

CAGA SERIES: Surface Mount | SMD E-CAP General Purpose



FEATURES

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

SPECIFICATIONS

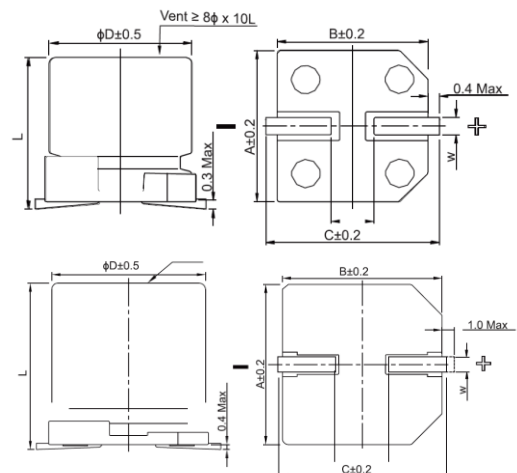
Item	Performance																																																														
Operating Temperature Range	-40°C ~ +85°C																																																														
Capacitance Tolerance	± 20%																																																														
Leakage Current (at 20°C)	<table><tr><td>Rated Voltage</td><td colspan="2">6.3 ~ 100V</td><td>160 ~ 450V</td></tr><tr><td>Time</td><td colspan="2">after 2 minutes</td><td>after 5 minutes</td></tr><tr><td>Case Size</td><td>3-10Φ</td><td>12.5-18Φ</td><td>12.5-18Φ</td></tr><tr><td>Leakage Current</td><td>I = 0.01CV or 3μA whichever is greater</td><td>I = 0.03CV or 4μA whichever is greater</td><td>I = 0.04CV + 100μA</td></tr></table> Where, C = rated capacitance in μF. V=rated DC working voltage in V	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																																														
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Dissipaton Factor (Tan δ at 120Hz, 20°C)	<table><tr><td>Rated Voltage</td><td>4.0</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160-250</td><td>400-450</td></tr><tr><td>3-10Φ</td><td>7</td><td>0.28</td><td>0.24</td><td>0.20</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.10</td><td>0.10</td><td>—</td><td>—</td></tr><tr><td>12.5-18Φ</td><td>—</td><td>0.38</td><td>0.34</td><td>0.30</td><td>0.26</td><td>0.22</td><td>0.18</td><td>0.14</td><td>0.10</td><td>0.20</td><td>0.25</td></tr></table> When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase	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																										
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Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below. <table><tr><td>Rated Voltage</td><td>4.0</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160-250</td><td>400-450</td></tr><tr><td rowspan="3">Impedance Ratio</td><td>Z(-25°/Z(+20°</td><td>ΦD < 12.5</td><td>7</td><td>4</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>—</td><td>—</td></tr><tr><td></td><td>ΦD ≥ 12.5</td><td>—</td><td>5</td><td>5</td><td>4</td><td>2</td><td>2</td><td>2</td><td>2</td><td>3</td><td>6</td></tr><tr><td>Z(-40°/Z(+20°</td><td>ΦD < 12.5</td><td>15</td><td>8</td><td>5</td><td>4</td><td>3</td><td>3</td><td>3</td><td>3</td><td>—</td><td>—</td></tr><tr><td></td><td></td><td>ΦD ≥ 12.5</td><td>—</td><td>14</td><td>12</td><td>10</td><td>5</td><td>4</td><td>3</td><td>3</td><td>6</td><td>10</td></tr></table>	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	—	—		ΦD ≥ 12.5	—	5	5	4	2	2	2	2	3	6	Z(-40°/Z(+20°	ΦD < 12.5	15	8	5	4	3	3	3	3	—	—			ΦD ≥ 12.5	—	14	12	10	5	4	3	3	6	10
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Load Life Test	<table><tr><td>Test Time</td><td>2,000 hours</td></tr><tr><td>Capacitance Change</td><td>Within ± 20% of initial value (4V : ± 30%)</td></tr><tr><td>Tan δ</td><td>Less than 200% of specified value (4V : < 300%)</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> The above specif1cation shall be sat1sf1ed when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hours at 85°C.	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																																																						
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Shelf Life Test	Test time: 1,000 hours; other items are the same as those for the Load Life Test 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	<table><tr><td>Freq. (Hz)</td><td>50</td><td>120</td><td>1K</td><td>10K Up</td></tr><tr><td>Cap. (μF)</td><td></td><td></td><td></td><td></td></tr><tr><td>Under 1,000</td><td>0.80</td><td>1.00</td><td>1.25</td><td>1.40</td></tr><tr><td>1,000 < C ≤ 10,000</td><td>0.85</td><td>1.00</td><td>1.15</td><td>1.25</td></tr></table>	Freq. (Hz)	50	120	1K	10K Up	Cap. (μF)					Under 1,000	0.80	1.00	1.25	1.40	1,000 < C ≤ 10,000	0.85	1.00	1.15	1.25																																										
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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





CAGA SERIES: Surface Mount | SMD E-CAP General Purpose

DIMENSION (mm) & PERMISSIBLE RIPPLE CURRENT

Vdc		4 V (0G)		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)	
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	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 8x6.5	40 46
22	226	3x5.3	16	4x5.3	26	5x5.3	44	4x5.3 5x5.3	30 44	5x5.3 6.3x5.3	47 59	5x5.3 6.3x5.3	47 59	6.3x5.3 6.3x7.7	50 65	8 X 10	139
33	336	4x5.3	31	4x5.3	31	4x5.3 5x5.3	31 55	5x5.3	55	5x5.3 6.3x5.3	55 67	6.3x5.3 6.3x7.7	67 85	6.3x7.7 8x6.5	75 95	8 X 10	139
47	476	4x5.3	34	4x5.3 5x5.3	34 55	6.3x5.3	75	5x5.3 6.3x5.3	55 75	6.3x5.3 6.3x7.7	75 98	6.3x7.7 8x6.5	98 105	6.3x7.7 8 X 10	75 190	10 X 10	200
68	686	5x5.3	58	5x5.3 6.3x5.3	58 89	5x5.3 6.3x5.3	58 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 6.3x5.3	58 89	6.3x5.3	89	6.3x5.3 6.3x7.7	89 109	6.3x5.3 6.3x7.7 8x6.5	89 109 125	6.3x7.7 8x6.5	109 145	8 X 10	252	8 X 10	190	10 X 10	226
150	157											10 X7.7	252				
220	227	6.3x5.3 6.3x7.7	89 124	6.3x5.3 6.3x7.7	89 124	6.3x7.7 8x6.5 8 X 10	124 175 270	6.3x7.7 8X10	124 270	8 X 10 10 X7.7	270 270	8 X 10 10 X 10	270 370	10 X 10	320	12.5x13.5	500
330	337	6.3x7.7	124	6.3x7.7 8x6.5	124 190	8 X 10	290	8 x10 10 X7.7	290 290	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 10 X 10	290 400	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	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 16 x 21.5	1,350 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 16 x 21.5	1,450 1,500				
3,300	338			12.5x16	1,000	16x16.5	1,300	16 x 16.5	1,300	18 x 16.5 16 x 21.5	1,500 1,450	18 X 21.5	1,750				
4,700	478			16x16.5	1,400	16 x16.5	1,400	18 x 16.5 16 x 21.5	1,600 1,650	18 X 21.5	1,750						
6,800	688			18 x 16.5 16 x 21.5	1,700 1,750	18 x 16.5 16 x 21.5	1,700 1,750	18 X 21.5	2,000								
10,000	109			18 X 21.5	2,000	18 X 21.5	2,000										

Vdc		100V (2A)		160V (2C)		200V (2D)		250V (2E)		400V (2G)		450V (2W)	
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
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 16X21.5	440 450	18X21.5	350		
100	107	12.5x13.5	440	18X16.5 16X21.5	650 690	18X16.5 16X21.5	550 590	18X21.5	490				
220	227	16x16.5	600										
330	337	18X16.5 16X21.5	780 850										

PART NUMBER EXAMPLE

