

# Type AVEZ $-55\text{ }^{\circ}\text{C}$ to $+105\text{ }^{\circ}\text{C}$ Low Impedance SMT Aluminum Electrolytic Capacitors

For Filtering, Bypassing and Power Supply Decoupling



Type AVEZ Capacitors are rated for 1000 hours at  $105\text{ }^{\circ}\text{C}$  with low impedance characteristics. They are ideal for high density PC board packaging. The Type AVEZ offers a low in-place-cost for a high quality performer. The vertical cylindrical cases facilitate automatic mounting and reflow soldering into the same footprint of like-rated tantalum capacitors except without the need for voltage derating. Type AVEZ is RoHS compliant.

## Highlights

- $+105\text{ }^{\circ}\text{C}$ , Up to 1000 Hours Load Life
- Capacitance Range:  $1.0\text{ }\mu\text{F}$  to  $220\text{ }\mu\text{F}$
- Voltage Range:  $6.3\text{ Vdc}$  to  $50\text{ Vdc}$

## Specifications

<b>Operating Temperature:</b>	$-55\text{ }^{\circ}\text{C}$ to $+105\text{ }^{\circ}\text{C}$
<b>Rated Voltage:</b>	6.3, 10, 16, 25, 35, 50 Vdc
<b>Capacitance:</b>	$1.0\text{ }\mu\text{F}$ to $220\text{ }\mu\text{F}$
<b>Capacitance Tolerance:</b>	$\pm 20\%$ @ 120 Hz and $+20\text{ }^{\circ}\text{C}$
<b>Leakage Current:</b>	$I = 0.01\text{ CV}$ or $3\text{ }(\mu\text{A})$ whichever is greater after 2 minutes C = rated capacitance in $\mu\text{F}$ , V = rated DC working voltage

### Ripple Current Multiplier:

Freq. (Hz)	50, 60	120	1 k	10 k up
Vdc				
6.3 ~ 50	0.64	0.80	0.93	1.00

### Dissipation Factor: ( $\text{Tan } \delta$ at 120 Hz, $20\text{ }^{\circ}\text{C}$ )

Rated Voltage	6.3	10	16	25	35	50
Tan $\delta$ Max	0.28	0.24	0.20	0.16	0.14	0.12

### Low Temperature Characteristic (at 120 Hz):

Rated Voltage		6.3	10	16	25	35	50
Impedance Ratio	$Z(-25\text{ }^{\circ}\text{C}) / Z(+20\text{ }^{\circ}\text{C})$	4	3	2	2	2	2
	$Z(-40\text{ }^{\circ}\text{C}) / Z(+20\text{ }^{\circ}\text{C})$	8	5	4	3	3	3



### Load Life Test:

Test Time	1,000 Hours
Capacitance Change	Within $\pm 25\%$ of initial value
Dissipation Factor	Less than 200% of specified value
Leakage Current	Within specified value

Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

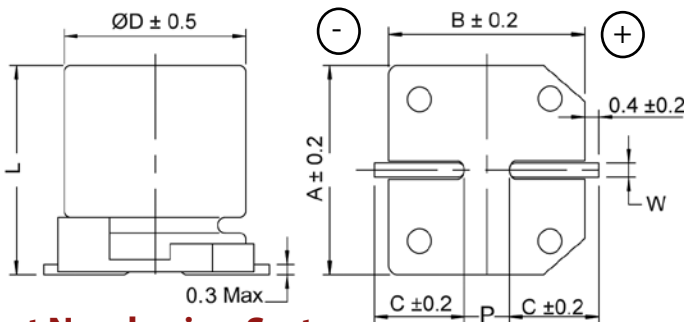
\* The above specifications shall be satisfied when the capacitors are restored to  $20\text{ }^{\circ}\text{C}$  after the rated voltage is applied for 1,000 hrs at  $105\text{ }^{\circ}\text{C}$

**Shelf Life Test:** Test time: 1000 hours; test limits are the same as those for life test.

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## Outline Drawing, Case Code & Dimensions Table

Fig. 1



Case Code	Ø D (mm)	L (mm)	A (mm)	B (mm)	C (mm)	W (mm)	P ± 0.2 (mm)
B	4.0	5.3 ± 0.2	4.3	4.3	2.0	0.5 to 0.8	1.0
C	5.0	5.3 ± 0.2	5.3	5.3	2.3	0.5 to 0.8	1.5
D	6.3	5.3 ± 0.2	6.6	6.6	2.7	0.5 to 0.8	2.0
X	6.3	7.7 ± 0.3	6.6	6.6	2.7	0.5 to 0.8	2.0

## Part Numbering System

<b>AVEZ</b>	<b>106</b>	<b>M</b>	<b>25</b>	<b>C</b>	<b>12T</b>	<b>-F</b>
Type	Capacitance	Capacitance Tolerance	Voltage Code	Case Code	Packaging Code	RoHS Compliant
<b>AVEZ</b>	<b>105</b> = 1.0 µF <b>106</b> = 10.0 µF <b>107</b> = 100.0 µF	<b>M</b> = ±20%	<b>06</b> = 6.3 Vdc <b>10</b> = 10 Vdc <b>16</b> = 16 Vdc <b>25</b> = 25 Vdc <b>35</b> = 35 Vdc <b>50</b> = 50 Vdc	See Table	<b>12</b> = Carrier Tape Width (mm) <b>T</b> = Tape & Reel	

## Ratings

Cap (µF)	Catalog Part Number	Max DCL 2 min. (µA)	Max DF 120 Hz 20 °C	Max Impedance 100 kHz 20 °C (ohms)	Max Ripple Current 100 kHz 105 °C (mA)	Case Code	Size D x L (mm)	Quantity per Reel (each)
<b>6.3 Vdc ( 8 Vdc Surge)</b>								
22	AVEZ226M06B12T-F	3.0	0.28	3.20	65	B	4 x 5.3	2000
33	AVEZ336M06C12T-F	3.0	0.28	1.50	110	C	5 x 5.3	1000
47	AVEZ476M06C12T-F	3.0	0.28	1.50	110	C	5 x 5.3	1000
100	AVEZ107M06D16T-F	6.3	0.28	0.85	170	D	6.3 x 5.3	1000
150	AVEZ157M06X16T-F	9.5	0.28	0.50	255	X	6.3 x 7.7	1000
220	AVEZ227M06X16T-F	13.9	0.28	0.50	255	X	6.3 x 7.7	1000
<b>10 Vdc ( 13 Vdc Surge)</b>								
10	AVEZ106M10B12T-F	3.0	0.24	3.20	65	B	4 x 5.3	2000
22	AVEZ226M10C12T-F	3.0	0.24	1.50	110	C	5 x 5.3	1000
33	AVEZ336M10C12T-F	3.0	0.24	1.50	110	C	5 x 5.3	1000
47	AVEZ476M10D16T-F	3.0	0.24	0.85	170	D	6.3 x 5.3	1000
100	AVEZ107M10D16T-F	6.3	0.24	0.85	170	D	6.3 x 5.3	1000
150	AVEZ157M10X16T-F	9.5	0.24	0.50	255	X	6.3 x 7.7	1000
220	AVEZ227M10X16T-F	13.9	0.24	0.50	255	X	6.3 x 7.7	1000

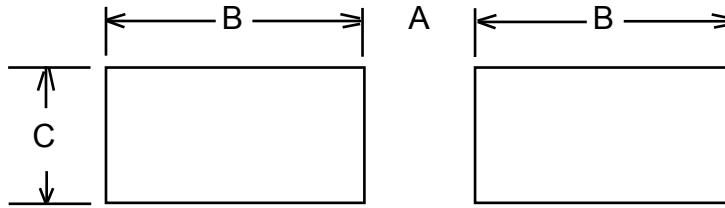
# Type AVEZ **-55 °C to +105 °C**

## Low Impedance SMT Aluminum Electrolytic Capacitors

Cap ( $\mu$ F)	Catalog Part Number	Max DCL 2 min. ( $\mu$ A)	Max DF 120 Hz 20 °C	Max Impedance 100 kHz 20 °C (ohms)	Max Ripple Current 100 kHz 105 °C (mA)	Case Code	Size D x L (mm)	Quantity per Reel (each)
<b>16 Vdc ( 13 Vdc Surge)</b>								
10	AVEZ106M16B12T-F	3.0	0.2	3.20	65	B	4 x 5.3	2000
22	AVEZ226M16C12T-F	3.0	0.2	1.50	110	C	5 x 5.3	1000
33	AVEZ336M16D16T-F	3.0	0.2	0.85	170	D	6.3 x 5.3	1000
47	AVEZ476M16D16T-F	3.0	0.2	0.85	170	D	6.3 x 5.3	1000
100	AVEZ107M16D16T-F	6.3	0.2	0.85	170	D	6.3 x 5.3	1000
150	AVEZ157M16X16T-F	9.5	0.2	0.50	255	X	6.3 x 7.7	1000
220	AVEZ227M16X16T-F	13.9	0.2	0.50	255	X	6.3 x 7.7	1000
<b>25 Vdc ( 31 Vdc Surge)</b>								
4.7	AVEZ475M25B12T-F	3.0	0.16	3.20	65	B	4 x 5.3	2000
10	AVEZ106M25C12T-F	3.0	0.16	1.50	110	C	5 x 5.3	1000
22	AVEZ226M25D16T-F	3.0	0.16	0.85	170	D	6.3 x 5.3	1000
33	AVEZ336M25D16T-F	3.0	0.16	0.85	170	D	6.3 x 5.3	1000
47	AVEZ476M25D16T-F	3.0	0.16	0.85	170	D	6.3 x 5.3	1000
100	AVEZ107M25X16T-F	6.3	0.16	0.5	255	X	6.3 x 7.7	1000
<b>35 Vdc ( 44 Vdc Surge)</b>								
4.7	AVEZ475M35B12T-F	3.0	0.14	3.20	65	B	4 x 5.3	2000
10	AVEZ106M35C12T-F	3.0	0.14	1.50	110	C	5 x 5.3	1000
22	AVEZ226M35D16T-F	3.0	0.14	0.85	170	D	6.3 x 5.3	1000
33	AVEZ336M35D16T-F	3.0	0.14	0.85	170	D	6.3 x 5.3	1000
47	AVEZ476M35X16T-F	3.0	0.14	0.50	255	X	6.3 x 7.7	1000
<b>50 Vdc ( 63 Vdc Surge)</b>								
1.0	AVEZ105M50B12T-F	3.0	0.12	5.0	30	B	4 x 5.3	2000
2.2	AVEZ225M50B12T-F	3.0	0.12	5.0	30	B	4 x 5.3	2000
3.3	AVEZ335M50B12T-F	3.0	0.12	5.0	30	B	4 x 5.3	2000
4.7	AVEZ475M50C12T-F	3.0	0.12	3.0	50	C	5 x 5.3	1000
10	AVEZ106M50D16T-F	3.0	0.12	2.0	70	D	6.3 x 5.3	1000
22	AVEZ226M50D16T-F	3.0	0.12	3.0	70	D	6.3 x 5.3	1000
33	AVEZ336M50X16T-F	3.0	0.12	1.0	170	X	6.3 x 7.7	1000

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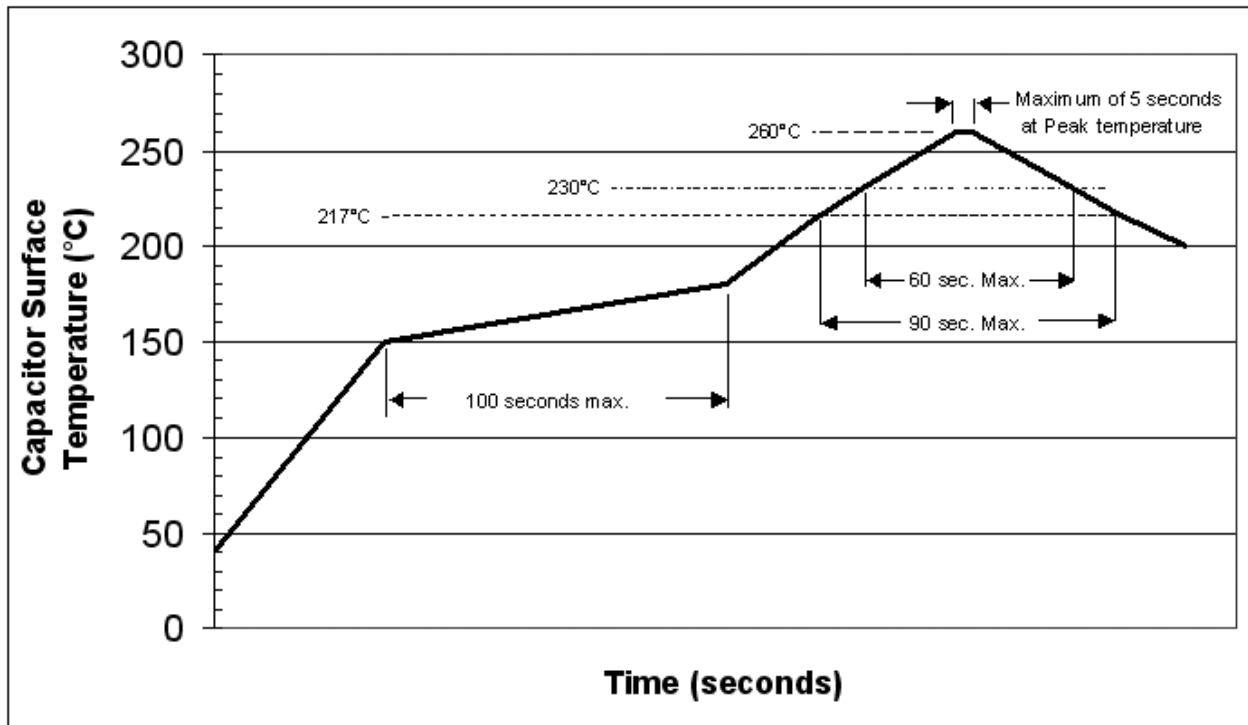
## Recommended Land Patterns by case size for AVEZ series



Case Code	Case Size	Land Dimensions (mm)		
		C	B	A
B	4x5.3	1.6	2.6	1
C	5x5.3	1.6	3	1.4
D	6.3x5.3	1.6	3.5	1.9
X	6.3x7.7	1.6	3.5	1.9

## Recommended Soldering Methods

Recommended Reflow Soldering Profile:



Parts should be subjected to just one reflow soldering process.

Soldering with a solder iron should be performed with a maximum soldering iron tip temperature of  $350\pm 5\text{ }^{\circ}\text{C}$  for 3 to 4 seconds.

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