Type AVEK –55 °C to +105 °C
Very Long Life - 5000 Hours - SMT Aluminum Electrolytic Capacitors

For Filtering, Bypassing and Power Supply Decoupling

Type AVEK Capacitors are rated for 5000 hours at 105 °C with low impedance characteristics. They are ideal for high density PC board packaging. The Type AVEK 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 AVEK is RoHS compliant.

Highlights

- +105 °C, Up to 5000 Hours Load Life
- Capacitance Range: 0.1 µF to 470 µF
- Voltage Range: 6.3 Vdc to 50 Vdc

Specifications

Operating Temperature: –55 °C to +105 °C

Rated Voltage: 6.3, 10, 16, 25, 35, 50 Vdc

Capacitance: 0.1µF to 470 µF

Capacitance Tolerance: ±20% @ 120 Hz and +20 °C

Leakage Current: I = 0.01 CV or 3 (µA) whichever is greater after 2 minutes
C = rated capacitance in µF, V = rated DC working voltage

Ripple Current Multiplier:

Freq. (Hz) / Vdc	50, 60	120	1 k	10 k up
Under 16	0.8	1	1.15	1.25
25 ~ 35	0.8	1	1.25	1.4
50 ~ 63	0.8	1	1.35	1.5
100	0.7	1	1.35	1.5

Dissipation Factor: (Tan δ at 120 Hz, 20 °C)

Rated Voltage	6.3	10	16	25	35	50
4 ~ 6.3 Ø	0.32	0.28	0.24	0.18	0.15	0.14
8 ~ 10 Ø	0.30	0.26	0.22	0.16	0.13	0.12

Low Temperature Characteristic (at 120 Hz):

Rated Voltage		6.3	10	16	25	35	50
Impedance Ratio	Z(–25 °C) / Z(+20 °C)	4	3	2	2	2	2
	Z(–40 °C) / Z(+20 °C)	8	5	4	3	3	3

RoHS Compliant

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).

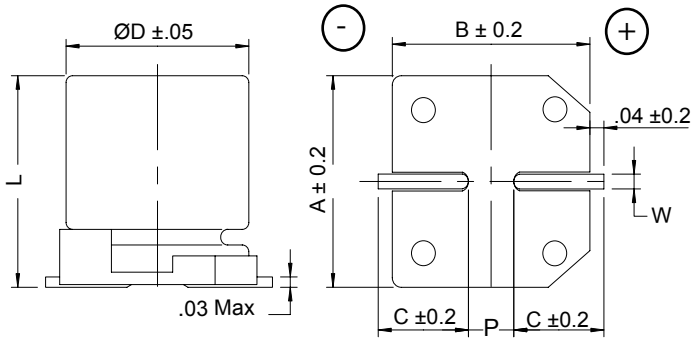
Load Life Test:

Test Time		2,000 Hours (4 ~ 6.3 Ø)	5,000 Hrs (8 ~ 10 Ø)
Capacitance Change	6.3 V	Within ±30% of initial value	Within ±30% of initial value
	10 ~ 16 V	Within ±25% of initial value	Within ±30% of initial value
	25 ~ 50 V	Within ±20% of initial value	Within ±30% of initial value
Dissipation Factor	6.3 ~ 16 V	< 300% of specified value	< 300% of specified value
	25 ~ 50 V	< 200% of specified value	< 300% of specified value
Leakage Current		Within specified value	Within specified value

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

Type AVEK –55 °C to +105 °C
Very Long Life - 5000 Hours - SMT Aluminum Electrolytic Capacitors

Outline Drawing, Case Code & Dimensions Table



Case Code	Ø D (mm)	L (mm)	A (mm)	B (mm)	C (mm)	W (mm)	P ±0.2 (mm)
B	4.0	5.7 ±0.3	4.3	4.3	2.0	0.5 to 0.8	1.0
C	5.0	5.7 ±0.3	5.3	5.3	2.3	0.5 to 0.8	1.5
D	6.3	5.7 ±0.3	6.3	6.3	2.7	0.5 to 0.8	2.0
F	8.0	10 ±0.5	8.4	8.4	3.0	0.7 to 1.1	3.1
G	10.0	10 ±0.5	10.4	10.4	3.3	0.7 to 1.1	4.7

Part Numbering System

AVEK	106	M	25	C	12T	–F
Type	Capacitance	Capacitance Tolerance	Voltage Code	Case Code	Packaging Code	RoHS Compliant
AVEK	104 = .1 µF	M = ±20%	06 = 6.3 Vdc 25 = 25 Vdc		12 = Carrier Tape Width (mm)	
	475 = 4.7 µF		10 = 10 Vdc 35 = 35 Vdc			
	106 = 10.0 µF		16 = 16 Vdc 50 = 50 Vdc		T = Tape & Reel	
	227 = 220 µF					

Ratings

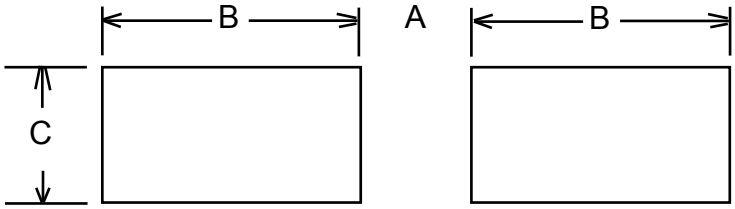
Cap (µF)	Catalog Part Number	Max DCL 2 min. (µA)	Max DF 120 Hz 20 °C	Max ESR 120 Hz 20 °C (ohms)	Max Ripple Current 120 Hz 105 °C (mA)	Case Code	Size D x L (mm)	Quantity per Reel (each)
6.3 Vdc (8 Vdc Surge)								
22	AVEK226M06B12T-F	3.0	0.32	24.1	13	B	4 x 5.7	2000
33	AVEK336M06C12T-F	3.0	0.32	16.1	30	C	5 x 5.7	1000
47	AVEK476M06C12T-F	3.0	0.32	11.3	36	C	5 x 5.7	1000
100	AVEK107M06D16T-F	6.3	0.32	5.3	61	D	6.3 x 5.7	1000
220	AVEK227M06F24T-F	13.9	0.30	2.3	178	F	8 x 10	500
330	AVEK337M06F24T-F	20.8	0.30	1.5	178	F	8 x 10	500
470	AVEK477M06G24T-F	29.6	0.30	1.1	324	G	10 x 10	500
10 Vdc (13 Vdc Surge)								
10	AVEK106M10B12T-F	3.0	0.28	46.4	13	B	4 x 5.7	2000
22	AVEK226M10C12T-F	3.0	0.28	21.1	30	C	5 x 5.7	1000
33	AVEK336M10C12T-F	3.3	0.28	14.1	30	C	5 x 5.7	1000
47	AVEK476M10D16T-F	4.7	0.28	9.9	43	D	6.3 x 5.7	1000
100	AVEK107M10F24T-F	10.0	0.26	4.3	178	F	8 x 10	500
220	AVEK227M10F24T-F	22.0	0.26	2.0	178	F	8 x 10	500
330	AVEK337M10G24T-F	33.0	0.26	1.3	324	G	10 x 10	500
470	AVEK477M10G24T-F	47.0	0.26	0.9	324	G	10 x 10	500

Type AVEK –55 °C to +105 °C
Very Long Life - 5000 Hours - SMT Aluminum Electrolytic Capacitors

Cap (µF)	Catalog Part Number	Max DCL 2 min. (µA)	Max DF 120 Hz 20 °C	Max ESR 120 Hz 20 °C (ohms)	Max Ripple Current 120 Hz 105 °C (mA)	Case Code	Size D x L (mm)	Quantity per Reel (each)
			16 Vdc (20 Vdc Surge)					
4.7	AVEK475M16B12T-F	3.0	0.24	84.7	13	B	4 x 5.7	2000
10	AVEK106M16B12T-F	3.0	0.24	39.8	16	B	4 x 5.7	2000
22	AVEK226M16C12T-F	3.5	0.24	18.1	30	C	5 x 5.7	1000
33	AVEK336M16D16T-F	5.3	0.24	12.1	40	D	6.3 x 5.7	1000
47	AVEK476M16D16T-F	7.5	0.24	8.5	50	D	6.3 x 5.7	1000
100	AVEK107M16F24T-F	16.0	0.22	3.6	178	F	8 x 10	500
220	AVEK227M16F24T-F	35.2	0.22	1.7	178	F	8 x 10	500
330	AVEK337M16G24T-F	52.8	0.22	1.1	324	G	10 x 10	500
470	AVEK477M16G24T-F	75.2	0.22	0.8	324	G	10 x 10	500
			25 Vdc (31 Vdc Surge)					
4.7	AVEK475M25B12T-F	3.0	0.18	63.5	13	B	4 x 5.7	2000
10	AVEK106M25C12T-F	3.0	0.18	29.8	23	C	5 x 5.7	1000
22	AVEK226M25D16T-F	5.5	0.18	13.6	38	D	6.3 x 5.7	1000
33	AVEK336M25D16T-F	8.3	0.18	9.0	48	D	6.3 x 5.7	1000
47	AVEK476M25F24T-F	11.8	0.16	5.6	178	F	8 x 10	500
100	AVEK107M25F24T-F	25.0	0.16	2.7	178	F	8 x 10	500
220	AVEK227M25F24T-F	55.0	0.16	1.2	240	F	8 x 10	500
330	AVEK337M25G24T-F	82.5	0.16	0.8	324	G	10 x 10	500
			35 Vdc (44 Vdc Surge)					
4.7	AVEK475M35B12T-F	3.0	0.15	52.9	13	B	4 x 5.7	2000
10	AVEK106M35C12T-F	3.5	0.15	24.9	25	C	5 x 5.7	1000
22	AVEK226M35D16T-F	7.7	0.15	11.3	50	D	6.3 x 5.7	1000
33	AVEK336M35F24T-F	11.6	0.13	6.5	178	F	8 x 10	500
47	AVEK476M35F24T-F	16.5	0.13	4.6	178	F	8 x 10	500
100	AVEK107M35G24T-F	35.0	0.13	2.2	324	G	10 x 10	500
220	AVEK227M35G24T-F	77.0	0.13	1.0	324	G	10 x 10	500
			50 Vdc (63 Vdc Surge)					
.10	AVEK104M50B12T-F	3.0	0.14	2321.0	2	B	4 x 5.7	2000
.22	AVEK224M50B12T-F	3.0	0.14	1055.0	3	B	4 x 5.7	2000
.33	AVEK334M50B12T-F	3.0	0.14	703.3	4	B	4 x 5.7	2000
.47	AVEK474M50B12T-F	3.0	0.14	493.8	5	B	4 x 5.7	2000
1.0	AVEK105M50B12T-F	3.0	0.14	232.1	10	B	4 x 5.7	2000
2.2	AVEK225M50B12T-F	3.0	0.14	105.5	16	B	4 x 5.7	2000
3.3	AVEK335M50B12T-F	3.0	0.14	70.3	18	B	4 x 5.7	2000
4.7	AVEK475M50C12T-F	3.0	0.14	49.4	22	C	5 x 5.7	1000
10.0	AVEK106M50D16T-F	5.0	0.14	23.2	30	D	6.3 x 5.7	1000
22.0	AVEK226M50F24T-F	11.0	0.12	9.0	178	F	8 x 10	500
33.0	AVEK336M50F24T-F	16.5	0.12	6.0	178	F	8 x 10	500
47.0	AVEK476M50F24T-F	23.5	0.12	4.2	178	F	8 x 10	500
100.0	AVEK107M50G24T-F	50.0	0.12	2.0	160	G	10 x 10	500

Type AVEK –55 °C to +105 °C
Very Long Life - 5000 Hours - SMT Aluminum Electrolytic Capacitors

Recommended Land Patterns by case size for AVEK series

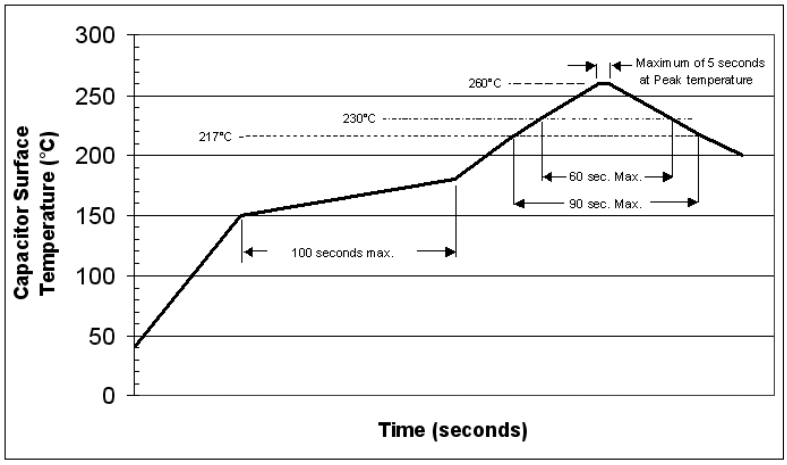


Case Code	Case Size	Land Dimensions (mm)		
		C	B	A
B	4x5.7	1.6	2.6	1.0
C	5x5.7	1.6	3.0	1.4
D	6.3x5.7	1.6	3.5	1.9
F	8x10	2.5	3.5	3.0
G	10x10	2.5	4.0	4.0

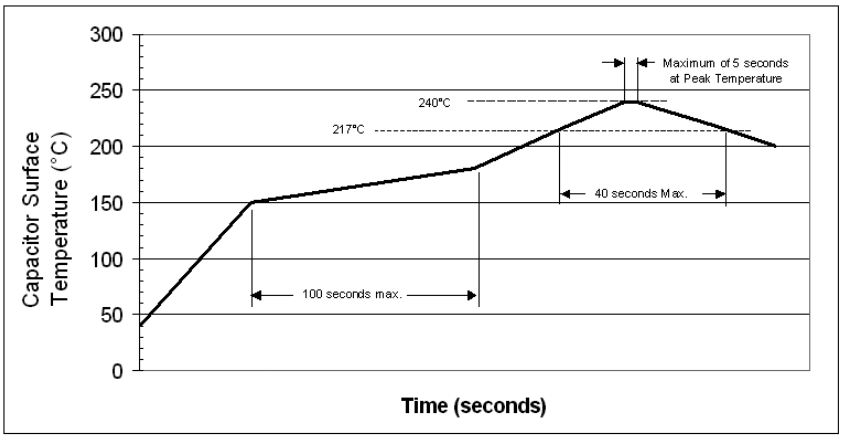
Recommended Soldering Methods

Recommended Reflow Soldering Profile:

For case diameters 4 thru 6.3 mm



For case diameters 8 and 10 mm



Case sizes 4 thur 6.3 mm dia. should be subjected to just one reflow soldering process.
The 8 and 10 mm dia. case sizes should be subjected to a maximum of two reflow soldering processes.

Soldering with a solder iron should be performed with a maximum soldering iron tip temperature of 350±5°C for 3 to 4 seconds.

Notice and Disclaimer: All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.