

SuperTan[®] Wet Tantalum Capacitors With Hermetic Seal, Extended Range, Improved Vibration Capability, 200 °C Applications



LINKS TO ADDITIONAL RESOURCES



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 through-hole, SMD outward L-leaded and SMD inward L-leaded
 - standard tin / lead (SnPb), 100 % tin available
- Mounting: through-hole
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS*
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

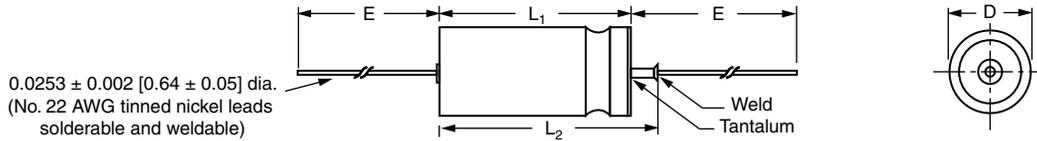
APPLICATIONS

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

ORDERING INFORMATION								
T34	C	107	M	125	B ⁽¹⁾	Z	6 ⁽²⁾	S
MODEL	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	TERMINATION	RELIABILITY LEVEL	CASE INSULATION	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	Axial through-hole A = 100 % tin B = tin / lead SMD, outward L-leaded J = tin / lead K = 100 % tin Low profile, SMD, outward L-leaded P = tin / lead R = 100 % tin SMD, inward L-leaded L = tin / lead M = 100 % tin Low profile, SMD, inward L-leaded S = tin / lead T = 100 % tin	Z = non-ER	8 = no outer case insulation 6 = high temperature insulation film	S = std. L = low	

Notes

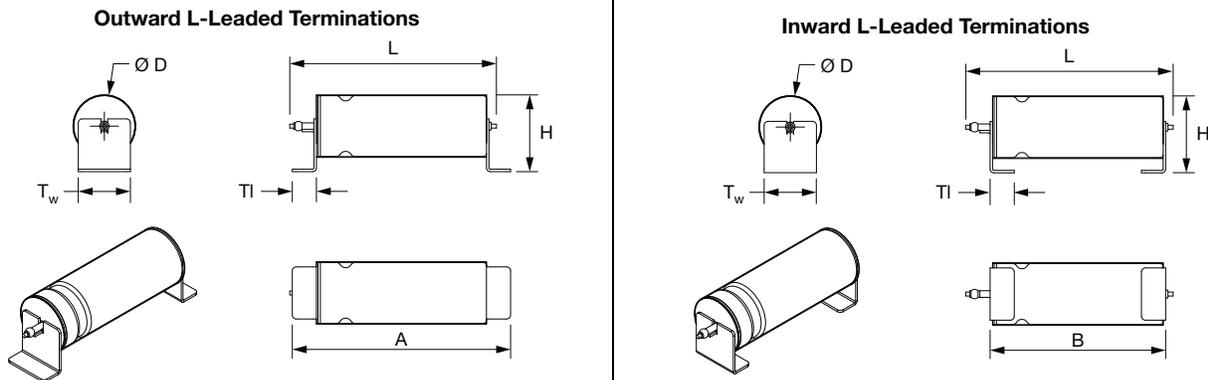
- Packaging: the use of formed plastic trays for packing bulk components is standard
- ⁽¹⁾ Contact marketing for SMD capacitors availability
- ⁽²⁾ Capacitors with SMD terminations are available only with high temperature (Kapton) film insulation

AXIAL PRODUCT DIMENSIONS in inches [millimeters]


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

Note

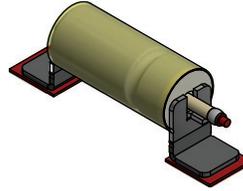
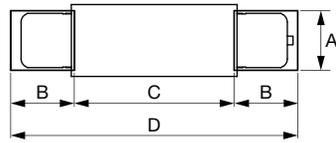
(1) For insulated parts, add 0.015 inches [0.38 mm] to the diameter. The insulation shall lap over the ends of the capacitor body

SMD PRODUCT DIMENSIONS in inches [millimeters]


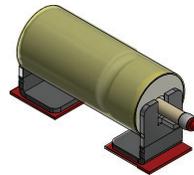
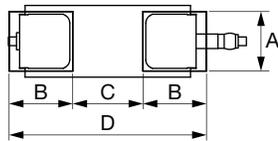
TERMINATIONS		J, K, L, M, P, R, S, T					J, K, P, R	L, M, S, T	P, R, S, T
CASE CODE		D (max.)	L (max.)	H (max.)	TI (max.)	Tw ± 0.008	A (max.)	B (max.)	LP H (max.)
TYPE T34	CLR 79/81 EQUIV.								
A	T1	0.228 [5.8]	0.705 [17.9]	0.296 [7.5]	0.157 [4.0]	0.158 [4.0]	0.773 [19.6]	0.513 [13.0]	
B	T2	0.300 [7.6]	0.903 [22.9]	0.374 [9.5]	0.157 [4.0]	0.217 [5.5]	1.001 [25.4]	0.720 [18.3]	
C	T3	0.397 [10.1]	1.051 [26.7]	0.492 [12.5]	0.157 [4.0]	0.331 [8.4]	1.143 [29.0]	0.858 [21.8]	
D	T4	0.397 [10.1]	1.343 [34.1]	0.492 [12.5]	0.157 [4.0]	0.331 [8.4]	1.432 [36.4]	1.140 [29.0]	0.421 [10.7]

Note

- Use appropriate adhesive between capacitor body and the board for improved mechanical strength

PAD DIMENSIONS in inches [millimeters]

STYLE J, K, P, R

CASE CODE	A (min.)	B (nom.)	C (nom.)	D (nom.)
A	0.173 [4.40]	0.185 [4.70]	0.465 [11.80]	0.835 [21.20]
B	0.232 [5.90]	0.185 [4.70]	0.650 [16.50]	1.020 [25.90]
C	0.346 [8.80]	0.185 [4.70]	0.783 [19.90]	1.154 [29.30]
D	0.346 [8.80]	0.185 [4.70]	1.059 [26.90]	1.429 [36.30]


STYLE L, M, S, T

CASE CODE	A (min.)	B (nom.)	C (nom.)	D (nom.)
A	0.173 [4.40]	0.185 [4.70]	0.205 [5.20]	0.575 [14.60]
B	0.232 [5.90]	0.185 [4.70]	0.390 [9.90]	0.760 [19.30]
C	0.346 [8.80]	0.185 [4.70]	0.527 [13.39]	0.897 [22.79]
D	0.346 [8.80]	0.185 [4.70]	0.800 [20.32]	1.170 [29.72]

RATINGS AND CASE CODES

μF	50 V	60 V	75 V	100 V	125 V
10					A
15				A	
33			A	A	
47		A			B
68	A		A	B	
100					C
110			B		
150		B		B	D
220	B		B	D	
240					D
330			C		
350					D
390		C			
400				D	
470	C		D	D	D
560		D		D	D
680	D				
750			D	D	
1000		D	D		
1500	D				



STANDARD RATINGS									
CAPACITANCE AT 25 °C 120 Hz (μ F)	V_{DC} AT 200 °C	CASE CODE	PART NUMBER	MAX. ESR 120 Hz (Ω)		MAX. DCL (μ A)		AC RIPPLE 85 °C AT 40 kHz (mA _{RMS})	LIFE TEST PERFORMANCE (h AT +200 °C)
				25 °C	85 °C / 125 °C	85 °C	125 °C		
50 V_{DC} AT +85 °C									
68	30	A	T34A686(1)050(2)(3)(4)S	2.5	2	10		1050	1000
220	30	B	T34B227(1)050(2)(3)(4)S	0.9	4	20		1800	1000
470	25	C	T34C477(1)050(2)(3)(4)S	0.75	3	25		2100	2000
680	25	D	T34D687(1)050(2)(3)(4)S	0.7	5	7		2200	1000
1500	25	D	T34D158(1)050(2)(3)(4)S	0.5	15	110		3000	500
60 V_{DC} AT +85 °C									
47	36	A	T34A476(1)060(2)(3)(4)S	2.0	2	10		1050	1000
150	36	B	T34B157(1)060(2)(3)(4)S	1.5	2	10		1650	1000
390	30	C	T34C397(1)060(2)(3)(4)S	0.9	3	25		2100	1000
560	36	D	T34D567(1)060(2)(3)(4)S	0.8	5	7		2500	1000
1000	36	D	T34D108(1)060(2)(3)(4)S	0.7	20	90		3200	1000
75 V_{DC} AT +85 °C									
33	45	A	T34A336(1)075(2)(3)(4)S	2.5	2	10		1050	2000
68	45	A	T34A686(1)075(2)(3)(4)S	3.0	2	10		1050	500
110	45	B	T34B117(1)075(2)(3)(4)S	1.3	2	10		1650	1000
220	37	B	T34B227(1)075(2)(3)(4)S	1.8	5	50		2000	1000
330	45	C	T34C337(1)075(2)(3)(4)S	1.0	3	25		2100	1500
470	45	D	T34D477(1)075(2)(3)(4)S	0.9	5	50		2750	1000
750	45	D	T34D757(1)075(2)(3)(4)S	0.7	25	150		3000	500
1000	45	D	T34D108(1)075(2)(3)(4)S	0.7	20	90		3500	1000
100 V_{DC} AT +85 °C									
15	60	A	T34A156(1)100(2)(3)(4)S	3.5	1	5		1050	1000
33	60	A	T34A336(1)100(2)(3)(4)S	3.0	2	10		1050	2000
68	60	B	T34B686(1)100(2)(3)(4)S	2.1	2	10		1650	1000
150	50	B	T34B157(1)100(2)(3)(4)S	1.3	7.5	25		2100	1000
220	60	D	T34D227(1)100(2)(3)(4)S	1.2	5	50		2750	1000
400	60	D	T34D407(1)100(2)(3)(4)S	0.8	10	150		3000	1500
470	60	D	T34D477(1)100(2)(3)(4)S	0.7	15	150		3000	1000
560	60	D	T34D567(1)100(2)(3)(4)S	1.0	25	200		3000	1000
750	50	D	T34D757(1)100(2)(3)(4)S	0.7	25	150		3000	500
125 V_{DC} AT +85 °C									
10	75	A	T34A106(1)125(2)(3)(4)S	5.5	1	5		1050	1000
47	75	B	T34B476(1)125(2)(3)(4)S	2.3	2	20		1650	1000
100	75	C	T34C107(1)125(2)(3)(4)S	1.8	3	35		2100	1000
150	75	D	T34D157(1)125(2)(3)(4)S	1.6	5	50		2750	1000
240	75	D	T34D247(1)125(2)(3)(4)S	1.0	10	50		2500	1000
350	62	D	T34D357(1)125(2)(3)(4)S	0.8	25	250		3000	2000
470	62	D	T34D477(1)125(2)(3)(4)S	1.0	30	300		3500	500
560	62	D	T34D567(1)125(2)(3)(4)S	0.7	30	160		4200	500

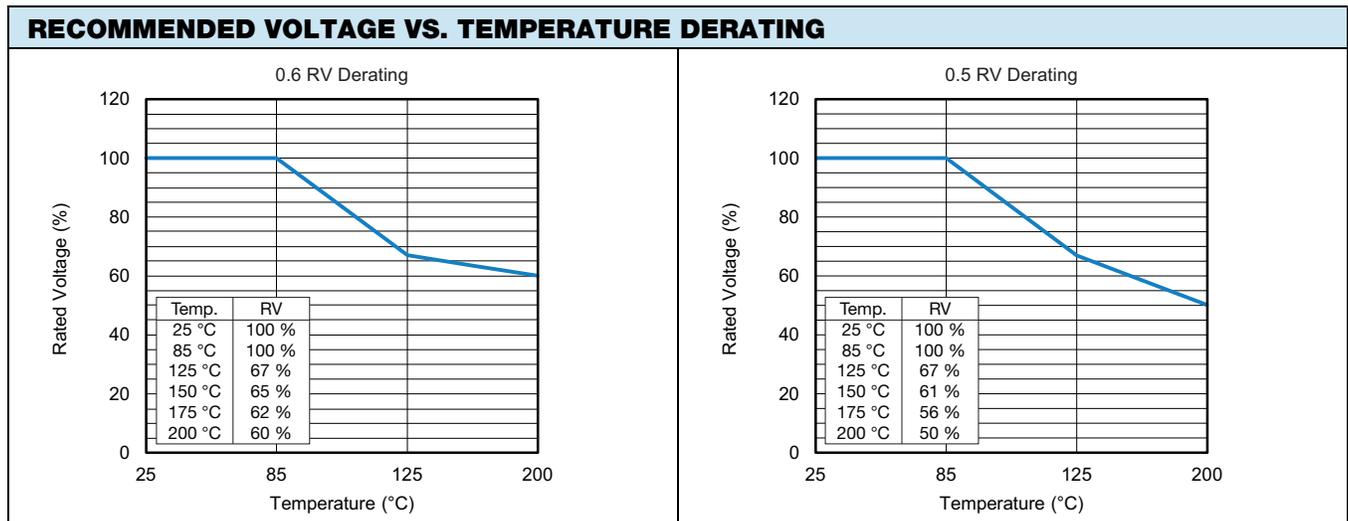
Notes

- Typical AC ripple current values at 85 °C, 40 kHz
- Part number definitions:
 - (1) Capacitance tolerance: K, M
 - (2) Terminations: A, B, J, K, L, M, P, R, S, T
 - (3) Reliability level: Z = non-ER
 - (4) Style number: 6 = high temperature film insulation, 8 = no film insulation



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	± 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
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: a) 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 b) The repetition rate of the reverse voltage surges is less than 10 Hz
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 _{DC}
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	www.vishay.com/doc?49054
Parameter Comparison Guide	www.vishay.com/doc?42088



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