

TBC SERIES

HRC5000 Medical Implantable Grade

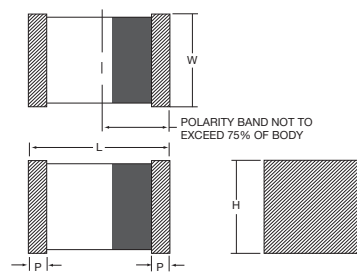


The TBC HRC5000 Medical Grade series is designed for use in medical implantable applications. These are some of the smallest surface mount tantalum capacitors available on the market which feature extremely low DC leakage limits well below typical values.



These components are manufactured and tested in the KYOCERA 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.

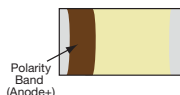


CASE DIMENSIONS: millimeters (inches)

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 ^{+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})	0.15 (0.006)
R	0805	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})	0.15 (0.006)
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_R (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			

TBC SERIES

HRC5000 Medical Implantable Grade

HOW TO ORDER

TBC	R	106	*	010	C	□	L	@	5	^	++
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance J = ±5% K = ±10% M = ±20%	Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 017 = 17Vdc 020 = 20Vdc 040 = 40Vdc	ESR C = Std ESR	Packaging B = Bulk R = 7" T&R W = Waffle	Inspection Level L = Group A	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf.	Qualification Level 5 = HRC5000	Termination Finish 0 = Solder Fused 9 = Gold Plated 7 = 100% Tin	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

For RoHS compliant products, please select correct termination style.

*Contact factory for 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 _R)	≤ +85°C:	4	6	10	16	20	40
Category Voltage (V _C)	≤ +125°C:	2.7	4	6.7	10.7	13.3	26.7
Surge Voltage (V _S)	≤ +85°C:	5.3	8	13.3	20.8	26.7	52
Surge Voltage (V _S)	≤ +125°C:	3.5	5.3	8.7	13.9	17.8	34.7
Temperature Range:	-55°C to +125°C						

TBC SERIES

HRC5000 Medical Implantable Grade



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							
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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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 ⁺ ++	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.

NOTICE: The specifications set forth herein are subject to change without notice and are typical and may not apply to all applications. KYOCERA AVX does not warrant or guarantee any aspect of the operation or use of any product except as explicitly set forth in the product specification. Unless specifically agreed to in writing. Seller has not tested or certified its products, services or deliverables for use in high risk applications including medical life support, medical device, direct physical patient contact, water treatment, nuclear facilities, weapon systems, mass and air transportation control, flammable environments, or any other potentially life critical uses. By ordering or using KYOCERA AVX products, the user understands and agrees that KYOCERA AVX makes no assurances that the products, services or deliverables are suitable for any high risk uses.

Under no circumstances does Seller warrant or guarantee suitability for any customer design or manufacturing process. Any statements herein are believed to be true, but are presented without warranty of any kind, explicit or implied. Statements concerning use of KYOCERA AVX products are made without any representation that such use is a non-infringing use or is consistent with any regulation. Users should not assume that any or all safety measures are indicated.

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.