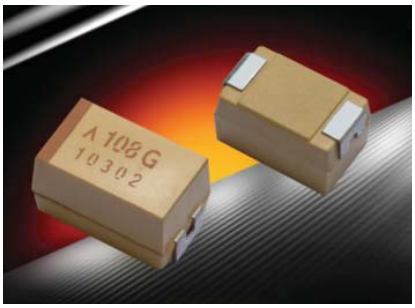
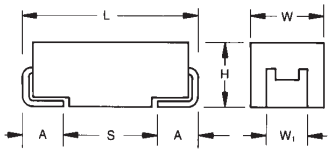
TCM Series

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

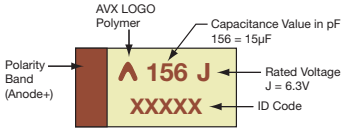
SnPb termination option is not RoHS compliant.

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 — **Type**

E — **Case Size**
See table above

108 — **Capacitance Code**
pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)

M — **Tolerance**
M=±20%

004 — **Rated DC Voltage**
002=2.5Vdc
004=4Vdc
006=6.3Vdc
010=10Vdc
035=35Vdc
100=100Vdc

R — **Packaging**
R = Pure Tin 7" Reel
S = Pure Tin 13" Reel
H = Tin Lead 7" Reel (contact manufacturer)
K = Tin Lead 13" Reel (contact manufacturer)

0010 — **ESR in mΩ**

TECHNICAL SPECIFICATIONS

Technical Data:		All technical data relate to an ambient temperature of +25°C						
Capacitance Range:		10 µF to 1000 µF						
Capacitance Tolerance:		±20%						
Leakage Current DCL:		0.1CV						
Rated Voltage (V_R)	≤ +85°C:	2.5	4	6.3	10	35	100	
Category Voltage (V_C)	≤ +105°C:	2	3.2	5	8	28	80	
Surge Voltage (V_S)	≤ +85°C:	3.3	5.2	8	13	46	130	
Surge Voltage (V_S)	≤ +105°C:	2.5	4	6	10	35	100	
Temperature Range:		-55ºC to +105ºC						
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 upon request						

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.

TCM Series

Conductive Polymer Solid Electrolytic Chip Multianode Capacitors

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)	35V (V)	100V (A)
10	106						V(50)
22	226					E(25)	
33	336						
47	476						
68	686						
100	107						
150	157						
220	227						
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	105°C	
2.5 Volt @ 85°C											
TCME108M002#0006	E	1000	2.5	105	250	10	6	8300	5800	3700	3
TCME108M002#0010	E	1000	2.5	105	250	10	10	6400	4500	2900	3
4 Volt @ 85°C											
TCME687M004#0012	E	680	4	105	272	8	12	5800	4100	2600	3
TCME108M004#0006	E	1000	4	105	400	8	6	8300	5800	3700	3
TCME108M004#0008	E	1000	4	105	400	8	8	7200	5000	3200	3
TCME108M004#0010	E	1000	4	105	400	8	10	6400	4500	2900	3
TCME108M004#0012	E	1000	4	105	400	8	12	5800	4100	2600	3
6.3 Volt @ 85°C											
TCME337M006#0010	E	330	6.3	105	198	8	10	6400	4500	2900	3
TCME337M006#0015	E	330	6.3	105	198	8	15	5200	3600	2300	3
TCME477M006#0007	E	470	6.3	105	296	10	7	7700	5400	3500	3
TCME477M006#0010	E	470	6.3	105	296	10	10	6400	4500	2900	3
TCME687M006#0012	E	680	6.3	105	408	8	12	5800	4100	2600	3
10 Volt @ 85°C											
TCME337M010#0010	E	330	10	105	330	8	10	6400	4500	2900	3
TCME337M010#0015	E	330	10	105	330	8	15	5200	3600	2300	3
35 Volt @ 85°C											
TCME226M035#0025	E	22	35	105	77	8	25	4000	2800	1800	3
100 Volt @ 85°C											
TCMV106M100#0050	V	10	100	105	100	8	50	2900	2000	1300	3

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

All technical data relates to an ambient temperature of +25°C. 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.

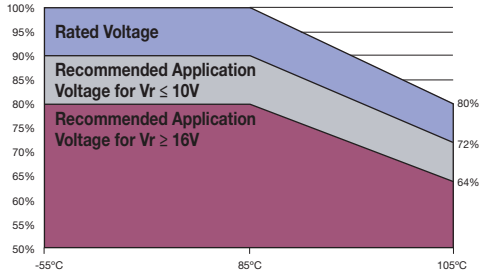
ESR allowed to move up to 1.25 times catalog limit post mounting.

For typical weight and composition see page 261.

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

RECOMMENDED DERATING FACTOR

Voltage and temperature derating as percentage of Vr

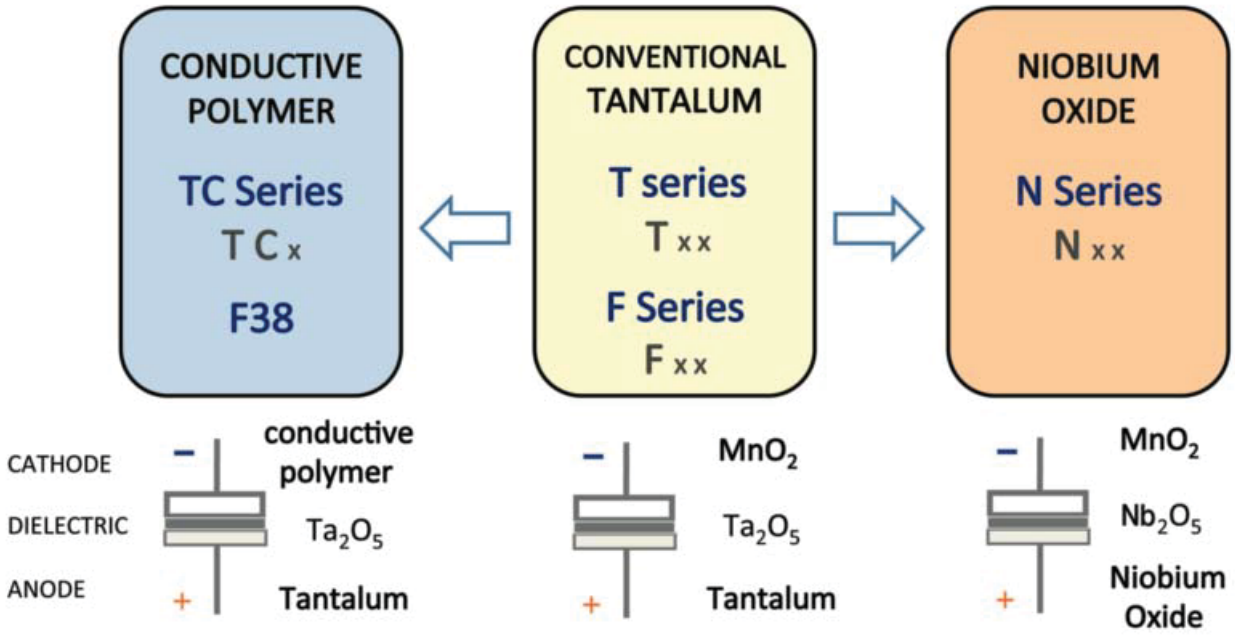


PRODUCT CATEGORY 105°C

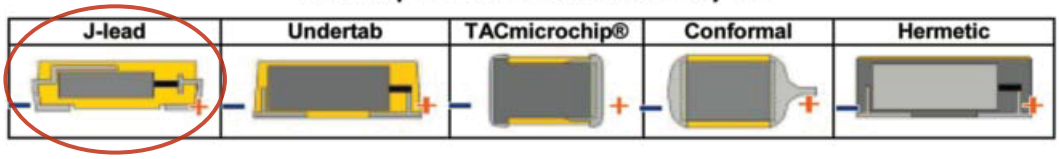
<table>
<tr><th>TEST</th><th>Condition</th><th colspan="8">Characteristics</th></tr>
<tr><td rowspan="5">Endurance</td><td rowspan="5">Apply rated voltage (Ur) at 85ºC and / or category voltage (Uc) at 105ºC for 2000 hours through a circuit impedance of ≤0.1Ω/V. Stabilize at room temperature for 1-2 hours before measuring.</td><td>Visual examination</td><td colspan="7">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="7">1.25 x initial limit</td></tr>
<tr><td>/C</td><td colspan="7">within ±20% of initial value</td></tr>
<tr><td>DF</td><td colspan="7">1.5 x initial limit</td></tr>
<tr><td>ESR</td><td colspan="7">2 x initial limit</td></tr>
<tr><td rowspan="6">Storage Life</td><td rowspan="6">Store at 105ºC, no voltage applied, for 2000 hours. Stabilize at room temperature for 1-2 hours before measuring.</td><td>Visual examination</td><td colspan="7">no visible damage</td></tr>
<tr><td>DCL ($V_R \leq 75V$)</td><td colspan="7">1.25 x initial limit</td></tr>
<tr><td>DCL ($V_R > 75V$)</td><td colspan="7">2 x initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="7">within ±20% of initial value</td></tr>
<tr><td>DF</td><td colspan="7">1.5 x initial limit</td></tr>
<tr><td>ESR</td><td colspan="7">2 x initial limit</td></tr>
<tr><td rowspan="5">Humidity</td><td rowspan="5">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.</td><td>Visual examination</td><td colspan="7">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="7">3 x initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="7">within +30/-20% of initial value</td></tr>
<tr><td>DF</td><td colspan="7">1.5 x initial limit</td></tr>
<tr><td>ESR</td><td colspan="7">2 x initial limit</td></tr>
<tr><td rowspan="5">Temperature Stability</td><td colspan="3"><table><tr><th>Step</th><th>Temperature°C</th><th>Duration(min)</th></tr><tr><td>1</td><td>+20</td><td>15</td></tr><tr><td>2</td><td>-55</td><td>15</td></tr><tr><td>3</td><td>+20</td><td>15</td></tr><tr><td>4</td><td>+85</td><td>15</td></tr><tr><td>5</td><td>+105</td><td>15</td></tr><tr><td>6</td><td>+20</td><td>15</td></tr></table></td><td></td><td>+20ºC</td><td>-55ºC</td><td>+20ºC</td><td>+85ºC</td><td>+105ºC</td><td>+20ºC</td></tr>
<tr><td>DCL</td><td>IL*</td><td>n/a</td><td>IL*</td><td>10 x IL*</td><td>12.5 x IL*</td><td>IL*</td></tr>
<tr><td>ΔC/C</td><td>n/a</td><td>+0/-20%</td><td>±10%</td><td>+20/-0%</td><td>+30/-0%</td><td>±10%</td></tr>
<tr><td>DF</td><td>IL*</td><td>1.5 x IL*</td><td>IL*</td><td>1.5 x IL*</td><td>2 x IL*</td><td>IL*</td></tr>
<tr><td rowspan="4">Surge Voltage</td><td rowspan="4">Apply 1.3x category voltage (Uc) at 105ºC for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω</td><td>Visual examination</td><td colspan="7">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="7">initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="7">within +10/-20% of initial value for Vr ≤ 10V
within +20/-30% of initial value for Vr ≥ 16V</td></tr>
<tr><td>DF</td><td colspan="7">1.25 x initial limit</td></tr>
</table>

*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