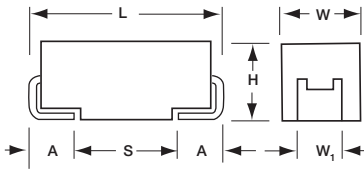


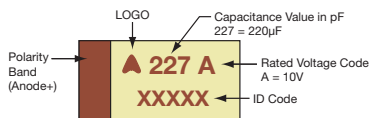
# TBM MULTIANODE

## Tantalum Ultra Low ESR Space Level



### MARKING

#### D, E CASE



TBM Space Level series is screened to SRC9000 or T Level and utilizes an internal multi-anode design to achieve ultra-low ESR which improves performance in high ripple power application. TBM Space Level is available with Weibull Grade "C" reliability and MIL-PRF-55365 surge test option "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 <sub>1</sub> ±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<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)	12V (B)	16V (C)	20V (D)	25V (E)	35V (V)
22	226									D(70) E(60,100)
33	336								D(65) E(65)	E(50,65)
47	476									
68	686									
100	107							E(35,45)		
150	157						E(30,40)			
220	227				D(35) E(35)	E(35)				
330	337		D(35)	D(35)	E(35)					
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 (mOhms)

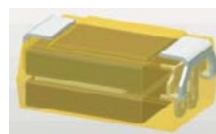
Notes: Voltage ratings are minimum values. KYOCERA AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.

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



# TBM MULTIANODE

## Tantalum Ultra Low ESR Space Level

### HOW TO ORDER

#### SPACE LEVEL SCREENING TO SRC9000 OR T LEVEL\*:

TBM	E	477	*	006	L	□	L	@	#	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b>	<b>Capacitance Tolerance</b>	<b>Voltage Code</b>	<b>Standard or Low ESR Range</b>	<b>Packaging</b>	<b>Inspection Level</b>	<b>Reliability Grade</b>	<b>Qualification Level</b>	<b>Termination Finish</b>	<b>Surge Test Option</b>
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20% K = ±10%	002 = 2.5Vdc 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 012 = 12Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	C = Std ESR L = Low ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 8 for additional packaging options.	L = Group A	Weibull: C = 0.01%/1000 hrs. 90% conf.	9 = SRC9000 T=T Level	H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	45 = 10 cycles, -55°C & +85°C before Weibull GC = Group C Testing and Data OR = TOR compliant testing and data
<p><small>For RoHS compliant products, please select correct termination style.</small></p>											

\*The product in this series is non-QPL. See Test Options chart for screening available.

### 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:	2.5	4	6	10	12	16	20	25	35	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	1.7	2.7	4	7	8.4	10	13	17	23	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	3.3	5.2	8	13	15.6	20	26	32	46	
Surge Voltage (V <sub>S</sub> )	≤ +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 Space Level



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	85°C Ripple	125°C Ripple	25°C Ripple	85°C Ripple	125°C Ripple
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C							
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)
<b>2.5 Volt @ 85°C (1.7 Volt @ 125°C)</b>																	
TBMD108*002L□LC#^++	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□LC#^++	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
<b>4 Volt @ 85°C (2.7 Volt @ 125°C)</b>																	
TBMD337*004L□LC#^++	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□LC#^++	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□LC#^++	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*004C□LC#^++	E	1000	4	23	30	300	600	6	9	10	0.270	3.426	3.084	1.370	0.079	0.071	0.032
<b>6 Volt @ 85°C (4 Volt @ 125°C)</b>																	
TBMD337*006L□LC#^++	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□LC#^++	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
<b>10 Volt @ 85°C (7 Volt @ 125°C)</b>																	
TBMD227*010L□LC#^++	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□LC#^++	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
<b>12 Volt @ 85°C (8.4 Volt @ 125°C)</b>																	
TBME227*012C□LC#^++	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
<b>16 Volt @ 85°C (10 Volt @ 125°C)</b>																	
TBME157*016L□LC#^++	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□LC#^++	E	150	16	40	18	180	360	6	9	10	0.270	2.598	2.338	1.039	0.104	0.094	0.042
<b>20 Volt @ 85°C (13 Volt @ 125°C)</b>																	
TBME107*020L□LC#^++	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□LC#^++	E	100	20	45	15	150	300	6	9	10	0.270	2.449	2.205	0.980	0.110	0.099	0.044
<b>25 Volt @ 85°C (17 Volt @ 125°C)</b>																	
TBMD336*025L□LC#^++	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□LC#^++	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
<b>35 Volt @ 85°C (23 Volt @ 125°C)</b>																	
TBMD226*035L□LC#^++	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□LC#^++	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□LC#^++	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□LC#^++	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□LC#^++	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: KYOCERA AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**