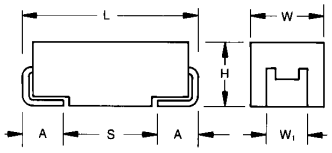
TCM Series

Conductive Polymer Solid Electrolytic Chip Multianode Capacitors



FEATURES

- Conductive polymer electrode, multianode design
- Benign failure mode under recommended use conditions
- Extremely Low ESR
- 3x reflow 260°C compatible
- Volumetric efficiency
- High frequency capacitance retention

Elektra Award 2010

LEAD-FREE

LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

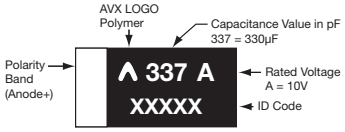
SnPb termination option is not RoHS compliant.

APPLICATIONS

- Telecommunication routers
- Basestations with high power DC/DCs

MARKING

E, V CASE



CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W_1±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
E	2917	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
V	2924	7361-38	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)
W_1 dimension applies to the termination width for A dimensional area only.								

HOW TO ORDER

TCM	E	108	M	004	R	0010	E
Type	**Case Size** See table above	**Capacitance Code** pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	**Tolerance** M=±20%	**Rated DC Voltage** 002 = 2.5Vdc 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 025 = 25Vdc 035 = 35Vdc 100 = 100Vdc	**Packaging** R = Pure Tin 7" Reel S = Pure Tin 13" Reel H = Tin Lead 7" Reel K = Tin Lead 13" Reel	**ESR in mΩ**	**Additional Character** E = Black resin

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25ºC
Capacitance Range:	10µF to1000µF
Capacitance Tolerance:	±20%
Leakage Current DCL:	0.1CV
Temperature Range:	-55ºC to +125ºC
Reliability:	1% per 1000 hours at 85°C, V_R with 0.1Ω/V series impedance, 60% confidence level
Termination Finish:	Sn Plating (standard) and SnPb Plating

NOTE: Conductive Polymer Capacitors are designed to operate within the limits of the environmental conditions specified for each series. If operated continuously at their maximum temperature and / or humidity limit, or beyond these limits, capacitors may exhibit a parametric shift in capacitance and increases in ESR. These changes may occur earlier if the specified environmental conditions are exceeded. Similarly, their normal operational time period will be significantly extended if their general duty cycle includes operation below maximum temperature within humidity controlled environments. Careful attention should be paid to maximum temperature with associated high humidity environments as well as voltage derating, ripple current and current surges. Please reference the AVX Conductive Polymer Capacitor Guidelines for more information or contact factory for application assistance.

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CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V_R) to 85°C							
µF	Code	2.5V (e)	4V (G)	6.3V (J)	10V (A)	16V (C)	25V (E)	35V (V)	100V (A)
10	106								V(50)
22	226							E(25)	
33	336						E(60)	E(60)	
47	476						E(60)		
68	686								
100	107								
150	157								
220	227					E(40)			
330	337			E(10,15)	E(10,15)				
470	477			E(7,10)					
680	687		E(12)	E(12)					
1000	108	E(6,10)	E(6,8,10,12)						

Released ratings, (ESR ratings in mOhms in parentheses)

Note: Voltage ratings are minimum values. AVX reserves the right to supply higher voltage ratings in the same case size, to the same reliability standards.

RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Maximum Operating Temperature (°C)	DCL Max. (µA)	DF Max. (%)	ESR Max. @ 100kHz (mΩ)	100kHz RMS Current (mA)			MSL
								45°C	85°C	125°C	
2.5 Volt @ 105°C											
TCME108M002#0006E	E	1000	2.5	125	250	10	6	8300	5800	2100	3
TCME108M002#0010E	E	1000	2.5	125	250	10	10	6400	4500	1600	3
4 Volt @ 105°C											
TCME687M004#0012E	E	680	4	125	272	8	12	5800	4100	1500	3
TCME108M004#0006E	E	1000	4	125	400	8	6	8300	5800	2100	3
TCME108M004#0008E	E	1000	4	125	400	8	8	7200	5000	1800	3
TCME108M004#0010E	E	1000	4	125	400	8	10	6400	4500	1600	3
TCME108M004#0012E	E	1000	4	125	400	8	12	5800	4100	1500	3
6.3 Volt @ 105°C											
TCME337M006#0010E	E	330	6.3	125	198	8	10	6400	4500	1600	3
TCME337M006#0015E	E	330	6.3	125	198	8	15	5200	3600	1300	3
TCME477M006#0007E	E	470	6.3	125	296	10	7	7700	5400	1900	3
TCME477M006#0010E	E	470	6.3	125	296	10	10	6400	4500	1600	3
TCME687M006#0012E	E	680	6.3	125	408	8	12	5800	4100	1500	3
10 Volt @ 105°C											
TCME337M010#0010E	E	330	10	125	330	8	10	6400	4500	1600	3
TCME337M010#0015E	E	330	10	125	330	8	15	5200	3600	1300	3
16 Volt @ 105°C											
TCME227M016#0040E	E	220	16	125	352	8	40	3200	2200	800	3
25 Volt @ 105°C											
TCME336M025#0060E	E	33	25	125	82.5	8	60	2600	1800	700	3
TCME476M025#0060E	E	47	25	125	117.5	8	60	2600	1800	700	3
35 Volt @ 105°C											
TCME226M035#0025E	E	22	35	125	77	8	25	4000	2800	1000	3
TCME336M035#0060E	E	33	35	125	115.5	8	60	2600	1800	700	3
100 Volt @ 105°C											
TCMV106M100#0050E	V	10	100	125	100	8	50	2900	2000	700	3

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

All technical data relates to an ambient temperature of +25ºC. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

ESR allowed to move up to 1.25 times catalog limit post mounting.

For typical weight and composition see page 269.

NOTE: AVX reserves the right to supply higher voltage ratings or tighter tolerance part in the same case size, to the same reliability standards.

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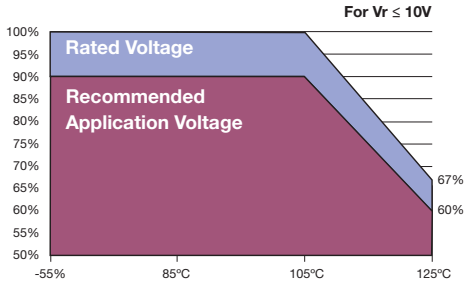
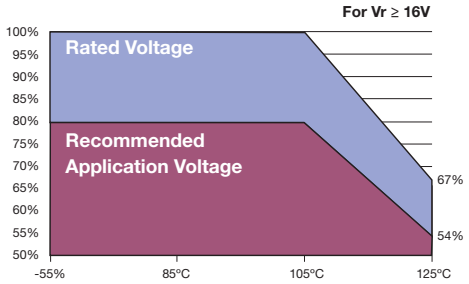
RECOMMENDED DERATING FACTOR

Voltage and temperature derating as percentage of Vr.

Rated voltage	Operating Temperature		
	≤85°C	105°C	125°C
≤10V	90%	90%	60%
≥16V	80%	80%	54%



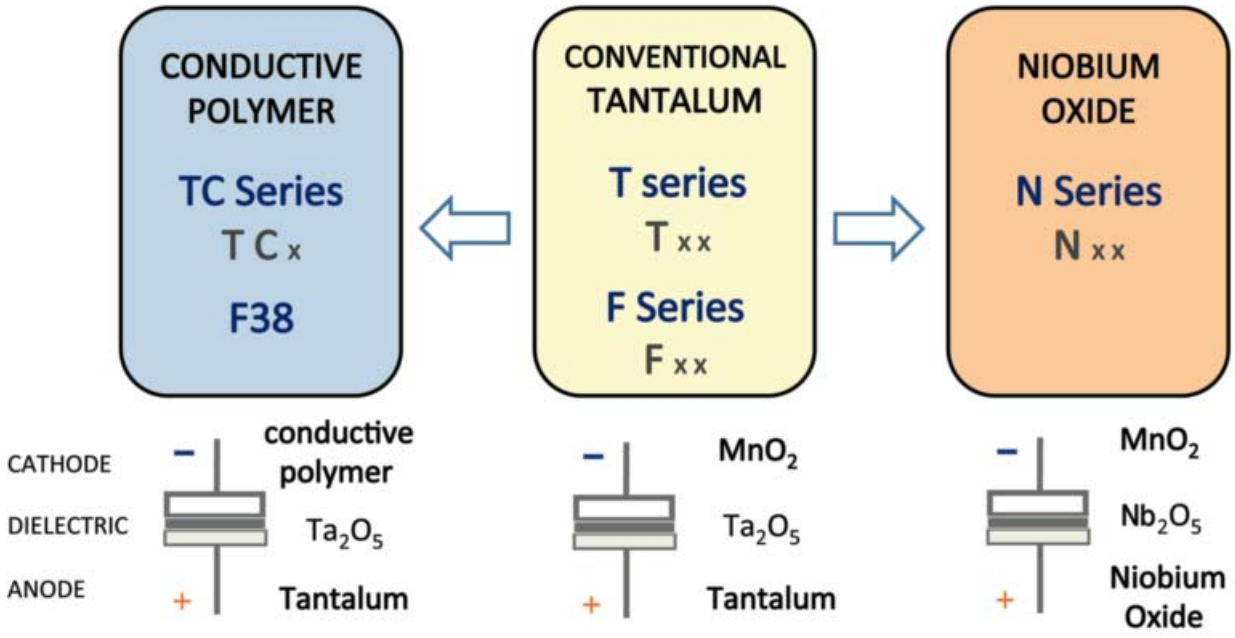


QUALIFICATION TABLE

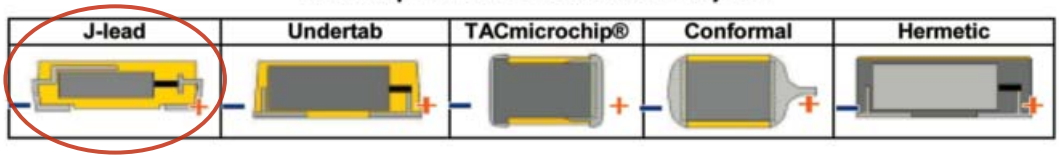
TEST	Condition	Characteristics						
	TCM series (Temperature range -55°C to +125°C)							
Endurance	Apply rated voltage (Ur) at 105°C and category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of ≤0.1Ω/V. Stabilize at room temperature for 1-2 hours before measuring.	Visual examination	no visible damage					
		DCL	1.25 x initial limit					
		ΔC/C	within ±20% of initial value					
		DF	1.5 x initial limit					
		ESR	2 x initial limit					
Storage Life	Store at 125ºC, no voltage applied, for 2000 hours. Stabilize at room temperature for 1-2 hours before measuring.	Visual examination	no visible damage					
		DCL	2 x initial limit					
		ΔC/C	within ±20% of initial value					
		DF	1.5 x initial limit					
		ESR	2 x initial limit					
Humidity	Store at 65ºC and 95% relative humidity for 500 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.	Visual examination	no visible damage					
		DCL	3 x initial limit					
		ΔC/C	within +30/-20% of initial value					
		DF	1.5 x initial limit					
		ESR	2 x initial limit					
Temperature Stability	Step 1: +20 (15); Step 2: -55 (15); Step 3: +20 (15); Step 4: +85 (15); Step 5: +125 (15); Step 6: +20 (15)		+20ºC	-55ºC	+20ºC	+85ºC	+125ºC	+20ºC
		DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*
		ΔC/C	n/a	+0/-20%	±10%	+20/-0%	+30/-0%	±10%
		DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
Surge Voltage	Apply 1.3x category voltage (Uc) at 125ºC for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω	Visual examination	no visible damage					
		DCL	initial limit					
		ΔC/C	within +20/-30% of initial value					
		DF	1.25 x initial limit					

*Initial Limit Initial measurement max. 1hr after the removal from dry pack or after pretreatment at 85°C for 24 hours.

AVX SOLID ELECTROLYTIC CAPACITOR ROADMAP



Five Capacitor Construction Styles



SERIES LINE UP: CONDUCTIVE POLYMER