

VE Series

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



Marking color: Black

Specifications

Items	Performance													
Category Temperature Range	-40°C ~ +85°C													
Capacitance Tolerance	±20% (at 120Hz, 20°C)													
Leakage Current (at 20°C)	Rated Voltage	6.3 ~ 100V												
	Time	after 2 minutes												
	Case size	3 ~ 10 ϕ 12.5 ~ 18 ϕ 12.5 ~ 18 ϕ												
	Leakage Current	I = 0.01CV or 3 μ A, whichever is greater I = 0.03CV or 4 μ A, whichever is greater I = 0.04CV +100 μ A												
Where, C = rated capacitance in μ F V = rated DC working voltage in V														
Tan δ (at 120Hz, 20°C)	Rated Voltage	4 6.3 10 16 25 35 50 63 100 160 ~ 250 400 ~ 450												
	3 ~ 10 ϕ 12.5 ~ 18 ϕ	0.42 0.28 0.24 0.20 0.14 0.12 0.10 0.10 0.10 0.10 - -												
When the capacitance exceeds 1,000 μ F, 0.02 shall be added every 1,000 μ F increase.														
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below.													
	Impedance Ratio	Rated Voltage		4.0	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450
		Z(-25°C)	ϕ D < 12.5	7	4	4	3	2	2	2	2	2	-	-
		/Z(+20°C)	ϕ D \geq 12.5	-	5	5	4	2	2	2	2	2	3	6
Z(-40°C)		ϕ D < 12.5	15	8	5	4	3	3	3	3	3	-	-	
/Z(+20°C)	ϕ D \geq 12.5	-	14	12	10	5	4	3	3	3	6	10		
Endurance	Test Time	2,000 Hrs												
	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 Specifications 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 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)		50	120	1k	10k up								
	Cap. (μ F)	Under 1,000	0.80	1.00	1.25	1.40								
	1,000 < C \leq 10,000	0.85	1.00	1.15	1.25									

Diagram of Dimensions

Fig. 1

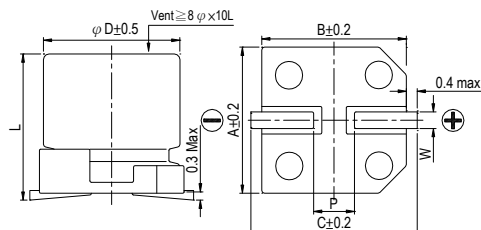
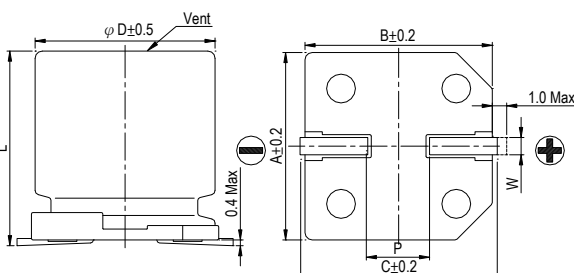


Fig. 2



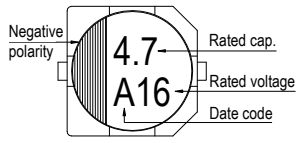
Lead Spacing and Diameter

Unit: mm

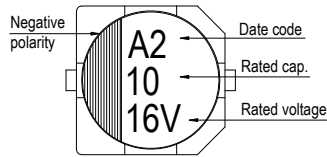
ϕ D	L	A	B	C	W	P ± 0.2	Fig. No.
3	5.3 ± 0.2	3.3	3.3	4.1	0.45 ~ 0.75	0.8	1
4	5.3 ± 0.2	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.3 ± 0.2	5.3	5.3	5.9	0.5 ~ 0.8	1.5	1
6.3	5.3 ± 0.2	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
8	6.5 ± 0.3	8.4	8.4	9.0	0.5 ~ 0.8	2.3	1
8	10 ± 0.5	8.4	8.4	9.0	0.7 ~ 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

Marking

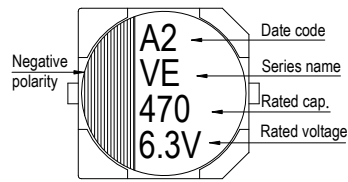
$\phi D = 3 \text{ mm}$



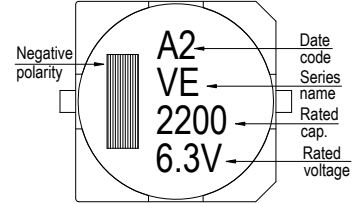
$\phi D = 4 \sim 6.3 \text{ mm}$



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



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



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

Ripple Current: mA/rms at 120 Hz, 85°C

Dimension & Permissible Ripple Current

V. DC μF	Contents	4V (0G)		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63 (1J)		
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	
1	010																	
2.2	2R2														4×5.3	10	4×5.3	8
3.3	3R3														4×5.3	14	4×5.3	12
4.7	4R7														4×5.3	17	5×5.3	22
10	100														4×5.3	20	5×5.3	25
															3×5.3	16	4×5.3	26
															4×5.3	26	4×5.3	26
															5×5.3	44	5×5.3	44
															5×5.3	35	6.3×5.3	40
															8×6.5	46	8×6.5	46
22	220														6.3×5.3	50	6.3×7.7	65
															6.3×5.3	59	6.3×7.7	65
															6.3×5.3	67	6.3×7.7	75
															8×6.5	85	8×6.5	95
															6.3×7.7	75	6.3×7.7	75
															8×10	190	8×10	190
															6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
47	470														6.3×7.7	98	6.3×7.7	98
															8×10	190	8×10	190
															6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
68	680														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
100	101														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
															6.3×5.3	89	6.3×7.7	109
															6.3×5.3	89	6.3×7.7	109
															8×6.5	125	8×6.5	125
150	151														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
															6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
220	221														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
															6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
330	331														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
470	471														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
680	681														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
1,000	102														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
2,200	222														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
3,300	332														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
4,700	472														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
6,800	682														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105
10,000	103														6.3×7.7	98	6.3×7.7	98
															8×6.5	105	8×6.5	105

V. DC μF	Contents	100V (2A)		160V (2C)		200V (2D)		250V (2E)		400V (2G)		450V (2W)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
4.7	4R7												
10	100												
22	220												
33	330												
47	470												
68	680												
100	101												
220	221												
330	331												

Part Numbering System

VE series 470 μF $\pm 20\%$ 6.3V Carrier Tape 8 $\phi \times 10L$ Pb-free and PET coating case

VE- **471** **M** **OJ** **TR** - **0810**

Series name Capacitance Capacitance Tolerance Rated Voltage Package Type Terminal Type Case size Lead Wire and Coating Type

Note: For more details, please refer to "Part Numbering System (SMD Type)" on page 12.