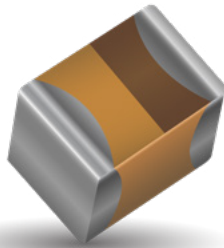


TBC SERIES

TBC COTS-Plus

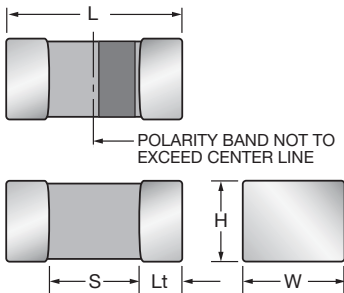


TBC COTS-Plus series extends the range of CWR15. TBC is available with Weibull grade “B” reliability and all MIL-PRF-55365 Rev. G surge test options (“A”, “B” & “C”).

For Space Level applications, SRC9000 ratings are available as shown in the rating table.

There are three termination finishes available: fused solder plated, gold plated, and 100% tin.

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



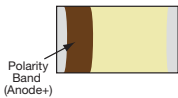
CASE DIMENSIONS:

millimeters (inches)

Code	EIA Code	EIA Metric	Length (L)	Width (W)	Height (H)	Termination Spacing(S)	Minimum Termination Length (Lt)	Average Mass
A	1206	3216-18	3.20 ±0.20 (0.126 ±0.008)	1.60 ±0.20 (0.063 ±0.008)	1.60 ±0.20 (0.063 ±0.008)	1.80 min. (0.071 min.)	0.15 (0.006)	44.6mg
L	0603	1608-10	1.60 ^{+0.25} / _{-0.15} (0.063 ^{+0.010} / _{-0.006})	0.84 ^{+0.20} / _{-0.10} (0.033 ^{+0.008} / _{-0.004})	0.84 ^{+0.20} / _{-0.10} (0.033 ^{+0.008} / _{-0.004})	0.55 min. (0.022 min.)	0.15 (0.006)	8.6mg
R	0805	2012-15	2.00 ^{+0.25} / _{-0.15} (0.079 ^{+0.010} / _{-0.006})	1.35 ^{+0.20} / _{-0.10} (0.053 ^{+0.008} / _{-0.004})	1.35 ^{+0.20} / _{-0.10} (0.053 ^{+0.008} / _{-0.004})	0.70 min. (0.027 min.)	0.15 (0.006)	29.9mg

MARKING

A, L, R CASE



CAPACITANCE AND RATED VOLTAGE, VR (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Voltage Rating DC (V _R) at 85°C					
µF	Code	4V	6V	10V	16V	20V	25V
0.33	334						L
0.47	474			L	L	L	
0.68	684			L	L		
1.0	105			L			
1.5	155			L			
2.2	225			L			
3.3	335			R		R	
4.7	475		L	R	R		
6.8	685		R	R			
10	106	R	R	R	A		
15	156	R		A			
22	226	R	A				
33	336	R	A				
47	476		A				
68	686	A					

TBC SERIES

TBC COTS-Plus

HOW TO ORDER

COTS-PLUS:

TBC	L	685	*	004	C		#	@	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% J = ±5%	Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc	ESR C = Std ESR	Packaging B = Bulk R = 7" T&R W = Waffle See page 8 for additional packaging options.	Inspection Level S = Std. Conformance L = Group A	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER None required	Qualification Level 0 = N/A 9 = SRC9000	Termination Finish 0 = Fused Solder Plated 9 = Gold Plated 7 = Matte Sn (COTS-Plus only) LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT For RoHS compliant products, please select correct termination style.	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

SPACE LEVEL OPTIONS TO SRC9000*:

TBC	L	685	*	004	C		L	C	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% J = ±5%	Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc	Standard or Low ESR Range C = Std ESR L = Low ESR	Packaging B = Bulk R = 7" T&R W = Waffle See page 8 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 0 = Fused Solder Plated 9 = Gold Plated LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT For RoHS compliant products, please select correct termination style.	Surge Test Option 45 = 10 cycles, -55°C & +85°C before Weibull GC = Group C Testing and Data OR = TOR compliant testing and data

*Contact factory for SRC9000 Space Level SCD details.

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C						
Capacitance Range:	0.33 µF to 68 µF						
Capacitance Tolerance:	±5%; ±10%; ±20%						
Leakage Current DCL:	0.01CV or 0.5µA whichever is the greater						
Rated Voltage (V _R)	≤ +85°C:	4	6	10	16	20	25
Category Voltage (V _C)	≤ +125°C:	2.7	4	7	10	13	17
Surge Voltage (V _S)	≤ +85°C:	5.2	8	13	20	26	32
Surge Voltage (V _S)	≤ +125°C:	3.2	5	8	12	16	20
Temperature Range:	-55°C to +125°C						

TBC SERIES

TBC 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	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								W
P/N	SRC9000 P/N	Case		µF @ 25°C	V @ +85°C	Ohms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	A (100kHz)	A (100kHz)	V (100kHz)	V (100kHz)	V (100kHz)	
4 Volt @ 85°C (2.7 Volt @ 125°C)																				
TBC R 106 * 004 C□# @ 0 ^ ++	TBC R 106 * 004 C□L C 9 ^ ++	0805	R	10	4.0	6	0.5	5.0	6.3	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC R 156 * 004 C□# @ 0 ^ ++	TBC R 156 * 004 C□L C 9 ^ ++	0805	R	15	4.0	6	0.6	6.0	7.5	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC R 226 * 004 C□# @ 0 ^ ++	TBC R 226 * 004 C□L C 9 ^ ++	0805	R	22	4.0	6	0.9	8.8	11.0	15	30	23	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC R 336 * 004 C□# @ 0 ^ ++	TBC R 336 * 004 C□L C 9 ^ ++	0805	R	33	4.0	6	1.3	13.2	16.5	10	20	15	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC A 686 * 004 C□# @ 0 ^ ++	TBC A 686 * 004 C□L C 9 ^ ++	1206	A	68	4.0	1	2.7	27.2	34.0	15	30	23	0.040	0.20	0.18	0.08	0.20	0.18	0.08	
6 Volt @ 85°C (4 Volt @ 125°C)																				
TBC L 475 * 006 C□# @ 0 ^ ++	TBC L 475 * 006 C□L C 9 ^ ++	0603	L	4.7	6	10	0.5	5.0	6.3	8	16	12	0.025	0.05	0.05	0.02	0.50	0.45	0.20	
TBC R 685 * 006 C□# @ 0 ^ ++	TBC R 685 * 006 C□L C 9 ^ ++	0805	R	6.8	6	6	0.5	5.0	6.3	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC R 106 * 006 C□# @ 0 ^ ++	TBC R 106 * 006 C□L C 9 ^ ++	0805	R	10	6	6	0.6	6.3	7.9	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC A 226 K 006 C□# @ 0 ^ ++	TBC A 226 K 006 C□L C 9 ^ ++	1206	A	22	6	6	1.4	13.9	17.3	10	20	15	0.040	0.08	0.07	0.03	0.49	0.44	0.20	
TBC A 336 K 006 C□# @ 0 ^ ++	TBC A 336 K 006 C□L C 9 ^ ++	1206	A	33	6	6	2.1	20.8	26.0	10	20	15	0.040	0.08	0.07	0.03	0.49	0.44	0.20	
TBC A 476 * 006 C□# @ 0 ^ ++	TBC A 476 * 006 C□L C 9 ^ ++	1206	A	47	6	1	3.0	29.6	37.0	15	30	23	0.040	0.20	0.18	0.08	0.20	0.18	0.08	
10 Volt @ 85°C (7 Volt @ 125°C)																				
TBC L 474 * 010 C□# @ 0 ^ ++	TBC L 474 * 010 C□L C 9 ^ ++	0603	L	0.47	10	12	0.5	5.0	6.3	6	12	9	0.025	0.05	0.04	0.02	0.55	0.49	0.22	
TBC L 684 * 010 C□# @ 0 ^ ++	TBC L 684 * 010 C□L C 9 ^ ++	0603	L	0.68	10	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0.05	0.02	0.50	0.45	0.20	
TBC L 105 * 010 C□# @ 0 ^ ++	TBC L 105 * 010 C□L C 9 ^ ++	0603	L	1.0	10	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0.05	0.02	0.50	0.45	0.20	
TBC L 155 * 010 C□# @ 0 ^ ++	TBC L 155 * 010 C□L C 9 ^ ++	0603	L	1.5	10	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0.05	0.02	0.50	0.45	0.20	
TBC L 225 * 010 C□# @ 0 ^ ++	TBC L 225 * 010 C□L C 9 ^ ++	0603	L	2.2	10	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0.05	0.02	0.50	0.45	0.20	
TBC R 335 * 010 C□# @ 0 ^ ++	TBC R 335 * 010 C□L C 9 ^ ++	0805	R	3.3	10	6	0.5	5.0	6.3	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC R 475 * 010 C□# @ 0 ^ ++	TBC R 475 * 010 C□L C 9 ^ ++	0805	R	4.7	10	6	0.5	4.7	5.9	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC R 685 * 010 C□# @ 0 ^ ++	TBC R 685 * 010 C□L C 9 ^ ++	0805	R	6.8	10	6	0.7	6.8	8.5	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC R 106 * 010 C□# @ 0 ^ ++	TBC R 106 * 010 C□L C 9 ^ ++	0805	R	10	10	6	1.0	10.0	12.5	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC A 156 * 010 C□# @ 0 ^ ++	TBC A 156 * 010 C□L C 9 ^ ++	1206	A	15	10	6	1.5	15.0	18.8	10	20	15	0.040	0.08	0.07	0.03	0.49	0.44	0.20	
16 Volt @ 85°C (10 Volt @ 125°C)																				
TBC L 474 * 016 C□# @ 0 ^ ++	TBC L 474 * 016 C□L C 9 ^ ++	0603	L	0.47	16	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0.05	0.02	0.50	0.45	0.20	
TBC L 684 * 016 C□# @ 0 ^ ++	TBC L 684 * 016 C□L C 9 ^ ++	0603	L	0.68	16	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0.05	0.02	0.50	0.45	0.20	
TBC R 475 * 016 C□# @ 0 ^ ++	TBC R 475 * 016 C□L C 9 ^ ++	0805	R	4.7	16	6	0.8	7.5	9.0	10	20	15	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
TBC A 106 * 016 C□# @ 0 ^ ++	TBC A 106 * 016 C□L C 9 ^ ++	1206	A	10	16	3	1.6	16.0	19.2	8	16	12	0.040	0.12	0.10	0.05	0.20	0.18	0.08	
20 Volt @ 85°C (13 Volt @ 125°C)																				
TBC L 474 * 020 C□# @ 0 ^ ++	TBC L 474 * 020 C□L C 9 ^ ++	0603	L	0.47	20	24	0.5	5.0	6.3	6	12	9	0.025	0.03	0.03	0.01	0.77	0.70	0.31	
TBC R 335 * 020 C□# @ 0 ^ ++	TBC R 335 * 020 C□L C 9 ^ ++	0805	R	3.3	20	6	0.7	6.6	8.3	8	16	12	0.045	0.09	0.08	0.03	0.52	0.47	0.21	
25 Volt @ 85°C (17 Volt @ 125°C)																				
TBC L 334 M 025 C□# @ 0 ^ ++	TBC L 334 M 025 C□L C 9 ^ ++	0603	L	0.33	25	30	0.5	5.0	6.3	6	12	9	0.025	0.03	0.03	0.01	0.87	0.78	0.35	

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.