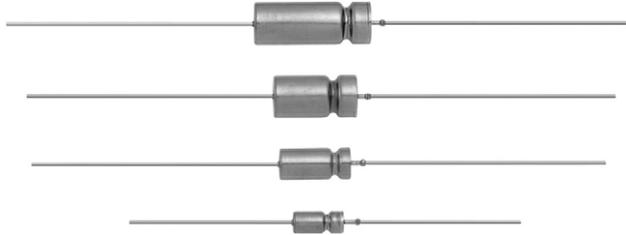


# Wet Tantalum High Performance HI-TMP<sup>®</sup> Capacitors for -55 °C to +200 °C Operation



## PERFORMANCE CHARACTERISTICS

**Operating Temperature:** -55 °C to +85 °C  
(to +200 °C with voltage derating)

**Capacitance Tolerance:** at 120 Hz, +25 °C; ± 20 % standard; ± 10 %

**DC Leakage Current (DCL Max.):** at +25 °C and above: leakage current shall not exceed the values listed in the Standard Ratings tables.

**Life Test:** capacitors are capable of withstanding life test at 200 °C at the applicable derated DC working voltage.

## FEATURES

- High capacitance, high performance (shock and vibration)
- Hermetically sealed, tantalum case
- +200 °C high temperature
- Terminations: axial, standard tin / lead (SnPb)
- 100 % tin (RoHS-compliant) available
- Mounting: through-hole
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS\***  
Available

HALOGEN  
**FREE**  
**GREEN**  
(5-2008)  
Available

## 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

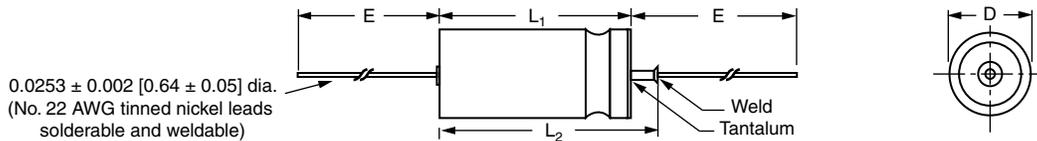
## APPLICATIONS

- Industrial
- Petroleum exploration
- High temperature / high stress environment

ORDERING INFORMATION								
T34	C	107	M	125	B	Z	6	S
MODEL	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	TERMINATION AND PACKAGING	RELIABILITY LEVEL	STYLE NUMBER	ESR
	See Standard Ratings table	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow	K = ± 10 % M = ± 20 %	This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating	A = 100 % tin (RoHS compliant), bulk B = std., tin / lead, bulk	Z = non-ER	High temperature 8 = no outer insulating sleeve 6 = high temperature film insulation (above +125 °C)	S = std. L = low

## Note

- Packaging: The use of formed plastic trays for packing bulk components is standard

**DIMENSIONS** in inches [millimeters]


CASE CODE		D	L <sub>1</sub> (1)	L <sub>2</sub> (Max.)	E	WEIGHT (g) (Max.)
TYPE T34	CLR 79 / 81 EQUIV.					
A	T1	0.188 ± 0.016 [4.78 ± 0.41]	0.453 + 0.031 / - 0.016 [11.51 + 0.79 / - 0.41]	0.734 [18.64]	1.500 ± 0.250 [38.10 ± 6.35]	2.6
B	T2	0.281 ± 0.016 [7.14 ± 0.41]	0.641 + 0.031 / - 0.016 [16.28 + 0.79 / - 0.41]	0.922 [23.42]	2.250 ± 0.250 [57.15 ± 6.35]	6.2
C	T3	0.375 ± 0.016 [9.53 ± 0.41]	0.766 + 0.031 / - 0.016 [19.46 + 0.79 / - 0.41]	1.047 [26.59]	2.250 ± 0.250 [57.15 ± 6.35]	11.6
D	T4	0.375 ± 0.016 [9.53 ± 0.41]	1.062 + 0.031 / - 0.016 [26.97 + 0.79 / - 0.41]	1.343 [34.11]	2.250 ± 0.250 [57.15 ± 6.35]	17.7

**Note**

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

**STANDARD RATINGS**

CAPACITANCE AT 25 °C 120 Hz (µF)	V <sub>DC</sub> AT 200 °C	CASE CODE	PART NUMBER	MAX. ESR 120 Hz (Ω)	MAX. DCL (µA)		LIFE TEST PERFORMANCE (h AT +200 °C)
					25 °C	85 °C / 125 °C	
<b>50 V<sub>DC</sub> AT +85 °C</b>							
68	30	A	T34A686(1)050(2)(3)(4)S	2.5	2	10	1000
220	30	B	T34B227(1)050(2)(3)(4)S	0.9	4	20	1000
470	25	C	T34C477(1)050(2)(3)(4)S	0.75	3	25	2000
680	25	D	T34D687(1)050(2)(3)(4)S	0.7	5	7	1000
1500	25	D	T34D158(1)050(2)(3)(4)S	0.5	15	110	500
<b>60 V<sub>DC</sub> AT +85 °C</b>							
47	36	A	T34A476(1)060(2)(3)(4)S	2.0	2	10	1000
150	36	B	T34B157(1)060(2)(3)(4)S	1.5	2	10	1000
390	30	C	T34C397(1)060(2)(3)(4)S	0.9	3	25	1000
560	36	D	T34D567(1)060(2)(3)(4)S	0.8	5	7	1000
<b>75 V<sub>DC</sub> AT +85 °C</b>							
33	45	A	T34A336(1)075(2)(3)(4)S	2.5	2	10	2000
68	45	A	T34A686(1)075(2)(3)(4)S	3.0	2	10	500
110	45	B	T34B117(1)075(2)(3)(4)S	1.3	2	10	1000
220	37	B	T34B227(1)075(2)(3)(4)S	1.8	5	50	1000
330	45	C	T34C337(1)075(2)(3)(4)S	1.0	3	25	1500
470	45	D	T34D477(1)075(2)(3)(4)S	0.9	5	50	1000
1000	45	D	T34D108(1)075(2)(3)(4)S	0.7	20	90	1000
<b>100 V<sub>DC</sub> AT +85 °C</b>							
15	60	A	T34A156(1)100(2)(3)(4)S	3.5	1	5	1000
33	60	A	T34A336(1)100(2)(3)(4)S	3.0	2	10	2000
68	60	B	T34B686(1)100(2)(3)(4)S	2.1	2	10	1000
150	50	B	T34B157(1)100(2)(3)(4)S	1.3	7.5	25	1000
220	60	D	T34D227(1)100(2)(3)(4)S	1.2	5	50	1000
400	60	D	T34D407(1)100(2)(3)(4)S	0.8	10	150	1500
470	60	D	T34D477(1)100(2)(3)(4)S	0.7	15	150	1000
560	60	D	T34D567(1)100(2)(3)(4)S	1.0	25	200	1000
750	50	D (1)	T34D757(1)100(2)(3)(4)S	0.7	25	150	500

**Notes**

- Part number definitions:
  - Capacitance tolerance: K, M
  - Termination and packaging: A = 100 % tin, bulk; B = std., tin / lead, bulk
  - Reliability level: Z = non-ER
  - Style number: 6 = high temperature film insulation, 8 = no film insulation
- Requires export license for shipments outside the US. Contact marketing for availability



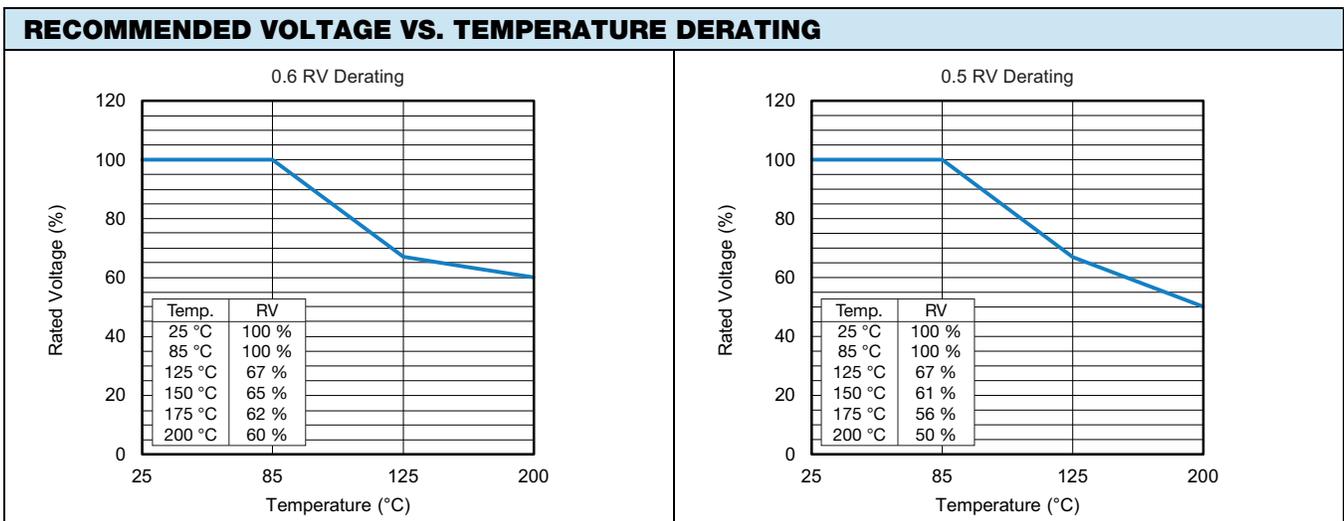
STANDARD RATINGS							
CAPACITANCE AT 25 °C 120 Hz ( $\mu$ F)	V <sub>DC</sub> AT 200 °C	CASE CODE	PART NUMBER	MAX. ESR 120 Hz ( $\Omega$ )	25 °C	MAX. DCL ( $\mu$ A) 85 °C / 125 °C	LIFE TEST PERFORMANCE (h AT +200 °C)
<b>125 V<sub>DC</sub> AT +85 °C</b>							
10	75	A	T34A106(1)125(2)(3)(4)S	5.5	1	5	1000
47	75	B	T34B476(1)125(2)(3)(4)S	2.3	2	20	1000
100	75	C	T34C107(1)125(2)(3)(4)S	1.8	3	35	1000
150	75	D	T34D157(1)125(2)(3)(4)S	1.6	5	50	1000
350	62	D	T34D357(1)125(2)(3)(4)S	0.8	25	250	2000

**Notes**

- Part number definitions:
  - Capacitance tolerance: K, M
  - Termination and packaging: A = 100 % tin, bulk; B = std., tin / lead, bulk
  - Reliability level: Z = non-ER
  - Style number: 6 = high temperature film insulation, 8 = no film insulation
- Requires export license for shipments outside the US. Contact marketing for availability

**TYPICAL PERFORMANCE CHARACTERISTICS OF T34 CAPACITORS**

ELECTRICAL CHARACTERISTICS	
ITEM	PERFORMANCE CHARACTERISTICS
Operating temperature range	-55 °C to +85 °C (to +200 °C with voltage derating)
Capacitor tolerance	$\pm$ 20 %, $\pm$ 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
DCL (leakage current)	Limit per Standard Ratings table
Reverse voltage	There shall be no continuous reverse voltage. Transient reverse voltage surges are acceptable under the following conditions: <ol style="list-style-type: none"> <li>The peak reverse voltage is equal to or less than 1.5 V and the product of the peak current times the duration of the reverse transient is 0.05 As or less</li> <li>The repetition rate of the reverse voltage surges is less than 10 Hz</li> </ol>
Surge voltage	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 life test at temperature +200 °C at derated voltage. After the test, the capacitors shall meet the following requirements: a) Capacitance shall be within +10 %, -20 % of the initial value b) ESR shall not exceed 200 % of the applicable value from “Standard Ratings” table

ENVIRONMENTAL CHARACTERISTICS		
ITEM	CONDITION	COMMENTS
Seal	MIL-STD-202, method 112, condition C	When the capacitors are tested as specified there will be no evidence of leakage.
Moisture resistance	MIL-STD-202, method 106	10 continuous cycles, 6 V <sub>DC</sub>
Barometric pressure (reduced)	MIL-STD-202, method 105, condition E	Altitude 150 000 feet

MECHANICAL CHARACTERISTICS		
ITEM	CONDITION	COMMENTS
Shock (specified pulse)	MIL-STD-202, method 213	Test condition D (500 g)
Vibration, high frequency	MIL-STD-202, method 204	Test condition H (80 g)
Random vibration	MIL-STD-202, method 214	Test condition II-K (53.8 g)
Thermal shock	MIL-STD-202, method 107	Test condition A, 30 cycles
Solderability	MIL-STD-202, method 208	ANSI / J-STD-002, test A
Terminal strength	MIL-STD-202, method 211	Condition A
Resistance to solder heat	MIL-STD-202, method 210	Condition C
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	<a href="http://www.vishay.com/doc?49054">www.vishay.com/doc?49054</a>
Parameter Comparison Guide	<a href="http://www.vishay.com/doc?42088">www.vishay.com/doc?42088</a>



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