Wet Tantalum Capacitor, Assembly or Array, All-Tantalum Case, -55 °C to +125 °C Operation



FEATURES

- High volumetric efficiency
- Withstands high ripple current
- Long life reliability
- Reverse voltage capability
- Stackable
- No silver migration problems
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

PERFORMANCE CHARACTERISTICS

Operating Temperature: -55 °C to +125 °C

Voltage Range: 6 V_{DC} to 375 V_{DC}

Capacitance Range: 27 µF to 6000 µF

SPECIFICATIONS

Environmental Classification: -

Vibration: -

Bump: -

Shock: -

Acceleration: -

Low Air Pressure: -

INTRODUCTION

By use of the latest techniques for manufacturing, Vishay is able to offer a new range of modules giving a size and weight advantage over the well proven MC range while still retaining a very high CV rating.

The MT2 series is an epoxy resin encapsulation of hermetically sealed units to give a robust construction of long life and high reliability under military and avionic environments.

In common with all Vishay styles of tantalum case wet capacitors they are capable of handling high levels of ripple current.

The modules incorporate connected Vishay ST all tantalum style capacitors which are already fully tested to the highest standards.

Mounting is by bolting through two 3 mm clearance holes, and the units are stackable.
Metal heatsinks between the modules are recommended if the units are stacked.

APPLICATIONS

The MT2 is ideal for use in military and professional applications, including power supply “smoothing”, filter networks, and timer functions.

WEIGHT

The approximate weight of a module is 40 g.

REVERSE VOLTAGE CAPABILITY

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 surge voltage capability is 115 % of the voltage rating at the relevant temperature.

TEMPERATURE RANGE

The capacitor is designed for operation between -55 °C and +125 °C, with linear voltage derating above +85 °C to 66 % of the rated voltage at +125 °C.

CAPACITANCE TOLERANCE

The standard capacitance tolerance is ± 20 % although special tolerances are available by arrangement.

For technical questions, contact: tantalum@vishay.com

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APPLICATION INFORMATION

Capacitors may be operated at less than the rated voltage, resulting in significantly reduced leakage current values.

In timing circuits, or other applications where the device is subjected only to a DC voltage, the ballistic or DC capacitance will be somewhat larger than measured at 50 Hz.

The parametric information must necessarily be brief, although additional comprehensive data is available on request, and the tests tailored to customers' requirements can be made.

RELIABILITY

The MT2 range incorporates ST style capacitors which are structurally similar to and subjected to the same processes as our DLA 93026 capacitors. MTBF and FIT for the MT2 may be calculated using the Reliability Calculator on the Vishay Tantalum website. Use the MT2 series and rating, along with the appropriate application information. The construction of the MT2 module gives an ability to handle the high ripple currents at high frequencies, and extremes of temperature likely to be encountered in modern circuitry.

All capacitors are subjected to burn-in. This is to remove infant mortalities and ensure reliability. The capacitor lifetime is enhanced when the unit is subjected to a reduced ripple current, a low ambient temperature, and is externally cooled. The use of a heat sink is recommended.

STACKING

The units are suitable for stacking by use of through bolts. It is strongly recommended that a metal heat sink is used between each unit in order to eliminate the possibility of hot spots.

ALTERNATIVE CONSTRUCTION

Alternative constructions based on the module range with differing terminal configurations and capacitor combinations including series connected units are available.

ORDERING PROCEDURE

Example: MT2B (300 µF, 100 V_{DC})

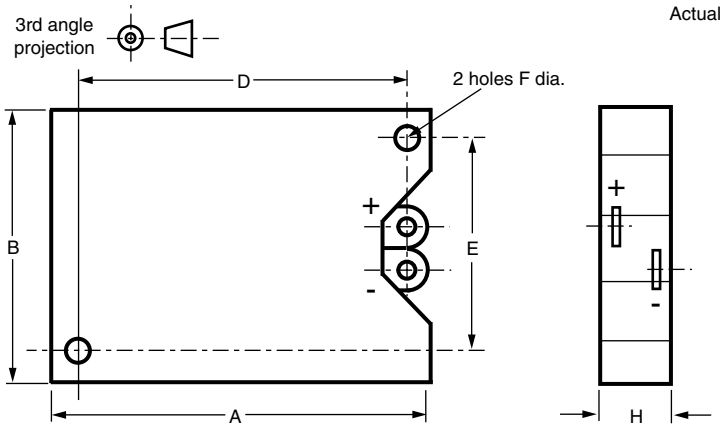
Vishay Part Number: MT2B307M100S

ORDERING INFORMATION

MT2	B	307	M	100	S
MODEL	CASE CODE	CAPACITANCE	TOLERANCE	VOLTAGE	TERMINATION AND PACKAGING
	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.	M = 20 % (std.) K = 10 % (special order)	This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 V).	S = Standard (Ag/Cu, center, 2 terminals)

DIMENSIONS in inches [millimeters]

MT2 styles



CASE CODE		A	B	H	D	E	F
B	Max.	1.669 [42.4]	1.236 [31.4]	0.445 [11.3]	1.386 [35.2]	0.953 [24.2]	0.131 [3.32]
	Min.	1.638 [41.6]	1.205 [30.6]		1.370 [34.8]	0.937 [23.8]	0.126 [3.20]

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STANDARD RATINGS

VISHAY PART NUMBERS	CASE CODE	CAPACITANCE AT 100 Hz (µF)	DISSIPATION FACTOR AT 100 Hz (%)		IMPEDANCE AT 100 kHz (Ω)	MAX. DCL (µA)		ΔC AT 100 Hz (%)		
			20 °C	125 °C	-55 °C	20 °C	85 °C/125 °C	-55 °C	85 °C	125 °C
6 V_{DC} AT 85 °C; 4 V_{DC} AT 125 °C										
MT2B608M006S	B	6000	170	170	22	18	54	-90	25	25
6.3 V_{DC} AT 85 °C; 4 V_{DC} AT 125 °C										
MT2B568M6R3S	B	5600	170	170	22	18	54	-90	25	25
8 V_{DC} AT 85 °C; 5 V_{DC} AT 125 °C										
MT2B508M008S	B	5000	138	138	24	21	75	-88	25	25
10 V_{DC} AT 85 °C; 7 V_{DC} AT 125 °C										
MT2B398M010S	B	3900	114	114	23	21	75	-88	25	25
MT2B418M010S	B	4100	114	114	23	21	75	-88	25	25
MT2B478M010S	B	4700	114	114	23	21	75	-88	25	25
MT2B518M010S	B	5100	138	138	24	21	75	-88	25	25
15 V_{DC} AT 85 °C; 10 V_{DC} AT 125 °C										
MT2B348M015S	B	3400	103	103	25	24	96	-84	25	25
16 V_{DC} AT 85 °C; 10 V_{DC} AT 125 °C										
MT2B338M016S	B	3300	103	103	25	24	96	-84	25	25
20 V_{DC} AT 85 °C; 13 V_{DC} AT 125 °C										
MT2B248M020S	B	2350	60	60	24	24	96	-80	25	25
MT2B278M020S	B	2700	95	95	26	24	96	-80	25	25
MT2B268M020S	B	2600	95	95	26	24	96	-80	25	25
25 V_{DC} AT 85 °C; 16 V_{DC} AT 125 °C										
MT2B158M025S	B	1500	60	60	24	24	96	-80	25	25
MT2B168M025S	B	1600	60	60	24	24	96	-80	25	25
MT2B208M025S	B	1950	60	60	24	24	96	-80	25	25
MT2B228M025S	B	2200	60	60	24	24	96	-80	25	25
MT2B248M025S	B	2400	95	95	26	24	96	-80	25	25
30 V_{DC} AT 85 °C; 20 V_{DC} AT 125 °C										
MT2B148M030S	B	1350	45	45	30	27	108	-80	25	25
MT2B178M030S	B	1650	40	40	30	27	108	-80	25	25
40 V_{DC} AT 85 °C; 25 V_{DC} AT 125 °C										
MT2B128M040S	B	1200	43	43	30	24	96	-75	25	25
MT2B138M040S	B	1300	45	45	30	27	108	-80	25	25
50 V_{DC} AT 85 °C; 30 V_{DC} AT 125 °C										
MT2B907M050S	B	900	40	40	33	27	108	-70	25	25
MT2B118M050S	B	1100	40	40	30	27	108	-70	25	25
63 V_{DC} AT 85 °C; 40 V_{DC} AT 125 °C										
MT2B757M063S	B	750	40	40	33	27	108	-70	24	25
MT2B827M063S	B	820	40	40	33	27	108	-70	24	25
MT2B108M063S	B	1000	32	32	31	30	120	-72	25	25

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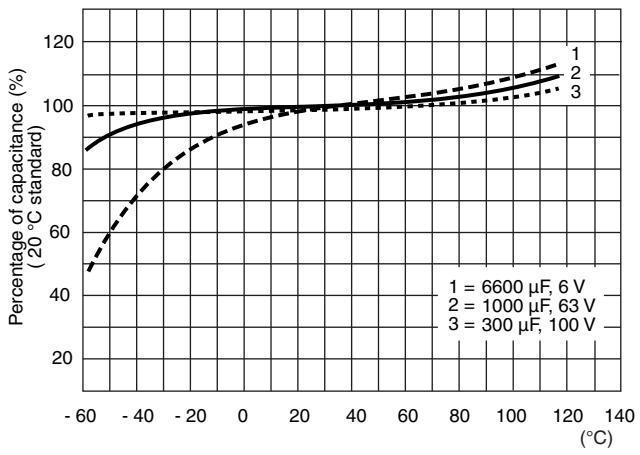
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STANDARD RATINGS

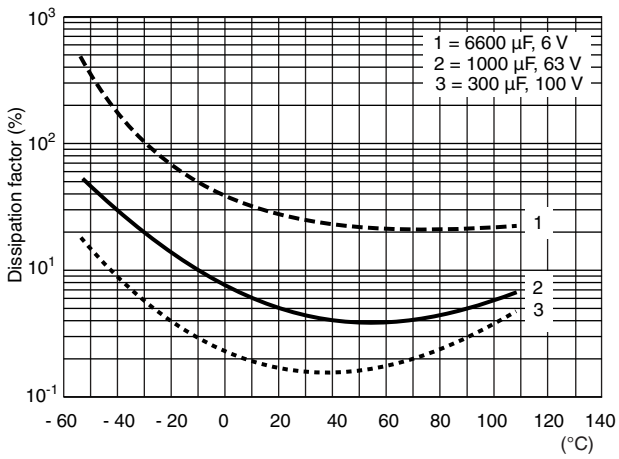
VISHAY PART NUMBERS	CASE CODE	CAPACITANCE AT 100 Hz (µF)	DISSIPATION FACTOR AT 100 Hz (%)		IMPEDANCE AT 100 kHz (Ω)	MAX. DCL (µA)		ΔC AT 100 Hz (%)		
			20 °C	125 °C	-55 °C	20 °C	85 °C/125 °C	-55 °C	85 °C	125 °C
75 V_{DC} AT 85 °C; 50 V_{DC} AT 125 °C										
MT2B337M075S	B	330	11	13	29	9	72	-35	20	20
MT2B347M075S	B	340	11	13	29	9	72	-35	20	20
MT2B397M075S	B	390	12	13	28	9	72	-36	20	20
MT2B417M075S	B	410	17	18	30	27	108	-48	21	22
MT2B477M075S	B	470	17	18	30	27	108	-48	21	22
MT2B507M075S	B	500	17	18	30	27	108	-48	21	22
MT2B587M075S	B	580	37	37	32	30	120	-60	22	22
MT2B607M075S	B	600	37	37	32	30	120	-60	22	22
MT2B687M075S	B	680	37	37	32	30	120	-60	22	22
MT2B757M075S	B	750	40	40	33	30	120	-68	24	25
100 V_{DC} AT 85 °C; 65 V_{DC} AT 125 °C										
MT2B277M100S	B	270	10	12	30	9	72	-24	20	20
MT2B287M100S	B	280	11	13	36	9	72	-35	20	20
MT2B307M100S	B	300	11	13	36	9	72	-35	20	20
125 V_{DC} AT 85 °C; 85 V_{DC} AT 125 °C										
MT2B227M125S	B	220	8	11	42	9	72	-24	15	15
MT2B247M125S	B	235	10	12	39	9	72	-24	18	18
150 V_{DC} AT 85 °C; 100 V_{DC} AT 125 °C										
MT2B157M150S	B	150	20	50	23	3	25	-45	12	30
180 V_{DC} AT 85 °C; 120 V_{DC} AT 125 °C										
MT2B127M180S	B	120	17	43	27	3	25	-33	9	20
225 V_{DC} AT 85 °C; 150 V_{DC} AT 125 °C										
MT2B826M225S	B	82	15	38	36	5	30	-30	6	15
300 V_{DC} AT 85 °C; 200 V_{DC} AT 125 °C										
MT2B406M300S	B	40	10	25	62	3	25	-30	4	12
375 V_{DC} AT 85 °C; 250 V_{DC} AT 125 °C										
MT2B276M375S	B	27	10	25	75	5	25	-22	4	15

PERFORMANCE CURVES

Capacitance/temperature at 100 Hz



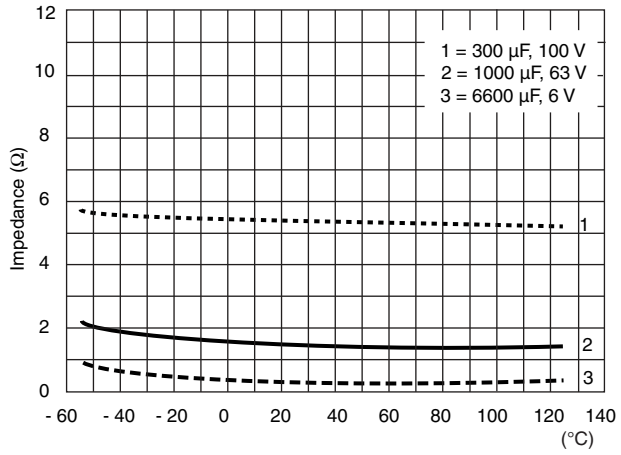
Dissipation factor/temperature at 100 Hz



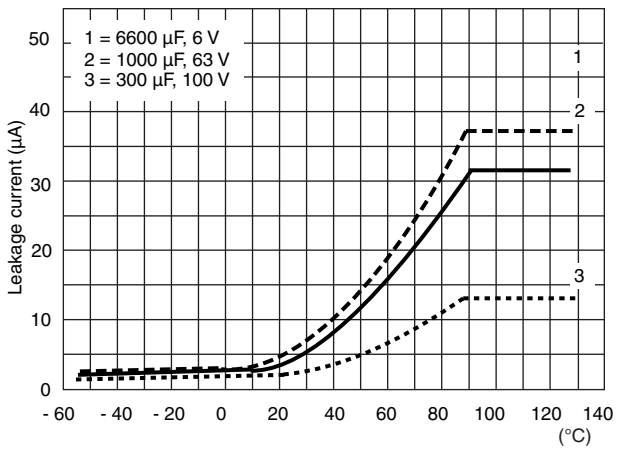
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PERFORMANCE CURVES

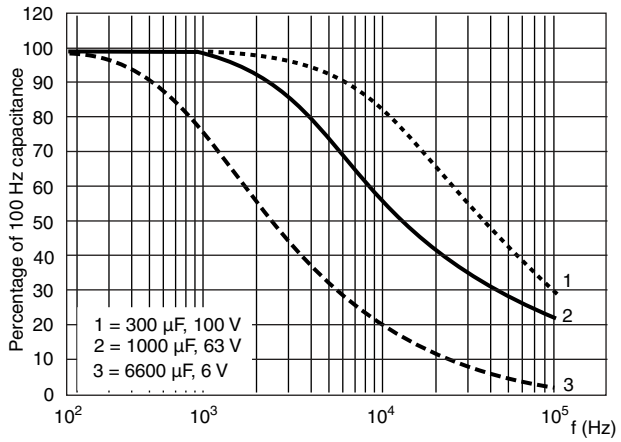
Impedance/temperature at 100 Hz



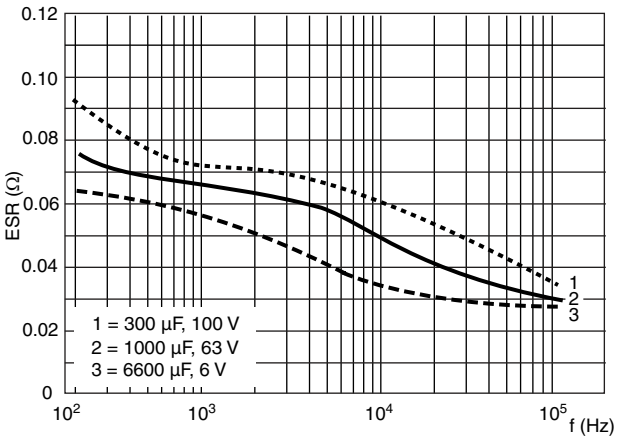
Leakage current/temperature at maximum permitted voltage



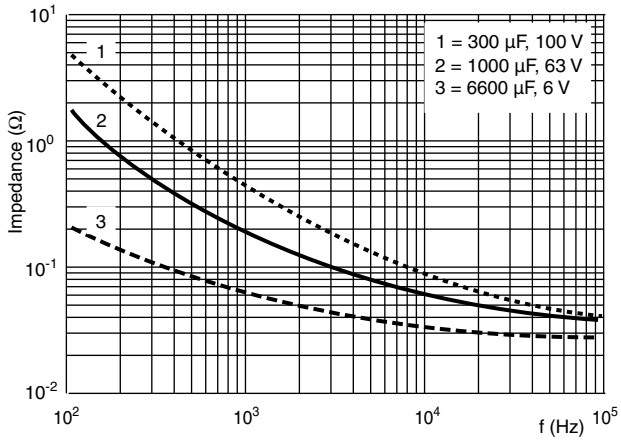
Capacitance/frequency at 20 °C



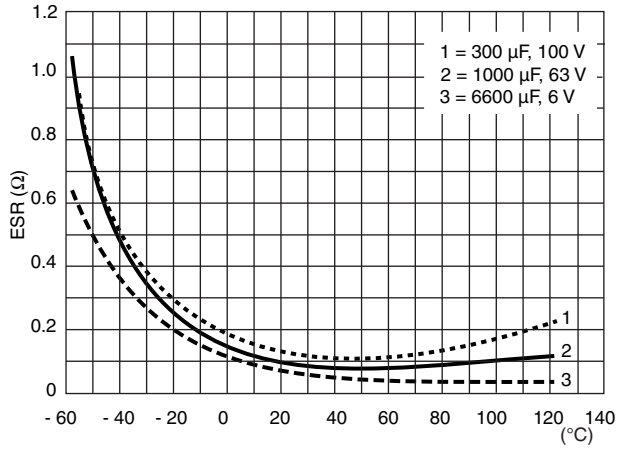
ESR/frequency at 20 °C



Impedance/frequency at 20 °C



ESR/frequency at 20 °C



Note

- All performance curves are provided from historic Arcotronics module series TM datasheet information

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CROSS REFERENCE	
VISHAY PART NUMBER	**ARCOTRONICS PART NUMBER**
MT2B276M375S	402/1/80123/005
MT2B336M300S (1)	402/1/80123/004
MT2B686M220S (1)	402/1/80123/003
MT2B107M180S (1)	402/1/80123/002
MT2B157M150S	402/1/80123/001
MT2B227M125S	402/1/80115/011
MT2B247M125S	402/1/80115/012
MT2B277M100S	402/1/80114/013
MT2B287M100S	402/1/80114/014
MT2B307M100S	402/1/80114/015
MT2B337M075S	402/1/80113/016
MT2B347M075S	402/1/80113/017
MT2B397M075S	402/1/80113/018
MT2B417M075S	402/1/80113/019
MT2B477M075S	402/1/80113/020
MT2B507M075S	402/1/80113/021
MT2B587M075S	402/1/80113/022
MT2B607M075S	402/1/80113/023
MT2B687M075S	402/1/80113/024
MT2B757M075S	402/1/80113/025
MT2B757M063S	402/1/80112/025
MT2B827M063S	402/1/80112/026
MT2B907M050S	402/1/80111/027
MT2B108M063S	402/1/80112/028
MT2B118M050S	402/1/80111/029
MT2B128M040S	402/1/80110/030
MT2B138M040S	402/1/80110/031
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MT2B158M025S	402/1/80108/033
MT2B178M030S	402/1/80109/034
MT2B168M025S	402/1/80108/035
MT2B208M025S	402/1/80108/036
MT2B228M025S	402/1/80108/037
MT2B248M020S	402/1/80107/038
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MT2B508M008S	402/1/80103/047
MT2B518M010S	402/1/80104/048
MT2B568M6R3S	402/1/80102/049
MT2B608M006S	402/1/80101/050

Note

(1) Contact Vishay for availability.

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