

# TBC SERIES

## HRC5000 Medical Implantable Grade

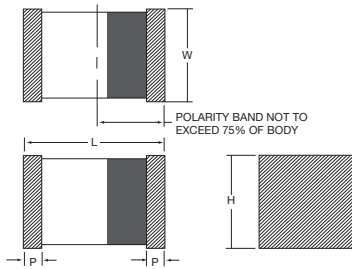


The TBC HRC5000 Medical Grade series is designed for use in medical implantable applications. These are some of the smallest surface mount tantalum capacitors available on the market which feature extremely low DC leakage limits well below typical values.

These components are manufactured and tested in the AVX Biddeford Maine factory which is ISO 13485 certified. Weibull grading and surge current testing options per MIL-PRF-55365 are available along with several plating options including tin/lead solder, 100% tin, or gold terminations.

To request a specific rating or for more information on HRC5000 testing details please contact the factory.

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

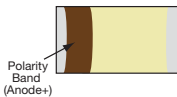


### CASE DIMENSIONS: millimeters (inches)

Case Code	EIA Code	Length (L)	Width (W)	Height (H)	Term. Width (P) min.
A	1206	3.20 ±0.20 (0.126 ±0.008)	1.60 ±0.20 (0.063 ±0.008)	1.60 ±0.20 (0.063 ±0.008)	0.15 (0.006)
B	1411	3.60 ±0.20 (0.141 ±0.008)	2.90 ±0.15 (0.114 ±0.006)	1.50 max (0.06 max)	0.15 (0.006)
L	0603	1.60 <sup>+0.25</sup> <sub>-0.15</sub>	0.84 <sup>+0.20</sup> <sub>-0.10</sub>	0.84 <sup>+0.20</sup> <sub>-0.10</sub>	0.15 (0.006)
		(0.063 <sup>+0.010</sup> <sub>-0.006</sub> )	(0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	(0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	
R	0805	2.00 <sup>+0.25</sup> <sub>-0.15</sub>	1.35 <sup>+0.20</sup> <sub>-0.10</sub>	1.35 <sup>+0.20</sup> <sub>-0.10</sub>	0.15 (0.006)
		(0.079 <sup>+0.010</sup> <sub>-0.006</sub> )	(0.053 <sup>+0.008</sup> <sub>-0.004</sub> )	(0.053 <sup>+0.008</sup> <sub>-0.004</sub> )	
S	1207	3.20 ±0.20 (0.126 ±0.008)	1.80 ±0.20 (0.071 ±0.008)	1.50 max (0.06 max)	0.15 (0.006)

### MARKING

#### A, B, L, R, S CASE



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

Capacitance		Rated Voltage					
µF	Code	4V	6V	10V	16V	20V	40V
0.47	474			L			
0.68	684						
1	105			L		R	A
1.5	155						
2.2	225			L			
3.3	335		L	R			
4.7	475			R	R		
6.8	685			R			
10	106			R	R/A (17v)		
15	156	R					
22	226						
33	336						
47	476		S	B			

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### HOW TO ORDER

TBC	R	106	*	010	C	□	L	@	5	^	++
<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> J = ±5% K = ±10% M = ±20%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 017 = 17Vdc 020 = 20Vdc 040 = 40Vdc	<b>ESR</b> C = Std ESR	<b>Packaging</b> B = Bulk R = 7" T&R W = Waffle	<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.	<b>Qualification Level</b> 5 = HRC5000	<b>Termination Finish</b> 0 = Solder Fused 9 = Gold Plated 7 = 100% Tin	<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



\*Contact factory for AVX HRC5000 Medical Grade SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C						
Capacitance Range:	0.47 μF to 47 μF						
Capacitance Tolerance:	±5%; ±10%; ±20%						
Rated Voltage (V <sub>R</sub> )	≤ +85°C:	4	6	10	16	20	40
Category Voltage (V <sub>C</sub> )	≤ +125°C:	2.7	4	6.7	10.7	13.3	26.7
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	5.3	8	13.3	20.8	26.7	52
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	3.5	5.3	8.7	13.9	17.8	34.7
Temperature Range:	-55°C to +125°C						

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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 HRC5000 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)
TBCR156*004C□L@5 <sup>+</sup> ++	R	15	4	6	0.150	1.500	1.800	8	16	12	0.045	0.087	0.078	0.035	0.522	0.468	0.210
TBCL335*006C□L@5 <sup>+</sup> ++	L	3.3	6	10	0.100	1.000	1.200	6	12	9	0.025	0.05	0.045	0.02	0.500	0.450	0.200
TBCS476*006C□L@5 <sup>+</sup> ++	S	47	6	4	0.470	4.700	5.640	6	8	9	0.04	0.1	0.09	0.04	0.400	0.360	0.160
TBCL474*010C□L@5 <sup>+</sup> ++	L	0.47	10	12	0.100	1.000	1.200	6	12	9	0.025	0.046	0.041	0.018	0.552	0.492	0.216
TBCL105*010C□L@5 <sup>+</sup> ++	L	1	10	10	0.100	1.000	1.200	6	12	9	0.025	0.05	0.045	0.02	0.500	0.450	0.200
TBCL225*010C□L@5 <sup>+</sup> ++	L	2.2	10	10	0.100	1.000	1.200	6	12	9	0.025	0.05	0.045	0.02	0.500	0.450	0.200
TBCR335*010C□L@5 <sup>+</sup> ++	R	3.3	10	6	0.100	1.000	1.200	8	16	12	0.045	0.087	0.078	0.035	0.522	0.468	0.210
TBCR475*010C□L@5 <sup>+</sup> ++	R	4.7	10	6	0.118	1.175	1.410	8	16	12	0.045	0.087	0.078	0.035	0.522	0.468	0.210
TBCR685*010C□L@5 <sup>+</sup> ++	R	6.8	10	6	0.170	1.700	2.040	8	16	12	0.045	0.087	0.078	0.035	0.522	0.468	0.210
TBCR106*010C□L@5 <sup>+</sup> ++	R	10	10	6	0.250	2.500	3.000	8	16	12	0.045	0.087	0.078	0.035	0.522	0.468	0.210
TBCB476*010C□L@5 <sup>+</sup> ++	B	47	10	1	1.175	11.750	14.100	15	30	23	0.04	0.2	0.18	0.08	0.200	0.180	0.080
TBCR475*016C□L@5 <sup>+</sup> ++	R	4.7	16	6	0.188	1.880	2.256	8	10	12	0.045	0.087	0.078	0.035	0.522	0.468	0.210
TBCR106*016C□L@5 <sup>+</sup> ++	R	10	16	5	0.400	4.000	4.800	10	12	12	0.045	0.095	0.085	0.038	0.475	0.425	0.190
TBCA106*017C□L@5 <sup>+</sup> ++	A	10	17	3	0.425	4.250	5.100	8	16	12	0.04	0.115	0.104	0.046	0.345	0.312	0.138
TBCR105*020C□L@5 <sup>+</sup> ++	R	1	20	6	0.100	1.000	1.200	8	16	12	0.045	0.087	0.078	0.035	0.522	0.468	0.210
TBCA105*040C□L@5 <sup>+</sup> ++	A	1	40	6	0.100	1.000	1.200	8	16	12	0.04	0.082	0.073	0.033	0.492	0.438	0.198

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.**



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