



## Features

- 4 ~ 18  $\phi$ , 105°C, 2,000 hours assured
- Designed for surface mounting on high density PC board
- RoHS Compliance



Marking color: Black

## SPECIFICATIONS

Items	Performance												
Category Temperature Range	6.3 ~ 100V	160 ~ 450V											
	-55°C ~ +105°C	-40°C ~ +105°C											
Capacitance Tolerance	$\pm 20\%$ (at 120Hz, 20°C)												
Leakage Current (at 20°C)	Rated voltage	6.3 ~ 100V	160 ~ 450V										
	Time	after 2 minutes											
	Case size	4 ~ 10 $\phi$	12.5 ~ 18 $\phi$	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													
Dissipation Factor (Tan $\delta$ at 120Hz, 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 120Hz)	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 ~ 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	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	6	10	
Endurance	Test Time	2,000 Hrs											
	Capacitance Change	Within $\pm 25\%$ of initial value for $\phi D \leq 6.3\text{mm}$ ; Within $\pm 20\%$ of initial value for $\phi D \geq 8\text{mm}$											
	Dissipation Factor	Less than 300% of specified value for $\phi D \leq 6.3\text{mm}$ ; Less than 200% of specified value for $\phi D \geq 8\text{mm}$											
	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 & Frequency Multipliers	Freq. (Hz)		50	120	1k	10k up							
	Cap. ( $\mu$ F)												
	Under 1,000		0.80	1.00	1.25	1.40							
1,000 < C $\leq$ 4,700		0.85	1.00	1.15	1.25								

## DIAGRAM OF DIMENSIONS

Fig. 1

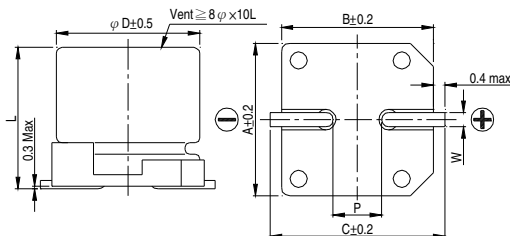
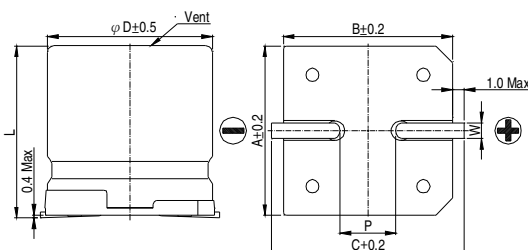


Fig. 2



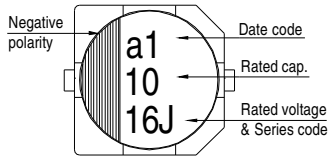
## LEAD SPACING AND DIAMETER

Unit: mm

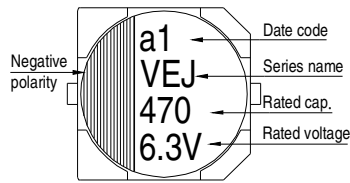
$\phi D$	L	A	B	C	W	P $\pm 0.2$	Fig. No.
4	5.7 $\pm$ 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.7 $\pm$ 0.3	5.3	5.3	6.1	0.5 ~ 0.8	1.5	1
6.3	5.7 $\pm$ 0.3	6.6	6.6	7.4	0.5 ~ 0.8	2.0	1
6.3	7.7 $\pm$ 0.3	6.6	6.6	7.4	0.5 ~ 0.8	2.0	1
8	10 $\pm$ 0.5	8.4	8.4	9.2	0.7 ~ 1.1	3.1	1
10	7.7 $\pm$ 0.3	10.4	10.4	11.2	0.7 ~ 1.1	4.7	1
10	10 $\pm$ 0.5	10.4	10.4	11.2	0.7 ~ 1.1	4.7	1
10	10.3 $\pm$ 0.5	10.4	10.4	11.2	0.7 ~ 1.1	4.7	1
12.5	13.5 $\pm$ 0.5	13.0	13.0	15.0	1.1 ~ 1.4	4.4	2
12.5	16 $\pm$ 0.5	13.0	13.0	15.0	1.1 ~ 1.4	4.4	2
16	16.5 $\pm$ 0.5	17.0	17.0	19.0	1.1 ~ 1.4	6.4	2
18	16.5 $\pm$ 0.5	19.0	19.0	21.0	1.1 ~ 1.4	6.4	2

## MARKING

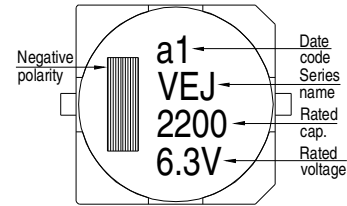
$\phi D \leq 6.3\text{mm}$



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



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



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

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

## DIMENSION & PERMISSIBLE RIPPLE CURRENT

$\mu\text{F}$	V <sub>DC</sub> 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
0.22	R22											4x5.7	3				
0.33	R33											4x5.7	4				
0.47	R47											4x5.7	5	4x5.7	5		
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	10x10.3	310	12.5x13.5	380
220	221	6.3x7.7	120	6.3x7.7	120	6.3x7.7	120	8x10 10x7.7	270 270	8x10	270	10x10.3	330	12.5x13.5	470	16x16.5	450
330	331	8x10	290	8x10	290	8x10 10x7.7	290 290	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		
1,000	102	10x10	410	10x10.3	410	12.5x13.5	550	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										
6,800	682	18x16.5	1,290	18x16.5	1,290												

$\mu\text{F}$	V <sub>DC</sub> 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
3.3	3R3					12.5x13.5	60			12.5x13.5	40
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	16x16	240	16x16.5	220	16x16.5	220				
100	101	16x16.5	250	18x16.5	280	18x16.5	260				

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