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# Wet Tantalum Capacitors, Ultra High Capacitance, Tantalum-Case with Glass-to-Tantalum Hermetic Seal for -55 °C to +125 °C



#### PERFORMANCE CHARACTERISTICS

Refer to: Typical Performance Characteristics

Operating Temperature: -55 °C to +85 °C

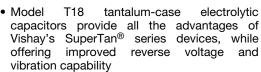
(to +125 °C with voltage derating)

Capacitance Tolerance: ± 10 %, ± 20 % standard

DC Leakage Current (DCL Max.): at  $+25~^{\circ}$ C and above: leakage current shall not exceed the values listed in the Standard Ratings table.

#### **FEATURES**

- Enhanced performance, high reliability design
- Terminations: axial, standard tin / lead (SnPb), 100 % tin available





- Increased thermal shock capability of 300 cycles
- Designed for the avionics and aerospace applications
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

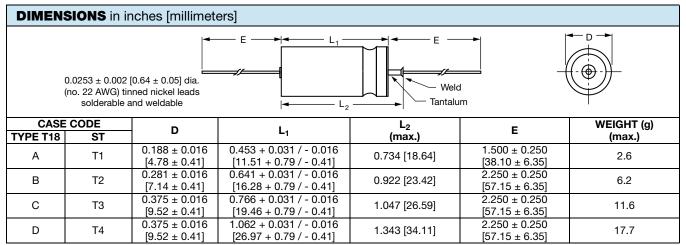
#### Note

This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details.

T18	D	108	M	075	E	Z	S	S
MODEL	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	TERMINATION AND PACKAGING	RELIABILITY LEVEL	INSULATING SLEEVE	ESR 
	Ratings   expressed in   M = ± 20 %   volts. To complete the		E = tin / lead, bulk, standard C = 100 % tin, bulk	Z = non-ER	S = sleeved U = unsleeved	S = sto		

#### Note

Packaging: the use of formed plastic trays for packing bulk components is standard.



#### Note

For insulated parts, add 0.015" [0.38 mm] to the diameter. The insulation shall lap over the ends of the capacitor body.

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STANDARD	STANDARD RATINGS									
CAPACITANCE AT +25 °C 120 Hz	CASE	PART NUMBER	MAX. ESR AT +25 °C 120 Hz (Ω)	MAX. IMP. AT -55 °C 120 Hz (Ω)	MAX. DCL (μΑ) AT		MAX. CAPACITANCE CHANGE AT (%)		AC RIPPLE +85 °C 40 kHz	
(μF)	0022				+25 °C	+85 °C	-55 °C	+85 °C	+125 °C	(mA <sub>RMS</sub> )
	75 V <sub>DC</sub> AT 85 °C, 50 V <sub>DC</sub> AT 125 °C									
1000	D	T18D108(1)075(2)(3)(4)(5)	0.50	8.00	20	200	-60	12	20	3500
100 V <sub>DC</sub> AT 85 °C, 65 V <sub>DC</sub> AT 125 °C										
400	D	T18D407(1)100(2)(3)(4)(5)	0.70	10.00	15	120	-50	8	15	3500
470	D	T18D477(1)100(2)(3)(4)(5)	0.70	10.00	25	250	-50	10	25	3500

#### Note

- Part number definitions:
  - (1) Capacitance tolerance: K, M
  - (2) Termination / packaging: C = 100 % tin, bulk, E = std., tin / lead, bulk (3) Reliability level: Z = non-ER

  - (4) Insulating sleeve: S = sleeved; U = unsleeved
  - (5) ESR: S = std.

#### **TYPICAL PERFORMANCE CHARACTERISTICS OF T18 CAPACITORS**

ELECTRICAL CHARACTERISTICS					
ITEM	PERFORMANCE CHARACTERISTICS				
Operating temperature range	-55 °C to +85 °C (to +125 °C with voltage derating)				
Capacitor tolerance	± 20 %, ± 10 % at 120 Hz, at +25 °C				
Capacitor change by temperature	Limit per Standard Ratings table				
ESR	Limit per Standard Ratings table, at +25 °C, 120 Hz				
Impedance	Limit per Standard Ratings table, at -55 °C, 120 Hz				
DCL (leakage current)	Limit per Standard Ratings table				
AC ripple current	Limit per Standard Ratings table, at +85 °C and 40 kHz				
Reverse voltage	Reverse voltage shall be in accordance with MIL-PRF-39006, paragraphs 3.23 and 4.8.19, except DC potential will be maximum of 1.5 V.				
Surge voltage	Surge voltage shall be in accordance with MIL-PRF-39006 and Table II of DSCC93026. The DC rated surge voltage is the maximum voltage to which the capacitors can be subjected under any conditions including transients and peak ripple at the highest line voltage. The DC surge voltage is 115 % of rated DC voltage.				

PERFORMANCE CHARACTERISTICS			
ITEM	PERFORMANCE CHARACTERISTICS		
Life testing	Capacitors shall be capable of withstanding a 2000 h life test at a temperature +85 °C at rated voltage, or a 2000 h life test at 125 °C test at derated voltage.  After the test, the capacitors shall meet the following requirements:  a) DC leakage at 85 °C and 125 °C shall not exceed 125 % of the specified value  b) DC leakage at 25 °C shall not exceed the specified value  c) Capacitance shall be within + 10 %, - 20 % of initial value  d) ESR shall not exceed 200 % of the specified value		

ENVIRONMENTAL CHARACTERISTICS				
ITEM	CONDITION	COMMENTS		
Seal	MIL-PRF-39006	When the capacitors are tested as specified in MIL-PRF-39006, there shall be no evidence of leakage.		
Moisture resistance	MIL-PRF-39006	Moisture resistance shall be in accordance with MIL-PRF-39006. Number of cycles: 10 continuous cycles		
Barometric pressure (reduced)	MIL-STD-202, method 105, condition E	Altitude 150 000 feet		



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MECHANICAL CHARACTERISTICS					
ITEM	CONDITION	COMMENTS			
Shock (specified pulse)	MIL-STD-202, method 213, condition I (100 g)	The capacitors shall meet the requirements of MIL-PRF-39006.			
Vibration, high frequency	MIL-STD-202, method 204, condition E (50 g peak)	The capacitors shall meet the requirements of MIL-PRF-39006.			
Random vibration	MIL-STD-202, method 214, condition II-G (overall RMS 27.78 g)	The capacitors shall meet the requirements of MIL-PRF-39006.			
Thermal shock	MIL-STD-202, method 107, condition A	Thermal shock shall be in accordance with MIL-PRF-39006 when tested for 300 cycles.			
Solderability	MIL-STD-202, method 208, ANSI/J-STD-002, test A	Solderability shall be in accordance with MIL-PRF-39006.			
Terminal strength	MIL-STD-202, method 211	Terminal strength shall be in accordance with MIL-PRF-39006.			
Resistance to solder heat	MIL-STD-202, method 210, condition C	The capacitors shall meet the requirements of MIL-PRF-39006.			
Terminals	MIL-STD-1276	Terminals shall be as specified in MIL-STD-1276. The length and diameter of the terminals shall be as specified in Dimensions table. All terminals shall be permanently secured internally and externally, as applicable. All external joints shall be welded.			
Marking	MIL-STD-1285	Marking of capacitors conforms to method I of MIL-STD-1285 and include capacitance (in µF), capacitance tolerance letter, rated voltage, date code, lot symbol and Vishay trademark.			

SELECTOR GUIDES			
Tantalum Selector Guide	www.vishay.com/doc?49375		
Parameter Comparison Guide	www.vishay.com/doc?42088		



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Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

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