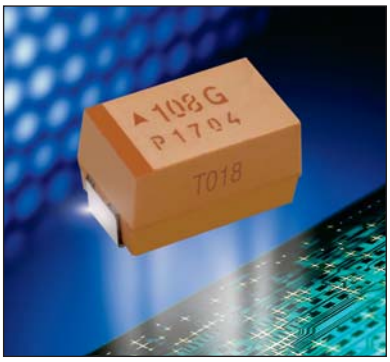
TBM Multianode

Tantalum Ultra Low ESR COTS-Plus Weibull Grade & Space Level



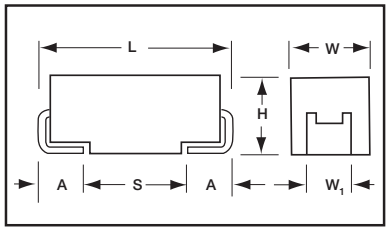
TBM COTS-Plus series uses an internal multi-anode design to achieve ultra-low ESR which improves performance in high ripple power applications.

TBM is available with Weibull Grade "B" reliability and all MIL-PRF-55365 surge test options ("A", "B" & "C").

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these correspond to "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365).

The molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of NASA SP-R-0022A.

This product is considered MSL 3 in accordance with J-STD-020.



CASE DIMENSIONS: millimeters (inches)

Code	L±0.20 (0.008)	W+0.20 (0.008) –0.10 (0.004)	H+0.20 (0.008) –0.10 (0.004)	W_1±0.20 (0.008)	A+0.30 (0.012) –0.20 (0.008)	S Min.
D	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
W_1 dimension applies to the termination width for A dimensional area only.						

CAPACITANCE AND RATED VOLTAGE RANGE
LETTER DENOTES CASE SIZE ESR LIMIT IN BRACKETS

Capacitance		Rated Voltage DC (V_R) to 85°C								
µF	Code	2.5V (e)	4V (G)	6V (J)	10V (A)	12V (B)	16V (C)	20V (D)	25V (E)	35V (V)
10	106									
15	156									
22	226									D(70) E(60,100)
33	336								D(65)	E(50,65)
47	476								E(65)	
68	686									
100	107							E(35,45)		
150	157						E(30,40)			
220	227				D(35)	E*				
330	337		D(35)	D(35)	E(35)	E*				
470	477		D(35)	E(30)						
680	687		E(23)							
1000	108	D(25)	E(23)							
1500	158	E(18)								

Available Ratings: ESR limits quoted in brackets (Ohms)

Engineering samples - please contact manufacturer

*Codes under development - subject to change.

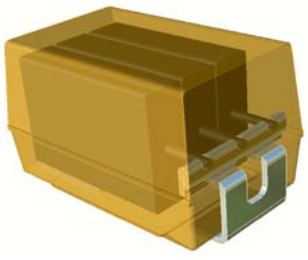
Notes: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.

EIA standards for Low ESR solid tantalum capacitors allow an ESR movement of 1.25 times initial limit post mounting.

TBM D MULTIANODE CONSTRUCTION



TBM E MULTIANODE CONSTRUCTION



TBM Multianode

Tantalum Ultra Low ESR COTS-Plus Weibull Grade & Space Level

HOW TO ORDER

COTS-PLUS:

TBM	E	477	*	006	L	□	#	@	0	^	++
Type	**Case Size**	**Capacitance Code** pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	**Capacitance Tolerance** M = ±20% K = ±10%	**Voltage Code** 002 = 2.5Vdc 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	**Standard or Low ESR Range** C = Std ESR L = Low ESR	**Packaging** B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 6 for additional packaging options.	**Inspection Level** S = Std. Conformance L = Group A D = DSCC DWG (Pending)	**Reliability Grade** Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. Z = Non-ER	**Qualification Level** 0 = N/A 9 = SRC9000	**Termination Finish** H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	**Surge Test Option** 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

Not RoHS Compliant

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT
RoHS COMPLIANT

For RoHS compliant products, please select correct termination style.

SPACE LEVEL OPTIONS TO SRC9000*:

TBM	E	477	*	006	L	□	L	@	9	^	++
Type	**Case Size**	**Capacitance Code** pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	**Capacitance Tolerance** M = ±20% K = ±10%	**Voltage Code** 002 = 2.5Vdc 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	**Standard or Low ESR Range** C = Std ESR L = Low ESR	**Packaging** B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 6 for additional packaging options.	**Inspection Level** L = Group A	**Reliability Grade** Weibull: C = 0.01%/1000 hrs. 90% conf.	**Qualification Level** 9 = SRC9000	**Termination Finish** H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	**Surge Test Option** 45 = 10 cycles, -55°C & +85°C before Weibull

Not RoHS Compliant

***Check with factory for availability**

TECHNICAL SPECIFICATIONS

Technical Data:		Unless otherwise specified, all technical data relate to an ambient temperature of +25°C								
Capacitance Range:		22 µF to 1500 µF								
Capacitance Tolerance:		±10%; ±20%								
Rated Voltage DC (V_R)	⩽+85°C:	2.5	4	6	10	16	20	25	35	
Category Voltage (V_C)	⩽+125°C:	1.7	2.7	4	7	10	13	17	23	
Surge Voltage (V_S)	⩽+85°C:	3.3	5.2	8	13	20	26	32	46	
	⩽+125°C:	2.2	3.4	5	8	12	16	20	28	
Temperature Range:		-55°C to +125°C								

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RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating										Typical Ripple Data by Rating						
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF max			Power Dissipation	25ºC Ripple	85ºC Ripple	125ºC Ripple	25ºC Ripple	85ºC Ripple	125ºC Ripple
AVX P/N	Case	µF @ 25ºC	V @ +85ºC	mOhms @ +25ºC	+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)	W	A (100kHz)	A (100kHz)	A (100kHz)	V (100kHz)	V (100kHz)	V (100kHz)
2.5 Volt @ 85ºC (1.7 Volt @ 125ºC)																		
TBMD108*002L□SB0^++	D	1000	2.5	25	18.8	188	376	8	11	12	0.255	3.194	2.874	1.277	0.080	0.072	0.032
TBME158*002L□SB0^++	E	1500	2.5	18	28.1	281	562	6	9	10	0.270	3.873	3.486	1.549	0.070	0.063	0.028
4 Volt @ 85ºC (2.7 Volt @ 125ºC)																		
TBMD337*004L□SB0^++	D	330	4	35	9.9	99	198	8	11	12	0.255	2.699	2.429	1.080	0.094	0.085	0.038
TBMD477*004L□SB0^++	D	470	4	35	14.1	141	282	8	11	12	0.255	2.699	2.429	1.080	0.094	0.085	0.038
TBME687*004L□SB0^++	E	680	4	23	20.4	204	408	6	9	10	0.270	3.426	3.084	1.370	0.079	0.071	0.032
TBME108*004L□SB0^++	E	1000	4	23	30	300	600	6	9	10	0.270	3.426	3.084	1.370	0.079	0.071	0.032
6 Volt @ 85ºC (4 Volt @ 125ºC)																		
TBMD337*006L□SB0^++	D	330	6	35	14.9	149	298	8	11	12	0.255	2.699	2.429	1.080	0.094	0.085	0.038
TBME477*006L□SB0^++	E	470	6	30	21.2	212	424	6	9	10	0.270	3.000	2.700	1.200	0.090	0.081	0.036
10 Volt @ 85ºC (7 Volt @ 125ºC)																		
TBMD227*010L□SB0^++	D	220	10	35	16.5	165	330	8	11	12	0.255	2.699	2.429	1.080	0.094	0.085	0.038
TBME337*010L□SB0^++	E	330	10	35	24.8	248	496	6	9	10	0.270	2.777	2.500	1.111	0.097	0.087	0.039
16 Volt @ 85ºC (10 Volt @ 125ºC)																		
TBME157*016L□SB0^++	E	150	16	30	18	180	360	6	9	10	0.270	3.000	2.700	1.200	0.090	0.081	0.036
TBME157*016C□SB0^++	E	150	16	40	18	180	360	6	9	10	0.270	2.598	2.338	1.039	0.104	0.094	0.042
20 Volt @ 85ºC (13 Volt @ 125ºC)																		
TBME107*020L□SB0^++	E	100	20	35	15	150	300	6	9	10	0.270	2.777	2.500	1.111	0.097	0.087	0.039
TBME107*020C□SB0^++	E	100	20	45	15	150	300	6	9	10	0.270	2.449	2.205	0.980	0.110	0.099	0.044
25 Volt @ 85ºC (17 Volt @ 125ºC)																		
TBMD336*025L□SB0^++	D	33	25	65	6.2	62	124	8	11	12	0.255	1.981	1.783	0.792	0.129	0.116	0.051
TBME476*025L□SB0^++	E	47	25	65	8.8	88	176	6	9	10	0.270	2.038	1.834	0.815	0.132	0.119	0.053
35 Volt @ 85ºC (23 Volt @ 125ºC)																		
TBMD226*035L□SB0^++	D	22	35	70	5.8	58	116	8	11	12	0.255	1.909	1.718	0.763	0.134	0.120	0.053
TBME226*035L□SB0^++	E	22	35	60	5.8	58	116	6	9	10	0.270	2.121	1.909	0.849	0.127	0.115	0.051
TBME226*035C□SB0^++	E	22	35	100	5.8	58	116	6	9	10	0.270	1.643	1.479	0.657	0.164	0.148	0.066
TBME336*035L□SB0^++	E	33	35	50	8.7	87	174	6	9	10	0.270	2.324	2.091	0.930	0.116	0.105	0.046
TBME336*035C□SB0^++	E	33	35	65	8.7	87	174	6	9	10	0.270	2.038	1.834	0.815	0.132	0.119	0.053

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.