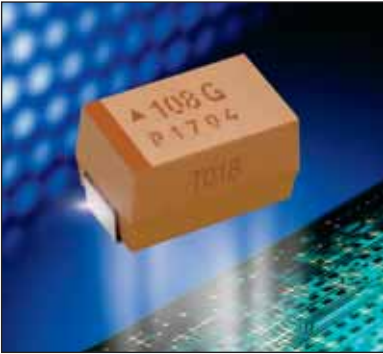


# TBM Multianode



## 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.

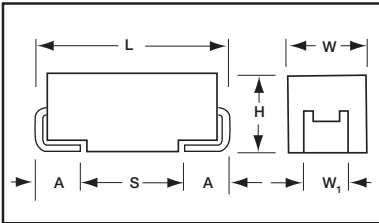
TBM is available with Weibull Grade “B” reliability and all MIL-PRF-55365 surge test options (“A”, “B” & “C”).

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 <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
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)

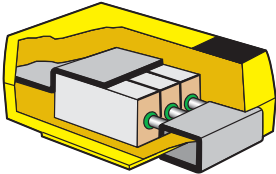
W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

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

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C							
µF	Code	2.5V (e)	4V (G)	6V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)
10	106								
15	156								
22	226								E(60)
33	336								E(50)
47	476								E(55)
68	686							E(45)	
100	107						E(35)		
150	157					E(30)			
220	227					E(25)			
330	337				E(23)				
470	477			E(18)	E(23)				
680	687		E(18)	E(18), V(23)					
1000	108		E(18), V(18)						
1500	158	E(12)	E(15)						

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

### TBM 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	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10%	<b>Voltage Code</b> 002 = 2.5Vdc 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	<b>Standard or Low ESR Range</b> L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 5 for additional packaging options.	<b>Inspection Level</b> S = Std. Conformance L = Group A D = DSCC DWG (Pending)	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. Z = Non-ER	<b>Qualification Level</b> 0 = N/A 9 = SRC9000	<b>Termination Finish</b> H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	<b>Surge Test Option</b> 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

#### SPACE LEVEL OPTIONS TO SRC9000\*:

TBM	E	477	*	006	L	□	L	@	9	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10%	<b>Voltage Code</b> 002 = 2.5Vdc 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	<b>Standard or Low ESR Range</b> L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 5 for additional packaging options.	<b>Inspection Level</b> L = Group A	<b>Reliability Grade</b> Weibull: C = 0.01%/1000 hrs. 90% conf.	<b>Qualification Level</b> 9 = SRC9000	<b>Termination Finish</b> H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	<b>Surge Test Option</b> 45 = 10 cycles, -55°C & +85°C before Weibull

\*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 <sub>R</sub> )	≤+85°C:	4	6	10	16	20	25	35	
Category Voltage (V <sub>C</sub> )	≤+125°C:	2.7	4	7	10	13	17	23	
Surge Voltage (V <sub>S</sub> )	≤+85°C:	5.2	8	13	20	26	32	46	
	≤+125°C:	3.4	5	8	12	16	20	28	
Temperature Range:	-55°C to +125°C								



# TBM Multianode

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

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical Ripple		
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF max			Power Dissipation W	25°C Ripple A (100kHz)	85°C Ripple A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)			
AVX P/N	Case	1500	2.5	12	38	380	760	6	9	10	0.165	4.743	4.269
TBME158*002L□SB0^++	E	680	4	18	27	270	540	6	9	10	0.165	3.873	3.486
TBME687*004L□SB0^++	E	1000	4	18	40	400	800	6	9	10	0.165	3.873	3.486
TBMV108*004L□SB0^++	V	1000	4	18	40	400	800	6	9	10	0.250	3.979	3.581
TBME158*004L□SB0^++	E	1500	4	15	60	400	1200	6	9	10	0.165	4.243	3.818
TBME477*006L□SB0^++	E	470	6	18	28	280	560	6	9	10	0.165	3.873	3.486
TBME687*006L□SB0^++	E	680	6	18	41	410	820	6	9	10	0.165	3.873	3.486
TBMV687*006L□SB0^++	V	680	6	23	41	410	820	6	9	10	0.250	3.520	3.168
TBME337*010L□SB0^++	E	330	10	23	33	330	660	6	9	10	0.165	3.426	3.084
TBME477*010L□SB0^++	E	470	10	23	47	470	940	6	9	10	0.165	3.426	3.084
TBME157*016L□SB0^++	E	150	16	30	24	240	480	6	9	10	0.165	3.000	2.700
TBME227*016L□SB0^++	E	220	16	25	35	350	700	6	9	10	0.165	3.286	2.958
TBME107*020L□SB0^++	E	100	20	35	20	200	400	6	9	10	0.165	2.777	2.500
TBME686*025L□SB0^++	E	68	25	45	17	170	340	6	9	10	0.165	2.449	2.205
TBME226*035L□SB0^++	E	22	35	60	8	80	160	6	9	10	0.165	2.121	1.909
TBME336*035L□SB0^++	E	33	35	50	12	120	240	6	9	10	0.165	2.324	2.091
TBME476*035L□SB0^++	E	47	35	55	16	160	320	6	9	10	0.165	2.216	1.994

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 100kHz.

**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.**