

THH 230°C Hermetic Series



SMD 230°C High Temperature Tantalum Capacitor in Hermetic Package



FEATURES

- High temperature applications
- Rated temperature up to 230°C @ 0.5Vr / 1000hrs
- Ceramic case hermetic packaging
- Stability under humidity and ambient atmosphere exposure
- Large case sizes including CTC-21D provide high capacitance values
- Manufacturing and screening utilizing AVX patented Q-Process to effectively remove components that may experience excessive parametric shifts or instability in operation life

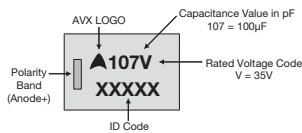


APPLICATIONS

- Oil drilling
- Extreme temperature applications

MARKING

9, I CASE



CASE DIMENSIONS: millimeters (inches)

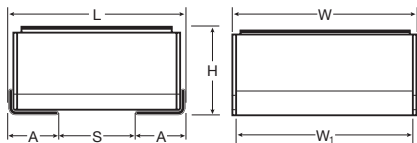
Code	Type	L	W	H	W ₁	A	S
9 (CTC-21D)	J-lead (L shape)	11.50 (0.453)	12.50 (0.492)	5.60 (0.220)	12.50 (0.492)	2.00 (0.079)	7.50 (0.295)
9 (CTC-21D)	J-lead (flex)	12.00 (0.472)	12.50 (0.492)	5.90 (0.232)	12.00 (0.472)	1.90 (0.075)	8.20 (0.323)
9 (CTC-21D)	Undertab	11.00 (0.433)	12.50 (0.492)	5.50 (0.217)	10.50 (0.413)	1.50 (0.059)	8.00 (0.315)
I	J-lead (L shape)	11.50 (0.453)	6.00 (0.236)	2.50 (0.098)	6.00 (0.236)	3.60 (0.142)	4.30 (0.169)
I	J-lead (flex)	11.80 (0.465)	6.00 (0.236)	2.60 (0.102)	5.50 (0.217)	3.50 (0.138)	4.80 (0.189)
I	Undertab	11.00 (0.433)	6.00 (0.236)	2.40 (0.094)	4.00 (0.157)	3.00 (0.118)	4.60 (0.181)

Available ratings

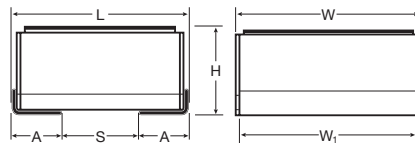
*Codes under development – subject to change

Engineering samples - please contact manufacturer

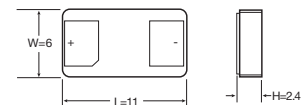
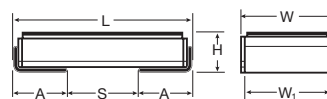
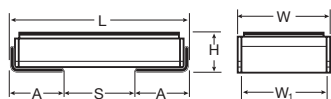
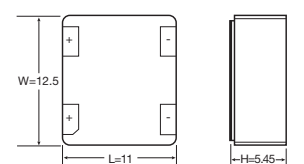
'J' Lead Termination (J-Flex)



'J' Lead Termination (L-Shape)



Undertab Termination



TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C							
Capacitance Range:	3.3 µF to 470 µF							
Capacitance Tolerance:	±20%							
Leakage Current DCL:	0.01CV							
Rated Voltage (V _R)	≤ +85°C	16	20	25	35	50	63	
Category Voltage (V _C)	≤ +215°C	10	13	16	23	33	41	
Category Voltage (V _C)	≤ +230°C	8	10	12	17	25	31	
Temperature Range:	-55°C to +230°C for case size "9", -55°C to +215°C for case size "I"							
Reliability:	1% per 1000 hours at 85°C, Vr with 0.1Ω/V series impedance, 60% confidence level							
Termination Finish:	Gold plating (Undertab), Gold Plating (J-lead L shape), Nickel Plated (J-lead flex)							



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HOW TO ORDER

AVX PART NUMBER

THH	9	107	M	035	W	0250	J
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 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc 063 = 63Vdc	Packaging W = Waffle B = Bulk	ESR in mΩ	Termination J = 'J' lead L shape U = Undertab W = 'J' lead flex



CAPACITANCE AND VOLTAGE RANGE (CODE DENOTES THE CASE SIZE)

Capacitance		Rated Voltage DC (V _R) at 85°C					
μF	Code	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)	63V (J)
3.3	335					I*	I*
4.7	475					I*	I*
6.8	685				I	I*	
10	106				I*		
15	156		I*	I*	I*		
22	226	I	I*	I*	I*		
33	336	I*	I*	I*			9*
47	476	I*	I*			9*	9
68	686					9*	
100	107			9*	9		
150	157		9*	9*	9*		
220	227	9*	9*	9*			
330	337	9*	9*				
470	477	9*					

Available ratings

*Codes under development - subject to change

Engineering samples - please contact manufacturer

RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (μA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (A)			Product Category
											25°C	85°C	230°C	
16 Volt @ 85°C														
THH1226M016W0500#	I	22	16	85	10	215	3.6	8	500	1	0.81	0.73	0.73	215
35 Volt @ 85°C														
THH1685M035W0500#	I	6.8	35	85	23	215	2.4	8	500	1	0.81	0.73	0.73	215
THH9107M035W0250#	9	100	35	85	17	230	35	8	250	1	1.26	1.13	1.13	230
63 Volt @ 85°C														
THH9476M063W0250#	9	47	63	85	31	230	29.6	8	250	1	1.26	1.13	1.13	230

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

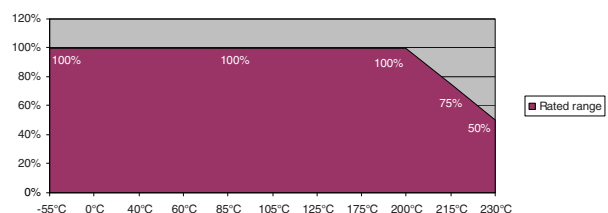
DCL is measured at rated voltage after 5 minutes.

ESR change post 1000hrs allowed up to 3 times catalog limit.

Parts are aged at 230°C.

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

THH 230°C Voltage vs Temperature Rating



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QUALIFICATION TABLE

TEST	THH 230°C hermetic series (Temperature range -55°C to +230°C)														
	Condition			Characteristics											
Endurance	Determine after application of rated voltage for 2000+48/0 hours at 175±2°C and then leaving min. 2 hours at room temperature. Also determine of 200°C temperature, category voltage for 2000+48/-0 hours and then leaving min. 2 hours at room temperature. Also determine after application of 230°C temperature, category voltage for 1000+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	3 x initial limit										
Storage Life	230°C, 0V, 2000h			Visual examination	no visible damage										
				DCL	initial limit										
				ΔC/C	within ±5% of initial value										
				DF	initial limit										
				ESR	1.25 x initial limit										
Biased Humidity	Determine after leaving for 1000 hours at 85±2°C, 85% relative humidity and rated voltage and then recovery min. 2 hours at room temperature.			Visual examination	no visible damage										
				DCL	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)		+22°C	-55°C	+22°C	+85°C	+125°C	+175°C	+200°C	+230°C	+22°C		
	1	+22	15												
	2	-55	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	n/a	n/a	n/a	IL*		
	3	+22	15												
	4	+85	15	ΔC/C	n/a	+0/-20%	±5%	+20/-0%	+30/-0%	+30/-0%	+30/-0%	+30/-0%	±5%		
	5	+125	15												
	6	+175	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	2 x IL*	2 x IL*	2 x IL*	IL*		
	7	+200	15												
	8	+230	15												
	9	+22	15	ESR	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*		
Surge Voltage	Test temperature: 85°C+3/0°C Surge voltage: 1.3 x rated voltage Series protection resistance: 33Ω 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 ±5% of initial value										
				DF	initial limit										
				ESR	1.25 x initial limit										

*Initial Limit