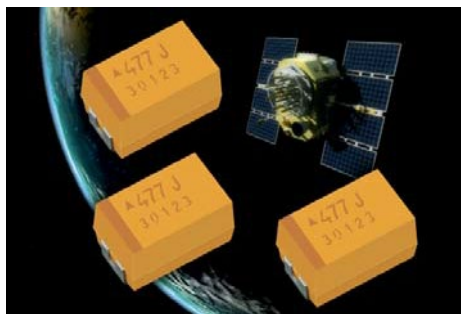


TBM MULTIANODE

Tantalum Ultra Low ESR COTS-Plus



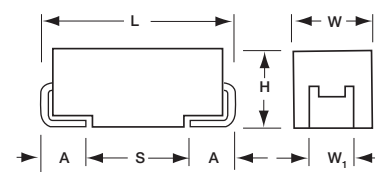
TBM COTS-Plus series uses an internal multi-anode design to achieve ultra-low ESR which improves performance in high ripple power applications.

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 ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.



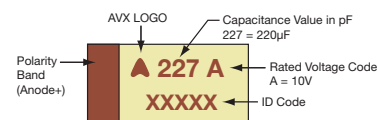
CASE DIMENSIONS: millimeters (inches)

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 (0.122)	1.30 (0.051)	4.40 (0.173)

W₁ dimension applies to the termination width for A dimensional area only.

MARKING

D, E, V CASE



CAPACITANCE AND RATED VOLTAGE RANGE

LETTER DENOTES CASE SIZE ESR LIMIT IN BRACKETS

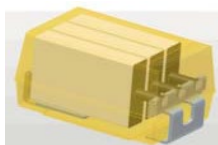
Capacitance		Rated Voltage DC (V _R) to 85°C								
µF	Code	2.5V (e)	4V (G)	6V (J)	10V (A)	12V (B)	16V (C)	20V (D)	25V (E)	35V (V)
22	226									D(70) E(60,100)
33	336								D(65)	E(50,65)
47	476								E(65)	E(55)
68	686								E(45)	
100	107							E(35,45)		
150	157						E(30,40)			
220	227				D(35)	E(35)	E(25)			
330	337		D(35)	D(35)	E(23,35)					
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 (mOhms)

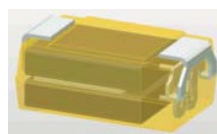
Notes: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.

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

MULTIANODE CONSTRUCTION



MULTIANODE TBM D LOW SELF INDUCTANCE CONSTRUCTION "MIRROR" DESIGN



HOW TO ORDER

COTS-PLUS:

TBM

E

477

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006

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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
012 = 12Vdc
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 8 for additional packaging options.

Inspection Level
S = Std. Conformance
L = Group A

Reliability Grade
Weibull:
C = 0.01%/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

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


LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT


RoHS
COMPLIANT

For RoHS compliant products, please select correct termination style.

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	12	16	20	25	35		
Category Voltage (V _C)	≤ +125°C:	1.7	2.7	4	7	8.4	10	13	17	23		
Surge Voltage (V _S)	≤ +85°C:	3.3	5.2	8	13	15.6	20	26	32	46		
Surge Voltage (V _S)	≤ +125°C:	2.2	3.4	5	8	9.6	12	16	20	28		
Temperature Range:	-55°C to +125°C											

TBM MULTIANODE

Tantalum Ultra Low ESR COTS-Plus



RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical RMS Ripple Data by Rating						
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF Max			Power Dissipation	25°C Ripple Current	85°C Ripple Current	125°C Ripple Current	25°C Ripple Voltage	85°C Ripple Voltage	125°C Ripple Voltage
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C							
AVX P/N	Case	µF @ 25°C	V @ +85°C	mOhms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	A (100kHz)	A (100kHz)	V (100kHz)	V (100kHz)	V (100kHz)
2.5 Volt @ 85°C (1.7 Volt @ 125°C)																	
TBMD108*002L□#@0^++	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*002C□#@0^++	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
TBME158*002L□#@0^++	E	1500	2.5	12	38	380	760	6	9	10	0.270	4.743	4.269	1.897	0.057	0.051	0.023
4 Volt @ 85°C (2.7 Volt @ 125°C)																	
TBMD337*004L□#@0^++	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□#@0^++	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*004C□#@0^++	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
TBME687*004L□#@0^++	E	680	4	18	27	270	540	6	9	10	0.270	3.873	3.486	1.549	0.070	0.063	0.028
TBME108*004C□#@0^++	E	1000	4	23	30	300	600	6	9	10	0.270	3.426	3.084	1.370	0.079	0.071	0.032
TBME108*004L□#@0^++	E	1000	4	18	40	400	800	6	9	10	0.270	3.873	3.486	1.549	0.070	0.063	0.028
TBMV108*004L□#@0^++	V	1000	4	18	40	400	800	6	9	10	0.285	3.979	3.581	1.592	0.072	0.064	0.029
TBME158*004L□#@0^++	E	1500	4	15	40	400	800	6	9	10	0.270	4.243	3.818	1.697	0.064	0.057	0.025
6 Volt @ 85°C (4 Volt @ 125°C)																	
TBMD337*006L□#@0^++	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*006C□#@0^++	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
TBME477*006L□#@0^++	E	470	6	18	28	280	560	6	9	10	0.270	3.873	3.486	1.549	0.070	0.063	0.028
TBME687*006L□#@0^++	E	680	6	18	41	410	820	6	9	10	0.270	3.873	3.486	1.549	0.070	0.063	0.028
TBMV687*006L□#@0^++	V	680	6	23	41	410	820	6	9	10	0.285	3.520	3.168	1.408	0.081	0.073	0.032
10 Volt @ 85°C (7 Volt @ 125°C)																	
TBMD227*010L□#@0^++	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*010C□#@0^++	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
TBME337*010L□#@0^++	E	330	10	23	33	330	660	6	9	10	0.270	3.426	3.084	1.370	0.079	0.071	0.032
TBME477*010L□#@0^++	E	470	10	23	47	470	940	6	9	10	0.270	3.426	3.084	1.370	0.079	0.071	0.032
12 Volt @ 85°C (8.4 Volt @ 125°C)																	
TBME227*012C□#@0^++	E	220	12	35	19.8	198	396	6	9	10	0.270	2.777	2.500	1.111	0.097	0.087	0.039
16 Volt @ 85°C (10 Volt @ 125°C)																	
TBME157*016C□#@0^++	E	150	16	40	18	180	360	6	9	10	0.270	2.598	2.338	1.039	0.104	0.094	0.042
TBME157*016L□#@0^++	E	150	16	30	18	180	360	6	9	10	0.270	3.000	2.700	1.200	0.090	0.081	0.036
TBME227*016L□#@0^++	E	220	16	25	35	350	700	6	9	10	0.270	3.286	2.958	1.315	0.082	0.074	0.033
20 Volt @ 85°C (13 Volt @ 125°C)																	
TBME107*020C□#@0^++	E	100	20	45	15	150	300	6	9	10	0.270	2.449	2.205	0.980	0.110	0.099	0.044
TBME107*020L□#@0^++	E	100	20	35	15	150	300	6	9	10	0.270	2.777	2.500	1.111	0.097	0.087	0.039
25 Volt @ 85°C (17 Volt @ 125°C)																	
TBMD336*025L□#@0^++	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□#@0^++	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
TBME686*025L□#@0^++	E	68	25	45	17	170	340	6	9	10	0.270	2.449	2.205	0.980	0.110	0.099	0.044
35 Volt @ 85°C (23 Volt @ 125°C)																	
TBMD226*035L□#@0^++	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*035C□#@0^++	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
TBME226*035L□#@0^++	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
TBME336*035C□#@0^++	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
TBME336*035L□#@0^++	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
TBME476*035L□#@0^++	E	47	35	55	16	160	320	6	9	10	0.270	2.216	1.994	0.886	0.122	0.110	0.049

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.

Mouser Electronics

Authorized Distributor

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AVX:

TBME336K035LRSB0824	TBME687K006LRSB0824	TBME107K020LBSB0823	TBME107M020LBSB0824
TBME158K004LBSB0824	TBME336K035LBSB0824	TBME477K010LBSB0823	TBME477K010LBSB0824
TBME477K010LRSB0823	TBME686K025LBSB0823	TBME337K010LBSB0823	TBME687M006LRSB0824
TBME686K025LRSB0824	TBME107K020LBSB0824	TBME476K035LBSB0824	TBMD227K010LBSZ0000
TBME106K050LBSZ0000	TBME106M050LBSB0H00	TBME107K020LBLC0H24	TBME107K020LBLC9812
TBME107K020LBSZ0000	TBME108K004LBLC9845	TBME108K004LBSB0924	TBME108K004LBSZ0000
TBME157J016LBSZ0H00	TBME157K016LBSZ0000	TBME158K004LBSZ0000	TBME226K035LBLC0024
TBME226K035LBSB0024	TBME226K035LBSZ0000	TBME226K050LBSZ0000	TBME226M050LBSZ0000
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TBME476K035LBSB0H00	TBME477K006LBSB0700	TBME477K006LBSZ0000	TBME477K006LWSZ0800
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TBME226K050LBSB0823	TBME106K050LBSB0823	TBME477M010LBSB0823	TBME337K010LBSB0923
TBME227K016LBSB0823	TBME686M025LRSB0024	TBME686K025LBSB0023	TBME337M010LSSB0800
TBME476K035LRSB0824	TBME226K035LRSB0700	TBME337K010LRSZ0000	TBME227K016LRSB0745
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TBME337M010LBSB0800	TBME107K020LRSZ0923	TBME227K016LWLC0024	TBMD337K006LBSZ0H00
TBME686K025LRSB0023	TBME107K020LRSB0800	TBME476K035LBSB0800	TBME476K035LRSZ0000
TBME107M020LRSZ0H00	TBME108M004LRSB0000	TBME107M020LRSB0723	TBME687K004LSSZ0800
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TBME227M016LBSB0823	TBME337K010LBSZ0800	TBME477M006LBSB0H00	TBME107K020LWSB0H24

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AVX:

TBME476K025LRLB0045	TBME337K010LWLC0045	TBME476K025LRLZ0045	TBMD227K010LRB0000
TBME687K004LWLC0045	TBME336K035LRSZ0000	TBME337K010CRSZ0000	TBME227K012CBLC0045
TBME336K035CBLB0H00	TBME336K035LRLB0000	TBME687M004LBSB0945	TBME336M035CRSZ0H00
TBME108K004CRSZ0800	TBME337K010LBLZ0045	TBME227K016LRLB0000	TBME157K016LRLB0845
TBME227K012CBSB0800	TBME476M025LBSZ0000	TBME157K016LBLZ0045	TBME107K020LRLC0845
TBME687K004LBLC0045	TBME226K035LBLB0824	TBME476K025LBSZ0800	TBME337K010LSSB0H23
TBME157M016LBSZ0000	TBME107K020LRSZ0024	TBME227M016LBSB0H00	TBME687K006LBLB0845
TBME476K025LBLB0045	TBME477K010LBLZ0045	TBME157K016LBLB0045	TBMD337K006LRB0000
TBME477K010LRLZ0045	TBME337M010CBSC0045	TBME687M004CRSB0745	TBME336K035LBLC0045
TBME686M025LSSB0824	TBME337K010LBLB0923	TBME107M020LSSB0824	TBME337K010LRLB0923
TBME687M004CBSB0745	TBME477K006CBLZ0H00	TBME336K035LWSZ0800	TBME157K016LRSC0H45
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TBME337K010CBLZ0H00	TBME157K016LRLZ0045	TBME337K010LRLZ0045	TBME337K010LBSB0900
TBME226K035LBSZ0800	TBME337K010LRLC0045	TBME337K010LWSZ0H45	TBME687M004LBSB0H45
TBME226K035CBSZ0800	TBME227K016LBSB0824	TBME686K025LSSZ0H00	TBME686K025LSSZ0H45
TBME107K020LSSZ0H45	TBME227K012CSSZ0H00	TBME476K025LSLB0H45	TBME476K025LSSZ0H00
TBME476K025LSSZ0H45	TBME686K025LSLB0H45	TBMD226K035LSSZ0H00	TBMD226K035LSSZ0H45
TBMD227K010LSSZ0H00	TBMD227K010LSSZ0H45	TBME107K020LSLB0H45	TBME107K020LSSZ0H00
TBME477K010LBSB0045	TBME477K010LRB0845	TBME477K010LRB0045	TBME107K020LBLC0845
TBME337K010CRSZ0800	TBMD226K035LSLB0H45		