Features

- 4ϕ ~ 18ϕ, 105℃, 3,000 ~ 5,000 hours assured
- Long life assured
- Designed for surface mounting on high density PC board
- RoHS compliance
- AEC-Q200 qualified

Marking color: Black

Specifications

Items	Performance		
Category Temperature Range	6.3 ~ 100V	160 ~ 400V	450V
	-55℃ ~ +105℃	-40℃ ~ +105℃	-25℃ ~ +105℃
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
Leakage Current	I = 0.01CV or 3 (μA), whichever is greater	I = 0.04CV + 100 (μA)

Where, C = rated capacitance in μF, V = rated DC working voltage in V

Tanδ (at 120 Hz, 20℃)

Rated Voltage	6.3	10	16	25	35	50	63	80	100	160	200	250	400	450
Tanδ (max)	0.30	0.24	0.20	0.16	0.13	0.12	0.09	0.08	0.07	0.15	0.15	0.15	0.20	0.20

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	80	100	160	200	250	400	450
Impedance Ratio	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	2	2	2	3	3	3	6	6
	Z(-55/-40℃)/Z(+20℃)	10	7	5	3	3	3	3	3	3	6	6	6	10	-

Endurance

Test Time	3,000 Hrs for ϕD ≦ 10 mm; 5,000 Hrs for ϕD ≧ 12.5 mm
Capacitance Change	Within ±30% of initial value
Tanδ	Less than 300% of specified value
Leakage Current	Within specified value

* The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied for 3,000 ~ 5,000 hours at 105℃.

Shelf Life Test

Test Time	1,000 Hrs
Capacitance Change	Within ±30% of initial value
Tanδ	Less than 300% of specified value
Leakage Current	Within specified value

* The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied.

Ripple Current and Frequency Multipliers

Frequency (Hz) / Cap.(μF)	50	120	1k	10k up
≦ 1,000	0.70	1.00	1.30	1.40
1,000 < C ≦ 1,500	0.85	1.00	1.13	1.15

Diagram of Dimensions

Fig. 1

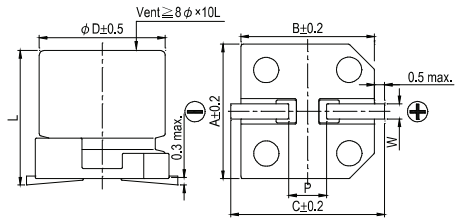
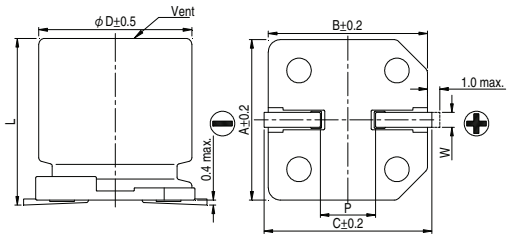


Fig. 2



Lead Spacing and Diameter Unit: mm

φD	L	A	B	C	W	P ± 0.2	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	10 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1	1
10	10 ± 0.5	10.3	10.3	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

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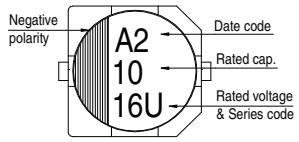
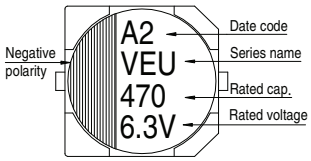
Marking

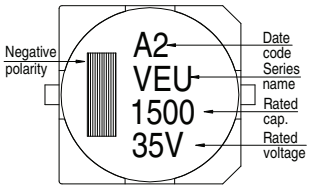
ϕD ≦ 6.3 mm



ϕD = 8 ~ 10 mm



ϕD ≧ 12.5 mm



Dimension and Permissible Ripple Current

Dimension: ϕD × L(mm)
Ripple Current: mA/rms at 120 Hz, 105℃

Rated Volt. (Vdc) / Cap. (μF)	Contents	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		80V (1K)	
		ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA
1	010											4×5.7	8				
2.2	2R2											4×5.7	12				
3.3	3R3											4×5.7	17				
4.7	4R7									4×5.7	16	5×5.7	22				
10	100					4×5.7	18	5×5.7	27	5×5.7	27	6.3×5.7	32				
22	220	4×5.7	22	4×5.7	22	5×5.7	30	6.3×5.7	44	6.3×5.7	44	6.3×7.7	58				
33	330	5×5.7	35	5×5.7	35	6.3×5.7	48	6.3×5.7	50	6.3×7.7	57	8×10	130				
47	470	5×5.7	38	6.3×5.7	50	6.3×5.7	50	6.3×7.7	63	8×10	92	8×10	141				
100	101	6.3×5.7	69	6.3×7.7	81	6.3×7.7	81	8×10	116	10×10	151	10×10	160			12.5×13.5	220
150	151													12.5×13.5	240	12.5×16	290
220	221	6.3×7.7	120	8×10	141	8×10	141	10×10	290	10×10	320	12.5×13.5	280	12.5×16	320	16×16.5	410
330	331	8×10	141	10×10	290	10×10	290	10×10	320	12.5×13.5	320	12.5×16	360	16×16.5	450	16×16.5	510
470	471	10×10	320	10×10	320	10×10	320			12.5×16	410	16×16.5	510	16×16.5	540	18×16.5	650
1,000	102	10×10	410							16×16.5	690	18×16.5	780				
1,500	152									18×16.5	900						

Rated Volt. (Vdc) / Cap. (μF)	Contents	100V (2A)		160V (2C)		200V (2D)		250V (2E)		400V (2G)		450V (2W)	
		ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA
3.3	3R3											12.5×13.5	40
4.7	4R7							12.5×13.5	65	12.5×16	50	12.5×16	50
10	100					12.5×13.5	80	12.5×16	105	16×16.5	85	16×16.5	85
22	220					12.5×16	105	16×16.5	180	18×21.5	130	18×21.5	130
33	330			12.5×13.5	95	16×16.5	220	18×16.5	230				
47	470			16×16.5	260	18×16.5	270	18×21.5	280				
68	680	12.5×13.5	180	18×16.5	320	18×21.5	330						
100	101	12.5×16	240	16×21.5	380								
150	151	16×16.5	340										
220	221	16×16.5	410										
330	331	18×16.5	540										

Part Numbering System

VEU Series	470μF	±20%	6.3V	Carrier Tape		10ϕ×10L	
VEU	**471**	**M**	**0J**	**TR**	**-**	**1010**	**xx**
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case Size	

xx
S = Standard
KS = AEC-Q200 Qualified, Safety Critical Application
LS = AEC-Q200 Qualified, Non-Safety Critical Application

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