

## VEJ Series

### Features

- 4  $\phi$  ~ 18  $\phi$ , 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															
	6.3 ~ 100V	160 ~ 400V	450V													
Category Temperature Range	-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														
	Time	after 2 minutes														
	Case size	4 ~ 10 $\phi$	12.5 ~ 18 $\phi$													
	Leakage Current	I = 0.01CV or 3 $\mu$ A, whichever is greater	I = 0.03CV or 4 $\mu$ A, whichever is greater	I = 0.04CV + 100 $\mu$ A												
Where, C = rated capacitance in $\mu$ F, V = rated DC working voltage in V																
Tan $\delta$ (at 120 Hz, 20°C)	Rated Voltage	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450					
	4 ~ 10 $\phi$	0.45	0.35	0.28	0.18	0.16	0.14	0.12	0.12	-	-					
	12.5 ~ 18 $\phi$	0.40	0.38	0.34	0.26	0.22	0.18	0.14	0.10	0.20	0.25					
When the capacitance exceeds 1,000 $\mu$ F, 0.02 shall be added every 1,000 $\mu$ F increase.																
Low Temperature Characteristics (at 120 Hz)	Impedance ratio shall not exceed the values given in the table below.															
	Impedance Ratio	Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250	400	450
		Z(-25°C)	$\phi D < 12.5$	4	4	3	2	2	2	2	3	-	-	-	-	-
		/ Z(+20°C)	$\phi D \geq 12.5$	5	4	3	2	2	2	2	2	3	3	3	6	6
		Z(-55/-40°C)	$\phi D < 12.5$	12	8	6	4	3	3	3	4	-	-	-	-	-
/ Z(+20°C)	$\phi D \geq 12.5$	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 $\phi D \leq 6.3$ mm; Within ± 20% of initial value for $\phi D \geq 8$ mm														
	Tan $\delta$	Less than 300% of specified value for $\phi D \leq 6.3$ mm; Less than 200% of specified value for $\phi D \geq 8$ 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			Freq. (Hz)													
	Cap. ( $\mu$ F)		50	120	1k	10k up										
	$\leq 1,000$		0.80	1.00	1.25	1.40										
	$1,000 < C \leq 8,200$		0.85	1.00	1.15	1.25										

### Diagram of Dimensions

Fig. 1

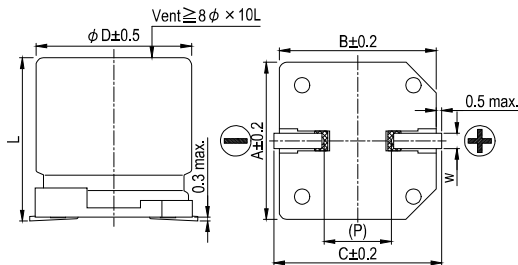
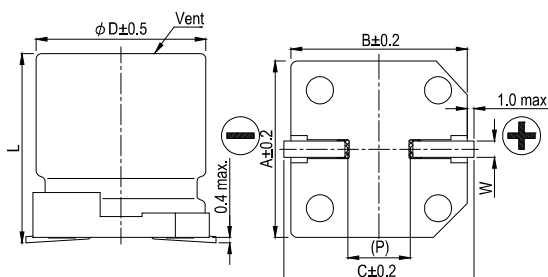


Fig. 2



### Lead Spacing and Diameter

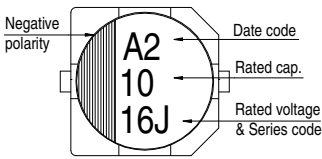
Unit: mm

$\phi D$	L	A	B	C	W	P	Fig. No.
4	5.7 ± 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5	1
6.3	5.7 ± 0.3	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	8.3	8.3	9.0	0.5 ~ 0.8	2.3	1
8	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1	1
10	7.7 ± 0.3	10.3	10.3	11.0	0.7 ~ 1.1	4.7	1
10	10 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.1	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

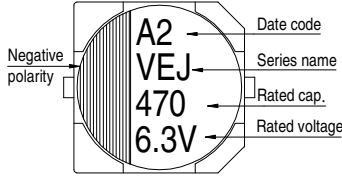
The diagram is marking "()" for reference dimension.

### Marking

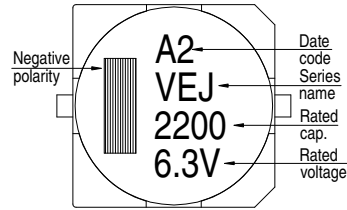
$\phi D \leq 6.3 \text{ mm}$



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



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



### Dimension and Permissible Ripple Current

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

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

Rated Volt. (Vdc)	Cap. ( $\mu\text{F}$ )	Contents	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
			$\phi D \times L$	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												4x5.7	8	4x5.7	8		
2.2	2R2												4x5.7	12	4x5.7	12		
3.3	3R3												4x5.7	14	5x5.7	17		
4.7	4R7								4x5.7	17	4x5.7	17	5x5.7	20	6.3x5.7	22		
10	100						4x5.7	20	4x5.7	20	5x5.7	27	6.3x5.7	32	6.3x5.7	32		
22	220		4x5.7	22	4x5.7	22	5x5.7	30	5x5.7	30	6.3x5.7	44	6.3x5.7	38	6.3x7.7	58	8x10	100
33	330		5x5.7	34	5x5.7	34	5x5.7	34	6.3x5.7	46	6.3x5.7	46	6.3x7.7	65	8x10	140	10x10	150
47	470		5x5.7	38	5x5.7	38	6.3x5.7	48	6.3x5.7	48	6.3x7.7	80	6.3x7.7	70	8x10	170	12.5x13.5	250
100	101		6.3x5.7	69	6.3x5.7	69	6.3x5.7	69	6.3x7.7	100	8x10	240	8x10	210	10x10	310	12.5x13.5	380
220	221		6.3x7.7	120	6.3x7.7	120	6.3x7.7	120	8x10	270	8x10	270	10x10	330	12.5x13.5	470	16x16.5	450
330	331		8x10	290	8x10	290	8x10	290	8x10	290	10x10	370	12.5x13.5	490	16x16.5	650	18x16.5	590
470	471		8x10	320	8x10	320	10x10	380	10x10	380	12.5x13.5	520	12.5x16	550	16x16.5	700	18x21.5	980
1,000	102		10x10	410	10x10	410	12.5x13.5	500	12.5x16	550	16x16.5	800	18x16.5	990				
2,200	222		12.5x13.5	680	12.5x13.5	680	16x16.5	900	16x16.5	900	18x16.5	1,050						
3,300	332		12.5x16	850	16x16.5	950	16x16.5	950	18x16.5	1,150								
4,700	472		16x16.5	1,000	16x16.5	1,000	18x16.5	1,225	18x21.5	1,300								
6,800	682		18x16.5	1,290	18x16.5	1,290												
8,200	822		18x21.5	1,450	18x21.5	1,450												

Rated Volt. (Vdc)	Cap. ( $\mu\text{F}$ )	Contents	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
4.7	4R7						12.5x13.5	65	12.5x13.5	45	12.5x13.5	45
10	100				12.5x13.5	80	12.5x13.5	70	12.5x13.5	50	12.5x16	75
22	220				12.5x16	110	12.5x13.5	105	16x16.5	85	16x16.5	85
33	330		12.5x13.5	95	12.5x16	120	16x16.5	180	18x16.5	100	18x16.5	100
47	470		12.5x16	205	16x16.5	220	16x16.5	220	18x21.5	130		
100	101		16x16.5	250	18x16.5	280	18x21.5	290				

### Part Numbering System

VEJ Series    470 $\mu\text{F}$      $\pm 20\%$     6.3V    Carrier Tape    8 $\phi \times 10\text{L}$     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.