

FEATURES

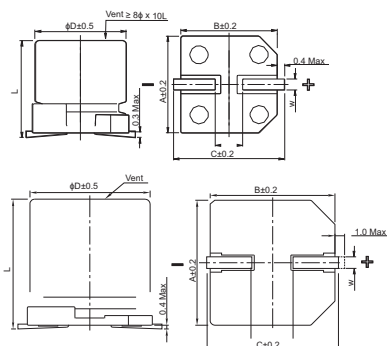
- Endurance: 2000 hours at 85°C
- Available: 3φ ~ 18φ
- SMD Technology, for high temperature reflow soldering
- RoHS directive compliant



SPECIFICATIONS

Items	Performance																																				
Operating Temperature	-40°C ~ +85°C																																				
Capacitance Tolerance	±20% (at 120Hz, 20°C)																																				
Leakage Current (at 20°C)	<table border="1"> <tr> <td>Rated Voltage</td> <td>6.3 ~ 100V</td> <td>160 ~ 450V</td> </tr> <tr> <td>Time</td> <td>after 2 minutes</td> <td>after 5 minutes</td> </tr> <tr> <td>Case Size</td> <td>3 ~ 10φ</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> </tr> </table>	Rated Voltage	6.3 ~ 100V	160 ~ 450V	Time	after 2 minutes	after 5 minutes	Case Size	3 ~ 10φ	12.5 ~ 18φ	Leakage Current	I = 0.01CV or 3μA whichever is greater	I = 0.03CV or 4μA whichever is greater																								
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Where, C = rated capacitance in uF V=rated DC working voltage in V																																					
Dissipation Factor (Tanδ at 120Hz, 20°C)	<table border="1"> <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>	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																									
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12.5 ~ 18φ	--	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.20	0.25																										
When the capacitance exceeds 1,000uF, 0.02 shall be added every 1,000μF increase																																					
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the value given in the table below.																																				
	Rated Voltage	4.0	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450																									
	Impedance Ratio	Z(-25C)	ΦD< 12.5	7	4	4	3	2	2	2	2	--	--																								
		/Z(+20C)	ΦD< 12.5	--	5	5	4	2	2	2	2	3	6																								
Z(-40C)		ΦD< 12.5	15	8	5	4	3	3	3	3	--	--																									
/Z(+20C)		ΦD< 12.5	--	14	12	10	5	4	3	3	6	10																									
Load Life Test	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																																			
* 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																																					
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 4.0)																																				
Ripple Current & Frequency Multipliers	Freq. (Hz)		50	120	1K	10K Up																															
	Cap. (μF)																																				
	Capacitance Change		0.80	1.00	1.25	1.40																															
	Tan δ		0.85	1.00	1.15	1.25																															

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Lead Spacing and Diameter

D	L	A	B	C	W	P0.2	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 ± 0.5	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 ± 0.5	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 ± 0.5	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

DIMENSION (mm) & PERMISSIBLE RIPPLE CURRENT

Ripple Current: mA/rms at 120Hz, 85°C

μF	Code	4V (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	010														4 x 5.3	10	4 x 5.3	8
2.2	2R2														4 x 5.3	14	4 x 5.3	12
3.3	3R3														4 x 5.3	17	5 x 5.3	22
4.7	4R7														4 x 5.3	20	5 x 5.3	
10	100			3 x 5.3	16	4 x 5.3	26	4 x 5.3	26	5 x 5.3	44	5 x 5.3	44	5 x 5.3	35	6.3 x 5.3 8 x 6.5	40 46	
22	220	3 x 5.3	16	4 x 5.3	26	5 x 5.3	44	4 x 5.3 5 x 5.3	30 44	5 x 5.3 6.3 x 5.3	47 59	5 x 5.3 6.3 x 5.3	47 59	6.3 x 5.3 6.3 x 7.7	47 65	6.3 x 5.3 6.3 x 7.7	50 139	
33	330	4 x 5.3	31	4 x 5.3	31	4 x 5.3 5 x 5.3	31 55	5 x 5.3	55	5 x 5.3 6.3 x 5.3	55 67	6.3 x 5.3 6.3 x 7.7	67 85	6.3 x 7.7 8 x 6.5	75 95	8 x 10	139	
47	470	4 x 5.3	34	4 x 5.3 5 x 5.3	34 55	6.3 x 5.3	75	5 x 5.3 6.3 x 5.3	75	6.3 x 5.3 6.3 x 7.7	75 98	6.3 x 7.7 8 x 6.5	98 105	6.3 x 7.7 8 x 10	75 190	10 x 10	200	
68	680	5 x 5.3	58	5 x 5.3 6.3 x 5.3	58 89	5 x 5.3 6.3 x 5.3	58 89	6.3 x 5.3	89	6.3 x 7.7	109	6.3 x 7.7	109	8 x 10	190	10 x 10	226	
100	101	5 x 5.3 6.3 x 5.3	58 89	6.3 x 5.3	89	6.3 x 5.3 6.3 x 7.7	89 109	6.3 x 5.3 6.3 x 7.7 8 x 6.5	89 109 125	6.3 x 7.7 8 x 6.5	109 145	8 x 10	252	8 x 10	190	10 x 10	226	
150	151											10 x 7.7	252					
220	221	6.3 x 5.3 6.3 x 7.7	89 124	6.3 x 5.3 6.3 x 7.7	89 124	6.3 x 7.7 8 x 6.5 8 x 10	124 175 270	6.3 x 7.7 8 x 10	124 270	8 x 10 10 x 7.7	270 270	8 x 10 10 x 10	270 370	10 x 10	320	12.5 x 13.5	500	
330	331	6.3 x 7.7	124	6.3 x 7.7 8 x 6.5	124 190	8 x 10	290	8 x 10 10 x 7.7	290 290	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 10 x 10	290 400	10 x 10	400	10 x 10	400	12.5 x 13.5	680	12.5 x 16	740	16 x 16.5	850	
680	681			10 x 7.7	290	10 x 10	410	10 x 10	410	12.5 x 13.5	680	12.5 x 13.5	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	12.5 x 13.5	750	16 x 16.5	1,100	18 x 16.5 16 x 21.5	1,350 1,400			
2,200	222			12.5 x 13.5	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	332			12.5 x 16	1,000	16 x 16.5	1,300	16 x 16.5	1,300	18 x 16.5 16 x 21.5	1,450 1,500	18 x 21.5	1,750					
4,700	472			16 x 16.5	1,400	16 x 16.5	1,400	18 x 16.5 16 x 21.5	1,600 1,650	18 x 21.5	1,750							
6,800	682			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	103			18 x 21.5	2,000	18 x 21.5	2,000											

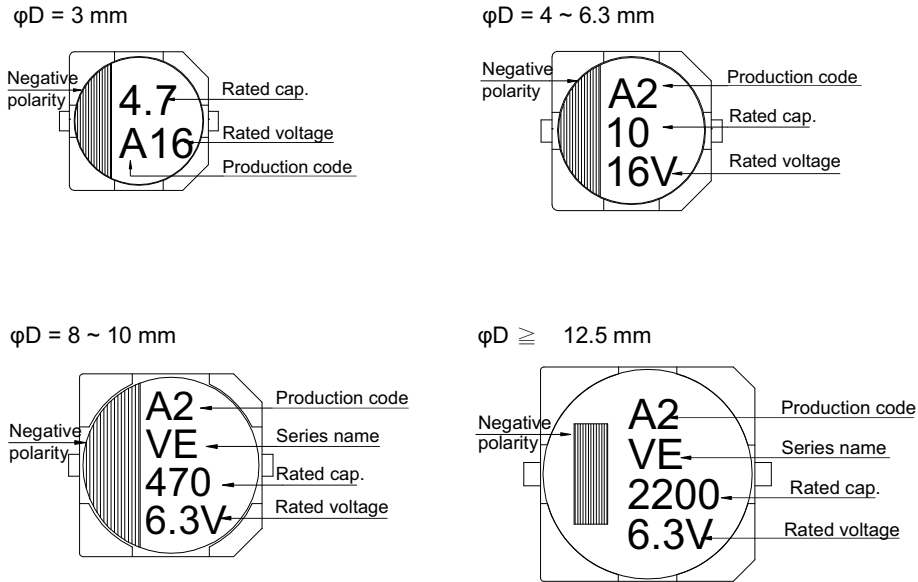
μF	Code	100V (2A)		160V (2C)		200V (2D)		250V (2E)		400V (2G)		450V (2W)	
		φD x L	mA	φD x L	mA	φD x L	mA	φD x L	mA	φD x L	mA	φD x L	mA
4.7	4R7									12.5 x 13.5	120	12.5 x 13.5	120
10	100	8 x 10	90					12.5 x 13.5	150	12.5 x 13.5	120	12.5 x 16	130
22	220	8 x 10	90			12.5 x 13.5	240	12.5 x 13.5	150	16 x 16.5	140	16 x 16.5	140
33	330	10 x 10	120	12.5 x 13.5	290	12.5 x 16	310	12.5 x 16	240	16 x 16.5	140	18 x 16.5	180
47	470	10 x 10	120	12.5 x 16	370	16 x 16.5	420	16 x 16.5	340	18 x 16.5	280	18 x 21.5	250
68	680	12.5 x 13.5	380	16 x 16.5	500	16 x 16.5	420	18 x 16.5 16 x 21.5	440 450	18 x 21.5	350		
100	101	12.5 x 13.5	440	18 x 16.5 16 x 21.5	650 690	18 x 16.5 16 x 21.5	550 590	18 x 21.5	490				
220	221	16 x 16.5	600										
330	331	18 x 16.5 16 x 21.5	780 850										

PART NUMBER EXAMPLE

VE 221 M 1C TR 080100

Series Capacitance Code Tolerance Code Voltage Code Package Style Can Size (8Ø x 10L)

■ LEGACY MARKING



■ NEW MARKING

