Wet Tantalum Capacitors Surface Mount, Molded Case



FEATURES

- Terminations: standard tin/lead (SnPb), 100 % tin (RoHS compliant) terminations available
- Very high capacitance, 10 µF to 470 µF 6 V to 125 V, - 55 °C to + 125 °C
- Very low ESR
- High ripple current capability
- Low DCL
- Model M34 wet tantalum electrolytic chip capacitors incorporate the advantages of all the varieties of electrolytic capacitors and eliminate most of the disadvantages. These units have a transient reverse voltage capability and a higher ripple current capability than any other electrolytic type with similar combinations of capacitance and case size.
- Compliant to RoHS Directive 2002/95/EC

Pb-free Available

RoHS* COMPLIANT

Note

* Pb containing terminations are not RoHS compliant, exemptions may apply

PERFORMANCE CHARACTERISTICS

Operating Temperature: - 55 °C to + 85 °C
(to + 125 °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 table.

Life Test: Capacitors are capable of withstanding a 2000 h life test at a temperature of + 85 °C or + 125 °C at the applicable rated DC working voltage.

Following life test:

1. DCL, measured at + 85 °C rated voltage, shall not be in excess of the original requirement.
2. The equivalent series resistance shall not exceed 150 % of the initial requirement.
3. Change in capacitance shall not exceed 10 % from the initial measurement.

APPLICATION NOTES

a) No continuous reverse voltage permissible.

b) Transient reverse voltage surges are acceptable under the following conditions:
The peak reverse voltage does not exceed 1.5 V and the peak current times the duration of the reverse transient does not exceed 0.05 A. In addition, the repetition frequency of the reverse voltage surge is less than 10 Hz.

c) The peak of the applied AC ripple and the applied DC voltage must not exceed the DC voltage rating of the capacitor.

ORDERING INFORMATION

M34	C	826	M	125	B	Z	S	S
MODEL	CASE CODE	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT + 85 °C	TERMINATION AND PACKAGING	RELIABILITY LEVEL	TEMP	ESR
	See Ratings and Case Codes 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	S = Std	S = Std

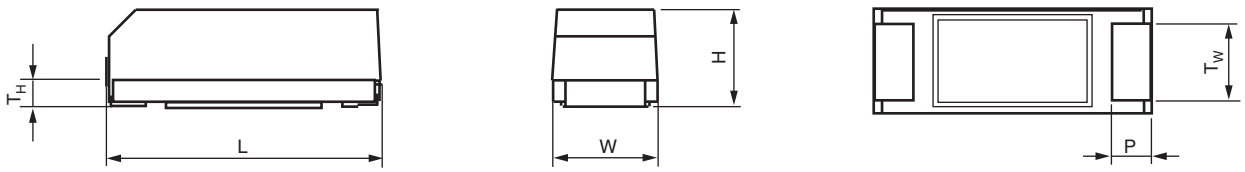
Note

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

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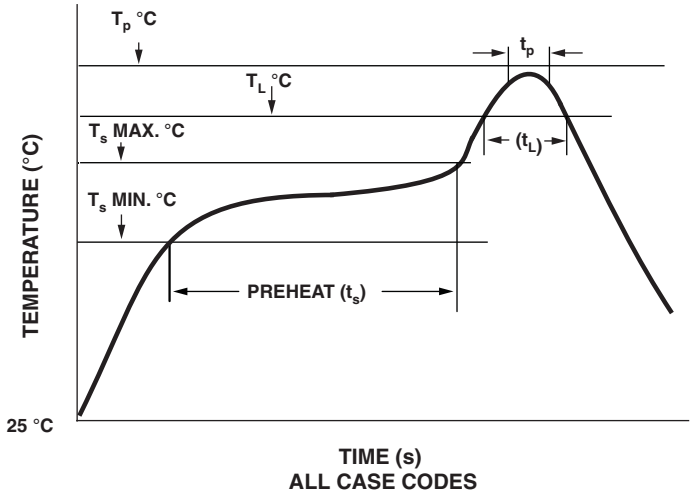
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DIMENSIONS in inches [millimeters]



CASE CODE	L (MAX.)	W	H	P (MIN.)	T_W	T_H (MIN.)
C	0.835 [21.2]	0.315 ± 0.012 [8 ± 0.3]	0.295 ± 0.012 [7.5 ± 0.3]	0.118 [3.0]	0.236 ± 0.012 [6.0 ± 0.3]	0.075 [1.9]

RECOMMENDED REFLOW PROFILES



T_p Lead (Pb)-free	T_p Sn/Pb	t_p	T_L Lead (Pb)-free	T_L Sn/Pb	T_s MIN. Lead (Pb)-free	T_s MIN. Sn/Pb	T_s MAX. Lead (Pb)-free	T_s MAX. Sn/Pb	t_s Lead (Pb)-free	t_s Sn/Pb	t_L
245 °C	220 °C	10	217 °C	183 °C	150 °C	100 °C	200 °C	150 °C	60 to 150	60 to 90	60

MOUNTING

Due to the size and weight of these capacitors, we recommend that a supplemental mounting restraint to be used in printed circuit board attachment in addition to the reflowed solder.

One recommendation is to use an adhesive such as defined in the J-STD-001DS.

This is the Space Application Electronic Hardware Addendum to J-STD-001 (Requirements for Solder Electrical and Electronic Assemblies).

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STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. ESR AT + 25 °C 120 Hz (Ω)	MAX. IMP. AT - 55 °C 120 Hz (Ω)	MAX. DCL (µA) AT		MAX. CAPACITANCE CHANGE (%) AT			MAX. RIPPLE 40 kHz RMS (mA)
					+ 25 °C	+ 85 °C + 125 °C	- 55 °C	+ 85 °C	+ 125 °C	
6 V_{DC} AT + 85 °C; 4 V_{DC} AT + 125 °C										
470	C	M34C477(1)006(2)ZSS	0.9	12	1.0	3.0	- 75	+ 10	+ 20	1500
10 V_{DC} AT + 85 °C; 7 V_{DC} AT + 125 °C										
330	C	M34C337(1)010(2)ZSS	1.0	15	1.0	3.0	- 70	+ 8	+ 20	1400
15 V_{DC} AT + 85 °C; 10 V_{DC} AT + 125 °C										
150	C	M34C157(1)015(2)ZSS	1.1	25	1.0	3.0	- 45	+ 8	+ 20	1400
25 V_{DC} AT + 85 °C; 15 V_{DC} AT + 125 °C										
120	C	M34C127(1)025(2)ZSS	1.3	25	1.0	5.0	- 42	+ 8	+ 12	1250
30 V_{DC} AT + 85 °C; 20 V_{DC} AT + 125 °C										
100	C	M34C107(1)030(2)ZSS	1.3	25	1.0	5.0	- 38	+ 8	+ 12	1200
50 V_{DC} AT + 85 °C; 30 V_{DC} AT + 125 °C										
68	C	M34C686(1)050(2)ZSS	1.5	35	1.0	5.0	- 25	+ 8	+ 15	1050
60 V_{DC} AT + 85 °C; 40 V_{DC} AT + 125 °C										
47	C	M34C476(1)060(2)ZSS	2.0	44	1.0	5.0	- 25	+ 8	+ 12	1050
75 V_{DC} AT + 85 °C; 50 V_{DC} AT + 125 °C										
33	C	M34C336(1)075(2)ZSS	2.5	66	1.0	5.0	- 25	+ 5	+ 9	1050
100 V_{DC} AT + 85 °C; 65 V_{DC} AT + 125 °C										
15	C	M34C156(1)100(2)ZSS	3.5	125	1.0	5.0	- 18	+ 3	+ 10	1050
125 V_{DC} AT + 85 °C; 85 V_{DC} AT + 125 °C										
10	C	M34C106(1)125(2)ZSS	5.5	175	1.0	5.0	- 15	+ 3	+ 10	1050

Note

- Part number definitions:
  (1) Capacitance tolerance: K, M
  (2) Termination/packaging: A = 100 % tin (RoHS compliant), bulk; B = Std, tin/lead, bulk
  Reliability level: Z = Non-ER
  Temperature: S = STD
  ESR: S = STD

PERFORMANCE CHARACTERISTICS OF M34 CAPACITORS

ELECTRICAL CHARACTERISTICS

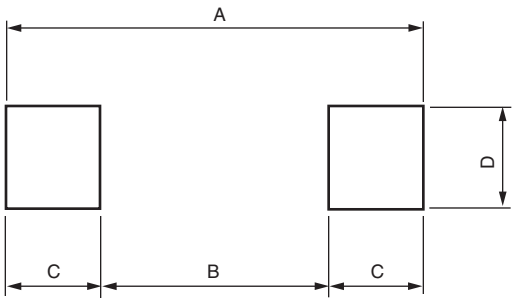
ITEM	PERFORMANCE CHARACTERISTICS
Operating temperature range	- 55 °C to + 125 °C
Capacitor tolerance	± 20 %, ± 10 %, at 120 Hz
Capacitance change (maximum)	Limits per standard ratings table
ESR	Limits per standard ratings table
AC ripple current	Limits per standard ratings table
DCL (maximum leakage current)	Limits per standard ratings table
Impedance (maximum)	Limits per standard ratings table
Reverse voltage	Reverse voltage shall be in accordance with DSCC drawing 93026. There shall be no continuous reverse voltage. Transient reverse voltage surges are acceptable under the following conditions: a) 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 A or less. b) The repetition rate of the reverse voltage surges is less than 10 Hz.
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 should be subjected under any conditions. This includes transcients and ripple at the highest line voltage. The surge voltage is 115 % of rated DC working voltage.
Life test	The capacitors shall be capable of withstanding a 2000 h life test at 85 °C at rated voltage

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ENVIRONMENTAL CHARACTERISTICS		
ITEM	**CONDITION**	**COMMENTS**
Hermeticity	MIL-PRF-39006	There shall be no evidence of leakage after testing to MIL-PRF-39006 specifications.
Moisture resistance	MIL-PRF-39006	Tested in accordance to MIL-PRF-39006 for 30 cycles.
Altitude	MIL-STD-202G, method 105 D	100 000 feet test

MECHANICAL CHARACTERISTICS		
ITEM	**CONDITION**	**COMMENTS**
Thermal shock	MIL-STD-202G, method 107 A	Per M39006 and DSCC93026, 30 cycles
Shock	MIL-STD-202G, method 213 I	Per M39006 and DSCC93026, 100 *g*
Vibration (high frequency)	MIL-STD-202G, method 204 D	Per M39006 and DSCC93026, 20 *g*
Resistance to solder heat	MIL-STD-202G, method 210 F	Terminals at 260 °C for 10 s. The capacitor must not be visibly damaged and the electrical characteristics must not be affected.
Solderability	ANSI J-STD-002	The terminations must be solderable per the MIL standard.
Terminals	MIL-STD-1276	All terminals shall be permanently secured internally and externally, as applicable. All external joints shall be welded.
Part markings	MIL-STD-1285	The part marking shall include Vishay name, trademark, capacitance, voltage, date code and lot symbol.
Weight (typical) in g	3.5	

PAD DIMENSIONS in millimeters



CASE CODE	A (MIN.)	B (NOM.)	C (NOM.)	D (NOM.)
C	22.7	14.7	4.0	6.4

STANDARD PACKAGING QUANTITY		
SERIES	**CASE CODE**	**BULK/TUBE**
M34	C	10 pcs

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