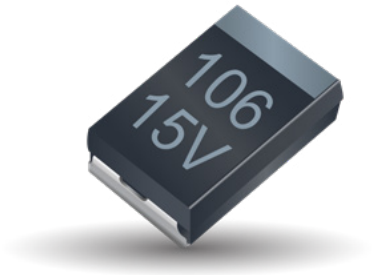
# TAZ SERIES

## T4Z HRC4000 Medical Grade for Non-Critical Applications




### GENERAL DESCRIPTION

The T4Z HRC4000 Medical Grade series is designed for use in non-critical medical applications. The T4Z product line is based on the MIL-PRF- 55365 case sizes A-H. Statistical screening is used resulting in DC leakage levels significantly lower than commercial solid tantalum capacitors.
These components are manufactured and tested in KYOCERA AVX's high reliability tantalum capacitor plant in Biddeford, Maine which is ISO 13485 certified. Reliability grading to implantable device standards 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 HRC4000 testing details please contact the factory.

### APPLICATIONS

**Medical Devices for Non-Critical Applications**

- Implantable, Non-Life Sustaining Devices
  e.g. implanted temporary cardiac monitor, insulin pumps
- External, Life Sustaining Devices
  e.g. heart pump external controller
- External Devices
  e.g. patient monitoring, diagnostic equipment

### MARKING

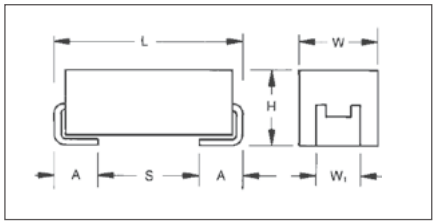
(White marking on black body)




**Polarity Stripe (+)**

**Capacitance Code**

**Rated Voltage**




### CASE DIMENSIONS:

**millimeters (inches)**

| Case Code | Length (L) ±0.38 (0.015) | Width (W) ±0.38 (0.015) | Height (H) ±0.38 (0.015) | Term. Width ($W_1$) | Term. Length (A) +0.25/-0.13 (+0.010/-0.005) | S min | Typical Weight (g) |
|---|---|---|---|---|---|---|---|
| A | 2.54 (0.100) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 0.38 (0.015) | 0.016 |
| B | 3.81 (0.150) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 1.65 (0.065) | 0.025 |
| C | 5.08 (0.200) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 2.92 (0.115) | 0.035 |
| D | 3.81 (0.150) | 2.54 (0.100) | 1.27 (0.050) | 2.41+0.13/-0.25 (0.095+0.005/-0.010) | 0.76 (0.030) | 1.65 (0.065) | 0.045 |
| E | 5.08 (0.200) | 2.54 (0.100) | 1.27 (0.050) | 2.41+0.13/-0.25 (0.095+0.005/-0.010) | 0.76 (0.030) | 2.92 (0.115) | 0.065 |
| F | 5.59 (0.220) | 3.43 (0.135) | 1.78 (0.070) | 3.30±0.13 (0.130±0.005) | 0.76 (0.030) | 3.43 (0.135) | 0.125 |
| G | 6.73 (0.265) | 2.79 (0.110) | 2.79 (0.110) | 2.67±0.13 (0.105±0.005) | 1.27 (0.050) | 3.56 (0.140) | 0.205 |
| H | 7.24 (0.285) | 3.81 (0.150) | 2.79 (0.110) | 3.68+0.13/-0.51 (0.145+0.005/-0.020) | 1.27 (0.050) | 4.06 (0.160) | 0.335 |

# TAZ SERIES

## T4Z HRC4000 Medical Grade for Non-Critical Applications

### CAPACITANCE AND RATED VOLTAGE, $V_R$ (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

| Capacitance | | Rated Voltage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| µF | Code | 4V | 6V | 10V | 12V | 15V | 20V | 25V | 35V | 50V |
| 0.10 | 104 | | | | | | | | | A |
| 0.15 | 154 | | | | | | | | | A |
| 0.22 | 224 | | | | | | | | A | |
| 0.33 | 334 | | | | | | | A | | |
| 0.47 | 474 | | | | | | A | | B | |
| 0.68 | 684 | | | | | A | | | | |
| 1 | 105 | | | A | | A | A/B | B | D | E |
| 1.5 | 155 | | A | A | | | B | D | | |
| 2.2 | 225 | A | A | A/B | | A/B/C | B/D | D/E | | F |
| 3.3 | 335 | | A/B | A/B | | B/D | E | E | F | G |
| 4.7 | 475 | A/B | A | B/D | | B/D/E | D/E | F | | |
| 6 | 605 | | | | | | | | | |
| 6.8 | 685 | A | D | B/D/E | | | D/E | F | | |
| 10 | 106 | D | B/D/E | B/D/E | | D/E/F | E | G | H | |
| 14 | 146 | | | E | | | | | | |
| 15 | 156 | | B/D/F | D/E/F | | E | F/G | | | |
| 22 | 226 | | F | D/E/F | E | F/G | G/H | H | | |
| 33 | 336 | E/F | E | F/G | | F/H | | | | |
| 47 | 476 | E | E/F/G | F/G/H | | G | H | | | |
| 68 | 686 | E/G | E/F/G/H | G | | | | | | |
| 100 | 107 | F | G | H | | H | | | | |
| 150 | 157 | | G | H | | | | | | |
| 220 | 227 | | | H | | | | | | |
| 300 | 307 | | H | | | | | | | |
| 330 | 337 | | H | | | | | | | |

### HOW TO ORDER

| T4Z | E | 106 | * | 10 | C | □ | L | @ | 4 | ^ | ++ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Type** | **Case Size** | **Capacitance Code** pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | **Capacitance Tolerance** K = ±10% M = ±20% | **Voltage Code** 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc | **ESR** C = Std ESR | **Packaging** B = Bulk R = 7" T&R W = Waffle | **Inspection Level** L = Group A | **Reliability Grade** B = Weibull B 0.1%/1000 hrs. 90% conf. | **Qualification Level** 4 = HRC4000 | **Termination Finish** H = Solder Plated 0 = Solder Fused 9 = Gold Plated 7 =100% Tin | **Surge Test Option** 00 =None 23 =10 Cycles,+25ºC 24 =10 Cycles, -55ºC & +85ºC 45 =10 cycles, -55ºC & +85ºC before burn-in |

### TECHNICAL SPECIFICATIONS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Technical Data: | | Unless otherwise specified, all technical data relate to an ambient temperature of 25°C | | | | | | | |
| Capacitance Range: | | 0.10 µF to 330 µF | | | | | | | |
| Capacitance Tolerance: | | ±10%; ±20% | | | | | | | |
| Rated Voltage ($V_R$) | at ≤ 85°C: | 4 | 6 | 10 | 15 | 20 | 25 | 35 | 50 |
| Category Voltage ($V_C$) | at ≤125°C: | 2.7 | 4 | 6.7 | 10 | 13.3 | 16.7 | 23.3 | 33.3 |
| Surge Voltage ($V_S$) | at ≤ 85°C: | 5.3 | 8 | 13.3 | 20 | 26.7 | 33.3 | 46.7 | 66.7 |
| applies to Weibull parts only | at ≤125°C: | 3.5 | 5.3 | 8.7 | 13.3 | 17.8 | 22.2 | 31.1 | 44.5 |
| Temperature Range: | | -55°C to +125°C | | | | | | | |



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.kyocera-avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

# TAZ SERIES

## T4Z HRC4000 Medical Grade for Non-Critical Applications

| 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 | | | | | | | |
| 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) |
| T4ZA225*004C□L@4^++ | A | 2.2 | 4 | 8 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.079 | 0.071 | 0.032 | 0.632 | 0.569 | 0.253 |
| T4ZA475*004C□L@4^++ | A | 4.7 | 4 | 12 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZB475*004C□L@4^++ | B | 4.7 | 4 | 8 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.07 | 0.094 | 0.084 | 0.037 | 0.748 | 0.673 | 0.299 |
| T4ZA685*004C□L@4^++ | A | 6.8 | 4 | 12 | 0.136 | 1.360 | 1.632 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZD106*004C□L@4^++ | D | 10 | 4 | 4 | 0.200 | 2.000 | 2.400 | 8 | 8 | 10 | 0.08 | 0.141 | 0.127 | 0.057 | 0.566 | 0.509 | 0.226 |
| T4ZE336*004C□L@4^++ | E | 33 | 4 | 3 | 0.660 | 6.600 | 7.920 | 8 | 10 | 12 | 0.09 | 0.173 | 0.156 | 0.069 | 0.520 | 0.468 | 0.208 |
| T4ZF336*004C□L@4^++ | F | 33 | 4 | 2.2 | 0.660 | .600 | 7.920 | 8 | 10 | 12 | 0.1 | 0.213 | 0.192 | 0.085 | 0.469 | 0.422 | 0.188 |
| T4ZE476*004C□L@4^++ | E | 47 | 4 | 3 | 0.940 | 9.400 | 11.280 | 8 | 10 | 12 | 0.09 | 0.173 | 0.156 | 0.069 | 0.520 | 0.468 | 0.208 |
| T4ZE686*004C□L@4^++ | E | 68 | 4 | 3 | 1.360 | 13.600 | 16.320 | 8 | 10 | 12 | 0.09 | 0.173 | 0.156 | 0.069 | 0.520 | 0.468 | 0.208 |
| T4ZG686*004C□L@4^++ | G | 68 | 4 | 1.1 | 1.360 | 13.600 | 16.320 | 10 | 12 | 12 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZF107*004C□L@4^++ | F | 100 | 4 | 2 | 2.000 | 20.000 | 24.000 | 10 | 12 | 12 | 0.1 | 0.224 | 0.201 | 0.089 | 0.447 | 0.402 | 0.179 |
| T4ZA155*006C□L@4^++ | A | 1.5 | 6 | 8 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.079 | 0.071 | 0.032 | 0.632 | 0.569 | 0.253 |
| T4ZA225*006C□L@4^++ | A | 2.2 | 6 | 12 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZA335*006C□L@4^++ | A | 3.3 | 6 | 12 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZB335*006C□L@4^++ | B | 3.3 | 6 | 8 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.07 | 0.094 | 0.084 | 0.037 | 0.748 | 0.673 | 0.299 |
| T4ZA475*006C□L@4^++ | A | 4.7 | 6 | 12 | 0.141 | 1.410 | 1.692 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZD685*006C□L@4^++ | D | 6.8 | 6 | 4.5 | 0.204 | 2.040 | 2.448 | 6 | 8 | 8 | 0.08 | 0.133 | 0.120 | 0.053 | 0.600 | 0.540 | 0.240 |
| T4ZB106*006C□L@4^++ | B | 10 | 6 | 8 | 0.300 | 3.000 | 3.600 | 6 | 8 | 8 | 0.07 | 0.094 | 0.084 | 0.037 | 0.748 | 0.673 | 0.299 |
| T4ZD106*006C□L@4^++ | D | 10 | 6 | 6 | 0.300 | 3.000 | 3.600 | 6 | 8 | 8 | 0.08 | 0.115 | 0.104 | 0.046 | 0.693 | 0.624 | 0.277 |
| T4ZE106*006C□L@4^++ | E | 10 | 6 | 3.5 | 0.300 | 3.000 | 3.600 | 8 | 10 | 12 | 0.09 | 0.160 | 0.144 | 0.064 | 0.561 | 0.505 | 0.224 |
| T4ZB156*006C□L@4^++ | B | 15 | 6 | 8 | 0.450 | 4.500 | 5.400 | 8 | 10 | 10 | 0.07 | 0.094 | 0.084 | 0.037 | 0.748 | 0.673 | 0.299 |
| T4ZD156*006C□L@4^++ | D | 15 | 6 | 5 | 0.450 | 4.500 | 5.400 | 8 | 10 | 12 | 0.08 | 0.126 | 0.114 | 0.051 | 0.632 | 0.569 | 0.253 |
| T4ZF156*006C□L@4^++ | F | 15 | 6 | 0.3 | 0.450 | 4.500 | 5.400 | 6 | 8 | 8 | 0.1 | 0.577 | 0.520 | 0.231 | 0.173 | 0.156 | 0.069 |
| T4ZF226*006C□L@4^++ | F | 22 | 6 | 2.2 | 0.660 | 6.600 | 7.920 | 8 | 10 | 12 | 0.1 | 0.213 | 0.192 | 0.085 | 0.469 | 0.422 | 0.188 |
| T4ZE336*006C□L@4^++ | E | 33 | 6 | 3.5 | 0.990 | 9.900 | 11.880 | 6 | 8 | 8 | 0.09 | 0.160 | 0.144 | 0.064 | 0.561 | 0.505 | 0.224 |
| T4ZE476*006C□L@4^++ | E | 47 | 6 | 5 | 1.410 | 14.100 | 16.920 | 6 | 8 | 8 | 0.09 | 0.134 | 0.121 | 0.054 | 0.671 | 0.604 | 0.268 |
| T4ZF476*006C□L@4^++ | F | 47 | 6 | 3.5 | 1.410 | 14.100 | 16.920 | 8 | 10 | 12 | 0.1 | 0.169 | 0.152 | 0.068 | 0.592 | 0.532 | 0.237 |
| T4ZG476*006C□L@4^++ | G | 47 | 6 | 1.1 | 1.410 | 14.100 | 16.920 | 10 | 12 | 12 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZE686*006C□L@4^++ | E | 68 | 6 | 2 | 2.040 | 20.400 | 24.480 | 10 | 12 | 12 | 0.09 | 0.212 | 0.191 | 0.085 | 0.424 | 0.382 | 0.170 |
| T4ZF686*006C□L@4^++ | F | 68 | 6 | 1.5 | 2.040 | 20.400 | 24.480 | 10 | 12 | 12 | 0.1 | 0.258 | 0.232 | 0.103 | 0.387 | 0.349 | 0.155 |
| T4ZG686*006C□L@4^++ | G | 68 | 6 | 1 | 2.040 | 20.400 | 24.480 | 10 | 12 | 12 | 0.125 | 0.354 | 0.318 | 0.141 | 0.354 | 0.318 | 0.141 |
| T4ZH686*006C□L@4^++ | H | 68 | 6 | 0.9 | 2.040 | 20.400 | 24.480 | 10 | 12 | 12 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZG107*006C□L@4^++ | G | 100 | 6 | 1.1 | 3.000 | 30.000 | 36.000 | 10 | 12 | 12 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZG157*006C□L@4^++ | G | 150 | 6 | 1.1 | 4.500 | 45.000 | 54.000 | 10 | 12 | 12 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZH307*006C□L@4^++ | H | 300 | 6 | 0.9 | 9.000 | 90.000 | 108.000 | 15 | 18 | 18 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZH337*006C□L@4^++ | H | 330 | 6 | 0.9 | 9.900 | 99.000 | 118.800 | 10 | 12 | 12 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZA105*010C□L@4^++ | A | 1 | 10 | 10 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.071 | 0.064 | 0.028 | 0.707 | 0.636 | 0.283 |
| T4ZA155*010C□L@4^++ | A | 1.5 | 10 | 12 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZA225*010C□L@4^++ | A | 2.2 | 10 | 12 | 0.110 | 1.100 | 1.320 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZB225*010C□L@4^++ | B | 2.2 | 10 | 8 | 0.110 | 1.100 | 1.320 | 6 | 8 | 8 | 0.07 | 0.094 | 0.084 | 0.037 | 0.748 | 0.673 | 0.299 |

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.**

# TAZ SERIES

## T4Z HRC4000 Medical Grade for Non-Critical Applications

| RATING & PART NUMBER REFERENCE | | Parametric Specifications by Rating | | | | | | | | | Power Dissipation | Typical RMS Ripple Data by Rating | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cap @ 120Hz | DC Rated Voltage | ESR @ 100kHz | DCL max | | | DF Max | | | | 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 | | | | | | | |
| 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) |
| T4ZA335*010C□L@4^++ | A | 3.3 | 10 | 12 | 0.165 | 1.650 | 1.980 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZB335*010C□L@4^++ | B | 3.3 | 10 | 18 | 0.165 | 1.650 | 1.980 | 6 | 8 | 8 | 0.07 | 0.062 | 0.056 | 0.025 | 1.122 | 1.010 | 0.449 |
| T4ZB475*010C□L@4^++ | B | 4.7 | 10 | 8 | 0.235 | 2.350 | 2.820 | 6 | 8 | 8 | 0.07 | 0.094 | 0.084 | 0.037 | 0.748 | 0.673 | 0.299 |
| T4ZD475*010C□L@4^++ | D | 4.7 | 10 | 4.5 | 0.235 | 2.350 | 2.820 | 6 | 8 | 8 | 0.08 | 0.133 | 0.120 | 0.053 | 0.600 | 0.540 | 0.240 |
| T4ZB685*010C□L@4^++ | B | 6.8 | 10 | 8 | 0.340 | 3.400 | 4.080 | 6 | 8 | 8 | 0.07 | 0.094 | 0.084 | 0.037 | 0.748 | 0.673 | 0.299 |
| T4ZD685*010C□L@4^++ | D | 6.8 | 10 | 5 | 0.340 | 3.400 | 4.080 | 6 | 8 | 8 | 0.08 | 0.126 | 0.114 | 0.051 | 0.632 | 0.569 | 0.253 |
| T4ZE685*010C□L@4^++ | E | 6.8 | 10 | 3.5 | 0.340 | 3.400 | 4.080 | 6 | 8 | 8 | 0.09 | 0.160 | 0.144 | 0.064 | 0.561 | 0.505 | 0.224 |
| T4ZB106*010C□L@4^++ | B | 10 | 10 | 8 | 0.500 | 5.000 | 6.000 | 8 | 10 | 10 | 0.07 | 0.094 | 0.084 | 0.037 | 0.748 | 0.673 | 0.299 |
| T4ZD106*010C□L@4^++ | D | 10 | 10 | 4 | 0.500 | 5.000 | 6.000 | 6 | 8 | 8 | 0.08 | 0.141 | 0.127 | 0.057 | 0.566 | 0.509 | 0.226 |
| T4ZE106*010C□L@4^++ | E | 10 | 10 | 3.5 | 0.500 | 5.000 | 6.000 | 6 | 8 | 8 | 0.09 | 0.160 | 0.144 | 0.064 | 0.561 | 0.505 | 0.224 |
| T4ZE146*010C□L@4^++ | E | 14 | 10 | 3 | 0.700 | 7.000 | 8.400 | 6 | 8 | 8 | 0.09 | 0.173 | 0.156 | 0.069 | 0.520 | 0.468 | 0.208 |
| T4ZD156*010C□L@4^++ | D | 15 | 10 | 5 | 0.750 | 7.500 | 9.000 | 6 | 8 | 8 | 0.08 | 0.126 | 0.114 | 0.051 | 0.632 | 0.569 | 0.253 |
| T4ZE156*010C□L@4^++ | E | 15 | 10 | 3 | 0.750 | 7.500 | 9.000 | 8 | 10 | 10 | 0.09 | 0.173 | 0.156 | 0.069 | 0.520 | 0.468 | 0.208 |
| T4ZF156*010C□L@4^++ | F | 15 | 10 | 2.5 | 0.750 | 7.500 | 9.000 | 8 | 8 | 10 | 0.1 | 0.200 | 0.180 | 0.080 | 0.500 | 0.450 | 0.200 |
| T4ZD226*010C□L@4^++ | D | 22 | 10 | 8 | 1.100 | 11.000 | 13.200 | 6 | 8 | 8 | 0.08 | 0.100 | 0.090 | 0.040 | 0.800 | 0.720 | 0.320 |
| T4ZE226*010C□L@4^++ | E | 22 | 10 | 2 | 1.100 | 11.000 | 13.200 | 8 | 10 | 10 | 0.09 | 0.212 | 0.191 | 0.085 | 0.424 | 0.382 | 0.170 |
| T4ZF226*010C□L@4^++ | F | 22 | 10 | 3 | 1.100 | 11.000 | 13.200 | 8 | 10 | 10 | 0.1 | 0.183 | 0.164 | 0.073 | 0.548 | 0.493 | 0.219 |
| T4ZF336*010C□L@4^++ | F | 33 | 10 | 1.5 | 1.650 | 16.500 | 18.800 | 8 | 10 | 10 | 0.1 | 0.258 | 0.232 | 0.103 | 0.387 | 0.349 | 0.155 |
| T4ZG336*010C□L@4^++ | G | 33 | 10 | 1.1 | 1.650 | 16.500 | 19.800 | 10 | 12 | 12 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZF476*010C□L@4^++ | F | 47 | 10 | 1.5 | 2.350 | 23.500 | 28.200 | 10 | 12 | 12 | 0.1 | 0.258 | 0.232 | 0.103 | 0.387 | 0.349 | 0.155 |
| T4ZG476*010C□L@4^++ | G | 47 | 10 | 1 | 2.350 | 23.500 | 28.200 | 10 | 12 | 12 | 0.125 | 0.354 | 0.318 | 0.141 | 0.354 | 0.318 | 0.141 |
| T4ZH476*010C□L@4^++ | H | 47 | 10 | 0.9 | 2.350 | 23.500 | 28.200 | 10 | 12 | 12 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZG686*010C□L@4^++ | G | 68 | 10 | 1.1 | 3.400 | 34.000 | 40.800 | 10 | 12 | 12 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZH107*010C□L@4^++ | H | 100 | 10 | 0.9 | 5.000 | 50.000 | 60.000 | 10 | 12 | 12 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZH157*010C□L@4^++ | H | 150 | 10 | 0.9 | 7.500 | 75.000 | 90.000 | 10 | 12 | 12 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZH227*010C□L@4^++ | H | 220 | 10 | 0.9 | 11.000 | 110.000 | 132.000 | 10 | 12 | 12 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZE226*012C□L@4^++ | E | 22 | 12 | 0.5 | 1.320 | 13.200 | 15.840 | 6 | 8 | 8 | 0.09 | 0.424 | 0.382 | 0.170 | 0.212 | 0.191 | 0.085 |
| T4ZA684*015C□L@4^++ | A | 0.68 | 15 | 12 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.065 | 0.058 | 0.026 | 0.775 | 0.697 | 0.310 |
| T4ZA105*015C□L@4^++ | A | 1 | 15 | 15 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.058 | 0.052 | 0.023 | 0.866 | 0.779 | 0.346 |
| T4ZA225*015C□L@4^++ | A | 2.2 | 15 | 15 | 0.165 | 1.650 | 1.980 | 6 | 8 | 8 | 0.05 | 0.058 | 0.052 | 0.023 | 0.866 | 0.779 | 0.346 |
| T4ZB225*015C□L@4^++ | B | 2.2 | 15 | 5.5 | 0.165 | 1.650 | 1.980 | 6 | 8 | 8 | 0.07 | 0.113 | 0.102 | 0.045 | 0.620 | 0.558 | 0.248 |
| T4ZC225*015C□L@4^++ | C | 2.2 | 15 | 5.5 | 0.165 | 1.650 | 1.980 | 6 | 8 | 8 | 0.075 | 0.117 | 0.105 | 0.047 | 0.642 | 0.578 | 0.257 |
| T4ZB335*015C□L@4^++ | B | 3.3 | 15 | 9 | 0.248 | 2.475 | 2.970 | 6 | 8 | 8 | 0.07 | 0.088 | 0.079 | 0.035 | 0.794 | 0.714 | 0.317 |
| T4ZD335*015C□L@4^++ | D | 3.3 | 15 | 5 | 0.248 | 2.475 | 2.970 | 6 | 8 | 8 | 0.08 | 0.126 | 0.114 | 0.051 | 0.632 | 0.569 | 0.253 |
| T4ZB475*015C□L@4^++ | B | 4.7 | 15 | 5 | 0.353 | 3.525 | 4.230 | 6 | 8 | 8 | 0.07 | 0.118 | 0.106 | 0.047 | 0.592 | 0.532 | 0.237 |
| T4ZD475*015C□L@4^++ | D | 4.7 | 15 | 6 | 0.353 | 3.525 | 4.230 | 6 | 8 | 8 | 0.08 | 0.115 | 0.104 | 0.046 | 0.693 | 0.624 | 0.277 |
| T4ZE475*015C□L@4^++ | E | 4.7 | 15 | 4 | 0.353 | 3.525 | 4.230 | 6 | 8 | 8 | 0.09 | 0.150 | 0.135 | 0.060 | 0.600 | 0.540 | 0.240 |
| T4ZD106*015C□L@4^++ | D | 10 | 15 | 6 | 0.750 | 7.500 | 9.000 | 6 | 8 | 8 | 0.08 | 0.115 | 0.104 | 0.046 | 0.693 | 0.624 | 0.277 |
| T4ZE106*015C□L@4^++ | E | 10 | 15 | 4 | 0.750 | 7.500 | 9.000 | 6 | 8 | 8 | 0.09 | 0.150 | 0.135 | 0.060 | 0.600 | 0.540 | 0.240 |

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.**



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## T4Z HRC4000 Medical Grade for Non-Critical Applications

| 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 | | | | | | | |
| 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) |
| T4ZF106*015C□L@4^++ | F | 10 | 15 | 2.5 | 0.750 | 7.500 | 9.000 | 6 | 8 | 8 | 0.1 | 0.200 | 0.180 | 0.080 | 0.500 | 0.450 | 0.200 |
| T4ZE156*015C□L@4^++ | E | 15 | 15 | 4 | 1.125 | 11.250 | 13.500 | 6 | 8 | 8 | 0.09 | 0.150 | 0.135 | 0.060 | 0.600 | 0.540 | 0.240 |
| T4ZF226*015C□L@4^++ | F | 22 | 15 | 3 | 1.650 | 16.500 | 19.800 | 8 | 10 | 10 | 0.1 | 0.183 | 0.164 | 0.073 | 0.548 | 0.493 | 0.219 |
| T4ZG226*015C□L@4^++ | G | 22 | 15 | 1.1 | 1.650 | 16.500 | 19.800 | 6 | 8 | 8 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZF336*015C□L@4^++ | F | 33 | 15 | 3 | 2.475 | 24.750 | 29.700 | 6 | 8 | 8 | 0.1 | 0.183 | 0.164 | 0.073 | 0.548 | 0.493 | 0.219 |
| T4ZH336*015C□L@4^++ | H | 33 | 15 | 0.9 | 2.475 | 24.750 | 29.700 | 8 | 8 | 10 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZG476*015C□L@4^++ | G | 47 | 15 | 1.1 | 3.525 | 35.250 | 42.300 | 8 | 10 | 10 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZH107*015C□L@4^++ | H | 100 | 15 | 0.9 | 7.500 | 75.000 | 90.000 | 10 | 12 | 12 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZA474*020C□L@4^++ | A | 0.47 | 20 | 14 | 0.100 | 1.000 | 1.200 | 8 | 8 | 10 | 0.05 | 0.060 | 0.054 | 0.024 | 0.837 | 0.753 | 0.335 |
| T4ZA105*020C□L@4^++ | A | 1 | 20 | 15 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.058 | 0.052 | 0.023 | 0.866 | 0.779 | 0.346 |
| T4ZB105*020C□L@4^++ | B | 1 | 20 | 12 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.07 | 0.076 | 0.069 | 0.031 | 0.917 | 0.825 | 0.367 |
| T4ZB155*020C□L@4^++ | B | 1.5 | 20 | 9 | 0.150 | 1.500 | 1.800 | 6 | 8 | 8 | 0.07 | 0.088 | 0.079 | 0.035 | 0.794 | 0.714 | 0.317 |
| T4ZB225*020C□L@4^++ | B | 2.2 | 20 | 9 | 0.220 | 2.200 | 2.640 | 6 | 8 | 8 | 0.07 | 0.088 | 0.079 | 0.035 | 0.794 | 0.714 | 0.317 |
| T4ZD225*020C□L@4^++ | D | 2.2 | 20 | 5 | 0.220 | 2.200 | 2.640 | 6 | 8 | 8 | 0.08 | 0.126 | 0.114 | 0.051 | 0.632 | 0.569 | 0.253 |
| T4ZE335*020C□L@4^++ | E | 3.3 | 20 | 4 | 0.330 | 3.300 | 3.960 | 6 | 8 | 8 | 0.09 | 0.150 | 0.135 | 0.060 | 0.600 | 0.540 | 0.240 |
| T4ZD475*020C□L@4^++ | D | 4.7 | 20 | 6 | 0.470 | 4.700 | 5.640 | 6 | 8 | 8 | 0.08 | 0.115 | 0.104 | 0.046 | 0.693 | 0.624 | 0.277 |
| T4ZE475*020C□L@4^++ | E | 4.7 | 20 | 6 | 0.470 | 4.700 | 5.640 | 6 | 8 | 8 | 0.09 | 0.122 | 0.110 | 0.049 | 0.735 | 0.661 | 0.294 |
| T4ZD685*020C□L@4^++ | D | 6.8 | 20 | 4 | 0.680 | 6.800 | 8.160 | 6 | 8 | 8 | 0.08 | 0.141 | 0.127 | 0.057 | 0.566 | 0.509 | 0.226 |
| T4ZE685*020C□L@4^++ | E | 6.8 | 20 | 5 | 0.680 | 6.800 | 8.160 | 6 | 8 | 8 | 0.09 | 0.134 | 0.121 | 0.054 | 0.671 | 0.604 | 0.268 |
| T4ZE106*020C□L@4^++ | E | 10 | 20 | 5 | 1.000 | 10.000 | 12.000 | 6 | 8 | 8 | 0.09 | 0.134 | 0.121 | 0.054 | 0.671 | 0.604 | 0.268 |
| T4ZF156*020C□L@4^++ | F | 15 | 20 | 3 | 1.500 | 15.000 | 18.000 | 6 | 8 | 8 | 0.1 | 0.183 | 0.164 | 0.073 | 0.548 | 0.493 | 0.219 |
| T4ZG156*020C□L@4^++ | G | 15 | 20 | 1.1 | 1.500 | 15.000 | 18.000 | 6 | 8 | 8 | 0.125 | 0.337 | 0.303 | 0.135 | 0.371 | 0.334 | 0.148 |
| T4ZG226*020C□L@4^++ | G | 22 | 20 | 2.5 | 2.200 | 22.000 | 26.400 | 6 | 8 | 8 | 0.125 | 0.224 | 0.201 | 0.089 | 0.559 | 0.503 | 0.224 |
| T4ZH226*020C□L@4^++ | H | 22 | 20 | 0.9 | 2.200 | 22.000 | 26.400 | 6 | 8 | 8 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZH476*020C□L@4^++ | H | 47 | 20 | 0.9 | 4.700 | 47.000 | 56.400 | 8 | 10 | 10 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZA334*025C□L@4^++ | A | 0.33 | 25 | 15 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.058 | 0.052 | 0.023 | 0.866 | 0.779 | 0.346 |
| T4ZB105*025C□L@4^++ | B | 1 | 25 | 10 | 0.125 | 1.250 | 1.500 | 6 | 8 | 8 | 0.07 | 0.084 | 0.075 | 0.033 | 0.837 | 0.753 | 0.335 |
| T4ZD155*025C□L@4^++ | D | 1.5 | 25 | 6.5 | 0.188 | 1.875 | 2.250 | 6 | 8 | 8 | 0.08 | 0.111 | 0.100 | 0.044 | 0.721 | 0.649 | 0.288 |
| T4ZD225*025C□L@4^++ | D | 2.2 | 25 | 6 | 0.275 | 2.750 | 3.300 | 6 | 8 | 8 | 0.08 | 0.115 | 0.104 | 0.046 | 0.693 | 0.624 | 0.277 |
| T4ZE225*025C□L@4^++ | E | 2.2 | 25 | 3.5 | 0.275 | 2.750 | 3.300 | 6 | 8 | 8 | 0.09 | 0.160 | 0.144 | 0.064 | 0.561 | 0.505 | 0.224 |
| T4ZE335*025C□L@4^++ | E | 3.3 | 25 | 4 | 0.413 | 4.125 | 4.950 | 6 | 8 | 8 | 0.09 | 0.150 | 0.135 | 0.060 | 0.600 | 0.540 | 0.240 |
| T4ZF475*025C□L@4^++ | F | 4.7 | 25 | 2.5 | 0.588 | 5.875 | 7.050 | 6 | 8 | 8 | 0.1 | 0.200 | 0.180 | 0.080 | 0.500 | 0.450 | 0.200 |
| T4ZF685*025C□L@4^++ | F | 6.8 | 25 | 3 | 0.850 | 8.5001 | 0.200 | 6 | 8 | 8 | 0.1 | 0.183 | 0.164 | 0.073 | 0.548 | 0.493 | 0.219 |
| T4ZG106*025C□L@4^++ | G | 10 | 25 | 1.4 | 1.250 | 12.500 | 15.000 | 6 | 8 | 8 | 0.125 | 0.299 | 0.269 | 0.120 | 0.418 | 0.376 | 0.167 |
| T4ZH226*025C□L@4^++ | H | 22 | 25 | 0.9 | 2.750 | 27.500 | 33.000 | 6 | 8 | 8 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZA224*035C□L@4^++ | A | 0.22 | 35 | 18 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.053 | 0.047 | 0.021 | 0.949 | 0.854 | 0.379 |
| T4ZB474*035C□L@4^++ | B | 0.47 | 35 | 10 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.07 | 0.084 | 0.075 | 0.033 | 0.837 | 0.753 | 0.335 |
| T4ZD105*035C□L@4^++ | D | 1 | 35 | 6.5 | 0.175 | 1.750 | 2.100 | 6 | 8 | 8 | 0.08 | 0.111 | 0.100 | 0.044 | 0.721 | 0.649 | 0.288 |
| T4ZF335*035C□L@4^++ | F | 3.3 | 35 | 2.5 | 0.578 | 5.775 | 6.930 | 6 | 8 | 8 | 0.1 | 0.200 | 0.180 | 0.080 | 0.500 | 0.450 | 0.200 |

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.**

## T4Z HRC4000 Medical Grade for Non-Critical Applications

| 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 | | | | | | | |
| 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) |
| T4ZH106*035C□L@4^++ | H | 10 | 35 | 0.9 | 1.750 | 17.500 | 21.000 | 8 | 10 | 10 | 0.15 | 0.408 | 0.367 | 0.163 | 0.367 | 0.331 | 0.147 |
| T4ZA104*050C□L@4^++ | A | 0.1 | 50 | 22 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.048 | 0.043 | 0.019 | 1.049 | 0.944 | 0.420 |
| T4ZA154*050C□L@4^++ | A | 0.15 | 50 | 17 | 0.100 | 1.000 | 1.200 | 6 | 8 | 8 | 0.05 | 0.054 | 0.049 | 0.022 | 0.922 | 0.830 | 0.369 |
| T4ZE105*050C□L@4^++ | E | 1 | 50 | 6 | 0.250 | 2.500 | 3.000 | 6 | 8 | 8 | 0.09 | 0.122 | 0.110 | 0.049 | 0.735 | 0.661 | 0.294 |
| T4ZF225*050C□L@4^++ | F | 2.2 | 50 | 2.5 | 0.550 | 5.500 | 6.600 | 6 | 8 | 8 | 0.1 | 0.200 | 0.180 | 0.080 | 0.500 | 0.450 | 0.200 |
| T4ZG335*050C□L@4^++ | G | 3.3 | 50 | 2 | 0.825 | 8.250 | 9.900 | 6 | 8 | 8 | 0.125 | 0.250 | 0.225 | 0.100 | 0.500 | 0.450 | 0.200 |

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.

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**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.**



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