

VEJ Series

Features

- 4 ϕ ~ 18 ϕ , 105°C, 2,000 hours assured
- Designed for surface mounting on high density PC board
- RoHS compliant
- AEC-Q200 compliant



Marking color: Black

Specifications

Items	Performance																																														
Category Temperature Range	6.3 ~ 100V				160 ~ 400V				450V																																						
	-55°C ~ +105°C				-40°C ~ +105°C				-25°C ~ +105°C																																						
Capacitance Tolerance	± 20% (at 120 Hz, 20°C)																																														
Leakage Current (at 20°C)	Rated voltage		6.3 ~ 100V						160 ~ 450V																																						
	Time		after 2 minutes						after 5 minutes																																						
	Case size		4 ~ 10 φ			12.5 ~ 18 φ			12.5 ~ 18 φ																																						
	Leakage Current		I = 0.01CV or 3μA, whichever is greater			I = 0.03CV or 4μA, whichever is greater			I = 0.04CV + 100μA																																						
	Where, C = rated capacitance in μF, V = rated DC working voltage in V																																														
Tanδ (at 120 Hz, 20°C)	<table><tr><td>Rated Voltage</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>4 ~ 10 φ</td><td>0.45</td><td>0.35</td><td>0.28</td><td>0.18</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.12</td><td>-</td><td>-</td></tr><tr><td>12.5 ~ 18 φ</td><td>0.40</td><td>0.38</td><td>0.34</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	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450	4 ~ 10 φ	0.45	0.35	0.28	0.18	0.16	0.14	0.12	0.12	-	-	12.5 ~ 18 φ	0.40	0.38	0.34	0.26	0.22	0.18	0.14	0.10	0.20	0.25
	Rated Voltage	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450																																				
	4 ~ 10 φ	0.45	0.35	0.28	0.18	0.16	0.14	0.12	0.12	-	-																																				
12.5 ~ 18 φ	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 120 Hz)	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	400	450																																
	Impedance Ratio	Z(-25°C)	φ D < 12.5	4	4	3	2	2	2	2	3	-	-	-	-																																
		/ Z(+20°C)	φ D ≥ 12.5	5	4	3	2	2	2	2	2	3	3	3	6	6																															
		Z(-55/-40°C)	φ D < 12.5	12	8	6	4	3	3	3	4	-	-	-	-	-																															
		/ Z(+20°C)	φ D ≥ 12.5	10	8	6	4	3	3	3	3	6	6	6	10	-																															
Note: The ratio value with “ * ” is only available for 400V.																																															
Endurance	Test Time		2,000 Hrs																																												
	Capacitance Change		Within ± 25% of initial value for φ D ≤ 6.3 mm; Within ± 20% of initial value for φ D ≥ 8 mm																																												
	Tanδ		Less than 300% of specified value for φ D ≤ 6.3 mm; Less than 200% of specified value for φ D ≥ 8 mm																																												
	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 hours at 105°C.																																														
Shelf Life Test	Test time: 1,000 hours; 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 and Frequency Multipliers	<table><tr><td colspan="2">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><td></td></tr><tr><td colspan="2">≤ 1,000</td><td>0.80</td><td>1.00</td><td>1.25</td><td>1.40</td></tr><tr><td colspan="2">1,000 < C ≤ 8,200</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)						≤ 1,000		0.80	1.00	1.25	1.40	1,000 < C ≤ 8,200		0.85	1.00	1.15	1.25									
	Freq. (Hz)		50	120	1k	10k up																																									
	Cap. (μF)																																														
≤ 1,000		0.80	1.00	1.25	1.40																																										
1,000 < C ≤ 8,200		0.85	1.00	1.15	1.25																																										

Diagram of Dimensions

Fig. 1

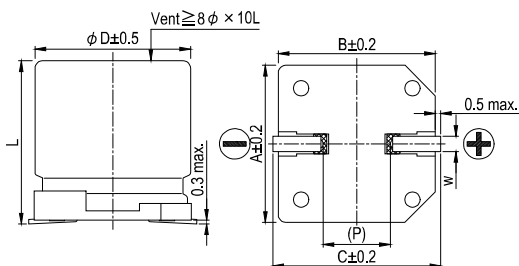
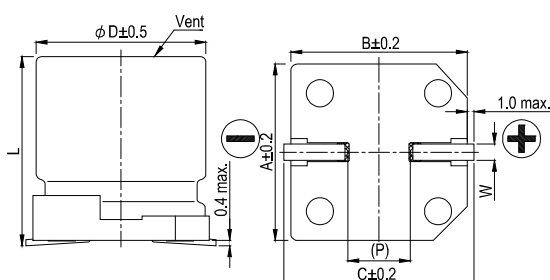


Fig. 2



Lead Spacing and Diameter

Unit: mm

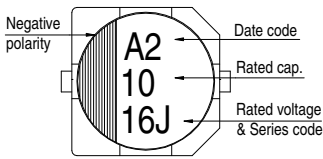
ϕD	L	A	B	C	W	P	Fig. No.
4	5.7 $\pm$ 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.7 $\pm$ 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5	1
6.3	5.7 $\pm$ 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
6.3	7.7 $\pm$ 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
8	6.5 $\pm$ 0.3	8.3	8.3	9.0	0.5 ~ 0.8	2.3	1
8	10 $\pm$ 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1	1
10	7.7 $\pm$ 0.3	10.3	10.3	11.0	0.7 ~ 1.1	4.7	1
10	10 $\pm$ 0.5	10.3	10.3	11.0	0.7 ~ 1.1	4.7	1
12.5	13.5 $\pm$ 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
12.5	16 $\pm$ 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
16	16.5 $\pm$ 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
16	21.5 $\pm$ 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
18	16.5 $\pm$ 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2
18	21.5 $\pm$ 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2

The diagram is marking " () " for reference dimension.

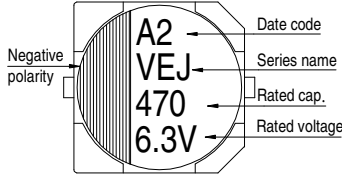


Marking

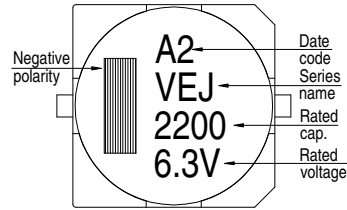
$\phi D \leq 6.3 \text{ mm}$



$\phi D = 8 \sim 10 \text{ mm}$



$\phi D \geq 12.5 \text{ mm}$



Dimension and Permissible Ripple Current

Dimension: $\phi D \times L(\text{mm})$

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

Rated Volt. (Vdc)	6.3V (0J)	10V (1A)	16V (1C)	25V (1E)	35V (1V)	50V (1H)	63V (1J)	100V (2A)
Cap. (μF) Contents	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
1 010						4×5.7 8	4×5.7 8	
2.2 2R2						4×5.7 12	4×5.7 12	
3.3 3R3						4×5.7 14	5×5.7 17	
4.7 4R7				4×5.7 17	4×5.7 17	5×5.7 20	6.3×5.7 22	
10 100			4×5.7 20	4×5.7 20	5×5.7 27	6.3×5.7 32	6.3×5.7 32	
22 220	4×5.7 22	4×5.7 22	5×5.7 30	5×5.7 30	6.3×5.7 44	6.3×5.7 44	6.3×7.7 58	8×10 100
33 330	5×5.7 34	5×5.7 34	5×5.7 34	6.3×5.7 46	6.3×5.7 46	6.3×7.7 65	8×10 140	10×10 150
47 470	5×5.7 38	5×5.7 38	6.3×5.7 48	6.3×5.7 48	6.3×7.7 80	6.3×7.7 70	8×10 170	12.5×13.5 250
100 101	6.3×5.7 69	6.3×5.7 69	6.3×5.7 69	6.3×7.7 100	8×10 240	8×10 210	10×10 310	12.5×13.5 380
220 221	6.3×7.7 120	6.3×7.7 120	6.3×7.7 120	8×10 270	8×10 270	10×10 330	12.5×13.5 470	16×16.5 450
330 331	8×10 290	8×10 290	8×10 290	8×10 290	10×10 370	12.5×13.5 490	16×16.5 650	18×16.5 590
470 471	8×10 320	8×10 320	10×10 380	10×10 380	12.5×13.5 520	12.5×16 550	16×16.5 700	18×21.5 980
1,000 102	10×10 410	10×10 410	12.5×13.5 500	12.5×16 550	16×16.5 800	18×16.5 990		
2,200 222	12.5×13.5 680	12.5×13.5 680	16×16.5 900	16×16.5 900	18×16.5 1,050			
3,300 332	12.5×16 850	16×16.5 950	16×16.5 950	18×16.5 1,150				
4,700 472	16×16.5 1,000	16×16.5 1,000	18×16.5 1,225	18×21.5 1,300				
6,800 682	18×16.5 1,290	18×16.5 1,290						
8,200 822	18×21.5 1,450	18×21.5 1,450						

Rated Volt. (Vdc)		160V (2C)		200V (2D)		250V (2E)		400V (2G)		450V (2W)	
Cap. (μF)	Contents	ϕ D×L	mA	ϕ D×L	mA	ϕ D×L	mA	ϕ D×L	mA	ϕ D×L	mA
4.7	4R7					12.5×13.5	65	12.5×13.5	45	12.5×13.5	45
10	100			12.5×13.5	80	12.5×13.5	70	12.5×13.5	50	12.5×16	75
22	220			12.5×16	110	12.5×13.5	105	16×16.5	85	16×16.5	85
33	330	12.5×13.5	95	12.5×16	120	16×16.5	180	18×16.5	100	18×16.5	100
47	470	12.5×16	205	16×16.5	220	16×16.5	220	18×21.5	130		
100	101	16×16.5	250	18×16.5	280	18×21.5	290				

Part Numbering System

VEJ Series	470μF	± 20%	6.3V	Carrier Tape	8 ϕ × 10L	General Purpose
VEJ	471	M	0J	TR	-	0810
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case Size
						Application

Note: For more details, please refer to "Part Numbering System - SMD Type" on page 106.