

SMD Aluminum Electrolytic Capacitors

VE Series

◆ This series is not recommended for new design

- Features
- 3 ϕ ~ 18 ϕ , 85°C, 2,000 hours assured
 - Chip type large capacitance capacitors
 - Designed for surface mounting on high density PC board
 - RoHS compliance
 - AEC-Q200 Parts Available: Replace "S" Suffix with "KS" Suffix or "LS" Suffix



Marking color: Black

Specifications

Items	Performance																			
Category Temperature Range	-40℃ ~ +85℃																			
Capacitance Tolerance	±20% (at 120 Hz, 20℃)																			
Leakage Current (at 20℃)	Rated Voltage		6.3 ~ 100V						160 ~ 450V											
	Time		after 2 minutes						after 5 minutes											
	Case size		3 ~ 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℃)	Rated Voltage	4	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450								
	3 ~ 10 ϕ	0.42	0.28	0.24	0.20	0.14	0.12	0.10	0.10	0.10	-	-								
	12.5 ~ 18 ϕ	-	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.20	0.25								
When the capacitance exceeds 1,000μF, 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		4.0	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450							
	Impedance Ratio	Z/(-25℃)	ϕ D < 12.5	7	4	4	3	2	2	2	2	-	-							
		/Z(+20℃)	ϕ D ≥ 12.5	-	5	5	4	2	2	2	2	3	6							
		Z/(-40℃)	ϕ D < 12.5	15	8	5	4	3	3	3	3	-	-							
/Z(+20℃)		ϕ D ≥ 12.5	-	14	12	10	5	4	3	3	6	10								
Endurance	Test Time		2,000 Hrs																	
	Capacitance Change		Within ±20% of initial value (4V: ±30%)																	
	Tanδ		Less than 200% of specified value (4V: < 300%)																	
	Leakage Current		Within specified value																	
	* The above specifications shall be satisfied when the capacitors are restored to 20℃After the rated voltage applied for 2,000 hours at 85℃.																			
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	Cap. (μF) \ Freq. (Hz)		50				120				1k				10k up					
			≤ 1,000				0.80				1.00				1.25				1.40	
	1,000 < C ≤ 10,000		0.85				1.00				1.15				1.25					

Diagram of Dimensions

Fig. 1

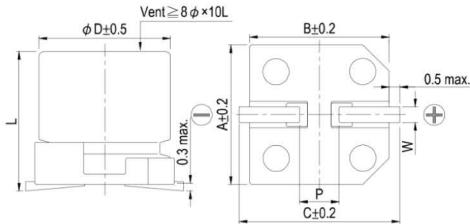
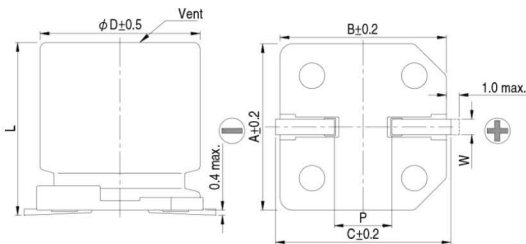


Fig. 2



Lead Spacing and Diameter

Unit: mm

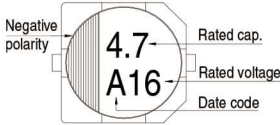
ϕ D	L	A	B	C	W	P $\pm$ 0.2	Fig. No.
3	5.3 $\pm$ 0.2	3.3	3.3	4.1	0.45 ~ 0.75	0.8	1
4	5.3 $\pm$ 0.2	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.3 $\pm$ 0.2	5.3	5.3	5.9	0.5 ~ 0.8	1.5	1
6.3	5.3 $\pm$ 0.2	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
6.3	7.7 $\pm$ 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
8	6.5 $\pm$ 0.3	8.3	8.3	9.0	0.5 ~ 0.8	2.3	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 ~ 1.3	4.7	1
10	10 $\pm$ 0.5	10.3	10.3	11.0	0.7 ~ 1.3	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

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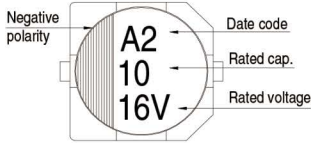
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Marking

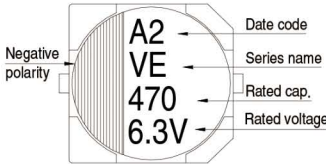
φ D = 3 mm



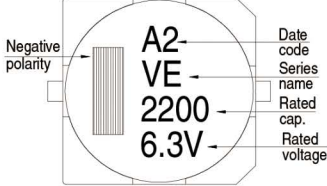
φ D = 4 ~ 6.3 mm



φ D = 8 ~ 10 mm



φ D ≥ 12.5 mm



Dimension and Permissible Ripple Current

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

Rated Volt. (V _{DC})	4V (0G)	6.3V (0J)	10V (1A)	16V (1C)	25V (1E)	35V (1V)	50V (1H)	63 (1J)
Cap. (μF) Contents	φ D×L	φ D×L	φ D×L	φ D×L	φ D×L	φ D×L	φ D×L	φ D×L
1 010								
2.2 2R2							4×5.3	4×5.3
3.3 3R3					3×5.3	3×5.3	4×5.3	5×5.3
4.7 4R7			3×5.3	3×5.3	4×5.3	4×5.3	4×5.3	5×5.3
10 100		3×5.3	4×5.3	4×5.3	5×5.3	5×5.3	5×5.3	6.3×5.3
22 220	3×5.3	4×5.3	5×5.3	4×5.3	5×5.3	5×5.3	6.3×5.3	8×10
33 330	4×5.3	4×5.3	4×5.3	5×5.3	5×5.3	6.3×5.3	6.3×7.7	8×10
47 470	4×5.3	4×5.3	6.3×5.3	5×5.3	6.3×5.3	6.3×7.7	6.3×7.7	10×10
68 680	5×5.3	5×5.3	5×5.3	6.3×5.3	6.3×7.7	6.3×7.7	8×10	10×10
100 101	5×5.3	6.3×5.3	6.3×5.3	6.3×5.3	6.3×7.7	8×6.5	8×10	10×10
150 151						10×7.7		
220 221	6.3×5.3	6.3×5.3	6.3×7.7	6.3×7.7	8×10	8×10	10×10	12.5×13.5
330 331	6.3×7.7	6.3×7.7	8×6.5	8×10	8×10	10×10	12.5×13.5	12.5×16
470 471	8×10	8×10	10×7.7	10×10	10×10	12.5×13.5	12.5×16	16×16.5
680 681		10×7.7	10×10	10×10	12.5×13.5	12.5×13.5	16×16.5	18×16.5
1,000 102		10×10	10×10	12.5×13.5	12.5×13.5	16×16.5	18×16.5	
2,200 222		12.5×13.5	12.5×13.5	16×16.5	16×16.5	18×16.5		
3,300 332		12.5×16	16×16.5	16×16.5	18×16.5	18×21.5		
4,700 472		16×16.5	16×16.5	18×16.5	18×21.5			
6,800 682		18×16.5	18×16.5	18×21.5				
10,000 103		18×21.5	18×21.5					

Rated Volt. (V _{DC})	100V (2A)	160V (2C)	200V (2D)	250V (2E)	400V (2G)	450V (2W)
Cap. (μF) Contents	φ D×L	φ D×L	φ D×L	φ D×L	φ D×L	φ D×L
4.7 4R7					12.5×13.5	12.5×13.5
10 100	8×10			12.5×13.5	12.5×13.5	12.5×16
22 220	8×10		12.5×13.5	12.5×13.5	16×16.5	16×16.5
33 330	10×10	12.5×13.5	12.5×16	12.5×16	16×16.5	18×16.5
47 470	10×10	12.5×16	16×16.5	16×16.5	18×16.5	18×21.5
68 680	12.5×13.5	16×16.5	16×16.5	18×16.5	18×21.5	
100 101	12.5×13.5	18×16.5	18×16.5	18×21.5		
220 221	16×16.5	16×21.5	16×21.5			
330 331	18×16.5					

Part Numbering System

VE Series 470μF ±20% 6.3V Carrier Tape 8φ×10L S

VE- 471 M 0J TR - 0810 S

Series Name Capacitance Tolerance Rated Voltage Package Type Terminal Type Case Size Regional Code

Note: For more details, please refer to "Part Numbering System (SMD Type)" on page 15.