SMD Aluminium Electrolytic Capacitors

multicomp PRO

RoHS Compliant

Features

- Extra low impedance with temperature range -55°C to +105°C and load life of 2000~5000 hours
- Applicable to SMT process.

Specifications

Items	Characteristics
Capacitance Tolerance	± 20% (120Hz, 20°C)
Operating Temperature Range	-55°C to +105°C
Rated Voltage Range	6.3 to 50V DC
Capacitance Range	0.1 to 1,000μF
Leakage Current	For Φ4 ~ Φ10, after 2 minutes application of rated voltage, leakage current is not more than 0.01CV or 3(μA), whichever is greater. For Φ12.5 ~ Φ16, after 1 minutes application of rated voltage, leakage current is not more than 0.03CV or 4(μA), whichever is greater.
Dissipation Factor (tan δ)	Measurement Frequency: 120Hz. Temperature: 20°C

Rated Voltage(V)		6.3	10	16	25	35	50	63	80	100
tan δ(Max)	Φ4 ~ Φ10	0.26	0.1	0.16	0.14	0.12	0.1	0.08	0.08	0.07
	Φ12.5 ~ Φ16	0.26	0.22	0.18	0.16	0.14	0.1	0.08	0.08	0.07

Stability at Low Temperature

Measurement Frequency: 120Hz.

Rated Voltage(V)		6.3	10	16	25	35	50	63	80	100
Impedance ratio ZT/Z20 (max)	Z(-25°C)/Z(20°C)	2	2	2	2	2	2	2	2	2
	Z(-40°C)/Z(20°C)	3	3	3	3	3	3	3	3	3
	Z(-55°C)/Z(20°C)	4	4	4	3	3	3	3	3	3

Load Life

5000 hours,with application of rated voltage at 105°C

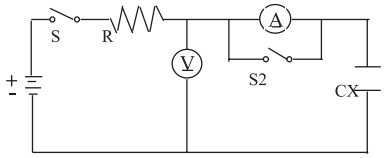
Capacitance Change	Within ±30% of Initial Value
tan δ	200% or less of Initial Specified Value
Leakage Current	Initial Specified Value or less

Shelf Life	After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for load life characteristics listed above.	
Resistance to Soldering Heat	After reflow soldering and restored at room temperature, they meet the characteristics requirements listed at right.	Capacitance Change: Within ± 10% of Initial Value tan δ: Initial specified value or less Leakage Current: Initial Specified Value or less
Applicable Standards	JIS C-5141 and JIS C-5102	

Scope

This specification applies to aluminium electrolytic capacitor, used in electronic equipment.

Electrical Characteristics

<table>
<tr><th>Item</th><th>Test Method</th><th>Specification</th></tr>
<tr><td>Rated Voltage</td><td></td><td>Voltage range, capacitance range, see specification of this series.</td></tr>
<tr><td>Capacitance
Dissipation factor</td><td>Measuring frequency : 120 ±12Hz
Measuring voltage : ≦0.5Vrms + 0.5 ~ 2VDC
Measurement circuit : </td><td>Voltage range, capacitance range, see specification of this series.
Dissipation factor, leakage current, see specification of this series.</td></tr>
<tr><td>Leakage current</td><td>DC leakage current shall be measured after 1~2 minutes application of the DC rated working voltage through the 1000Ω resistor at 20°C
 
R : 1000 ±100Ω S1 : Switch
A : DC current meter S2 : Switch for protect of current meter
V : DC voltage meter CX : Testing capacitor</td><td>Dissipation factor leakage current, see specification of this series.</td></tr>
<tr><td>Temperature characteristics</td><td><table><tr><th>Step</th><th>Temperature</th><th>Storage Time</th></tr><tr><td>1</td><td>20 ±2°C</td><td>30 minutes</td></tr><tr><td>2</td><td>-40 ±3°C</td><td>2 hours</td></tr><tr><td>3</td><td>20 ±2°C</td><td>15 minutes</td></tr><tr><td>4</td><td>105 ±2°C</td><td>2 hours</td></tr></table>Step 1. Measure the capacitance and impedance. (Z_{r0}) (|Z|, 20°C , 120Hz ±10%)
Step 2. Measure the impedance at thermal balance after 2 hours. (|Z|, 20°C , 120Hz ±10%)
Step 4. Measure the capacitance and leakage current at thermal balance after 2 hours.</td><td>Step 2. Impedance ratio (Zr / Z_{r0}) less than specified value.
Step 4. Capacitance change : within ± 20% of the initial measured value.
Leakage current :
Less than 10 times of initial specified value .</td></tr>
<tr><td>Surge test</td><td>Rated surge voltage shall be applied (switch on) for 30 ±5 seconds and then shall be applied (switch off) with discharge for 5 ±0.5 min at room temperature . This cycle shall be repeated for 1000 cycles.
Duration of one cycle is 6 ± 0.5 minutes .</td><td rowspan="2">Capacitance change : within ± 20% of the initial specified value.
Dissipation factor : 2.7 less than 200% of the initial specified value.
Leakage current : within initial specified value.</td></tr>
<tr><td>Applicable Ripple Current</td><td>The maximum A.C. current having frequency of 100k Hz which can be applied to the capacitor at 105 ±2°C continuously. Peak voltage not to exceed rated D.C.voltage.</td></tr>
</table>

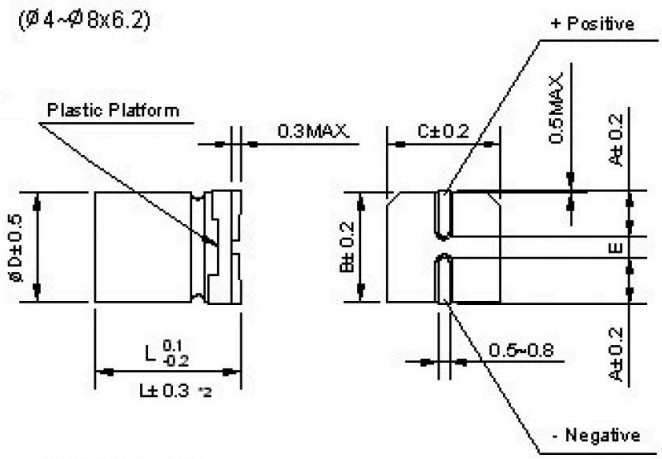
Mechanical Characteristics

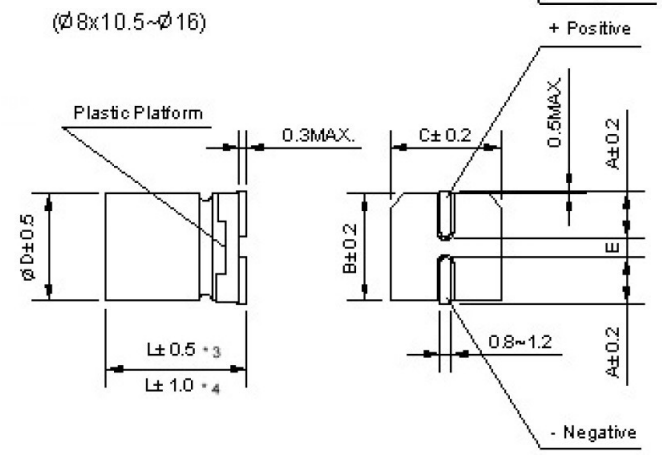
<table>
<tr><th>Item</th><th>Test Method</th><th>Specification</th></tr>
<tr><td>Lead strength</td><td>(A) Tensile strength :
wire lead terminal :
<table>
<tr><td>d (mm)</td><td>≦0.45</td><td>0.5 ~ 0.8</td><td>0.8<d ≦1.25</td></tr>
<tr><td>Load (kg)</td><td>0.51</td><td>1</td><td>2</td></tr>
</table>
Snap-in terminal
<table>
<tr><td>d (mm)</td><td>snap-in terminal</td></tr>
<tr><td>Load (kg)</td><td>2</td></tr>
</table>
The capacitor shall withstand the constant tensile force specified between the body and each lead for 10 seconds without damage either mechanical or electrical.
(B) Bending strength :
wire lead terminal :
<table>
<tr><td>d (mm)</td><td>≦0.45</td><td>0.5 ~ 0.8</td><td>0.8<d ≦1.25</td></tr>
<tr><td>Load (kg)</td><td>0.25</td><td>0.51</td><td>1</td></tr>
</table>
Snap-in terminal
<table>
<tr><td>Cross section area of terminal</td><td>Force (kg)</td></tr>
<tr><td>0.5<S≦1</td><td>1</td></tr>
<tr><td>S>1</td><td>2.5</td></tr>
</table>
With the capacitor in a vertical position apply the load specified axially to each lead. The capacitor shall be rotated slowly from the vertical to the horizontal position, back to the vertical position. The 90° in the opposite direction and back the original position. Performance of capacitor shall not have changed and leads shall be undamaged</td><td>When the capacitance is measured, there shall be no intermittent contacts, or open- or short-circuiting.
There shall be no such mechanical damage as terminal damage etc.</td></tr>
<tr><td>Vibration resistance</td><td>The frequency of the vibration shall vary uniformly within the range 10 to 55 Hz with the amplitude of 1.5mm, completing the cycle in the internal of one minute.
The capacitor shall be securely mounted by its leads with hold the body of capacitor. The capacitor shall be vibrated in three mutually perpendicular directions for a period of 2 hours in each direction .</td><td>Capacitance : no unsteady.
Appearance : no abnormal.
Capacitance change : within ± 5% of initial measured value .</td></tr>
<tr><td>Solderability</td><td>The leads are dipped in the solder bath of Sn at 260 ±5°C for 2 ± 0.5 seconds . The dipping depth should be set at 1.5 ~ 2mm .</td><td>The solder alloy shall cover the 95% or more of the dipped lead’s area .</td></tr>
</table>

MCVFZ Series

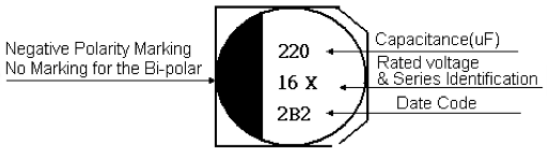
Dimensions & Marking:

Chip Type





Following items shall be marked on the body of Capacitor.
(Note: color of the marking is black)



a) Rated Working Voltage
6.3V of rated working voltage shall be marked as 6V, but 6.3V shall be assured and 5.5V of rated working voltage shall be marked as 5V, but 5.5V shall be assured.
b) Nominal Capacitance
c) Negative polarity
d) Series mark
e) Date Code
Remark: Date code numbering system:

Manufactured year								
Code	8	9	0	1	2	3	4	.....
Year	2018	2019	2020	2021	2022	2023	2024	.....

Manufactured Month												
Month	1	2	3	4	5	6	7	8	9	10	11	12
Code	1	2	3	4	5	6	7	8	9	A	B	C

Manufactured address			
address	Dongguan		
Code	3		

D × L	Φ4×5.8	Φ5×5.8	Φ6.3×5.8	Φ6.3×7.7	Φ8×6.2	Φ8×10.5
A	1.8	2.1	2.4	2.4	3.3	2.9
B	4.3	5.3	6.6	6.6	8.3	8.3
C	4.3	5.3	6.6	6.6	8.3	8.3
E±0.2	1.0	1.3	2.2	2.2	2.2	3.1
L	5.8	5.8	5.8	7.7	6.2	10.5

D × L	Φ10×10.5	Φ10×13.5	Φ12.5×13.5	Φ12.5×16	Φ16×16.5
A	3.2	3.2	4.7	4.7	5.5
B	10.3	10.3	12.8	12.8	16.3
C	10.3	10.3	12.8	12.8	16.3
E±0.2	4.4	4.4	4.4	4.4	6.7
L	10.5	13.5	13.5	16.0	16.5

Dimensions : Millimetres

Standard size & Maximum permissible ripple current & Impedance

WV		6.3			10			16		
Cap. (µF)		0J			1A			1C		
10	100							4×5.8	1.35	90
15	150							4×5.8	1.35	90
22	220	4×5.8	1.35	90	4×5.8	1.35	90	5×5.8 (4×5.8)	0.70 (1.35)	160 (90)
33	330	5×5.8 (4×5.8)	0.70 (1.35)	160 (90)	5×5.8 (4×5.8)	0.70 (1.35)	160 (90)	6.3×5.8 (5×5.8)	0.36 (0.70)	240 (160)
47	470	5×5.8 (4×5.8)	0.70 (1.35)	160 (90)	6.3×5.8 (5×5.8)	0.36 (0.70)	240 (160)	6.3×5.8 (5×5.8)	0.36 (0.70)	240 (160)
56	560	5×5.8	0.70	160	6.3×5.8	0.36	240	6.3×5.8	0.36	240
68	680	6.3×5.8 (5×5.8)	0.36 (0.70)	240 (160)	6.3×5.8	0.36	240	6.3×7.7 (6.3×5.8)	0.26 (0.36)	300 (240)
100	101	6.3×5.8 (5×5.8)	0.36 (0.70)	240 (160)	6.3×7.7 (6.3×5.8)	0.26 (0.36)	300 (240)	6.3x7.7 (6.3×5.8)	0.26 (0.36)	300 (240)
150	151	6.3×5.8	0.36	240	6.3×7.7	0.26	300	6.3×7.7	0.26	300
220	221	6.3x7.7 (6.3×5.8) (8×6.2)	0.26 (0.36) (0.26)	300 (240) (300)	6.3×7.7 (8×6.2)	0.26 (0.26)	300 (300)	8×10.5 (6.3×7.7)	0.16 (0.26)	600 (300)
330	331	6.3×7.7 (8×6.2)	0.26 (0.26)	300 (300)	10×10.5 (8×10.5)	0.08 (0.16)	850 (600)	10×10.5 (8×10.5)	0.08 (0.16)	850 (600)
470	471	8×10.5	0.16	600	10×10.5 (8×10.5)	0.08 (0.16)	850 (600)	10×10.5 (8×10.5)	0.08 (0.16)	850 (600)
680	681	10×10.5 (8x10.5)	0.08 (0.16)	850 (600)	10×10.5	0.08	850	10×13.5 (10×10.5)	0.07 (0.08)	950 (850)
1000	102	10×10.5 (8×10.5)	0.08 (0.16)	850 (600)	10×13.5 (10×10.5)	0.07 (0.08)	950 (850)	16×16.5 (12.5×16) (12.5×13.5)	0.05 (0.055) (0.06)	1450 (1200) (1100)
1500	152	10×13.5 (10×10.5)	0.07 (0.08)	950 (850)	12.5×13.5	0.06	1100	16×16.5	0.05	1450
2200	222	12.5×13.5	0.06	1100	12.5×16	0.055	1200	-	-	-
3300	332	12.5×16	0.055	1200	16×16.5	0.05	1450	Case Size	Imped-ance	Ripple Current
4700	472	16×16.5	0.05	1450						

Maximum Impedance (Ω) at 20°C 100kHz, Ripple Current (mA rms) at 105°C 100kHz

Standard size & Maximum permissible ripple current & Impedance

WV		25			35			50		
Cap. (µF)		1E			1V			1H		
4.7	4R7				4×5.8	1.35	90	5×5.8 (4×5.8)	1.52 (2.9)	85 (60)
10	100	4×5.8	1.35	90	5×5.8 (4x5.8)	0.70 (1.35)	160 (90)	6.3×5.8 (5×5.8)	0.88 (1.52)	165 (85)
15	150	5×5.8	0.70	160	5×5.8	0.70	160	6.3×5.8	0.88	165
22	220	6.3×5.8 (5x5.8)	0.36 (0.70)	240 (160)	6.3×5.8 (5×5.8)	0.36 (0.70)	240 (160)	6.3×7.7 (6.3x5.8) (8x6.2)	0.68 (0.88) (0.68)	195 (165) (195)
33	330	6.3×5.8 (5x5.8)	0.36 (0.70)	240 (160)	6.3×5.8 (8×6.2)	0.36 (0.26)	240 (300)	6.3×7.7 (8×6.2)	0.68 (0.68)	195 (195)
47	470	6.3×7.7 (6.3x5.8) (8x6.2)	0.26 (0.36) (0.26)	300 (240) (300)	6.3×7.7 (6.3x5.8) (8x6.2)	0.26 (0.36) (0.26)	300 (240) (300)	6.3×7.7 (8×6.2)	0.68 (0.68)	195 (195)
56	560	6.3×7.7 (6.3x5.8)	0.26 (0.36)	300 (240)	6.3×7.7	0.26	300	8×10.5	0.34	350
68	680	6.3×7.7	0.26	300	6.3x7.7	0.26	300	8×10.5	0.34	350
100	101	6.3×7.7 (8x6.2)	0.26 (0.26)	300 (300)	8×10.5	0.16	600	10×10.5 (8×10.5)	0.18 (0.34)	670 (350)
150	151	8x10.5 6.3×7.7)	0.16 0.26)	600 (300)	10×10.5 (8×10.5)	0.08 (0.16)	850 (600)	10×10.5	0.18	670
220	221	8×10.5	0.16	600	10×10.5 (8×10.5)	0.08 (0.16)	850 (600)	10×13.5 (10×10.5)	0.14 (0.18)	780 (670)
330	331	10×10.5 (8x10.5)	0.08 (0.16)	850 (600)	10×10.5	0.08	850	12.5×13.5	0.12	900
470	471	10×13.5 10×10.5)	0.07 (0.08)	950 (850)	12.5×13.5 (10×13.5)	0.07 (0.07)	820 (950)	16×16.5 (12.5×16)	0.08 (0.10)	1250 (1050)
680	681	12.5×13.5	0.06	1100	12.5×16	0.055	1200	-	-	-
1000	102	16×16.5 (12.5×16)	0.05 (0.055)	1450 (1200)	16×16.5	0.05	1450	16×16.5	0.073	1300
1500	152	16×16.5	0.05	1450	-	-	-	-	-	-

Maximum Impedance (Ω) at 20°C 100kHz, Ripple Current (mA rms) at 105°C 100kHz

Standard size & Maximum permissible ripple current & Impedance

WV Cap. (μF)		63			80			100		
		1J			1K			2A		
3.3	3R3	-	-	-	5×5.8	5	25	-	-	-
4.7	4R7	5×5.8	3.0	50	6.3×5.8	3	40	-	-	-
10	100	6.3×7.7 (6.3×5.8)	1.2 (1.5)	120 (80)	6.3×7.7 (8×6.2)	2.4 (2.4)	60 (60)	8×10.5	1.3	130
22	220	(8×10.5 (6.3×7.7) (8×6.2)	0.65 (1.2) (1.2)	250 (120) (120)	8×10.5	1.3	130	10×10.5 (8×10.5)	0.7 (1.3)	200 (130)
33	330	8×10.5	0.65	250	8×10.5	1.3	130	10×10.5	0.7	200
47	470	8×10.5	0.65	250	10×10.5	0.7	200	12.5×13.5 (10×13.5)	0.32 (0.60)	500 (250)
68	680	12.5×13.5 (8×10.5)	0.16 (0.65)	800 (250)	12.5×13.5	0.32	500		0.32	500
100	101	12.5×13.5 (10×10.5)	0.16 0.35)	800 (400)	12.5×13.5	0.32	500	16×16.5 (12.5×16)	0.17 (0.26)	795 (550)
150	151	12.5×13.5 (10×13.5)	0.16 (0.25)	800 (650)	12.5×13.5	0.32	500	-	-	-
220	221	12.5×13.5 (10×13.5)	0.16 0.25)	800 (650)	12.5×16	0.26	550	Case Size	Imped- ance	Ripple Current
330	331	16×16.5	0.082	1400	16×16.5	0.17	795			

Maximum Impedance (Ω) at 20°C 100kHz, Ripple Current (mA rms) at 105°C 100kHz

Frequency Correction Factor of Rated Ripple Current

Frequency Capacitance (μF)		50Hz	120Hz	300Hz	1kHz	10kHz~
Φ4 ~ Φ10	4.7 ~ 68	0.35	0.5	0.64	0.83	1
	100 ~ 1500	0.4	0.55	0.7	0.85	1
Φ12.5 ~ Φ16	~ 68	0.4	0.55	0.7	0.85	1
	100 ~ 680	0.45	0.65	0.8	0.9	1
	1000 ~ 4700	0.65	0.85	0.95	1	1

Explanation of parts numbers