µF | | | | | | |
| Capacitance Tolerance | ±3% (H), ±5% (J), ±10% (K) | | | | | | |
| Dissipation Factor | KHz | C ≤ 0.1 µF | 0.1 < C ≤ 1.0 µF | 1.0 < C ≤ 3.0 µF | 3.0 < C ≤ 5.0 µF | 5.0 < C ≤ 10 µF | |
| | 1 | ≤ 0.10% | | | | | |
| | 100 | ≤ 0.40% | ≤ 0.70% | ≤ 1.20% | ≤ 1.80% | ≤ 2.80% | |
| Insulation Resistance Terminal to Terminal | Voltage Charge: 100Vdc x 1min (at 20˚C ± 5˚C)<br>≥ 30,000MΩ for C ≤ 0.33µF<br>≥ 10,000MΩ x µF for C > 0.33µF | | | | | | |
| Withstand Voltage | Terminal to Terminal: (at 20˚C ± 5˚C) | | | | | | |
| Rated Voltage Pulse Slope dV/dt (V/µs) | Pitch / $V_R$ | 7.5mm | 10mm | 15mm | 22.5mm | 27.5mm | |
| | 100Vdc | 130 | 110 | 100 | 70 | 50 | |
| | 250Vdc | 240 | 220 | 200 | 130 | 100 | |
| | 400Vdc | -- | 350 | 300 | 200 | 150 | |
| | 630Vdc | -- | 420 | 400 | 250 | 180 | |

## RELIABILITY TEST

| Item | Test Methods | Requirements |
|---|---|---|
| Resistance to Soldering Heat IEC 60068-2-20 | Solder Bath: 260ºC ± 5ºC<br>Immersion Time: 10sec ± 1sec | Capacitance Change IΔ C/C : ≤1% DF Change Δ tan δ : 0.1% at 1KHz IR: > limit value |
| Resistance to Vibration IEC 60068-2-6 | Frequency Range: 10Hz to 55Hz<br>Amplitude: 1.5mm<br>Duration: 6 hours | There shall be no Visible Damage, No Intermittent Contact,<br>No Open or Short Circuit |
| Damp Heat, Steady State IEC 60068-2-3 | Temperature: 40ºC ± 2ºC Relative Humidity: 90% to 95%<br>Duration: 1,000 hours | Capacitance Change IΔC/C I< ±3% DF Change Δ tan δ: 0.1% at 1KHz IR: > 50% limit value |
| Electrical Endurance IEC 60384-17 | Temperature: 85ºC + 2ºC Voltage Applied: 1.25 x Vr(DC) Duration: 2,000 hours | Capacitance Change IΔC/CI< ±3% DF Change Δ tan δ : 0.1% at 1KHz IR: > 50% limit value |

## CDBC SERIES: Radial Dipped

### MAXIMUM DIMENSIONS

| | W.V. | 100VDC (2A) | | | | | 250VDC (2E) | | | | | 400VDC (2G) | | | | | 630VDC (2J) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | d | W | H | T | P | d | W | H | T | P | d | W | H | T | P | d |
| 0.010 | 103 | | | | | | | | | | | 10.5 | 7.5 | 4.0 | 7.5 | 0.6 | 10.5 | 9.0 | 5.5 | 7.5 | 0.6 |
| 0.012 | 123 | | | | | | | | | | | 10.5 | 8.5 | 4.0 | 7.5 | 0.6 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 |
| 0.015 | 153 | | | | | | | | | | | 10.5 | 9.0 | 4.5 | 7.5 | 0.6 | 10.5 | 10.5 | 6.0 | 7.5 | 0.6 |
| 0.018 | 183 | | | | | | | | | | | 10.5 | 9.5 | 4.5 | 7.5 | 0.6 | 10.5 | 11.0 | 6.5 | 7.5 | 0.6 |
| 0.022 | 223 | | | | | | 10.5 | 7.5 | 4.0 | 7.5 | 0.6 | 10.5 | 10.0 | 5.0 | 7.5 | 0.6 | 13.0 | 10.0 | 6.0 | 10.0 | 0.6 |
| 0.027 | 273 | | | | | | 10.5 | 8.0 | 4.0 | 7.5 | 0.6 | 10.5 | 10.5 | 5.5 | 7.5 | 0.6 | 13.0 | 11.0 | 6.5 | 10.0 | 0.6 |
| 0.033 | 333 | | | | | | 10.5 | 8.5 | 4.5 | 7.5 | 0.6 | 10.5 | 11.0 | 6.0 | 7.5 | 0.6 | 13.0 | 11.5 | 7.0 | 10.0 | 0.6 |
| 0.039 | 393 | | | | | | 10.5 | 9.0 | 4.5 | 7.5 | 0.6 | 13.0 | 11.0 | 5.5 | 10.0 | 0.6 | 13.0 | 12.0 | 8.0 | 10.0 | 0.6 |
| 0.047 | 473 | 10.5 | 7.5 | 4.0 | 7.5 | 0.6 | 10.5 | 10.0 | 4.5 | 7.5 | 0.6 | 13.0 | 11.0 | 5.5 | 10.0 | 0.6 | 13.0 | 13.0 | 8.0 | 10.0 | 0.6 |
| 0.056 | 563 | 10.5 | 8.0 | 4.0 | 7.5 | 0.6 | 10.5 | 10.5 | 5.0 | 7.5 | 0.6 | 13.0 | 11.5 | 6.0 | 10.0 | 0.6 | 13.0 | 14.0 | 9.0 | 10.0 | 0.6 |
| 0.068 | 683 | 10.5 | 9.0 | 4.5 | 7.5 | 0.6 | 10.5 | 11.0 | 5.5 | 7.5 | 0.6 | 13.0 | 12.5 | 6.5 | 10.0 | 0.6 | 18.0 | 12.5 | 7.0 | 15.0 | 0.8 |
| 0.082 | 823 | 10.5 | 9.5 | 4.5 | 7.5 | 0.6 | 10.5 | 11.5 | 6.0 | 7.5 | 0.6 | 13.0 | 13.0 | 7.0 | 10.0 | 0.6 | 18.0 | 13.0 | 7.5 | 15.0 | 0.8 |
| 0.10 | 104 | 10.5 | 10.0 | 5.0 | 7.5 | 0.6 | 10.5 | 12.0 | 6.5 | 7.5 | 0.6 | 13.0 | 13.5 | 8.0 | 10.0 | 0.6 | 18.0 | 14.0 | 8.0 | 15.0 | 0.8 |
| 0.12 | 124 | 10.5 | 10.0 | 5.5 | 7.5 | 0.6 | 13.0 | 11.5 | 6.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 18.0 | 15.5 | 8.0 | 15.0 | 0.8 |
| 0.15 | 154 | 10.5 | 11.0 | 6.0 | 7.5 | 0.6 | 13.0 | 12.0 | 6.5 | 10.0 | 0.6 | 18.0 | 12.5 | 7.0 | 15.0 | 0.8 | 18.0 | 16.5 | 9.0 | 15.0 | 0.8 |
| 0.18 | 184 | 10.5 | 11.5 | 6.5 | 7.5 | 0.6 | 13.0 | 12.5 | 7.0 | 10.0 | 0.6 | 18.0 | 13.5 | 8.5 | 15.0 | 0.8 | 18.0 | 17.5 | 10.0 | 15.0 | 0.8 |
| 0.22 | 224 | 13.0 | 11.5 | 6.0 | 10.0 | 0.6 | 13.0 | 13.0 | 7.5 | 10.0 | 0.6 | 18.0 | 15.0 | 8.0 | 15.0 | 0.8 | 18.0 | 18.5 | 11.5 | 15.0 | 0.8 |
| 0.27 | 274 | 13.0 | 12.0 | 6.5 | 10.0 | 0.6 | 18.0 | 13.0 | 6.0 | 15.0 | 0.8 | 18.0 | 16.0 | 8.5 | 15.0 | 0.8 | 25.5 | 18.0 | 9.0 | 22.5 | 0.8 |
| 0.33 | 334 | 13.0 | 13.0 | 7.0 | 10.0 | 0.6 | 18.0 | 14.0 | 6.5 | 15.0 | 0.8 | 18.0 | 17.0 | 9.5 | 15.0 | 0.8 | 25.5 | 19.0 | 10.0 | 22.5 | 0.8 |
| 0.39 | 394 | 13.0 | 13.5 | 7.5 | 10.0 | 0.6 | 18.0 | 14.5 | 7.0 | 15.0 | 0.8 | 18.0 | 18.0 | 10.5 | 15.0 | 0.8 | 25.5 | 20.0 | 11.0 | 22.5 | 0.8 |
| 0.47 | 474 | 13.0 | 14.0 | 8.5 | 10.0 | 0.6 | 18.0 | 15.0 | 8.0 | 15.0 | 0.8 | 25.5 | 16.0 | 9.0 | 22.5 | 0.8 | 20.5 | 20.5 | 12.0 | 17.5 | 0.8 |
| | | | | | | | | | | | | | | | | | 25.5 | 21.0 | 12.0 | 22.5 | 0.8 |
| 0.56 | 564 | 18.0 | 14.0 | 7.0 | 15.0 | 0.8 | 18.0 | 16.0 | 8.5 | 15.0 | 0.8 | 25.5 | 17.0 | 10.0 | 22.5 | 0.8 | 25.5 | 22.5 | 13.5 | 22.5 | 0.8 |
| 0.68 | 684 | 18.0 | 15.0 | 7.5 | 15.0 | 0.8 | 18.0 | 17.0 | 9.5 | 15.0 | 0.8 | 25.5 | 18.0 | 11.0 | 22.5 | 0.8 | 25.5 | 24.0 | 15.0 | 22.5 | 0.8 |
| 0.82 | 824 | 18.0 | 15.5 | 8.0 | 15.0 | 0.8 | 18.0 | 18.5 | 10.0 | 15.0 | 0.8 | 25.5 | 20.0 | 11.0 | 22.5 | 0.8 | 25.5 | 25.5 | 16.5 | 22.5 | 0.8 |
| 1.00 | 105 | 18.0 | 16.5 | 9.0 | 15.0 | 0.8 | 18.0 | 20.0 | 11.0 | 15.0 | 0.8 | 25.5 | 21.5 | 12.5 | 22.5 | 0.8 | 26.0 | 16.5 | 12.0 | 22.5 | 0.8 |
| | | | | | | | | | | | | | | | | | 31.5 | 25.0 | 16.0 | 27.5 | 0.8 |
| 1.20 | 125 | 18.0 | 17.5 | 10.0 | 15.0 | 0.8 | 25.5 | 18.0 | 9.0 | 22.5 | 0.8 | 25.5 | 23.0 | 14.0 | 22.5 | 0.8 | 31.5 | 27.0 | 18.0 | 27.5 | 0.8 |
| 1.50 | 155 | 18.0 | 18.5 | 11.5 | 15.0 | 0.8 | 25.5 | 19.5 | 10.5 | 22.5 | 0.8 | 25.5 | 24.5 | 15.5 | 22.5 | 0.8 | | | | | |
| 1.80 | 185 | 25.5 | 18.0 | 9.0 | 22.5 | 0.8 | 25.5 | 20.5 | 11.5 | 22.5 | 0.8 | | | | | | | | | | |
| 2.20 | 225 | 25.5 | 19.0 | 10.0 | 22.5 | 0.8 | 25.5 | 22.0 | 13.0 | 22.5 | 0.8 | | | | | | | | | | |
| 2.70 | 275 | 25.5 | 20.0 | 11.5 | 22.5 | 0.8 | 25.5 | 23.5 | 14.5 | 22.5 | 0.8 | | | | | | | | | | |
| 3.30 | 335 | 25.5 | 24.5 | 15.5 | 22.5 | 0.8 | 25.5 | 25.5 | 16.0 | 22.5 | 0.8 | | | | | | | | | | |

### PART NUMBER EXAMPLE - *BULK*

CDBC 103 M 2G 075 B 100 S

- Series
- Capacitance
- Tolerance
- Voltage Code
- Lead Spacing Code*
- Packaging
- Lead Length
- Lead Style

### PART NUMBER EXAMPLE - *RADIAL TAPED*

CDBC 103 K 2G 075 A RT2 K

- Series
- Capacitance
- Tolerance
- Voltage Code
- Lead Spacing Code*
- Packaging
- Tape Code (Tape)
- Lead Style

* Leadspace is straight lead non-formed original leadspace.

### CAPACITANCE

| μF | 0.01 | 0.047 | 0.1 | 0.47 | 1.0 | 3.3 |
|---|---|---|---|---|---|---|
| pF | 10,000 | 47,000 | 100,000 | 470,000 | – | – |
| Code | 103 | 473 | 104 | 474 | 105 | 335 |

### TOLERANCE CODE

| Code | Tolerance |
|---|---|
| J | ± 5% |
| K | ± 10% |
| M | ± 20% |

# METALIZED POLYPROPYLENE FILM CAPACITOR |LOW DF

## CDBC SERIES: Radial Dipped

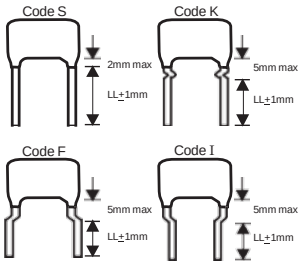
### RATED VOLTAGE

| W.V. | 100 | 250 | 400 | 630 |
|---|---|---|---|---|
| Code | 2A | 2E | 2G | 2J |

### TAPE CODE (See Diagrams)

| Spacing | 7.5mm | 10mm | 15mm |
|---|---|---|---|
| Packing | A or R | A | A |
| Code | RT2 | RT3 | RT4 |

### LEAD STYLE EXAMPLES




(For LL over 20mm spec is minimum)

### RADIAL LEAD SPACING

* Leadspace is straight lead non-formed original leadspace.

| mm | 7.5 | 10 | 15 | 22.5 | 27.5 |
|---|---|---|---|---|---|
| Code | 075 | 100 | 150 | 225 | 275 |

### LEAD LENGTH FROM SEATING PLANE (if bulk pack)

| mm | 5 | 10 | 15 | 20 | 25 |
|---|---|---|---|---|---|
| Code | 050 | 100 | 150 | 200 | 250 |

### PACKAGING

| Method | Bulk | Ammo | Reel |
|---|---|---|---|
| Code | B | A | R |

### LEAD STYLE

| Code | Style |
|---|---|
| S | Straight |
| K | Kink-In (Stand Off) |
| F | Form Out |
| I | Form In |

### RADIAL TAPING CODE DIAGRAM

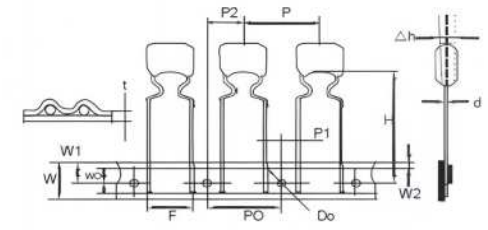



Fig. 1
F=7.5mm
(RT2)

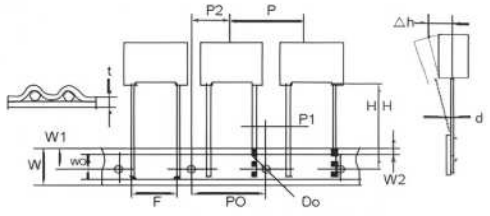



Fig. 2
F=7.5mm
(RT2)

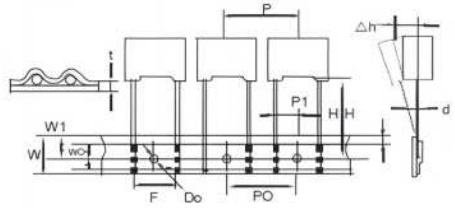



Fig. 3 Box
F=7.5mm
Ammo Only
(RT2)

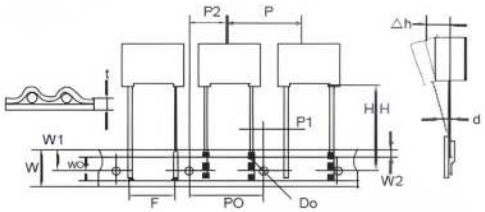



Fig. 4 Box or Expoxy Coated
F=10 = Ammo Only
F=15 Every other space skipped because of Larger body - Ammo Only
(RT3 or RT4)

### SPECIFICATIONS

| Description | Letter | Dimension (mm) | | | | | Description | Letter | Dimension (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RT1 | RT2 | RT3 | RT4 | Tol. | | | RT1 | RT2 | RT3 | RT4 | Tol. |
| Lead Wire Diameter | d | 0.5 / 0.6 | 0.5 / 0.6 | 0.6 | 0.6 / 0.8 | + 0.05 | Carrier Tape Width | W | 18 | 18 | 18 | 18 | + 1;-0.5 |
| Tape Pitch | P | 12.7 | 12.7 | 12.7 | 25.4 | +1 | Hold Down Tape Width | WO | 6 | 6 | 9 | 10 | Min |
| Feed Hole Pitch | PO | 12.7 | 12.87 | 12.7 | 12.7 | + 0.2 | Hole Position | W1 | 9 | 9 | 9 | 9 | + 0.5 |
| Centering of the Lead Wire | P1 | 3.85 | 2.6 / 3.75 | 7.7 | 5.2 | + 0.7 | Hold Down Tape Position | W2 | 3 | 3 | 3 | 3 | Max |
| Centering of the Body | P2 | 6.35 | 6.35 | 12.7 | 12.7 | + 1.3 | Feed Hole Diameter | Do | 4 | 4 | 4 | 4 | + 0.2 |
| Lead Spacing (Pitch) | F | 5 | 7.5 | 10 | 15 | + 0.6;-0.1 | Tape Thickness | t | 0.7 | 0.7 | 0.7 | 0.07 | + 0.2 |
| Component Alignment | Δh | 0 | 0 | 0 | 0 | + 2 | Figure | fig | 1 or 2 | 1.2 or 3 | 4 | 4 | |
| Height of Componenet from Tape Center | H | 18.5 | 18.5 | 18.5 | 18.5 | + 0.5 | | | | | | | |

Remark: *Allowance of accumulated pitch less than 1mm at the sum of 20 pitches.
*Continuous empty component less than 3 consecutive pieces.
*Total empty on one reel less than 1%.

## CDBE SERIES: Power Factor Correction Applications




## INTRODUCTION

CDBE Series are constructed specifically for Power Factor Correction (PFC) applications. Film was selected and metalization applied specifically for PFC application requirements.

## PART NUMBER EXAMPLE

CDBE 104 K 2W 100 B 200 S

- Series
- Capacitance
- Tolerance
- Voltage
- Lead Style
- Lead Length
- Packaging
- Lead space*

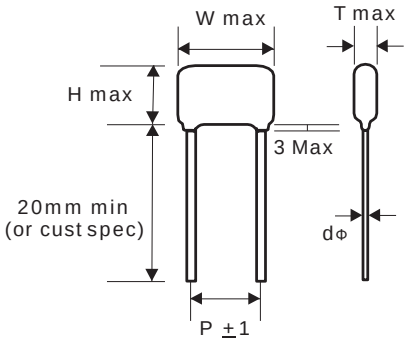
* Leadspace is straight lead non-formed original leadspace.

## FEATURES

- Self-healing property
- Excellent dv/dt
- RoHS Compliance
- Ultra-miniature Size
- Ideal for Power Factor correction applications

## SPECIFICATIONS

| Items | Performance | | | | | |
|---|---|---|---|---|---|---|
| Operating Voltage Range | 450Vdc, 630Vdc | | | | | |
| Rated Temperature | -40 °C ~ +85°C | | | | | |
| Usable Upper Category Temperature | +110°C<br>(Derating ratio of rated voltage over +85 °C ~ +110°C: 1.5% per °C of Rated Voltage) | | | | | |
| Capacitance Range | 0.022 μF ~ 2.2 μF | | | | | |
| Capacitance Tolerance | +3% (H), +5% (J), +10% (K) | | | | | |
| Dissipation Factor | 0.1% (max.) at 1KHz<br>1.2% (max.) at 10KHz | | | | | |
| Insulation Resistance Terminal to Terminal | Voltage Charge: 100Vdc x 1min (at 20°C ± 5°C)<br>≥ 9,000MΩ for C ≤ 0.33μF<br>> 3,000MΩ x μF for C > 0.33μF | | | | | |
| Withstand Voltage | Terminal to Terminal: (at 20 °C +5°C)<br>1.6 x $V_R$ applied for 2sec. (cut off current 10mA)<br>Slow-up voltage speed: 100V/sec | | | | | |
| Rated Voltage Pulse Slope dV/dt (V/μs) | $V_R$ | 10mm | 15mm | 22.5mm | 27.5mm | |
| | 450Vdc | 220 | 160 | 100 | | |
| | 630Vdc | 350 | 250 | 160 | 115 | |




## PERFORMANCE

| Item | Test Methods | Requirements |
|---|---|---|
| Resistance to Soldering Heat IEC 60068-2-20 | Solder Bath: 260°C± 5°C<br>Immersion Time: 10sec ± 1sec | Capacitance Change \|ΔC/C \| :≤1%<br>DF Change tanδ: 0.1% at 1KHz IR: > limit value |
| Resistance to Vibration IEC 60068-2-6 | Frequency Range: 10Hz to 55Hz<br>Amplitude:<br>1.5mm<br>Duration: 6<br>hours | There shall be no Visible Damage,<br>No Intermittent Contact,<br>No Open or Short Circuit |
| Damp Heat, Steady State IEC 60068-2-3 | Temperature: 40°C ± 2°C<br>Relative Humidity: 90% to 95%<br>Duration: 1,000 hours | Capacitance Change \|ΔC/C \|: ≤3%<br>DF Change tanδ: 0.1% at 1KHz IR: > 50% limit value |
| Electrical Endurance IEC 60384-16 | Temperature: 85°C + 2°C<br>Voltage Applied: 1.25 x Vr(DC)<br>Duration: 1,000 hours | Capacitance Change \|ΔC/C \|: ≤3%<br>DF Change tanδ: 0.1% at 1KHz IR: > 50% limit value |


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# METALIZED POLYPROPYLENE FILM CAPACITOR

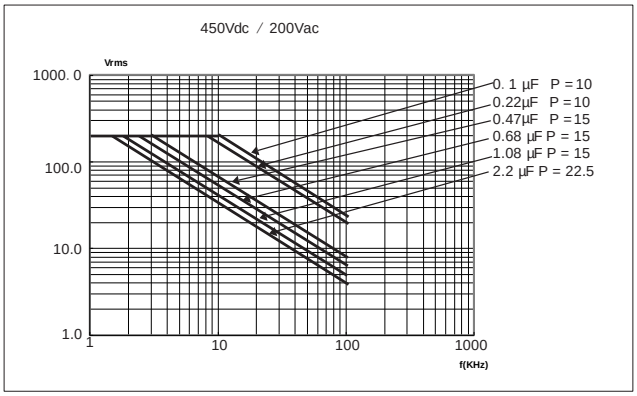
## CDBE SERIES: Power Factor Correction Applications

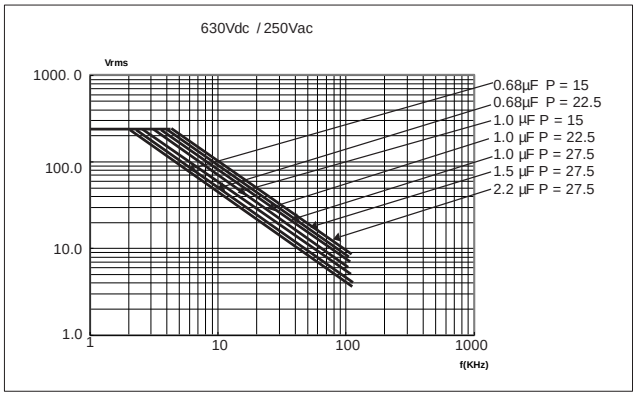
### DIMENSIONS (mm)

| R.V. | | 450Vdc (2W) | | | | |
|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | dΦ |
| 0.047 | 473 | 13.0 | 8.0 | 4.5 | 10 | 0.6 |
| 0.1 | 104 | 13.0 | 12.0 | 6.5 | 10 | 0.6 |
| 0.12 | 124 | 13.0 | 13.0 | 7.0 | 10 | 0.6 |
| 0.15 | 154 | 13.0 | 13.5 | 8.0 | 10 | 0.6 |
| 0.22 | 224 | 13.0 | 14.0 | 6.5 | 10 | 0.6 |
| | | 18.0 | 12.0 | 7.0 | 15 | 0.8 |
| 0.33 | 334 | 18.0 | 14.0 | 7.0 | 15 | 0.8 |
| 0.47 | 474 | 13.0 | 16.5 | 7.0 | 10 | 0.6 |
| | | 18.0 | 14.5 | 5.5 | 15 | 0.8 |
| 0.56 | 564 | 18.0 | 15.5 | 6.5 | 15 | 0.8 |
| 0.68 | 684 | 13.0 | 20.5 | 9.5 | 10 | 0.6 |
| | | 18.0 | 16.0 | 7.0 | 15 | 0.8 |
| 1.0 | 105 | 18.0 | 17.5 | 8.5 | 15 | 0.8 |
| 1.5 | 155 | 18.0 | 19.0 | 10.5 | 15 | 0.8 |
| 2.20 | 225 | 18.0 | 24.5 | 11.0 | 15 | 0.8 |
| | | 25.5 | 21.5 | 13.5 | 22.5 | 0.8 |

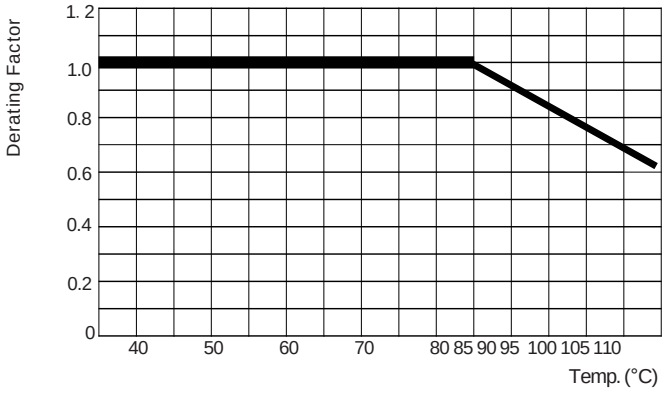
| R.V. | | 630Vdc (2J) | | | | |
|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | dΦ |
| 0.022 | 223 | 13.0 | 11 | 5 | 10 | 0.6 |
| 0.047 | 473 | 13.0 | 11 | 5.5 | 10 | 0.6 |
| 0.068 | 683 | 13.0 | 12 | 6 | 10 | 0.6 |
| 0.10 | 104 | 13.0 | 14 | 7 | 10 | 0.6 |
| | | 18.0 | 11 | 6 | 15 | 0.6 |
| 0.22 | 224 | 18.0 | 14 | 7 | 15 | 0.8 |
| 0.33 | 334 | 18.0 | 14 | 7 | 15 | 0.9 |
| 0.47 | 474 | 18.0 | 18 | 12 | 15 | 0.8 |
| 0.68 | 684 | 18.0 | 22 | 13 | 15 | 0.8 |
| | | 26.0 | 21.5 | 12 | 22.5 | 0.8 |
| 1.00 | 105 | 18.0 | 24 | 18.5 | 15 | 0.8 |
| | | 26.0 | 22 | 13 | 22.5 | 0.8 |
| | | 31.0 | 20 | 11 | 27.5 | 0.8 |
| 1.5 | 155 | 31.0 | 22.5 | 13 | 27.5 | 0.8 |
| 2.2 | 225 | 31.0 | 27.5 | 15 | 27.5 | 0.8 |

### RATED VOLTAGE (Vrms) VS. FREQUENCY

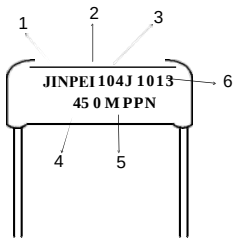



### MAX. DC & AC VOLTAGE VS TEMPERATURE




### MARKING




1. Name or Symbol
2. Nominal Capacitance in μF
3. Capacitance Tolerance
4. DC, Rating, Voltage
5. Type Name
6. Date Code
   Year: 11→ 2011, 12→ 2012, 13→ 2013
   Week On: 01~53

# METALIZED POLYPROPYLENE FILM CAPACITOR

## CDBE SERIES: Power Factor Correction Applications

### MAXIMUM CURRENT, AMPS (rms)

450Vdc / 200Vac

| CAP (μF) | P | 15.75 KHz | 35 KHz | 45 KHz | 65 KHz | 80 KHz | 100 KHz |
|---|---|---|---|---|---|---|---|
| 0.047 | 10 | 0.54 | 0.70 | 0.77 | 0.87 | 0.93 | 1.00 |
| 0.068 | 10 | 0.65 | 0.84 | 0.91 | 1.01 | 1.08 | 1.16 |
| 0.1 | 10 | 0.81 | 1.00 | 1.08 | 1.20 | 1.26 | 1.33 |
| 0.12 | 10 | 1.10 | 1.35 | 1.45 | 1.60 | 1.68 | 1.78 |
| 0.15 | 10 | 1.25 | 1.58 | 1.72 | 1.85 | 2.02 | 2.15 |
| 0.22 | 10 | 1.33 | 1.66 | 1.80 | 1.91 | 2.10 | 2.22 |
| | 15 | 2.48 | 2.95 | 3.11 | 3.36 | 3.50 | 3.70 |
| 0.33 | 10 | 1.42 | 1.75 | 1.88 | 2.07 | 2.18 | 2.32 |
| | 15 | 2.60 | 3.08 | 3.25 | 3.52 | 3.70 | 3.88 |
| 0.47 | 10 | 2.20 | 2.62 | 2.80 | 3.03 | 3.18 | 3.35 |
| | 15 | 2.30 | 2.65 | 2.76 | 2.95 | 3.06 | 3.20 |
| 0.56 | 15 | 2.90 | 3.40 | 3.58 | 3.85 | 4.00 | 4.20 |
| 0.68 | 10 | 2.50 | 2.92 | 3.07 | 3.30 | 3.44 | 3.58 |
| | 15 | 2.70 | 3.20 | 3.40 | 3.70 | 3.85 | 4.05 |
| 1.0 | 15 | 3.35 | 4.10 | 4.30 | 4.65 | 4.88 | 5.15 |
| 1.5 | 15 | 6.08 | 6.70 | 6.95 | 7.25 | 7.44 | 7.65 |
| | 22.5 | 3.93 | 4.60 | 4.80 | 5.15 | 5.35 | 5.60 |
| 2.2 | 15 | 5.90 | 6.51 | 6.70 | 7.05 | 7.23 | 7.42 |
| | 22.5 | 5.40 | 5.75 | 5.85 | 6.00 | 6.10 | 6.20 |

### MAXIMUM CURRENT, AMPS (rms)

630Vdc / 250Vac

| CAP (μF) | P | 15.75 KHz | 35 KHz | 45 KHz | 65 KHz | 80 KHz | 100 KHz | 125 KHz | 100 KHz |
|---|---|---|---|---|---|---|---|---|---|
| 0.01 | 7.5 | 0.212 | 0.300 | 0.340 | 0.400 | 0.440 | 0.480 | 0.540 | 0.580 |
| | 10 | 0.245 | 0.350 | 0.395 | 0.460 | 0.510 | 0.560 | 0.620 | 0.680 |
| 0.015 | 10 | 0.275 | 0.390 | 0.440 | 0.520 | 0.570 | 0.630 | 0.700 | 0.750 |
| 0.022 | 15 | 0.485 | 0.610 | 0.650 | 0.720 | 0.760 | 0.810 | 0.860 | 0.910 |
| 0.033 | 10 | 0.575 | 0.710 | 0.770 | 0.850 | 0.900 | 0.950 | 1.010 | 1.060 |
| 0.047 | 10 | 0.570 | 0.790 | 0.880 | 1.010 | 1.100 | 1.200 | 1.300 | 1.400 |
| 0.068 | 10 | 0.960 | 1.250 | 1.350 | 1.500 | 1.600 | 1.700 | 1.800 | 1.900 |
| | 15 | 0.860 | 1.100 | 1.200 | 1.330 | 1.420 | 1.520 | 1.650 | 1.750 |
| 0.10 | 10 | 0.970 | 1.250 | 1.350 | 1.550 | 1.650 | 1.750 | 1.900 | 2.000 |
| | 15 | 1.280 | 1.600 | 1.700 | 1.880 | 1.980 | 2.100 | 2.250 | 2.350 |
| 0.33 | 15 | 2.600 | 3.300 | 3.600 | 4.050 | 4.300 | 4.650 | 5.000 | 5.250 |
| 0.47 | 15 | 2.750 | 3.500 | 3.800 | 4.250 | 4.550 | 4.880 | 5.250 | 5.550 |
| 0.68 | 15 | 3.800 | 4.700 | 5.100 | 5.650 | 5.950 | 6.350 | 6.750 | 7.080 |
| | 22.5 | 3.100 | 3.400 | 3.500 | 3.700 | 3.800 | 3.900 | 4.000 | 4.150 |
| 1.0 | 15 | 5.000 | 5.530 | 5.700 | 5.950 | 6.100 | 6.300 | 6.500 | 6.650 |
| | 22.5 | 4.400 | 4.900 | 5.100 | 5.350 | 5.500 | 5.600 | 5.750 | 5.900 |
| | 27.5 | 3.450 | 3.600 | 3.650 | 3.700 | 3.750 | 3.800 | 3.830 | 3.850 |
| 1.5 | 27.5 | 4.900 | 5.100 | 5.150 | 5.250 | 5.350 | 5.380 | 5.450 | 5.500 |
| 2.2 | 27.5 | 6.110 | 6.350 | 6.480 | 6.530 | 6.620 | 6.700 | 6.800 | 6.900 |

### PACKAGING CODE

| Method | Bulk | Ammo | Reel |
|---|---|---|---|
| Code | B | A | R |

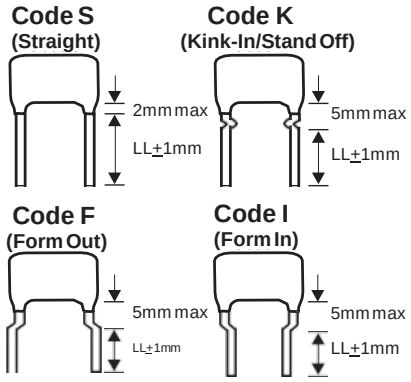
### LEAD LENGTH FROM SEATING PLANE

| mm | 5 | 10 | 15 | 20 | 25 |
|---|---|---|---|---|---|
| Code | 050 | 100 | 150 | 200 | 250 |

### TAPE CODE (Lead spacing of tape, if taped)

| Spacing | 10mm | 15mm |
|---|---|---|
| Packing | A | A |
| Code | RT3 | RT4 |

### LEAD STYLE CODE EXAMPLE




(Typical Straight Lead Length is 20mm for Bulk Pack)

## CDAA SERIES: Polyester Film Foil, Radial




### INTRODUCTION

CDAA series is constructed with polyester film dielectric, aluminum foil electrode, copperply lead, and epoxy resin coating. They are suitable for blocking, by-pass and coupling of DC and signal to VHF range, timing circuits,filtering, and other general purpose usage.

They are also ideal for use in amplifiers, TV, radio, stereo equipment and other electronic equipments.

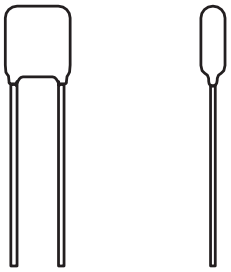
### FEATURES

- High moisture resistance
- Unilateral lead-out
- Good insulating performance
- ESR is minimized
- Rated Voltage 100~1200Vdc

### PART NUMBER EXAMPLE

CDAA 104 K 2A 050 A RT1 K

- Series
- Capacitance
- Tolerance
- Voltage
- Lead Style
- Lead Length
- Packaging
- Lead space*

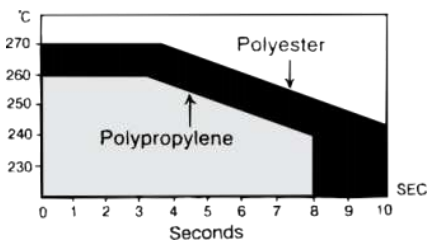


* Leadspace is straight lead non-formed original leadspace.

### ELECTRICAL CHARACTERISTICS

| Items | Performance |
|---|---|
| Operating Voltage Range | 100Vdc, 250Vdc, 400Vdc, 630Vdc, 1200Vdc |
| Rated Temperature | -55˚C ~ +105˚C (Derates over 85˚C) |
| Climatic Category | 55 / 105 / 21 |
| Capacitance Range | 0.001 µF ~ 0.27 µF |
| Capacitance Tolerance | 5% (J), 10% (K), 20%(M) |
| Dissipation Factor | ≤ 1.0% (1KHz, 20°C) |
| Insulation Resistance Terminal to Terminal | ≥ 30000MΩ, CR ≤ 0.1µF (20°C, 10V, 1min)<br>≥ 10000MΩ, CR > 0.1µF (20°C, 100V, 1min) |
| Withstand Voltage | 2.0UR : (5s) |

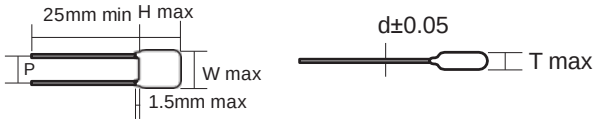
### SOLDERING




The area under the curve is the recommended soldering time & temp. for the materials shown.

## CDAA SERIES: Polyester Film Foil, Radial

### MAXIMUM DIMENSIONS (mm)




| (μF) | W.V. DC | 50V (1H) / 63V (1J) / 100V (2A) | | | | | 250V (2E) | | | | | 400V (2G) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Code | W | H | T | P | d | W | H | T | P | d | W | H | T | P | d |
| 0.001 | 102 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 |
| 0.0012 | 122 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 |
| 0.0015 | 152 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 |
| 0.0018 | 182 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 | 6.0 | 11.5 | 3.5 | 3.5 | 0.5 |
| 0.0022 | 222 | 6.0 | 11.5 | 4.0 | 3.5 | 0.5 | 6.0 | 11.5 | 4.0 | 3.5 | 0.5 | 6.0 | 11.5 | 4.0 | 3.5 | 0.5 |
| 0.0027 | 272 | 6.0 | 11.5 | 4.0 | 3.5 | 0.5 | 6.5 | 12.0 | 4.0 | 3.5 | 0.5 | 7.0 | 13.0 | 4.0 | 4.0 | 0.5 |
| 0.0033 | 332 | 6.0 | 11.5 | 4.0 | 3.5 | 0.5 | 6.5 | 12.0 | 4.0 | 3.5 | 0.5 | 7.0 | 13.0 | 4.5 | 4.5 | 0.5 |
| 0.0039 | 392 | 6.0 | 11.5 | 4.0 | 3.5 | 0.5 | 6.5 | 12.0 | 4.0 | 4.0 | 0.5 | 7.5 | 13.5 | 4.5 | 4.5 | 0.5 |
| 0.0047 | 472 | 6.0 | 11.5 | 4.0 | 3.5 | 0.5 | 6.5 | 12.0 | 4.0 | 4.5 | 0.5 | 8.0 | 13.5 | 4.5 | 4.5 | 0.5 |
| 0.0056 | 562 | 6.0 | 11.5 | 4.0 | 4.0 | 0.5 | 7.0 | 12.0 | 4.0 | 5.0 | 0.5 | 8.0 | 13.5 | 5.0 | 5.5 | 0.5 |
| 0.0068 | 682 | 6.5 | 11.5 | 4.0 | 4.0 | 0.5 | 7.0 | 12.0 | 4.0 | 5.0 | 0.5 | 8.5 | 13.5 | 5.5 | 5.5 | 0.5 |
| 0.0082 | 822 | 7.0 | 11.5 | 4.0 | 4.0 | 0.5 | 8.0 | 13.0 | 4.0 | 5.5 | 0.5 | 9.0 | 15.5 | 5.5 | 5.5 | 0.5 |
| 0.01 | 103 | 7.0 | 11.5 | 4.5 | 4.0 | 0.5 | 8.0 | 13.0 | 5.0 | 5.5 | 0.5 | 9.5 | 15.5 | 6.0 | 5.5 | 0.5 |
| 0.012 | 123 | 7.0 | 11.5 | 4.5 | 4.0 | 0.5 | 8.5 | 13.5 | 5.0 | 5.5 | 0.5 | 10.5 | 15.5 | 6.5 | 6.0 | 0.5 |
| 0.015 | 153 | 7.0 | 11.5 | 4.5 | 4.5 | 0.5 | 8.5 | 13.5 | 5.0 | 5.5 | 0.5 | 10.5 | 15.5 | 6.5 | 6.5 | 0.5 |
| 0.018 | 183 | 7.0 | 12.0 | 4.5 | 4.5 | 0.5 | 9.0 | 14.0 | 6.0 | 6.0 | 0.5 | 11.5 | 17.5 | 7.0 | 7.0 | 0.5 |
| 0.022 | 223 | 8.0 | 12.0 | 4.5 | 5.0 | 0.5 | 9.5 | 14.0 | 6.0 | 6.5 | 0.5 | 11.5 | 17.5 | 7.0 | 7.0 | 0.5 |
| 0.027 | 273 | 8.0 | 13.0 | 5.0 | 5.0 | 0.5 | 10.0 | 15.0 | 6.5 | 6.5 | 0.5 | 12.5 | 18.5 | 7.5 | 7.5 | 0.5 |
| 0.033 | 333 | 8.5 | 13.0 | 5.0 | 5.5 | 0.5 | 10.5 | 15.5 | 6.5 | 6.5 | 0.5 | 12.5 | 18.5 | 7.5 | 7.5 | 0.5 |
| 0.039 | 393 | 9.0 | 13.0 | 5.0 | 5.5 | 0.5 | 11.5 | 15.5 | 7.0 | 7.0 | 0.5 | 14.0 | 19.0 | 8.0 | 8.5 | 0.5 |
| 0.047 | 473 | 9.0 | 13.0 | 5.5 | 5.5 | 0.5 | 11.5 | 16.0 | 7.0 | 7.5 | 0.5 | 14.5 | 19.0 | 8.5 | 9.0 | 0.5 |
| 0.056 | 563 | 9.5 | 13.5 | 5.5 | 6.5 | 0.5 | 12.5 | 16.0 | 8.5 | 8.0 | 0.5 | 14.5 | 21.5 | 8.5 | 9.0 | 0.5 |
| 0.068 | 683 | 10.0 | 13.5 | 6.0 | 7.0 | 0.5 | 12.5 | 17.0 | 8.5 | 8.0 | 0.5 | 14.5 | 22.5 | 9.0 | 9.5 | 0.5 |
| 0.082 | 823 | 10.5 | 13.5 | 6.5 | 7.0 | 0.5 | 14.0 | 19.0 | 10.0 | 8.5 | 0.5 | | | | | |
| 0.1 | 104 | 11.5 | 13.5 | 7.0 | 7.5 | 0.5 | 15.0 | 19.0 | 10.0 | 9.0 | 0.5 | | | | | |
| 0.12 | 124 | 12.5 | 15.5 | 7.5 | 8.5 | 0.5 | | | | | | | | | | |
| 0.15 | 154 | 13.5 | 16.0 | 8.0 | 9.0 | 0.5 | | | | | | | | | | |
| 0.18 | 184 | 14.0 | 16.5 | 8.0 | 9.5 | 0.5 | | | | | | | | | | |
| 0.22 | 224 | 14.5 | 17.5 | 8.5 | 9.5 | 0.5 | | | | | | | | | | |
| 0.27 | 274 | 15.0 | 21.0 | 9.0 | 10.0 | 0.5 | | | | | | | | | | |

| (μF) | W.V. DC | 630VDC (2J) | | | | | 1200VDC (3B) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Code | W | H | T | P | d | W | H | T | P | d |
| 0.001 | 102 | 6.5 | 12.5 | 4.0 | 3.5 | 0.5 | 7.0 | 13.5 | 4.5 | 4.0 | 0.5 |
| 0.0012 | 122 | 6.5 | 12.5 | 4.0 | 3.5 | 0.5 | 7.0 | 13.5 | 4.5 | 4.0 | 0.5 |
| 0.0015 | 152 | 6.5 | 12.5 | 4.0 | 3.5 | 0.5 | 7.5 | 13.5 | 4.5 | 4.5 | 0.5 |
| 0.0018 | 182 | 6.5 | 12.5 | 4.0 | 3.5 | 0.5 | 7.5 | 13.5 | 4.5 | 4.5 | 0.5 |
| 0.0022 | 222 | 7.0 | 12.5 | 4.5 | 4.5 | 0.5 | 8.0 | 14.0 | 5.0 | 5.0 | 0.5 |
| 0.0027 | 272 | 7.5 | 13.5 | 5.0 | 4.5 | 0.5 | 8.0 | 14.0 | 5.5 | 5.0 | 0.5 |
| 0.0033 | 332 | 7.5 | 13.5 | 5.0 | 4.5 | 0.5 | 9.0 | 14.0 | 6.0 | 5.5 | 0.5 |
| 0.0039 | 392 | 8.0 | 13.5 | 5.5 | 5.0 | 0.5 | 9.5 | 15.0 | 6.0 | 6.0 | 0.5 |
| 0.0047 | 472 | 8.5 | 13.5 | 5.5 | 5.0 | 0.5 | 9.5 | 16.0 | 6.0 | 6.0 | 0.5 |
| 0.0056 | 562 | 9.5 | 14.0 | 5.5 | 5.5 | 0.5 | 10.0 | 16.5 | 6.5 | 6.0 | 0.5 |
| 0.0068 | 682 | 10.0 | 14.0 | 6.0 | 6.0 | 0.5 | 10.5 | 16.5 | 6.5 | 6.5 | 0.5 |
| 0.0082 | 822 | 10.0 | 16.0 | 6.0 | 6.0 | 0.5 | 11.5 | 17.5 | 7.5 | 7.5 | 0.5 |
| 0.01 | 103 | 10.0 | 16.0 | 6.5 | 6.0 | 0.5 | 12.0 | 17.5 | 7.5 | 7.5 | 0.5 |
| 0.012 | 123 | 11.0 | 16.5 | 6.5 | 7.0 | 0.5 | | | | | |
| 0.015 | 153 | 11.5 | 17.0 | 7.0 | 7.5 | 0.5 | | | | | |
| 0.018 | 183 | 12.0 | 17.5 | 7.5 | 7.5 | 0.5 | | | | | |
| 0.022 | 223 | 12.5 | 18.0 | 7.5 | 8.0 | 0.5 | | | | | |



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## CDAA SERIES: Polyester Film Foil, Radial

### PERFORMANCE

| Item | Test Methods | Requirements |
|---|---|---|
| Resistance to Soldering Heat | Solder Bath: 260°C± 5°C<br>Immersion Time: 10sec ± 1sec | Capacitance Change ΔC/C ≤ 5%<br>DF Change Δ tanδ ≤ 1% at 1KHz IR<br>≥ 50% spec value |
| Resistance to Vibration | Frequency Range: 10 ~ 500Hz<br>Amplitude: 0.75m/m<br>Duration: 6 hours | There shall be no Visible Damage<br>No Intermittent Contact,<br>No Open or Short Circuit |
| Damp heat, Steady State | Temperature: 55°C<br>Relative Humidity: 90% to 95%<br>Duration: 21 Days | Capacitance Change ΔC/C ≤ 5%<br>DF Change Δ tanδ ≤ 1% at 1KHz IR<br>≥ 50% spec value |
| Electrical Endurance | Temperature: 105°C<br>Voltage Applied: 1.25 x Vr (DC)<br>Duration: 1,000 hours | Capacitance Change ΔC/C ≤ 1%<br>DF Change Δ tanδ ≤ 1% at 1KHz IR<br>≥ 50% spec value |

### CAPACITANCE CODE

| μF | 0.001 | 0.0047 | 0.01 | 0.047 | 0.1 | 0.27 |
|---|---|---|---|---|---|---|
| pF | 1000 | 4700 | 10000 | 47000 | 100000 | 270000 |
| Code | 102 | 472 | 103 | 473 | 104 | 274 |

### RATED VOLTAGE

| W V | 100 | 250 | 400 | 630 | 1200 |
|---|---|---|---|---|---|
| Code | 2A | 2E | 2G | 2J | 3B |

### TOLERANCE

| Code | Tolerance |
|---|---|
| J | ± 5% |
| K | ± 10% |
| M | ± 20% |

### RADIAL LEAD SPACING

* Leadspace is straight lead non-formed original leadspace.

| Lead Spacing | 5.0mm | 7.5mm | 10mm |
|---|---|---|---|
| Code | 050 | 075 | 100 |

### TAPE CODE (Lead spacing of tape)

* see diagram on page 4

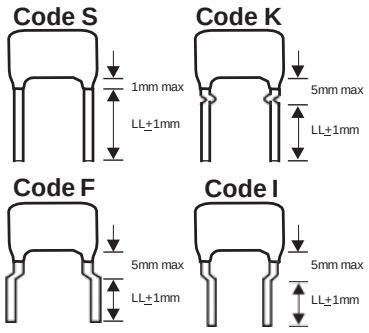
| Lead Spacing | 5.0mm | 7.5mm | 10mm |
|---|---|---|---|
| Tape Packing | A | A | A |
| Code | RT1 | RT2 | RT3 |

### LEAD LENGTH FROM SEATING PLANE

(Bulk Pack)

| mm | 5 | 10 | 15 | 20 |
|---|---|---|---|---|
| Code | 50 | 100 | 150 | 250 |

### LEAD STYLE EXAMPLES




Typical length (LL) is 20mm
for straight lead bulk pack

## CDAA SERIES: Polyester Film Foil, Radial

### RADIAL TAPING CODE DIAGRAM

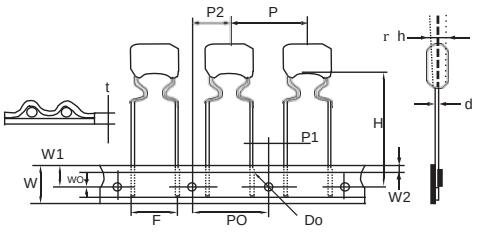



Fig. 1
F=7.5mm
(RT2)

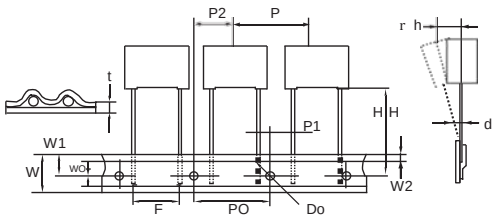



Fig. 2
F=7.5mm
(RT2)

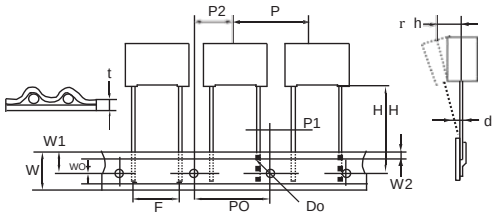



Fig. 4 Box or Expoxy Coated
F=10 = Ammo Only (RT3)

### SPECIFICATIONS

| Description | Letter | Dimension (mm) | | | |
|---|---|---|---|---|---|
| | | RT1 | RT2 | RT3 | Tol. |
| Lead Wire Diameter | d | 0.5 / 0.6 | 0.5 / 0.6 | 0.6 | ± 0.05 |
| Tape Pitch | P | 12.7 | 12.7 | 12.7 | ± 1 |
| Feed Hole Pitch | PO | 12.7 | 12.7 | 12.7 | ± 0.2 |
| Centering of the Lead Wire | P1 | 3.85 | 2.6 / 3.75 | 7.7 | ± 0.7 |
| Centering of the Body | P2 | 6.35 | 6.35 | 12.7 | ± 1.3 |
| Lead Spacing (Pitch) | F | 5 | 7.5 | 10 | ± 0.6; -0.1 |
| Component Alignment | Δh | 0 | 0 | 0 | ± 2 |
| Height of Componenet from Tape Center | H | 18.5 | 18.5 | 18.5 | ± 0.5 |
| Carrier Tape Width | W | 18 | 18 | 18 | ± 1; -0.5 |
| Hold Down Tape Width | WO | 6 | 6 | 9 | Min |
| Hole Position | W1 | 9 | 9 | 9 | ± 0.5 |
| Hold Down Tape Position | W2 | 3 | 3 | 3 | Max |
| Feed Hole Diameter | Do | 4 | 4 | 4 | ± 0.2 |
| Tape Thickness | t | 0.7 | 0.5 | 0.5 | ± 0.2 |
| Figure | fig | 1 or 2 | 1.2 or 3 | 4 | |

Remark: *Allowance of accumulated pitch less than 1mm at the sum of 20 pitches.
*Continuous empty component less than 3 consecutive pieces.
*Total empty on one reel less than 1%.


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## CDAB SERIES: General Purpose




### INTRODUCTION

CDAB Series are constructed with metalized polyester film dielectric, copperply lead and epoxy resin powder coating. They are suitable for blocking, coupling, decoupling, filtering, bypass timing circuit and ideal for use in telecommunication equipment, data processing equipment, industrial instrument, automatic control systems and other general electronic equipment.

### FEATURES

- High moisture resistance
- Good solderability
- Non-inductive construction
- Self-healing property

### SPECIFICATIONS

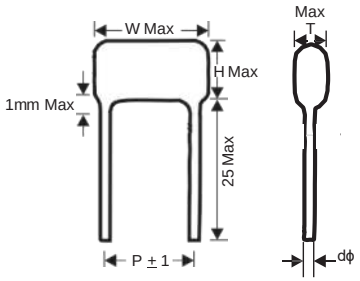
| Item | Performance |
|---|---|
| Operating Temp. Range | -40°C~115°C (VR Derates 1.25% per °C over 105°C) |
| Capacitance Range | 0.01μF ~ 10μF |
| Capacitance Tolerance | ± 5%(J), 10%(K), +20%(M) |
| Rated Voltage VR 85°C | 100Vdc, 250Vdc, 400Vdc, 630Vdc |
| Dissipation Factor | 1.0%(0.01)max @ 1Khz, 25°C |
| Insulation Resistance | ≥ 9000MΩ (C ≤ 0.33μF)<br>≥ 3000MΩ x μF (C > 0.33μF) |

### PART NUMBER EXAMPLE

CDAB 104 K 2A 075 B 200 S**

- Series
- Capacitance
- Tolerance
- Voltage
- Lead Style
- Lead Length
- Packaging
- Lead space*

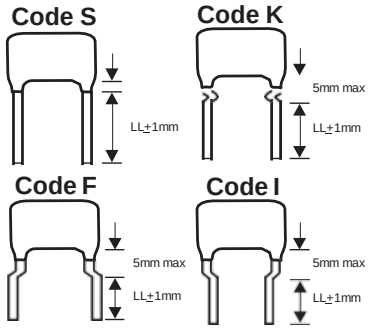
* Leadspace is straight lead non-formed original leadspace.




### TOLERANCE

| Code | Tolerance |
|---|---|
| J | + 5% |
| K | + 10% |
| M | + 20% |

### LEAD STYLE EXAMPLES




Typical length (LL) is 20mm for straight lead bulk pack

### CAPACITANCE CODE

| F | 0.01 | 0.047 | 0.1 | 0.47 | 1.0 | 4.7 | 10 |
|---|---|---|---|---|---|---|---|
| pF | 10000 | 47000 | 100000 | 470000 | - | - | - |
| Code | 103 | 473 | 104 | 474 | 105 | 475 | 106 |

### RATED VOLTAGE

| WV | 100 | 250 | 400 | 630 |
|---|---|---|---|---|
| Code | 2A | 2E | 2G | 2J |

### PACKAGING

| Method | Bulk | Ammo | Reel |
|---|---|---|---|
| Code | B | A | R |

### TAPE CODE (Lead spacing on tape, if taped)

| Spacing | 5.0mm | 7.5mm | 10mm | 15mm |
|---|---|---|---|---|
| Packing | A or R | A or R | A | A |
| Code | RT1 | RT2 | RT3 | RT4 |

### RADIAL LEAD SPACING

* Leadspace is straight lead non-formed original leadspace.

| mm | 5.0 | 7.5 | 10 | 15 | 22.5 | 27.5 |
|---|---|---|---|---|---|---|
| Code | 050 | 075 | 100 | 150 | 225 | 275 |

### LEAD STYLE

| Code | Style |
|---|---|
| S | Straight |
| K | Kink-In (Stand Off) |
| F | Form Out** |
| I | Form In** |

** For Bulk packaging with formed leads, add an additional 3 digit lead spacing code at end of part number.

### LEAD LENGTH FROM SEATING PLANE

(Bulk Pack and is ± 1mm when < 10mm, otherwise is nominal)

| mm | 5 | 10 | 15 | 20 | 25 |
|---|---|---|---|---|---|
| Code | 050 | 100 | 150 | 200 | 250 |

## CDAB SERIES: General Purpose

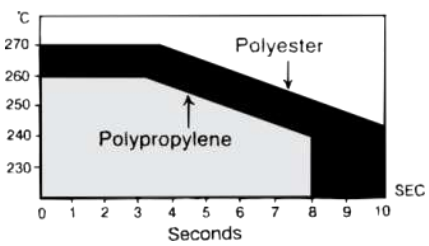
### MAXIMUM DIMENSIONS (mm)

| | W.V. | 100VDC(2A) | | | | | 250VDC(2E) | | | | | 400VDC(2G) / 450VDC(2W) | | | | | 630VDC(2J) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| μF | Code | W | H | T | P | dΦ | W | H | T | P | dΦ | W | H | T | P | dΦ | W | H | T | P | dΦ |
| 0.01 | 103 | | | | | | | | | | | | | | | | 13.0 | 8.0 | 5.0 | 10.0 | 0.6 |
| 0.012 | 123 | | | | | | | | | | | | | | | | 13.0 | 8.5 | 5.0 | 10.0 | 0.6 |
| 0.015 | 153 | | | | | | | | | | | 10.5 | 8.0 | 4.5 | 7.5 | 0.6 | 13.0 | 9.5 | 5.5 | 10.0 | 0.6 |
| 0.018 | 183 | | | | | | | | | | | 10.5 | 8.5 | 5.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.5 | 10.0 | 0.6 |
| 0.022 | 223 | | | | | | | | | | | 10.5 | 8.5 | 5.0 | 7.5 | 0.6 | 13.0 | 11.5 | 6.0 | 10.0 | 0.6 |
| 0.027 | 273 | | | | | | | | | | | 10.5 | 9.0 | 5.5 | 7.5 | 0.6 | 13.0 | 12.0 | 6.5 | 10.0 | 0.6 |
| 0.033 | 333 | | | | | | | | | | | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 13.0 | 12.5 | 7.0 | 10.0 | 0.6 |
| 0.039 | 393 | | | | | | 10.5 | 8.0 | 4.0 | 7.5 | 0.6 | 13.0 | 8.5 | 4.5 | 10.0 | 0.6 | 13.0 | 14.0 | 7.0 | 10.0 | 0.6 |
| 0.047 | 473 | | | | | | 10.5 | 8.0 | 4.5 | 7.5 | 0.6 | 9.5 | 7.5 | 4.0 | 7.5 | 0.6 | 13.0 | 9.0 | 5.5 | 10.0 | 0.6 |
| | | | | | | | | | | | | 13.0 | 9.0 | 5.0 | 10.0 | 0.6 | | | | | |
| 0.056 | 563 | | | | | | 10.5 | 8.5 | 5.0 | 7.5 | 0.6 | 13.0 | 9.5 | 5.5 | 10.0 | 0.6 | 18.5 | 11.0 | 5.5 | 15.0 | 0.8 |
| 0.068 | 683 | | | | | | 10.5 | 8.5 | 5.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.5 | 10.0 | 0.6 | 18.5 | 11.5 | 6.0 | 15.0 | 0.8 |
| 0.082 | 823 | | | | | | 10.5 | 9.5 | 5.5 | 7.5 | 0.6 | 13.0 | 11.5 | 5.5 | 10.0 | 0.6 | 18.5 | 12.0 | 6.5 | 15.0 | 0.8 |
| 0.1 | 104 | 10.5 | 7.5 | 4.0 | 7.5 | 0.6 | 10.5 | 10.0 | 6.0 | 7.5 | 0.6 | 12.0 | 9.0 | 5.0 | 10.0 | 0.6 | 18.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.12 | 124 | 10.5 | 7.5 | 4.0 | 7.5 | 0.6 | 10.5 | 10.5 | 6.5 | 7.5 | 0.6 | 18.5 | 10.5 | 5.0 | 15.0 | 0.8 | 18.5 | 14.5 | 7.0 | 15.0 | 0.8 |
| 0.15 | 154 | 10.5 | 8.0 | 4.5 | 7.5 | 0.6 | 10.5 | 11.0 | 7.0 | 7.5 | 0.6 | 18.5 | 11.5 | 5.5 | 15.0 | 0.8 | 18.5 | 15.5 | 8.0 | 15.0 | 0.8 |
| 0.18 | 184 | 10.5 | 8.5 | 5.0 | 7.5 | 0.6 | 13.0 | 9.0 | 4.5 | 10.0 | 0.6 | 18.5 | 12.0 | 6.0 | 15.0 | 0.8 | 18.5 | 16.0 | 8.5 | 15.0 | 0.8 |
| 0.22 | 224 | 10.5 | 8.5 | 5.0 | 7.5 | 0.6 | 10.3 | 11.0 | 6.1 | 7.5 | 0.6 | 11.3 | 4.3 | 7.0 | 10.0 | 0.8 | 11.3 | 11.3 | 7.0 | 10.0 | 0.6 |
| | | | | | | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 18.5 | 13.5 | 6.0 | 15.0 | 0.8 | 18.5 | 16.5 | 9.0 | 15.0 | 0.8 |
| 0.27 | 274 | 10.5 | 9.5 | 5.5 | 7.5 | 0.6 | 13.0 | 11.5 | 6.0 | 10.0 | 0.6 | 18.5 | 14.0 | 7.0 | 15.0 | 0.8 | 26.5 | 16.5 | 7.5 | 22.5 | 0.8 |
| 0.33 | 334 | 10.5 | 10.0 | 6.0 | 7.5 | 0.6 | 12.0 | 12.0 | 6.5 | 7.5 | 0.6 | 12.0 | 12.0 | 7.5 | 10.0 | 0.6 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | | | | | | 13.0 | 12.0 | 6.5 | 10.0 | 0.6 | 18.5 | 15.0 | 7.5 | 15.0 | 0.8 | | | | | |
| 0.39 | 394 | 10.5 | 10.5 | 6.0 | 7.5 | 0.6 | 18.0 | 9.0 | 5.0 | 15.0 | 0.6 | 18.5 | 15.5 | 8.5 | 15.0 | 0.8 | 26.5 | 17.0 | 9.0 | 22.5 | 0.8 |
| 0.47 | 474 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 | 18.5 | 13.0 | 5.5 | 15.0 | 0.8 | 18.5 | 17.5 | 8.5 | 15.0 | 0.8 | 26.5 | 18.0 | 10.0 | 22.5 | 0.8 |
| 0.56 | 564 | 13.0 | 11.0 | 5.5 | 10.0 | 0.6 | 18.5 | 13.0 | 6.0 | 15.0 | 0.8 | 26.0 | 16.0 | 7.5 | 22.5 | 0.8 | 26.5 | 18.0 | 11.0 | 22.5 | 0.8 |
| 0.68 | 684 | 13.0 | 11.5 | 6.0 | 10.0 | 0.6 | 18.5 | 13.5 | 6.0 | 15.0 | 0.8 | 26.0 | 17.0 | 8.0 | 22.5 | 0.8 | 26.0 | 21.5 | 12.5 | 22.5 | 0.8 |
| 0.82 | 824 | 13.0 | 13.0 | 6.0 | 10.0 | 0.6 | 18.5 | 14.0 | 7.0 | 15.0 | 0.8 | 26.0 | 17.5 | 9.0 | 22.5 | 0.8 | 31.0 | 21.0 | 12.0 | 27.5 | 0.8 |
| 1 | 105 | 13.0 | 14.0 | 6.5 | 10.0 | 0.6 | 18.5 | 15.0 | 8.5 | 15.0 | 0.8 | 26.0 | 18.5 | 10.0 | 22.5 | 0.8 | 31.0 | 22.0 | 13.5 | 27.5 | 0.8 |
| 1.2 | 125 | 18.5 | 12.5 | 5.5 | 15.0 | 0.8 | 18.5 | 15.5 | 8.5 | 15.0 | 0.8 | 26.0 | 20.0 | 11.0 | 22.5 | 0.8 | 31.0 | 23.5 | 15.0 | 27.5 | 0.8 |
| 1.5 | 155 | 18.5 | 13.5 | 6.0 | 15.0 | 0.8 | 18.5 | 16.5 | 9.5 | 15.0 | 0.8 | 31.0 | 19.5 | 11.0 | 27.5 | 0.8 | 31.0 | 26.5 | 16.0 | 27.5 | 0.8 |
| 1.8 | 185 | 18.5 | 14.0 | 6.5 | 15.0 | 0.8 | 26.0 | 16.0 | 7.5 | 22.5 | 0.8 | 31.0 | 21.0 | 12.0 | 27.5 | 0.8 | 31.0 | 28.0 | 18.0 | 27.5 | 0.8 |
| 2.2 | 225 | 18.5 | 15.0 | 7.0 | 15.0 | 0.8 | 26.0 | 17.0 | 8.5 | 22.5 | 0.8 | 31.0 | 23.5 | 13.0 | 27.5 | 0.8 | 31.0 | 30.5 | 20.0 | 27.5 | 0.8 |
| 2.7 | 275 | 18.5 | 16.0 | 7.5 | 15.0 | 0.8 | 26.0 | 18.0 | 9.5 | 22.5 | 0.8 | | | | | | | | | | |
| 3.3 | 335 | 18.5 | 16.5 | 8.5 | 15.0 | 0.8 | 26.0 | 19.0 | 10.5 | 22.5 | 0.8 | | | | | | | | | | |
| 3.9 | 395 | 26.0 | 16.0 | 7.0 | 22.5 | 0.8 | 26.0 | 21.5 | 10.5 | 22.5 | 0.8 | | | | | | | | | | |
| 4.7 | 475 | 26.0 | 17.0 | 7.5 | 22.5 | 0.8 | 26.0 | 22.0 | 12.0 | 22.5 | 0.8 | | | | | | | | | | |
| 5.6 | 565 | 26.0 | 17.5 | 8.0 | 22.5 | 0.8 | 31.0 | 22.0 | 12.0 | 27.5 | 0.8 | | | | | | | | | | |
| 6.8 | 685 | 26.0 | 18.5 | 9.0 | 22.5 | 0.8 | 31.0 | 23.5 | 13.0 | 27.5 | 0.8 | | | | | | | | | | |
| 8.2 | 825 | 26.0 | 20.0 | 10.0 | 22.5 | 0.8 | 31.0 | 25.0 | 14.5 | 27.5 | 0.8 | | | | | | | | | | |
| 10 | 106 | 26.0 | 21.0 | 11.5 | 22.5 | 0.8 | 31.0 | 26.5 | 16.5 | 27.5 | 0.8 | | | | | | | | | | |

### PERFORMANCE

| Item | Metalized Polyester |
|---|---|
| Capacitance Drift | Cycled through the operating temperature range 2%. |
| Humidity Test | Will withstand the test of R.H. 95% at 40°C for 1000hrs. C ≤ 5% DF<1.2%IR>10000MΩ |
| Load Test | Will withstand a testing voltage at140% of W.V. for 1000hrs. at 85°C. C≤5% DF<1.2% IR>5000MΩ |
| Lead Pull Test | Will withstand a pull of 1.5Kg applied axialy for 10 seconds. |
| Lead Bend Test | Will sustain two cycles without breaking when attaching a load of 0.5Kg to the end of the lead and then rotating the capacitor 90° from the direction of lead egress. Then 180° in opposite direction. Then back to the starting point. |
| Solderability | Immersed in molten solder (230±0.5 sec. After testing, the wound lead and gap in the wound lead will be covered and filled by solder. Will be difficult to unwind by finger |
| Dielectric Strength | Shall withstand 200% or 160% of rated voltage at 25°C for 1 minute with current limiting resistance of 1Ω / V |

### SOLDERING




The area under the curve is the recommended soldering time & temp. for the materials shown.

## CDAB SERIES: General Purpose

### RADIAL TAPING CODE DIAGRAM

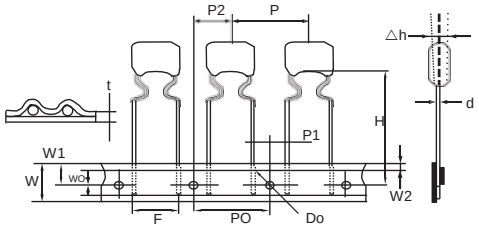



Fig. 1
F=7.5mm
(RT2)

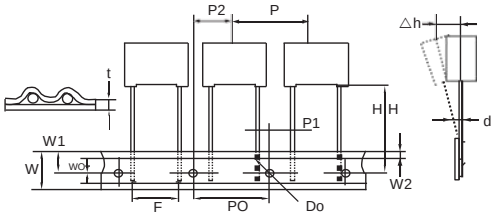



Fig. 2
F=7.5mm
(RT2)

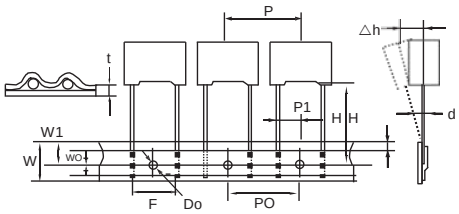



Fig. 3 Box
F=7.5mm
Ammo Only
(RT2)

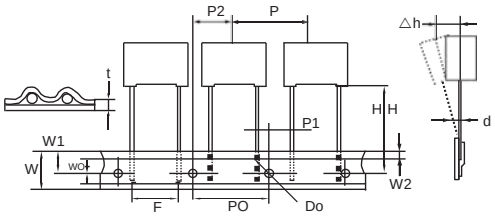



Fig. 4 Box or Expoxy Coated
F=10 = Ammo Only
F=15 Every other space skipped because of Larger body - Ammo Only
(RT3 or RT4)

### SPECIFICATIONS

| Description | Letter | Dimension (mm) | | | |
|---|---|---|---|---|---|
| | | RT2 | RT3 | RT4 | Tol. |
| Lead Wire Diameter | d | 0.5 / 0.6 | 0.6 | 0.6 / 0.8 | ± 0.05 |
| Tape Pitch | P | 12.7 | 12.7 | 25.4 | ± 1 |
| Feed Hole Pitch | PO | 12.7 | 12.7 | 12.7 | ± 0.2 |
| Centering of the Lead Wire | P1 | 2.6 / 3.75 | 7.7 | 5.2 | ± 0.7 |
| Centering of the Body | P2 | 6.35 | 12.7 | 12.7 | ± 1.3 |
| Lead Spacing (Pitch) | F | 7.5 | 10 | 15 | ± 0.6; -0.1 |
| Component Alignment | Δh | 0 | 0 | 0 | ± 2 |
| Height of Componenet from Tape Center | H | 18.5 | 18.5 | 18.5 | ± 0.5 |
| Carrier Tape Width | W | 18 | 18 | 18 | ± 1; -0.5 |
| Hold Down Tape Width | WO | 6 | 9 | 10 | Min |
| Hole Position | W1 | 9 | 9 | 9 | ± 0.5 |
| Hold Down Tape Position | W2 | 3 | 3 | 3 | Max |
| Feed Hole Diameter | Do | 4 | 4 | 4 | ± 0.2 |
| Tape Thickness | t | 0.5 | 0.5 | 0.5 | ± 0.2 |
| Figure | fig | 1.2 or 3 | 4 | 4 | |

Remark: *Allowance of accumulated pitch less than 1mm at the sum of 20 pitches.
*Continuous empty component less than 3 consecutive pieces.
*Total empty on one reel less than 1%.

## CDAC: General Purpose, Lead Space 7.5mm~42.5mm HIGH MOISTURE RESISTANCE




### INTRODUCTION

CDAC Series are constructed with metalized polyester film dielectric, copperply lead and epoxy resin coating. They are suitable for blocking, coupling, decoupling, filtering, bypass timing circuit and ideal for use in data / telecomm equipment, industrial instrument, automatic control systems and other general electronic application.

### FEATURES

- High moisture resistance
- Good solderability
- Non-inductive construction
- Self-healing proprety

### SPECIFICATIONS

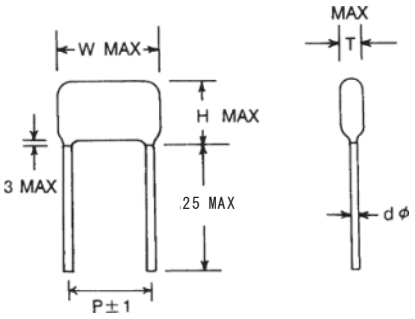
| Item | Performance |
|---|---|
| Operating Temp. Range | -40°C ~105°C (VR Derates 1.25% per °C over 85°C) |
| Capacitance Range | 0.01μF ~ 10μF |
| Capacitance Tolerance | ± 5%(J), 10%(K), +20%(M) |
| Rated Voltage VR 85°C | 100Vdc, 250Vdc, 400Vdc, 630Vdc |
| Dissipation Factor | 1.0%(0.01)max @ 1Khz, 25°C |
| Insulation Resistance | VR ≤ 100VDC ≥ 15000MΩ (C ≤ 0.33μF)<br>≥ 5000MΩ x μF(C > 0.33 μF)<br>VR ≤ 100VDC ≥ 30000MΩ (C ≤ 0.33μF)<br>≥ 10000MΩ x μF(C > 0.33μF) |

### PART NUMBER EXAMPLE

CDAC103K 2A 075 B 200 S

- Series
- Capacitance
- Tolerance
- Voltage
- Lead Style
- Lead Length
- Packaging
- Lead space*

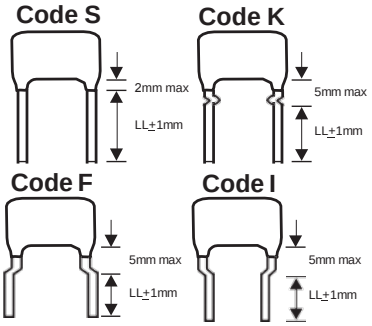
* Leadspace is straight lead non-formed original leadspace.




### TOLERANCE

| Code | Tolerance |
|---|---|
| J | ± 5% |
| K | ± 10% |
| M | ± 20% |

### LEAD STYLE EXAMPLES




Typical length (LL)is 20 mm for straight lead, bulk pack

### CAPACITANCE CODE

| μF | 0.01 | 0.047 | 0.1 | 0.47 | 1.0 | 4.7 | 10 |
|---|---|---|---|---|---|---|---|
| pF | 10000 | 47000 | 100000 | 470000 | - | - | - |
| Code | 103 | 473 | 104 | 474 | 105 | 475 | 106 |

### RATED VOLTAGE

| WV | 100 | 250 | 400 | 630 |
|---|---|---|---|---|
| Code | 2A | 2E | 2G | 2J |

### PACKAGING

| Method | Bulk | Ammo | Reel |
|---|---|---|---|
| Code | B | A | R |

### TAPE CODE (Lead spacing of tape, if taped)

| Spacing | 7.5mm | 10mm | 15mm |
|---|---|---|---|
| Packing | A or R | A | A |
| Code | RT2 | RT3 | RT4 |

### RADIAL LEAD SPACING

* Leadspace is straight lead non-formed original leadspace.

| mm | 7.5 | 10 | 15 | 20 | 27.5 | 32.5 | 37.5 | 42.5 |
|---|---|---|---|---|---|---|---|---|
| Code | 075 | 100 | 150 | 200 | 275 | 325 | 375 | 425 |

### LEAD STYLE

| Code | Style |
|---|---|
| S | Straight |
| K | Kink-In (Stand Off) |
| F | Form Out |
| I | Form In |

### LEAD LENGTH FROM SEATING PLANE

| mm | 5 | 10 | 15 | 20 | 25 |
|---|---|---|---|---|---|
| Code | 050 | 100 | 150 | 200 | 250 |

# METALIZED POLYESTER FILM CAPACITOR

## HIGH MOISTURE RESISTANCE

**CDAC:** General Purpose, Lead Space 7.5mm~42.5mm

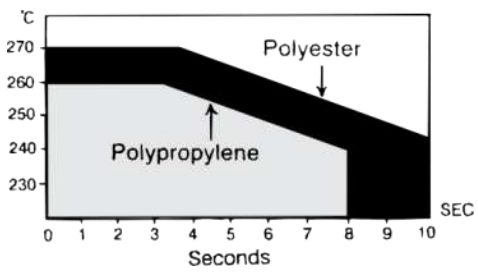
## MAXIMUM DIMENSIONS (mm)

| CAP \ W.V | | 50VDC(1H) and 100VDC(2A) | | | | | 250VDC (2E) | | | | | 400VDC (2G) | | | | | 630VDC (2J) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | dΦ | W | H | T | P | dΦ | W | H | T | P | dΦ | W | H | T | P | dΦ |
| 0.01 | 103 | 10.5 | 9.0 | 5.5 | 7.5 | 0.6 | 10.5 | 9.0 | 5.5 | 7.5 | 0.6 | 10.5 | 9.0 | 5.5 | 7.5 | 0.6 | 13.0 | 10.0 | 6.0 | 10.0 | 0.6 |
| 0.015 | 153 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 13.0 | 10.5 | 6.5 | 10.0 | 0.6 |
| 0.022 | 223 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 13.0 | 9.5 | 6.0 | 10.0 | 0.6 | 13.0 | 12.5 | 7.5 | 10.0 | 0.6 |
| 0.033 | 333 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 13.0 | 10.0 | 6.5 | 10.0 | 0.6 | 18.5 | 12.0 | 6.5 | 15.0 | 0.6 |
| 0.047 | 473 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 13.0 | 12.0 | 7.0 | 10.0 | 0.6 | 18.5 | 12.5 | 7.5 | 15.0 | 0.6 |
| 0.068 | 683 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 10.5 | 10.0 | 6.5 | 7.5 | 0.6 | 13.0 | 13.0 | 8.0 | 10.0 | 0.6 | 18.5 | 14.0 | 8.5 | 15.0 | 0.8 |
| 0.1 | 104 | 10.5 | 9.5 | 6.0 | 7.5 | 0.6 | 13.0 | 10.0 | 6.5 | 10.0 | 0.6 | 18.0 | 12.5 | 7.0 | 15.0 | 0.8 | 18.5 | 14.5 | 10.0 | 15.0 | 0.8 |
| 0.15 | 154 | 13.0 | 9.0 | 5.5 | 10.0 | 0.6 | 18.5 | 11.0 | 6.0 | 15.0 | 0.6 | 18.5 | 13.5 | 8.0 | 15.0 | 0.8 | 23.0 | 15.0 | 9.5 | 20.0 | 0.8 |
| 0.22 | 224 | 13.0 | 10.0 | 6.5 | 10.0 | 0.6 | 18.5 | 11.5 | 6.5 | 15.0 | 0.6 | 22.5 | 14.5 | 8.0 | 20.0 | 0.8 | 23.0 | 15.5 | 10.0 | 20.0 | 0.8 |
| 0.33 | 334 | 13.0 | 11.5 | 8.0 | 10.0 | 0.6 | 18.5 | 12.0 | 7.0 | 15.0 | 0.8 | 22.5 | 15.0 | 9.0 | 20.0 | 0.8 | 32.0 | 19.0 | 12.0 | 27.5 | 0.8 |
| 0.47 | 474 | 18.5 | 11.0 | 6.0 | 15.0 | 0.6 | 22.5 | 12.5 | 7.5 | 20.0 | 0.8 | 22.5 | 18.5 | 11.5 | 20.0 | 0.8 | 32.0 | 22.0 | 13.5 | 27.5 | 0.8 |
| 0.68 | 684 | 18.5 | 12.5 | 7.5 | 15.0 | 0.6 | 22.5 | 13.5 | 8.5 | 20.0 | 0.8 | 32.0 | 19.0 | 12.0 | 27.5 | 0.8 | 36.0 | 22.5 | 14.5 | 32.5 | 0.8 |
| 1 | 105 | 18.5 | 13.5 | 8.5 | 15.0 | 0.8 | 22.5 | 15.0 | 10.0 | 20.0 | 0.8 | 32.0 | 21.5 | 13.5 | 27.5 | 0.8 | 36.0 | 29.0 | 16.0 | 32.5 | 0.8 |
| 1.5 | 155 | 22.5 | 14.5 | 8.0 | 20.0 | 0.8 | 32.0 | 17.5 | 9.5 | 27.5 | 0.8 | 36.0 | 23.5 | 14.0 | 32.5 | 0.8 | 42.0 | 29.5 | 18.5 | 37.5 | 1.0 |
| 2.2 | 225 | 22.5 | 16.5 | 10.0 | 20.0 | 0.8 | 32.0 | 19.0 | 10.5 | 27.5 | 0.8 | 36.0 | 27.5 | 18.5 | 32.5 | 0.8 | 46.0 | 32.5 | 20.5 | 42.5 | 1.0 |
| 3.3 | 335 | 22.5 | 20.0 | 12.0 | 20.0 | 0.8 | 32.0 | 23.0 | 13.5 | 27.5 | 0.8 | 42.0 | 30.5 | 18.5 | 37.5 | 1.0 | | | | | |
| 4.7 | 475 | 22.5 | 21.5 | 14.0 | 20.0 | 0.8 | 36.0 | 24.0 | 14.0 | 32.5 | 0.8 | 46.0 | 34.0 | 22.0 | 42.5 | 1.0 | | | | | |
| 6.8 | 685 | 32.0 | 23.5 | 14.5 | 27.5 | 0.8 | 42.0 | 27.0 | 16.0 | 37.5 | 1.0 | | | | | | | | | | |
| 10 | 106 | 32.0 | 29.0 | 18.0 | 27.5 | 0.8 | 42.0 | 35.0 | 19.0 | 37.5 | 1.0 | | | | | | | | | | |

## PERFORMANCE

| Item | Metalized Polyester |
|---|---|
| Capacitance Drift | Cycled through the operating temperature range 2% |
| Humidity Test | Will withstand the test of R.H. 95% at 40°Cfor 1000hrs. C < 5% DF < 1.2% IR >10000M |
| Load Test | Will withstand a testing voltage at 140% of W.V. for 1000hrs at 85 °C. C< 5% DF < 1.2% IR > 5000M |
| Lead Pull Test | Will withstand a pull of 1.5Kg applied axially for 10 seconds |
| Lead Bend Test | Will sustain two cycles without breaking when attaching a load of 0.5Kg to the end of the lead and then rotating the capacitor 90°C from the direction of lead egress. Then 180°C in opposite direction. Then back to the starting point. |
| Solderability | Immersed in molten solder 230 ± 0.5sec. After testing, the wound lead and gap in the wound lead will be covered and filled by solder. Will be difficult to unwind by finger. |
| Dielectric Strength | Shall withstand 200% or 160% of rated voltage at 25°C for 1 minute with current limiting resistance of 1 / V |

## SOLDERING




The area under the curve is the recommended soldering time & temp. for the materials shown.

## CDAD SERIES: For Active Filtering Circuits

# ULTRA MINI SIZE




## INTRODUCTION

CDAD Series are constructed specifically for active filtering circuits like those used in power factor correction applications.

## FEATURES

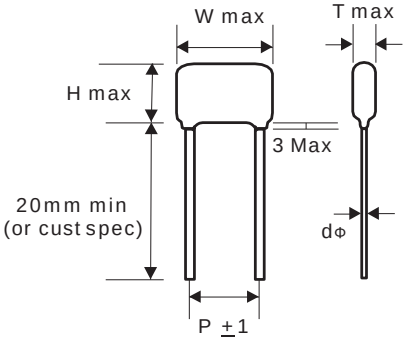
- Self-healing property
- Safe-film construction
- RoHS Compliance
- Ultra-miniature Size
- Ideal for Power Factor correction applications

## PART NUMBER EXAMPLE

CDAD 104 K 2W 100 B 200 S

- Series
- Capacitance
- Tolerance
- Voltage
- Lead space*
- Packaging
- Lead Length
- Lead Style

* Leadspace is straight lead non-formed original leadspace.




## SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Voltage Range | 450Vdc, 630Vdc |
| Rated Temperature | -40 °C ~ +85°C |
| Usable Upper Category Temperature | +110°C<br>(Derating ratio of rated voltage over +85 °C ~ +110°C:<br>1.5% per °C of Rated Voltage) |
| Capacitance Range | 0.033 µF ~ 3.3 µF |
| Capacitance Tolerance | +2% (G), +5% (J), +10% (K) |
| Dissipation Factor | 1.0% (max.) at 1KHz<br>1.6% (max.) at 10KHz |
| Insulation Resistance Terminal to Terminal | Voltage Charge: 100Vdc x 1min (at 20 °C±5°C)<br>≥ 9,000MΩ for C ≤ 0.33µF<br>> 3,000MΩ x µF for C >0.33µF |
| Withstand Voltage | Terminal to Terminal: (at 20 °C + 5°C)<br>1.6 x $V_R$ applied for 2sec. (cut off current 10mA)<br>Slow-up voltage speed: 100V/sec |

| Rated Voltage Pulse Slope dV/dt (V/µs) | P / $V_R$ | 10mm | 15mm | 22.5mm |
|---|---|---|---|---|
| | 450Vdc | 110 | 45 | 20 |
| | 630Vdc | 160 | 65 | 30 |

## PERFORMANCE

| Item | Test Methods | Requirements |
|---|---|---|
| Resistance to Soldering Heat IEC 60068-2-20" | Solder Bath: 260°C± 5°C<br>Immersion Time: 10sec ± 1sec | Capacitance Change \|ΔC/C\| :≤2%<br>DF Change tanδ: 0.5% at 1KHz<br>IR: ≥ limit value |
| Resistance to Vibration IEC 60068-2-6" | Frequency Range: 10Hz to 55Hz<br>Amplitude:<br>1.5m/m<br>Duration: 6<br>hours | There shall be no Visible Damage,<br>No Intermittent<br>Contact, No Open or<br>Short Circuit |
| Damp Heat, Steady State IEC 60068-2-3" | Temperature: 40°C ±2°C<br>Relative Humidity: 90% to 95%<br>Duration: 1,000 hours | Capacitance Change \|ΔC/C \|: ≤5%<br>DF Change tanδ: 0.5% at 1KHz<br>IR: ≥ 50% limit value |
| Electrical Endurance IEC 60384-2" | Temperature: 85°C + 2°C<br>Voltage Applied: 1.10 x Vr(DC)<br>Duration: 1,000 hours | Capacitance Change \|ΔC/C \|: ≤5%<br>DF Change tanδ: 0.5% at 1KHz<br>IR: ≥ 50% limit value |

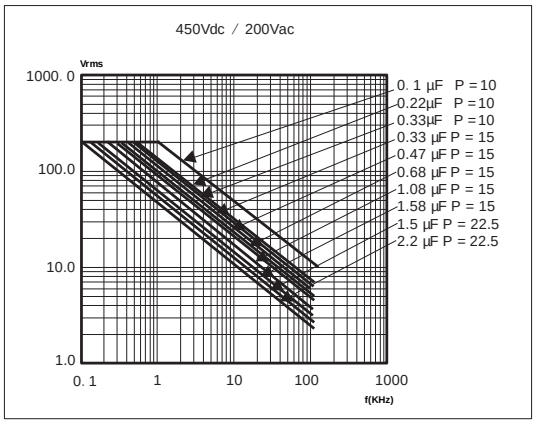
## CDAD SERIES: For Active Filtering Circuits

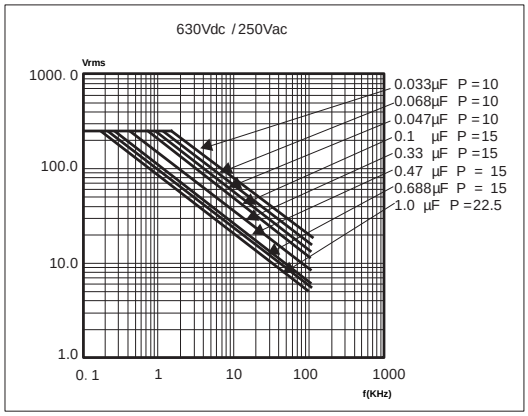
### MAXIMUM DIMENSIONS (mm)

| R.V. | 450Vdc (2W) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Size (μF) | W | H | T | P | dΦ | Size (μF) | W | H | T | P | dΦ |
| 0.047 | 13.0 | 13 | 5 | 10 | 0.6 | 1.0 | 13 | 19 | 8 | 10 | 0.8 |
| 0.068 | 12.5 | 10 | 5 | 10 | 0.6 | | 18.0 | 17 | 7.5 | 15 | 0.8 |
| 0.1 | 12.5 | 9.5 | 4.5 | 10 | 0.6 | | 26.0 | 16 | 7 | 22.5 | 0.8 |
| | 18.0 | 11 | 5 | 15 | 0.8 | 1.2 | 18.0 | 18 | 8 | 15 | 0.8 |
| 0.15 | 12.5 | 12 | 4.5 | 10 | 0.6 | 1.5 | 13.0 | 21.5 | 9.5 | 10 | 0.8 |
| 0.22 | 12.5 | 12 | 6.5 | 10 | 0.6 | | 18.0 | 18.5 | 8.5 | 15 | 0.8 |
| | 18.0 | 11.5 | 6 | 15 | 0.8 | | 26.0 | 17.5 | 7 | 22.5 | 0.8 |
| 0.33 | 12.5 | 12 | 6 | 10 | 0.6 | 2.2 | 18.0 | 21.5 | 11.5 | 15 | 0.8 |
| | 18.0 | 13 | 5 | 15 | 0.8 | | 26.0 | 19 | 9 | 22.5 | 0.8 |
| 0.47 | 12.5 | 15.5 | 6.5 | 10 | 0.6 | 3.3 | 26.0 | 23.5 | 13 | 22.5 | 0.8 |
| | 18.0 | 13 | 5.5 | 15 | 0.8 | | | | | | |
| 0.68 | 12.5 | 16 | 7.5 | 10 | 0.6 | | | | | | |
| | 18.0 | 15.5 | 5.5 | 15 | 0.8 | | | | | | |

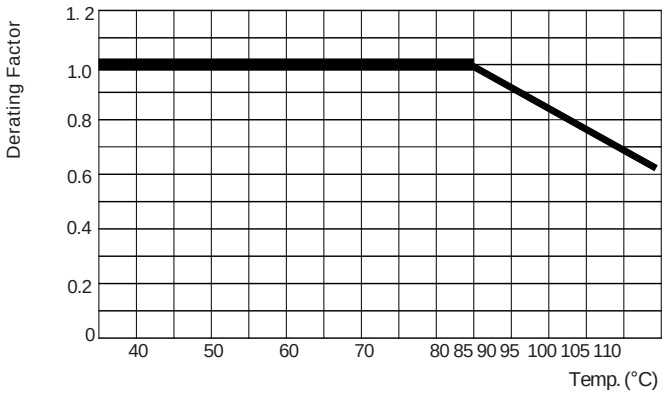
| R.V. | 630Vdc (2J) | | | | |
|---|---|---|---|---|---|
| Size (μF) | W | H | T | P | dΦ |
| 0.033 | 12.5 | 10.5 | 4.5 | 10 | 0.6 |
| 0.047 | 12.5 | 13 | 5 | 10 | 0.6 |
| | 18.0 | 11 | 5 | 15 | 0.8 |
| 0.068 | 13.0 | 13 | 6 | 10 | 0.6 |
| | 18.0 | 11 | 5 | 15 | 0.8 |
| 0.1 | 12.5 | 16 | 6 | 10 | 0.6 |
| | 18.0 | 11 | 5 | 15 | 0.8 |
| 0.22 | 18.0 | 13 | 5 | 15 | 0.8 |
| 0.33 | 18.0 | 13 | 5 | 15 | 0.8 |
| 0.47 | 18.0 | 17.5 | 9 | 15 | 0.8 |
| 0.68 | 18.0 | 20.5 | 10.5 | 15 | 0.8 |
| 1.0 | 26.0 | 20.5 | 9.5 | 22.5 | 0.8 |

### RATED VOLTAGE (Vrms) VS. FREQUENCY

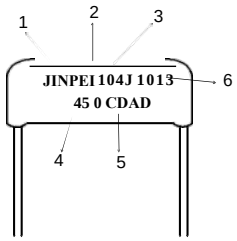



### MAX. DC & AC VOLTAGE VS TEMPERATURE




### MARKING




1. Name or Symbol
2. Nominal Capacitance in μF
3. Capacitance Tolerance
4. DC, Rating, Voltage
5. Type Name
6. Date Code

## CDAD SERIES: For Active Filtering Circuits

### MAXIMUM CURRENT, AMPS (rms)

450Vdc / 200Vac

| CAP (µF) | P | 15.75 KHz | 35 KHz | 45 KHz | 65 KHz | 80 KHz | 100 Khz |
|---|---|---|---|---|---|---|---|
| 0.047 | 10 | 0.18 | 0.20 | 0.21 | 0.23 | 0.24 | 0.25 |
| 0.068 | 10 | 0.20 | 0.22 | 0.23 | 0.24 | 0.25 | 0.26 |
| 0.1 | 10 | 0.36 | 0.46 | 0.50 | 0.56 | 0.60 | 0.64 |
| | 15 | 0.15 | 0.17 | 0.19 | 0.20 | 0.21 | 0.22 |
| 0.15 | 10 | 0.40 | 0.48 | 0.53 | 0.58 | 0.62 | 0.66 |
| 0.22 | 10 | 0.45 | 0.57 | 0.61 | 0.69 | 0.73 | 0.78 |
| | 15 | 0.18 | 0.19 | 0.20 | 0.21 | 0.22 | 0.23 |
| 0.33 | 10 | 0.48 | 0.60 | 0.65 | 0.72 | 0.74 | 0.80 |
| | 15 | 0.77 | 0.97 | 1.05 | 1.17 | 1.25 | 1.32 |
| 0.47 | 10 | 0.50 | 0.70 | 0.80 | 0.90 | 1.00 | 1.10 |
| | 15 | 0.67 | 0.88 | 0.99 | 1.06 | 1.17 | 1.31 |
| 0.68 | 10 | 0.60 | 0.90 | 1.00 | 1.10 | 1.20 | 1.30 |
| | 15 | 0.88 | 1.13 | 1.24 | 1.41 | 1.48 | 1.63 |
| 1.0 | 10 | 0.80 | 1.20 | 1.30 | 1.50 | 1.60 | 1.80 |
| | 15 | 1.06 | 1.38 | 1.59 | 1.77 | 1.84 | 1.91 |
| 1.2 | 15 | 1.20 | 1.50 | 1.65 | 1.85 | 2.00 | 2.20 |
| 1.5 | 10 | 0.98 | 1.30 | 1.40 | 1.60 | 1.70 | 1.90 |
| | 15 | 1.40 | 1.70 | 1.80 | 2.00 | 2.20 | 2.40 |
| | 22.5 | 1.38 | 1.68 | 1.78 | 1.96 | 2.00 | 2.04 |
| 2.2 | 15 | 1.70 | 2.00 | 2.20 | 2.35 | 2.50 | 2.70 |
| | 22.5 | 2.30 | 2.37 | 2.43 | 2.52 | 2.55 | 2.60 |
| 3.3 | 22.5 | 2.65 | 2.69 | 2.80 | 2.81 | 2.82 | 2.90 |

### MAXIMUM CURRENT, AMPS (rms)

630Vdc / 250Vac

| CAP (µF) | P | 15.75 KHz | 35 KHz | 45 KHz | 65 KHz | 80 KHz | 100 KHz |
|---|---|---|---|---|---|---|---|
| 0.033 | 10 | 0.14 | 0.20 | 0.22 | 0.25 | 0.27 | 0.30 |
| 0.047 | 10 | 0.18 | 0.24 | 0.30 | 0.35 | 0.39 | 0.42 |
| 0.068 | 10 | 0.21 | 0.29 | 0.32 | 0.37 | 0.41 | 0.44 |
| 0.1 | 10 | 0.25 | 0.37 | 0.45 | 0.50 | 0.55 | 0.63 |
| 0.047 | 15 | 0.16 | 0.22 | 0.24 | 0.27 | 0.30 | 0.32 |
| 0.068 | 15 | 0.23 | 0.26 | 0.32 | 0.35 | 0.40 | 0.44 |
| 0.1 | 15 | 0.42 | 0.55 | 0.58 | 0.65 | 0.69 | 0.73 |
| 0.22 | 15 | 0.58 | 0.62 | 0.67 | 0.78 | 0.80 | 0.85 |
| 0.33 | 15 | 0.91 | 1.15 | 1.25 | 1.40 | 1.48 | 1.58 |
| 0.5 | 15 | 0.85 | 1.08 | 1.18 | 1.30 | 1.40 | 1.49 |
| 0.68 | 15 | 1.16 | 1.48 | 1.60 | 1.80 | 1.90 | 2.05 |
| 1.0 | 22.5 | 1.85 | 2.25 | 2.36 | 2.60 | 2.70 | 2.85 |

### PACKAGING CODE

| Method | Bulk | Ammo | Reel |
|---|---|---|---|
| Code | B | A | R |

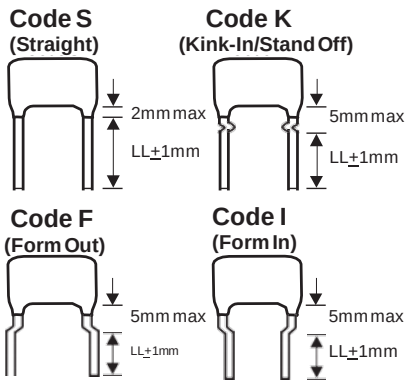
### LEAD LENGTH FROM SEATING PLANE

| mm | 5 | 10 | 15 | 20 | 25 |
|---|---|---|---|---|---|
| Code | 050 | 100 | 150 | 200 | 250 |

### TAPE CODE (Lead spacing of tape, if taped)

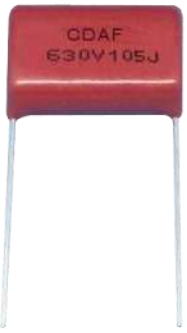
| Spacing | 10mm | 15mm |
|---|---|---|
| Packing | A | A |
| Code | RT3 | RT4 |

### LEAD STYLE CODE EXAMPLE




(Typical Straight Lead Length is 20mm for Bulk Pack)

## CDAF: Minature, Radial, Lead Space = 5mm




## INTRODUCTION

CDAF Series are constructed with metalized polyester film dielectric, copperply lead and epoxy resin powder coating. They are suitable for blocking, coupling, decoupling, filtering, bypass timing circuit and ideal for use in telecommunication equipment, data processing equipment, industrial instrument, automatic control systems and other general electronic equipment.

## FEATURES

- High moisture resistance
- Good solderability
- Non-inductive construction
- Self-healing property
- Miniature Size
- Standard 5mm lead spacing

## SPECIFICATIONS

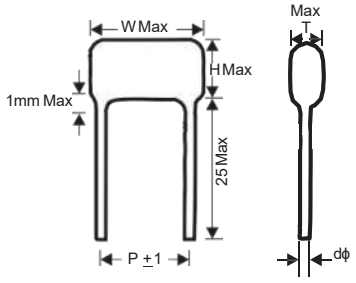
| Item | Performance |
|---|---|
| Operating Temp. Range | -40°C ~ 125°C (VR Derates 1.25% per °C over 105°C) |
| Capacitance Range | 0.001μF ~ 1.2μF |
| Capacitance Tolerance | ± 5%(J), 10%(K), +20%(M) |
| Rated Voltage VR85°C | 50/63Vdc, 100Vdc, 250Vdc, 400Vdc, 630Vdc |
| Dissipation Factor | 1.0%(0.01)max @ 1Khz, 25°C |
| Insulation Resistance | VR ≤ 100VDC ≥ 15000MΩ (C ≤ 0.33μF)<br>≥ 5000MΩ x μF (C > 0.33 μF)<br>VR ≤ 100VDC ≥ 30000MΩ (C ≤ 0.33μF)<br>≥ 10000MΩ x μF (C > 0.33μF) |

## PART NUMBER EXAMPLE

CDAF104 K 2A 050 B 250 S**

Series
Capacitance
Tolerance
Voltage
Lead Style
Lead Length
Packaging
Leadspace*

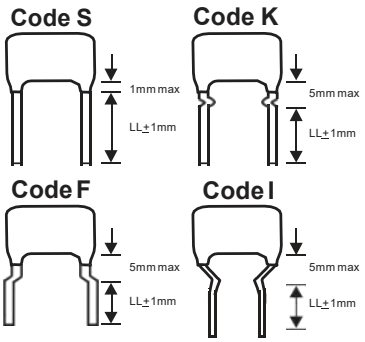
* Leadspace is straight lead non-formed original leadspace.




## TOLERANCE

| Code | Tolerance |
|---|---|
| J | ± 5% |
| K | ± 10% |
| M | ± 20% |

## LEAD STYLE EXAMPLES




Typical length (LL)is 20 mm for straight lead, bulk pack

## CAPACITANCE CODE

| F | 0.01 | 0.047 | 0.1 | 0.47 | 1.0 |
|---|---|---|---|---|---|
| pF | 10000 | 47000 | 100000 | 470000 | - |
| Code | 103 | 473 | 104 | 474 | 105 |

## RATED VOLTAGE

| WV | 50 | 63 | 100 | 250 | 400 | 630 |
|---|---|---|---|---|---|---|
| Code | 1H | 1J | 2A | 2E | 2G | 2J |

## PACKAGING

| Method | Bulk | Ammo | Reel |
|---|---|---|---|
| Code | B | A | R |

## TAPE CODE (Lead spacing of tape)

| Spacing | 5mm |
|---|---|
| Packing | A or R |
| Code | RT1 (See Diagram) |

## RADIAL LEAD SPACING

* Leadspace is straight lead non-formed original leadspace.

| mm | 5 |
|---|---|
| Code | 050 |

## LEAD STYLE

| Code | Style |
|---|---|
| S | Straight |
| K | Kink-In (Stand Off) |
| F | Form Out |
| I | Form In |

## LEAD LENGTH FROM SEATING PLANE (Bulk Pack)

| mm | 5 | 10 | 15 | 20 | 25 |
|---|---|---|---|---|---|
| Code | 050 | 100 | 150 | 200 | 250 |

** For Bulk packaging with formed leads, add an additional 3 digit lead spacing code at end of part number.

# MINI SIZE METALIZED POLYESTER FILM CAPACITORS

**CDAF:** Minature, Radial, Lead Space = 5mm

## MAXIMUM DIMENSIONS (mm)

| | W.V. | 50 / 63VDC (1H/1J) | | | | | 100VDC(2A) | | | | | 250VDC(2E) | | | | | 400VDC(2G) | | | | | 630VDC (2J) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (μF) | code | W | H | T | P | d | W | H | T | P | d | W | H | T | P | d | W | H | T | P | d | W | H | P | d |
| 0.001 | 102 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 5 | 0.5 |
| 0.0022 | 122 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 5 | 0.5 |
| 0.0033 | 332 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 5 | 0.5 |
| 0.0047 | 472 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 5 | 0.5 |
| 0.0056 | 562 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | | | | |
| 0.0068 | 682 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | | | | |
| 0.0082 | 822 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | | | | |
| 0.010 | 103 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | | | | |
| 0.012 | 123 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | | | | | | | | | |
| 0.015 | 153 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | | | | | | | | | |
| 0.018 | 183 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | | | | | | | | | |
| 0.022 | 223 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 3.5 | 5 | 0.5 | | | | | | | | | |
| 0.027 | 273 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 7.5 | 9.5 | 3.5 | 5 | 0.5 | | | | | | | | | |
| 0.033 | 333 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 7.5 | 9.5 | 4.5 | 5 | 0.5 | | | | | | | | | |
| 0.039 | 393 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 7.5 | 9.5 | 4.5 | 5 | 0.5 | | | | | | | | | |
| 0.047 | 473 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 7.5 | 9.5 | 4.5 | 5 | 0.5 | | | | | | | | | |
| 0.056 | 563 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 7.5 | 9.5 | 4.5 | 5 | 0.5 | | | | | | | | | |
| 0.068 | 683 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 7.5 | 9.5 | 4.5 | 5 | 0.5 | | | | | | | | | |
| 0.082 | 823 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 6.5 | 6.5 | 4.0 | 5 | 0.5 | 7.5 | 9.5 | 4.5 | 5 | 0.5 | | | | | | | | | |
| 0.1 | 104 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 7.5 | 9.5 | 4.5 | 5 | 0.5 | | | | | | | | | |
| 0.12 | 124 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 7.5 | 10 | 5.0 | 5 | 0.5 | | | | | | | | | |
| 0.15 | 154 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 7.5 | 10 | 5.0 | 5 | 0.5 | | | | | | | | | |
| 0.18 | 184 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 7.5 | 10 | 6.0 | 5 | 0.5 | | | | | | | | | |
| 0.22 | 224 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 7.5 | 10 | 6.0 | 5 | 0.5 | | | | | | | | | |
| 0.27 | 274 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 7.5 | 10.5 | 7.0 | 5 | 0.5 | | | | | | | | | |
| 0.33 | 334 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 7.5 | 11 | 7.0 | 5 | 0.5 | | | | | | | | | |
| 0.39 | 394 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 6.5 | 6.5 | 4.5 | 5 | 0.5 | 7.5 | 12 | 8.0 | 5 | 0.5 | | | | | | | | | |
| 0.47 | 474 | 7.0 | 7.5 | 4.5 | 5 | 0.6 | 7.0 | 7.5 | 4.5 | 5 | 0.6 | 7.5 | 12 | 8.5 | 5 | 0.5 | | | | | | | | | |
| 0.56 | 564 | 7.0 | 8.5 | 5.0 | 5 | 0.6 | 7.0 | 8.5 | 5.0 | 5 | 0.6 | | | | | | | | | | | | | | |
| 0.68 | 684 | 7.0 | 8.5 | 5.0 | 5 | 0.6 | 7.0 | 8.5 | 5.0 | 5 | 0.6 | | | | | | | | | | | | | | |
| 1.0 | 824 | 7.0 | 8.5 | 5.0 | 5 | 0.6 | 7.0 | 10 | 6.0 | 5 | 0.6 | | | | | | | | | | | | | | |
| 1.5 | 155 | 7.0 | 10.0 | 6.5 | 5 | 0.5 | 7.0 | 10 | 6.0 | 5 | 0.6 | 17 | 15 | 7.0 | 15 | 0.8 | | | | | | | | | |
| 2.2 | 225 | 7.0 | 10.0 | 6.5 | 5 | 0.6 | 7.0 | 10.5 | 7.0 | 5 | 0.6 | 17 | 15.5 | 6.5 | 15 | 0.8 | | | | | | | | | |

## PERFORMANCE

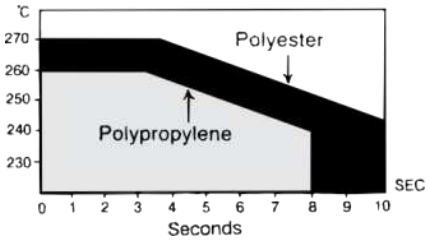
| Item | Metalized Polyester |
|---|---|
| Capacitance Drift | Cycled through the operating temperature range 2%. |
| Humidity Test | Will withstand the test of R.H. 95% at 40°C for 1000hrs. C ≤ 5% DF < 1.2% IR > 10000MΩ |
| Load Test | Will withstand a testing voltage at 140% of W.V. for 1000hrs at 85°C. C ≤ 5% DF < 1.2% IR > 5000MΩ |
| Lead Pull Test | Will withstand a pull of 1.5Kg applied axialy for 10 seconds. |
| Lead Bend Test | Will sustain two cycles without breaking when attaching a load of 0.5Kg to the end of the lead and then rotating the capacitor 90º from the direction of lead egress. Then 180 in opposite direction, then back to the starting point. |
| Solderability | Immersed in molten solder (230 ± 0.5 sec.) after testing, the wound lead and gap in the wound lead will be covered and filled by solder. Will be difficult to unwind by finger. |
| Dielectric Strength | Shall withstand 200% or 160% of rated voltage at 25°C for 1 minute with current limiting resistance of 1 Ω / V. |


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# MINI SIZE METALIZED POLYESTER FILM CAPACITORS

**CDAF:** Minature, Radial, Lead Space = 5mm

## SOLDERING




The area under the curve is the recommended soldering time & temp. for the materials shown.

## RADIAL TAPING

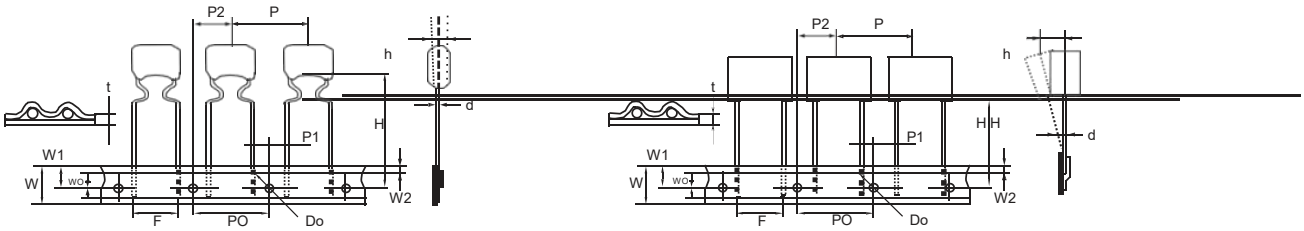



Fig. 1
F=5mm
(RT1)

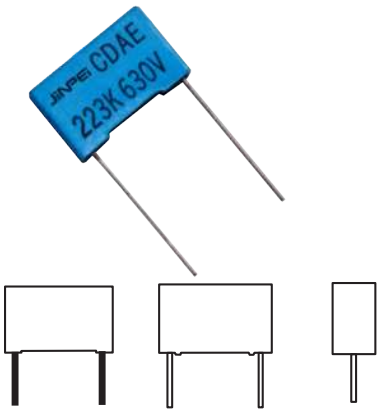
Fig. 2
F=5mm
(RT1)

## SPECIFICATIONS

| Description | Letter | Dimension (mm) |
|---|---|---|
| | | RT1 |
| Lead Wire Diameter | d | 0.5 / 0.6 |
| Tapping Pitch | P | 12.7 |
| Feed Hole Pitch | PO | 12.7 |
| Centering of the Lead Wire | P1 | 3.85 |
| Centering of the Body | P2 | 6.35 |
| Lead Spacing (Pitch) | F | 5 |
| Component Alignment | Δh | 0 |
| Height of Componenet from Tape Center | H | 18.5 |
| Carrier Tape Width | W | 18 |
| Hold Down Tape Width | WO | 6 |
| Hole Position | W1 | 9 |
| Hold Down Tape Position | W2 | 3 |
| Feed Hole Diameter | Do | 4 |
| Tape Thickness | t | 0.7 |
| Figure | fig | 1 or 2 |

Remark: *Allowance of accumulated pitch less than 1mm at the sum of 20 pitches.
*Continuous empty component less than 3 consecutive pieces.
*Total empty on one reel less than 1%.

## CDAE: General Purpose, Box Type






## FEATURES

- High moisture resistance
- Self-healing property
- Non-inductive construction
- Good solderability
- Flame-retardant epoxy resin (Compliant to UL 94V-0)
- Similiar to MDD type but in box encapsulation

## PART NUMBER EXAMPLE

CDAE 104 K 2W 100 B 200 S

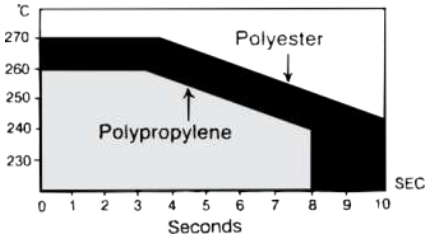
- Series
- Capacitance
- Tolerance
- Voltage
- Lead Style
- Lead Length
- Packaging
- Lead space*

* Leadspace is straight lead non-formed original leadspace.

## ELECTRICAL CHARACTERISTICS

| Items | Performance |
|---|---|
| Operating Voltage Range | 100Vdc, 250Vdc, 400Vdc, 450Vdc, 630Vdc, 1000Vdc |
| Rated Temperature | -40°C ~ +115°C (Derates over 105°C) |
| Usable Upper Category Temperature | +115°C (Derates over +105°C : 1.25% per °C of Rated Voltage) |
| Climatic Category | 55 / 105 / 56 |
| Capacitance Range | 0.001 µF ~ 10 µF |
| Capacitance Tolerance | 5% (J), 10% (K), 20%(M) |
| Dissipation Factor (at rated capacitance) | C ≤ 0.1uF: 1KHz, 20°C ≤ 0.01; 10KHz, 20°C ≤ 0.015; 100KHz, 20°C ≤ 0.030 — C > 0.1uF: 1KHz, 20°C ≤ 0.01; 10KHz, 20°C ≤ 0.015 |
| Insulation Resistance Terminal to Terminal | $V_R$ ≤ 100V: IR ≥ 3750MΩ, CN ≤ 0.33uF; IR ≥ 1250S, CN > 0.33uF (20°C, 100V, 1min) — $V_R$ > 100V: IR ≥ 15000MΩ, CN ≤ 0.33uF; IR ≥ 10000S, CN > 0.33uF (20°C, 100V, 1min) |
| Withstand Voltage | Terminal to Terminal: (at 20°C ± 5°C) 1.6 x $V_R$ applied for 2sec. (cut off current 10mA) |

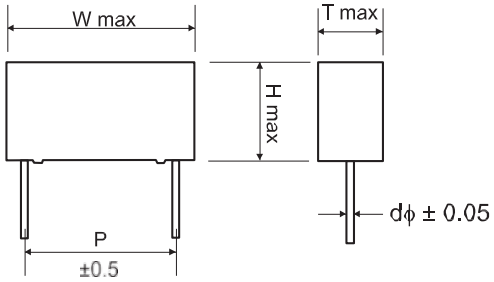
## SOLDERING




The area under the curve is the recommended soldering time & temp. for the materials shown.

## CDAE: General Purpose, Box Type

### MAXIMUM DIMENSIONS (mm)




** offers continuously to change, please contact RFE sales team for capacitance, voltage and size not found

| (μF) | W.V. | 100VDC (2A) | | | | | 250VDC (2E) | | | | | 400VDC (2G) | | | | | 630VDC (2J) | | | | | 1000VDC (3A) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Code | W | H | T | P | d | W | H | T | P | d | W | H | T | P | d | W | H | T | P | d | W | H | T | P | d |
| 0.001 | 102 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | | | | | | | | | | | 13.0 | 9.0 | 4.5 | 10.0 | 0.6 |
| 0.0015 | 152 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | | | | | | | | | | | 13.0 | 9.0 | 4.5 | 10.0 | 0.6 |
| 0.0022 | 222 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | | | | | | | | | | | 13.0 | 9.0 | 4.5 | 10.0 | 0.6 |
| 0.0033 | 332 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | | | | | | | | | | | 13.0 | 9.0 | 4.5 | 10.0 | 0.6 |
| 0.0047 | 472 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 13.0 | 9.0 | 4.5 | 10.0 | 0.6 |
| 0.0068 | 682 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 13.0 | 9.0 | 4.5 | 10.0 | 0.6 |
| 0.01 | 103 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 9.5 | 4.5 | 5.0 | 0.6 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 13.0 | 9.0 | 4.5 | 10.0 | 0.6 |
| 0.012 | 123 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 9.5 | 4.5 | 5.0 | 0.6 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| 0.015 | 153 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| 0.018 | 183 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| 0.022 | 223 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| 0.027 | 273 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 11.0 | 5.0 | 7.5 | 0.6 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.033 | 333 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 11.0 | 5.0 | 7.5 | 0.6 | 13.0 | 13.0 | 7.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.039 | 393 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 13.0 | 14.0 | 8.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.047 | 473 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 13.0 | 15.0 | 8.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.056 | 563 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 |
| 0.068 | 683 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 |
| 0.082 | 823 | 7.5 | 7.5 | 3.5 | 5.0 | 0.5 | 10.0 | 11.0 | 5.0 | 7.5 | 0.6 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 |
| 0.1 | 104 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 10.0 | 11.0 | 5.0 | 7.5 | 0.6 | 13.0 | 12.0 | 7.0 | 10.0 | 0.6 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 |
| 0.12 | 124 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 10.0 | 11.0 | 5.0 | 7.5 | 0.6 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| 0.15 | 154 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 10.0 | 12.0 | 6.0 | 7.5 | 0.6 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| 0.18 | 184 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 10.0 | 5.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 18.0 | 16.5 | 10.0 | 15.0 | 0.8 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| 0.22 | 224 | 10.0 | 9.0 | 4.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 18.0 | 18.0 | 10.0 | 15.0 | 0.8 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| 0.27 | 274 | 10.0 | 11.0 | 5.0 | 7.5 | 0.6 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 26.0 | 17.0 | 8.0 | 22.5 | 0.8 | 26.5 | 20.0 | 11.0 | 22.5 | 0.8 |
| 0.33 | 334 | 10.0 | 11.0 | 5.0 | 7.5 | 0.6 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | 26.0 | 18.0 | 9.0 | 22.5 | 0.8 | 26.5 | 20.0 | 11.0 | 22.5 | 0.8 |
| 0.39 | 394 | 10.0 | 11.0 | 5.0 | 7.5 | 0.6 | 18.0 | 11.0 | 5.0 | 15.0 | 0.8 | 18.0 | 15.0 | 9.0 | 15.0 | 0.8 | 26.0 | 19.0 | 10.0 | 22.5 | 0.8 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 0.47 | 474 | 10.0 | 12.0 | 6.0 | 7.5 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 18.0 | 17.5 | 8.5 | 15.0 | 0.8 | 26.0 | 19.0 | 10.0 | 22.5 | 0.8 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 0.56 | 564 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 26.0 | 16.0 | 7.0 | 22.5 | 0.8 | 26.0 | 20.0 | 11.0 | 22.5 | 0.8 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 |
| 0.68 | 684 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 26.0 | 17.0 | 8.5 | 22.5 | 0.8 | 26.0 | 21.5 | 12.0 | 22.5 | 0.8 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 |
| 0.82 | 824 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 26.0 | 19.0 | 10.0 | 22.5 | 0.8 | 31.0 | 22.0 | 13.0 | 27.5 | 0.8 | 32.0 | 30.0 | 16.0 | 27.5 | 0.8 |
| 1 | 105 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | 26.0 | 19.0 | 10.0 | 22.5 | 0.8 | 31.0 | 22.0 | 13.0 | 27.5 | 0.8 | 32.0 | 30.0 | 16.0 | 27.5 | 0.8 |
| 1.2 | 125 | 18.0 | 12.0 | 6.0 | 15.0 | 0.8 | 18.0 | 15.0 | 9.0 | 15.0 | 0.8 | 26.0 | 20.0 | 11.0 | 22.5 | 0.8 | 31.0 | 25.0 | 14.0 | 27.5 | 0.8 | | | | | |
| 1.5 | 155 | 18.0 | 12.5 | 6.0 | 15.0 | 0.8 | 18.0 | 17.5 | 8.5 | 15.0 | 0.8 | 31.0 | 20.0 | 11.0 | 27.5 | 0.8 | 31.0 | 26.0 | 18.0 | 27.5 | 0.8 | | | | | |
| 1.8 | 185 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | 26.0 | 16.0 | 7.0 | 22.5 | 0.8 | 31.0 | 22.0 | 13.0 | 27.5 | 0.8 | 31.0 | 31.0 | 22.0 | 27.5 | 0.8 | | | | | |
| 2.2 | 225 | 18.0 | 14.0 | 7.5 | 15.0 | 0.8 | 26.0 | 17.0 | 8.5 | 22.5 | 0.8 | 31.0 | 23.5 | 14.0 | 27.5 | 0.8 | 31.0 | 31.0 | 22.0 | 27.5 | 0.8 | | | | | |
| 2.7 | 275 | 18.0 | 15.0 | 9.0 | 15.0 | 0.8 | 26.0 | 19.0 | 10.0 | 22.5 | 0.8 | | | | | | | | | | | | | | | |
| 3.3 | 335 | 18.0 | 16.0 | 10.0 | 15.0 | 0.8 | 26.0 | 19.0 | 10.0 | 22.5 | 0.8 | | | | | | | | | | | | | | | |
| | | | | | | | 30.0 | 20.0 | 11.0 | 27.5 | 0.8 | | | | | | | | | | | | | | | |
| 3.9 | 395 | 26.0 | 16.0 | 6.0 | 22.5 | 0.8 | 26.0 | 20.0 | 11.0 | 22.5 | 0.8 | | | | | | | | | | | | | | | |
| 4.7 | 475 | 26.0 | 17.0 | 8.5 | 22.5 | 0.8 | 26.0 | 22.0 | 12.0 | 22.5 | 0.8 | | | | | | | | | | | | | | | |
| 5.6 | 565 | 26.0 | 18.5 | 7.0 | 22.5 | 0.8 | 31.0 | 22.0 | 13.0 | 27.5 | 0.8 | | | | | | | | | | | | | | | |
| 6.8 | 685 | 26.0 | 19.0 | 10.0 | 22.5 | 0.8 | 31.0 | 23.5 | 14.0 | 27.5 | 0.8 | | | | | | | | | | | | | | | |
| 8.2 | 825 | 26.0 | 20.0 | 10.0 | 22.5 | 0.8 | 31.0 | 25.0 | 14.0 | 27.5 | 0.8 | | | | | | | | | | | | | | | |
| 10 | 106 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 | 31.0 | 28.0 | 18.0 | 27.5 | 0.8 | | | | | | | | | | | | | | | |

### TAPE CODE (Lead spacing on tape, if taped)

| Lead Spacing | 7.5mm | 10mm | 15mm |
|---|---|---|---|
| Packing | A or R | A or R | A or R |
| Code | RT2 | RT3 | RT4 |

## CDAE: General Purpose, Box Type

### RADIAL TAPING CODE DIAGRAM

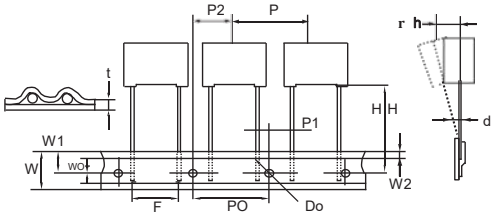



Fig. 2
F=7.5mm
(RT2)

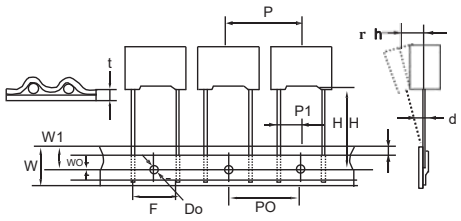



Fig. 3 Box
F=7.5mm
Ammo Only
(RT2)

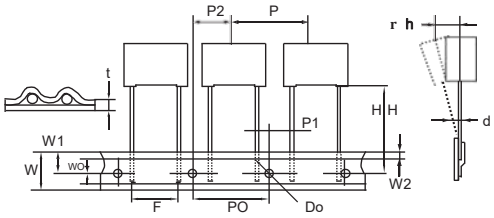


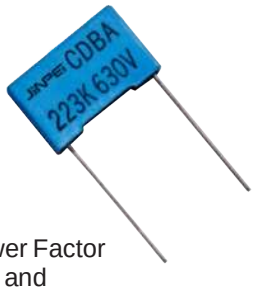

Fig. 4 Box or Expoxy Coated
F=10 = Ammo Only
F=15 Every other space skipped because of Larger body - Ammo Only
(RT3 or RT4)

| Description | Symbol | Dimension (mm) | | | |
|---|---|---|---|---|---|
| | | RT2 | RT3 | RT4 | Tol. |
| Lead Wire Diameter | d | 0.5 /0.6 | 0.6 | 0.6 / 0.8 | ± 0.05 |
| Tape Pitch | P | 12.7 | 12.7 | 25.4 | ± 1 |
| Feed Hole Pitch | PO | 12.7 | 12.7 | 12.7 | ± 0.2 |
| Centering of the Lead Wire | P1 | 2.6 /3.75 | 7.7 | 5.2 | ± 0.7 |
| Centering of the Body | P2 | 6.35 | 12.7 | 12.7 | ±1.3 |
| Lead Spacing (Pitch) | F | 7.5 | 10 | 15 | + 0.6;-0.1 |
| Component Alignment | Δh | 0 | 0 | 0 | ± 2 |
| Height of Componenet from TapeCenter | H | 18.5 | 18.5 | 18.5 | ± 0.5 |
| Carrier Tape Width | W | 18 | 18 | 18 | + 1;-0.5 |
| Hold Down Tape Width | WO | 6 | 9 | 10 | Min |
| Hole Position | W1 | 9 | 9 | 9 | ± 0.5 |
| Hold Down Tape Position | W2 | 3 | 3 | 3 | Max |
| Feed Hole Diameter | Do | 4 | 4 | 4 | ± 0.2 |
| Tape Thickness | t | 0.5 | 0.5 | 0.5 | ± 0.2 |
| Figure | fig | 1.2 or 3 | 4 | 4 | |

Remark: *Allowance of accumulated pitch less than 1mm at the sum of 20 pitches.
*Continuous empty component less than 3 consecutive pieces.
*Total empty on one reel less than 1%.

## CDBA SERIES:

Power Factor Correction, Box Type




## INTRODUCTION

CDBA Series are constructed specifically for Power Factor Correction (PFC) applications. Film was selected and metalization applied specifically for PFC application requirements.

## FEATURES

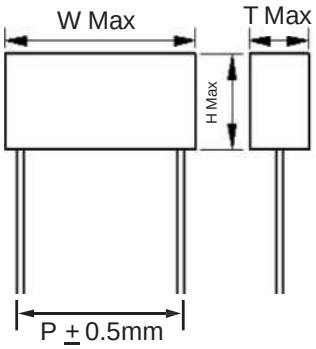
- Self-healing property
- Excellent dv/dt
- RoHS Compliance
- Ultra-miniature Size
- Ideal for Power Factor correction applications
- UL 94V-0 rated case

## PART NUMBER EXAMPLE

CDBA 104 K 2W 100 B 200 S

- CDBA — Series
- 104 — Capacitance
- K — Tolerance
- 2W — Voltage
- 100 — Lead space*
- B — Packaging
- 200 — Lead Length
- S — Lead Style

* Leadspace is straight lead non-formed original leadspace.




## SPECIFICATIONS

| Items | Performance |
|---|---|
| Operating Voltage Range | 450Vdc, 520Vdc, 630Vdc |
| Rated Temperature | -40 °C ~ 105°C<br>(Voltage derates 1.25%per℃ over 85°C) |
| Capacitance Range | 0.022 µF ~ 8.2 µF |
| Capacitance Tolerance | ±5% (J), ±10% (K), ±20% (M) |
| Dissipation Factor | 0.1% (max.) at 1KHz 0.2% (max.) at 10KHz |
| Insulation Resistance Terminal to Terminal | Voltage Charge: 100Vdc x 1min (at 20°C ± 5°C)<br>≥15,000MΩ for C ≤ 0.33µF<br>≥50,000MΩ x µF for C >0.33µF |
| Withstand Voltage | Terminal to Terminal: (at 20°C ± 5°C)<br>1.6 x $V_R$ applied for 2sec. (cut off current 10mA) |
| Rated Voltage Pulse Slope dV/dt (V/µs) | |

| P / $V_R$ | 10mm | 15mm | 22.5mm | 27.5mm |
|---|---|---|---|---|
| 450Vdc | 300 | 200 | 100 | 80 |
| 520Vdc | 350 | 220 | 150 | 100 |
| 630Vdc | 400 | 300 | 180 | 120 |

## PERFORMANCE

| Item | Test Methods | Requirements |
|---|---|---|
| Resistance to Soldering Heat IEC60068-2-20 | Solder Bath: 260°C ± 5°C<br>Immersion Time: 10sec ± 1sec | Capacitance Change C/C : 1%<br>DF Change Δ tan δ : 0.1% at 1KHz<br>IR: > limit value |
| Resistance to Vibration IEC60068-2-6 | Frequency Range: 10Hz to 55Hz<br>Amplitude: 1.5mm<br>Duration: 6 hours | There shall be no Visible Damage, No Intermittent Contact, No Open or Short Circuit |
| Damp Heat, Steady State IEC60068-2-3 | Temperature: 40°C ± 2°C<br>Relative Humidity: 90% to 95%<br>Duration: 1,000 hours | Capcitance Change C/C : 3%<br>DF Change tan δ : 0.1% at 1KHz<br>IR : 50% limit value |
| Electrical Endurance IEC60384-16 | Temperature: 85°C + 2°C<br>Voltage Applied: 1.25 x Vr(DC)<br>Duration: 1,000 hours | Capacitance Change C/C : 3%<br>DF Change tan δ : 0.1% at 1KHz<br>IR : 50% limit value |

## CDBA SERIES: Power Factor Correction, Box Type

### DIMENSIONS (mm)

#### 450Vdc (2W)

| R.V. | | 450Vdc (2W) | | | | | |
|---|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | d | dV/dt |
| 0.068 | 683 | 13.0 | 9 | 4 | 10 | 0.6 | 300 |
| 0.082 | 823 | 13.0 | 9 | 4 | 10 | 0.6 | 300 |
| 0.100 | 104 | 17.5 | 10 | 5 | 15 | 0.6 | 200 |
| 0.120 | 124 | 17.5 | 11 | 5 | 15 | 0.6 | 200 |
| 0.150 | 154 | 17.5 | 11 | 5 | 15 | 0.6 | 200 |
| 0.180 | 184 | 17.5 | 11 | 5 | 15 | 0.6 | 200 |
| 0.220 | 224 | 13.0 | 13 | 6 | 10 | 0.6 | 220 |
| | | 17.5 | 11 | 5 | 15 | 0.6 | 200 |
| 0.270 | 274 | 17.5 | 12 | 6 | 15 | 0.6 | 200 |
| 0.330 | 334 | 17.5 | 12 | 6 | 15 | 0.6 | 200 |
| 0.390 | 394 | 17.5 | 14 | 8 | 15 | 0.6 | 200 |
| 0.470 | 474 | 17.5 | 14 | 8 | 15 | 0.6 | 200 |
| 0.560 | 564 | 17.5 | 14 | 8 | 15 | 0.6 | 200 |
| 0.680 | 684 | 17.5 | 16 | 10 | 15 | 0.8 | 200 |

| R.V. | | 450Vdc (2W) | | | | | |
|---|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | d | dV/dt |
| 0.820 | 824 | 17.5 | 16 | 10 | 15 | 0.8 | 200 |
| 1.000 | 105 | 26.5 | 17 | 9 | 22.5 | 0.8 | 100 |
| 1.200 | 125 | 26.5 | 19 | 10 | 22.5 | 0.8 | 100 |
| 1.500 | 155 | 26.5 | 19 | 10 | 22.5 | 0.8 | 100 |
| 1.800 | 185 | 26.5 | 22 | 12 | 22.5 | 0.8 | 100 |
| 2.200 | 225 | 32.0 | 20 | 11 | 27.5 | 0.8 | 80 |
| 2.700 | 275 | 32.0 | 22 | 13 | 27.5 | 0.8 | 80 |
| 3.300 | 335 | 32.0 | 22 | 13 | 27.5 | 0.8 | 80 |
| 3.900 | 395 | 32.0 | 25 | 15 | 27.5 | 0.8 | 80 |
| 4.700 | 475 | 32.0 | 33 | 18 | 27.5 | 0.8 | 80 |
| 5.600 | 565 | 32.0 | 33 | 18 | 27.5 | 0.8 | 80 |
| 6.800 | 685 | 32.0 | 33 | 18 | 27.5 | 0.8 | 80 |
| 8.200 | 825 | 32.0 | 33 | 18 | 27.5 | 0.8 | 80 |

#### 520Vdc (2Y)

| R.V. | | 520Vdc (2Y) | | | | | |
|---|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | d | dV/dt |
| 0.047 | 473 | 13.0 | 9 | 4 | 10 | 0.6 | 350 |
| 0.056 | 563 | 13.0 | 9 | 4 | 10 | 0.6 | 350 |
| 0.068 | 683 | 13.0 | 9 | 4 | 10 | 0.6 | 350 |
| 0.082 | 823 | 13.0 | 11 | 5 | 10 | 0.6 | 350 |
| 0.100 | 104 | 17.5 | 11 | 5 | 15 | 0.6 | 220 |
| 0.120 | 124 | 17.5 | 11 | 5 | 15 | 0.6 | 220 |
| 0.150 | 154 | 13.0 | 12 | 6 | 10 | 0.6 | 220 |
| | | 17.5 | 11 | 5 | 15 | | |
| 0.180 | 184 | 17.5 | 11 | 5 | 15 | 0.6 | 220 |
| 0.220 | 224 | 17.5 | 12 | 6 | 15 | 0.6 | 220 |
| 0.270 | 274 | 17.5 | 12 | 6 | 15 | 0.6 | 220 |
| 0.330 | 334 | 17.5 | 14 | 8 | 15 | 0.6 | 220 |
| 0.390 | 394 | 17.5 | 14 | 8 | 15 | 0.6 | 220 |
| 0.470 | 474 | 17.5 | 15 | 9 | 15 | 0.8 | 220 |
| 0.560 | 564 | 17.5 | 16 | 10 | 15 | 0.8 | 220 |

| R.V. | | 520Vdc (2Y) | | | | | |
|---|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | d | dV/dt |
| 0.680 | 684 | 17.5 | 16 | 10 | 15 | 0.8 | 220 |
| 0.820 | 824 | 26.5 | 17 | 9 | 22.5 | 0.8 | 150 |
| 1.000 | 105 | 26.5 | 19 | 10 | 22.5 | 0.8 | 150 |
| 1.200 | 125 | 26.5 | 19 | 10 | 22.5 | 0.8 | 150 |
| 1.500 | 155 | 26.5 | 22 | 12 | 22.5 | 0.8 | 150 |
| 1.800 | 185 | 26.5 | 22 | 12 | 22.5 | 0.8 | 150 |
| 2.200 | 225 | 32.0 | 22 | 13 | 27.5 | 0.8 | 100 |
| 2.700 | 275 | 32.0 | 25 | 15 | 27.5 | 0.8 | 100 |
| 3.300 | 335 | 32.0 | 28 | 14 | 27.5 | 0.8 | 100 |
| 3.900 | 395 | 32.0 | 28 | 14 | 27.5 | 0.8 | 100 |
| 4.700 | 475 | 32.0 | 33 | 18 | 27.5 | 0.8 | 100 |
| 5.600 | 565 | 32.0 | 33 | 18 | 27.5 | 0.8 | 100 |
| 6.800 | 685 | 32.0 | 33 | 18 | 27.5 | 0.8 | 100 |

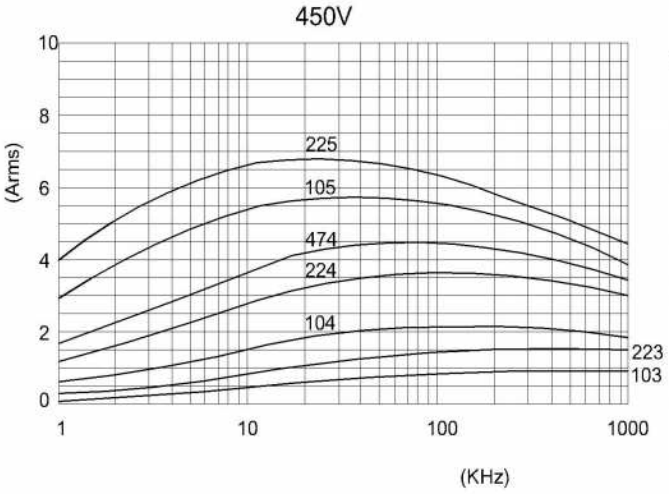
#### 630Vdc (2J)

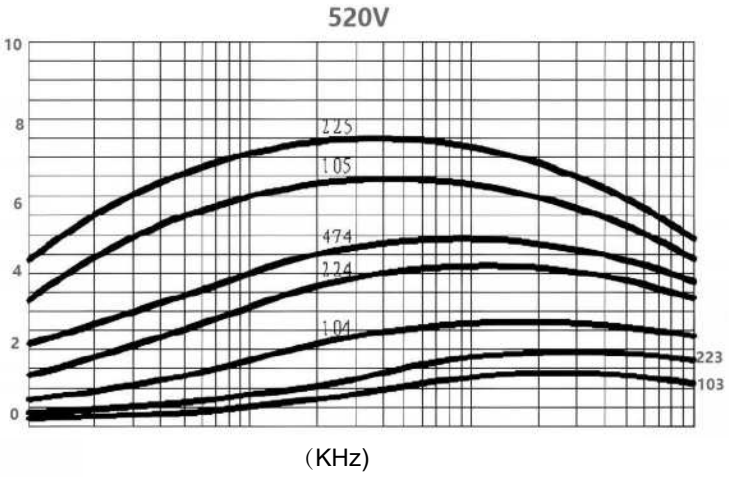
| R.V. | | 630Vdc (2J) | | | | | |
|---|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | d | dv / dt |
| 0.022 | 223 | 13.0 | 9 | 4 | 10.0 | 0.6 | 400 |
| 0.027 | 273 | 13.0 | 9 | 4 | 10.0 | 0.6 | 400 |
| 0.033 | 333 | 13.0 | 9 | 4 | 10.0 | 0.6 | 400 |
| 0.039 | 393 | 13.0 | 9 | 4 | 10.0 | 0.6 | 400 |
| 0.047 | 473 | 13.0 | 11 | 5 | 10.0 | 0.6 | 400 |
| 0.056 | 563 | 13.0 | 11 | 5 | 10.0 | 0.6 | 400 |
| 0.068 | 683 | 13.0 | 11 | 5 | 10.0 | 0.6 | 400 |
| 0.082 | 823 | 13.0 | 12 | 6 | 10.0 | 0.6 | 400 |
| 0.100 | 104 | 17.5 | 11 | 5 | 15.0 | 0.6 | 300 |
| 0.120 | 124 | 17.5 | 11 | 5 | 15.0 | 0.6 | 300 |
| 0.150 | 154 | 17.5 | 12 | 6 | 15.0 | 0.6 | 300 |
| 0.180 | 184 | 17.5 | 12 | 6 | 15.0 | 0.6 | 300 |
| 0.220 | 224 | 17.5 | 14 | 8 | 15.0 | 0.6 | 300 |
| 0.270 | 274 | 17.5 | 14 | 8 | 15.0 | 0.6 | 300 |
| 0.330 | 334 | 17.5 | 15 | 9 | 15.0 | 0.8 | 300 |

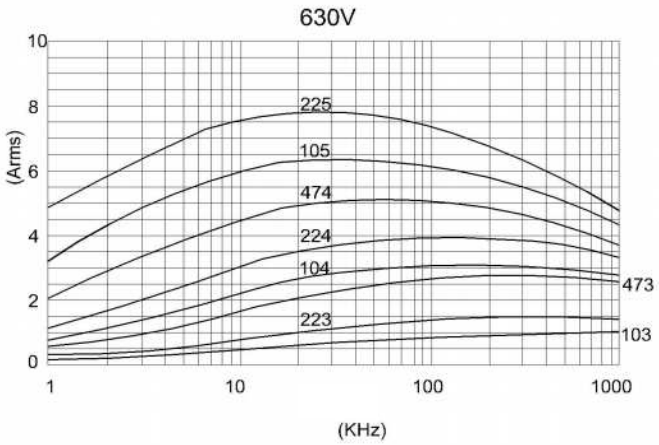
| R.V. | | 630Vdc (2J) | | | | | |
|---|---|---|---|---|---|---|---|
| (μF) | Code | W | H | T | P | d | dv / dt |
| 0.390 | 394 | 17.5 | 16 | 10 | 15.0 | 0.8 | 300 |
| 0.470 | 474 | 17.5 | 16 | 10 | 15.0 | 0.8 | 300 |
| 0.560 | 564 | 26.5 | 17 | 9 | 22.5 | 0.8 | 180 |
| 0.680 | 684 | 26.5 | 17 | 9 | 22.5 | 0.8 | 180 |
| 0.820 | 824 | 26.5 | 19 | 10 | 22.5 | 0.8 | 180 |
| 1.000 | 105 | 26.5 | 19 | 10 | 22.5 | 0.8 | 180 |
| 1.200 | 125 | 26.5 | 22 | 12 | 22.5 | 0.8 | 180 |
| 1.500 | 155 | 26.0 | 22 | 11 | 22.5 | 0.8 | 120 |
| | | 32.0 | 22 | 13 | 27.5 | | |
| 1.800 | 185 | 32.0 | 22 | 13 | 27.5 | 0.8 | 120 |
| 2.200 | 225 | 32.0 | 25 | 15 | 27.5 | 0.8 | 120 |
| 2.700 | 275 | 32.0 | 28 | 14 | 27.5 | 0.8 | 120 |
| 3.300 | 335 | 32.0 | 33 | 18 | 27.5 | 0.8 | 120 |
| 3.900 | 395 | 32.0 | 33 | 18 | 27.5 | 0.8 | 120 |

## CDBA SERIES: Power Factor Correction, Box Type

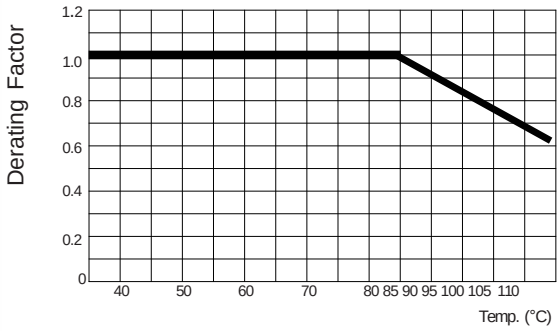
### CURRENT ARMS VS. FREQUENCY (450V, 520V, 630V)



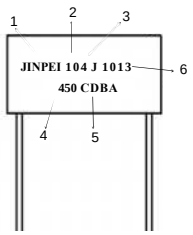

### MAX. DC & AC VOLTAGE VS TEMPERATURE




### PACKAGING CODE

| Method | Bulk | Ammo | Reel |
|---|---|---|---|
| Code | B | A | R |

### MARKING




1. Name or Symbol
2. Nominal Capacitance in μF
3. Capacitance Tolerance
4. DC, Rating, Voltage
5. Type Name
6. Date Code
   Year: 11→ 2011, 12→ 2012, 13→ 2013
   Week On: 01~53

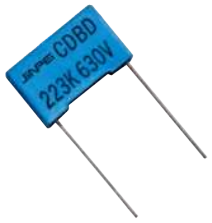
### LEAD LENGTH FROM SEATING PLANE

| mm | 5 | 10 | 15 | 20 | 25 |
|---|---|---|---|---|---|
| Code | 050 | 100 | 150 | 200 | 250 |

### TAPE CODE (Lead spacing of tape, if taped)

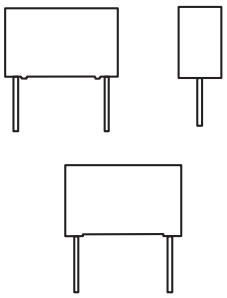
| Spacing | 10mm | 15mm |
|---|---|---|
| Packing | A | A |
| Code | RT3 | RT4 |

**CDBD:** Box Type, Low Loss at High Frequency




## FEATURES

- Low loss at high frequency
- Rated voltage : 160Vdc~2000Vdc (90Vac~700Vac)
- Capacitance range : 0.00056 ~15 uF
- Plastic case (Compliant to UL 94V-0), epoxy resom sealing
- RoHS Compliant and lead-free terminations
- Widely used in high frequency, DC, AC and pulse circuits



## PART NUMBER EXAMPLE

CDBD 104 K 2E 100 B 200 S

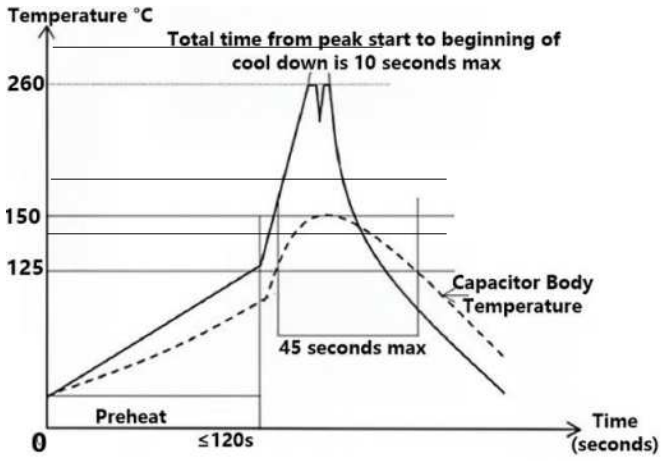
- Series
- Capacitance
- Tolerance
- Voltage
- Straight Lead Length
- Packaging
- Lead space*

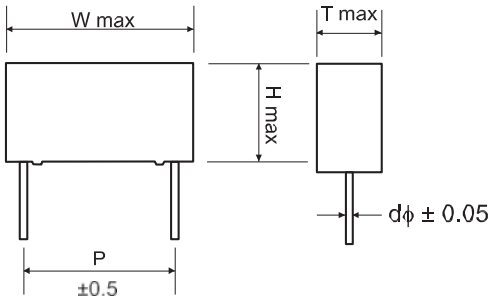
## ELECTRICAL CHARACTERISTICS

| Items | Performance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Operating Voltage Range | 160Vdc ~ 2,000Vdc (90Vac ~ 700Vac) | | | | | | | |
| Rated Temperature | -55°C ~ +105°C (Derates over 85°C : 1.25% per °C of Rated Voltage) | | | | | | | |
| Usable Upper Category Temperature | +105°C<br>(Derates over +85°C: 1.25% per °C of Rated Voltage) | | | | | | | |
| Climatic Category | 55 / 105 / 56 | | | | | | | |
| Capacitance Range | 0.00056 µF ~ 15µF | | | | | | | |
| Capacitance Tolerance | 5% (J), 10% (K), other tolerances on request | | | | | | | |
| Voltage Proof | 1.6 $U_R$ ( 5s ) | | | | | | | |
| Dissipation Factor | ≤ 10 x $10^{-4}$ (1KHz, 20°C) | | | | | | | |
| Insulation Resistance | R ≥ 100,000MΩ, CN ≤ 0.33 µF (20°C, 100V, 1min)<br>RCN ≥ 30,000s, CN > 0.33 µF | | | | | | | |
| Maximum Pulse Rise Time (dV/dt)<br><br>If the w orking voltage (V) is low er than the rated voltage ($V_R$), the capacitor can be worked at a higher dV/dt. In this case, the maximum allow ed dV/dt is obtained by multiplying the right value w ith $V_R$/V. | Voltage (Vdc) | max. pulse rise time, dV/dt (V/µSec), Ta < 25°C | | | | | | |
| | | P= 5.0 | P= 7.5 | P= 10.0 | P= 15.0 | P= 22.5 | P=27.5 | P=37.5 |
| | 160 | 110 | 310 | 190 | 110 | 65 | 55 | --- |
| | 250 | 270 | 660 | 560 | 310 | 130 | 110 | --- |
| | 400 | 440 | 900 | 780 | 600 | 300 | 130 | 100 |
| | 630 | 550 | 1,500 | 1,200 | 900 | 400 | 200 | --- |
| | 1,000 | --- | --- | 2,200 | 2,000 | 800 | --- | --- |
| | 1,600 | --- | --- | --- | 4,500 | 1,800 | --- | --- |
| | 2,000 | --- | --- | --- | 9,500 | 4,500 | --- | --- |

## CDBD: Box Type, Low Loss at High Frequency

### Wave Soldering Recommendations




### RATINGS & DIMENSIONS (mm)

| (μF) | Working Voltage | 160Vdc (2C) 90Vac | | | | |
|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø |
| 0.027 | 273 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.033 | 333 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.039 | 393 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.047 | 473 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| 0.056 | 563 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| 0.068 | 683 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| 0.082 | 823 | 7.2 | 10.0 | 5.0 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.1 | 104 | 7.2 | 10.0 | 5.0 | 5.0 | 0.5 |
| | | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.12 | 124 | 7.2 | 11.0 | 6.0 | 5.0 | 0.5 |
| | | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| 0.15 | 154 | 7.2 | 11.0 | 6.0 | 5.0 | 0.5 |
| | | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| 0.18 | 184 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.22 | 224 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.27 | 274 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.33 | 334 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.39 | 394 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.47 | 474 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.56 | 564 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |

| (μF) | Working Voltage | 160Vdc (2C) 90Vac | | | | |
|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø |
| 0.68 | 684 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.82 | 824 | 17.5 | 14.5 | 8.5 | 15.0 | 0.8 |
| | | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| 1 | 105 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 |
| | | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1.2 | 125 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 |
| | | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1.5 | 155 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 |
| | | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1.8 | 185 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 |
| | | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 2.2 | 225 | 26.5 | 20.0 | 11.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 2.5 | 255 | 26.5 | 20.0 | 11.0 | 22.5 | 0.8 |
| 2.7 | 275 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 |
| | | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 3.3 | 335 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 |
| | | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 3.9 | 395 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 |
| 4.7 | 475 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 |
| 6.8 | 685 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 8.2 | 825 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 10 | 106 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 12 | 126 | 32.0 | 37.0 | 22.0 | 27.5 | |
| 15 | 156 | 32.0 | 37.0 | 22.0 | 27.5 | 0.8 |

## CDBD: Box Type, Low Loss at High Frequency

### RATINGS & DIMENSIONS (mm) continue ....

| (μF) | Working Voltage | 250Vdc(2E) 180Vac | | | | |
|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø |
| 0.01 | 103 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.012 | 123 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.015 | 153 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.018 | 183 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.022 | 223 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.027 | 273 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| 0.033 | 333 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.039 | 393 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.047 | 473 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.056 | 563 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.068 | 683 | 7.2 | 10.0 | 5.0 | 5.0 | 0.6 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.082 | 823 | 7.2 | 10.0 | 5.0 | 5.0 | 0.6 |
| | | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.1 | 104 | 7.2 | 11.0 | 6.0 | 5.0 | 0.6 |
| | | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.12 | 124 | 7.2 | 11.0 | 6.0 | 5.0 | 0.6 |
| | | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.15 | 154 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.18 | 184 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 |
| | | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |

| (μF) | Working Voltage | 250Vdc(2E) 180Vac | | | | |
|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø |
| 0.22 | 224 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.27 | 274 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.33 | 334 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.39 | 394 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.47 | 474 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.56 | 564 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.68 | 684 | 17.5 | 14.5 | 8.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.82 | 824 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1 | 105 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 |
| | | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1.2 | 125 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 |
| | | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1.5 | 155 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1.8 | 185 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 2.2 | 225 | 26.5 | 20.0 | 11.0 | 22.5 | 0.8 |
| | | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 2.5 | 255 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 2.7 | 275 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 |
| | | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 3.3 | 335 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 3.9 | 395 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 |
| 4.7 | 475 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 |
| 5.6 | 565 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 |
| 6.8 | 685 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 8.2 | 825 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 10 | 106 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 12 | 126 | 32.0 | 37.0 | 22.0 | 27.5 | 0.8 |
| 15 | 156 | 32.0 | 37.0 | 22.0 | 27.5 | 0.8 |


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**CDBD:** Box Type, Low Loss at High Frequency

## RATINGS & DIMENSIONS (mm) continue ....

| (μF) | Working Voltage | 400Vdc (2G) 250Vac | | | | |
|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø |
| 0.0039 | 392 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.0047 | 472 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.0056 | 562 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.0068 | 682 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.0082 | 822 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| 0.01 | 103 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| 0.012 | 123 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| 0.015 | 153 | 7.2 | 9.5 | 4.5 | 5.0 | 0.6 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.018 | 183 | 7.2 | 9.5 | 4.5 | 5.0 | 0.6 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.022 | 223 | 7.2 | 9.5 | 4.5 | 5.0 | 0.6 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.027 | 273 | 7.2 | 10.0 | 5.0 | 5.0 | 0.6 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.033 | 333 | 7.2 | 11.0 | 6.0 | 5.0 | 0.6 |
| | | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.039 | 393 | 7.2 | 11.0 | 6.0 | 5.0 | 0.6 |
| | | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.047 | 473 | 7.2 | 11.0 | 6.0 | 5.0 | 0.6 |
| | | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| 0.056 | 563 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| 0.068 | 683 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.082 | 823 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.1 | 104 | 13.0 | 12.0 | 6.0 | 10.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |

| (μF) | Working Voltage | 400Vdc (2G) 250Vac | | | | |
|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø |
| 0.12 | 124 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.15 | 154 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.18 | 184 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.22 | 224 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.27 | 274 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.33 | 334 | 17.5 | 14.5 | 8.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.39 | 394 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 |
| | | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| 0.47 | 474 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 |
| | | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| 0.56 | 564 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 |
| | | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 0.68 | 684 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 |
| | | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 0.82 | 824 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1 | 105 | 26.5 | 20.0 | 11.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 1.2 | 125 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 |
| | | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 1.5 | 155 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 |
| | | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 1.8 | 185 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 |
| 2.2 | 225 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 |
| 2.5 | 255 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 |
| 2.7 | 275 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 |
| 3.3 | 335 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 3.9 | 395 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 4.7 | 475 | 32.0 | 37.0 | 22.0 | 27.5 | 0.8 |
| | | 42.0 | 31.5 | 18.0 | 37.5 | 0.8 |
| 5.6 | 565 | 32.0 | 37.0 | 22.0 | 27.5 | 0.8 |

**CDBD:** Box Type, Low Loss at High Frequency

## RATINGS & DIMENSIONS (mm) continue ....

| (μF) | Working Voltage | 630Vdc (2J) 400Vac | | | | |
|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø |
| 0.001 | 102 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0012 | 122 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0015 | 152 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0018 | 182 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0022 | 222 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0027 | 272 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0033 | 332 | 7.2 | 7.5 | 3.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0039 | 392 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0047 | 472 | 7.2 | 9.5 | 4.5 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0056 | 562 | 7.2 | 10.0 | 5.0 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0068 | 682 | 7.2 | 10.0 | 5.0 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.0082 | 822 | 7.2 | 11.0 | 6.0 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.01 | 103 | 7.2 | 11.0 | 6.0 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.012 | 123 | 7.2 | 11.0 | 6.0 | 5.0 | 0.5 |
| | | 10.5 | 9.0 | 4.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.015 | 153 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.018 | 183 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 |
| 0.022 | 223 | 10.5 | 11.0 | 5.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |

| (μF) | Working Voltage | 630Vdc (2J) 400Vac | | | | |
|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø |
| 0.027 | 273 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.033 | 333 | 10.5 | 12.0 | 6.0 | 7.5 | 0.6 |
| | | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.039 | 393 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.047 | 473 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.056 | 563 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.068 | 683 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| 0.082 | 823 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.1 | 104 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.12 | 124 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.15 | 154 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.18 | 184 | 17.5 | 14.5 | 8.5 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.22 | 224 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 |
| | | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| 0.27 | 274 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 |
| | | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| 0.33 | 334 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 |
| | | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 0.39 | 394 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 0.47 | 474 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 |
| | | 32.0 | 18.0 | 9.0 | 27.5 | 0.8 |
| 0.56 | 564 | 26.5 | 20.0 | 11.0 | 22.5 | 0.8 |
| | | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 0.68 | 684 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 |
| | | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 0.82 | 824 | 32.0 | 20.0 | 11.0 | 27.5 | 0.8 |
| 1 | 105 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 |
| 1.2 | 125 | 32.0 | 24.5 | 15.0 | 27.5 | 0.8 |
| 1.5 | 155 | 32.0 | 28.0 | 14.0 | 27.5 | 0.8 |
| 1.8 | 185 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 2.2 | 225 | 32.0 | 33.0 | 18.0 | 27.5 | 0.8 |
| 2.7 | 275 | 32.0 | 37.0 | 22.0 | 27.5 | 0.8 |
| 3.3 | 335 | 32.0 | 37.0 | 22.0 | 27.5 | 0.8 |


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**CDBD:** Box Type, Low Loss at High Frequency

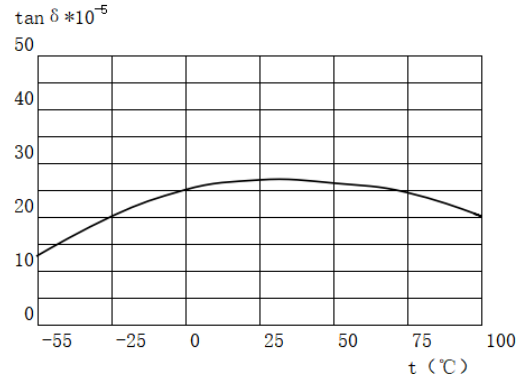
## RATINGS & DIMENSIONS (mm) continue ....

| (μF) | Working Voltage | 1000VDC(3A) 600Vac | | | | | 1600Vdc (3C) 650Vac | | | | | 2000Vdc (3D) 700Vac | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Code | W | H | T | P | dø | W | H | T | P | dø | W | H | T | P | dø |
| 0.00056 | 561 | | | | | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.00068 | 681 | | | | | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.00082 | 821 | | | | | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.001 | 102 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.0012 | 122 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.0015 | 152 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.0018 | 182 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| 0.0022 | 222 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | | | | | |
| 0.0027 | 272 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | | | | | |
| 0.0033 | 332 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | | | | | |
| 0.0039 | 392 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | | | | | |
| 0.0047 | 472 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | | | | | |
| 0.0056 | 562 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | | | | | |
| 0.0068 | 682 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.0082 | 822 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.01 | 103 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 |
| | | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | | | | | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.012 | 123 | 17.5 | 11.0 | 5.0 | 15.0 | 0.8 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 | 17.5 | 14.5 | 8.5 | 15.0 | 0.8 |
| | | | | | | | | | | | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.015 | 153 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 | 17.5 | 14.5 | 8.5 | 15.0 | 0.8 |
| | | | | | | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 |
| 0.018 | 183 | 17.5 | 12.0 | 6.0 | 15.0 | 0.8 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 |
| 0.022 | 223 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 | 17.5 | 14.5 | 8.5 | 15.0 | 0.8 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| 0.027 | 273 | 17.5 | 13.5 | 7.5 | 15.0 | 0.8 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | | | | | |
| 0.033 | 333 | 17.5 | 14.5 | 8.5 | 15.0 | 0.8 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | | | | | |
| 0.039 | 393 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 |
| | | 26.5 | 15.0 | 6.0 | 22.5 | 0.8 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | | | | | |
| 0.047 | 473 | 17.5 | 16.0 | 10.0 | 15.0 | 0.8 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 |
| | | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | | | | | |
| 0.056 | 563 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 |
| | | 26.5 | 16.0 | 7.0 | 22.5 | 0.8 | | | | | | | | | | |
| 0.068 | 683 | 17.5 | 19.0 | 11.0 | 15.0 | 0.8 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 | | | | | |
| | | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | | | | | | | | | | |
| 0.082 | 823 | 226.5 | 17.0 | 8.5 | 22.5 | 0.8 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 | | | | | |
| 0.1 | 104 | 26.5 | 18.5 | 10.0 | 22.5 | 0.8 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 | | | | | |
| 0.12 | 124 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 | | | | | | | | | | |
| 0.15 | 154 | 26.5 | 22.0 | 12.0 | 22.5 | 0.8 | | | | | | | | | | |

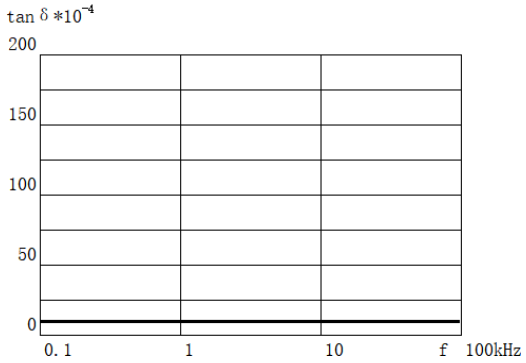
**CDBD:** Box Type, Low Loss at High Frequency

## Vrms vs. Frequency, typical value

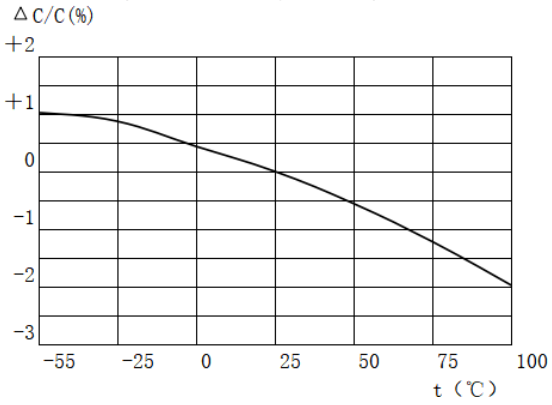
Dissipation Factor vs Temperature



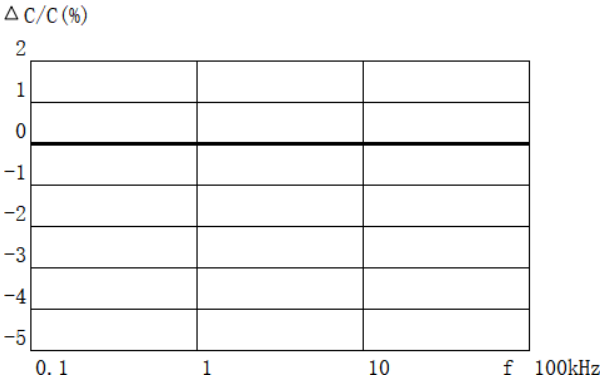

Dissipation Factor vs Frequency



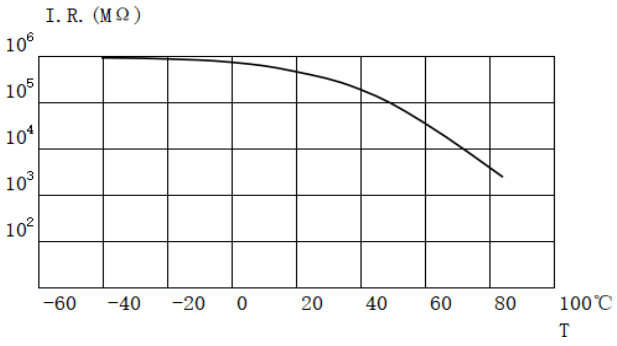

Capacitance Change vs Temperature



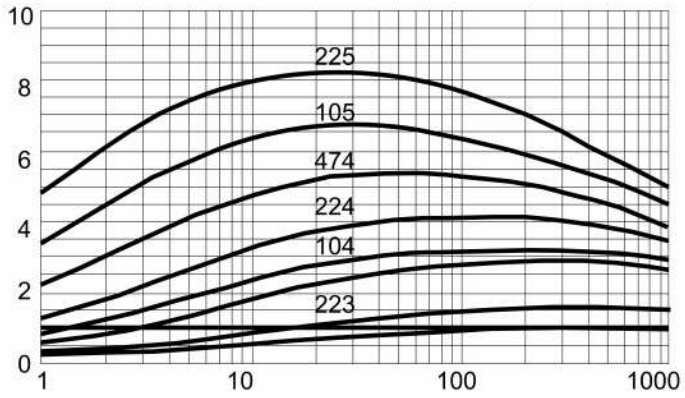

Capacitance Change vs Frequency




Insulation Resistance vs Temperature




Permissible Current (Vrms) vs Frequency
Typical Values



**CDBD:** Box Type, Low Loss at High Frequency

## RADIAL TAPING

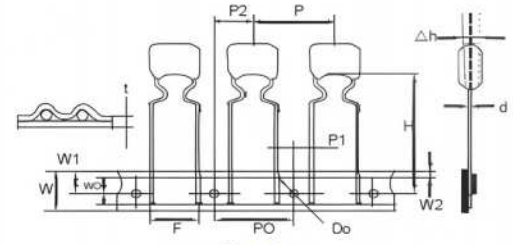



Fig. 1
F=7.5mm
(RT2)

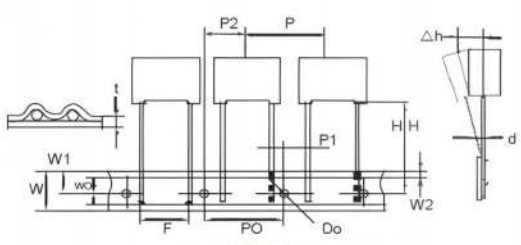



Fig. 2
F=7.5mm
(RT2)

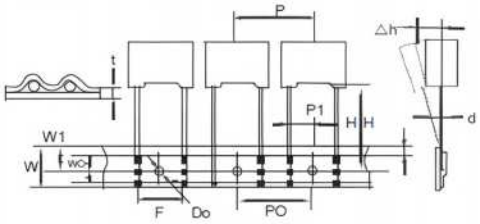



Fig. 3 Box
F=7.5mm
Ammo Only
(RT2)

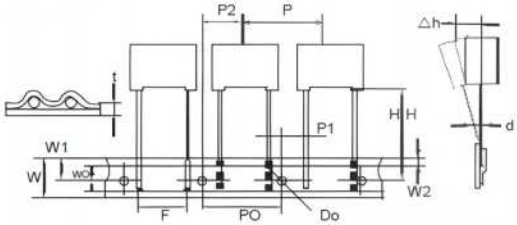



Fig. 4 Box or Expoxy Coated
F=10 = Ammo Only
F=15 Every other space skipped because of Larger body - Ammo Only
(RT3 or RT4)

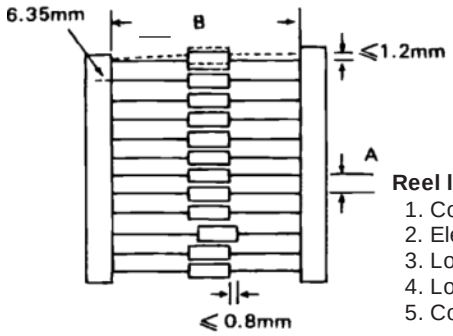
## SPECIFICATIONS

| Description | Letter | Dimension (mm) | | | | |
|---|---|---|---|---|---|---|
| | | RT1 | RT2 | RT3 | RT4 | Tol. |
| Lead Wire Diameter | d | 0.5 / 0.6 | 0.5 / 0.6 | 0.6 | 0.6 / 0.8 | ± 0.05 |
| Tape Pitch | P | 12.7 | 12.7 | 12.7 | 25.4 | ± 1 |
| Feed Hole Pitch | PO | 12.7 | 12.7 | 12.7 | 12.7 | ± 0.2 |
| Centering of the Lead Wire | P1 | 3.85 | 2.6 / 3.75 | 7.7 | 5.2 | ± 0.7 |
| Centering of the Body | P2 | 6.35 | 6.35 | 12.7 | 12.7 | ± 1.3 |
| Lead Spacing (Pitch) | F | 5 | 7.5 | 10 | 15 | + 0.6; -0.1 |
| Component Alignment | Δh | 0 | 0 | 0 | 0 | ± 2 |
| Height of Componenet from Tape Center | H | 18.5 | 18.5 | 18.5 | 18.5 | ± 0.5 |
| Carrier Tape Width | W | 18 | 18 | 18 | 18 | + 1; -0.5 |
| Hold Dow n Tape Width | WO | 6 | 6 | 9 | 10 | Min |
| Hole Position | W1 | 9 | 9 | 9 | 9 | ± 0.5 |
| Hold Dow n Tape Position | W2 | 3 | 3 | 3 | 3 | Max |
| Feed Hole Diameter | Do | 4 | 4 | 4 | 4 | ± 0.2 |
| Tape Thickness | t | 0.5 | 0.5 | 0.5 | 0.5 | ± 0.2 |
| Figure | fig | 1 or 2 | 1.2 or 3 | 4 | 4 | |

Remark: *Allowance of accumulated pitch less than 1mm at the sum of 20 pitches.
*Continuous empty component less than 3 consecutive pieces.
*Total empty on one reel less than 1%.

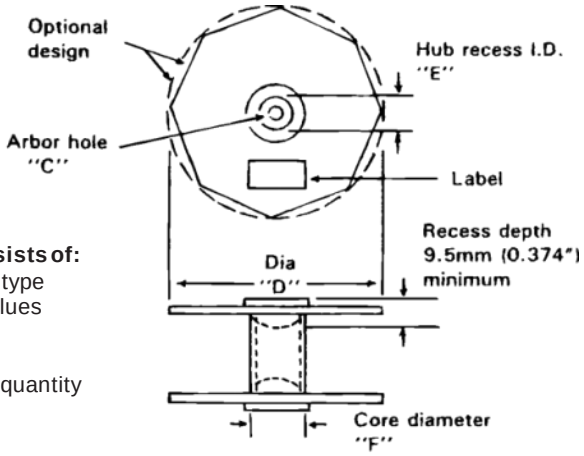
**CDBD:** Box Type, Low Loss at High Frequency

## EIA STANDARD RS-296-D AXIAL TAPE & REEL




**Reel label consists of:**

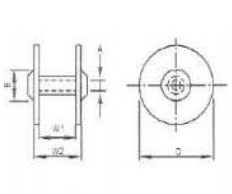
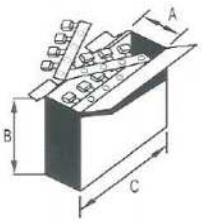
1. Component type
2. Electrical values
3. Lot number
4. Lot date
5. Component quantity




### SPECIFICATIONS

| Body Diameter | Body Length | Quantity Per Reel | Parts Spacing ±0.5mm (A) | Tape Spacing ±1.5mm (B) | Arbor Hole (C) | Reel Diameter (D) | Hub Recess (E) | Core Diameter (F) |
|---|---|---|---|---|---|---|---|---|
| ≤5mm (0.197") | ≤16.5mm (0.65") | 4000 | 5mm (0.2") | 52.44mm (2.062") | 13.9mm to 38.1mm<br>0.054" to 1.5" | 76.2mm to 355.6mm<br>3.0" to 14.0" | 28.6mm to 78.0mm<br>1.126" to 3.071" | 34.5mm to 92.0mm<br>1.374" to 3.626" |
| | 16.51 - 28.45mm (0.651 - 1.12") | 4000 | 5mm (0.2") | 63.5mm (2.5") | | | | |
| | 28.46 - 37.00mm (1.121 - 1.45") | 4000 | 5mm (0.2") | 73.0mm (2.874") | | | | |
| 5.01 - 10mm (0.197 - 0.394") | ≤16.5mm (0.65") | 2000 | 10mm (0.4") | 52.44mm (2.062") | | | | |
| | 16.51 - 28.45mm (0.651 - 1.12") | 2000 | 10mm (0.4") | 63.5mm (2.5") | | | | |
| | 28.46 - 37.00mm (1.121 - 1.45") | 2000 | 10mm (0.4") | 73.0mm (2.874") | | | | |
| 10.01 - 15mm (0.394 - 0.591") | ≤16.5mm (0.65") | 1000 | 15mm (0.6") | 52.44mm (2.062") | | | | |
| | 16.51 - 28.45mm (0.651 - 1.12") | 1000 | 15mm (0.6") | 63.5mm (2.5") | | | | |
| | 28.46 - 37.00mm (1.121 - 1.45") | 1000 | 15mm (0.6") | 73.0mm (2.874") | | | | |

### PACKAGING

| Packaging Type | Reel Packing | | Ammo Box Packing | |
|---|---|---|---|---|
| |  | |  | |
| Dimensions unit: mm | A | 14 ~ 30 | A | 50 +5 -2 |
| | B | 80 min | | |
| | D | 370 max | B | 260±2 |
| | W1 | 45 +5 -2 | C | 330±2 |
| | W2 | 55max | | |
| Packing Qty Per Reel/Box | C≤0.022 | C>0.022 | C≤0.047 | C>0.047 |
| | 1,500pcs | 1,000pcs | 1,500pcs | 1,000pcs |

## CDFB: NON – INDUCTIVE, PLASTIC CASE AND EPOXY RESIN




**FEATURES:**

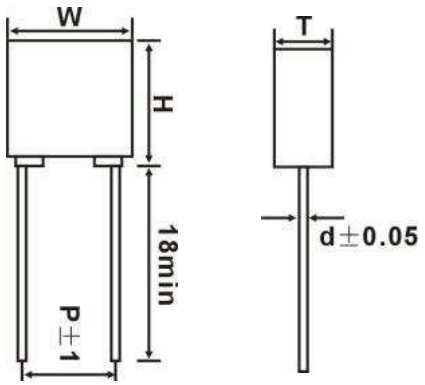
High dv / dt ability and small size due to stacked construction

| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| Reference Standard | GB7332 (IEC 60384-2) | | | |
| Climatic Category | 55/100/56 | | | |
| Rated Temperature | 85℃ | | | |
| Operating Temperature Range | -55℃~105℃<br>(+85℃ to +105℃: decreasing factor 1.25% per ℃ for $V_R$ (DC)) | | | |
| Rated Voltage | 63V, 100V, 250V, 400V, 500V, 630V | | | |
| Capacitance Range | 0.0010μF ~ 1.5μF | | | |
| Capacitance Tolerance | ±5%(J), ±10%(K), ±20%(M) | | | |
| Voltage Proof | Type A: 1.6$U_R$(5s) ; Type B: 1.4$U_R$(5s) | | | |
| Dissipation Factor | Frequency | $C_R$≤0.1μF | $C_R$>0.1μF | |
| | 1kHz | ≤1.0% | ≤1.0% | |
| | 10kHz | ≤1.5% | ≤1.5% | |
| | 100kHz | ≤3.0% | -- | |
| Insulation Resistance | $U_R$>100V | ≥30 000MΩ, $C_R$≤0.33μF (20℃, 100V, 1min) | | |
| | $U_R$≤100V | ≥15 000MΩ, $C_R$≤0.33μF | (20℃, 10V,1min) | |
| | | ≥5 000s, $C_R$>0.33μF | | |
| If the working voltage (U) is lower than the rated voltage ($U_R$), the capacitor can be worked at a higher dv / dt. In this case, the maximum allowed dv / dt is obtain by multiplying the right value with $U_R$ /U | $U_R$ (V) | dv / dt (V / μ s ) | | |
| | | Type A | Type B | |
| | 63 | 250 | 75 | |
| | 100 | 300 | 85 | |
| | 250 | 400 | 100 | |
| | 400 | 600 | 150 | |
| | 500 | 700 | 200 | |
| | 630 | 800 | 200 | |

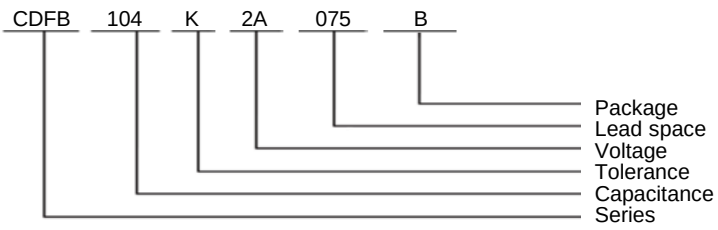
### Dimensions (mm)

| (Capacitor Tickness)T | ≦3.5 | > 3.5 |
|---|---|---|
| (Lead Wire Diz.)d±0.05 | 0.5 | 0.6 |
| (Dimension Tolerance: W, H, T) | ±0.2 | ±0.4 |

### Outline Drawing




### PART NUMBER EXAMPLE



## CDFB: NON – INDUCTIVE, PLASTIC CASE AND EPOXY RESIN

### Type A (P:5mm)

| (μF) | 63VDC 1J | | | 100VDC 2A | | | 250VDC 2E | | | 400VDC 2G | | | 500VDC 1H | | | 630VDC 2J | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W | H | T | W | H | T | W | H | T | W | H | T | W | H | T | W | H | T |
| 0.0010 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 |
| 0.0012 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 |
| 0.0015 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 |
| 0.0018 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 |
| 0.0022 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 |
| 0.0027 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 |
| 0.0033 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 7.5 | 3.5 |
| 0.0039 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 7.5 | 3.5 |
| 0.0047 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 |
| 0.0056 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 |
| 0.0062 | -- | -- | -- | 7.2 | 6.5 | 2.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.0068 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | 7.2 | 9.5 | 4.5 |
| 0.0082 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | 7.2 | 9.5 | 4.5 |
| 0.010 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | 7.2 | 10.0 | 5.0 |
| 0.012 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 |
| 0.015 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | 7.2 | 10.0 | 5.0 | 7.2 | 11.0 | 6.0 |
| 0.018 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | 7.2 | 11.0 | 6.0 |
| 0.022 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 10.0 | 5.0 | 7.2 | 11.0 | 6.0 | -- | -- | -- |
| 0.027 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 11.0 | 6.0 | 7.2 | 11.0 | 6.0 | -- | -- | -- |
| 0.033 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- |
| 0.039 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- |
| 0.047 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- |
| 0.056 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- |
| 0.068 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.082 | 7.2 | 6.5 | 2.5 | 7.2 | 6.5 | 2.5 | 7.2 | 10.0 | 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.10 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 10.0 | 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.12 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.15 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.18 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.22 | 7.2 | 7.5 | 3.5 | 7.2 | 10.0 | 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.27 | 7.2 | 9.5 | 4.5 | 7.2 | 10.0 | 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.33 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.39 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.47 | 7.2 | 10.0 | 5.0 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.56 | 7.2 | 10.0 | 5.0 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.68 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.82 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1.0 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

### Type B (P:5mm)

| (μF) | 63VDC | | | 100VDC | | | (μF) | 250VDC | | | 400VDC | | | 630VDC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W | H | T | W | H | T | | W | H | T | W | H | T | W | H | T |
| 0.10 | -- | -- | -- | 7.2 | 6.5 | 2.5 | 0.0033 | -- | -- | -- | -- | -- | -- | 7.2 | 6.5 | 2.5 |
| 0.12 | -- | -- | -- | 7.2 | 6.5 | 2.5 | 0.0039 | -- | -- | -- | -- | -- | -- | 7.2 | 6.5 | 2.5 |
| 0.15 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 0.0047 | -- | -- | -- | -- | -- | -- | 7.2 | 6.5 | 2.5 |
| 0.18 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 0.0056 | -- | -- | -- | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 |
| 0.22 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 0.0068 | -- | -- | -- | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 |
| 0.27 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | 0.0082 | -- | -- | -- | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 |
| 0.33 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | 0.01 | -- | -- | -- | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 |
| 0.39 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | 0.012 | -- | -- | -- | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 |
| 0.47 | 7.2 | 7.5 | 3.5 | 7.2 | 10.0 | 5.0 | 0.015 | -- | -- | -- | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 |
| 0.56 | 7.2 | 9.5 | 4.5 | 7.2 | 10.0 | 5.0 | 0.018 | -- | -- | -- | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 |
| 0.68 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | 0.022 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 10.0 | 5.0 |
| 0.82 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | 0.027 | 7.2 | 6.5 | 2.5 | 7.2 | 7.5 | 3.5 | 7.2 | 11.0 | 6.0 |
| 1.0 | 7.2 | 10.0 | 5.0 | 7.2 | 11.0 | 6.0 | 0.033 | 7.2 | 6.5 | 2.5 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 |
| 1.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- | 0.039 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | -- | -- | -- |
| 2.2 | 7.2 | 11.0 | 6.0 | -- | -- | -- | 0.047 | 7.2 | 7.5 | 3.5 | 7.2 | 9.5 | 4.5 | -- | -- | -- |
| | | | | | | | 0.056 | 7.2 | 7.5 | 3.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- |
| | | | | | | | 0.068 | 7.2 | 7.5 | 3.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- |
| | | | | | | | 0.082 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- |
| | | | | | | | 0.1 | 7.2 | 9.5 | 4.5 | 7.2 | 11.0 | 6.0 | -- | -- | -- |
| | | | | | | | 0.12 | 7.2 | 9.5 | 4.5 | -- | -- | -- | -- | -- | -- |
| | | | | | | | 0.15 | 7.2 | 10.0 | 5.0 | -- | -- | -- | -- | -- | -- |
| | | | | | | | 0.18 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- |
| | | | | | | | 0.22 | 7.2 | 11.0 | 6.0 | -- | -- | -- | -- | -- | -- |

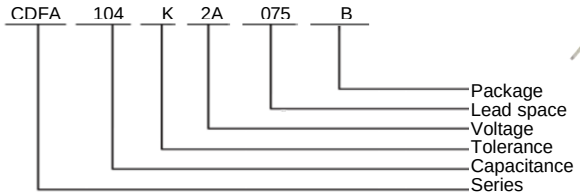

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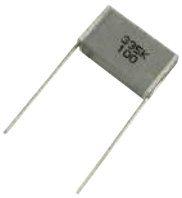
# CDFA

**FEATURES:**

- Uncoated, stacked construction
- Small size
- Applied to DC impulse and pulse circuits

**PART NUMBER EXAMPLE**



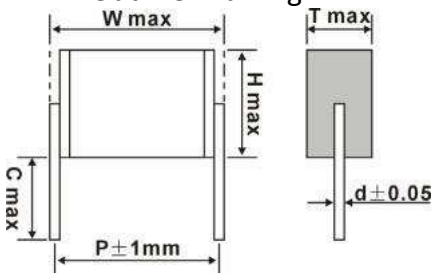



| SPECIFICATIONS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Reference Standard | GB7332(IEC 60384-2) | | | | | | |
| Climatic Category | 55/100/56 | | | | | | |
| Rated Temperature | 85℃ for $V_R$ (DC)<br>75℃ for $V_R$ (AC) | | | | | | |
| Operating Temperature Range | -55℃ ~ 105℃<br>(+85℃ to +105℃: decreasing factor 1.25% per ℃ for $V_R$ (DC)<br>(+75℃ to +105℃: decreasing factor 1.35% per ℃ for $V_R$ (AC) | | | | | | |
| Rated Voltage | 63V 1J, 100V 2A, 250V 2E, 400V 2G, 630V 2J, 1000V 3A | | | | | | |
| Capacitance Range | 0.0010μF ~ 33μF | | | | | | |
| Capacitance Tolerance | ±5%(J), ±10%(K), ±20%(M) | | | | | | |
| Voltage Proof | 1.4$U_R$(2s) | | | | | | |
| Dissipation Factor | ≤0.0100(1kHz) | | | | | | |
| | ≤0.0150 (10kHz, CR 1.0μF) | | | | | | |
| | ≤0.0300 (100kHz, $C_R$ 0.1μF) | | | | | | |
| Insulation Resistance | $U_R$ ≤ 100V | ≥3750MΩ, $C_R$ ≤0.33μF | UR ≤ 100V, Charging Voltage 10V, UR ≥ 100V, Charging Voltage 100V (20℃, 1min) | | | | |
| | | ≥1250s, $C_R$>0.33μF | | | | | |
| | UR ≥ 100V | ≥3750MΩ, $C_R$ ≤0.33μF | | | | | |
| | | ≥2500s, CR>0.33μF | | | | | |
| dV/dt(V/s)Maximum Pulse Rise Time | P(mm) \ UR(VDC) | 63 | 100 | 250 | 400 | 630 | 1000 |
| | 5 | 120 | 150 | 250 | 300 | 400 | - |
| | 7.5 | 120 | 150 | 200 | 275 | 320 | 400 |
| | 10 | - | 75 | 150 | 175 | - | - |
| | 15 | - | 50 | 100 | 125 | 150 | - |
| | 22.5 | - | 50 | 100 | 125 | - | - |
| | 27.5 | - | 25 | 50 | 60 | - | - |

## Dimensions (mm)

| Lead Pitch: P ± 1 | 5.0 | 7.5 | 10.0 | 15.0 | 22.5 | 27.5 |
|---|---|---|---|---|---|---|
| Lead Diameter: Φd ± 0.05 | 0.5 | | | 0.6 | 0.8 | |

Outline Drawing



# CDFA

P=5.0

| (μF) | 63VDC(40VAC) | | | 100VDC(63VAC) | | | 250VDC(160VAC) | | | 400VDC(200VAC) | | | 630VDC(400VAC) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W max | H max | T max | W max | H max | T max | W max | H max | T max | W max | H max | T max | W max | H max | T max |
| 0.0010 | 6.5 | 3.9 | 2.0 | 6.5 | 3.9 | 2.0 | 6.5 | 3.9 | 2.0 | 6.5 | 3.9 | 2.0 | 6.5 | 3.9 | 2.0 |
| 0.0012 | 6.5 | 4.0 | 2.2 | 6.5 | 4.0 | 2.2 | 6.5 | 4.0 | 2.2 | 6.5 | 4.0 | 2.2 | 6.5 | 4.0 | 2.2 |
| 0.0015 | 6.5 | 5.0 | 2.2 | 6.5 | 5.0 | 2.2 | 6.5 | 5.0 | 2.2 | 6.5 | 5.0 | 2.2 | 6.5 | 5.0 | 2.2 |
| 0.0018 | 6.5 | 4.9 | 2.5 | 6.5 | 4.9 | 2.5 | 6.5 | 4.9 | 2.5 | 6.5 | 4.9 | 2.5 | 6.5 | 4.9 | 2.5 |
| 0.0022 | 6.5 | 4.7 | 2.2 | 6.5 | 4.7 | 2.2 | 6.5 | 4.7 | 2.2 | 6.5 | 4.7 | 2.2 | 6.5 | 4.7 | 2.2 |
| 0.0027 | 6.5 | 4.7 | 2.5 | 6.5 | 4.7 | 2.5 | 6.5 | 4.7 | 2.5 | 6.5 | 4.7 | 2.5 | 6.5 | 4.7 | 2.5 |
| 0.0033 | 6.5 | 5.2 | 2.7 | 6.5 | 5.2 | 2.7 | 6.5 | 5.2 | 2.7 | 6.5 | 5.2 | 2.7 | 6.5 | 5.2 | 2.7 |
| 0.0039 | 6.5 | 3.8 | 2.0 | 6.5 | 3.8 | 2.0 | 6.5 | 3.8 | 2.0 | 6.5 | 3.8 | 2.0 | 6.5 | 5.5 | 2.9 |
| 0.0047 | 6.5 | 3.9 | 2.2 | 6.5 | 3.9 | 2.2 | 6.5 | 3.9 | 2.2 | 6.5 | 3.9 | 2.2 | 6.5 | 4.9 | 2.5 |
| 0.0056 | 6.5 | 4.6 | 2.2 | 6.5 | 4.6 | 2.2 | 6.5 | 4.6 | 2.2 | 6.5 | 4.6 | 2.2 | 6.5 | 5.2 | 2.7 |
| 0.0068 | 6.5 | 4.6 | 2.5 | 6.5 | 4.6 | 2.5 | 6.5 | 4.6 | 2.5 | 6.5 | 4.6 | 2.5 | 6.5 | 5.0 | 3.2 |
| 0.0082 | 6.5 | 5.0 | 2.7 | 6.5 | 5.0 | 2.7 | 6.5 | 5.0 | 2.7 | 6.5 | 5.0 | 2.7 | 6.5 | 5.4 | 3.5 |
| 0.010 | 6.5 | 3.8 | 2.0 | 6.5 | 3.8 | 2.0 | 6.5 | 3.8 | 2.0 | 6.5 | 3.8 | 2.0 | 6.5 | 5.7 | 3.9 |
| 0.012 | 6.5 | 4.2 | 2.0 | 6.5 | 4.2 | 2.0 | 6.5 | 4.2 | 2.0 | 6.5 | 4.2 | 2.0 | 6.5 | 7.3 | 3.7 |
| 0.015 | 6.5 | 3.7 | 2.5 | 6.5 | 3.7 | 2.5 | 6.5 | 3.7 | 2.5 | 6.5 | 4.5 | 2.2 | -- | -- | -- |
| 0.018 | 6.5 | 4.5 | 2.5 | 6.5 | 4.5 | 2.5 | 6.5 | 4.5 | 2.5 | 6.5 | 4.5 | 2.5 | -- | -- | -- |
| 0.022 | 6.5 | 4.3 | 2.0 | 6.5 | 4.3 | 2.0 | 6.5 | 4.3 | 2.0 | 6.5 | 4.9 | 2.7 | -- | -- | -- |
| 0.027 | 6.5 | 4.6 | 2.2 | 6.5 | 4.6 | 2.2 | 6.5 | 4.6 | 2.2 | 6.5 | 5.4 | 2.9 | -- | -- | -- |
| 0.033 | 6.5 | 4.6 | 2.5 | 6.5 | 4.6 | 2.5 | 6.5 | 4.6 | 2.5 | 6.5 | 5.8 | 3.2 | -- | -- | -- |
| 0.039 | 6.5 | 4.9 | 2.7 | 6.5 | 4.9 | 2.7 | 6.5 | 4.9 | 2.7 | 6.5 | 5.7 | 3.7 | -- | -- | -- |
| 0.047 | 6.5 | 4.1 | 2.0 | 6.5 | 4.1 | 2.0 | 6.5 | 4.0 | 2.7 | 6.5 | 7.4 | 3.5 | -- | -- | -- |
| 0.056 | 6.5 | 4.2 | 2.2 | 6.5 | 4.2 | 2.2 | 6.5 | 4.3 | 2.9 | 6.5 | 8.2 | 3.7 | -- | -- | -- |
| 0.068 | 6.5 | 4.2 | 2.5 | 6.5 | 4.2 | 2.5 | 6.5 | 4.5 | 3.2 | 6.5 | 8.4 | 4.2 | -- | -- | -- |
| 0.082 | 6.5 | 4.6 | 2.7 | 6.5 | 4.6 | 2.7 | 6.5 | 4.9 | 3.5 | 6.5 | 8.9 | 4.7 | -- | -- | -- |
| 0.10 | 6.5 | 3.9 | 2.0 | 6.5 | 3.9 | 2.0 | 6.5 | 5.5 | 3.7 | 6.5 | 8.6 | 5.7 | -- | -- | -- |
| 0.12 | 6.5 | 4.0 | 2.2 | 6.5 | 4.0 | 2.2 | 6.5 | 7.1 | 3.5 | -- | -- | -- | -- | -- | -- |
| 0.15 | 6.5 | 5.0 | 2.2 | 6.5 | 5.0 | 2.2 | 6.5 | 7.1 | 4.2 | -- | -- | -- | -- | -- | -- |
| 0.18 | 6.5 | 5.2 | 2.4 | 6.5 | 5.2 | 2.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.22 | 6.5 | 4.4 | 2.5 | 6.5 | 4.9 | 2.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.27 | 6.5 | 4.8 | 2.7 | 6.5 | 5.3 | 3.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.33 | 6.5 | 5.3 | 2.9 | 6.5 | 5.3 | 3.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.39 | 6.5 | 5.5 | 3.2 | 6.5 | 7.6 | 3.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.47 | 6.5 | 5.5 | 3.7 | 6.5 | 7.6 | 3.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.56 | 6.5 | 7.9 | 3.2 | 6.5 | 7.7 | 4.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.68 | 6.5 | 8.0 | 3.7 | 6.5 | 8.2 | 4.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.82 | 6.5 | 8.2 | 4.2 | 6.5 | 7.9 | 5.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1.0 | 6.5 | 8.7 | 4.7 | 6.5 | 8.7 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |



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# CDFA

P=7.5

| (μF) | 63VDC(40VAC) | | | 100VDC(63VAC) | | | 250VDC(160VAC) | | | 400VDC(200VAC) | | | 630VDC(400VAC) | | | 1000VDC(600VAC) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W max | H max | T max | W max | H max | T max | W max | H max | T max | W max | H max | T max | W max | H max | T max | W max | H max | T max |
| 0.0010 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 3.7 | 2.0 | 9.0 | 3.7 | 2.0 | 9.0 | 3.7 | 2.0 |
| 0.0012 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 3.7 | 2.0 | 9.0 | 3.7 | 2.0 | 9.0 | 3.7 | 2.0 |
| 0.0015 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.0 | 2.2 | 9.0 | 4.0 | 2.2 | 9.0 | 4.0 | 2.2 |
| 0.0018 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.7 | 2.2 | 9.0 | 4.7 | 2.2 | 9.0 | 4.7 | 2.2 |
| 0.0022 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 3.7 | 2.2 | 9.0 | 3.7 | 2.2 | 9.0 | 3.7 | 2.2 |
| 0.0027 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.6 | 2.2 | 9.0 | 4.6 | 2.2 | 9.0 | 4.6 | 2.2 |
| 0.0033 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 3.8 | 2.2 | 9.0 | 3.8 | 2.2 | 9.0 | 4.6 | 2.5 |
| 0.0039 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 3.9 | 2.2 | 9.0 | 3.9 | 2.2 | 9.0 | 4.9 | 2.7 |
| 0.0047 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.7 | 2.2 | 9.0 | 4.1 | 2.4 | 9.0 | 5.8 | 2.7 |
| 0.0056 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 3.7 | 2.2 | 9.0 | 4.6 | 2.5 | 9.0 | 5.5 | 3.2 |
| 0.0068 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.5 | 2.2 | 9.0 | 5.0 | 2.7 | 9.0 | 6.7 | 3.2 |
| 0.0082 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.5 | 2.5 | 9.0 | 6.1 | 2.7 | 9.0 | 6.7 | 3.7 |
| 0.010 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 3.8 | 2.2 | 9.0 | 5.9 | 3.2 | 9.0 | 7.0 | 4.2 |
| 0.012 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.2 | 2.2 | 9.0 | 5.8 | 3.7 | 9.0 | 7.3 | 4.7 |
| 0.015 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.3 | 2.5 | 9.0 | 6.2 | 4.2 | 9.0 | 8.1 | 5.2 |
| 0.018 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 3.8 | 2.2 | 9.0 | 7.4 | 4.2 | 9.0 | 9.7 | 5.2 |
| 0.022 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.3 | 2.2 | 9.0 | 7.9 | 4.7 | 9.0 | 10.6 | 5.7 |
| 0.027 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9.0 | 4.4 | 2.5 | 9.0 | 7.8 | 5.7 | 9.0 | 11.8 | 6.2 |
| 0.033 | -- | -- | -- | -- | -- | -- | 9.0 | 3.6 | 2.2 | 9.0 | 4.8 | 2.7 | 9.0 | 9.5 | 5.7 | 9.0 | 13.2 | 6.7 |
| 0.039 | -- | -- | -- | -- | -- | -- | 9.0 | 4.3 | 2.2 | 9.0 | 5.6 | 2.7 | 9.0 | 10.2 | 6.2 | -- | -- | -- |
| 0.047 | -- | -- | -- | -- | -- | -- | 9.0 | 4.3 | 2.5 | 9.0 | 6.8 | 2.7 | 9.0 | 11.2 | 6.7 | -- | -- | -- |
| 0.056 | -- | -- | -- | -- | -- | -- | 9.0 | 4.6 | 2.7 | 9.0 | 6.4 | 3.2 | -- | -- | -- | -- | -- | -- |
| 0.068 | -- | -- | -- | -- | -- | -- | 9.0 | 5.5 | 2.7 | 9.0 | 6.5 | 3.7 | -- | -- | -- | -- | -- | -- |
| 0.082 | -- | -- | -- | -- | -- | -- | 9.0 | 4.5 | 2.7 | 9.0 | 6.6 | 4.2 | -- | -- | -- | -- | -- | -- |
| 0.10 | -- | -- | -- | 9.0 | 4.3 | 2.4 | 9.0 | 6.5 | 2.4 | 9.0 | 8.1 | 4.2 | -- | -- | -- | -- | -- | -- |
| 0.12 | -- | -- | -- | 9.0 | 4.3 | 2.7 | 9.0 | 5.2 | 3.2 | 9.0 | 7.5 | 5.2 | -- | -- | -- | -- | -- | -- |
| 0.15 | -- | -- | -- | 9.0 | 5.4 | 2.7 | 9.0 | 5.4 | 3.7 | 9.0 | 8.4 | 5.7 | -- | -- | -- | -- | -- | -- |
| 0.18 | -- | -- | -- | 9.0 | 3.9 | 2.2 | 9.0 | 6.1 | 3.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.22 | 9.0 | 4.2 | 2.4 | 9.0 | 4.2 | 2.4 | 9.0 | 6.8 | 4.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.27 | 9.0 | 4.8 | 2.5 | 9.0 | 4.3 | 2.7 | 9.0 | 7.2 | 4.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.33 | 9.0 | 5.3 | 2.7 | 9.0 | 5.3 | 2.7 | 9.0 | 7.4 | 5.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.39 | 9.0 | 6.3 | 2.7 | 9.0 | 6.3 | 2.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.47 | 9.0 | 5.5 | 2.7 | 9.0 | 6.0 | 3.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.56 | 9.0 | 6.5 | 2.7 | 9.0 | 5.9 | 3.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.68 | 9.0 | 6.3 | 3.2 | 9.0 | 6.1 | 4.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 0.82 | 9.0 | 6.2 | 3.7 | 9.0 | 7.4 | 4.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1.0 | 9.0 | 6.5 | 4.2 | 9.0 | 7.8 | 4.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1.2 | 9.0 | 6.8 | 4.7 | 9.0 | 7.8 | 5.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1.5 | 9.0 | 7.5 | 5.2 | 9.0 | 8.5 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1.8 | 9.0 | 8.1 | 5.7 | 9.0 | 10.2 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2.2 | 9.0 | 9.0 | 6.2 | 9.0 | 10.5 | 7.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2.7 | 9.0 | 10.1 | 6.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3.3 | 9.0 | 11.4 | 7.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3.9 | 9.0 | 11.7 | 8.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 4.7 | 9.0 | 12.4 | 9.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 5.6 | 9.0 | 13.9 | 9.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 6.8 | 9.0 | 14.5 | 11.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

## CDFA

P=10

| (μF) | 100VDC(63VAC) | | | 250VDC(160VAC) | | | 400VDC(200VAC) | | |
|---|---|---|---|---|---|---|---|---|---|
| | W max | H max | T max | W max | H max | T max | W max | H max | T max |
| 0.010 | -- | -- | -- | -- | -- | -- | 11.5 | 4.1 | 2.2 |
| 0.012 | -- | -- | -- | -- | -- | -- | 11.5 | 4.5 | 2.2 |
| 0.015 | -- | -- | -- | -- | -- | -- | 11.5 | 4.7 | 2.5 |
| 0.018 | -- | -- | -- | -- | -- | -- | 11.5 | 5.0 | 2.7 |
| 0.022 | -- | -- | -- | -- | -- | -- | 11.5 | 4.4 | 2.5 |
| 0.027 | -- | -- | -- | -- | -- | -- | 11.5 | 5.4 | 2.5 |
| 0.033 | -- | -- | -- | -- | -- | -- | 11.5 | 4.5 | 2.2 |
| 0.039 | -- | -- | -- | -- | -- | -- | 11.5 | 4.4 | 2.5 |
| 0.047 | -- | -- | -- | 11.5 | 3.9 | 2.2 | 11.5 | 4.7 | 2.7 |
| 0.056 | -- | -- | -- | 11.5 | 4.3 | 2.2 | 11.5 | 5.6 | 2.7 |
| 0.068 | -- | -- | -- | 11.5 | 4.3 | 2.5 | 11.5 | 5.4 | 3.2 |
| 0.082 | -- | -- | -- | 11.5 | 4.6 | 2.7 | 11.5 | 6.5 | 3.2 |
| 0.10 | -- | -- | -- | 11.5 | 5.6 | 2.7 | 11.5 | 6.6 | 3.7 |
| 0.12 | -- | -- | -- | 11.5 | 5.4 | 3.2 | 11.5 | 6.7 | 4.2 |
| 0.15 | -- | -- | -- | 11.5 | 6.7 | 3.2 | 11.5 | 7.3 | 4.7 |
| 0.18 | -- | -- | -- | 11.5 | 5.4 | 3.2 | 11.5 | 7.8 | 5.2 |
| 0.22 | -- | -- | -- | 11.5 | 5.5 | 3.7 | 11.5 | 8.6 | 5.7 |
| 0.27 | -- | -- | -- | 11.5 | 5.8 | 4.2 | -- | -- | -- |
| 0.33 | 11.5 | 4.1 | 2.5 | 11.5 | 6.5 | 4.5 | -- | -- | -- |
| 0.39 | 11.5 | 4.9 | 2.5 | 11.5 | 6.9 | 4.9 | -- | -- | -- |
| 0.47 | 11.5 | 5.2 | 2.7 | 11.5 | 7.8 | 5.2 | -- | -- | -- |
| 0.56 | 11.5 | 5.0 | 3.2 | -- | -- | -- | -- | -- | -- |
| 0.68 | 11.5 | 6.0 | 3.2 | -- | -- | -- | -- | -- | -- |
| 0.82 | 11.5 | 6.0 | 3.7 | -- | -- | -- | -- | -- | -- |
| 1.0 | 11.5 | 6.5 | 4.2 | -- | -- | -- | -- | -- | -- |
| 1.2 | 11.5 | 7.5 | 4.2 | -- | -- | -- | -- | -- | -- |
| 1.5 | 11.5 | 8.2 | 4.7 | -- | -- | -- | -- | -- | -- |
| 1.8 | 11.5 | 8.7 | 5.2 | -- | -- | -- | -- | -- | -- |
| 2.2 | 11.5 | 9.5 | 5.7 | -- | -- | -- | -- | -- | -- |


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# CDFA

P=15

| (μF) | 100VDC(63VAC) | | | 250VDC(160VAC) | | | 400VDC(200VAC) | | | 630VDC(400VAC) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W max | H max | T max | W max | H max | T max | W max | H max | T max | W max | H max | T max |
| 0.047 | -- | -- | -- | -- | -- | -- | 16.5 | 4.1 | 2.4 | -- | -- | -- |
| 0.056 | -- | -- | -- | -- | -- | -- | 16.5 | 4.0 | 2.7 | -- | -- | -- |
| 0.068 | -- | -- | -- | -- | -- | -- | 16.5 | 4.3 | 2.9 | -- | -- | -- |
| 0.082 | -- | -- | -- | -- | -- | -- | 16.5 | 4.5 | 3.2 | -- | -- | -- |
| 0.10 | -- | -- | -- | -- | -- | -- | 16.5 | 5.5 | 3.2 | 16.5 | 8.7 | 5.2 |
| 0.12 | -- | -- | -- | -- | -- | -- | 16.5 | 5.3 | 3.7 | 16.5 | 9.1 | 5.7 |
| 0.15 | -- | -- | -- | -- | -- | -- | 16.5 | 6.2 | 3.9 | 16.5 | 10.3 | 6.2 |
| 0.18 | -- | -- | -- | -- | -- | -- | 16.5 | 6.7 | 4.2 | 16.5 | 10.3 | 7.2 |
| 0.22 | -- | -- | -- | 16.5 | 4.6 | 3.2 | 16.5 | 7.1 | 4.7 | 16.5 | 11.7 | 7.7 |
| 0.27 | -- | -- | -- | 16.5 | 5.6 | 3.2 | 16.5 | 7.6 | 5.2 | 16.5 | 13.4 | 8.2 |
| 0.33 | -- | -- | -- | 16.5 | 5.6 | 3.7 | 16.5 | 8.0 | 5.9 | 16.5 | 13.5 | 9.7 |
| 0.39 | -- | -- | -- | 16.5 | 6.6 | 3.7 | 16.5 | 8.9 | 6.2 | 16.5 | 14.3 | 10.7 |
| 0.47 | -- | -- | -- | 16.5 | 6.7 | 4.2 | 16.5 | 9.3 | 7.0 | 16.5 | 15.6 | 11.7 |
| 0.56 | -- | -- | -- | 16.5 | 6.8 | 4.7 | 16.5 | 9.9 | 7.7 | -- | -- | -- |
| 0.68 | -- | -- | -- | 16.5 | 7.3 | 5.5 | 16.5 | 11.2 | 8.7 | -- | -- | -- |
| 0.82 | -- | -- | -- | 16.5 | 8.8 | 5.2 | 16.5 | 11.8 | 9.2 | -- | -- | -- |
| 1.0 | 16.5 | 6.1 | 3.2 | 16.5 | 9.0 | 6.0 | 16.5 | 12.8 | 10.2 | -- | -- | -- |
| 1.2 | 16.5 | 5.9 | 3.7 | 16.5 | 9.5 | 6.7 | -- | -- | -- | -- | -- | -- |
| 1.5 | 16.5 | 6.6 | 4.0 | 16.5 | 10.9 | 7.2 | -- | -- | -- | -- | -- | -- |
| 1.8 | 16.5 | 7.5 | 4.2 | 16.5 | 12.1 | 7.7 | -- | -- | -- | -- | -- | -- |
| 2.2 | 16.5 | 7.5 | 4.9 | 16.5 | 12.0 | 9.2 | -- | -- | -- | -- | -- | -- |
| 2.7 | 16.5 | 8.5 | 5.2 | 16.5 | 13.2 | 10.2 | -- | -- | -- | -- | -- | -- |
| 3.3 | 16.5 | 8.7 | 6.0 | 16.5 | 14.5 | 11.2 | -- | -- | -- | -- | -- | -- |
| 3.9 | 16.5 | 9.9 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 4.7 | 16.5 | 10.0 | 7.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 5.6 | 16.5 | 11.0 | 7.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 6.8 | 16.5 | 11.6 | 8.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 8.2 | 16.5 | 12.4 | 9.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 10 | 16.5 | 13.5 | 10.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- |

# SMD METALLIZED PEN FILM CAPACITOR

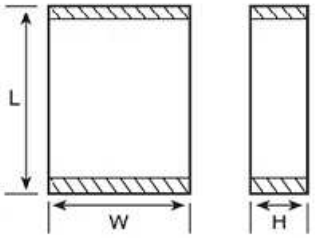
# CDGA

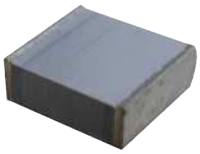
## FEATURES

- Use non over case stacked technic. Small size.
- Stable performance. Good temperature and voltage characteristic.Time reliability and showerproof.
- High reliability
- Non-piezoelectric effect, non-polar,non-nonlinear distortion
- Low ESR, Low Noise Level
- Strong ability of anti-Pulse

## USE

- Telecommunications, base stations,distributor
- Automotive (engine control systems,
- security systems, car radios, navigation
- systems, air–conditioning)
- Lighting (electronic ballast)
- DC/DC switch
- Electrical appliance (LCD,PDP TV)



## DIMENSIONS

(mm)

| Size Code | 1206 | 1210 | 1812 | 2220 | 2824 | 4030 | 5040 | 6054 |
|---|---|---|---|---|---|---|---|---|
| L | 3.2 ± 0.2 | 3.2 ± 0.2 | 4.5 ± 0.5 | 5.7 ± 0.5 | 7.1 ± 0.5 | 10.2 ± 0.6 | 12.7 ± 0.6 | 15.2 ± 0.6 |
| W | 1.6 ± 0.2 | 2.5 ± 0.2 | 3.2 ± 0.5 | 5.0 ± 0.5 | 6.1 ± 0.5 | 7.6 ± 0.8 | 10.2 ± 0.8 | 13.7 ± 0.8 |
| H | ± 0.2 | | | | ± 0.4 | | | |

## SPECIFICATIONS

| | |
|---|---|
| Standard | IEC60384–19 |
| Enviroment | 55/125/56 |
| Rated temperature | 105℃ |
| Temperature | 55℃～125℃ ( +105℃ to + 125℃:decreasing factor 1.25% per℃ for $V_R$(DC) |
| Rated Voltage | 50/63V、100V、250V、400V、630V |
| Capacitance | 0.001 μ F ~ 12 μ F |
| Tolerance | ± 5%(J), ± 10%(K), ± 20%(M) |
| Voltage | 1.40$U_R$(5s) |
| DF | ≤0.008(1KHz) |
| InsulationResistance | ≥1000MΩ, $C_R$ 0.33uF $U_R$＜100 charging voltage 10V |
| | ≥400$_S$, $C_R$＞0.33uF $U_R$≥100 charging voltage 100V(20℃ 1mini) |
| Max. speed of pulse up. | 100 |
| Solder | resolder |

## PATTREN |

| Cap (μF) | 50 1H / 63VDC 1J | | | 100VDC 2A | | | 250VDC 2E | | | 400VDC 2G | | | 630VDC 2J | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size | .H | Tape Code | Size | .H | Tape Code | Size | .H | Tape Code | Size | .H | Tape Code | Size | .H | Tape Code |
| 0.001 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0012 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0015 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0018 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0022 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0027 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0033 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0039 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0047 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0056 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0068 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a |
| 0.0082 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.8 | a |
| 0.010 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 2.0 | a | 2220 | 2.0 | a |
| 0.012 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 2.0 | b | 2220 | 2.4 | b |
| 0.015 | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | a | 1812 | 1.4 | b | 2220 | 3.6 | c |
| 0.018 | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a | 1812 | 1.4 | a | 2220 | 4.0 | c |
| 0.022 | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.8 | a | 2220 | 2.0 | a | 2824 | 2.8 | a |
| 0.027 | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 2.0 | a | 2220 | 2.4 | a | 2824 | 3.2 | a |
| 0.033 | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.4 | a | 2220 | 2.8 | a | 2824 | 4.0 | b |
| 0.039 | 1812 | 1.8 | b | 1812 | 1.8 | b | 2220 | 1.4 | a | 2220 | 3.2 | b | 2824 | 4.8 | c |
| 0.047 | 1812 | 2.0 | b | 1812 | 2.0 | b | 2220 | 1.8 | a | 2220 | 3.6 | b | 4030 | 2.8 | a |
| 0.056 | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 1.8 | a | 2824 | 2.8 | c | 4030 | 3.6 | b |

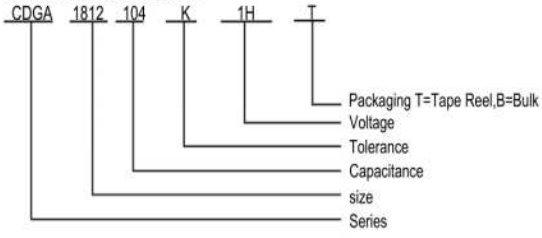

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| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.068 | 1812 | 1.4 | a | 1812 | 1.4 | a | 2220 | 2.4 | a | 2824 | 3.2 | a | 4030 | 4.0 | b |
| 0.082 | 1812 | 1.4 | a | 1812 | 1.4 | a | 2824 | 1.8 | a | 2824 | 4.0 | b | 4030 | 4.8 | c |
| 0.10 | 1812 | 2.0 | b | 1812 | 1.4 | b | 2824 | 2.0 | a | 2824 | 4.8 | c | 5040 | 3.6 | b |
| 0.12 | 1812 | 1.4 | a | 2220 | 2.0 | a | 2824 | 2.4 | a | 4030 | 2.8 | a | 5040 | 4.0 | b |
| 0.15 | 1812 | 1.4 | a | 2220 | 1.4 | a | 2824 | 3.2 | a | 4030 | 3.6 | b | 5040 | 5.2 | c |
| 0.18 | 1812 | 2.0 | b | 2220 | 1.4 | a | 4030 | 2.0 | a | 4030 | 4.4 | c | 6054 | 3.6 | a |
| 0.22 | 1812 | 2.0 | b | 2220 | 1.4 | a | 4030 | 2.4 | a | 5040 | 3.2 | a | 6054 | 4.4 | b |
| 0.27 | 2220 | 1.4 | a | 2220 | 1.8 | a | 4030 | 2.8 | a | 5040 | 4.0 | b | 6054 | 5.2 | c |
| 0.33 | 2220 | 1.4 | a | 2220 | 2.4 | b | 4030 | 3.6 | b | 5040 | 4.8 | c | | | |
| 0.39 | 2220 | 1.8 | a | 2824 | 2.8 | a | 5040 | | | | 4.6 | a | | | |
| 0.47 | 2220 | 1.8 | a | 2824 | 2.0 | a | 5040 | 2.8 | a | 6054 | 4.0 | b | | | |
| 0.56 | 2220 | 2.4 | a | 2824 | 2.4 | a | 5040 | 3.6 | b | 6054 | 4.8 | c | | | |
| 0.68 | 2220 | 2.8 | b | 2824 | 2.8 | a | 6054 | 2.4 | a | | | | | | |
| 0.82 | 2824 | 2.0 | a | 4030 | 3.6 | a | 6054 | 3.2 | a | | | | | | |
| 1.0 | 2824 | 2.4 | a | 4030 | 2.4 | a | 6054 | 3.6 | a | | | | | | |
| 1.2 | 2824 | 3.2 | a | 5040 | 2.8 | a | | | | | | | | | |
| 1.5 | 5040 | 2.4 | a | 5040 | 2.4 | a | | | | | | | | | |
| 1.8 | 5040 | 2.8 | a | 5040 | 2.4 | a | | | | | | | | | |
| 2.2 | 5040 | 3.2 | a | 5040 | 3.2 | a | | | | | | | | | |
| 2.7 | 5040 | 4.0 | b | 6054 | 2.8 | a | | | | | | | | | |
| 3.3 | 6054 | 3.2 | a | 6054 | 3.2 | a | | | | | | | | | |
| 3.9 | 6054 | 3.6 | a | 6054 | 3.6 | a | | | | | | | | | |
| 4.7 | 6054 | 4.4 | b | 6054 | 4.4 | b | | | | | | | | | |

## PATTREN ||

| Cap（μF） | 50 1H/63VDC 1J | | | 100VDC 2A | | | 250VDC 2E | | |
|---|---|---|---|---|---|---|---|---|---|
| | Size | .H | Tape Code | Size | .H | Tape Code | Size | .H | Tape Code |
| 0.001 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.1 | a |
| 0.0012 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.1 | a |
| 0.0015 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.1 | a |
| 0.0018 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.1 | a |
| 0.0022 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.1 | a |
| 0.0027 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.1 | a |
| 0.0033 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.1 | a |
| 0.0039 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.5 | b |
| 0.0047 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1206 | 1.5 | b |
| 0.0056 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1210 | 1.5 | b |
| 0.0068 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1210 | 1.5 | b |
| 0.0082 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1210 | 1.5 | b |
| 0.010 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1210 | 2.1 | c |
| 0.012 | 1206 | 1.1 | a | 1206 | 1.1 | a | 1210 | 2.2 | c |
| 0.015 | 1206 | 1.1 | a | 1206 | 1.1 | a | * | * | * |
| 0.018 | 1206 | 1.1 | a | 1210 | 1.1 | a | 1812 | 1.4 | a |
| 0.022 | 1206 | 1.1 | a | 1210 | 1.1 | a | 1812 | 1.8 | b |
| 0.027 | 1206 | 1.1 | a | 1210 | 1.5 | b | 1812 | 2.0 | b |
| 0.033 | 1206 | 1.5 | b | 1210 | 1.5 | b | 1812 | 2.4 | b |
| 0.039 | 1210 | 2.1 | c | 1210 | 2.1 | c | * | * | * |
| 0.047 | 1210 | 2.1 | c | 1210 | 2.1 | c | * | * | * |
| 0.056 | 1210 | 1.5 | b | * | * | * | * | * | * |
| 0.068 | 1210 | 1.5 | b | * | * | * | * | * | * |
| 0.082 | 1210 | 2.1 | c | * | * | * | 2220 | 2.8 | b |
| 0.10 | 1210 | 2.1 | c | * | * | * | 2220 | 3.2 | b |
| 0.12 | * | * | * | 1812 | 2.4 | b | 2220 | 4.0 | c |
| 0.15 | * | * | * | * | * | * | * | * | * |
| 0.18 | * | * | * | * | * | * | 2824 | 3.6 | b |
| 0.22 | * | * | * | * | * | * | 2824 | 4.6 | b |
| 0.27 | * | * | * | * | * | * | 2824 | 5.2 | c |
| 0.33 | * | * | * | * | * | * | * | * | * |
| 0.39 | * | * | * | 2220 | 3.2 | b | 4030 | 4.0 | b |
| 0.47 | * | * | * | 2220 | 4.0 | c | 4030 | 4.8 | c |
| 0.56 | * | * | * | 2220 | 4.4 | c | 4030 | 5.6 | c |
| 0.68 | * | * | * | * | * | * | 5040 | 4.0 | b |
| 0.82 | 2220 | 3.2 | b | 2824 | 4.0 | c | 5040 | 4.8 | c |
| 1.0 | 2220 | 4.0 | c | 2824 | 5.2 | c | * | * | * |
| 1.2 | * | * | * | 4030 | 3.2 | a | 6054 | 4.4 | b |
| 1.5 | 2824 | 3.6 | b | 4030 | 4.0 | b | 6054 | 5.2 | c |
| 1.8 | 2824 | 4.4 | c | 4030 | 4.8 | c | | | |
| 2.2 | 2824 | 5.2 | c | 4030 | 5.6 | c | | | |
| 2.7 | 4030 | 3.6 | b | 5040 | 4.0 | b | | | |
| 3.3 | 4030 | 4.4 | c | 5040 | 5.0 | c | | | |
| 3.9 | 4030 | 4.8 | c | 5040 | 5.6 | c | | | |
| 4.7 | 5040 | 3.6 | b | * | * | * | | | |
| 5.6 | 5040 | 4.0 | b | 6054 | 5.0 | c | | | |
| 6.8 | 5040 | 5.0 | c | | | | | | |
| 8.2 | 6054 | 5.8 | a | | | | | | |
| 10.0 | 6054 | 4.4 | b | | | | | | |

**PART NUMBER EXAMPLE**



# SMD METALLIZED PPS FILM CAPACITOR

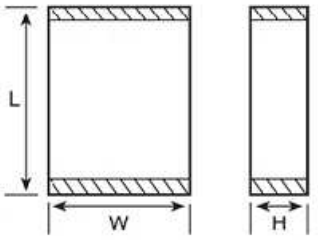
# CDGB

## FEATURES

- Use non over case stacked technic. Small size.
- Stable performance. Good temperature and voltage characteristic.Time reliability and showerproof.
- High reliability
- Non-piezoelectric effect, non-polar,non-nonlinear distortion
- Low ESR, Low Noise Level
- Strong ability of anti-Pulse

## USE

- Telecommunications, base stations,distributor
- Automotive (engine control systems,
- security systems, car radios, navigation
- systems, air–conditioning)
- Lighting (electronic ballast)
- DC/DC switch
- Electrical appliance (LCD,PDP TV)






## DIMENSIONS

| Size Code | 1206 | 1210 |
|---|---|---|
| L | 3.2±0.2 | 3.2±0.2 |
| W | 1.6±0.2 | 2.5±0.2 |

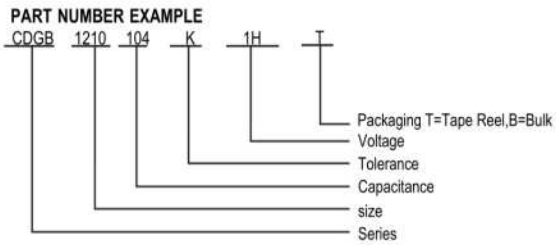
## SPECIFICATIONS

| | | |
|---|---|---|
| Standard | IEC60384–20 | |
| Enviroment | 55/125/56 | |
| Rated temperature | 105℃ | |
| temperature | 55℃ ~ 125℃ ( +105℃ to + 125℃:decreasing factor 1.25% per℃ for $V_R$(DC) | |
| Rated Voltage | 16V,50V | |
| capacitance | 0.0033 μ F ~ 0.1 μ F | |
| Tolerance | G± 2%,±5%(J), ±10%(K), | |
| Voltage | 1.50$U_R$(5s) | |
| DF | 0.004(1KHz) | |
| InsulationResistance | ⩾3000M Ω | $U_R$=16V charging voltage 10V |
| | | $U_R$=50V charging voltage 50V(20℃ 1mini) |
| Welding process | Reflow soldering recommended | |

| Cap （μF） | 50 1H/63VDC 1J | | |
|---|---|---|---|
| | Size | .H | Tape Code |
| 0.012 | 1206 | 1.3 | b |
| 0.015 | 1206 | 1.5 | b |
| 0.018 | 1206 | 1.7 | c |
| 0.022 | 1206 | 1.9 | c |
| 0.027 | 1206 | 1.2 | a |
| 0.033 | 1206 | 1.3 | b |
| 0.039 | 1206 | 1.5 | b |
| 0.047 | 1206 | 1.6 | c |
| 0.056 | 1210 | 1.4 | a |
| 0.068 | 1210 | 1.5 | b |
| 0.082 | 1210 | 1.7 | b |
| 0.10 | 1210 | 2.0 | b |

| Cap （μF） | 50 1H/63VDC 1J | | |
|---|---|---|---|
| | Size | .H | Tape Code |
| 0.0033 | 1206 | 1.4 | b |
| 0.0039 | 1206 | 1.5 | c |
| 0.0047 | 1206 | 1.7 | c |
| 0.0056 | 1206 | 1.9 | c |
| 0.0082 | 1206 | 1.1 | a |
| 0.010 | 1206 | 1.2 | a |
| 0.012 | 1206 | 1.3 | b |
| 0.015 | 1210 | 1.2 | a |
| 0.018 | 1210 | 1.3 | a |
| 0.022 | 1210 | 1.5 | a |
| 0.027 | 1210 | 1.6 | b |
| 0.033 | 1210 | 1.9 | b |
| 0.039 | 1210 | 2.1 | c |
| 0.047 | 1210 | 2.4 | c |

**PART NUMBER EXAMPLE**






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# CDDA:

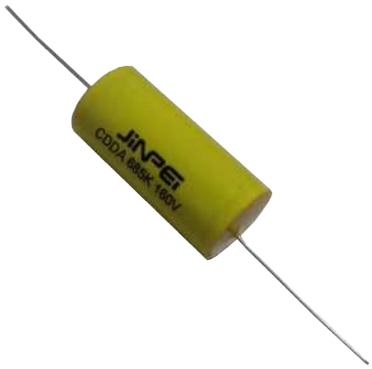
CYCLOIDAL

## FEATURES:

- CDDA is constructed with metallized polyester film as medium and electrode, wrapped and sealed with flame-retardant plastic and epoxy resin. With high reliability, high temperature-resistance, small volume, large capacity and good self-healing property.
- Mainly used in instruments and the DC & AC circuit of the household equipment and the fractional frequency circuit of acoustics system.

## SPECIFICATIONS

| | | | |
|---|---|---|---|
| OPERATING TEMPERATURE | -40℃ TO + 105℃ | | |
| CAPACITANCE RANGE | 0.033μF ~68μF | | |
| CAPACITANCE TOLERANCE | J (±5%), K (±10%) | | |
| RATED VOLTAGE | 100V, 250V, 400V, 630V(DC) | | |
| WITHSTAND VOLTAGE | 1.6$U_R$ 2s (1.5$U_R$5s) | | |
| DISSIPATION FACTOR | C<1μF | ≤0.013 | 10KHz |
| | 1μF<C≤10μF | ≤0.008 | 1KHz |
| | C>10μF | ≤0.010 | 1HKz |
| INSULATION RESISTANCE | C≤0.33μF | VR≤100V(10V) | ≥7500MΩ |
| | | VR>100V | ≥15000 MΩ |
| | C>0.33μF | VR≤100V(10V) | ≥2500S |
| | | VR>100V | ≥5000S |





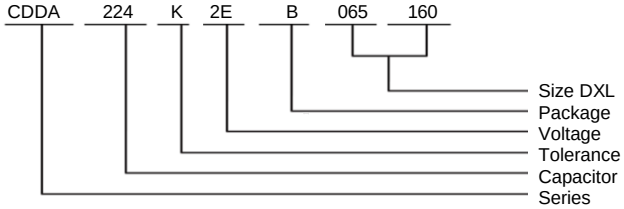





| CAP | | 100VDC\| 2A | | | 250VDC\| 2E | | | 400VDC\| 2G | | | 630VDC \| 2J | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | D | d | L | D | d | L | D | d | L | D | d |
| 333 | 0.033 | -- | -- | -- | -- | -- | -- | -- | -- | | 15.5 | 7.0 | 0.6 |
| 473 | 0.047 | -- | -- | -- | -- | -- | -- | 21.0 | 6.0 | 0.6 | 20.5 | 7.5 | 0.6 |
| 683 | 0.068 | -- | -- | -- | -- | -- | -- | 21.0 | 6.5 | 0.6 | 20.5 | 7.5 | 0.8 |
| 104 | 0.1 | 16.0 | 6.5 | 0.6 | 16.0 | 6.5 | 0.6 | 21.0 | 7.5 | 0.6 | 21.0 | 8.0 | 0.6 |
| 224 | 0.22 | 16.0 | 6.5 | 0.6 | 16.0 | 6.5 | 0.6 | 21.0 | 9.5 | 0.8 | 26.0 | 11.5 | 0.8 |
| 334 | 0.33 | 16.0 | 8.0 | 0.6 | 21.0 | 7.5 | 0.6 | 21.0 | 9.5 | 0.8 | 26.0 | 9.5 | 0.8 |
| 474 | 0.47 | 21.0 | 7.0 | 0.6 | 21.0 | 8.5 | 0.8 | 26.0 | 9.0 | 0.8 | 31.0 | 14.0 | 0.8 |
| 684 | 0.68 | 21.0 | 7.5 | 0.6 | 21.0 | 10.0 | 0.8 | 26.0 | 10.5 | 0.8 | 32.0 | 11.5 | 0.8 |
| 105 | 1.0 | 21.0 | 9.0 | 0.8 | 26.0 | 10.0 | 0.8 | 31.0 | 14.0 | 0.8 | 32.0 | 14.0 | 0.8 |
| 225 | 2.2 | 26.0 | 11.0 | 0.8 | 31.0 | 12.0 | 0.8 | 37.5 | 14.5 | 0.8 | 37.5 | 17.5 | 0.8 |
| 335 | 3.3 | 26.0 | 14.0 | 0.8 | 31.0 | 14.5 | 0.8 | 37.5 | 17.5 | 0.8 | 47.5 | 18.5 | 0.8 |
| 475 | 4.7 | 31.0 | 13.5 | 0.8 | 31.0 | 17.5 | 0.8 | 37.5 | 20.0 | 1.0 | 47.5 | 22.0 | 1.0 |
| 565 | 5.6 | 31.0 | 15.0 | 0.8 | 31.0 | 19.5 | 0.8 | 47.0 | 17.0 | 0.8 | 57.5 | 21.0 | 1.0 |
| 685 | 6.8 | 31.0 | 16.0 | 0.8 | 46.0 | 16.0 | 0.8 | 57.5 | 18.5 | 0.8 | 57.5 | 23.0 | 1.0 |
| 825 | 8.2 | 31.0 | 17.5 | 0.8 | 46.0 | 17.5 | 0.8 | 57.5 | 20.0 | 1.0 | 57.5 | 25.0 | 1.0 |
| 106 | 10.0 | 31.0 | 19.0 | 0.8 | 46.0 | 19.5 | 0.8 | 57.5 | 22.5 | 1.0 | 57.5 | 27.5 | 1.0 |
| 156 | 15.0 | 46.0 | 18.0 | 0.8 | 46.0 | 24.0 | 1.0 | 57.5 | 26.5 | 1.0 | 67.5 | 30.0 | 1.0 |
| 226 | 22.0 | 46.0 | 22.0 | 1.0 | 46.0 | 29.0 | 1.0 | 57.5 | 31.5 | 1.0 | -- | -- | -- |
| 336 | 33.0 | 56.0 | 23.5 | 1.0 | 56.0 | 30.0 | 1.0 | -- | -- | -- | -- | -- | -- |
| 476 | 47.0 | 56.0 | 29.0 | 1.0 | 58.0 | 37.0 | 1.0 | -- | -- | -- | -- | -- | -- |
| 686 | 68.0 | 58.0 | 33.0 | 1.0 | 61.0 | 41.0 | 1.0 | -- | -- | -- | -- | -- | -- |

Note: Specification are subject to change without notice. For more detail and update, please visit our website.

## PART NUMBER EXAMPLE



# CDEA:

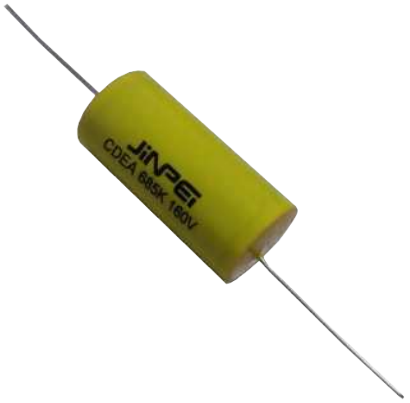
CYCLOIDAL

## FEATURES:

- CDEA is constructed with metallized polypropylene film as medium and electrode, wrapped and sealed with flame-retardant plastic and epoxy resin. With high reliability, high temperature-resistance, small volume, large capacity and good self-healing property.
- Mainly used in instruments and the DC & AC circuit of the household equipment and the fractional frequency circuit of acoustics system.

## SPECIFICATIONS

| | | | |
|---|---|---|---|
| OPERATING TEMPERATURE | -55℃ TO + 100℃ | | |
| CAPACITANCE RANGE | 0.047μF ~ 56μF | | |
| CAPACITANCE TOLERANCE | J (±5%), K (±10%) | | |
| RATED VOLTAGE | 250V, 400V, 630V, 1000V, 1250V (DC) | | |
| WITHSTAND VOLTAGE | $1.7U_R$ 2s ($1.5U_R$ 5s) | | |
| DISSIPATION FACTOR | C<0.1μF | ≤0.0015 | 10KHz |
| | 0.1μF<C≤1μF | ≤0.0020 | 10KHz |
| | 1μF<C≤4.7μF | ≤0.0030 | 10HKz |
| | C>4.7μF | ≤0.0015 | 1KHz |
| INSULATION RESISTANCE | C≤0.33μF | ≥50000MΩ | |
| | C>0.33μF | ≥15000S | |





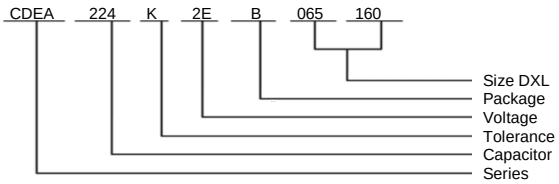





| CAP | | 250VDC 2E | | | 400VDC 2G | | | 630VDC 2J | | | 1000VDC 3A | | | 1250VDC 3Q | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | D | d | L | D | d | L | D | d | L | D | d | L | D | d |
| 473 | 0.047 | 16.0 | 7.0 | 0.6 | 16.0 | 7.0 | 0.6 | 16.0 | 8.0 | 0.8 | 21.0 | 9.0 | 0.8 | 26.0 | 9.0 | 0.8 |
| 683 | 0.068 | 16.0 | 7.5 | 0.6 | 21.0 | 10.5 | 0.8 | 16.0 | 9.0 | 0.8 | 26.0 | 9.0 | 0.8 | 26.0 | 10.5 | 0.8 |
| 104 | 0.1 | 16.0 | 6.0 | 0.6 | 16.0 | 7.0 | 0.8 | 26.0 | 10.0 | 0.8 | 26.0 | 10.0 | 0.8 | 32.0 | 11.5 | 0.8 |
| 224 | 0.22 | 16.0 | 8.0 | 0.6 | 20.5 | 9.0 | 0.8 | 21.0 | 12.0 | 0.8 | 26.0 | 14.0 | 0.8 | 32.0 | 15.5 | 0.8 |
| 334 | 0.33 | 21.0 | 7.5 | 0.6 | 21.0 | 9.5 | 0.8 | 26.0 | 12.0 | 0.8 | 32.0 | 15.0 | 0.8 | 37.0 | 16.5 | 0.8 |
| 474 | 0.47 | 29.0 | 8.5 | 0.8 | 21.0 | 9.5 | 0.8 | 26.0 | 13.5 | 0.8 | 37.0 | 16.0 | 0.8 | 37.0 | 19.0 | 0.8 |
| 684 | 0.68 | 21.0 | 10.0 | 0.8 | 26.0 | 10.0 | 0.8 | 26.0 | 16.0 | 0.8 | 37.0 | 18.5 | 0.8 | 48.0 | 20.0 | 1.0 |
| 105 | 1.0 | 21.0 | 12.0 | 0.8 | 26.0 | 12.0 | 0.8 | 32.0 | 16.5 | 0.8 | 48.0 | 19.0 | 0.8 | 48.0 | 23.5 | 1.0 |
| 225 | 2.2 | 26.0 | 14.5 | 0.8 | 32.0 | 14.5 | 0.8 | 37.0 | 21.5 | 1.0 | 58.0 | 24.5 | 1.0 | 58.0 | 30.0 | 1.0 |
| 335 | 3.3 | 26.0 | 17.0 | 0.8 | 32.0 | 17.5 | 0.8 | 37.0 | 26.0 | 1.0 | 58.0 | 29.0 | 1.0 | 68.0 | 33.5 | 1.0 |
| 405 | 4.0 | 26.0 | 18.5 | 0.8 | 37.0 | 17.0 | 0.8 | 48.0 | 24.5 | 1.0 | 68.0 | 29.0 | 1.0 | -- | -- | -- |
| 475 | 4.7 | 32.0 | 17.5 | 0.8 | 37.0 | 18.5 | 0.8 | 48.0 | 26.5 | 1.0 | 68.0 | 31.5 | 1.0 | -- | -- | -- |
| 565 | 5.6 | 37.0 | 17.0 | 0.8 | 37.0 | 20.0 | 1.0 | 58.0 | 25.5 | 1.0 | 68.0 | 34.5 | 1.0 | -- | -- | -- |
| 685 | 6.8 | 37.0 | 18.5 | 0.8 | 48.0 | 19.0 | 0.8 | 58.0 | 28.0 | 1.0 | -- | -- | -- | -- | -- | -- |
| 825 | 8.2 | 48.0 | 17.5 | 0.8 | 48.0 | 20.5 | 1.0 | 68.0 | 27.5 | 1.0 | -- | -- | -- | -- | -- | -- |
| 106 | 10.0 | 48.0 | 19.0 | 0.8 | 48.0 | 23.0 | 1.0 | 68.0 | 30.5 | 1.0 | -- | -- | -- | -- | -- | -- |
| 156 | 15.0 | 58.0 | 20.5 | 1.0 | 58.0 | 24.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 226 | 22.0 | 58.0 | 25.0 | 1.0 | 58.0 | 29.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 306 | 30.0 | 58.0 | 29.0 | 1.0 | 68.0 | 30.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 336 | 33.0 | 68.0 | 27.5 | 1.0 | 68.0 | 32.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 396 | 39.0 | 68.0 | 29.5 | 1.0 | 68.0 | 35.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 476 | 47.0 | 68.0 | 33.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 566 | 56.0 | 68.0 | 35.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Note: Specification are subject to change without notice. For more detail and update, please visit our website.

## PART NUMBER EXAMPLE



# CDDB:

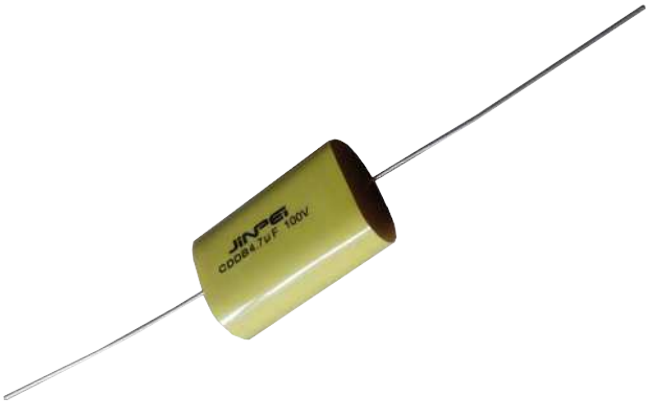
FLAT OVAL

## FEATURES:

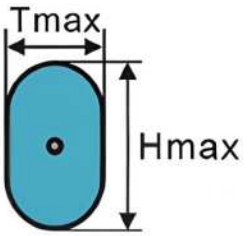
- CDDB is constructed with metallized polyester film as medium and electrode, wrapped and sealed with flame-resistance plastic and epoxy resin, with high reliability,high-temperature-resistance, small volume, large capacity and good self-healing property.
- Mainly used in instruments and the DC & AC circuit of the household equipment and the fractional frequency circuit of acoustics system.

## SPECIFICATIONS

| | |
|---|---|
| OPERATING TEMPERATURE | -40℃ TO + 105℃ |
| CAPACITANCE RANGE | 0.01μF ~ 68μF |
| CAPACITANCE TOLERANCE | J (±5%), K (±10%) |
| RATED VOLTAGE | 100V, 250V, 400V, 630V(DC) |
| WITHSTAND VOLTAGE | 1.6$U_R$ 2s (1.5$U_R$5s) |
| DISSIPATION FACTOR | C≤ 1μF ≤0.013 10KHz |
| | 1μF<C≤10μF ≤0.008 1KHz |
| | C>10μF ≤0.010 1HKz |
| INSULATION RESISTANCE | C≤0.33μF VR≤100V(10V)≥7500MΩ |
| | VR>100V ≥15000 MΩ |
| | C>0.33μF VR≤100V(10V) ≥2500S |
| | VR>100V ≥5000S |



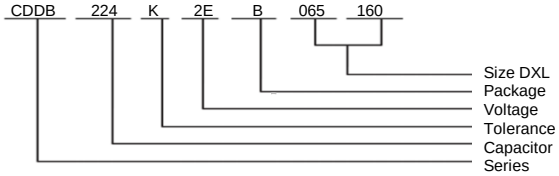



| CAP | | 100VDC 2A | | | | 250VDC 2E | | | | 400VDC 2G | | | | 630VDC 2J | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | H | d | L | T | H | d | L | T | H | d | L | T | H | d |
| 103 | 0.01 | 15.0 | 5.0 | 8.0 | 0.6 | 15.0 | 5.0 | 8.0 | 0.6 | 15.0 | 5.0 | 8.0 | 0.6 | 15.0 | 5.0 | 8.0 | 0.6 |
| 223 | 0.022 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 |
| 333 | 0.033 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 | 20.0 | 5.0 | 9.0 | 0.6 |
| 473 | 0.047 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 | 20.0 | 5.0 | 9.0 | 0.6 |
| 683 | 0.068 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 | 20.0 | 5.0 | 8.5 | 0.6 | 20.0 | 6.0 | 11.0 | 0.6 |
| 104 | 0.1 | 15.0 | 5.0 | 8.5 | 0.6 | 15.0 | 5.0 | 8.5 | 0.6 | 20.0 | 5.0 | 8.5 | 0.6 | 15.5 | 7.0 | 10.5 | 0.6 |
| 224 | 0.22 | 15.0 | 5.0 | 8.5 | 0.6 | 20.0 | 5.0 | 9.0 | 0.6 | 15.5 | 7.5 | 11.5 | 0.6 | 20.5 | 7.5 | 11.5 | 0.6 |
| 334 | 0.33 | 15.0 | 5.0 | 9.0 | 0.6 | 15.5 | 7.0 | 10.5 | 0.6 | 20.5 | 6.5 | 11.5 | 0.6 | 20.5 | 8.0 | 14.5 | 0.6 |
| 474 | 0.47 | 15.5 | 6.0 | 10.0 | 0.6 | 15.5 | 8.5 | 12.5 | 0.8 | 26.0 | 6.5 | 11.0 | 0.6 | 26.0 | 7.5 | 15.5 | 0.6 |
| 684 | 0.68 | 20.0 | 5.0 | 9.0 | 0.6 | 20.5 | 7.5 | 11.5 | 0.6 | 26.0 | 7.5 | 12.5 | 0.6 | 32.0 | 8.0 | 16.0 | 0.6 |
| 105 | 1.0 | 20.0 | 7.0 | 11.0 | 0.6 | 25.0 | 7.0 | 12.0 | 0.6 | 32.0 | 7.5 | 14.0 | 0.6 | 32.0 | 9.5 | 18.5 | 0.8 |
| 225 | 2.2 | 25.0 | 8.0 | 12.0 | 0.6 | 26.0 | 11.5 | 15.5 | 0.8 | 37.5 | 10.5 | 17.0 | 0.8 | 37.5 | 13.5 | 21.5 | 1.0 |
| 335 | 3.3 | 25.0 | 9.5 | 16.0 | 0.8 | 26.0 | 14.0 | 18.5 | 0.8 | 37.5 | 13.0 | 20.5 | 1.0 | 47.5 | 17.0 | 26.5 | 1.0 |
| 405 | 4.0 | 31.0 | 8.0 | 15.0 | 0.6 | 32.0 | 13.5 | 17.5 | 0.8 | 37.5 | 14.0 | 22.0 | 1.0 | 47.5 | 15.5 | 23.5 | 1.0 |
| 475 | 4.7 | 31.0 | 9.0 | 15.5 | 0.8 | 32.0 | 13.5 | 19.5 | 0.8 | 37.5 | 15.0 | 24.5 | 1.0 | 47.5 | 17.5 | 25.0 | 1.0 |
| 565 | 5.6 | 31.0 | 10.0 | 17.0 | 0.8 | 32.0 | 15.0 | 21.0 | 1.0 | 47.5 | 13.5 | 23.0 | 1.0 | 57.5 | 16.5 | 24.5 | 1.0 |
| 685 | 6.8 | 31.0 | 11.0 | 18.5 | 0.8 | 37.5 | 14.0 | 22.0 | 1.0 | 57.5 | 13.0 | 22.5 | 1.0 | 57.5 | 18.5 | 26.5 | 1.0 |
| 825 | 8.2 | 31.0 | 12.5 | 19.0 | 0.8 | 37.5 | 15.5 | 23.5 | 1.0 | 57.5 | 14.5 | 24.0 | 1.0 | 57.5 | 20.5 | 28.5 | 1.0 |
| 106 | 10.0 | 31.0 | 14.5 | 21.0 | 1.0 | 37.5 | 16.5 | 26.5 | 1.0 | 57.5 | 16.0 | 27.0 | 1.0 | 57.5 | 22.7 | 30.5 | 1.0 |
| 156 | 15.0 | 46.0 | 15.0 | 22.0 | 1.0 | 47.5 | 17.5 | 27.0 | 1.0 | 57.5 | 20.0 | 31.0 | 1.0 | 57.5 | 27.0 | 37.0 | 1.0 |
| 226 | 22.0 | 46.0 | 17.5 | 25.0 | 1.0 | 47.5 | 22.0 | 33.0 | 1.0 | 67.5 | 22.0 | 33.0 | 1.0 | -- | -- | -- | -- |
| 336 | 33.0 | 56.0 | 19.0 | 27.0 | 1.0 | 57.5 | 23.5 | 34.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| 476 | 47.0 | 56.0 | 24.5 | 31.0 | 1.0 | 56.0 | 32.0 | 39.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| 686 | 68.0 | 56.0 | 29.0 | 35.0 | 1.0 | 61.0 | 37.5 | 45.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |

Note: Specification are subject to change without notice. For more detail and update, please visit our website.

## PART NUMBER EXAMPLE



FLAT OVAL

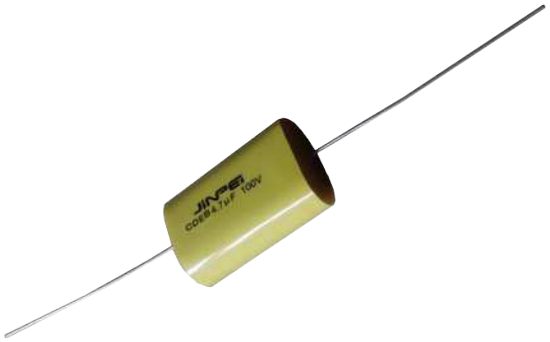
# CDEB:

## FEATURES:

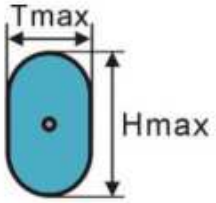
- CDEB is constructed with metallized polypropylene film as medium and electrode, wrapped and sealed with flame-resistance plastic and epoxy resin, with high reliability, high-temperature-resistance, small volume, large capacity and good self-healing property.
- Mainly used in instruments and the DC & AC circuit of the household equipment and the fractional frequency circuit of acoustics system.

## SPECIFICATIONS

| | | | |
|---|---|---|---|
| OPERATING TEMPERATURE | -55℃ TO + 100℃ | | |
| CAPACITANCE RANGE | 0.022μF ~ 47μF | | |
| CAPACITANCE TOLERANCE | J (±5%), K (±10%) | | |
| RATED VOLTAGE | 250V, 400V, 630V, 1000V, 1250V (DC) | | |
| WITHSTAND VOLTAGE | $1.7U_R$ 2s ($1.5U_R$ 5s) | | |
| DISSIPATION FACTOR | C≤ 0.1μF | ≤0.0015 | 10KHz |
| | 0.1μF<C≤1μF | ≤0.0020 | 10KHz |
| | 1μF<C≤4.7μF | ≤0.0030 | 10KHz |
| | C>4.7μF | ≤0.0015 | 1KHz |
| INSULATION RESISTANCE | C≤0.33μF | ≥50000MΩ | |
| | C>0.33μF | ≥15000S | |



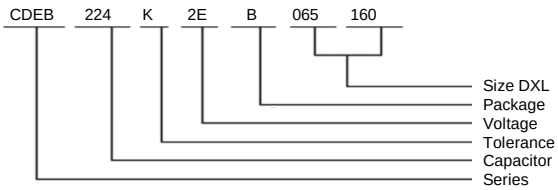



| CAP | | 250VDC 2E | | | | 400VDC 2G | | | | 630VDC 2J | | | | 1000VDC 3A | | | | 1250VDC 3Q | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | H | d | L | T | H | d | L | T | H | d | L | T | H | d | L | T | H | d |
| 223 | 0.022 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 16.0 | 7.5 | 10.5 | 0.6 |
| 333 | 0.033 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 16.0 | 7.0 | 10 | 0.6 | 21.0 | 6.5 | 9.5 | 0.6 |
| 473 | 0.047 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 16.0 | 8.5 | 12 | 0.8 | 21.0 | 7.5 | 12 | 0.6 |
| 683 | 0.068 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 21.0 | 7.0 | 11.5 | 0.6 | 26 | 7.0 | 13 | 0.6 |
| 104 | 0.1 | 16.0 | 6.0 | 9.0 | 0.6 | 21.0 | 7.0 | 10.5 | 0.6 | 26.0 | 6.5 | 13 | 0.6 | 26 | 7.0 | 11.5 | 0.6 | 26 | 8.5 | 14.5 | 0.8 |
| 224 | 0.22 | 21.0 | 5.0 | 9.0 | 0.6 | 16.0 | 6.5 | 10.5 | 0.6 | 16.0 | 12.0 | 16 | 0.8 | 26 | 10.0 | 16 | 0.8 | 32 | 10.5 | 18 | 0.8 |
| 334 | 0.33 | 16.0 | 7.0 | 10.5 | 0.6 | 16.0 | 9.0 | 13.0 | 0.6 | 21.0 | 10.5 | 15 | 0.8 | 32 | 10.0 | 17.5 | 0.8 | 37.5 | 11.5 | 20 | 0.8 |
| 474 | 0.47 | 16.0 | 8.5 | 12.5 | 0.8 | 21.0 | 9.0 | 14.0 | 0.6 | 21.0 | 13.0 | 17 | 0.8 | 37.5 | 10.5 | 19.5 | 0.8 | 47.5 | 10.5 | 21 | 0.8 |
| 684 | 0.68 | 21.0 | 6.8 | 12.0 | 0.6 | 21.0 | 10.0 | 14.0 | 0.8 | 26 | 12.0 | 18 | 0.8 | 47.5 | 10.0 | 20.5 | 0.8 | 57.5 | 11.5 | 23.5 | 0.8 |
| 105 | 1.0 | 21.0 | 8.5 | 13.5 | 0.8 | 26 | 9.0 | 13.0 | 0.8 | 26 | 15.0 | 20.5 | 1.0 | 57.5 | 10.5 | 23 | 0.8 | 67.5 | 12.5 | 25 | 1.0 |
| 225 | 2.2 | 31 | 11.0 | 17.5 | 0.8 | 32 | 11.5 | 16.0 | 0.8 | 32 | 18.5 | 26.5 | 1.0 | 67.5 | 15.5 | 27.5 | 1.0 | 67.5 | 20.0 | 32.5 | 1.0 |
| 335 | 3.3 | 32 | 11.5 | 17.5 | 0.8 | 32 | 13.5 | 19.5 | 0.8 | 32 | 23.0 | 32.5 | 1.0 | 67.5 | 19.5 | 31.5 | 1.0 | 67.5 | 20.0 | 32.5 | 1.0 |
| 475 | 4.7 | 31 | 16.5 | 22.5 | 1.0 | 37.5 | 15.0 | 22.0 | 1.0 | 37.5 | 24.0 | 35 | 1.0 | 67.5 | 24.0 | 36.5 | 1.0 | -- | -- | -- | -- |
| 565 | 5.6 | 37.5 | 13.0 | 20.5 | 1.0 | 47.5 | 14.5 | 21.0 | 0.8 | 47.5 | 21.0 | 34 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| 685 | 6.8 | 47.5 | 11.0 | 20.5 | 0.8 | 47.5 | 15.0 | 23.0 | 1.0 | 57.5 | 20.5 | 33.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| 825 | 8.2 | 47.5 | 12.5 | 22.0 | 1.0 | 57.5 | 14.0 | 22.0 | 1.0 | 57.5 | 23.0 | 35.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| 106 | 10.0 | 47.5 | 15.0 | 23.5 | 1.0 | 57.5 | 14.5 | 24.5 | 1.0 | 67.5 | 23.0 | 35.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| 156 | 15.0 | 57.5 | 14.5 | 26.0 | 1.0 | 67.5 | 16.0 | 27.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 226 | 22.0 | 57.5 | 18.5 | 29.5 | 1.0 | 67.5 | 19.0 | 32.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 306 | 30.0 | 67.5 | 19.0 | 32.0 | 1.0 | 67.5 | 23.5 | 36.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 336 | 33.0 | 67.5 | 20.0 | 33.5 | 1.0 | 67.5 | 24.5 | 37.5 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 476 | 47.0 | 67.5 | 26.0 | 38.0 | 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Note: Specification are subject to change without notice. For more detail and update, please visit our website.

### PART NUMBER EXAMPLE






www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

## CFBA: ELECTRICALAPPARATUE USE METALLIZED FILM WITH PRECISELY QUALITY CONTROL |EQUATIVE CBB61




### FEATURES:

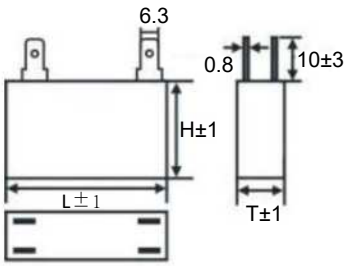
- High safety. High reliability
- High I.R. (insulation resistance) small size.
- Low D.F. (dissipation factor), lower temperature rise.
- Durability and characteristics of frequency, etc..

### SPECIFICATIONS

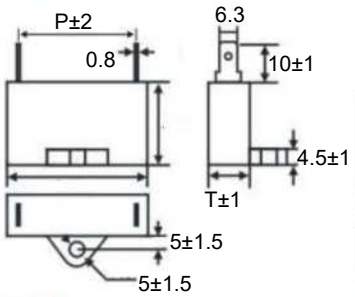
| | |
|---|---|
| OPERATING CONDITION | -40℃~+85℃ |
| CAPACITANCE RANGE | 1uF~20uF(TS11-B~D、TS11-5~7、TS11-9) |
| CAPACITANCE TOLERANCE | J(±5%)、K(±10%) |
| RATED VOLTAGE | 250V 450V (AC) |
| WITHSTAND VOLTAGE | AC≥2$U_R$ 2S(Imax≤1.3 InA) |
| DISSIPATION FACTORY | ≤0.003 1KHz |
| INSULATION RESISTANCE | ≥3000S |

mm

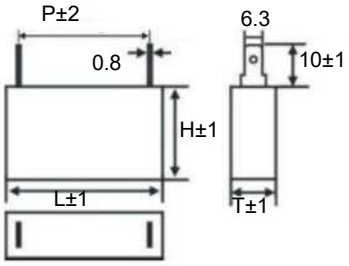
CFBA-A



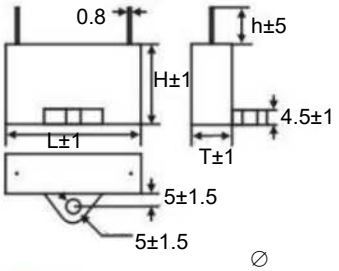

CFBA-B



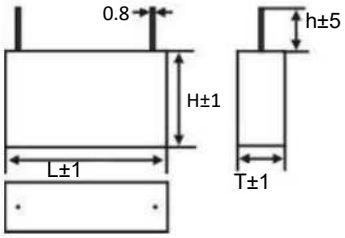

CFBA-C



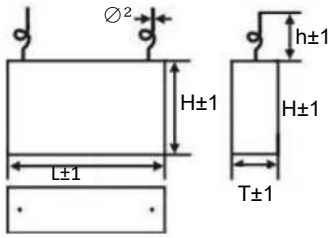

CFBA-D



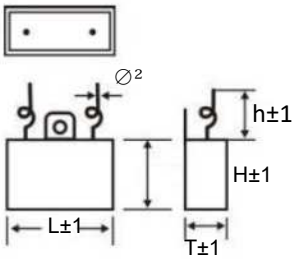

CFBA-E



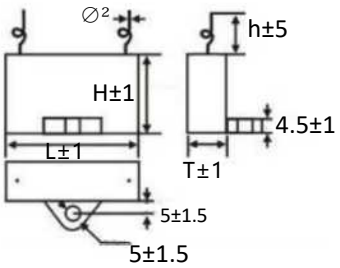

CFBA-F




CFBA-G




CFBA-H




**Remark:** PVC wires are not guarantee centered on the bottom, the wire position not affect the capacitors performance.

**Dimensions (mm)**

| CAP | CFBA-C, CFBA-5 | | | | | | CFBA-B, CFBA-D | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 250VAC | | | 450VAC | | | 250VAC | | | 450VAC | | |
| μF | L | T | H | L | T | H | L | T | H | L | T | H |
| 0.5 | 26.5 | 12.5 | 21 | 26.5 | 12.5 | 21 | 26.5 | 12 | 20 | 25.5 | 12 | 20 |
| 1 | 26.5 | 12.5 | 21 | 32 | 14 | 24 | 26.5 | 12 | 20 | 32 | 14 | 25 |
| 2 | 32 | 14 | 24 | 37 | 17 | 28 | 32 | 14 | 25 | 37 | 17 | 28 |
| 2.5 | 32 | 14 | 24 | 37 | 17 | 28 | 32 | 14 | 25 | 37 | 17 | 28 |
| 3 | 32 | 14 | 24 | 38 | 20 | 30 | 32 | 14 | 25 | 38 | 20 | 30 |
| 5 | 37 | 17 | 28 | 47 | 20 | 34 | 37 | 17 | 28 | 47 | 20 | 34 |
| 6 | 37 | 17 | 28 | 47 | 23 | 34 | 37 | 17 | 28 | 47 | 23 | 34 |
| 8 | 47 | 17.5 | 33 | 47 | 28 | 34 | 47 | 18 | 32 | 47 | 28 | 34 |
| 10 | 47 | 17.5 | 33 | 47 | 32 | 40 | 47 | 18 | 32 | 47 | 30 | 40 |
| 12 | 47 | 23 | 34 | 47 | 32 | 43 | 47 | 23 | 34 | -- | -- | -- |
| 15 | 47 | 25 | 34 | -- | -- | -- | 47 | 25 | 34 | -- | -- | -- |
| 20 | 47 | 28 | 37 | -- | -- | -- | 47 | 28 | 37 | -- | -- | -- |

Please visit our website to get more update data, those data & specification are subject to change without notice.

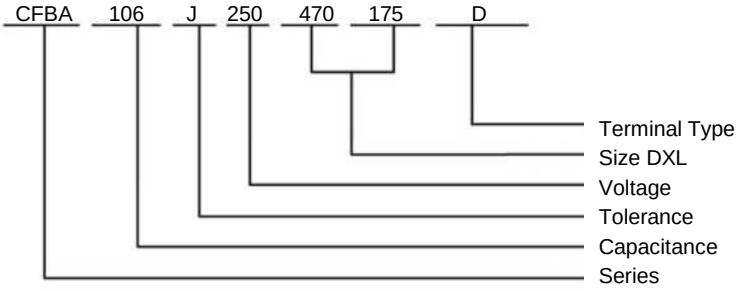
## CFBA: ELECTRICALAPPARATUE USE METALLIZED FILM WITH PRECISELY QUALITY CONTROL |EQUATIVE **CBB61**

**Dimensions (mm)**

| CAP | CFBA-6 | | | | | | | | CFBA-7 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 250VAC | | | | 450VAC | | | | 250VAC | | | 450VAC | | |
| μF | L | T | H | P | L | T | H | P | L | T | H | L | T | H |
| 0.5 | 32 | 10 | 20 | 27.5 | 32 | 10 | 20 | 27.5 | 32 | 10 | 20 | 32 | 10 | 20 |
| 1.0 | 32 | 10 | 20 | 27.5 | 36 | 10 | 20 | 31.5 | 32 | 10 | 20 | 36 | 10 | 20 |
| 1.2 | 36 | 10 | 20 | 31.5 | 36 | 11 | 22 | 31.5 | 36 | 10 | 20 | 36 | 11 | 22 |
| 1.5 | 36 | 10 | 20 | 31.5 | 36 | 12 | 22 | 31.5 | 36 | 10 | 20 | 36 | 12 | 22 |
| 1.8 | 36 | 11 | 22 | 31.5 | 36 | 12 | 22 | 31.5 | 36 | 11 | 22 | 36 | 12 | 22 |
| 2.0 | 36 | 11 | 22 | 31.5 | 37 | 13 | 23 | 31.5 | 36 | 11 | 22 | 37 | 13 | 23 |
| 2.5 | 37 | 12 | 21 | 31.5 | 38 | 15 | 25 | 31.5 | 37 | 12 | 21 | 38 | 15 | 25 |
| 3.0 | 37 | 13 | 23 | 31.5 | 38 | 17 | 28 | 31.5 | 37 | 13 | 23 | 38 | 17 | 28 |
| 3.5 | 38 | 15 | 25 | 31.5 | 38 | 18.5 | 29 | 31.5 | 38 | 15 | 25 | 38 | 18.5 | 29 |
| 4.0 | 38 | 17 | 28 | 31.5 | 38 | 18.5 | 29 | 31.5 | 38 | 17 | 28 | 38 | 18.5 | 29 |
| 4.5 | 38 | 17 | 28 | 31.5 | 38 | 21 | 32 | 31.5 | 38 | 17 | 28 | 38 | 21 | 32 |
| 5.0 | 38 | 18.5 | 29 | 31.5 | 38 | 21 | 32 | 31.5 | 38 | 18.5 | 29 | 38 | 21 | 32 |
| 6.0 | 38 | 19.5 | 31 | 31.5 | 38 | 21 | 32 | 31.5 | 38 | 19.5 | 31 | 38 | 21 | 32 |
| 7.0 | 38 | 21 | 32 | 31.5 | 47 | 23 | 35 | 41.5 | 38 | 21 | 32 | 47 | 23 | 35 |
| 8.0 | 38 | 21 | 32 | 31.5 | 47 | 23 | 35 | 41.5 | 38 | 21 | 32 | 47 | 23 | 35 |
| 10.0 | 47 | 23 | 35 | 41.5 | 47 | 23 | 35 | 41.5 | 47 | 23 | 35 | 47 | 23 | 35 |
| 12.0 | 47 | 23 | 35 | 41.5 | 48 | 33 | 45 | 41.5 | 47 | 23 | 35 | 48 | 33 | 45 |
| 15.0 | 47 | 23 | 35 | 41.5 | 48 | 33 | 45 | 41.5 | 47 | 23 | 35 | 48 | 33 | 45 |
| 16.0 | 47 | 23 | 35 | 41.5 | 57 | 32 | 44 | 51.5 | 47 | 23 | 35 | 57 | 32 | 44 |
| 18.0 | 47 | 23 | 35 | 41.5 | 57 | 32 | 44 | 51.5 | 47 | 23 | 35 | 57 | 32 | 44 |
| 20.0 | 48 | 33 | 45 | 41.5 | 57 | 32 | 44 | 51.5 | 48 | 33 | 45 | 57 | 32 | 44 |

| CAP | CFBA-9 | | | | | |
|---|---|---|---|---|---|---|
| | 250VAC | | | 450VAC | | |
| μF | L | T | H | L | T | H |
| 0.5 | 32 | 10 | 20 | 32 | 10 | 20 |
| 1.0 | 32 | 10 | 20 | 36 | 10 | 20 |
| 1.2 | 36 | 10 | 20 | 36 | 11 | 22 |
| 1.5 | 36 | 10 | 20 | 36 | 12 | 22 |
| 1.8 | 36 | 11 | 22 | 36 | 12 | 22 |
| 2.0 | 36 | 11 | 22 | 37 | 13 | 23 |
| 2.5 | 37 | 12 | 21 | 38 | 15 | 25 |
| 3.0 | 37 | 13 | 23 | 38 | 17 | 28 |
| 3.5 | 38 | 15 | 25 | 38 | 18.5 | 29 |
| 4.0 | 38 | 17 | 28 | 38 | 18.5 | 29 |
| 4.5 | 38 | 17 | 28 | 38 | 21 | 32 |
| 5.0 | 38 | 18.5 | 29 | 38 | 24 | 33 |
| 6.0 | 38 | 19.5 | 31 | 38 | 24 | 33 |
| 7.0 | 38 | 21 | 32 | 47 | 23 | 35 |
| 8.0 | 38 | 24 | 33 | 47 | 26 | 38 |
| 10.0 | 47 | 23 | 35 | 47 | 26 | 38 |
| 12.0 | 47 | 23 | 35 | 48 | 33 | 45 |
| 15.0 | 47 | 26 | 38 | 48 | 33 | 45 |
| 16.0 | 47 | 26 | 38 | 57 | 32 | 44 |
| 18.0 | 47 | 26 | 38 | 57 | 32 | 44 |
| 20.0 | 48 | 33 | 45 | 57 | 32 | 44 |

### PART NUMBER EXAMPLE




Please visit our website to get more update data, those data & specification are subject to change without notice.



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JINPEI

# CFCA

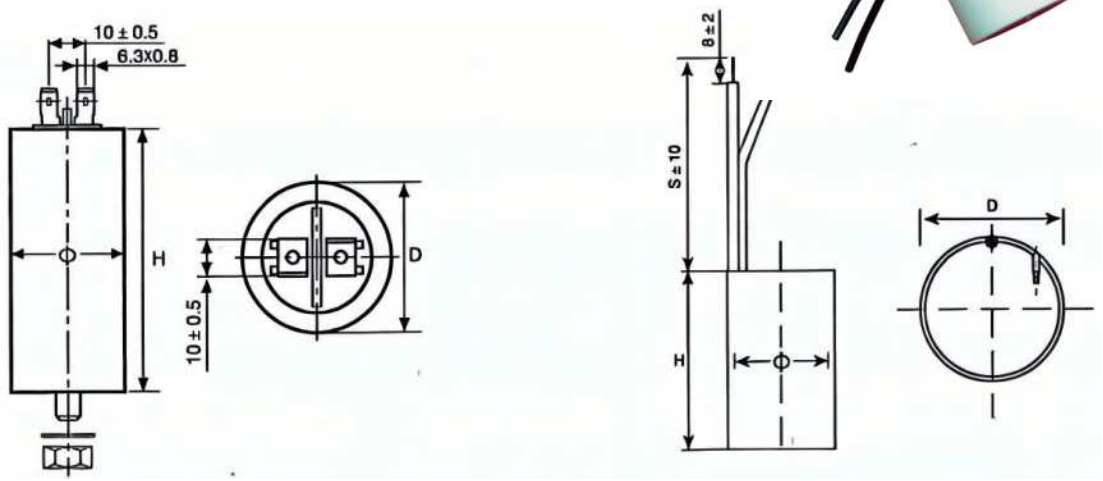
## 金属化聚丙烯膜交流电动机电容器 圆柱形

**Metallized polypropylene film AC motor capacito**






### ■ 外形图 Outline Drawing




### ▪特点

●适用于频率为 50HZ/60HZ 交流电源供电的单相电动机起动和运转
●具有良好的自愈性
●性能稳定，可靠性强

### ▪Features

●Widely applied to starting and running of AC single-phase motors at 50Hz/60Hz frequency power
●Self-heading property
●Excellent stable performance and reliability

### ▪技术要求 Specifications

| | | |
|---|---|---|
| 运行等级 Class of operation | 500VAC Class C (3 000h), 450VAC Class B (10 000h), 400VAC Class A (30 000h) | |
| 气候类别 Climatic Category | 40/85/21 | |
| 贮存温度 Storage temperature | -40℃ ~ 85℃ | |
| 额定电压 Rated Voltage | 500VAC, 50/60Hz | |
| 安全防护等级 Class of safety protection | S0 (P0) | |
| 电容量范围 Capacitance Range | 1.0μF~80.0μF | |
| 电容量偏差 Capacitance Tolerance | ±5%，±10%，±15% | |
| 耐电压 Voltage Proof | 引线之间 Between Terminals: | 1 000VAC(2s) |
| | 极壳之间 Between Terminals To Case: | 3 000VAC(60s) |
| 最高运行电压 Maximum permissible voltage | $1.1U_N$ | |
| 最高运行电流 Maximum permissible current | $1.3I_N$ | |
| 损耗角正切 Dissipation Factor | ≤0.002 0（1KHz, C≤10μF）<br>≤0.006 0（1KHz, C≤35μF）<br>≤0.008 0 (1KHz, C＞35μF) | |
| 绝缘电阻 Insulation Resistance | ≥3 000s (20℃, 100V,1min) | |
| 最大扭矩 Max tightening torque | 4Nm(M8) ~ 8Nm(M12) | |

## 产品代码说明 Part number system

■ **产品代码说明如下：**

**Part number is formed as follow:**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| **C** | **F** | **C** | **A** | | | | | | | | |

第 1~4 位： 型号代码

CFCA=CBB60

第 5~6 位： 交流额定电压

2H=500V 2W=450V

第 7~9 位：标称容量

举例 ： 505 =50×$10^5$ PF = 5.0μf

175=17.5×$10^5$ PF = 1.75μf

第 10位： 容量偏差

J=±5% K=±10%,

Digit 1 to 4: Series code

CFCA=CBB60

Digit 5 to 6: AC rated voltage

2H=500V 2W=450V

Digit 7 to 9: Rated capacitance

For example: 505 =50×$10^5$ PF = 5.0μf

175=17.5×$10^5$ PF = 1.75μf

Digit 10: Capacitance tolerance

J=±5%, K=±10%

第 11 位： 产品外形尺寸代码

Digit 11 Dimension code

| **CBB60 Dimension code** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | Code | D | Code | D | Code | D | Code | D | Code | D | Code | D | Code | D | Code |
| 25 | 1 | 30 | 2 | 35 | 3 | 40 | 4 | 45 | 5 | 50 | 6 | 55 | 7 | 60 | 8 |

第 12 位： 引出端代码

B=铁片

0=绝缘线剥线式

Digit 12: Terminals code

B= iron code

0=insulate lead wire

## ■ 外形尺寸 Dimensions (mm)

| C (μF) | $I_N$ (A) | Max dv/dt (V/μs) | 500Vac Tabs | | | 500Vac Insulated flexible lead wire | | |
|---|---|---|---|---|---|---|---|---|
| | | | D±10% (mm) | H±10% (mm) | Part number | D±10% (mm) | H±10% (mm) | Part number |
| 1.0 | 0.16 | 20 | 25 | 43 | CFCA2H105-1# | 25 | 38 | CFCA2H105-1# |
| 1.25 | 0.20 | 20 | 25 | 43 | CFCA2H125-1# | 25 | 38 | CFCA2H125-1# |
| 1.5 | 0.24 | 20 | 25 | 43 | CFCA2H155-1# | 25 | 38 | CFCA2H155-1# |
| 1.7 | 0.27 | 20 | 25 | 43 | CFCA2H175-1# | 25 | 38 | CFCA2H175-1# |
| 2.0 | 0.31 | 20 | 30 | 43 | CFCA2H205-2# | 30 | 38 | CFCA2H205-2# |
| 2.5 | 0.39 | 20 | 30 | 43 | CFCA2H255-2# | 30 | 38 | CFCA2H255-2# |
| 3.0 | 0.47 | 20 | 30 | 43 | CFCA2H305-2# | 30 | 38 | CFCA2H305-2# |
| 3.15 | 0.49 | 20 | 30 | 43 | CFCA2H315-2# | 30 | 38 | CFCA2H315-2# |
| 3.5 | 0.55 | 20 | 30 | 53 | CFCA2H355-2# | 30 | 48 | CFCA2H355-2# |
| 4.0 | 0.63 | 20 | 30 | 53 | CFCA2H405-2# | 30 | 48 | CFCA2H405-2# |
| 4.5 | 0.71 | 20 | 30 | 53 | CFCA2H455-2# | 30 | 48 | CFCA2H455-2# |
| 5.0 | 0.79 | 20 | 30 | 53 | CFCA2H505-2# | 30 | 48 | CFCA2H505-2# |
| 5.5 | 0.86 | 20 | 35 | 53 | CFCA2H555-3# | 35 | 48 | CFCA2H555-3# |
| 6.0 | 0.94 | 20 | 35 | 53 | CFCA2H605-3# | 35 | 48 | CFCA2H605-3# |
| 6.3 | 0.99 | 20 | 35 | 53 | CFCA2H635-3# | 35 | 48 | CFCA2H635-3# |
| 6.5 | 1.02 | 20 | 35 | 53 | CFCA2H655-3# | 35 | 48 | CFCA2H655-3# |
| 7.0 | 1.10 | 20 | 35 | 53 | CFCA2H705-3# | 35 | 48 | CFCA2H705-3# |
| 7.5 | 1.18 | 20 | 35 | 53 | CFCA2H755-3# | 35 | 48 | CFCA2H755-3# |
| 8.0 | 1.26 | 20 | 35 | 53 | CFCA2H805-3# | 35 | 48 | CFCA2H805-3# |
| 9.0 | 1.41 | 20 | 35 | 63 | CFCA2H905-3# | 35 | 58 | CFCA2H905-3# |
| 10.0 | 1.57 | 20 | 35 | 63 | CFCA2H106-3# | 35 | 58 | CFCA2H106-3# |
| 12.0 | 1.88 | 20 | 40 | 63 | CFCA2H126-4# | 40 | 58 | CFCA2H126-4# |
| 13.0 | 2.04 | 20 | 40 | 63 | CFCA2H136-4# | 40 | 58 | CFCA2H136-4# |
| 14.0 | 2.20 | 20 | 40 | 63 | CFCA2H146-4# | 40 | 58 | CFCA2H146-4# |
| 15.0 | 2.36 | 20 | 40 | 73 | CFCA2H156-4# | 40 | 68 | CFCA2H156-4# |
| 16.0 | 2.51 | 20 | 40 | 73 | CFCA2H166-4# | 40 | 68 | CFCA2H166-4# |
| 18.0 | 2.83 | 20 | 40 | 73 | W60H2186-4# | 40 | 68 | CFCA2H186-4# |
| 20.0 | 3.14 | 20 | 40 | 73 | CFCA2H2064# | 40 | 68 | CFCA2H206-4# |
| 25.0 | 3.93 | 20 | 40 | 98 | CFCA2H256-4# | 40 | 93 | CFCA2H256-4# |
| 30.0 | 4.71 | 20 | 40 | 98 | CFCA2H306-4# | 40 | 93 | CFCA2H306-4# |
| 31.5 | 4.95 | 20 | 45 | 98 | CFCA2H315-5# | 45 | 93 | CFCA2H316-5# |
| 32.0 | 5.02 | 20 | 45 | 98 | CFCA2H326-5# | 45 | 93 | CFCA2H326-5# |
| 35.0 | 5.50 | 20 | 45 | 98 | CFCA2H356-5# | 45 | 93 | CFCA2H356-5# |
| 36.0 | 5.65 | 20 | 45 | 98 | CFCA2H3665# | 45 | 93 | CFCA2H366-5# |
| 40.0 | 6.28 | 20 | 45 | 98 | CFCA2H406-5# | 45 | 93 | W60H2406-5# |
| 45.0 | 7.07 | 20 | 50 | 98 | CFCA2H456-6# | 50 | 93 | CFCA2H456-6# |
| 50.0 | 7.85 | 20 | 50 | 98 | CFCA2H506-6# | 50 | 93 | CFCA2H506-6# |
| 55.0 | 8.64 | 20 | 50 | 123 | CFCA2H556-6# | 50 | 118 | CFCA2H556-6# |
| 60.0 | 9.42 | 20 | 50 | 123 | CFCA2H606-6# | 50 | 118 | CFCA2H606-6# |
| 70.0 | 10.99 | 20 | 55 | 123 | CFCA2H706-7# | 55 | 118 | CFCA2H708-7# |
| 80.0 | 12.56 | 20 | 60 | 123 | CFCA2H8068# | 60 | 118 | CFCA2H806-8# |

备注： 1. "-" 表示容量偏差。"-" =capacitance tolerance code, ,K=±10%,J=±5%,

2. "#" 表示引出端代码，引出端子可以选用铁片式或绝缘线剥线式。"#" Terminals code，Terminals can be iron code or insulate lead wire

3. 上表中所列的尺寸为本产品系列中的常用壳号尺寸，其它规格尺寸也可生产。引用端尺寸参照国家标准

Sizes presented above are normally used dimension, other dimension can be produced in pursuance of customer's request. Sizes of terminals please refer to corresponding national standard.

## CFDA: ELECTRICALAPPARATUE USE METALLIZED FILM WITH PRECISELY QUALITY CONTROL |EQUATIVE **CBB65**

### FEATURES:

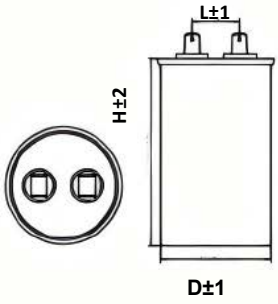
- Low D.F. (dissipation factor), good self-healing character
- High I.R. (insulation resistance)
- High safety & high reliability
- Anti-Striking current, strong over-carrier capacity



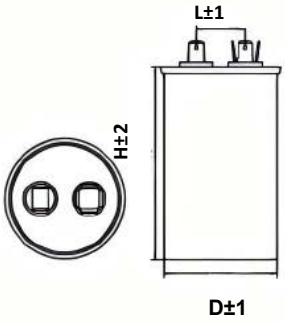

### SPECIFICATIONS

| | |
|---|---|
| OPERATING CONDITION | -40℃~+85℃ |
| CAPACITANCE RANGE | 2uF~100 uF<br>(TS11-22~26) |
| CAPACITANCE TOLERANCE | J(±5%)、K(±10%) |
| RATED VOLTAGE | 370V, 450V(AC) |
| DISSIPATION FACTORY | ＜0.0040（100Hz） |
| WITHSTAND VOLTAGE BETWEEN TERMINALS | 2Un, 2s |
| WITHSTAND VOLTAGE BETWEEN TERMINALS AND CASE | 2.2KV, 2s |

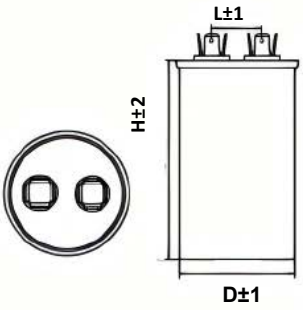
CFDA-A

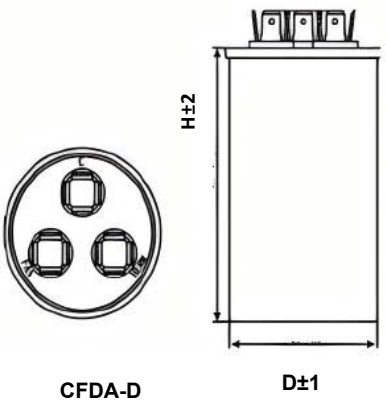



CFDA-B

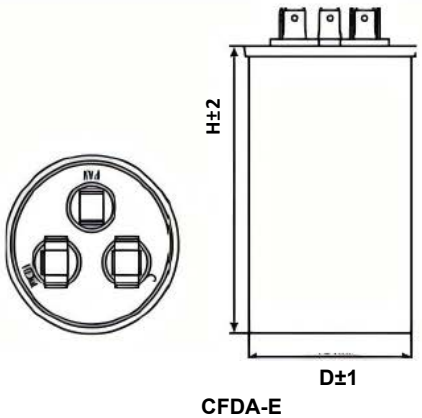



CFDA-C




CFDA-D




CFDA-E

# MOTOR CAPACITOR

## CFDA: ELECTRICALAPPARATUE USE METALLIZED FILM WITH PRECISELY QUALITY CONTROL |EQUATIVE **CBB65**

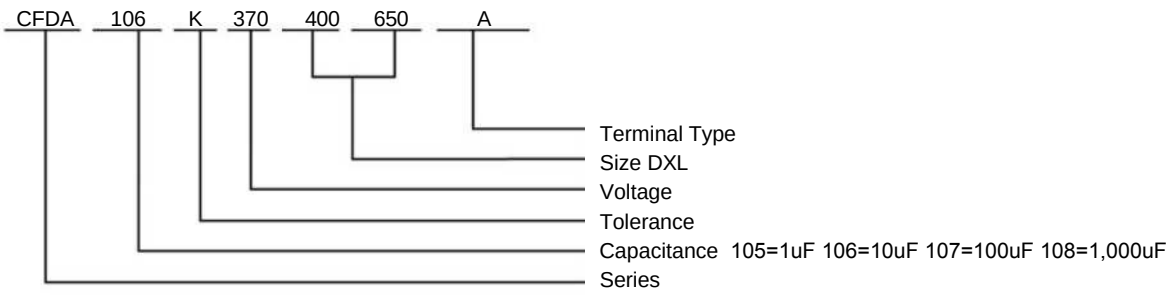
### FEATURES:

- Low D.F. (dissipation factor), good self-healing character
- High I.R. (insulation resistance)
- High safety & high reliability
- Anti-Striking current, strong over-carrier capacity

### Dimensions (mm)

| CAP uF | CFDA-22, CFDA-23, CFDA-24 | | | | CAP uF | CFDA-25, CFDA-26 | |
|---|---|---|---|---|---|---|---|
| | 370VAC | | 450VAC | | | 450VAC | |
| | D | H | D | H | | D | H |
| 1 | 40 | 55 | 40 | 55 | 20+1.5 | 50 | 85 |
| 1.5 | 40 | 55 | 40 | 55 | 20+5 | 50 | 85 |
| 2 | 40 | 55 | 40 | 55 | 25+1.5 | 50 | 95 |
| 2.5 | 40 | 55 | 40 | 55 | 25+3 | 50 | 95 |
| 3 | 40 | 55 | 40 | 55 | 25+5 | 50 | 95 |
| 3.5 | 40 | 55 | 40 | 55 | 30+2 | 50 | 95 |
| 4 | 40 | 55 | 40 | 55 | 30+5 | 50 | 95 |
| 4.5 | 40 | 55 | 40 | 55 | 30+7.5 | 50 | 100 |
| 5 | 40 | 55 | 40 | 55 | 35+2 | 50 | 100 |
| 6 | 40 | 55 | 40 | 55 | 35+5 | 50 | 110 |
| 7 | -- | -- | 40 | 65 | 40+5 | 50 | 120 |
| 7.5 | 40 | 55 | 40 | 65 | 40+7.5 | 50 | 125 |
| 8 | 40 | 55 | 40 | 65 | 45+5 | 50 | 120 |
| 10 | 40 | 65 | 40 | 75 | 45+7.5 | 50 | 125 |
| 12 | 40 | 75 | 40 | 75 | 50+5 | 50 | 130 |
| 12.5 | 40 | 75 | 40 | 75 | 50+7.5 | 55 | 125 |
| 14 | 40 | 75 | 45 | 75 | 55+5 | 55 | 120 |
| 15 | 40 | 75 | 45 | 75 | 55+6 | 55 | 120 |
| 16 | 45 | 75 | 45 | 75 | 55+7.5 | 55 | 125 |
| 17 | 45 | 75 | 45 | 75 | 60+5 | 60 | 120 |
| 17.5 | 45 | 75 | 45 | 75 | 60+6 | 60 | 120 |
| 18 | 45 | 75 | 50 | 75 | 60+7.5 | 60 | 125 |
| 20 | 45 | 75 | 50 | 75 | 65+5 | 60 | 120 |
| 25 | 45 | 75 | 50 | 85 | 70+5 | 60 | 120 |
| 30 | 50 | 85 | 50 | 100 | 80+5 | 60 | 130 |
| 35 | 50 | 100 | 50 | 100 | -- | -- | -- |
| 40 | 50 | 100 | 50 | 110 | -- | -- | -- |
| 45 | 50 | 110 | 55 | 110 | -- | -- | -- |
| 50 | 50 | 100 | 55 | 110 | -- | -- | -- |
| 55 | 50 | 125 | 55 | 125 | -- | -- | -- |
| 60 | 55 | 125 | 55 | 125 | -- | -- | -- |
| 65 | 55 | 125 | 60 | 125 | -- | -- | -- |
| 70 | 55 | 125 | 60 | 125 | -- | -- | -- |
| 80 | 60 | 125 | 65 | 125 | -- | -- | -- |
| 100 | 65 | 125 | 65 | 125 | -- | -- | -- |

### PART NUMBER EXAMPLE

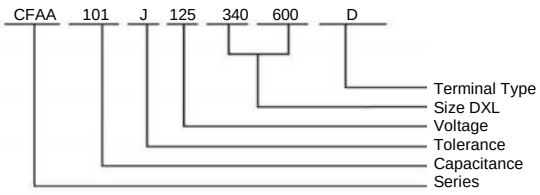


## CFAA: FOR MOTOR STARTING |EQUATIVE CD60

**FEATURES:**

- Small volume, large capacitance
- Low spoilage, stable capability
- Used for the compressor and Air-conditioner and for the pumps.

**PART NUMBER EXAMPLE**

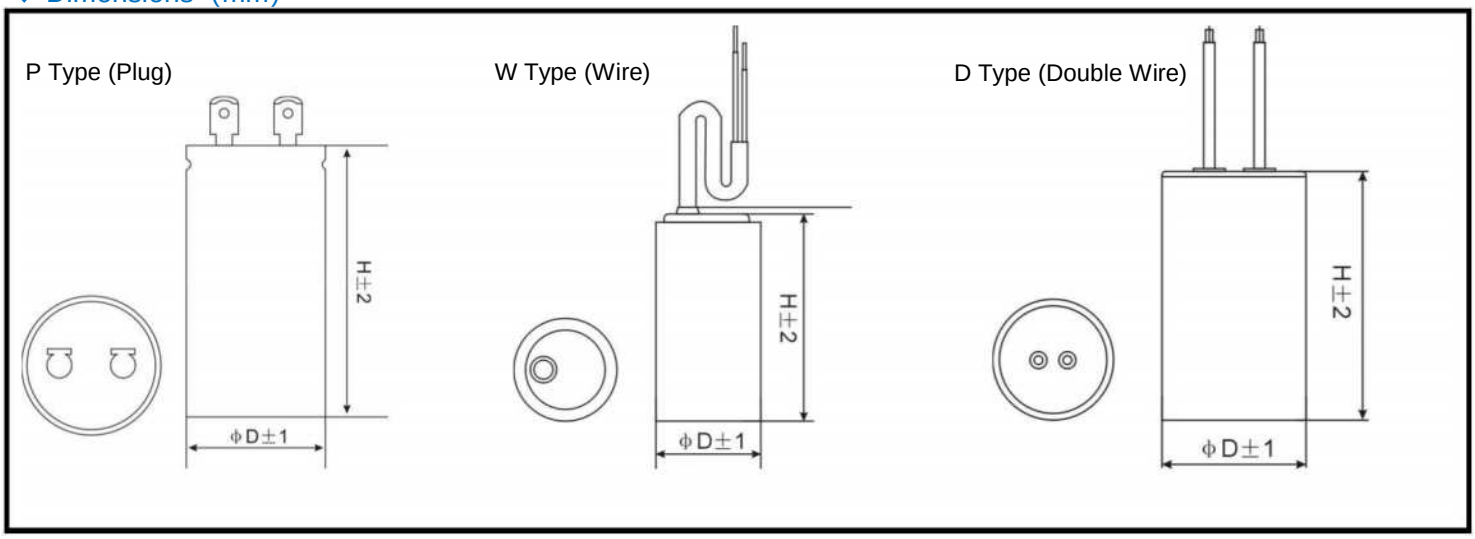





## ◆ Specifications

| ITEMS | PERFORMANCE CHARACTERISTICS |
|---|---|
| Operating Temperature Range(℃) | -40℃~+65℃ |
| Rated Voltage | 110~330V.AC |
| Capacitance Tolerance | -10%~+20% |
| Capacitance | 50-1500μF |
| Loss Tangent | 0~+20% |
| Withstand Voltage Between Terminals | 1.2 times working voltage, no break down within 2s |
| Withstand Voltage Between Terminal And Case | 2000VAC, no break down with 60s |

## ◆ Dimensions (mm)




## ◆ Standard Ratings

| Voltage(V) / Capacitance(μF) | 110/125V Size D x H (MM) | 125V Size D x H (MM) | 220/275V Size D x H (MM) | 250V Size D x H (MM) | 330V Size D x H (MM) |
|---|---|---|---|---|---|
| 50 | 34x60 | 34x60 | 34x70 | 34x80 | 42x80 |
| 75 | 34x60 | 34x60 | 34x70 | 34x80 | 42x80 |
| 100 | 34x60 | 34x60 | 34x70 | 34x80 | 42x80 |
| 150 | 34x70 | 34x70 | 34x70 | 50x100 | 50x100 |
| 200 | 40x70 | 40x70 | 40x70 | 50x100 | 50x100 |
| 250 | 40x90 | 40x90 | 45x100 | 50x100 | 50x100 |
| 300 | 40x90 | 40x90 | 45x100 | 50x100 | 50x100 |
| 350 | 45x90 | 45x90 | 45x100 | 50x100 | 50x100 |
| 400 | 45x100 | 45x100 | 45x100 | 50x100 | 50x100 |
| 500 | 45x100 | 45x100 | 45x100 | 50x110 | --- |
| 600 | 45x100 | 45x100 | 50x100 | 50x110 | --- |
| 700 | 50x100 | 50x100 | 50x100 | --- | --- |
| 800 | 50x100 | 50x100 | 50x100 | --- | --- |
| 1000 | 50x100 | 50x100 | --- | --- | --- |
| 1200 | 50x100 | 50x100 | --- | --- | |

Note: Specification are subject to change without notice. For more detail and update, please visit our website.


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# CEAA SERIES

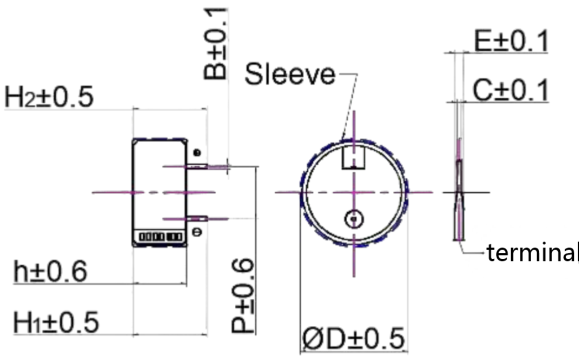
## Features

- Standard product
- Quick charge & discharge
- RoHS compliant
- Computer & peripherals
- DSL modems & routers
- Automatic meter reader

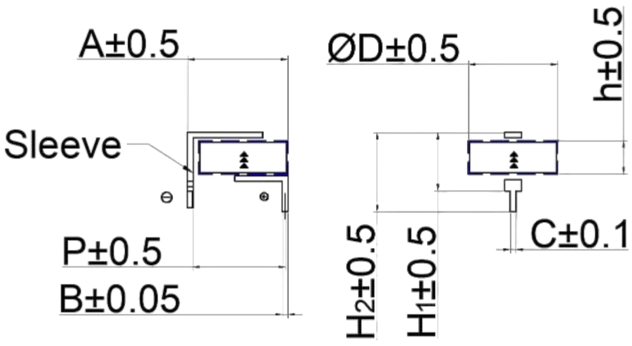



| Items | Characteristics | | |
|---|---|---|---|
| Rated Voltage | 5.5V | | |
| Operating Temperature Range | -25 ~+70℃ | | |
| Surge Voltage | 6.0V | | |
| Capacitance Range | 0.1~1.5 F | | |
| Capacitance Tolerance (25°C) | -20~+80% | | |
| Temperature Characteristics | The specifications shall be met at category temperature range from -25℃ to 70℃ | Capacitance range | Within 30% of the value at 25℃ |
| | | ESR | Less than 2 times of the initial specified value |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 70℃ for 1000 hours | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 4 times of the initial specified value |
| High Temperature Storage | The specifications shall be met after storage at 70 ℃ for 1000 hours | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 4 times of the initial specified value |

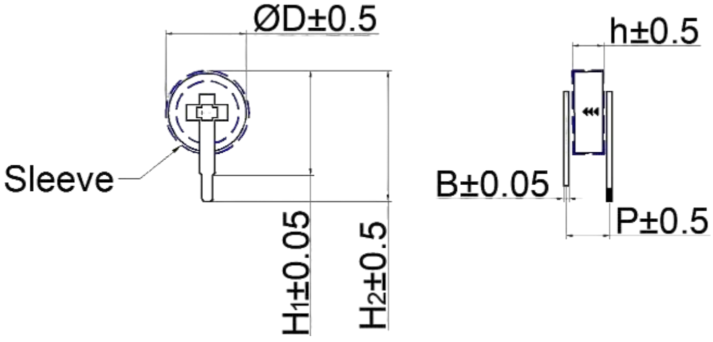
**Dimensions mm**




**C-TYPE**




**H-TYPE**




**V-TYPE**

# CEAA SERIES

## Standard Ratings for CEAA Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃, | $ESR_{AC}$ (1KHz) | Leakage Current (72hrs) | Size | | | | | | | | P/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | D | h | P | $H_1$ | $H_2$ | B | C | E | |
| (v) | (F) | (Ω) | (mA) | (mm) | | | | | | | | - |
| 5.5 (6) 5R5 | 0.1 | 75 | 0.003 | 13.5 | 7.0 | 5.0 | 12.5 | 13.5 | 0.4 | 0.8 | 1.2 | CEAA5R5104ZC135070 |
| | 0.22 | 75 | 0.003 | 13.5 | 7.0 | 5.0 | 12.5 | 13.5 | 0.4 | 0.8 | 1.2 | CEAA5R5224ZC135070 |
| | 0.33 | 50 | 0.005 | 13.5 | 7.0 | 5.0 | 12.5 | 13.5 | 0.4 | 0.8 | 1.2 | CEAA5R5334ZC135070 |
| | 0.47 | 50 | 0.005 | 13.5 | 7.0 | 5.0 | 12.5 | 13.5 | 0.4 | 0.8 | 1.2 | CEAA5R5474ZC135070 |
| | 1.0 | 30 | 0.008 | 20.5 | 7.5 | 5.0 | 12.0 | 12.5 | 0.4 | 0.8 | 1.2 | CEAA5R5105ZC205075 |
| C-TYPE | 1.5 | 30 | 0.008 | 20.5 | 7.5 | 5.0 | 12.0 | 12.5 | 0.4 | 0.8 | 1.2 | CEAA5R5155ZC205075 |

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃, | $ESR_{AC}$ (1KHz) | Leakage Current (72hrs) | Size | | | | | | | | P/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | D | h | P | $H_1$ | $H_2$ | A | B | C | |
| (v) | (F) | (Ω) | (mA) | (mm) | | | | | | | | - |
| 5.5 (6) 5R5 | 0.1 | 75 | 0.003 | 11.5 | 4.5 | 10 | 6 | 9 | 12.5 | 0.2 | 0.8 | CEAA5R5104ZH115045 |
| | 0.22 | 75 | 0.003 | 11.5 | 4.5 | 10 | 6 | 9 | 12.5 | 0.2 | 0.8 | CEAA5R5224ZH115045 |
| | 0.33 | 50 | 0.005 | 11.5 | 4.5 | 10 | 6 | 9 | 12.5 | 0.2 | 0.8 | CEAA5R5334ZH115045 |
| | 0.47 | 50 | 0.005 | 11.5 | 4.5 | 10 | 6 | 9 | 12.5 | 0.2 | 0.8 | CEAA5R5474ZH115045 |
| | 1.0 | 30 | 0.008 | 19 | 4.5 | 20 | 7 | 9.5 | 20 | 0.2 | 1.0 | CEAA5R5105ZH190045 |
| H-TYPE | 1.5 | 30 | 0.008 | 19 | 4.5 | 20 | 7 | 9.5 | 20 | 0.2 | 1.0 | CEAA5R5155ZH190045 |

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃, | $ESR_{AC}$ (1KHz) | Leakage Current (72hrs) | Size | | | | | | | | P/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | D | h | P | $H_1$ | $H_2$ | B | C | | |
| (v) | (F) | (Ω) | (mA) | (mm) | | | | | | | | - |
| 5.5 (6) 5R5 | 0.1 | 75 | 0.003 | 11.5 | 4.5 | 5 | 13 | 16.5 | 0.2 | 0.8 | | CEAA5R5104ZV115045 |
| | 0.22 | 75 | 0.003 | 11.5 | 4.5 | 5 | 13 | 16.5 | 0.2 | 0.8 | | CEAA5R5224ZV115045 |
| | 0.33 | 50 | 0.005 | 11.5 | 4.5 | 5 | 13 | 16.5 | 0.2 | 0.8 | | CEAA5R5334ZV115045 |
| | 0.47 | 50 | 0.005 | 11.5 | 4.5 | 5 | 13 | 16.5 | 0.2 | 0.8 | | CEAA5R5474ZV115045 |
| | 1.0 | 30 | 0.008 | 19 | 4.5 | 5 | 20.5 | 25.5 | 0.2 | 0.8 | | CEAA5R5105ZV190045 |
| V-TYPE | 1.5 | 30 | 0.008 | 19 | 4.5 | 5 | 20.5 | 25.5 | 0.2 | 0.8 | | CEAA5R5155ZV190045 |

PART NUMBER EXAMPLE

CEAA 5R5 104 Z V 115004E

## CEAB SERIES

Gold Capacitors | Ultra Capacitors

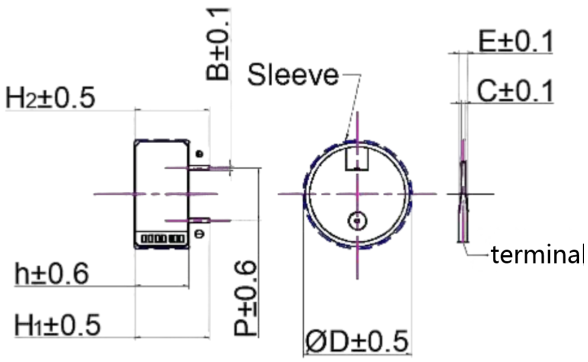
### Features

- High temperature product
- Quick charge & discharge
- RoHS compliant
- Computer & peripherals
- DSL modems & routers
- Automatic meter reader

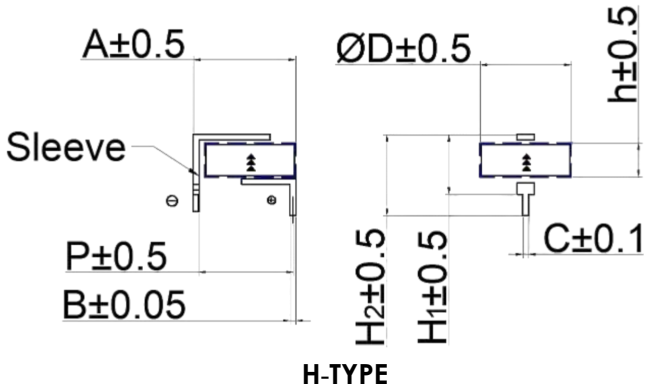



| Items | Characteristics | | |
|---|---|---|---|
| Rated Voltage | 5.5V | | |
| Operating Temperature Range | -25 ~+85℃ | | |
| Surge Voltage | 6.0V | | |
| Capacitance Range | 0.1~1.5 F | | |
| Capacitance Tolerance (25°C) | -20~+80% | | |
| Temperature Characteristics | The specifications shall be met at category temperature range from -25℃ to 85℃ | Capacitance range | Within 30% of the value at 25℃ |
| | | ESR | Less than 2 times of the initial specified value |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 85℃ for 1000 hours | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 4 times of the initial specified value |
| High Temperature Storage | The specifications shall be met after storage at 85 ℃ for 1000 hours | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 4 times of the initial specified value |

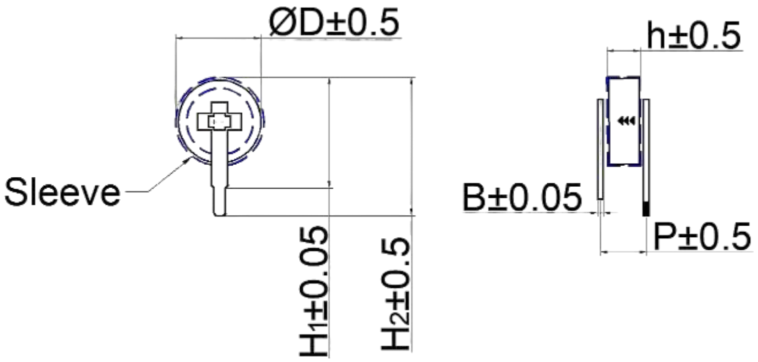
### Dimensions mm




C-TYPE




H-TYPE




V-TYPE

## CEAB SERIES

Gold Capacitors | Ultra Capacitors

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃, | $ESR_{AC}$ (1KHz) | Leakage Current (72hrs) | Size | | | | | | | | P/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | D | h | P | $H_1$ | $H_2$ | B | C | E | |
| (v) | (F) | (Ω) | (mA) | (mm) | | | | | | | | - |
| 5.5 (6) 5R5 C-TYPE | 0.1 | 75 | 0.003 | 13.5 | 7.0 | 5.0 | 12.5 | 13.5 | 0.4 | 0.8 | 1.2 | CEAB5R5104ZC135070 |
| | 0.22 | 75 | 0.003 | 13.5 | 7.0 | 5.0 | 12.5 | 13.5 | 0.4 | 0.8 | 1.2 | CEAB5R5224ZC135070 |
| | 0.33 | 50 | 0.005 | 13.5 | 7.0 | 5.0 | 12.5 | 13.5 | 0.4 | 0.8 | 1.2 | CEAB5R5334ZC135070 |
| | 0.47 | 50 | 0.005 | 13.5 | 7.0 | 5.0 | 12.5 | 13.5 | 0.4 | 0.8 | 1.2 | CEAB5R5474ZC135070 |
| | 1.0 | 30 | 0.008 | 20.5 | 7.5 | 5.0 | 12.0 | 12.5 | 0.4 | 0.8 | 1.2 | CEAB5R5105ZC205075 |
| | 1.5 | 30 | 0.008 | 20.5 | 7.5 | 5.0 | 12.0 | 12.5 | 0.4 | 0.8 | 1.2 | CEAB5R5155ZC205075 |

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃, | $ESR_{AC}$ (1KHz) | Leakage Current (72hrs) | Size | | | | | | | | P/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | D | h | P | $H_1$ | $H_2$ | A | B | C | |
| (v) | (F) | (Ω) | (mA) | (mm) | | | | | | | | - |
| 5.5 (6) 5R5 H-TYPE | 0.1 | 75 | 0.005 | 11.5 | 4.5 | 10 | 6 | 9 | 12.5 | 0.2 | 0.8 | CEAB5R5104ZH115045 |
| | 0.22 | 75 | 0.005 | 11.5 | 4.5 | 10 | 6 | 9 | 12.5 | 0.2 | 0.8 | CEAB5R5224ZH115045 |
| | 0.33 | 50 | 0.008 | 11.5 | 4.5 | 10 | 6 | 9 | 12.5 | 0.2 | 0.8 | CEAB5R5334ZH115045 |
| | 0.47 | 50 | 0.008 | 11.5 | 4.5 | 10 | 6 | 9 | 12.5 | 0.2 | 0.8 | CEAB5R5474ZH115045 |
| | 1.0 | 30 | 0.010 | 19 | 4.5 | 20 | 7 | 9.5 | 20 | 0.2 | 1.0 | CEAB5R5105ZH190045 |
| | 1.5 | 30 | 0.010 | 19 | 4.5 | 20 | 7 | 9.5 | 20 | 0.2 | 1.0 | CEAB5R5155ZH190045 |

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃, | $ESR_{AC}$ (1KHz) | Leakage Current (72hrs) | Size | | | | | | | | P/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | D | h | P | $H_1$ | $H_2$ | B | C | | |
| (v) | (F) | (Ω) | (mA) | (mm) | | | | | | | | - |
| 5.5 (6) 5R5 V-TYPE | 0.1 | 75 | 0.005 | 11.5 | 4.5 | 5 | 13 | 16.5 | 0.2 | 0.8 | | CEAB5R5104ZV115045 |
| | 0.22 | 75 | 0.005 | 11.5 | 4.5 | 5 | 13 | 16.5 | 0.2 | 0.8 | | CEAB5R5224ZV115045 |
| | 0.33 | 50 | 0.008 | 11.5 | 4.5 | 5 | 13 | 16.5 | 0.2 | 0.8 | | CEAB5R5334ZV115045 |
| | 0.47 | 50 | 0.008 | 11.5 | 4.5 | 5 | 13 | 16.5 | 0.2 | 0.8 | | CEAB5R5474ZV115045 |
| | 1.0 | 30 | 0.010 | 19 | 4.5 | 5 | 20.5 | 25.5 | 0.2 | 0.8 | | CEAB5R5105ZV190045 |
| | 1.5 | 30 | 0.010 | 19 | 4.5 | 5 | 20.5 | 25.5 | 0.2 | 0.8 | | CEAB5R5155ZV190045 |

# CEAC SERIES

Gold Capacitors | Ultra Capacitors

## Features

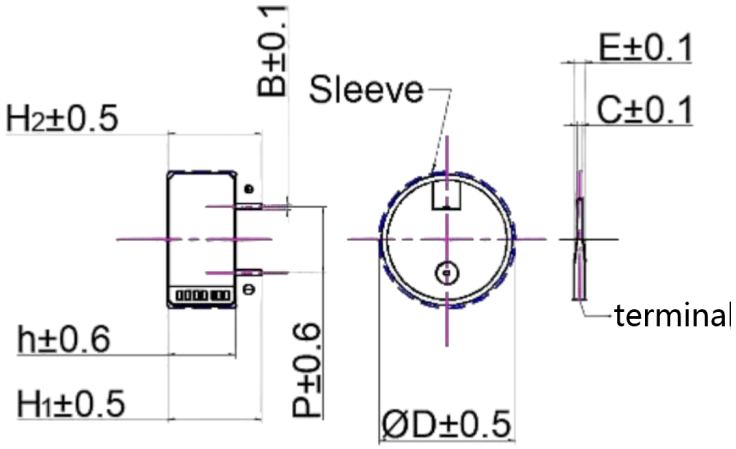
- Wide temperature range
- Quick charge & discharge
- RoHS compliant
- Computer & peripherals
- DSL modems & routers
- Automatic meter reader



| Items | Characteristics | | |
|---|---|---|---|
| Rated Voltage | 5.5V | | |
| Operating Temperature Range | -40~+85℃ | | |
| Surge Voltage | 6.0V | | |
| Capacitance Range | 0.1~1.0 F | | |
| Capacitance Tolerance (25°C) | -20~+80% | | |
| Temperature Characteristics | The specifications shall be met at category temperature range from -45℃ to 85℃ | Capacitance range | Within 30% of the value at 25℃ |
| | | ESR | Less than 2 times of the initial specified value |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 85℃ for 1000 hours | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 4 times of the initial specified value |
| High Temperature Storage | The specifications shall be met after storage at 85 ℃ for 1000 hours | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 4 times of the initial specified value |

## Dimensions mm

**C-TYPE**




## Standard Ratings for CEAC Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃, | $ESR_{AC}$ (1KHz) | Leakage Current (72hrs) | Size | | | | | | | | P/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | D | h | P | $H_1$ | $H_2$ | B | C | E | |
| (v) | (F) | (Ω) | (mA) | (mm) | | | | | | | | - |
| 5.5 | 0.1 | 75 | 0.003 | 13.5 | 9.0 | 5.0 | 14.5 | 15.5 | 0.4 | 0.8 | 1.2 | CEAC5R5104ZC135050 |
| (6) | 0.22 | 75 | 0.003 | 13.5 | 9.0 | 5.0 | 14.5 | 15.5 | 0.4 | 0.8 | 1.2 | CEAC5R5224ZC135050 |
| 5R5 | 0.33 | 50 | 0.005 | 13.5 | 9.0 | 5.0 | 14.5 | 15.5 | 0.4 | 0.8 | 1.2 | CEAC5R5334ZC135050 |
| C-TYPE | 0.68 | 30 | 0.008 | 20.5 | 9.5 | 5.0 | 14.5 | 15.5 | 0.4 | 0.8 | 1.2 | CEAC5R5684ZC205050 |
| | 1.0 | 30 | 0.010 | 20.5 | 9.5 | 5.0 | 14.5 | 15.5 | 0.4 | 0.8 | 1.2 | CEAC5R5105ZC205050 |

Gold Capacitors | Ultra Capacitors

# CECA SERIES

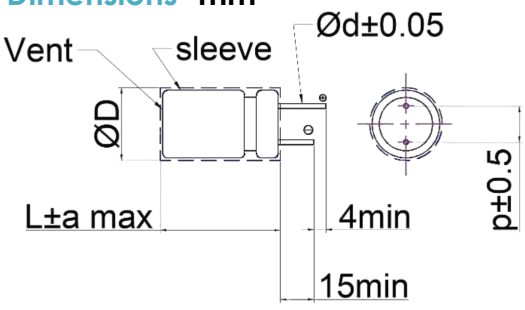


## Features

- Lower ESR
- Low temperature
- RoHS compliant
- Consumer electronic
- Pulse power
- Hold-up power

| Items | Characteristics |
|---|---|
| Rated Voltage | 2.7V |
| Operating Temperature Range | -40~+65℃ (-40~+85℃@2.3V) |
| Surge Voltage | 2.85V |
| Capacitance Range | 1~100 F |
| Capacitance Tolerance (25°C) | -10~+30% |
| Temperature Characteristics | The specifications shall be met at category temperature rangefrom -40℃ to 65℃ — Capacitance range: Within 30% of the value at 25℃; ESR: Less than 2 times of the initial specified value |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 65℃ for 1000 hours — Capacitance range: Within 30% of the initial value; ESR: Less than 2 times of the initial specified value |
| High Temperature Storage | The specifications after storage at shall 65℃ be met for 1000 hours — Capacitance range: Within 30% of the initial value; ESR: Less than 2 times of the initial specified value |
| Cycle Life | The specifications shall be met after 500,000 cycles at 25 ℃, cycle of charge/discharge from $V_R$ to $1/2V_R$ — Capacitance range: Within 30% of the initial value; ESR: Less than 2 times of the initial specified value |

## Dimensions mm




| ΦD | 8 | 10 | 12 | 12.5 | 16 | 18 |
|---|---|---|---|---|---|---|
| p | 3.5 | 5.0 | | | 7.5 | |
| Φd | 0.6 | 0.6 | | | 0.8 | |
| a | 1.5 | 2.0 | | | | |

## Standard Ratings for CECA Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃ | Impedance $ESR_{DC}$ | Impedance $ESR_{AC}$ ( 1KHz ) | Leakage Current (72hrs) | Size ΦDxL | Weight | P/N |
|---|---|---|---|---|---|---|---|
| (v) | (F) | (mΩ) | (mΩ) | (mA) | (mm) | (g) | - |
| | 1 | 400 | 200 | 0.008 | 8 x 14 | 0.8 | CECA2R7105Q080014E |
| | 2 | 250 | 130 | 0.010 | 8 x 14 | 1 | CECA2R7205Q080014E |
| | 3 | 150 | 80 | 0.012 | 8 x 20 | 1.4 | CECA2R7305Q080020E |
| | 3.3 | 150 | 80 | 0.014 | 8 x 20 | 1.5 | CECA2R7335Q080020E |
| | 5 | 130 | 70 | 0.016 | 10 x 20 | 2.1 | CECA2R7505Q100020E |
| 2.7 | 7 | 80 | 55 | 0.020 | 10 x 25 | 2.3 | CECA2R7705Q100025E |
| (2.85) | 10 | 60 | 40 | 0.030 | 10 x 30 | 3.2 | CECA2R7106Q100030E |
| 2R7 | 10 | 60 | 40 | 0.030 | 12.5 x 25 | 3.5 | CECA2R7106Q125025E |
| | 25 | 35 | 25 | 0.080 | 16 x 25 | 7 | CECA2R7256Q160025E |
| | 50 | 22 | 15 | 0.140 | 18 x 40 | 12.8 | CECA2R7506Q180040E |
| | 60 | 22 | 15 | 0.140 | 18 x 40 | 13 | CECA2R7606Q180040E |
| | 70 | 20 | 14 | 0.160 | 18 x 50 | 15 | CECA2R7706Q180050E |
| | 100 | 18 | 12 | 0.180 | 18 x 60 | 20 | CECA2R7107Q180060E |



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# CECB SERIES

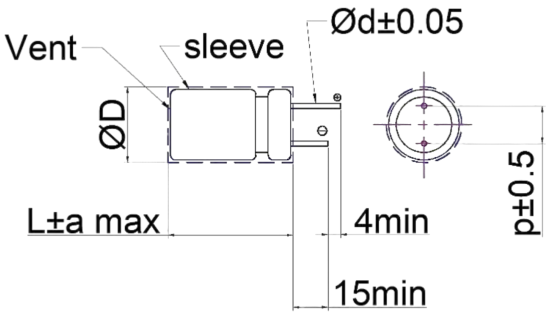



## Features

- High voltage
- Wider temperature range
- RoHS compliant
- Consumer electronic
- Pulse power
- Hold-up power

| Items | Characteristics | | | | |
|---|---|---|---|---|---|
| Rated Voltage | 3 V | | | | |
| Operating Temperature Range | | | | -40~+65℃ | (-40~+85℃@2.5V) |
| Surge Voltage | 3.2V | | | | |
| Capacitance Range | 3~50 F | | | | |
| Capacitance Tolerance (25°C) | -10~+30% | | | | |
| Temperature Characteristics | The specifications shall be met at category temperature range from -40℃ to 65℃ | | | Capacitance range: Within 30% of the value at 25℃<br>ESR: Less than 2 times of the initial specified value | |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 65℃ for 1000 hours | | | Capacitance range: Within 30% of the initial value<br>ESR: Less than 2 times of the initial specified value | |
| High Temperature Storage | The specifications after storage at hours | shall 65℃ | be met for 1000 | Capacitance range: Within 30% of the initial value<br>ESR: Less than 2 times of the initial specified value | |
| Cycle Life | The specifications shall be met after 500,000 cycles at 25 ℃, cycle of charge/discharge from $V_R$ to $1/2V_R$ | | | Capacitance range: Within 30% of the initial value<br>ESR: Less than 2 times of the initial specified value | |

## Dimensions




| ΦD | 8 | 10 | 16 | 18 |
|---|---|---|---|---|
| p | 3.5 | 5.0 | 7.5 | |
| Φd | 0.6 | 0.6 | 0.8 | |
| α | 1.5 | 2.0 | | |

## Standard Ratings for CECB Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25 ℃, | Impedance ESR$_{DC}$ | Impedance ESR$_{AC}$ ( 1KHz ) | Leakage Current (72hrs) | Size ΦDxL | Weight | P/N |
|---|---|---|---|---|---|---|---|
| (v) | (F) | (mΩ) | (mΩ) | (mA) | (mm) | (g) | - |
| 3<br>(3.2)<br>3R0 | 3 | 150 | 80 | 0.013 | 8x20 | 1.4 | CECB3R0305Q080020E |
| | 5 | 130 | 70 | 0.018 | 10x20 | 2.1 | CECB3R0505Q100020E |
| | 7 | 80 | 55 | 0.025 | 10x25 | 2.3 | CECB3R0705Q100025E |
| | 10 | 60 | 40 | 0.040 | 10x30 | 3.2 | CECB3R0106Q100030E |
| | 25 | 35 | 25 | 0.080 | 16x25 | 7 | CECB3R0256Q160025E |
| | 50 | 22 | 15 | 0.150 | 18x40 | 12.8 | CECB3R0506Q180040E |

# CECC SERIES

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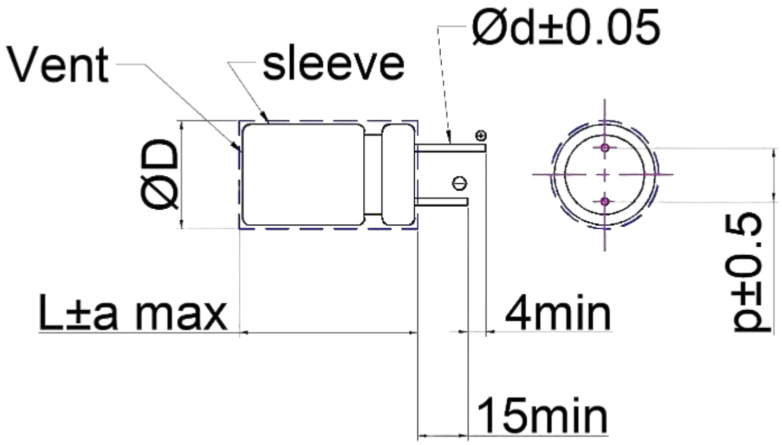
## Features

- Standard product
- RoHS compliant
- Consumer electronic
- Pulse power
- Hold-up power

| Items | Characteristics |
|---|---|
| Rated Voltage | 3.8V~2.5V |
| Operating Temperature Range | -15 ~+70℃ |
| Surge Voltage | 4.2V |
| Capacitance Range | 30~220 F |
| Capacitance Tolerance (25°C) | -20~+20% |
| Temperature Characteristics | The specifications shall be met at category temperature range from -15℃ to 70℃ |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 70℃ |
| High Temperature Storage | The specifications shall be met after storage at 70℃ |
| Cycle Life | The specifications shall be met after 500,000 cycles at 25 ℃ , cycle of charge/discharge from 3.8~2.5V. |

## Dimensions

mm




| ΦD | 10 | 12.5 | 16 |
|---|---|---|---|
| p | 5.0 | 5.0 | 7.5 |
| Φd | 0.6 | 0.6 | 0.8 |
| a | 2.0 | 2.0 | 2.0 |

## Standard Ratings for CECC Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃ , | Impedance | | Rated . Current | Self-discharge Current | Size ΦDxL | P/N |
|---|---|---|---|---|---|---|---|
| | | $ESR_{DC}$ | $ESR_{AC}$ ( 1KHz ) | | | | |
| (v) | (F) | (mΩ) | (mΩ) | (A) | (μA) | (mm) | |
| 3.8 | 30 | 550 | 250 | 0.15 | 1.0 | 10*16 | CECC3R8306M100016E |
| (4.2) | 70 | 250 | 100 | 0.35 | 2.0 | 10*25 | CECC3R8706M100025E |
| 3R8 | 120 | 200 | 80 | 0.6 | 3.0 | 12.5*25 | CECC3R8127M125025E |
| | 220 | 100 | 60 | 1.1 | 5.0 | 16*25 | CECC3R8227M160025E |



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# CECD SERIES

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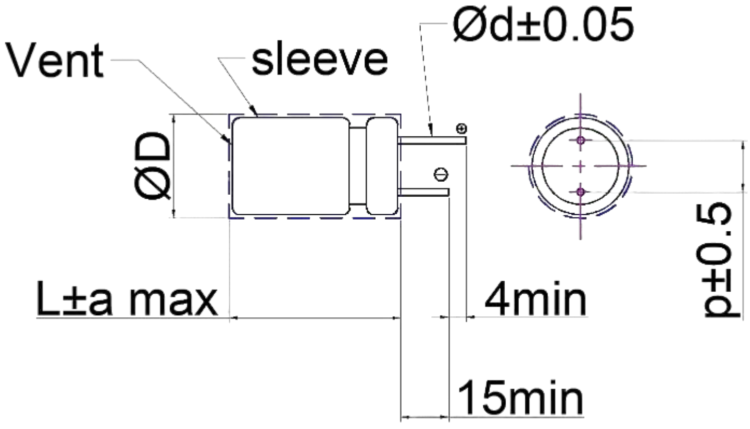



## Features

- Low temperature
- Wider temperature range
- RoHS compliant
- Consumer electronic
- Pulse power
- Hold-up power

| Items | Characteristics |
|---|---|
| Rated Voltage | 3.8V~2.5V |
| Operating Temperature Range | -25 ~+60℃ |
| Surge Voltage | 4.2V |
| Capacitance Range | 30~220 F |
| Capacitance Tolerance (25°C) | -20~+20% |
| Temperature Characteristics | The specifications shall be met at category temperature range from -25℃ to 60℃ |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 60℃ for 1000 hours |
| High Temperature Storage | The specifications shall be met after storage at 60℃ for 1000 hours |
| Cycle Life | The specifications shall be met after 250,000 cycles at 25 ℃ , cycle of charge/discharge from 3.8~2.5V. |

## Dimensions mm




| ΦD | 10 | 12.5 | 16 |
|---|---|---|---|
| p | 5.0 | 5.0 | 7.5 |
| Φd | 0.6 | 0.6 | 0.8 |
| a | 2.0 | 2.0 | 2.0 |

## Standard Ratings for CECD Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃ , | Impedance | | Rated . Current | Self-discharge Current | Size ΦDxL | P/N |
|---|---|---|---|---|---|---|---|
| | | $ESR_{DC}$ | $ESR_{AC}$ ( 1KHz ) | | | | |
| (v) | (F) | (mΩ) | (mΩ) | (A) | (μA) | (mm) | |
| 3.8 | 30 | 550 | 250 | 0.15 | 1.5 | 10*16 | CECD3R8306M100016E |
| (4.2) | 70 | 250 | 100 | 0.35 | 2.5 | 10*25 | CECD3R8706M100025E |
| 3R8 | 120 | 200 | 80 | 0.6 | 3.5 | 12.5*25 | CECD3R8127M125025E |
| | 220 | 100 | 60 | 1.1 | 5.5 | 16*25 | CECD3R8227M160025E |

## CEBA SERIES: Polyester Film Foil

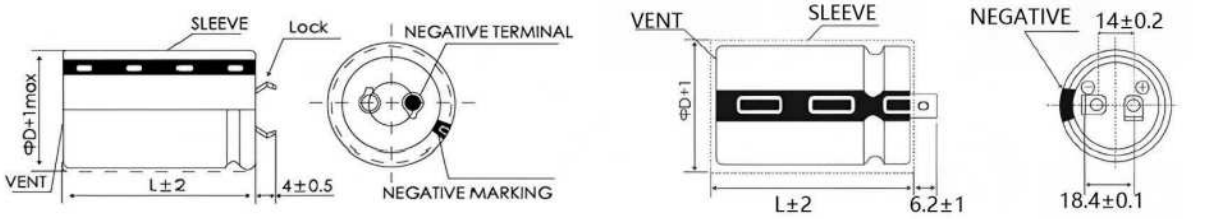
Gold Capacitors | Ultra Capacitors



### ■ Features

- Lower ESR
- Low temperature
- RoHS compliant
- Electronic tools
- Portable power tools
- UPS and back power supply

| Items | Characteristics |
|---|---|
| Rated Voltage | 2.7V |
| Operating Temperature Range | -40~+65℃ (-40~+85℃@2.3V) |
| Surge Voltage | 2.85V |
| Capacitance Range | 100~470 F |
| Capacitance Tolerance (25°C) | -10~+30% |
| Temperature Characteristics | The specifications shall be met at category temperature range from -40℃ to 65℃ |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 65℃ for 1500 hours |
| High Temperature Storage | The specifications shall 65℃ be met after storage at for 1000 hours |
| Cycle Life | The specifications shall be met after 500,000 cycles at 25 ℃ , cycle of charge/discharge from $V_R$ to 1/2$V_R$ |




**Dimensions**

## Standard Ratings for CEBA Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃ | Impedance | | Leakage Current (72hrs) | Size ΦDxL | Weight | P/N |
|---|---|---|---|---|---|---|---|
| | | $ESR_{DC}$ | $ESR_{AC}$ ( 1KHz ) | | | | |
| (v) | (F) | (mΩ) | (mΩ) | (mA) | (mm) | (g) | - |
| 2.7 (2.85) 2R7 | 100 | 12 | 8 | 0.3 | 22 x 45 | 20 | CEBA2R7107Q220045E |
| | 200 | 10 | 6 | 0.7 | 30 x 50 | 36 | CEBA2R7207Q300050E |
| | 350 | 3.5 | 3 | 1.0 | 35 x 60 | 64 | CEBA2R7357Q350060E |
| | 400 | 3.2 | 2.8 | 1.0 | 35 x 60 | 70 | CEBA2R7407Q350060E |
| | 470 | 3.5 | 3 | 1.3 | 35 x 60 | 75 | CEBA2R7477Q350060E |

# CEBB SERIES

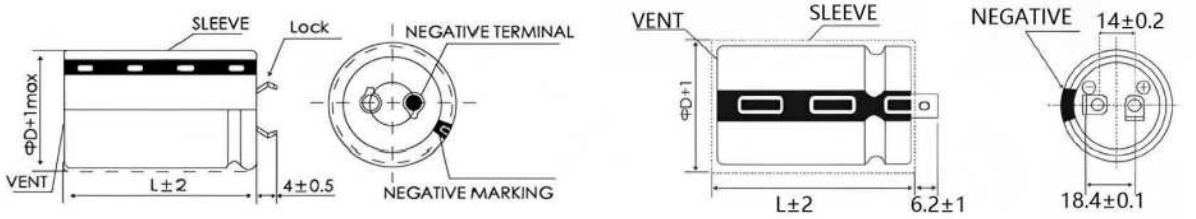
## Features

- High voltage product
- Wider temperature range
- RoHS compliant
- Electronic tools
- Portable power tools
- UPS and back power supply




| Items | Characteristics | | | | |
|---|---|---|---|---|---|
| Rated Voltage | 3V | | | | |
| Operating Temperature Range | | | | -40~+65℃ | (-40~+85℃@2.5V) |
| Surge Voltage | 3.2V | | | | |
| Capacitance Range | 100~400 F | | | | |
| Capacitance Tolerance (25°C) | -10~+30% | | | | |
| Temperature Characteristics | The specifications shall be met at category temperature rangefrom -40℃ to 65℃ | | | | |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 65℃ for 1500 hours | | | | |
| High Temperature Storage | The specifications after storage at hours | shall 65℃ | be met for 1000 | | |
| Cycle Life | The specifications shall be met after 500,000 cycles at 25℃, cycle of charge/discharge from $V_R$ to 1/2$V_R$ | | | | |

## Dimensions mm




## Standard Ratings for CEBA Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃ | Impedance | | Leakage Current (72hrs) | Size ΦDxL | Weight | P/N |
|---|---|---|---|---|---|---|---|
| | | $ESR_{DC}$ | $ESR_{AC}$ ( 1KHz ) | | | | |
| (v) | (F) | (mΩ) | (mΩ) | (mA) | (mm) | (g) | - |
| 3 (3.2) 3R0 | 100 | 12 | 8 | 0.3 | 22 x 45 | 20 | CEBB2R7107Q220045E |
| | 200 | 10 | 6 | 0.7 | 30 x 50 | 36 | CEBB2R7207Q300050E |
| | 350 | 3.5 | 3 | 1.0 | 35 x 60 | 64 | CEBB2R7357Q350060E |
| | 400 | 3.2 | 2.8 | 1.0 | 35 x 60 | 70 | CEBB2R7407Q350060E |

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# CEDA SERIES



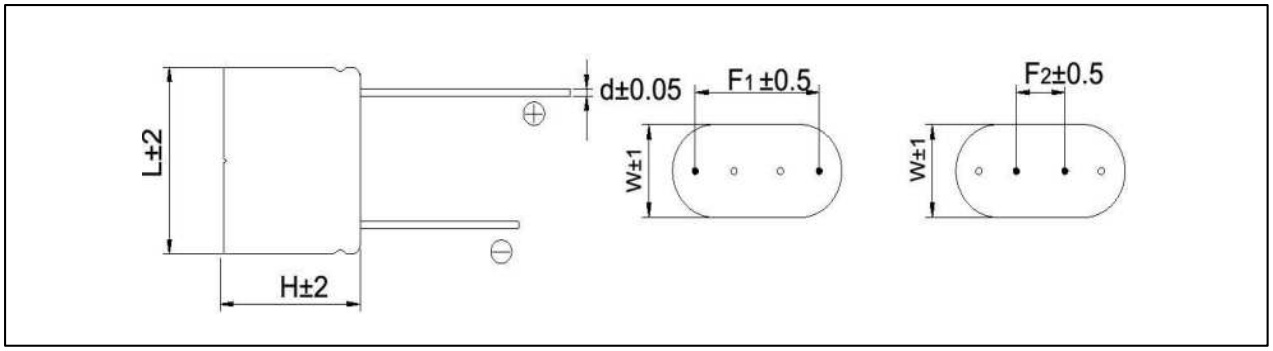

## Features

- Double cells in series
- Higher voltage
- RoHS compliant
- Consumer electronic
- AMR
- DC-DC converters

| Items | Characteristics |
|---|---|
| Rated Voltage | 5.5V |
| Operating Temperature Range | -40~+65℃ (-40~+85℃@4.6V) |
| Surge Voltage | 5.7V |
| Capacitance Range | 0.5~5 F |
| Capacitance Tolerance (25°C) | -10~+30% |
| Temperature Characteristics | The specifications shall be met at category temperature range from -40℃ to 65℃ — Capacitance range: Within 30% of the value at 25℃; ESR: Less than 2 times of the initial specified value |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 65℃ for 1000 hours — Capacitance range: Within 30% of the initial value; ESR: Less than 2 times of the initial specified value |
| High Temperature Storage | The specifications after storage at 65℃ shall be met for 1000 hours — Capacitance range: Within 30% of the initial value; ESR: Less than 2 times of the initial specified value |
| Cycle Life | The specifications shall be met after 500,000 cycles at 25℃, cycle of charge/discharge from $V_R$ to 1/2$V_R$ — Capacitance range: Within 30% of the initial value; ESR: Less than 2 times of the initial specified value |

## Dimensions

mm




## Standard Ratings for CEDA Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃, | Impedance | | Leakage Current (72hrs) | Size WxLx H | F | d | P/N |
|---|---|---|---|---|---|---|---|---|
| | | $ESR_{DC}$ | $ESR_{AC}$ ( 1KHz ) | | | | | |
| (v) | (F) | (mΩ) | (mΩ) | (mA) | (mm) | (mm) | (mm) | - |
| 5.5 (5.7) 5R5 | 0.5 | 800 | 400 | 0.008 | 8.5 x 17 x 17 | 12/5.0 | 0.6 | CEDA5R5504V081717 |
| | 1 | 500 | 260 | 0.010 | 8.5 x 17 x 17 | 12/5.0 | 0.6 | CEDA5R5105V081717 |
| | 1.5 | 300 | 160 | 0.012 | 8.5 x 17 x 23 | 12/5.0 | 0.6 | CEDA5R5155V081723 |
| | 2.5 | 260 | 140 | 0.016 | 10x 20 x 22 | 15.5/5.5 | 0.6 | CEDA5R5255V102022 |
| | 3.5 | 160 | 110 | 0.02 | 10x 20x 22 | 15.5/5.5 | 0.6 | CEDA5R5355V102022 |
| | 5 | 120 | 80 | 0.03 | 10x 20x 27 | 18/8.0 | 0.6 | CEDA5R5505V102027 |



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# CEDC SERIES

## Features

- Standard LIC modules
- Energy storage solution
- Application for AGV, power grid, EV, train, elevator
- Higher energy density
- RoHS compliant







| Items | Characteristics | | |
|---|---|---|---|
| Rated Voltage | 32V~136V | | |
| Operating Temperature Range | -25 ~+55℃ | | |
| Capacitance Range | 277F~7500 F | | |
| Capacitance Tolerance (25°C) | -20~+20% | | |
| Temperature Characteristics | The specifications shall be met at category temperature rangefrom -20℃ to 55℃ | Capacitance range | Within 30% of the value at 25℃ |
| | | ESR | Less than 2 times of the initial specified value |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 55℃ for 1000 hours | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 2 times of the initial specified value |
| High Temperature Storage | The specifications shall be met after storage at 55 ℃ for 1000 hours | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 2 times of the initial specified value |
| Cycle Life | The specifications shall be met after 50,000 cycles at 25℃ | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 2 times of the initial specified value |

## Standard Ratings for CEDC Series

| $U_R$ | $U_{min}$ | Rated Cap. 25℃ , | $ESR_{DC}$ | Rated Current | Size ΦLxWxH | Weight | P/N |
|---|---|---|---|---|---|---|---|
| (v) | (v) | (F) | (mΩ) | (A) | (mm) | (Kg) | - |
| 32 | 20 | 7500 | 10 | 300 | 702 x 405 x 230 | 41.5 | CEDC032758M |
| 48 | 30 | 833 | 35 | 50 | 338 x 144 x204 | 7.7 | CEDC048837M |
| 64 | 43 | 400 | 55 | 32 | 458 x 228 x 75 | 6.4 | CEDC064407M |
| 91 | 63 | 416 | 55 | 50 | 311 x 138 x290 | 11 | CEDC091417M |
| 136 | 90 | 277 | 75 | 50 | 305 x 138 x415 | 17.5 | CEDC136277M |

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# CEEA SERIES



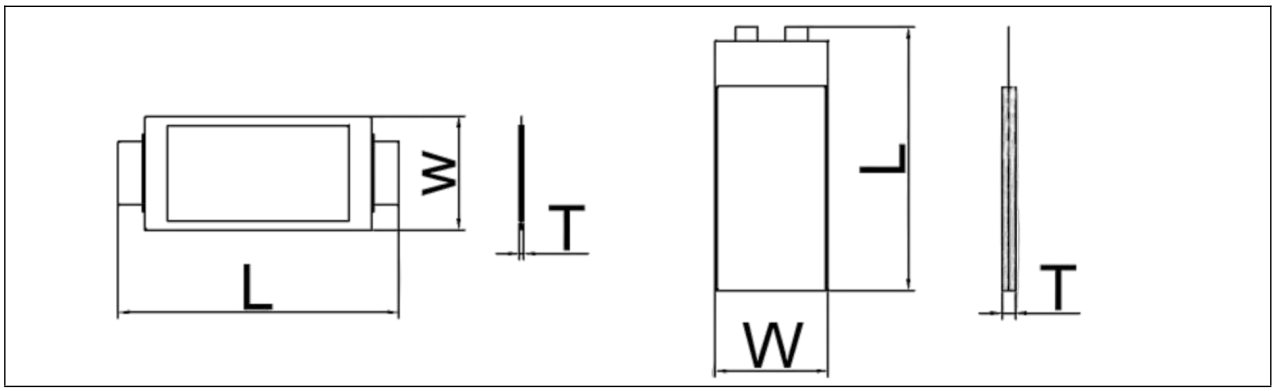

## Features

- Lower ESR ,
- Wider temperature range
- High energy density
- High power density
- RoHS compliant

| Items | Characteristics | | |
|---|---|---|---|
| Rated Voltage | 2.5V~4.0V | | |
| Operating Temperature Range | -25 ~+55℃ | | |
| Surge Voltage | 4.35V | | |
| Capacitance Range | 1000~16000 F | | |
| Capacitance Tolerance (25°C) | -20~+20% | | |
| Temperature Characteristics | The specifications shall be met at category temperature rangefrom -25℃ to 55℃ | Capacitance range | Within 40% of the value at 25℃ |
| | | $ESR_{AC}$ | Less than 400% of the value at 25℃ |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 55℃ for 1000 hours | Capacitance range | Within 20% of the initial value |
| | | $ESR_{AC}$ | Less than 200% of the initial value |
| High Temperature Storage | The specifications shall be met after storage at 55 ℃ for 1000 hours | Capacitance range | Within 20% of the initial value |
| | | $ESR_{AC}$ | Less than 200% of the initial value |
| Cycle Life | The specifications shall be met after 50,000 cycles at 25 ℃ , cycle of charge/discharge from 2.5~4.0V. | Capacitance range | Within 20% of the initial value |
| | | $ESR_{AC}$ | Less than 200% of the initial value |

## Dimensions

mm




## Standard Ratings for CEEA Series

| $U_R$ (Surge Voltage) Code | Rated Cap. 25℃ | Impedance | | Rated . Current | Self-discharge (72hrs) | Dimension (L*W*T) | P/N |
|---|---|---|---|---|---|---|---|
| | | $ESR_{DC}$ | $ESR_{AC}$ ( 1KHz ) | | | | |
| (v) | (F) | (mΩ) | (mΩ) | (A) | (V) | (mm) | |
| 4.0 (4.35) 4R0 | 1000 | ≤20 | ≤9 | 5 | ≥3.92 | 100 x 71 x 3.0 | CEEA4R0108M |
| | 2000 | ≤9 | ≤5 | 10 | ≥3.92 | 100 x 71 x 5.5 | CEEA4R0208M |
| | 3200 | ≤5.5 | ≤3 | 16 | ≥3.92 | 100 x 60 x 9.0 | CEEA4R0328M |
| | 6000 | ≤3.5 | ≤2.5 | 30 | ≥3.92 | 295 x 123 x 3.5 | CEEA4R0608M |
| | 10000 | ≤1.8 | ≤1.2 | 50 | ≥3.92 | 295 x 123 x 5.5 | CEEA4R0109M |
| | 16000 | ≤1.2 | ≤1.0 | 50 | ≥3.92 | 295 x 123 x 8.0 | CEEA4R0169M |


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# CEEB SERIES



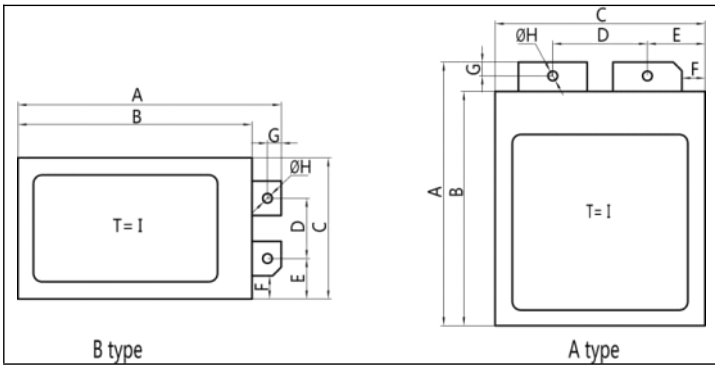

## Features

- Higher voltage
- Higher energy density
- RoHS compliant
- More safe than LiB
- Energy regeneration
- Vehicle and rail transport

| Items | Characteristics | | |
|---|---|---|---|
| Usable Cell Voltage Range | 3.8 ~ 2.2 V | | |
| Operating Temperature Range | -30 ~ +60 ℃ | | |
| Surge Voltage | 4.0 V | | |
| Capacitance Range | 1000 ~ 5000 F | | |
| Capacitance Tolerance (25°C) | -10 ~ +10% | | |
| Temperature Characteristics | The specifications shall be met at category temperature range from -30℃ to 60℃ | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 4 times of the initial specified value |
| High Temperature Loaded | The specifications shall be met after rated voltage applied at 60℃ for 1000 hours | Capacitance range | Within 20% of the initial value |
| | | ESR | Less than 2 times of the initial specified value |
| High Temperature Storage | The specifications shall be met after storage at 60℃ for 1000 hours | Capacitance range | Within 20% of the initial value |
| | | ESR | Less than 2 times of the initial specified value |
| Cycle Life | The specifications shall be met after 500,000 cycles at 25 ℃ , cycle of charge/discharge from 3.8V to 2.2V | Capacitance range | Within 30% of the initial value |
| | | ESR | Less than 2 times of the initial specified value |

## Dimensions

mm




| Type | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| A | 153 | 136 | 122 | 55 | 33.5 | 13.5 | 8 | 5.5 |
| B | 153 | 136 | 82 | 35 | 23.5 | 13.5 | 8 | 5.5 |

## Standard Ratings for CEEB Series

| Usable Cell Voltage Range | Static Capacitance 25℃ | Impedance | | Self Discharge (72hrs) | Size | | Weight | P/N |
|---|---|---|---|---|---|---|---|---|
| | | ESRDC | ESRAC ( 1KHz ) | | Type | CxAxT | | |
| (V) | (F) | (mΩ) | (mΩ) | | | (mm) | (g) | |
| 3.8 | 1000 | 5.0 | 2.5 | ≥3.7 | B | 82x136x11 | 120 | CEEB3R8107M |
| | 2000 | 3.0 | 1.5 | ≥3.7 | A | 122x136x12 | 220 | CEEB3R8207M |
| | 3000 | 2.0 | 1.0 | ≥3.7 | A | 122x136x18 | 330 | CEEB3R8307M |
| | 5000 | 5.0 | 2.5 | ≥3.7 | A | 122x136x21 | 370 | CEEB3R8507M |

## CGDA SERIES

### Features

- Monolithic/Miniature size
- Low loss and high stability
- Min.work voltage under 10uV
- Meet MIL-C5

### Configuration

Dipped Mica Capacitors are fabricated from The top best China Danba Mica available.Using this Mica,results in the capacitor with outstanding high Temperature&frequency performance as well as Excellent stability.

Capacitance Range: 1 to120,000PF
Capacitance Tolerance: +/-1%;+-2%;+/-5%
Rated Voltage 50V to 3000V
Operating Temperature: -55 to + 125 ℃
(+200degree C is available if requested)
Insulation Resistance(Min.): $1x10^9$ohms

### PART NUMBER EXAMPLE

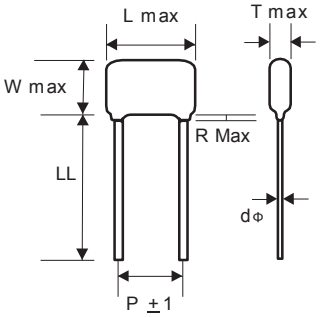
CGDA 102 J 2A 03 B

- Series
- Capacitance
- Tolerance
- Voltage
  100V=2A 250V=2E 500V=2H
  1000V=2A 1500V=3R
  2000V=3D 2500V=3E
  3000V=3U
- Package B=Bulk
  A=Ammo (tape&box)
- Size Code








### Specifications&Outline Drawing

Refenence standard:GB/T2693-2001
Operating Temperatune:-55℃~+125 ℃
Rated Voltage 50V to 3000V
Capacitarce Range ±1%, ±2%, ±5%
Insulation Resistance(min):1* $10^9$0hms

### Dimensions

| Capacitance Range(PF) | Work Voltage(V) | Size Code | Size(mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L max | W max | T max | R max | P | d ±0.1 | LL |
| 1~9 | 100 | 01 | 5.5 | 4.5 | 3.0 | 2.0 | 2.5 | 0.3 | 20 |
| 10~300 | 100 | 02 | 6.5 | 5.5 | 4.0 | 2.0 | 3.5 | 0.4 | |
| 330~1000 | 100 | 03 | 8.5 | 7 | 5.0 | 3.0 | 4.5 | 0.4 | 25 |
| 1100~2400 | 100 | 04 | 10 | 8.5 | 6.0 | 3.0 | 5 | 0.6 | |
| 10~750 | 250 | 05 | | | | | | | |
| 10~240 | 500 | 05 | | | | | | | |
| 2700~5100 | 100 | 06 | 12.5 | 10 | 7.0 | 3.5 | 6.5 | 0.6 | 28 |
| 820~2400 | 250 | 06 | | | | | | | |
| 270~750 | 500 | 06 | | | | | | | |
| 5600~10000 | 100 | 07 | 15 | 12 | 8.0 | 3.5 | 8.5 | 0.8 | |
| 2700~5100 | 250 | 07 | | | | | | | |
| 820~2400 | 500 | 07 | | | | | | | |
| 11000~18000 | 100 | 08 | 17.5 | 15.5 | 9.0 | 4.0 | 10 | 0.8 | |
| 5600~10000 | 250 | 08 | | | | | | | |
| 2700~5100 | 500 | 08 | | | | | | | |
| 20000~30000 | 100 | 09 | 22 | 19 | 9.0 | 4 | 17 | 1.0 | |
| 11000~18000 | 250 | 09 | | | | | | | |
| 5600~10000 | 500 | 09 | | | | | | | |
| 100~6800 | 1000 | 09 | | | | | | | |
| 100~4300 | 1500 | 09 | | | | | | | |
| 33000~68000 | 100 | 10 | 26 | 20 | 9 | 4 | 21 | 1.0 | |
| 20000~47000 | 250 | 10 | | | | | | | |
| 11000~33000 | 500 | 10 | | | | | | | |
| 7500~12000 | 1000 | 10 | | | | | | | |
| 4700~7500 | 1500 | 10 | | | | | | | |
| 1000~4300 | 2000 | 10 | | | | | | | |
| 75000~120000 | 100 | 11 | 32 | 24 | 12 | 4 | 26 | 1.2 | |
| 51000~75000 | 250 | 11 | | | | | | | |
| 36000~62000 | 500 | 11 | | | | | | | |
| 13000~30000 | 1000 | 11 | | | | | | | |
| 8200~20000 | 1500 | 11 | | | | | | | |
| 4700~13000 | 2000 | 11 | | | | | | | |
| 1000~5600 | 2500 | 11 | | | | | | | |
| 510~3000 | 3000 | 11 | | | | | | | |

# CGCA Mica Paper Capacitor: Big current,high voltage




**Feature:**

- Using the best mica paper as material,dipping high temperature epoxy resin.
- High frequency,high voltage and big current.
- Very stable at big current circuit.

**Application:**

- JINPEI CGCA series mica pcapacitors are suitable to high frequency,high voltage, big current circuit. Like high frequency feedback circuit,high frequency resonance circuit and pulse circuit etc.
- Widely use in satellite,aerospace,ship,medical equipment,oil down-hole equipment, welding machine,metallurgy equipment etc.

**General Characteristics:**

- Temperature Range: -40℃～+85℃
- Capacitance Tolerance: ±5%,±10%,±20%
- Relative Humidity: 80%, at +40℃ can be short time at 95~98%.
- Atmospheric pressure: $6x10^4$Pa~$1.04x10^5$Pa
- Vibration: frequency 10~500Hz, acceleration: 10g
- Working voltage: 2KV~30KV
- Working current: 5A~50A
- DC test voltage: at room termperature,rated voltage $U_0 \leqslant$ 10KV capacitor, load 2 times working voltage, Rated voltage 10KV < $U_0 \leqslant$ 30KV capacitor,load 1.5 times working voltage, Rated voltage $U_0$ > 30KV capacitor,load 1.2 times working voltage, After keep 1 minute,no breakdown and flashover.
- Insulation resistance(R): normal climate

  Capacitance C ≥ 0.1μF R≥1000MΩ

  Capacitance C＜ 0.1μF R＞5000MΩ
- Dissipation factor: tgδ≤$4\times10^{-3}$(1KHz), Pass D.C. rated voltage test.

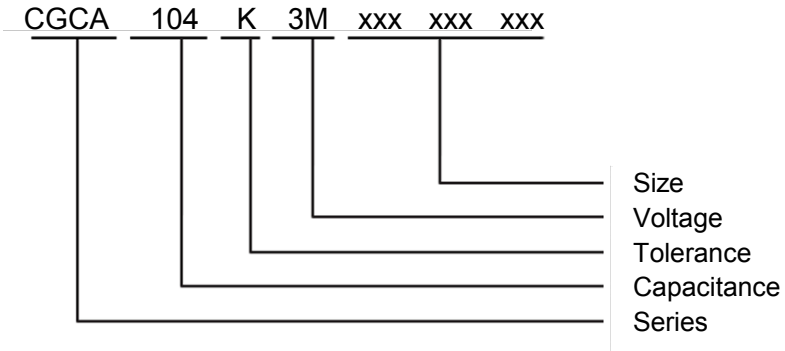
## CGCA Mica Paper Capacitor: Big current,high voltage

**Some items' datas.**

| Part Number | Capaitance (μF) | Working Voltage (KV/DC) | Working Current (A) | Working Frequency (MHz) |
|---|---|---|---|---|
| CGCA-A | 0.005 | 15 4R | 30 | 1 |
| | 0.01 | 30 4U | 50 | 1 |
| | 0.01 | 4.5 3W | 25 | 1 |
| | 0.05 | 15 4R | 50 | 1 |
| | 0.1 | 7.5 3M | 15 | 1 |
| CGCA-B | 0.004 | 15 4R | 10 | 1 |
| | 0.01 | 20 4D | 10 | 1 |
| CGCA-C | 0.025 | 5 3H | 25 | 1 |
| | 0.025 | 5 3H | 5 | 1 |

Can used in DC blocking,energy storage,feedback,by-pass circuit etc.

## PART NUMBER EXAMPLE





www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

# CGEA High Frequency Mica Capacitor

## 1, Brief Introduction

This capacitor is silver-layer coating,

can used at high frequency 1KHz~1MHz and big current 200A.

Operating Temperature: 0℃~50℃

Relative Humidity： 35%~70%

Suit Equipment: 3kw----10kw high frequency equipment.;

Function：High frequency resonance.



## 2, Feature

| No. | Item | Standard | |
|---|---|---|---|
| 1 | Frequency | ≤800KHz | Electrical Bridge |
| 2 | Current | ≤200A | Ampere Meter |
| 3 | Voltage | ≤1000V | Puncture Tester |
| 4 | Capacitance | 0.01μF~ 0.1μF | Capacitance Meter |
| 5 | Insulate Resistance | >500MΩ | Insulation Tester |
| 6 | Dissipation Factor | ≤0.5 | |

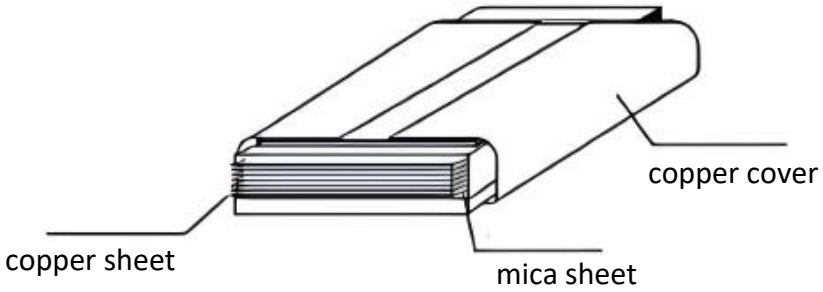
## 3, Data Record

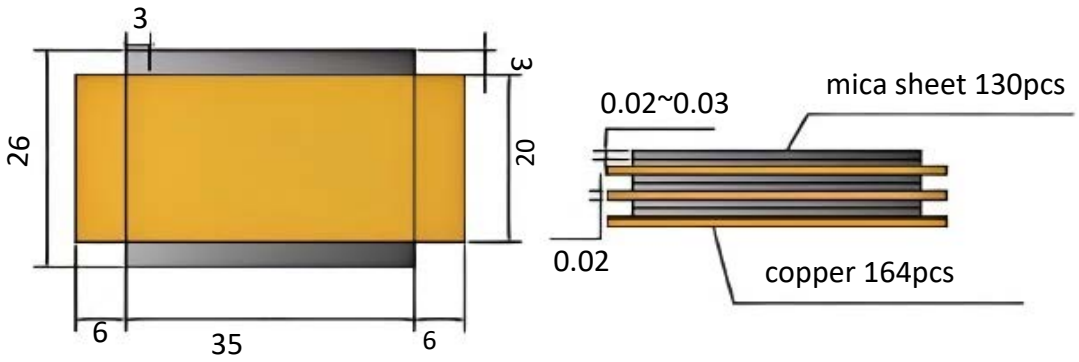
Part Number: CGEA523J3R460310090

| NO. | C （μF） | tgδ （≤N X10$^{-3}$） | U （KV/min） | Size |
|---|---|---|---|---|
| 1 | 0.052 | 0.3 | 1.5 3R | 46*31*9mm |

## CGEA High Frequency Mica Capacitor

### 4, Outline Drawing:



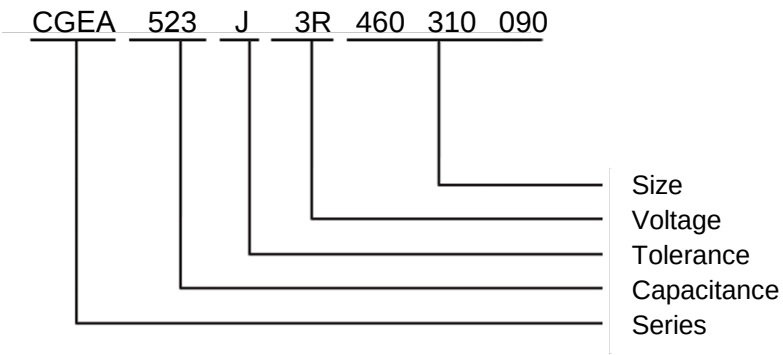

### 5, Guarantee and Storage

Store temperature 5℃ ~ 25 ℃, put at dry and sealed. Quality guaranteed 12 months after shipping.

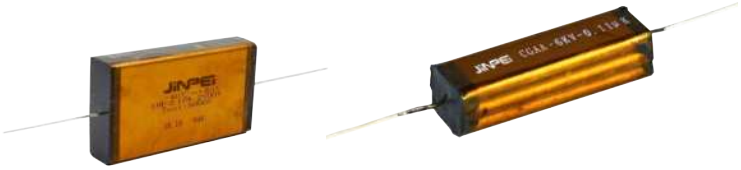
### 6, Application

High frequency welding machine,big current welding machine etc.

### PART NUMBER EXAMPLE



## CGAA Mica Paper Capacitor: High voltage,High frequency



### Feature:

- Using the best mica paper as material,dipping high temperature epoxy resin.
- High voltage,high frequency, and big current.
- Very stable at high frequency circuit.

### Application:

- JINPEI CGAA series mica capacitors are suitable to high frequency,high voltage, big current circuit. Like high frequency feedback circuit,high frequency resonance circuit and pulse circuit etc.
- Widely use in satellite,aerospace,ship,medical equipment,oil down-hole equipment,high voltage transmission,welding machine,metallurgy equipment etc.

### General Characteristics:

- Temperature Range: -40℃～+85℃
- Capacitance Tolerance: ±5%,±10%,±20%
- Relative Humidity: 80%, at +40℃ can be short time at 95~98%.
- Atmospheric pressure: $6x10^4$Pa~$1.04x10^5$Pa
- Vibration: frequency 10~500Hz, acceleration: 10g
- Working voltage: 2KV~30KV
- Working current: 5A~50A
- DC test voltage: at room termperature,rated voltage $U_0 \leqslant$ 10KV capacitor, load 2 times working voltage, Rated voltage 10KV < $U_0 \leqslant$ 30KV capacitor,load 1.5 times working voltage, Rated voltage $U_0$ > 30KV capacitor,load 1.2 times working voltage, After keep 1 minute,no breakdown and flashover.
- Insulation resistance(R): normal climate

  Capacitance C ≥ 0.1μF R≥1000MΩ

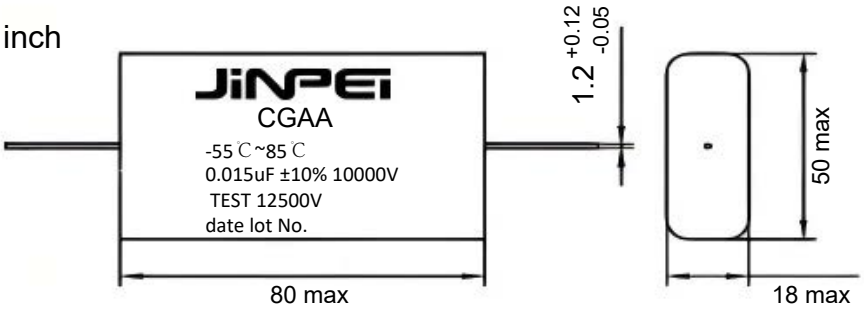
  Capacitance C＜ 0.1μF R＞5000MΩ
- Dissipation factor: tgδ≤$4\times10^{-3}$(1KHz), Pass D.C. rated voltage test.

## CGAA Mica Paper Capacitor: High voltage,High frequency

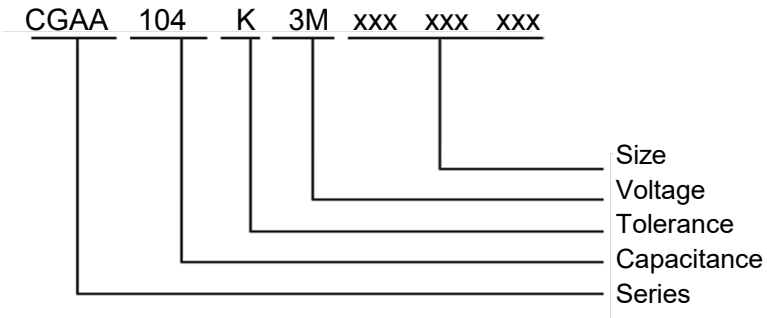
**Some items' datas.**

| Part Number | Capaitance (μF) | Working Voltage (KV/DC) | Working Current (A) | Working Frequency (MHz) |
|---|---|---|---|---|
| CGAA-A | 0.005 | 15 (4R) | 30 | 1 |
| | 0.01 | 30 (4U) | 50 | 1 |
| | 0.01 | 4.5 (2W) | 25 | 1 |
| | 0.05 | 15 (10R) | 50 | 1 |
| | 0.1 | 7.5 (3M) | 15 | 1 |
| CGAA-B | 0.004 | 15 (4R) | 10 | 1 |
| | 0.01 | 20 (4D) | 10 | 1 |
| CGAA-C | 0.025 | 5 (3H) | 25 | 1 |
| | 0.025 | 5 (3H) | 5 | 1 |

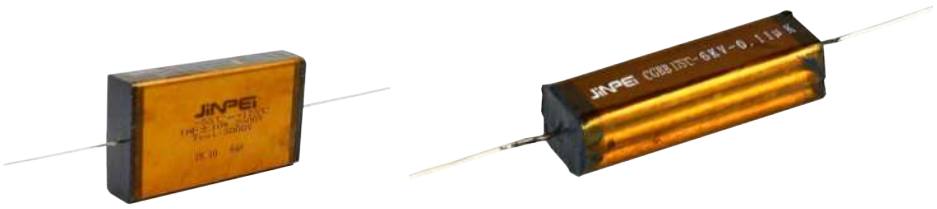
Dimension in inch




## PART NUMBER EXAMPLE



# CGBB Mica Paper Capacitor: High temperature,high voltage



**Feature:**

- Using the best mica paper 511 as material,dipping high temperature epoxy resin.
- As the high insulated resistance,low coefficient,good high frequency performance.
- Very low dissipation factor <$5x10^{-3}$ (min $1x10^{-4}$).
- Very stable at high temperature, small capacitance tolerance.
- After storage 15years, capacitance change not over ±1%.

**Application:**

- JINPEI CGBB series mica pcapacitors are suitable to high frequency,high voltage,high temperature,big current circuit. Like high frequency feedback circuit,high frequency resonance circuit and pulse circuit etc.
- Widely use in satellite,aerospace,ship,medical equipment,oil down-hole equipment, welding machine,metallurgy equipment etc.

**General Characteristics:**

- Temperature Range: -55℃～+175℃
- Capacitance Tolerance: ±3%,±5%,±10%
- Relative Humidity: at +40℃ can be 95~98%
- Atmospheric pressure: $4x10^{4}$Pa
- Vibration: frequency 20~200Hz, acceleration: 2.7~4.5g
- Working voltage: 2500V
- DC test voltage: After keep 1 hour at +150℃,loading 1.5times working voltage 1 minute,no breakdown and flashover.
- Insulation resistance(R): normal climate

  Capacitance C ≥ 0.1μF  R≥1000MΩ

  Capacitance C＜ 0.1μF  R＞5000MΩ

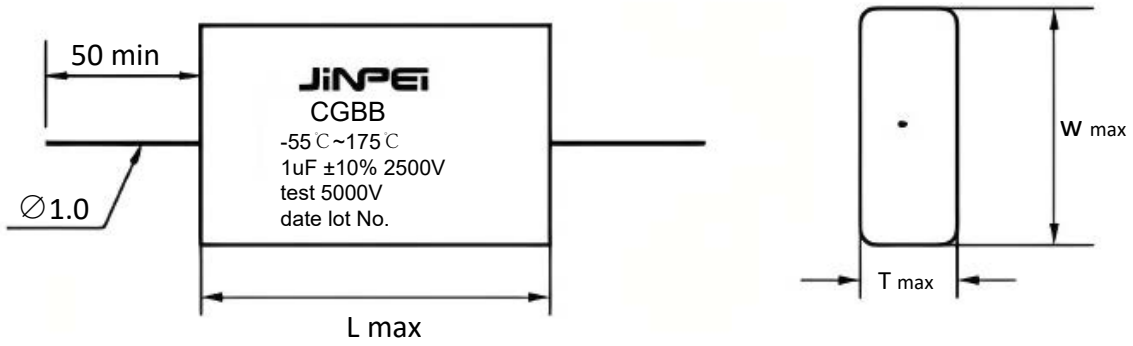
## CGBB Mica Paper Capacitor: High temperature,high voltage

**Temperature characteristics:**

- After keep at +175℃ 1 hour,capacitance change not over ±10%, Insulation resistance R＞500MΩ, Dissipation factor: tgδ≤5×10$^{-3}$(1KHz), Pass D.C. rated voltage test.
- After keep at -55℃ 1 hour,capacitance change not over ±7%, Insulation resistance R＞500MΩ, Dissipation factor: tgδ≤5×10$^{-3}$(1KHz), Pass D.C. rated voltage test.
- After keep at +40℃, relative Humidity 95~98% 48 hours, capacitance change not over ±5%, Insulation resistance R＞500MΩ,Dissipation factor: tgδ≤5×10$^{-3}$(1KHz), Pass D.C. rated voltage test.
- After keep at +195℃~+200℃ 96 hours, capacitance change not over ±10%, Insulation resistance R＞500MΩ,Dissipation factor: tgδ≤6×10$^{-3}$(1KHz), Pass D.C. rated voltage test.
- After vibration test, capacitance change not over ±5%

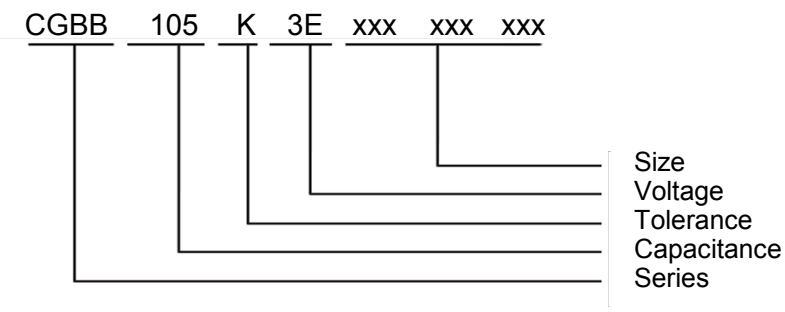
| Part Number | Capaitance (μF) | Working Voltage (V/DC) | Test Voltage (V/DC) | Dissipation Factor Max. |
|---|---|---|---|---|
| CGBB105K3Exxxx | 1.0 | 2500 3E | 5000 | 0.5% |

**Dimensions: unit: mm**




| L Max. | W Max. | T Max. | Terminals |
|---|---|---|---|
| 83mm | 48mm | 20mm | Axial wire leaded |

## PART NUMBER EXAMPLE



## CGBA Mica Paper Capacitor: High temperature,high voltage



**Feature:**

- Using the best mica paper 511 as material,dipping high temperature epoxy resin.
- As the high insulated resistance,low coefficient,good high frequency performance.
- Very low dissipation factor <$5x10^{-3}$ (min $1x10^{-4}$).
- Very stable at high temperature, small capacitance tolerance.
- After storage 15years, capacitance change not over ±1%.

**Application:**

- JINPEI CGBA series mica pcapacitors are suitable to high frequency,high voltage,high temperature,big current circuit. Like high frequency feedback circuit,high frequency resonance circuit and pulse circuit etc.
- Widely use in satellite,aerospace,ship,medical equipment,oil down-hole equipment, welding machine,metallurgy equipment etc.

General Characteristics

- Temperature Range: -55℃～+200℃
- Capacitance Tolerance: ±3%,±5%,±10%
- Relative Humidity: at +40℃ can be 95~98%
- Atmospheric pressure: $4x10^4$Pa
- Vibration: frequency 20~200Hz, acceleration: 2.7~4.5g
- Working voltage: 0.45KV~30KV
- DC test voltage: After keep 1 hour at +150℃,loading 1.5times working voltage 1 minute,no breakdown and flashover.
- Insulation resistance(R): normal climate

  Capacitance C ≥ 0.1μF R≥1000MΩ

  Capacitance C＜ 0.1μF R＞5000MΩ

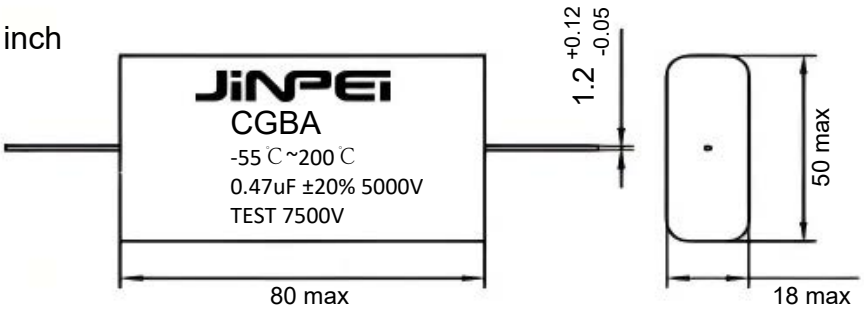
## CGBA Mica Paper Capacitor: High temperature,high voltage

**Temperature characteristics:**

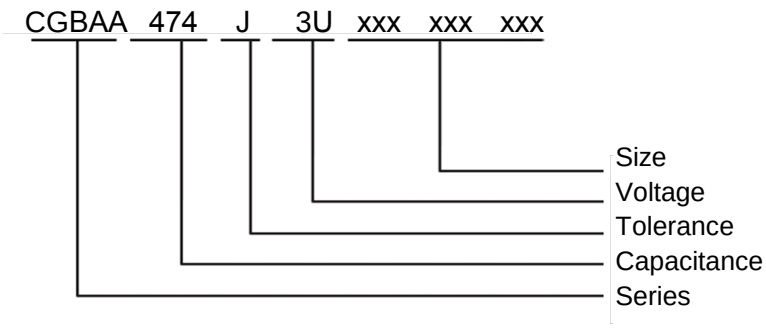
- After keep at +200℃ 1 hour,capacitance change not over ±10%, Insulation resistance R＞500MΩ, Dissipation factor: tgδ≤5×10$^{-3}$(1KHz), Pass D.C. rated voltage test.
- After keep at -55℃ 1 hour,capacitance change not over ±7%, Insulation resistance R＞500MΩ, Dissipation factor: tgδ≤5×10$^{-3}$(1KHz), Pass D.C. rated voltage test.
- After keep at +40℃, relative Humidity 95~98% 48 hours, capacitance change not over ±5%, Insulation resistance R＞500MΩ,Dissipation factor: tgδ≤5×10$^{-3}$(1KHz), Pass D.C. rated voltage test.
- After keep at +195℃~+200℃ 96 hours, capacitance change not over ±10%, Insulation resistance R＞500MΩ,Dissipation factor: tgδ≤6×10$^{-3}$(1KHz), Pass D.C. rated voltage test.
- After vibration test, capacitance change not over ±5%

| Part Number | Capaitance (μF) | Working Voltage (KV/DC) |
|---|---|---|
| CGBA-A | 0.47 | 3 3U |
| | 0.47 | 0.25 2E |
| | 0.047 | 2 2D |
| | 0.033 | 0.25 2E |
| CGBA-B | 3.3 | 3 3U |
| | 0.1 | 4 3G |
| CGBA-C | 0.022 | 4 3G |

Dimension in inch




**PART NUMBER EXAMPLE**



# CHAA



**FEATURES:**

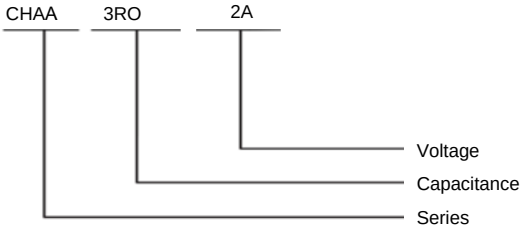
- Ultra miniature size with external dimensions of 3.2(W) x 4.5(L) x 1.5(T)mm
- Designed for reflow soldering
- Lowest capacitance drift
- Very good Q and high resonant frequency
- Color coded case permits easy identification
- Sealed construction prevents the penetration of Flux and Dust

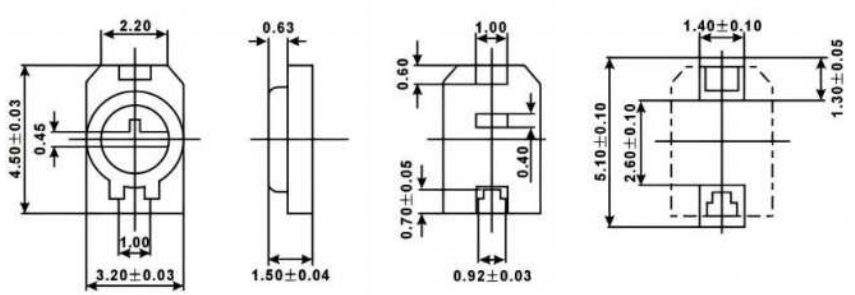
Chip Trimmer Capacitors, CHAA Series, are miniature and ultra-thin type surface mounting device, and are recommended for miniaturization of electronic equipment.

The capacity drift after adjustment is very low and having a very thin dustproof structure, these capacitors are most suited to the fine adjustment of items.

The plastic is a high temperature liquid-crystal polymer with low dielectric loss and good mechanical strength.

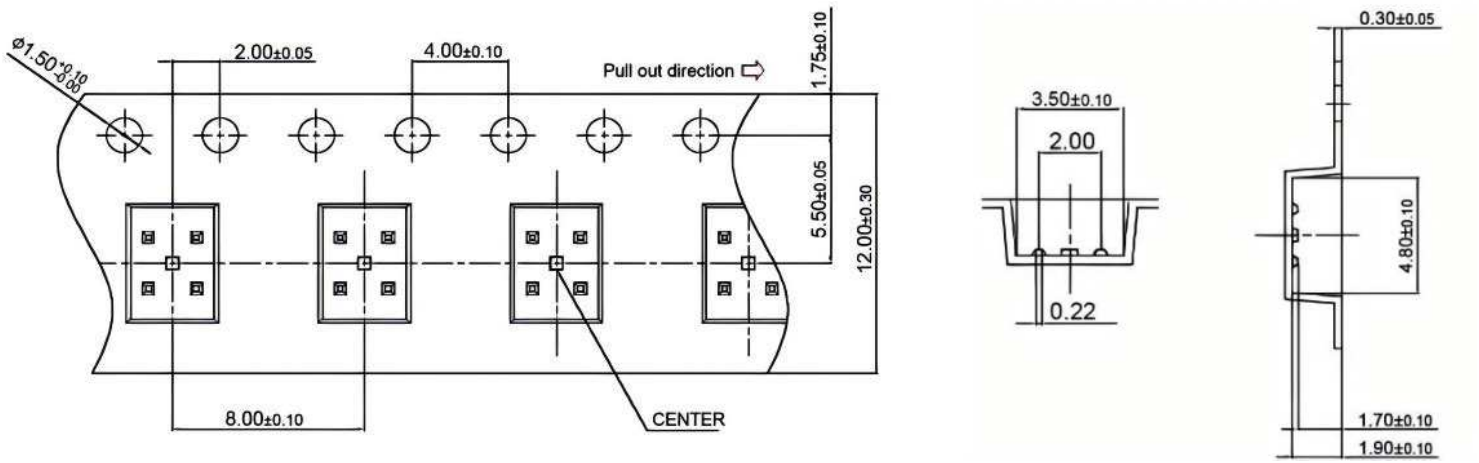
**PART NUMBER EXAMPLE**




## Ratings and Characteristics

| Item \ Part No | CHAA3R02A 3pF Black | CHAA6R02A 6pF Blue | CHAA1002A 10pF Ivory | CHAA2002A 20pF Pink | CHAA3002A 30pF Green |
|---|---|---|---|---|---|
| Capacitance(pF Min) | 1.5 MAX | 2.0 MAX | 3.0 MAX | 5.5 MAX | 8.0MAX |
| Capacitance(pF Max) | $3.0^{+50}$-0% | $6.0^{+50}$-0% | $10.0^{+50}$-0% | $20.0^{+50}$-0% | $29.0^{+50}$-0% |
| Capacitance Drift (Max) | ±2% | ±2% | ±2% | ±3% | ±3% |
| Temperature Coefficient (ppm/℃) | NPO±300 | NPO±200 | N600±400 | N900±400 | N1200±400 |
| Q Value (at 1 Mhz, C max) | 300min | 500 min | 700 min | 500 min | 250 min |
| DC Working Voltage | 100 VDC | 100 VDC | 100 VDC | 100 VDC | 100 VDC |
| DC Withstanding Voltage | 220 VDC | 220 VDC | 220 VDC | 220 VDC | 220 VDC |
| Insulation Resistance | $10^{4}$MΩMin | | | | |
| Operating Temperature | -25℃ to 85℃ | | | | |
| Rotation Torque | 15 ~ 72 gf.cm | | | | |




Note: Specification are subject to change without notice. For more detail and update, please visit our website.

# CHBA

## FEATURES:

As well as applications to small sized electronic apparatus, this series is designed for easy handing.

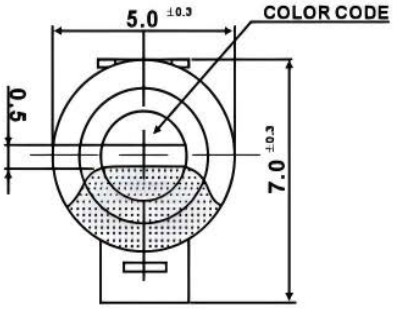
- Wide mounting sizes and variable adjustment available
- Lots of capacity ranges, 3pF through 90pF
- Sturdy mechanical structure against vibration or shock

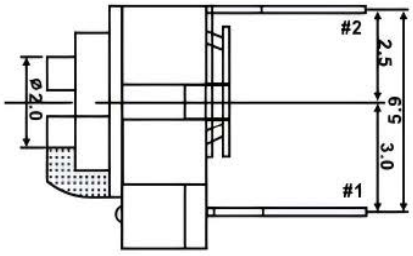


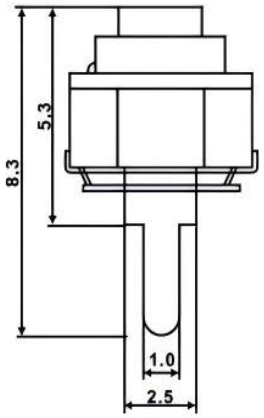
## SPECIFICATIONS

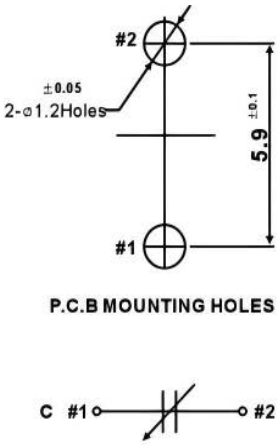
| | |
|---|---|
| OPERATING TEMPERATURE RANGE | -30℃ to +85℃ |
| RATED WORKING VOLTAGE | 100VDC |
| WITHSTANDING VOLTAGE | 400VDC |
| INSULATION RESISTANCE | $10^4$ MΩ min. |
| ROTATION TORQUE | 35 to 200 g-cm |
| SOLDERING TEMPERATURE | 260 ± 5℃ |

- **NORMAL TYPE**



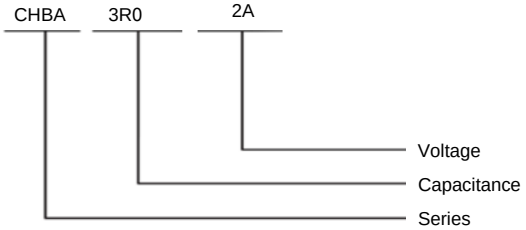




UNIT:MM

| PART NO. | MIN. CAP. (PF) | MAX. CAP. (PF) | TEMP.COEFF. PPM/℃ | Q Value 10MHz | Q Value 100MHz |
|---|---|---|---|---|---|
| CHBA3R02A | 1.3±50% | 3.0 +100 -0 % | 0 ± 200 | >300 | >200 |
| CHBA5R02A | 2.0±50% | 5.0 +100 -0 % | -500 ± 300 | >300 | |
| CHBA1002A | 4.0±50% | 10.0 +100 -0 % | -500 ± 300 | >300 | |
| CHBA2002A | 6.0±50% | 20.0 +100 -0 % | -1000 ± 600 | >300 | |
| CHBA3002A | 7.0±50% | 30.0 +100 -0 % | -1000 ± 600 | >250 | |
| CHBA4002A | 8.0±50% | 40.0 +100 -0 % | -1600 ± 800 | >200 | |
| CHBA5002A | 9.0±50% | 50.0 +100 -0 % | -1600 ± 800 | >200 | |
| CHBA6002A | 10.5±50% | 60.0 +100 -0 % | -1600 ± 800 | >200 | |
| CHBA-7002A | 13.0±50% | 70.0 +100 -0 % | N1200 ± 500 | 200min. | |
| CHBA9002A | 15.0±50% | 90.0 +100 -0 % | N1200 ± 500 | 200min. | |

## PART NUMBER EXAMPLE




Note: Specification are subject to change without notice. For more detail and update, please visit our website.

# CERAMIC TRIMMER CAPACITOR | 6MM

# CHCA



**1.Applications**

These specifications are applied to Ceramic Trimmer Capacitors with the ceramic dielectric, which are used for the electric and electronic apparatus and communication equipments.

**2.Part Number**

The part number consists of category, dimension , temperature characteristics and maximum nominal

**Capacitance:**

| CHCA | 3R0 | 2A | R |
|---|---|---|---|
| ( a ) | ( b ) | 3 | ( c ) |

**(a)Series**

**(b) Maximum nominal capacitance :** PF unit in 3 digits (The1st and 2nd figures indicate the significant figures, but the 3rd indicates the number of naught.)

**(c ) Adjusting types :** R (Reverse Type) or Blank (Normal Type)

**3.Rated voltage :** 100VDC

**4.Temperature range :** –25℃to +85℃

**5.Test circumstance :**Test should be done at 20℃ with relative humidity at 65%. However, subjected to special requirement,the ideal range should be within ± 5℃ and humidity from 45℃to 85℃

**6. Electrical Characteristic**

**6.1 Capacitance Drift After Adjustment**

Rotation shall be made for 5 cycles for 180° at a rate of 20 r/mm, a capacitance value difference woul d be found immediately. Once the shaft is stopped at the position of the maximum capacit–ance value after 24 hours later. The specification range should be within 5pF, 10pF ± 1.5% and 30pF ± 2%.

**6.2 Temperature Characteristics**

When measured the capacitance at 1MHz ± 10%, it reached the heat balance at each temperature changed to .+20℃to –25℃with adjusting to 80%~90% of the maximum capacitance, the capacitance change is based on the capacitance at +20℃ of 2nF, stage of changing the temperature as above.

**6.3 Q (Quality factor)**

When measured at 20℃, 0.5V to 5V, 1MHz and maximum capacitance ,the Q values are listed in the attached specification.

**6.4 Insulation Resistance**

When applied 100VDC between terminals for 1 minute at the maximum capacitance, the insulation resistance shall be more than 10,000M.

**6.5 Withstanding Voltage**

There is no abnormality after applied 220VDC (1ess than 5mA) for 5 seconds between the terminals.

**7. Structure and mechanical characteristics**

**7.1 Configuration and Dimensions**

Please refer to the attached drawings.

**7.2 Strength of Terminals**

When applied a power to the terminals to any direction slowly and kept at 0.5 kg for 10 seconds, the terminals shall not be loosen or broken mechanically.

**7.3 Torque**

The torque test should be done at least for l round tuning from 35gf.cm to 100gf.cm for the Normal Type, or 15gf.cm to 100gf.cm for the Reverse Type . Please note that it might cause the torque will decrease against the rotation increase.

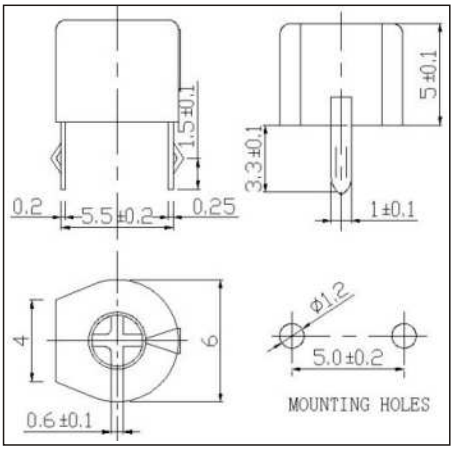
**7.4 Solder ability**

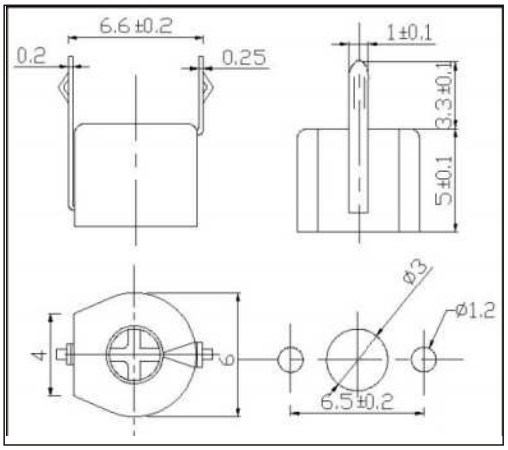
When dipped the terminals into the soldering pot at 255℃ ± 5℃ for 2 ± 0.5 seconds. There is almost 75% of the total dipped surface are covered with the new solder.( Caution: Keep the soldering conditions as above. If the soldering conditions are not suitable (excessive time, excessive temperature and etc.), it’ s performance will be seriously deviated.

**8. Color Code**

Please refer to the color code in the attached specifications.

**6mm Ceramic Trimmer Capacitors)**




Normal Type

Reverse Type

| Part No. | Capacitance(pF) | | | Q(1MHz, Cmax) | Temp.Coeff ppm/℃ | Rated Voltage | Withstanding Voltage | Color Code |
|---|---|---|---|---|---|---|---|---|
| | Min | Max | | | | | | |
| CHCA3R02A(R) | 1.3max | 3 | +50%–0% | 500 min | NPO ± 200 | 100Vdc | 220Vdc | Blue |
| CHCA5R02A(R) | 1.5max | 5 | +50%–0% | | NPO ± 250 | 100Vdc | 220Vdc | Blue |
| CHCA7R02A(R) | 2.0max | 7 | +50%–0% | | NPO ± 250 | 100Vdc | 220Vdc | Blue |
| CHCA1002A(R) | 3.0max | 10 | +50%–0% | | N 450 ± 300 | 100Vdc | 220Vdc | White |
| CHCA2002A(R) | 5.0max | 20 | +50%–0% | | N 750 ± 300 | 100Vdc | 220Vdc | Red |
| CHCA3002A(R) | 6.0max | 30 | +50%–0% | | N 1000 ± 500 | 100Vdc | 220Vdc | Green |
| CHCA4002A(R) | 7.0max | 40 | +50%–0% | 300 min | N 1200 ± 500 | 100Vdc | 220Vdc | Yellow |
| CHCA5002A(R) | 10.0max | 50 | +50%–0% | 200 min | N 1200 ± 500 | 100Vdc | 220Vdc | Brown |
| CHCA6002A(R) | 12.0max | 60 | +50%–0% | | N 1200 ± 800 | 100Vdc | 220Vdc | Brown |
| CHCA7002A(R) | 14.0max | 70 | +50%–0% | | N 2200 ± 800 | 50Vdc | 110Vdc | Brown |
| CHCA9002A(R) | 25.0max | 90 | +50%–0% | | N 2200 ± 800 | 50Vdc | 110Vdc | Brown |
| CHCA1212A(R) | 35.0max | 120 | +50%–0% | | N 2200 ± 800 | 50Vdc | 110Vdc | Brown |

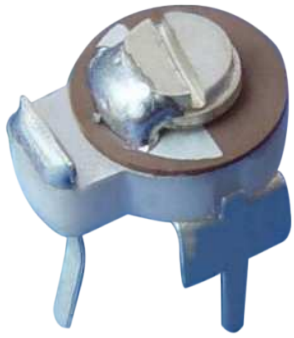
# CHDA

## FEATURES:

·Wide of capacity ranges

·Long durability of performance guaranteed by both stables
And strong characteristics of capacity against heat humidity and coldness

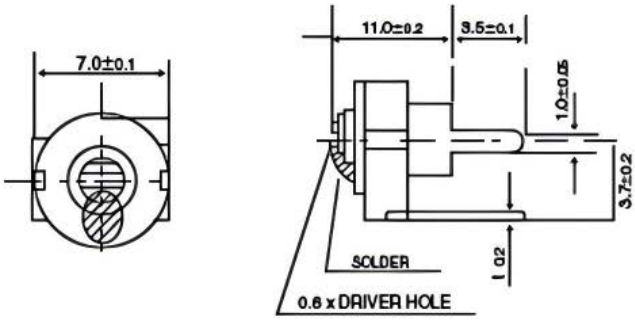
·Sturdy mechanical structure against vibration or shock

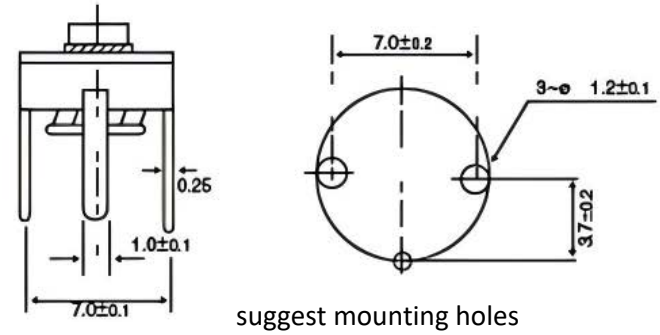


## SPECIFICATIONS

| | |
|---|---|
| OPERATING TEMPERATURE RANGE | -30℃ ~ +85℃ |
| RATED WORKING VLOTAGE | 100V DC |
| WITHSTANDING VOLTAGE | 500V DC |
| INSULATION RESISTANCE | $10^4$ MΩ min |
| ROTATION TORQUE | 40 ~ 200 g.cm |
| SOLDERING TEMPERATURE | 250 ± 5℃ |

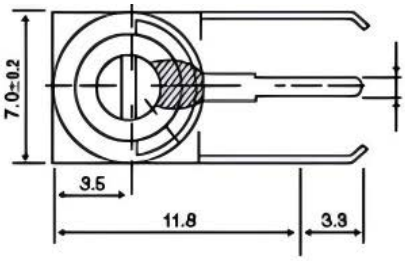
## NORMAL TYPE

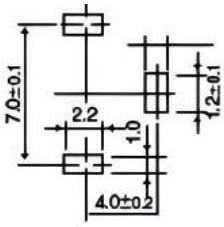


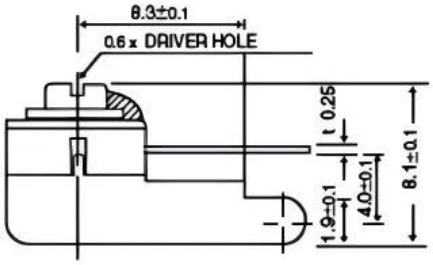

suggest mounting holes

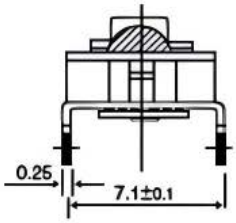
## VERTICAL TYPE




suggest mounting holes




**mm**

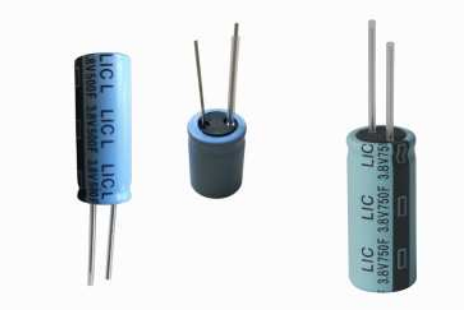
## RATINGS

| PART NO. | MIN. CAP. (pF) | MAX. CAP. (pF) | TEMP. COEFF. PPM / ℃ | Q FACTOR @1MHZ Cmax |
|---|---|---|---|---|
| CHDA(N,V)5R02A | 2.0 max | 5.0 +100 -0 % | NP 0±200 | >300 |
| CHDA(N,V)1002A | 2.5 max | 10.0 +100 -0 % | NP 0±200 | >300 |
| CHDA(N,V)2002A | 3.0 max | 20.0 +100 -0 % | N 470±200 | >300 |
| CHDA(N,V)3002A | 4.5 max | 30.0 +100 -0 % | N 550±300 | >300 |
| CHDA(N,V)5002A | 6.0 max | 50.0 +100 -0 % | N 1400±300 | >300 |
| CHDA(N,V)7002A | 8.5 max | 70.0 +100 -0 % | N 2200±300 | >200 |
| CHDA (N,V)1012A | 12.0 max | 100.0 +100 -0 % | N 2200±300 | >200 |

V: VERTICAL TYPE N: NORMAL TYPE

Note: Specification are subject to change without notice. For more detail and update, please visit our website.

# CKBA CKBB



Lithium-ion capacitors (LIC) is a kind of hybrid capacitor. Jinpei has advanced research and development capability on lithium-ion capacitors.

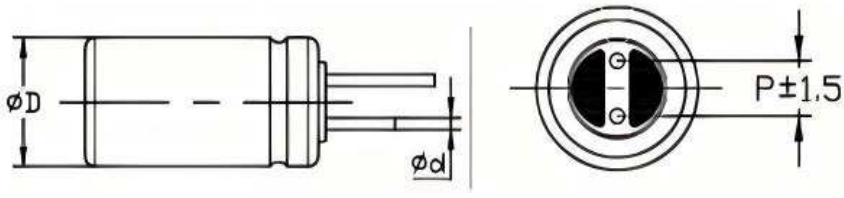
At present, Jinpei has completed the R&D of 3.8V 20F-750F CKBA 、 4.2V 80F-1200F CKBB series, 4.2V 100mah-4000mah cylinder CKAA Series monomer lithium-ion capacitors and ultra-fast battery module.

Being commonly used as a source of solutions,electric double layer capacitor (EDLC) and traditional lithium-ion batteries (LIB) in self-discharge characteristics, energy density, reliability, and thermal design aspects of life there are many obvious flaws,Jinpei brand lithium-ion capacitor(LIC) to overcome these problems, It just can make up the defect ofelectric double layer capacitor (EDLC) and lithium-ion batteries (LIB).

Market application covers new energy vehicles, mobile robots, military industry, power, energy storage, power tools, intelligent three meters, 5G/GPRS/ROLA/NB and other communication power supply, two-wheeler and other emerging industries.

| **Performance** | | | | |
|---|---|---|---|---|
| A new energy storage device, which integrates supercapacitor andlithium ion battery technology, stores energy through shallow embedding and shallow stripping of lithium ion, and hasintermediate characteristics between supercapacitor and lithium ion battery. | **Safety**<br>√Storage reliable<br>√ Overvoltage protection<br>√ Material safety, no explosion, no fire | **Temperature**<br>√Available charge at -40℃<br>√Available discharge at 85℃ | **Ratio**<br>√Continuous charge 20C<br>√Continuous discharge 30C<br>√Monmentary discharge 50C | **Life**<br>√Physical storage<br>√Life＞30,000 times 1C<br>√100% DOD |

| Comparion | Lead batteries | Lithium titanium oxide | Jinpei LIC | Lithium phosphate battery | Nickel cobalt manganese |
|---|---|---|---|---|---|
| Energy densit（Wh/kg） | 40-50 | 70-80 | 120-150 | 150-180 | 180-220 |
| Lify\|time | ○ 300-400(year) | ◎5000-10000(over 5years) | ◎1000（over 8years | ○ 2000-3000(years) | ○ 500-800(2 years) |
| Charge time（SOC90） | △8~10h | ◎~10min | ◎~3min | ◎~I~2h | △2~4h |
| Stability | o（heavy metal） | o | o | o | △ |
| Low tem characteristic | o | ○ (-20°C) | ○ (-40°C) | × | × |
| High charge&discharge | △ (1~3C) | ◎(10~20C) | ◎(20~30C) | △ (1~3C) | △ (1~3C) |
| Price(1KWh) | low | high | medium | low | medium |



## CKBA | fast charge | radial lead

| parameter | | CKBA 0813 | CKBA 0820 | CKBA 1013 | CKBA 1020 | CKBA 1030 | CKBA 1313 | CKBA 1320 | CKBA 1620 | CKBA 1640 | CKBA 1840 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Working Temperature | | -40℃~ 70℃ | | | | | | | | | |
| Work Voltage | | 2.5~3.8V | | | | | | | | | |
| Mix Voltage | | 2.5V | | | | | | | | | |
| (@25±2℃) Standard Capacitance | | 20F | 40F | 30F | 80F | 120F | 70F | 120F | 250F | 500F | 750F |
| Tolerance | | -20% ~ +80% | | | | | | | | | |
| AC(1kHz,3.8V) Resistance | | ≤500mΩ | ≤200mΩ | ≤250mΩ | ≤150mΩ | ≤100mΩ | ≤l75mΩ | ≤100mΩ | ≤50mΩ | ≤35mΩ | ≤25mΩ |
| Max. discharge current | Continuous | 100mA | 200mA | 150mA | 250mA | 500mA | 250mA | 500mA | 750mA | 2.0A | 3.0A |
| | Pulse (1sec) | 0.5 A | 1.0A | 0.7A | 3.0 A | 5.0 A | 3.0 A | 5.0 A | 10.0 A | 20A | 30.0 A |
| Max charge voltage/current | | 4.2V 200mA | 4.2V 300mA | 4.2V 350mA | 4.2V 500mA | 4.2V 1A | 4.2V 500mA | 4.2V 1A | 4.2V 2A | 4.2V 3A | 4.2V 5A |
| Weight (g) Mass | | ≤1.5 | ≤2.0 | ≤2.0 | ≤3.0 | ≤6.0 | ≤3.5 | ≤5.0 | ≤8.0 | ≤16.0 | ≤20.0 |
| Dimension（D×L） mm | | 8*13 | 8*20 | 10*13 | 10*20 | 10*30 | 13*13 | 13*20 | 16*20 | 16*40 | 18*40 |
| Optimum storage condition | | +10℃-50℃ 60%RH or lower | | | | | | | | | |

## CKBB | large capacitance | radial

| parameter | | CKBB0825 | D*L 8*25 | CKBB1320 | 13*20 | CKBB 1620 | 16*20 | CKBB1840 | 18*40 |
|---|---|---|---|---|---|---|---|---|---|
| Working Temperature | | -25℃~ 60℃ | | | | | | | |
| Work Voltage | | 2.5-4.2V | | | | | | | |
| Mix Voltage | | 2.5V | | | | | | | |
| (@25±2℃) Standard Capacitance | | 80F/40mAh | | 250F/120mAh | | 400F/200mAh | | 1200F/600mAh | |
| Tolerance | | -20% ~ +80% | | | | | | | |
| AC(1kHz,3.8V) Resistance | | ≤600mΩ | | ≤100mΩ | | ≤50mΩ | | ≤25mΩ | |
| Max. discharge current | Continuous | 400mA | | 1000mA | | 4000mA | | 6000mA | |
| | Pulse (1sec). | 1A | | 2A | | 5A | | 10A | |
| Max charge voltage/current | | 4.2V 200mA | | 4.2V 600mA | | 4.2V 2.0A | | 4.2V 3.0A | |
| Weight(g) Mass | | ≤2.5 | | ≤5.0 | | ≤8.0 | | ≤20.0 | |
| Optimum storage condition | | +10℃-50℃ 60%RH or lower | | | | | | | |

## CKAA:Lithium ion battery pack & fast charge solution



Lithium-ion capacitors (LIC) is a kind of hybrid capacitor. Jinpei has advanced research and development capability on lithium-ion capacitors.

At present, Jinpei has completed the R&D of 3.8V 20F-750F CKBA 、 4.2V 80F-1200F CKBB series, 4.2V 100mah-4000mah cylinder CKAA Series monomer lithium-ion capacitors and ultra-fast battery module.

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Market application covers new energy vehicles, mobile robots, military industry, power, energy storage, power tools, intelligent three meters, 5G/ GPRS/ROLA/NB and other communication power supply, two-wheeler and other emerging industries.

| **Performance** | | | | |
|---|---|---|---|---|
| A new energy storage device, which integrates supercapacitor andlithium ion battery technology, stores energy through shallow embedding and shallow stripping of lithium ion, and hasintermediate characteristics between supercapacitor and lithium ion battery. | **Safety**<br>√Storage reliable<br>√ Overvoltage protection<br>√ Material safety, no explosion, no fire | **Temperature**<br>√Available charge at -40℃<br>√Available discharge at 85℃ | **Ratio**<br>√Continuous charge 20C<br>√Continuous discharge 30C<br>√Monmentary discharge 50C | **Life**<br>√Physical storage<br>√Life> 10,000times<br>√100% DOD |

| Comparion | Lead batteries | Lithium titanium oxide | Jinpei LIC | Lithium phosphate battery | Nickel cobalt manganese |
|---|---|---|---|---|---|
| Energy densit（Wh/kg） | 40-50 | 70-80 | 120-150 | 150-180 | 180-220 |
| Lify\|time | ○ 300-400(year) | ◎5000-10000(over 5years) | ◎1000（over 8years | ○ 2000-3000(years) | ○ 500-800(2 years) |
| Charge time（SOC90） | △8~10h | ◎~10min | ◎~3min | ◎~l~2h | △2~4h |
| Stability | o（heavy metal） | o | o | o | △ |
| Low tem characteristic | o | ○ (-20°C) | ○ (-40°C) | × | × |
| High charge&discharge | △ (1~3C) | ◎(10~20C) | ◎(20~30C) | △ (1~3C) | △ (1~3C) |
| Price(1KWh) | low | high | medium | low | medium |


www.sh-jinpei.com inquiry@sh-jinpei.com 86-21-31263693
JINPEI

## CKAA |fast charge | cylinder

| Parameter | CKAA18650H | CKAA18650L | CKAA21700H | CKAA21700L |
|---|---|---|---|---|
| Capacitance | 1100mAh | 1500mAh | 1900mAh | 2500mAh |
| Rate voltage | 3.6V | 3.6V | 3.6V | 3.6V |
| Volt-HI | 4.2V | 4.2V | 4.2V | 4.2V |
| Volt-LO | 2.5V | 2.5V | 2.5V | 2.5V |
| DC internal resistan（10ms） | ≤11mΩ | ≤11mΩ | ≤8mΩ | ≤8mΩ |
| AC internal resistance（1KHZ） | ≤15mΩ | ≤15mΩ | ≤11mΩ | ≤11mΩ |
| Standard charging current | 5.5A(5C) | 4.5A(3C) | 9.5A(5C) | 7.5A(3C) |
| Quick charging current | 16.5A(15C) | 12A(8C) | 28.5A(15C) | 20A(8C) |
| Rated discharge current | 11A(15C) | 15A(10C) | 28.5A(15C) | 15A(10C) |
| Max continuous discharge current | 33A(30C) | 22.5A(15C) | 57A(30C) | 22.5A(15C) |
| Charge temperature range | -30~65°C | -40~55°C | -30~65°C | -40~55°C |
| Discharge temperature range | -40~85°C | -40~85°C | -40~85°C | - 40~85°C |
| Storage temperature range | -40~55°C | -40~55°C | -40~55°C | -40~55°C |
| Fast charging cycle life | ≥10K tims（10C） | ≥5K tims (6C) | ≥10K tims (10C) | ≥5K tims (6C) |
| Slow charging cycle life | ≥20K tims (1C) | ≥10K tims (1C) | ≥20K tims (1C) | ≥10K tims (1C) |
| Weight | ≤45g | ≤45g | ≤65g | ≤65g |
| Dimension（D×L）mm | 18x65 | 18x65 | 21x70 | 21x70 |

CKAA60140 Lithium ion battery pack & fast charge solution

# 1. Introduction

This specification describes the properties, testing methods and notice of the 60140 Flash Charge Lithium ion capacitors developed by Jinpei Electronics Co., Ltd.

# 2. General Features

## 2.1 Features and Advantages

- Fast charge and discharge
- Long cycle life
- Good low temperature performance
- High energy density

## 2.2 Typical Applications

Using at Energy storage, Start and stop system,
smart grid, harbor machinery UPS and other power system.

# 3. Product Appearance & Dimensions

## 3.1 Structure & Appearance



# 4. Product Technical Index

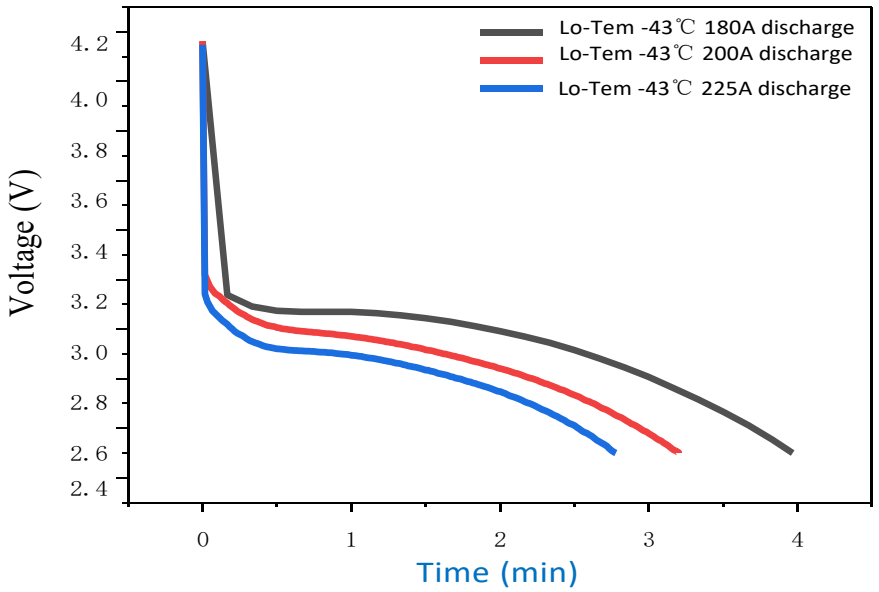
## 4.1 Main Parameters

| Series | Merits | Values |
|---|---|---|
| *1* | Capacitance | 15Ah±5% |
| *2* | Volt-HI | 4.2V |
| *3* | Volt-LO | 2.5V |
| *4* | DC internal resistan（10ms） | ≤0.6mΩ |
| *5* | Standard charging current | 45A(3C) |
| *6* | Quick charging current | 150A(10C) |
| *7* | Rated discharge current | 45A(3C) |
| *8* | Max continuous discharge current | 300A(20C) |
| *9* | Max continuous discharge time | 90S |
| *10* | Max Temperature increasing | 50±5℃ |
| *11* | Safety | GB/T 31485-2015《Electricvehicle Safety requirements and test methods for power accumulators》 |
| *12* | Charge&discharge temperaturerange | -40~85℃ |
| *13* | Storage temperature range | -40~55℃ |
| *14* | Fast charging cycle life (@25±2℃, Forced cooling) | ≥30,000 times(5C) |
| *15* | Slow charging cycle life | ≥30,000 times (1C) |
| *16* | Weight | ≤850g |
| *17* | Demension(D× H) | Φ60mm×140mm |

## 4.2 Other Technical Information

❖ **Low temperature discharge performance**

Low temperature discharge curves

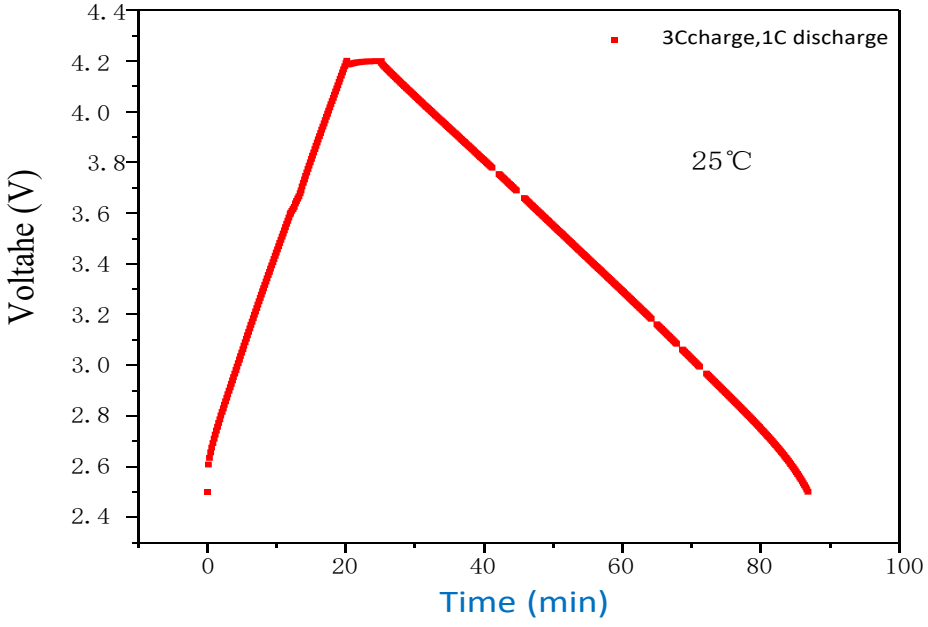



| discharge current (A) | discharge time | Discharge capacitance (mAh) |
|---|---|---|
| 180 | 3min58s | 11.89 |
| 200 | 3min12s | 10.66 |
| 225 | 2min47s | 10.44 |

Test method: at room temperature, 3C constant current charge to 4.2V, constant voltage to 0.05c cutoff, put in the low-temperature -43℃ environment for 3h, discharge to 2.5V cutoff with different current.

❖ **Charge/discharge**

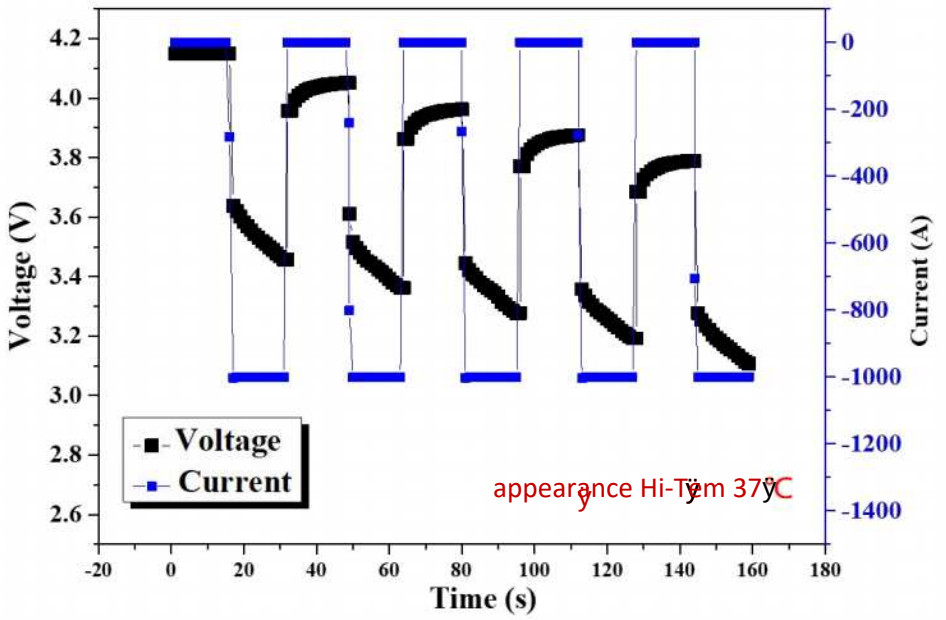
charge/discharge curves



Test method: at room temperature, 3C constant current charge to 4.2V, constant voltage to 0.1c cut-off, use 2min, discharge current 1C to 2.5V cut-off.

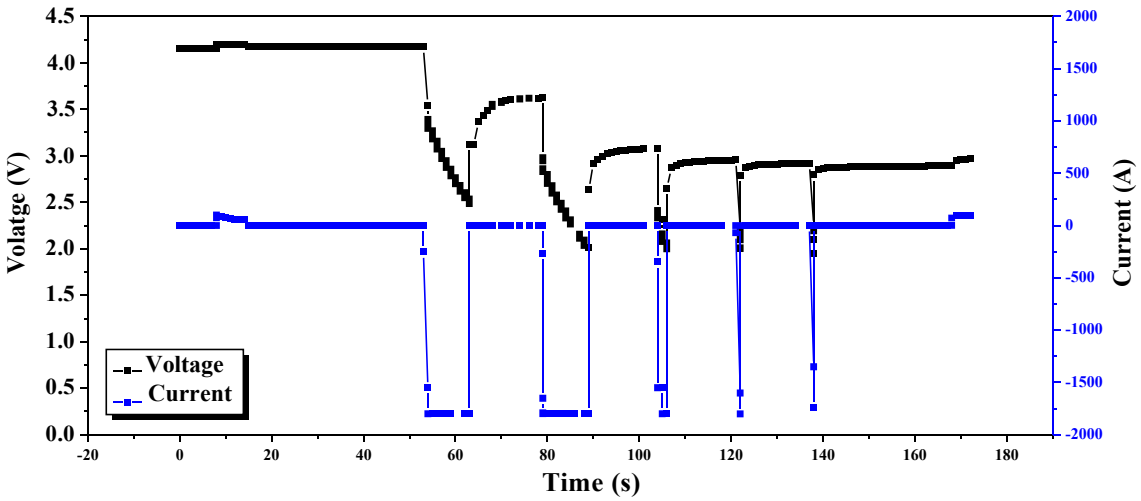
❖ **Charge/discharge**

@1000A Discharge curves at large current




Test method: charge 3C to 4.15V at normal temperature, constant voltage to 0.1c, discharge for 10s at 1000A, discharge again after 15s interval, record test data.

@1800A Discharge curves at large current




Test conditions: 3C charging to 4.2V at normal temperature, constant voltage to 0.2a cut-off, 1800A discharge for 10s, 15s interval after discharge again, recording test data.

# 5 Testing Methods

## 5.1 Testing Conditions

This specification followed the standard testing criteria: 1 atm, 25±2 ℃ and a relative humidity < 65%.

## 5.2 Test for Capacitance/Internal resistance

Capacitance Test: Charge the cell to 4.2V by 1C current and the charge it by constant voltage until the current reached 0.1C. And then, discharge the cell to 2.5V at 1C current. After rested 30s, repeated the last processes and regarded the second capacitance as cell's capacitance.

Resistance test: Charge the cell to 4.2V by 3C current and charge until 0.1C current by constant voltage, test it's ACR at 1kHZ Ac impedance meter. By the way, once test its capacitance, recorded its 10ms voltage difference during the discharge process, and the calculated its DCR by R=ΔU/I. Note: the mix record time is 1s during the "Capacitance and resistance test "proces

Test for Low Temperature

Under the ordered temperature, constant charge the cell to 4.2V and then end it at 0.1C by constant voltage. After this, remove the cell to different temperature condition (keep 2h) and discharge it to 2.5V at 1C current, record its discharge capacitance.Cycle life test

Under 25±5℃, test the cell's original performance by "Capacitance/resistance method", and then charge it to 4.0V by 5C current, discharge it to 2.5V at 2Cconstant current, after this rest 5min, cycle this processes 2000. Regarded the testing process at one cycle, and repeated it 15 times, until it reached 30000 times.

# 6 Notice

## 6.1 During Operation

- Working temperature of LIB should not exceed the upper and lower limits of the rated temperature.
- LIB should be used at rated voltage.

Check the polarity of LIB before power on. No reverse connecting.

Keep LIB away from heat. The temperature has a big influence on the working life of LIB(LIC).

No direct contacting with water, oil, acid or alkaline.

No crushing, nail penetrating or disassembling LIB.

No discarding. Dispose LIB based on the State Environmental-protection Standard.

The cell embraced constant voltage before shipment, therefore, the short circuit should be extremely forbidden.

### 5.3 Storage

- No storage in a condition with a relative humidity exceeding 85% or with toxic gases. It is easy to cause the damage and corrosion of the terminals and case, resulting in disconnection.
- For Long-term storage, place FCB in a well-ventilated condition at -20 to 55℃, with a relative humidity below 60%. Forbidden to sun directly

# 1. Introduction

This specification describes the properties, testing methods and notice of the CKAA60140L

Flash Charge Lithium ion capacitors developed by Jinpei Electronics

# 2. General Features

## 2.1 Features and Advantages

- Fast charge and discharge
- Long cycle life
- Good low temperature performance
- High energy density

## 2.2 Typical Applications

Using at Energy storage, Start and stop system, smart grid, harbor machinery UPS and other power system.

# 3. Product Appearance & Dimensions

## 3.1 Structure & Appearance





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# 4. Product Technical Index

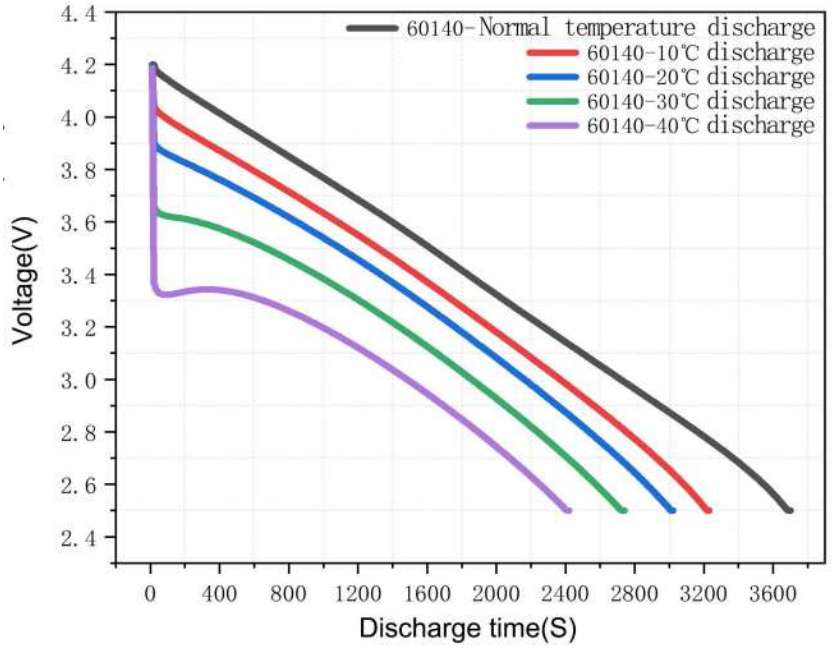
## 4.1 Main Parameters

| Series | Merits | Values |
|---|---|---|
| 1 | rated capacity | 18Ah |
| 2 | Battery energy | 65wh |
| 3 | nominal voltage | 3.6V |
| 4 | Upper limit voltage | 4.2V |
| 5 | Lower limit voltage | 2.5V |
| 6 | DC internal resistance (10ms) | ≤0.5mΩ |
| 7 | Standard charge current | 54A(3C) |
| 8 | Fast charging current | 180A(10C) |
| 9 | Rated discharge current | 54A(3C) |
| 10 | Maximum continuous discharge current | 540A(30C) |
| 11 | Maximum discharge duration | 90S |
| 12 | Maximum temperature rise | 55±5℃ |
| 13 | safety | refer to GB/T31485-2015《For electric vehicles Safety requirements and test methods for power batteries》 |
| 14 | Charging and discharging temperature range | -40~85℃ |
| 15 | Storage Temperature Range | -20~45℃ |
| 16 | Fast charging cycle life (@ 25 ± 5 ℃, forced heat dissipation) | ≥8，000 times (5C) |
| 17 | Slow charging cycle life | ≥20, 000 times (1C) |
| 18 | weight | ≤850g |
| 19 | Size (diameter D × Height H) | Φ60.5mm×144.5mm（±0.5mm） |

## 4.2 Other Technical Information

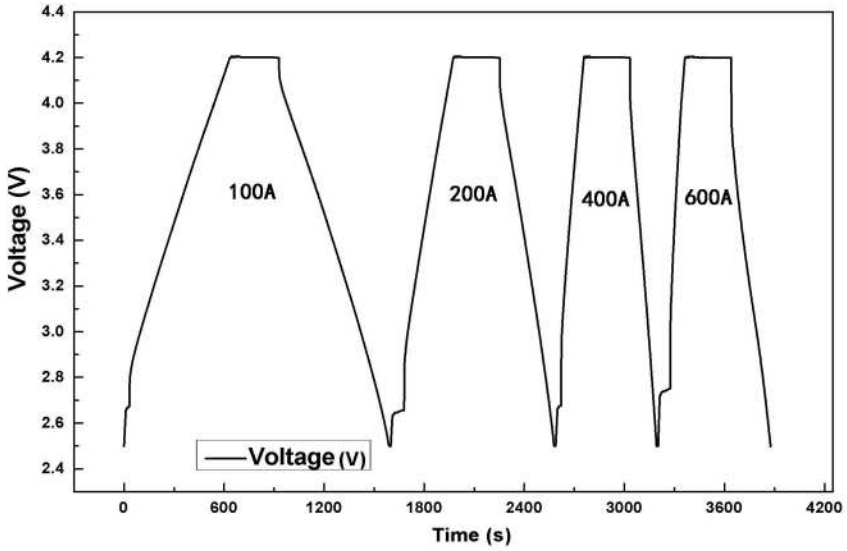
### ❖ Low temperature discharge performance

Low temperature discharge curves




### ❖ Charge/discharge at different rate

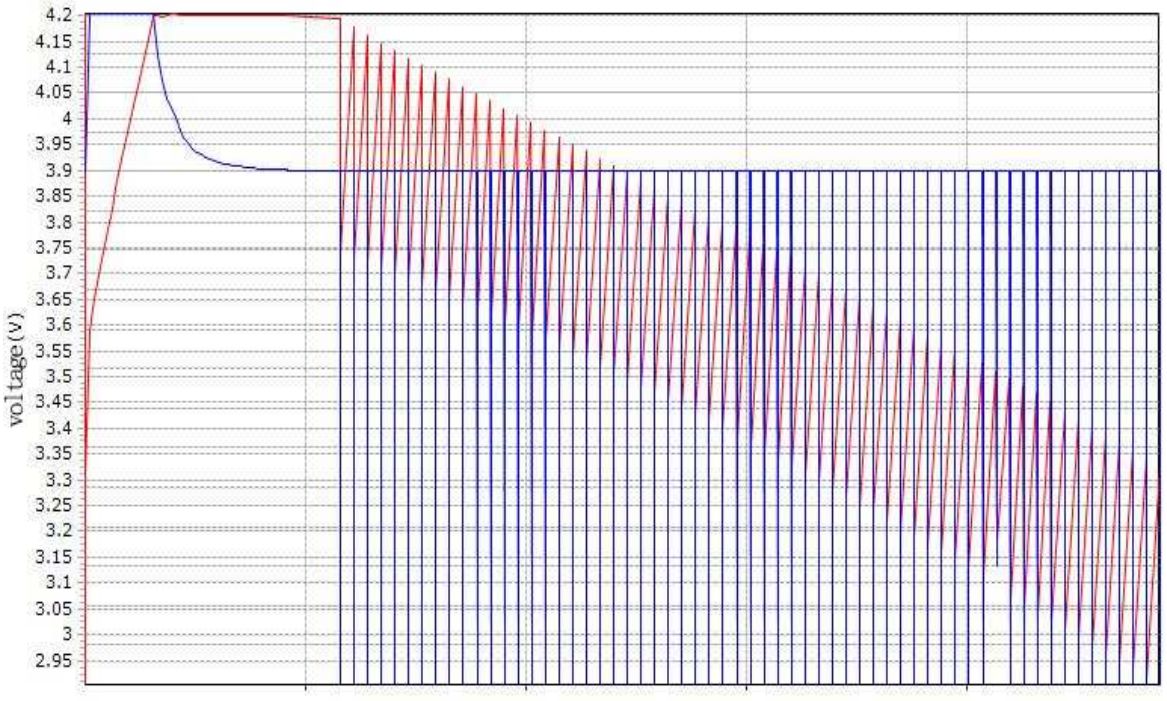
Rate charge/discharge curves




| Discharge Current | Retention (%) |
|---|---|
| 20A | 100% |
| 100A | 94 |
| 200A | 92 |
| 400A | 90 |
| 600A | 80 |

❖ **Pulse discharge performance**

Pulse discharge @25℃ 1000A/1S




test method：At room temperature, charge at a constant current of 10C to 4.2V, cut off at a constant voltage of 0.1C, let it stand for 2 minutes, and discharge at a pulse current of 1000A/1s to 2.5V for 30 seconds each time。

# 5 Testing Methods

## 5.1 Testing Conditions

This specification followed the standard testing criteria: 1 atm, 25±2 ℃ and a relative humidity < 65%.

## 5.2 Test for Capacitance/Internal resistance

Capacitance Test: Charge the cell to 4.2V by 1C current and the charge it by constant voltage until the current reached 0.1C. And then, discharge the cell to 2.5V at 1C current. After rested 30s，repeated the last processes and regarded the second capacitance as cell’ s capacitance.

Resistance test: Charge the cell to 4.2V by 3C current and charge until 0.1C current by constant voltage, test it’ s ACR at 1kHZ Ac impedance meter. By the way, once test its capacitance, recorded its 10ms voltage difference during the discharge process, and the calculated its DCR by R=ΔU/I. Note: the mix record time is 1s during the “Capacitance and resistance test” process.

### 5.3 Test for Low Temperature

Under the ordered temperature, constant charge the cell to 4.2V and then end it at 0.1C by constant voltage. After this, remove the cell to different temperature condition (keep 2h) and discharge it to 2.5V at 1C current, record its discharge capacitance.

### 5.4 Cycle life test

Under 25±5℃, test the cell’ s original performance by “Capacitance/resistance method”, and then charge it to 4.0V by 5C current, discharge it to 2.5V at 2Cconstant current, after this rest 5min, cycle this processes 2000. Regarded the testing process at one cycle, and repeated it 15 times, until it reached 30000 times.

### 5.5 Electrochemical Characteristics

Unless otherwise specified, the cell should be fresh cell and tested by standard charge and standard discharge.

| No. | Item | Test method and conditions | Criterion |
|---|---|---|---|
| 5.51 | Rate discharge capability | Standard charge followed by constant current (N C) discharge to 2.5V at specified discharge rates at 25±2℃. | $\text{Capacity Retension} = \frac{\text{discharge capacity at N C}}{\text{discharge capacity at 1C}} \geq 85\%$ |
| 5.5.2 | Quick charge cycle life | Under 25±2℃, test the cell's original performance by "2.1 and 2.2 methods", and then charge it to 4.2V by 5C current, discharge it to 2.5V at 3C constant current, after this rest 5min, cycle this processes 1000. Regarded the testing process at one cycle, and repeated it 8 times, until it reached 8000 times. | $\text{Capacity Retension} = \frac{\text{discharge capacity of 8000th cycel}}{\text{original discharge capacity}} \geq 80\%$ |
| 5.5.3 | Low temperature performance | Standard charge and discharge to 2.5V at 1C(2500mA) currentunder specified temperature. | -20℃: Capacity retention≥85%<br>-30℃: Capacity retention≥75%<br>-40℃: Capacity retention≥70% |
| 5.5.4 | 25 ℃ Storage performance at full charge station under 25℃ | Afte charg atstandard condition, and then stored at 25 ℃ for 30days.After this, discharge to 2.5V by standard condition. | $\text{CapacityRetension} = \frac{\text{Residualcapacityafter30daysstorage}}{\text{originaldischargecapacity}} \geq 90\%$<br>$\text{Recovercapacityfter30daysstorage}$<br>$\text{originaldischargecapacity} = 95\%$ |

| | | | |
|---|---|---|---|
| 5.5.5 | Storage performance at high temperature. | Standard charge to 4.2V and stored at 55℃ for 7days, and then rest at 25℃ for 5 hours, after this, discharge to 2.5V by 1C current | Capacity Retension $= \frac{\text{Residual capacity after 7days storage}}{\text{original discharge capacity}} \geq 92\%$<br>Capacity Retension $= \frac{\text{Recover capacity after 7days storage}}{\text{original discharge capacity}} = 96\%$ |
| 5.5.6 | Storage performance at 45 ℃ and 50%SOC | Standard charge to 4.2V and stored at 45℃ for 28 days, and then rest at 25℃ for 5 hours, after this re-test its capacity by standard charge/discharge method. | Capacity Retension $= \frac{\text{Recover capacity after 28days storage}}{\text{original discharge capacity}} = 95\%$ |

# 6 Notice

## 6.1 During Operation

- Working temperature of LIB should not exceed the upper and lower limits of the rated temperature.
- LIB should be used at rated voltage.
- Check the polarity of LIB before power on. No reverse connecting.
- Keep LIB away from heat. The temperature has a big influence on the working life of LIB.
- No direct contacting with water, oil, acid or alkaline.
- No crushing, nail penetrating or disassembling FCB.
- No discarding. Dispose LIB based on the State Environmental-protection Standard.
- The cell embraced constant voltage before shipment, therefore, the short circuit should be extremely forbidden.

## 6.2 Storage

- No storage in a condition with a relative humidity exceeding 85% or with toxic gases. It is easy to cause the damage and corrosion of the terminals and case, resulting in disconnection.
- For Long-term storage, place FCB in a well-ventilated condition at 25±5℃, with a relative humidity below 60%. Forbidden to sun directly.

# CKAA60140B

## Fast charge

| Item 项目 | | Specification 标准 | Explain 备注 |
|---|---|---|---|
| 1 | Capacitance<br>额定容量 | 20000mAh | @25±3℃ |
| 2 | Minimum capacity<br>最低容量 | 19000mAh | @25±3℃ |
| 3 | Nominal voltage<br>标称电压 | 3.4V | |
| 4 | Maximum working voltage<br>最大工作电压 | 4.2V | |
| 5 | Minimum operating voltage<br>最小工作电压 | 2.5V | |
| 6 | Direct Current Resistance<br>直流内阻 | ≤0.6mΩ | (10ms),<br>4.2V@25±3℃ |
| 7 | Alternating Current Resistance<br>交流内阻 | ≤0.4mΩ | 1kHz,<br>4.2V@25±3℃ |
| 8 | Standard charge current<br>标准充电电流 | 20A | 25±3℃ |
| 9 | Maximum charging current<br>最大充电电流 | 180A | 25±3℃ |
| 10 | Rated current<br>额定放电电流 | 20A | 25±3℃ |
| 11 | Max Continuous Discharge Current<br>最大持续放电电流 | 540A | @25±3℃,<br>强制散热 |
| 12 | Maximum pulse discharge current<br>最大脉冲放电电流 | 1000A/1s | @25℃@4.2V |
| 13 | Operating temperature*<br>使用工作温度* | -40~65℃ | 充放电电流值≤20A |

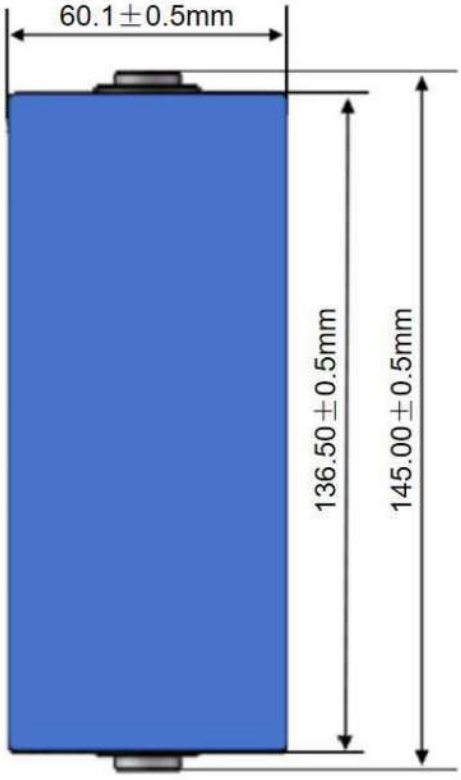

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| | | | |
|---|---|---|---|
| 14 | Storage Temperature Range (At Shipping SOC)<br>存储温度范围 (出货电压 SOC) | -20~45℃ | -20~25℃，1 年；<br>-20~45℃，3 个月 |
| 15 | Fast charging cycle life<br>快充循环寿命（5C 充 3C 放） | ≥30000次 | @25±3℃，<br>强制散热 |
| 16 | Standard cycle life<br>标准循环寿命（1C 充 1C 放） | ≥12000 次 | @25±3℃ |
| 17 | Cell Weight<br>电池重量 | ≤865.0g | |
| 18 | Cell Dimensions<br>电池尺寸 | Φ60.10×145.00 | 直径×高度<br>±0.5mm |

注：工作温度是指单体外壳的最高温度。

## Product structure and size 产品结构、尺寸




| 产品直径 D | 产品总体高度 L |
|---|---|
| 60.10±0.5mm | 145.00±0.5mm |
| 带套管状态 Casing included | |

# 6. Testing Methods 产品测试方法

## 6.1 Testing Conditions 测试条件

The standard testing conditions of this product specification are: under standard atmospheric pressure, temperature 25±3℃, relative humidity less than 65%.

本产品规格书标准测试条件为：标准大气压下，温度 25±3℃，相对湿度小于 65%。

## 6.2 Test equipment 测试设备

**(1) Vernier Scale 游标卡尺**

The slide caliper should have 0.01mm scale.

游标卡尺的测试精度应为 0.01mm。

**(2) Ammeters and Voltmeters 电流表和电压表**

The ammeters and voltmeters should have an accuracy of the grade 0.5mA and 0.5mV or higher

电流表和电压表的精度应分别为 0.5mA 和 0.5mV 或以上。

**(3) Impedance Meter 电压内阻测试仪**

AC Impedance 1000 Hz

交流阻抗测量频率：1000 Hz

**(4) Other information 其他信息**

- Temperature meter：Precision ≤ 0.5℃

温度仪表要求：精度为≤0.5℃

- Time measurement tolerance：±0.1%

时间测试公差：±0.1%

- The size measurement tolerance；±0.1%

尺寸测量公差：±0.1%

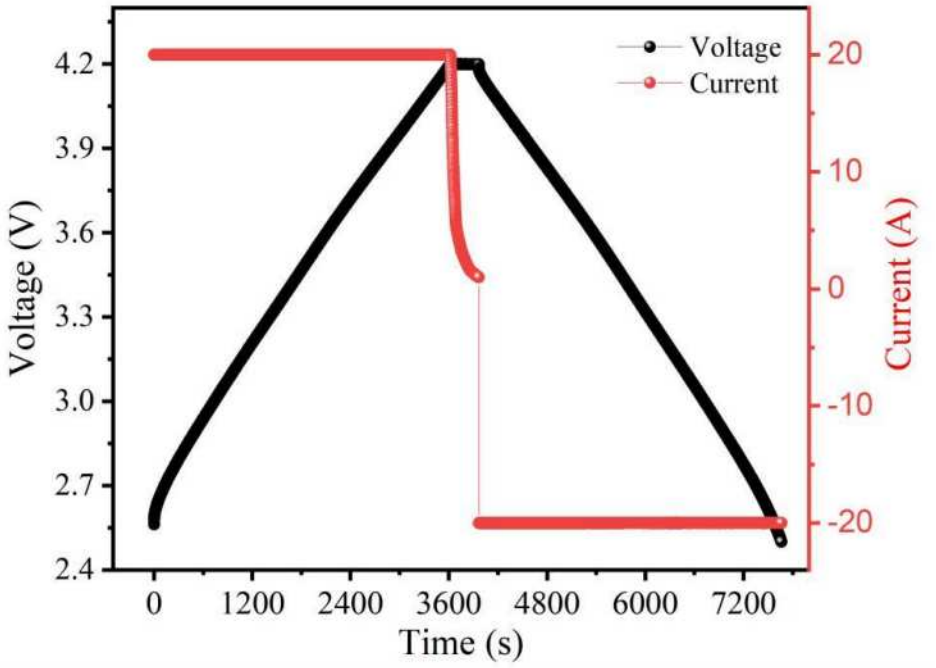
- The quality measurement tolerance 0.1%

质量测量公差：±0.1%

## 6.3 Test for Capacitance 容量测试

At 25±3℃, discharge the battery with a constant current I to $U_{min}$ before testing. Charge the product at 1C to the set voltage of 4.2V, then charge it at constant voltage to 0.05C and cut off the current. Then, discharge the product at 1C to 2.5V. After standing for 30 seconds, repeat the above process again, and take the capacity value (mAh) after the second discharge as the capacity value of the product.

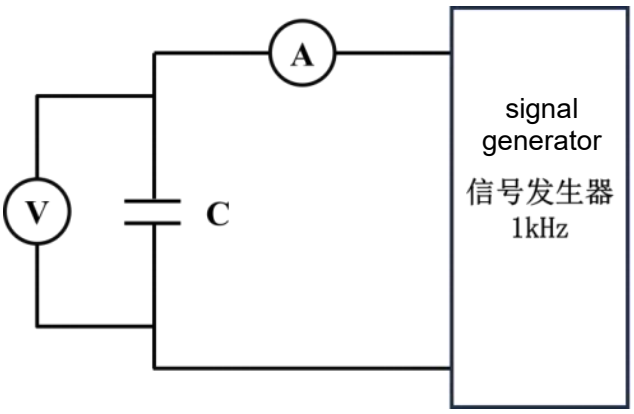
在 25±3℃条件下，在测试前，先将电池用恒定电流 I 放电至 $U_{min}$。将产品以 1C 充电至设定电压 4.2V 后恒压充电至 0.05C 电流截止，紧接着，以 1C 电流将产品放电至 2.5V。静置 30s 后，再次重复上述过程，取第 2 次放电后的容量值(mAh)为产品的容量值。。




## Alternating Current Resistance(ACR) 交流内阻

Charge the cell to 3.2V and keep this voltage for 30min, then using the AC Internal resistance to test its AC Resistance at 1kHz.

常温下，将单体充电至 3.2V 并恒压充电 30min 后，在 1kHz 条件下，采用交流阻抗仪进行交流内阻测试。




## Direct Current Resistance(DCR) 直流内阻

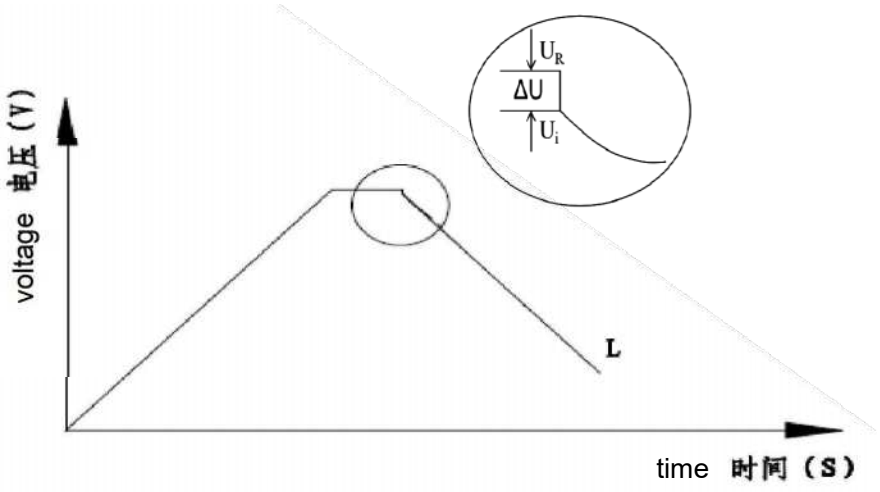
At 25±3℃, discharge the battery with a constant current I to $U_{min}$ before testing. Charge the product at 1C to the set voltage $U_R$, and then charge it at a constant voltage until the current stops at 0.05C. Record the end time as $t_0$.

在 25±3℃条件下，在测试前，先将电池用恒定电流 I 放电至 $U_{min}$。再将产品以 1C 充电至设定电压 $U_R$ 后恒压充电至 0.05C 电流截止，记录结束时刻为 $t_0$。

Afterwards, discharge the product to 2.5V with a 1C current and record the voltage $U_i$ at $t_0$+10ms. After standing for 30 seconds, repeat the above process again and calculate the DC internal resistance of the second cycle according to formula (1) as the DC internal resistance of the battery.

后以 1C 电流将产品放电至 2.5V，记录 $t_0$+10ms 时的电压 $U_i$。静置 30s 后，再次重复上述过程，按公式(1)计算第 2 次循环的直流内阻，作为电池的直流内阻。

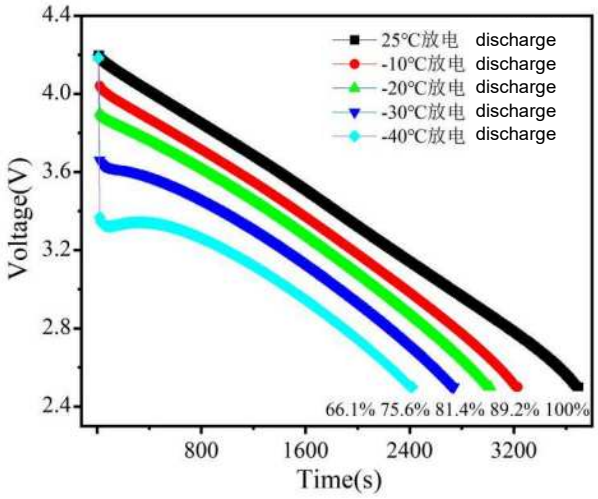
$$R=\Delta U/I=(U_R-U_i).$$



## 6.6 Test for Low Temperature 低温性能测试

Under the ordered temperature, constant charge the cell to 4.2V and then end it at 0.05C by constant voltage. After this, remove the cell to different temperature condition (keep 2h) and discharge it to 2.5V at 1C current, record its discharge capacitance.

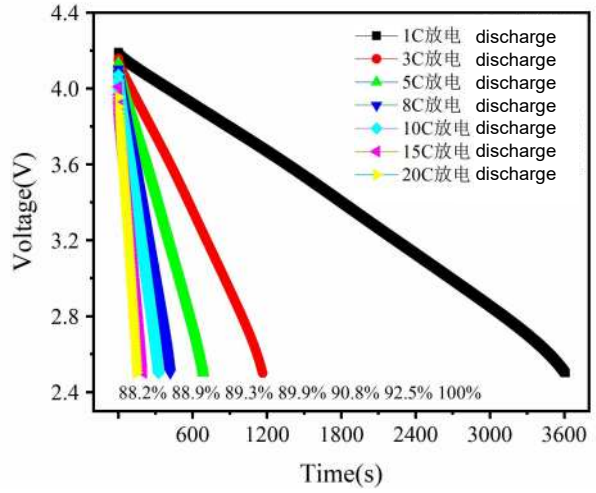
在设定温度条件下，将单体充电至 4.2V 后恒压充电至 0.05C 截止，放入不同温度并保持 2h 后，以 1C 电流将单体放电至 2.5V，记录单体放电过程的容量。

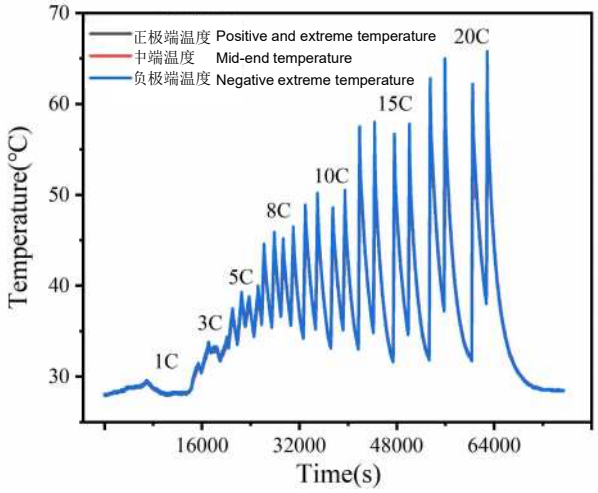



## Rate discharge 倍率放电

Under 25±3℃, test the cell's original performance by "Capacitance/resistance method", After charging according to the standard charging method， followed by constant current (N C) discharge to 2.5V at specified discharge rates at 25±3℃.

在 25±3℃条件下，按照"容量/内阻测试"方法测完初始性能后，按标准充电方式充电后，在 25±3℃下以给定放电倍率 N C 恒流放电至 2.5V。



## Charging Method 充电方法

### Standard Charge 标准充电

Standard Charge refers to charging at a constant current of 20A (1C) to 4.2V at an ambient temperature of 25±3℃, and then charging at a constant voltage until the current is less than 0.05C.

标准充电即在环境温度为 25±3℃的条件下，先以恒定电流 20A(1C)充电至 4.2V，然后恒压充电至电流小于 0.05C。

### Rapid Charge 快速充电

Rapid Charge refers to charging at a constant current of 60A (3C) to 4.2V at an ambient temperature of 25±3℃, and then charging at a constant voltage until the current is less than 0.05C.

快速充电即在环境温度为 25±3℃的条件下，先以恒定电流 60A(3C)充电至 4.2V，然后恒压充电至电流小于 0.05C。

## 8. Electrochemical Characteristics 电化学性能

| Item 项目 | | Test Condition 测试条件 | Criteria 检验标准 |
|---|---|---|---|
| 1 | Standard discharge capacity 标准放电容量 | At 25±3℃, fully charge the product with standard charging method, and then discharge it at1C to a capacity of 2.50V. 在 25±3℃条件下，将产品以标准充电方式充满电，然后以 1C 放电至 2.50V 截止的容量。 | Standard discharge capacity ≥19000mAh 标准放电容量≥19000mAh |
| 2 | DCR 直流内阻 | Charge the product at 1C to the set voltage $U_R$, then charge it at a constant voltage until the current cutoff is 0.05C, and record the end time as $t_0$. Afterwards, discharge the product to 2.5V with a 1C current and record the voltage $U_i$ at $t_0$+10ms. After standing for 30 seconds, repeat the above process again and calculate the DC internal resistance of the second cycle using the formula $R=\Delta U/I$ as the DC internal resistance of the battery. | ≤0.6mΩ |

| | | | |
|---|---|---|---|
| | | 将产品以1C充电至设定电压$U_R$后恒压充电至0.05C电流截止，记录结束时刻为$t_0$。后以1C电流将产品放电至2.5V，记录$t_0$+10ms 时的电压$U_i$。静置30s后，再次重复上述过程，按公式 $R=\Delta U/I$ 计算第2次循环的直流内阻，作为电池的直流内阻。 | |
| 3 | Rate discharge performance<br>倍率放电性能 | Standard charge followed by constant current(N C) discharge to 2.5V at Specified discharge rates at 25±3℃ .<br>按标准充电方式充电后，在25±3℃下以给定放电倍率NC恒流放电至2.5V。 | Capacity Retension $= \frac{\text{NC discharge capacity}}{\text{1C discharge capacity}} \times 100\%$<br>容量保持率 $= \frac{\text{NC 放电容量}}{\text{1C 放电容量}} \times 100\%$ |
| 4 | Fast charging cycle life<br>快充循环寿命 | Under the condition of 25±3℃, charge the product at 5C to 4.0V, discharge at 3C constant current to 2.5V, and let it stand for 30 minutes. After 1000 cycles of testing, the above testing process is a cycle that needs to be repeated 30 times, ultimately achieving 30000 life tests.<br>在 25±3℃条件下，将产品以 5C 将其充电至4.0V，以3C恒流放电至2.5V并静置30min，循环测试1000周后。上述测试过程为一个周期，测试过程需重复上述30次上述周期，最终实现30000次寿命测试。 | Capacity Retension $= \frac{\text{discharge capacity of 30000th cycel}}{\text{original discharge capacity}} \geq 80\%$<br>容量保持率 $= \frac{\text{第 30000 次循环的放电容量}}{\text{初始放电容量}} \geq 80\%$ |
| 5 | Standard cycle life<br>标准循环寿命 | Under the condition of 25±3℃, charge the product at 1C to 4.2V, discharge at 1C constant current to 2.5V, and let it stand for 30 minutes. After 1000 cycles of testing, the above testing process is a cycle that needs to be repeated 12 times, ultimately achieving 12000 life tests.<br>在25±3℃条件下，将产品以1C将其充电至4.2V，以1C恒流放电至2.5V并静置30min，循环测试1000周后。上述测试过程为一个周期，测试过程需重复上述12次上述周期，最终实现12000次寿命测试。 | Capacity Retension $= \frac{\text{discharge capacity of 12000th cycel}}{\text{original discharge capacity}} \geq 80\%$<br>容量保持率 $= \frac{\text{第 12000 次循环的放电容量}}{\text{初始放电容量}} \geq 80\%$ |

| | | | |
|---|---|---|---|
| 6 | Discharge temperature performance test<br>放电温度性能测试 | Under the condition of 25±3℃, fully charge the product with standard charging method, and discharge it to 2.5V at a constant current of 1C (20A) at the specified temperature.<br>25±3℃条件下，将产品以标准充电方式充满电后，在指定温度下以1C（20A）恒流放电截至到2.5V。 | -40℃: Capacity retention≥65%<br>-20℃: Capacity retention≥80%<br>0℃: Capacity retention≥92%<br>60℃:Capacity retention≥100%<br>-40℃：容量保持率≥65%<br>-20℃：容量保持率≥80%<br>0℃：容量保持率≥92%<br>60℃：容量保持率>100% |
| 7 | 25 ℃ storage performance<br>25 ℃存储性能 | After charge at standard condition, and then stored at 25±3℃ for 30 days. After this, discharge to 2.5V by standard condition.<br>标准充电方式充满电后25±3℃下存储30天，以标准放电方式放电至2.5V。 | Capacity Retension<br>$=\frac{\text{Residual capacity after 30 days storage}}{\text{original discharge capacity}}$<br>≥ 80%<br>容量保持率 $=\frac{\text{存储 30 天剩余容量}}{\text{初始容量}}$<br>≥ 80%<br>Capacity recovery rate<br>$=\frac{\text{Recover capacity after 7 days storage}}{\text{original discharge capacity}}$<br>=95%<br>容量恢复率 $=\frac{\text{存储 30 天恢复容量}}{\text{初始容量}}$<br>≥ 95% |
| 8 | High temperature storage performance<br>高温储存性能 | Standard charge to 4.2V and stored at 55℃ for 7 days, and then rest at 25±3℃ for 5 hours, after this, discharge to 2.5V by 1C current.<br>55℃下以标准充电方式充电至4.2V并存储7天，后在25±3℃下搁置5h，并以标准放电方式放电至2.5V。 | Capacity Retension<br>$=\frac{\text{Residual capacity after 7days storage}}{\text{original discharge capacity}}$<br>≥75%<br>容量保持率 $=\frac{\text{存储 7 天剩余容量}}{\text{初始容量}}$<br>≥ 75%<br>Capacity recovery rate<br>$=\frac{\text{Recover capacity after 7 days storage}}{\text{original discharge capacity}}$<br>≥90%<br>容量恢复率 $=\frac{\text{存储 7 天恢复容量}}{\text{初始容量}}$<br>≥ 90% |


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## Mechanical Properties 机械性能

| Test Item 测试项目 | | Test Condition 测试条件 | Criteria 检验标准 |
|---|---|---|---|
| 1 | Drop Test 跌落测试 | Under normal temperature conditions, fully charge the battery to 4.2V, and drop the battery cell from a height of 1.5m in the direction of positive and negative poles to the cement floor. After the experiment, place it for at least 1 hour and conduct a visual inspection. 常温条件下，将电池充满电至 4.2V状态，电芯从1.5m的高度以正负极柱的方向跌落至水泥地面，实验后放置至少1h后进行外观检查。 | No explosion, no fire 不爆炸、不起火 |
| 2 | Vibration Test 振动测试 | At room temperature, fix the fully charged battery cell with standard charging method on the vibration table, increase the vibration frequency from 7Hz to 200Hz within 15 minutes, and then reduce it to 7Hz. Repeat the above steps for 3 hours. Maintain an acceleration of 1g during the process of increasing from 7Hz to 18Hz, and maintain an acceleration of 8g during the process of increasing from 18Hz to 200Hz. 在室温条件下，将以标准充电方式充满电的电芯固定在振动台上，在15分钟内将振动频率由7Hz增加到200Hz后再降低至7Hz，重复上述步骤实验3h。7Hz增加到18Hz的过程中保持1g的加速度，18Hz增加到200Hz的过程中保持8g的加速度。 | No explosion, no fire, no leakage,Voltage drop less than 5% 不爆炸、不起火、不漏液、电压下降小于5% |

## Safety 安全性能

| Test Item 测试项目 | | Test Condition 测试条件 | Criteria 检验标准 |
|---|---|---|---|
| 1 | Hot Test 高温测试 | A cell is to be heated in a gravity convection or circulating air oven. The temperature of the oven is to be raised at a rate of 5°C±2°C per minute to a temperature of 130°C±2°C and remain for 30 min and observed 1h. 将电芯放在电热鼓风干燥箱中加热，温度以 5°C±2°C/min 的速率由室温升至 130°C±2°C 并保持 30min，观察 1h。 | No explosion, no fire 不爆炸、不起火 |
| 2 | Sea Water Immersion Test 海水浸泡 | The cell was immersed in 3.5%Nacl solution (mass fraction, simulated seawater composition at normal temperature) for 2h. 将电芯完全浸入 3.5%NaCl 溶液（质量分数，模拟常温下的海水成分）中搁置 2h。 | No explosion, no fire 不爆炸、不起火 |
| 3 | Over-discharge Test 过放电 | Constant discharge with 1C current for 90min ， then observed for 1h. 以 1C 电流恒流放电 90min，观察 1h。 | No explosion, no fire,no leakage 不爆炸、不起火、不漏液 |
| 4 | Over-charge Test 过充电 | Charge the battery at 1C to 4.2V and cut off the current at 0.1C, then charge at 0.5C until the voltage reaches 4.75V or the charging time reaches 50min, and then stop charging. Observe the status of the battery for 60min. 电池以 1C 充满电至 4.2V 且截至电流 0.1C，然后以 0.5C 充电至电压达到 4.75V 或充电时间达 50min 后停止充电，观察 60min 电池的状态 | No explosion, no fire 不爆炸、不起火 |

| | | | |
|---|---|---|---|
| 5 | Short-circuit Test<br>短路测试 | Short-circuit the standard charged cell by connecting positive and negative terminal by less 5 mΩ wire, until the cell case temperature has returned to be 20% less then peak temperature.<br>短接电芯的正负极，外部线路总电阻＜5mΩ，当电芯温度下降到比峰值低约20%，结束实验 | No explosion, no fire<br>不爆炸、不起火 |
| 6 | Thermal Shock Test<br>热冲击测试 | After fully charged according to the standard charge method, the cell is put in an oven. Then set the oven temperature as follows:<br>(1)Decrease the oven temperature from chamber temperature to -40℃ within 60 min and keep the cell under -40℃ for 90 min;<br>(2)Raise the oven temperature from -40℃ to 25℃ within 60min;<br>(3)Raise the oven temperature from 25℃ to 85℃ within 90 min and keep the cell under 85℃ for 110 min;<br>(4)Decrease the oven temperature from 85℃ to 25℃ within 70 min;<br>(5)Repeat the sequence for a further 4 cycles.Afterwards, the cell is observed for 1h.<br>电芯按标准充电方式充电后放入温度箱中，然后按以下步骤调节温度箱的温度：<br>(1)在 60min 内由 25℃降温至-40℃，保持90min；<br>(2)在 60min 内温度由-40℃升至 25℃；<br>(3)在 90min 内温度由 25℃升至 85℃，保持110min；<br>(4)在 70min 内温度由 85℃降至 25℃；<br>(5)循环上述步骤 4 次。结束后观察 1h。 | No explosion, no fire<br>不爆炸、不起火 |

| | | | |
|---|---|---|---|
| 7 | Low Pressure Test<br>低气压测试 | After charging according to the standard charging method, the battery cell is stored for 6 hours at 25±3℃ and an absolute pressure of 11.6kPa. Low-pressure area test shall be carried out according to UN38.3 standard.<br>电芯按标准充电方式充电后，在 25±3℃、绝对压力为 11.6kPa 条件下存储 6 小时。低气压测试按照 UN38.3 标准执行。 | No explosion, no fire, no leakage<br>不爆炸、不起火、不漏液 |

## 11. Satus of the Cell as of Ex-factory 电芯出厂状态

The battery cell should ensure transportation within the range of 3.10V to 3.50V (20-50% SOC)

电芯应保证在 3.30V 至 3.50V(20~35%SOC)范围内转运。

## 12. Instructions and precautions 使用指导和注意事项

### 12.1 Instructions 使用指导

- The operating temperature of ultra fast charging lithium-ion batteries should not exceed the upper or lower limit of rated temperature.
  超快充锂离子电池的使用温度不宜超过额定温度上限或下限。
- Ultra fast charging lithium-ion batteries should be used within the rated voltage range.
  超快充锂离子电池应在额定电压区间下使用。
- Please confirm the polarity of the ultra fast charging lithium-ion batteries before use, and reverse connection is prohibited.
  超快充锂离子电池在使用之前请确认极性，禁止反接。
- The external environmental temperature has a significant impact on the lifespan of ultra fast charging lithium-ion batteries. Please stay away from heat sources.
  外界环境温度对超快充锂离子电池的寿命具有重要影响，请远离热源。

- Do not come into direct contact with water, oil, acid, or alkali for ultra fast charging lithium-ion batteries.
  超快充锂离子电池请勿直接接触水、油、酸或碱。
- Do not squeeze, nail or disassemble ultra fast charging lithium-ion batteries.
  请勿挤压、钉刺或拆解超快锂离子电池。
- Do not squeeze, puncture, or disassemble ultra fast charging lithium-ion batteries.
  请勿随意丢弃超快充锂离子电池，废弃时请根据国家环保标准进行处理。
- This product has a certain voltage value before shipment. Do not short-circuit the positive and negative terminals during use.
  本产品发货前已具有一定电压值，使用过程切勿使正负极端短路。

## Storage 储存

- Ultra fast charging lithium-ion batteries should not be placed in places with a relative humidity of over 85% or containing toxic gases. In such environments, the leads and casing are prone to moisture and corrosion, leading to circuit breakers in lithium-ion batteries.
  超快充锂离子电池不可处于相对湿度为 85%以上或含有有毒气体的场所，该种环境下引线及壳体易受潮及腐蚀，导致超快充锂离子电池断路。
- If batteries need to be stored for a long time, please store them in a well ventilated area with a temperature of25±3C, a relative humidity of below 60%, a voltage not exceeding 3.50V, and no exposure to sunlight.
  电池若需长期储存，请在温度 25±3℃，相对湿度 60%以下，电压不超过 3.50V，通风良好的场所存放，严禁暴晒。

## Shipment 运输

- The capacity of delivery cell is approximately at 20-50% of charging. It is not specified more than 50% capacityremain at customer, because of self-discharge. During transportation, keep the cell from acutely vibration, impacting, solarization, drenching.
  出货电芯处 20-50%电量状态，由于电芯存在自耗，运送到客户端的电芯无法完全保证 50%荷电量。运输过程应防止剧烈振动、冲击、日晒雨淋。

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