

TCH Low ESR Hermetic Series

SMD Low ESR Conductive Polymer Capacitors in Hermetic package, COTS-Plus

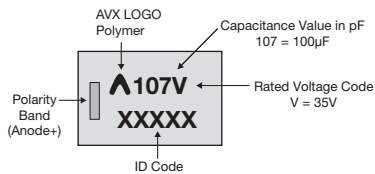


FEATURES

- 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



MARKING



APPLICATIONS

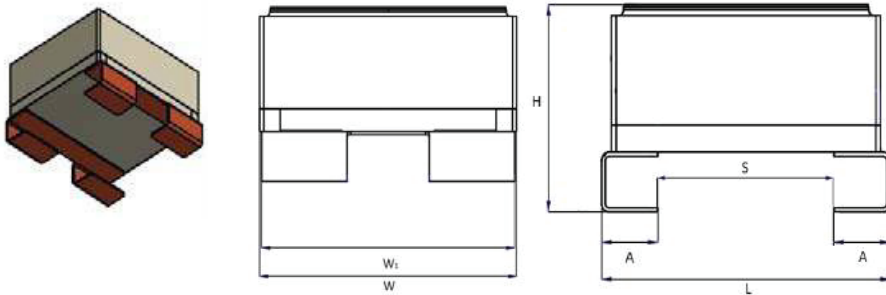
- Aerospace
- Defence
- Power supplies
- Pulse power

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>)

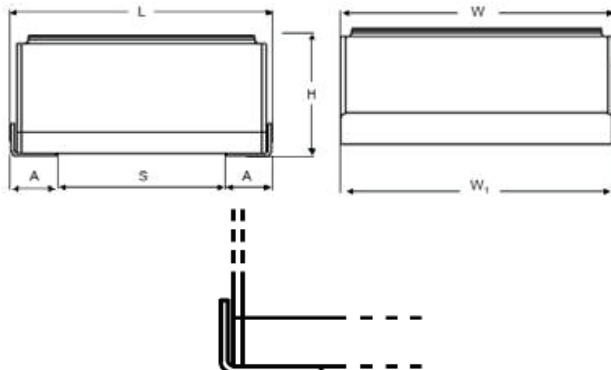
CASE DIMENSIONS: millimeters (inches)

Code	Type	L	W	H Max.	W ₁	A	S Min.
9 (CTC-21D)	J-lead (C-shape)	12.00 ± 0.50 (0.472 ± 0.020)	12.50 ± 0.50 (0.492 ± 0.020)	8.45 (0.333)	12.30 ± 0.50 (0.484 ± 0.020)	2.30 ± 0.50 (0.091 ± 0.020)	6.50 (0.256)
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)

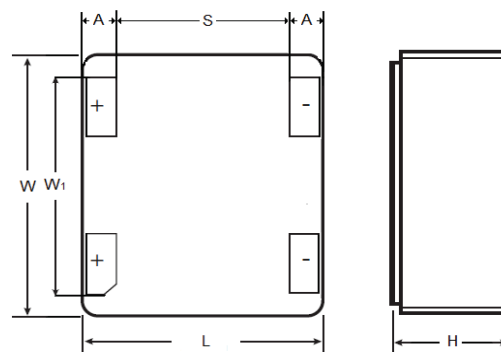
'J' Lead Termination (C-shape)



'J' Lead Termination (L-shape)



Undertab Termination



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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:		0.1 CV									
Rated Voltage DC (V _R)	≤ +85°C:	10	16	20	25	35	50	63	75	100	
Category Voltage (V _S)	≤ +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, Vr with 0.1Ω/Vseries impedance, 60% confidence level									
Termination Finish:		Gold Plating (Undertab), Gold Plating (J-lead/L-shape), Sn/Pb Plating (J-lead/C-shape, L-shape)									

HOW TO ORDER

AVX PART NUMBER

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



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										
22	226									9(150)	
33	336								9(120)		
47	476						9(70)				
68	686										
100	107					9(55)					
150	157				9(50)	9(55)					
220	227		9(40)								
330	337	9(40)									

Released ratings, (ESR ratings in mOhms in parentheses)

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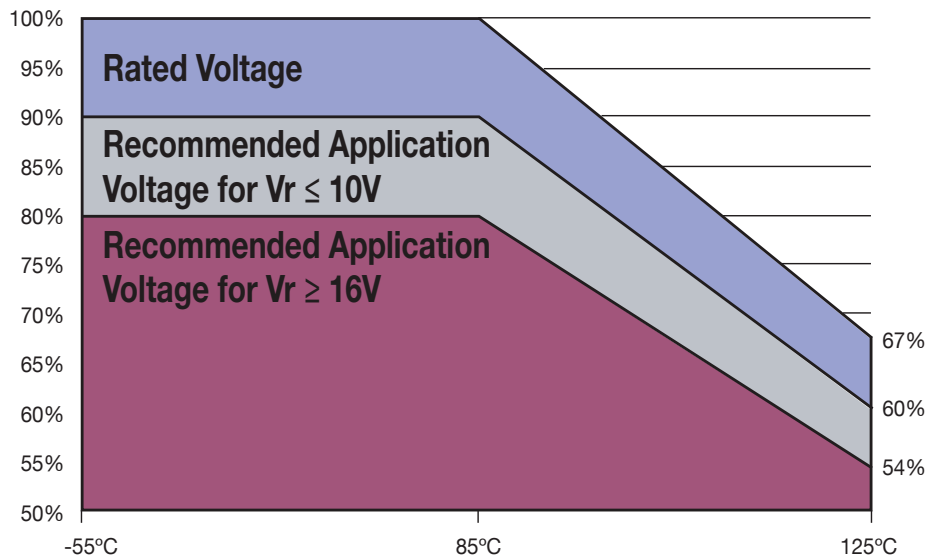
RATINGS & PART NUMBER REFERENCE

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)	100kHz RMS Current (A)			Endurance at 85°C (hrs)
										25°C	85°C	125°C	
10 Volt @ 85°C													
TCH9337M010W0040#	9	330	10	85	7	125	330	8	40	3.16	2.84	1.26	2000
16 Volt @ 85°C													
TCH9227M016W0040#	9	220	16	85	10	125	352	8	40	3.16	2.84	1.26	10000
25 Volt @ 85°C													
TCH9157M025W0050#	9	150	25	85	17	125	375	8	50	2.83	2.55	1.13	10000
35 Volt @ 85°C													
TCH9107M035W0055#	9	100	35	85	23	125	350	8	55	2.69	2.42	1.08	10000
TCH9157M035W0055#	9	150	35	85	23	125	525	8	55	2.69	2.42	1.08	2000
50 Volt @ 85°C													
TCH9476M050W0070#	9	47	50	85	33	125	235	8	70	2.39	2.15	0.96	10000
75 Volt @ 85°C													
TCH9336M075W0120#	9	33	75	85	50	125	248	8	120	1.82	1.64	0.73	2000
100 Volt @ 85°C													
TCH9226M100W0150#	9	22	100	85	66	125	220	8	150	1.63	1.47	0.65	10000

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. All TCH products are MSL1.

RECOMMENDED DERATING FACTOR

Voltage and temperature derating as percentage of Vr



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QUALIFICATION TABLE

TEST	TCH low ESR hermetic series (Temperature range -55°C to +125°C)									
	Condition			Characteristics						
Endurance	Apply rated voltage (Ur) at 85°C for 2000 (10000) hours and / or apply category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of <3Ω. Stabilize at room temperature for 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 125°C, 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 40°C and 90% relative humidity for 56 days, with no applied voltage. Stabilize at room temperature and humidity for min. 2 hours before measuring.			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							
	2	-55	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*
	3	+20	15	ΔC/C	n/a	+0/-20%	±5%	+20/-0%	+30/-0%	±5%
	4	+85	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
	5	+125	15							
	6	+20	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*
Surge Voltage	Apply 1.3x rated voltage (Ur) at 85°C through protection series resistance 33Ω for Ur ≤50V or 1.15x rated voltage (Ur) at 85°C through protection series resistance 1000Ω for Ur >50V for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through discharge resistance of 33Ω			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					

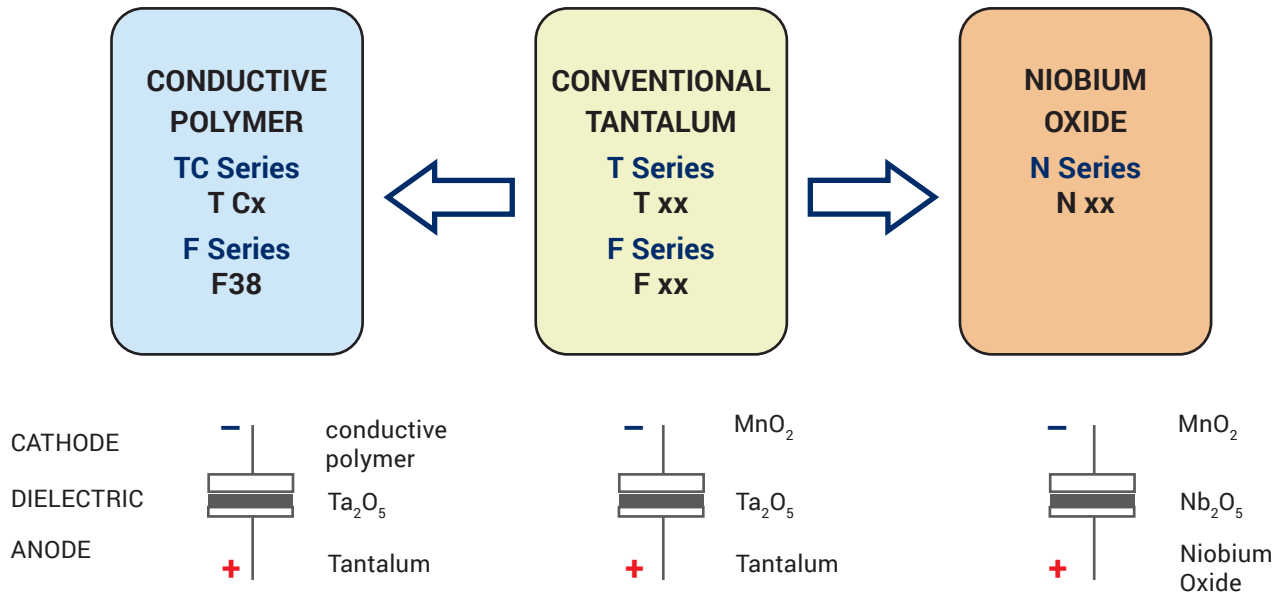
*Initial Limit

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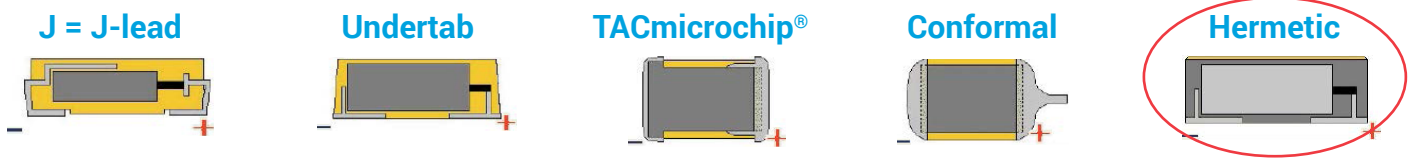
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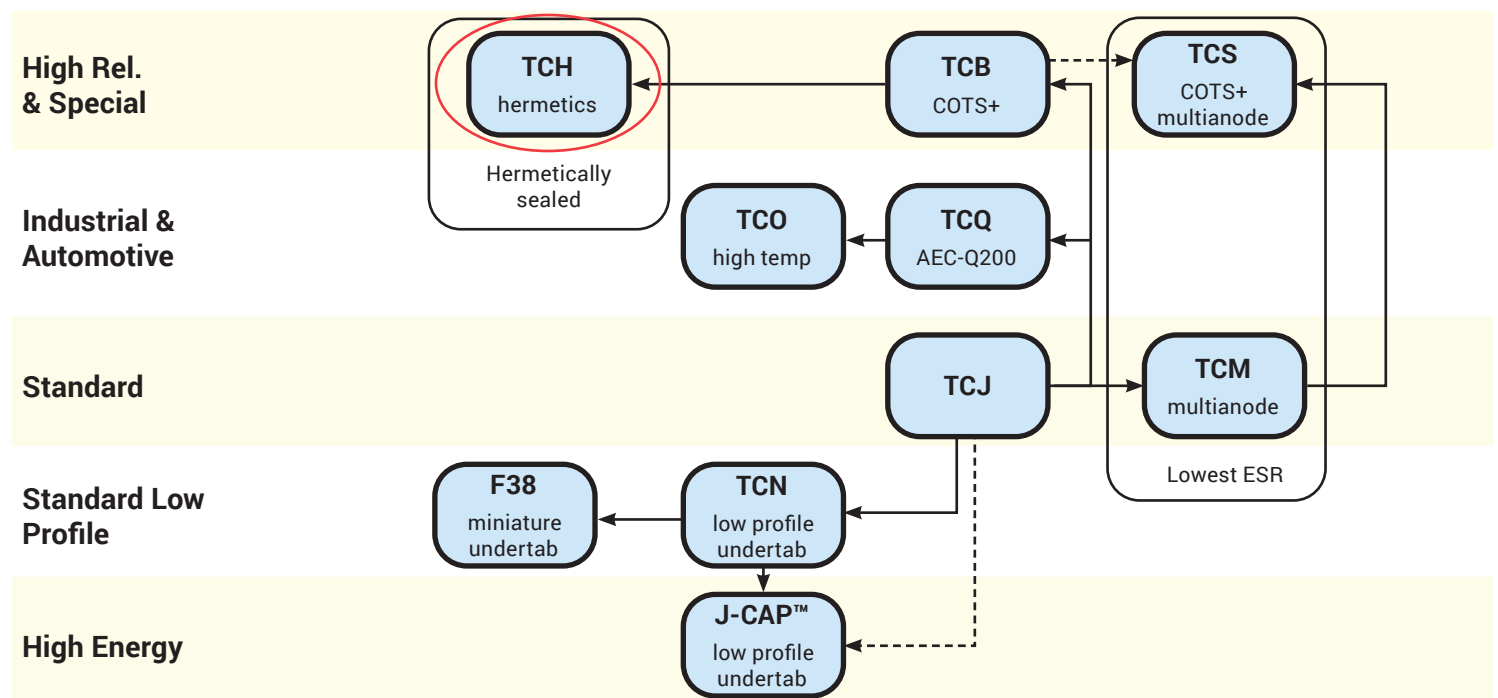
SOLID ELECTROLYTIC CAPACITOR ROADMAP



FIVE CAPACITOR CONSTRUCTION STYLES



SERIES LINE UP : Conductive Polymer



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

AVX:

<u>TCH9107M035W0055U</u>	<u>TCH9227M016W0040U</u>	<u>TCH9476M050W0070U</u>	<u>TCH9337M010W0040U</u>
<u>TCH9157M025W0050U</u>	<u>TCH9226M100W0150U</u>	<u>TCH9336M075W0120U</u>	<u>TCH9157M035W0055J</u>
<u>TCH9476M050W0070L</u>	<u>TCH9157M035B0055J</u>	<u>TCH9227M016B0040U</u>	<u>TCH9107M035B0055U</u>
<u>TCH9157M025B0050U</u>	<u>TCH9337M010B0040U</u>	<u>TCH9476M050B0070U</u>	<u>TCH9336M075B0120L</u>
<u>TCH9336M075B0120U</u>	<u>TCH9336M075W0120L</u>	<u>TCH9337M010B0040J</u>	<u>TCH9337M010W0040L</u>
<u>TCH9107M035W0055L</u>	<u>TCH9337M010W0040J</u>	<u>TCH9157M035B0055L</u>	<u>TCH9157M035W0055L</u>
<u>TCH9157M035W0055U</u>	<u>TCH9226M100W0150L</u>	<u>TCH9227M016W0040L</u>	<u>TCH9157M025W0050L</u>
<u>TCH9476M050W0070J</u>	<u>TCH9226M100W0150J</u>		