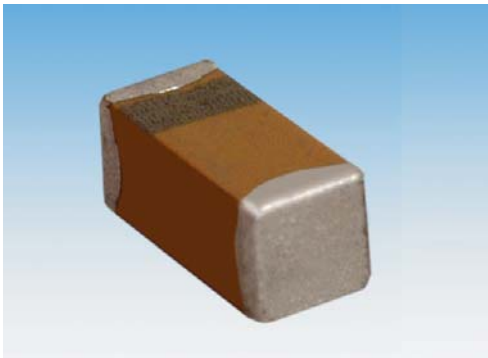


# TBC Series



## TBC COTS-Plus

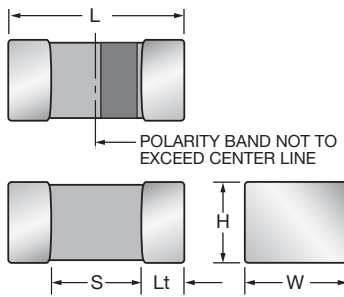


TBC COTS-Plus series extends the range of CWR15. TBC is available with Weibull grade “B” reliability and all MIL-PRF-55365 Rev. G surge test options (“A”, “B” & “C”).

For Space Level applications, AVX 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.

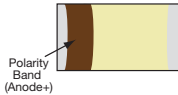


### CASE DIMENSIONS: millimeters (inches)

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 <sup>+0.25</sup> <sub>-0.15</sub> <sup>+0.010</sup> <sub>-0.006</sub>	0.84 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub>	0.84 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub>	0.55 min. (0.022 min.)	0.15 (0.006)	8.6mg
R	0805	2012-15	2.00 <sup>+0.25</sup> <sub>-0.15</sub> <sup>+0.010</sup> <sub>-0.006</sub>	1.35 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub>	1.35 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub>	0.70 min. (0.027 min.)	0.15 (0.006)	29.9mg

### MARKING

#### A, L, R CASE



### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Voltage Rating DC (V <sub>R</sub> ) at 85°C					
µF	Code	4V	6.3V	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	^	++
<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% J = ±5%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc	<b>Standard or Low ESR Range</b> C = Std ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 8 for additional packaging options.	<b>Inspection Level</b> S = Std. Conformance L = Group A	<b>Reliability Grade</b> 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	<b>Qualification Level</b> 0 = N/A 9 = SRC9000	<b>Termination Finish</b> 0 = Fused Solder Plated 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\*:

TBC	L	685	*	004	C	□	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% J = ±5%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc	<b>Standard or Low ESR Range</b> C = Std ESR L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 8 for additional packaging options.	<b>Inspection Level</b> L = Group A	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf.	<b>Qualification Level</b> 9 = SRC9000	<b>Termination Finish</b> 0 = Fused Solder Plated 9 = Gold Plated	<b>Surge Test Option</b> 45 = 10 cycles, -55°C & +85°C before Weibull



\*Contact factory for AVX 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 <sub>R</sub> )	≤ +85°C:	4	6.3	10	16	20	25	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	2.7	4	7	10	13	17	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	5.2	8	13	20	26	32	
Surge Voltage (V <sub>S</sub> )	≤ +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							
AVX P/N	AVX SRC9000 P/N	Case		μF @ 25°C	V @ +85°C	Ohms @ +25°C	(μA)	(μA)	(μA)	(%)	(%)	(%)	(100kHz)	(100kHz)	(100kHz)	(100kHz)	(100kHz)	(100kHz)	
<b>4 Volt @ 85°C (2.7 Volt @ 125°C)</b>																			
TBC R 106 * 004 C # @ 0 ^ ++	TBC R 106 * 004 C L @ 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 @ 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 @ 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 @ 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 @ 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
<b>6.3 Volt @ 85°C (4 Volt @ 125°C)</b>																			
TBC L 475 * 006 C # @ 0 ^ ++	TBC L 475 * 006 C L @ 9 ^ ++	0603	L	4.7	6.3	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 @ 9 ^ ++	0805	R	6.8	6.3	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 @ 9 ^ ++	0805	R	10	6.3	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 @ 9 ^ ++	1206	A	22	6.3	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 @ 9 ^ ++	1206	A	33	6.3	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 @ 9 ^ ++	1206	A	47	6.3	1	3.0	29.6	37.0	15	30	23	0.040	0.20	0.18	0.08	0.20	0.18	0.08
<b>10 Volt @ 85°C (7 Volt @ 125°C)</b>																			
TBC L 474 * 010 C # @ 0 ^ ++	TBC L 474 * 010 C L @ 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 @ 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 @ 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 @ 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 @ 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 @ 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 @ 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 @ 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 @ 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 @ 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
<b>16 Volt @ 85°C (10 Volt @ 125°C)</b>																			
TBC L 474 * 016 C # @ 0 ^ ++	TBC L 474 * 016 C L @ 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 @ 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 @ 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 @ 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
<b>20 Volt @ 85°C (13 Volt @ 125°C)</b>																			
TBC L 474 * 020 C # @ 0 ^ ++	TBC L 474 * 020 C L @ 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 @ 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
<b>25 Volt @ 85°C (17 Volt @ 125°C)</b>																			
TBC L 334 M 025 C # @ 0 ^ ++	TBC L 334 M 025 C L @ 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:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.