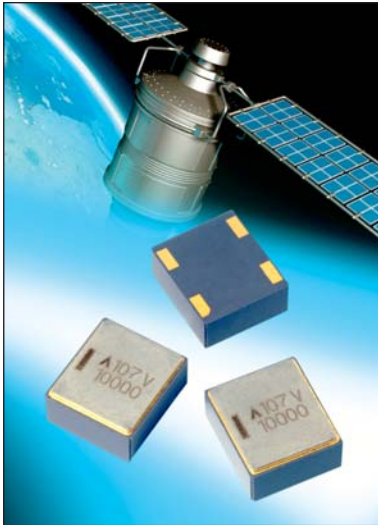


TCH Low ESR Hermetic Series



SMD Low ESR Conductive Polymer Capacitors in Hermetic package



FEATURES

- Aerospace & Hi-Rel applications
- Low ESR conductive polymer electrode
- Endurance up to 10 000 hrs. on selected codes
- Ceramic case hermetic packaging
- Stability under humidity and ambient atmosphere exposure
- Large case sizes including CTC-21D provide high capacitance values
- Developed with ESA to suit aerospace applications
- Ongoing ESA qualification
- Manufacturing and screening utilizing AVX patented Q-Process to effectively remove components that may experience excessive parametric shifts or instability in operation life



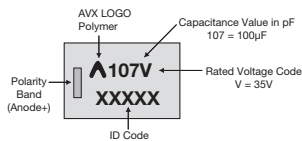
Elektra Award 2015

APPLICATIONS

- Aerospace
- Defence
- Power supplies
- Pulse power

MARKING

9 CASE

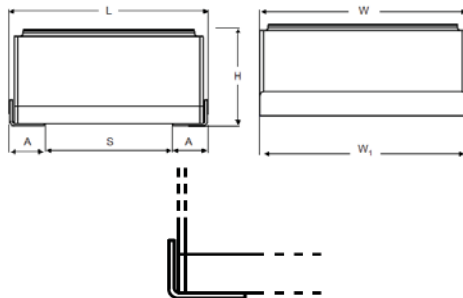


For additional information on Q-process please consult the AVX technical publication "Reaching the Highest Reliability for Tantalum Capacitors" (see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

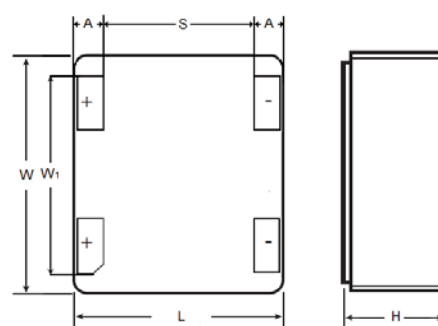
CASE DIMENSIONS: millimeters (inches)

Code	Type	L	W	H Max.	W ₁	A	S Min.
9 (CTC-21D)	J-lead (L-shape)	11.50 ± 0.50 (0.453 ± 0.020)	12.50 ± 0.50 (0.492 ± 0.020)	6.15 (0.242)	12.50 ± 0.50 (0.492 ± 0.020)	1.90 ± 0.50 (0.075 ± 0.020)	7.00 (0.276)
9 (CTC-21D)	Undertab	11.00 ± 0.20 (0.433 ± 0.008)	12.50 ± 0.20 (0.492 ± 0.008)	5.95 (0.234)	10.50 ± 0.20 (0.413 ± 0.008)	1.50 ± 0.20 (0.059 ± 0.008)	7.80 (0.307)

'J' Lead Termination (L-shape)



Undertab Termination



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CAPACITANCE AND VOLTAGE RANGE (CASE CODE BEFORE THE BRACKETS)

Capacitance		Rated Voltage DC (V _R) at 85°C								
μF	Code	10V	16V	20V	25V	35V	50V	63V	75V	100V
15	156									9(150)*
22	226								9(120)*	9(150)
33	336							9(100)*	9(120)	
47	476						9(70)	9(100)*		
68	686						9(70)*			
100	107				9(50)*	9(55)				
150	157			9(45)*	9(50)	9(55)				
220	227	9(40)*	9(40)	9(45)*	9(50)*					
330	337	9(40)	9(40)*	9(45)*						
470	477	9(40)*	9(40)*							
680	687	9(40)*	9(40)*							

Available Ratings, (ESR ratings in mOhms in brackets)

Engineering samples - please contact manufacturer

*Codes under development – upon request, please contact manufacturer

HOW TO ORDER

AVX PART NUMBER

TCH	9	687	M	016	W	0040	U
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 010 = 10Vdc 050 = 50Vdc 016 = 16Vdc 063 = 63Vdc 020 = 20Vdc 075 = 75Vdc 025 = 25Vdc 100 = 100Vdc 035 = 35Vdc	Packaging W = Waffle B = Bulk	ESR in mΩ	Termination J = 'J' lead L-shape (Gold) L = 'J' lead L-shape (Sn/Pb) U = Undertab



For RoHS compliant products, please select correct termination style.

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C										
Capacitance Range:	22 μF to 330 μF (for extended range under development, contact manufacturer)										
Capacitance Tolerance:	±20%										
Leakage Current DCL:	0.1CV										
Rated Voltage (V _R)	≤ +85°C:	10	16	20	25	35	50	63	75	100	
Category Voltage (V _C)	≤ +125°C:	7	11	13	17	23	33	42	50	66	
Temperature Range:	-55°C to +125°C										
Reliability:	1% per 1000 hours at 85°C, V _r with 0.1Ω/Vseries impedance, 60% confidence level										
Termination Finish:	Gold Plating (Undertab), Gold Plating (J-lead), Sn/Pb Plating (J-lead)										

TCH Low ESR Hermetic Series



SMD Low ESR Conductive Polymer Capacitors in Hermetic package

RATINGS & PART NUMBER REFERENCE

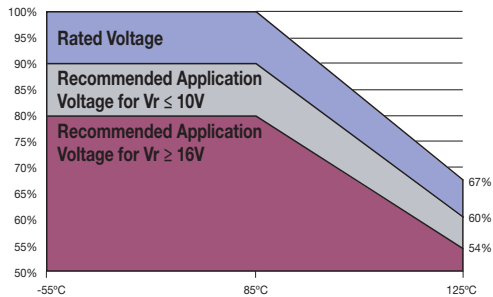
AVX Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL Max. (μA)	DF Max. (%)	ESR Max. @ 100kHz (mΩ)	MSL	100kHz RMS Current (A)		
											25°C	85°C	125°C
10 Volt @ 85°C													
TCH9337M010W0040#	9	330	10	85	7	125	330	8	40	1	3.16	2.84	1.26
16 Volt @ 85°C													
TCH9227M016W0040#	9	220	16	85	10	125	352	8	40	1	3.16	2.84	1.26
25 Volt @ 85°C													
TCH9157M025W0050#	9	150	25	85	17	125	375	8	50	1	2.83	2.55	1.13
35 Volt @ 85°C													
TCH9107M035W0055#	9	100	35	85	23	125	350	8	55	1	2.69	2.42	1.08
TCH9157M035W0055#	9	150	35	85	23	125	525	8	55	1	2.69	2.42	1.08
50 Volt @ 85°C													
TCH9476M050W0070#	9	47	50	85	33	125	235	8	70	1	2.39	2.15	0.96
75 Volt @ 85°C													
TCH9336M075W0120#	9	33	75	85	50	125	248	8	120	1	1.82	1.64	0.73
100 Volt @ 85°C													
TCH9226M100W0150#	9	22	100	85	66	125	220	8	150	1	1.63	1.47	0.65

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

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

RECOMMENDED DERATING FACTOR

Voltage and temperature derating as percentage of Vr



TCH Low ESR Hermetic Series



SMD Low ESR Conductive Polymer Capacitors in Hermetic package

QUALIFICATION TABLE

TEST	TCH low ESR hermetic series (Temperature range -55°C to +125°C)									
	Condition			Characteristics						
Endurance	Determine after application of rated voltage for 2000 (10000) +48/0 hours at 85±2°C and then leaving min. 2 hours at room temperature. Also determine of 125°C temperature, category voltage for 2000 +48/-0 hours and then leaving min. 2 hours at room temperature. Power supply impedance to be < 3Ω.			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	125°C, 0V, 2000h			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	Determine after storage without applied voltage at 40±2°C and 90±2% relative humidity for 56 days and then recovery min. 2 hours at room temperature.			Visual examination	no visible damage					
				DCL	1.25 x initial limit					
				ΔC/C	within ±10% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					
Temperature Stability	Step	Temperature°C	Duration (min)	+20°C	-55°C	+20°C	+85°C	+125°C	+20°C	
	1	+20	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*
	2	-55	15	ΔC/C	n/a	+0/-20%	±5%	+20/-0%	+30/-0%	±5%
	3	+20	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
	4	+85	15	ESR	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.5 x IL*	1.5 x IL*	1.25 x IL*
	5	+125	15							
	6	+20	15							
Surge Voltage	Test temperature: 85°C+3/0°C Surge voltage: 1.3 x rated voltage (for Ur ≤ 50V), 1.15 x rated voltage (for Ur > 50V) Series protection resistance: 33Ω (for Ur ≤ 50V), 1000Ω (for Ur > 50V) Discharge resistance: 33Ω Number of cycles: 1000x Cycle duration: 6 min; 30 sec charge, 5 min 30 sec discharge			Visual examination	no visible damage					
				DCL	initial limit					
				ΔC/C	within ±20% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					
Mechanical Shock/Vibration	MIL-STD-202, Method 213, Condition C, 100 G peak MIL-STD-202, Method 204, Condition D, 10 Hz to 2,000 Hz, 20 G peak			Visual examination	no visible damage					
				DCL	initial limit					
				ΔC/C	within ±10% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					

*Initial Limit