SMD Aluminum Electrolytic Capacitors

VE

Features

- 3 ~ 18 ϕ, 85℃, 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℃ ~ +85℃
Capacitance Tolerance	±20% (at 120Hz, 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

Dissipation Factor (Tan δ at 120Hz, 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 ~ 16 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 120Hz)

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℃) /Z(+20℃)	ϕD < 12.5	7	4	4	3	2	2	2	2	2	-	-
		ϕD ≧ 12.5	-	5	5	4	2	2	2	2	2	3	6
	Z(-40℃) /Z(+20℃)	ϕD < 12.5	15	8	5	4	3	3	3	3	3	-	-
		ϕD ≧ 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%)
Dissipation Factor	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 & Frequency Multipliers

Freq. (Hz) / Cap. (μF)	50	120	1k	10k up
Under 1,000	0.80	1.00	1.25	1.40
1,000 < C ≦ 4,700	0.85	1.00	1.15	1.25

DIAGRAM OF DIMENSIONS

Fig. 1

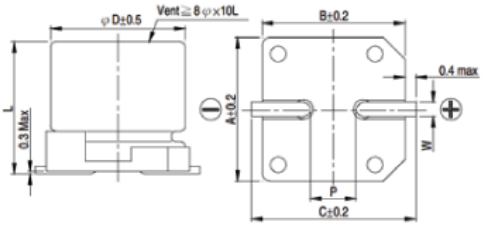
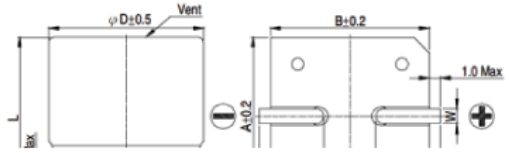


Fig. 2

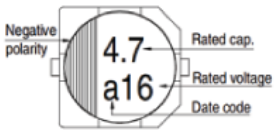


LEAD SPACING AND DIAMETER Unit: mm

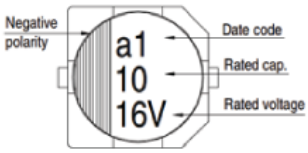
φD	L	A	B	C	W	P ± 0.2	Fig. No.
3	5.3 ± 0.2	3.3	3.3	4.1	0.45 ~ 0.75	0.8	1
4	5.3 ± 0.2	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.3 ± 0.2	5.3	5.3	6.1	0.5 ~ 0.8	1.5	1
6.3	5.3 ± 0.2	6.6	6.6	7.4	0.5 ~ 0.8	2.0	1
6.3	7.7 ± 0.3	6.6	6.6	7.4	0.5 ~ 0.8	2.0	1
8	10 ± 0.5	8.4	8.4	9.2	0.7 ~ 1.1	3.1	1
8	10.3 ± 0.5	8.4	8.4	9.2	0.7 ~ 1.1	3.1	1
10	7.7 ± 0.3	10.4	10.4	11.2	0.7 ~ 1.1	4.7	1
10	10 ± 0.5	10.4	10.4	11.2	0.7 ~ 1.1	4.7	1
10	10.3 ± 0.5	10.4	10.4	11.2	0.7 ~ 1.1	4.7	1
12.5	13.5 ± 0.5	13.0	13.0	15.0	1.1 ~ 1.4	4.4	2
12.5	16 ± 0.5	13.0	13.0	15.0	1.1 ~ 1.4	4.4	2

MARKING

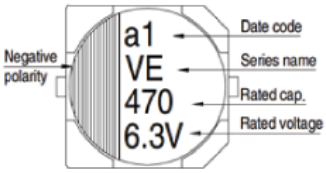
ϕD = 3 mm



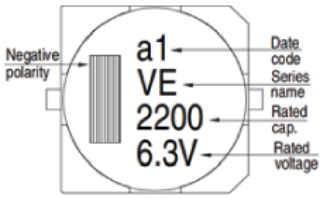
ϕD = 4 ~ 6.3mm



ϕD = 8 ~ 10 mm



ϕD ≧ 12.5mm



DIMENSION & PERMISSIBLE RIPPLE CURRENT

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

V. DC / μF / Contents	4V (0G)		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63 (1J)	
	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA	ϕD×L	mA
0.1 0R1													4×5.3	3	4×5.3	2
0.22 R22													4×5.3	5	4×5.3	3
0.33 R33													4×5.3	6	4×5.3	4
0.47 R47													4×5.3	7	4×5.3	5
1 010													4×5.3	10	4×5.3	8
2.2 2R2													4×5.3	14	4×5.3	12
3.3 3R3									3×5.3	14	3×5.3	14	4×5.3	17	5×5.3	22
4.7 4R7					3×5.3	14	3×5.3	14	4×5.3	26	4×5.3	26	4×5.3	20	5×5.3	25
10 100			3×5.3	16	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
22 220	3×5.3	16	4×5.3	26	5×5.3	44	4×5.3 5×5.3	30 44	5×5.3 6.3×5.3	47 59	5×5.3 6.3×5.3	47 59	6.3×5.3 6.3×7.7	50 65	8×10	139
33 330	4×5.3	31	4×5.3	31	4×5.3 5×5.3	31 55	5×5.3	55	5×5.3 6.3×5.3	55 67	6.3×5.3 6.3×7.7	67 85	6.3×7.7	75	8×10	139
47 470	4×5.3	34	4×5.3 5×5.3	34 55	6.3×5.3	75	5×5.3 6.3×5.3	55 75	6.3×5.3 6.3×7.7	75 98	6.3×7.7	98	6.3×7.7 8×10	75 190	10×10	200
68 680	5×5.3	58	5×5.3 6.3×5.3	58 89	5×5.3 6.3×5.3	58 89	6.3×5.3	89	6.3×7.7	109	6.3×7.7	109	8×10	190	10×10	226
100 101	5×5.3 6.3×5.3	58 89	6.3×5.3	89	6.3×5.3 6.3×7.7	89 109	6.3×5.3 6.3×7.7	89 109	6.3×7.7	109	8×10	252	8×10	190	10×10	226
150 151											10×7.7	252				
220 221	6.3×5.3 6.3×7.7	89 124	6.3×5.3 6.3×7.7	89 124	6.3×7.7 8×10	124 270	6.3×7.7 8×10	124 270	8×10 10×7.7	270 270	8×10 10×10	270 370	10×10	320	12.5×13.5	500
330 331	6.3×7.7	124	6.3×7.7	124	8×10	290	8×10 10×7.7	290 290	10×10	400	10×10.3	400	12.5×13.5	600	12.5×16	600
470 471	8×10	290	8×10	290	10×7.7 10×10	290 400	10×10	400	10×10	400	12.5×13.5	750	12.5×16	740	16×16.5	850
680 681			10×7.7	290	10×10	410	10×10	410	12.5×13.5	680	12.5×13.5	680	16×16.5	1,000	18×16.5	1,100
1,000 102			10×10	430	10×10	430	12.5×13.5	750	12.5×13.5	750	16×16.5	1,100	18×16.5	1,350		
2,200 222			12.5×13.5	890	12.5×13.5	890	16×16.5	1,100	16×16.5	1100	18×16.5	1,450				
3,300 332			12.5×16	1,000	16×16.5	1,300	16×16.5	1,300	18×16.5	1,450						
4,700 472			16×16.5	1,400	16×16.5	1,400	18×16.5	1,600								
6,800 682			18×16.5	1,700	18×16.5	1,700										

V. DC / 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
4.7 4R7									12.5×13.5	120	12.5×13.5	120
10 100	8×10	90					12.5×13.5	150	12.5×13.5	120	12.5×16	130
22 220	8×10	90			12.5×13.5	240	12.5×13.5	150	16×16.5	140	16×16.5	140
33 330	10×10	120	12.5×13.5	290	12.5×16	310	12.5×16	240	16×16.5	140	18×16.5	180
47 470	10×10	120	12.5×16	370	16×16.5	420	16×16.5	340	18×16.5	280		
68 680	12.5×13.5	380	16×16.5	500	16×16.5	420	18×16.5	440				
100 101	12.5×13.5	440	18×16.5	650	18×16.5	550						
220 221	16×16.5	600										
330 331	18×16.5	780										

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