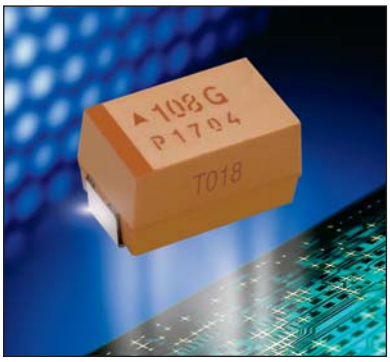
TBM Multianode

Tantalum Ultra Low ESR COTS-Plus



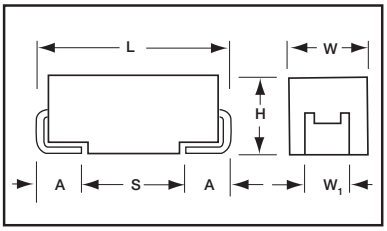
TBM COTS-Plus series uses an internal multi-anode design to achieve ultra-low ESR which improves performance in high ripple power applications.

TBM is available with Weibull Grade "B" reliability and all MIL-PRF-55365 Rev. G 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)
V	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.120)	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)
15	156									
22	226									D(70) E(60,100)
33	336								D(65)	E(50,65)
47	476								E(65)	E(55)
68	686								E(45)	
100	107							E(35,45)		
150	157						E(30,40)			
220	227				D(35)	E*	E(25)			
330	337		D(35)	D(35)	E(23,35)	E*				
470	477		D(35)	E(18,30)	E(23)					
680	687		E(18,23)	E(18), V(23)						
1000	108	D(25)	E(18,23) V(18)							
1500	158	E(12,18)	E(15)							
2000	208									

Available Ratings: ESR limits quoted in brackets (Ohms)

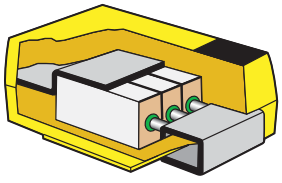
Engineering samples - please contact manufacturer

*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 Multianode

Tantalum Ultra Low ESR COTS-Plus

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	**Reliability Grade** Weibull: B = 0.1%/1000 hrs. 90% conf. Z = Non-ER	**Qualification Level** 0 = N/A	**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, +25ºC 24 = 10 Cycles, -55ºC & +85ºC 45 = 10 cycles, -55ºC & +85ºC before Weibull

Not RoHS Compliant

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

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		
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF max			Power Dissipation	25ºC Ripple Current	85ºC Ripple Current	1 R Cu
					+25°C	+85°C	+125°C	+25°C	+85/125°C	-55°C				
AVX P/N	Case	µF @ 25ºC	V @ +85ºC	mOhms @ +25ºC	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	A (100kHz)	(10
2.5 Volt @ 85°C (1.7 Volt @ 125°C)														
TBMD108*002L▫SB0^++	D	1000	2.5	25	18.8	188	376	8	11	12	0.255	3.194	2.874	1
TBME158*002C▫SB0^++	E	1500	2.5	18	28.1	281	562	6	9	10	0.270	3.873	3.486	1
TBME158*002L▫SB0^++	E	1500	2.5	12	38	380	760	6	9	10	0.270	4.743	4.269	1
4 Volt @ 85°C (2.7 Volt @ 125°C)														
TBMD337*004L▫SB0^++	D	330	4	35	9.9	99	198	8	11	12	0.255	2.699	2.429	1
TBMD477*004L▫SB0^++	D	470	4	35	14.1	141	282	8	11	12	0.255	2.699	2.429	1
TBME687*004C▫SB0^++	E	680	4	23	20.4	204	408	6	9	10	0.270	3.426	3.084	1
TBME687*004L▫SB0^++	E	680	4	18	27	270	540	6	9	10	0.270	3.873	3.486	1
TBME108*004C▫SB0^++	E	1000	4	23	30	300	600	6	9	10	0.270	3.426	3.084	1
TBME108*004L▫SB0^++	E	1000	4	18	40	400	800	6	9	10	0.270	3.873	3.486	1
TBMV687*004L▫SB0^++	V	1000	4	18	40	400	800	6	9	10	0.285	3.979	3.581	1
TBME158*004L▫SB0^++	E	1500	4	15	40	400	800	6	9	10	0.270	4.243	3.818	1
6 Volt @ 85°C (4 Volt @ 125°C)														
TBMD337*006L▫SB0^++	D	330	6	35	14.9	149	298	8	11	12	0.255	2.699	2.429	1
TBME477*006C▫SB0^++	E	470	6	30	21.2	212	424	6	9	10	0.270	3.000	2.700	1
TBME477*006L▫SB0^++	E	470	6	18	28	280	560	6	9	10	0.270	3.873	3.486	1
TBME687*006L▫SB0^++	E	680	6	18	41	410	820	6	9	10	0.270	3.873	3.486	1
TBMV687*006L▫SB0^++	V	680	6	23	41	410	820	6	9	10	0.285	3.520	3.168	1
10 Volt @ 85°C (7 Volt @ 125°C)														
TBMD227*010L▫SB0^++	D	220	10	35	16.5	165	330	8	11	12	0.255	2.699	2.429	1
TBME337*010C▫SB0^++	E	330	10	35	24.8	248	496	6	9	10	0.270	2.777	2.500	1
TBME337*010L▫SB0^++	E	330	10	23	33	330	660	6	9	10	0.270	3.426	3.084	1
TBME477*010L▫SB0^++	E	470	10	23	47	470	940	6	9	10	0.270	3.426	3.084	1
16 Volt @ 85°C (10 Volt @ 125°C)														
TBME157*016C▫SB0^++	E	150	16	40	18	180	360	6	9	10	0.270	2.598	2.338	1
TBME157*016L▫SB0^++	E	150	16	30	18	180	360	6	9	10	0.270	3.000	2.700	1
TBME227*016L▫SB0^++	E	220	16	25	35	350	700	6	9	10	0.270	3.286	2.958	1
20 Volt @ 85°C (13 Volt @ 125°C)														
TBME107*020C▫SB0^++	E	100	20	45	15	150	300	6	9	10	0.270	2.449	2.205	0
TBME107*020L▫SB0^++	E	100	20	35	15	150	300	6	9	10	0.270	2.777	2.500	1
25 Volt @ 85°C (17 Volt @ 125°C)														
TBMD336*025L▫SB0^++	D	33	25	65	6.2	62	124	8	11	12	0.255	1.981	1.783	0
TBME476*025L▫SB0^++	E	47	25	65	8.8	88	176	6	9	10	0.270	2.038	1.834	0
TBME686*025L▫SB0^++	E	68	25	45	17	170	340	6	9	10	0.270	2.449	2.205	0
35 Volt @ 85°C (23 Volt @ 125°C)														
TBMD226*035L▫SB0^++	D	22	35	70	5.8	58	116	8	11	12	0.255	1.909	1.718	0
TBME226*035C▫SB0^++	E	22	35	100	5.8	58	116	6	9	10	0.270	1.643	1.479	0
TBME226*035L▫SB0^++	E	22	35	60	5.8	58	116	6	9	10	0.270	2.121	1.909	0
TBME336*035C▫SB0^++	E	33	35	65	8.7	87	174	6	9	10	0.270	2.038	1.834	0
TBME336*035L▫SB0^++	E	33	35	50	8.7	87	174	6	9	10	0.270	2.324	2.091	0
TBME476*035L▫SB0^++	E	47	35	55	16	160	320	6	9	10	0.270	2.216	1.994	0

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 measu

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.