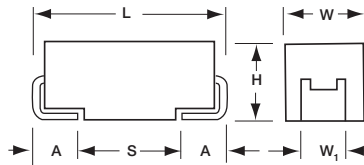


# T4J – Medical Series

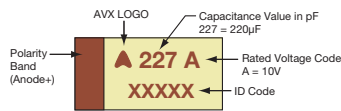


## HRC4000 Implantable Non Life Support and Non Implantable Life Support



### MARKING

#### A, B, C, D, E, U CASE



The AVX T4J series is designed for use in Implantable - Non-Life support or Non-Implantable - Life support medical applications. These components are screened using our newly designed Q-Process to effectively remove components that may experience parametric shifts through customer processing or display instability through life testing.



For RoHS compliant products, please select correct termination style.

### FEATURES

- Dedicated to medical applications
- HRC4000 - Implantable, Non-Life support  
- Non-Implantable, Life support
- -55 to +125°C operation temperature
- Basic reliability better than 0.1%/1000hours
- Custom DCL / ESR options on selected parts

**T4J Standard** – Standard option DCL and ESR limits including Q-Process screening.

**T4J Custom** – A custom option where specific DCL and ESR parameter limits can be agreed based Q-Process statistical screening. DCL down to 0.005CV on selected codes

### APPLICATIONS

- Medical, Implantable - Non-Life support and Non-Implantable - Life support

For additional information on Q-process please consult the AVX technical publication “Reaching the Highest Reliability for Tantalum Capacitors” (see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

### CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L±0.20 (0.008) | W±0.20 (0.008) -0.10 (0.004) | H±0.20 (0.008) -0.10 (0.004) | W <sub>1</sub> ±0.20 (0.008) | A±0.30 (0.012) -0.20 (0.008) | S Min.       |
|------|----------|------------|----------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| A    | 1206     | 3216-18    | 3.20 (0.126)   | 1.60 (0.063)                 | 1.60 (0.063)                 | 1.20 (0.047)                 | 0.80 (0.031)                 | 1.10 (0.043) |
| B    | 1210     | 3528-21    | 3.50 (0.138)   | 2.80 (0.110)                 | 1.90 (0.075)                 | 2.20 (0.087)                 | 0.80 (0.031)                 | 1.40 (0.055) |
| C    | 2312     | 6032-28    | 6.00 (0.236)   | 3.20 (0.126)                 | 2.60 (0.102)                 | 2.20 (0.087)                 | 1.30 (0.051)                 | 2.90 (0.114) |
| D    | 2917     | 7343-31    | 7.30 (0.287)   | 4.30 (0.169)                 | 2.90 (0.114)                 | 2.40 (0.094)                 | 1.30 (0.051)                 | 4.40 (0.173) |
| E    | 2917     | 7343-43    | 7.30 (0.287)   | 4.30 (0.169)                 | 4.10 (0.162)                 | 2.40 (0.094)                 | 1.30 (0.051)                 | 4.40 (0.173) |
| U    | 2924     | 7361-43    | 7.30 (0.287)   | 6.10 (0.240)                 | 4.10 (0.162)                 | 3.10 (0.120)                 | 1.30 (0.051)                 | 4.40 (0.173) |

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

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

| Capacitance |      | Rated Voltage DC (V <sub>R</sub> ) to 85°C (Voltage Code) |         |         |        |        |        |         |
|-------------|------|-----------------------------------------------------------|---------|---------|--------|--------|--------|---------|
| µF          | Code | 6.3V (J)                                                  | 10V (A) | 16V (C) | 20 (D) | 25 (E) | 35 (V) | 50V (T) |
| 1.0         | 105  |                                                           |         |         |        |        | A      | C       |
| 1.5         | 155  |                                                           |         |         |        | A      | B      | C       |
| 2.2         | 225  |                                                           |         |         |        | B      | B      | C       |
| 3.3         | 335  |                                                           |         |         | A*     | B      | B      | C       |
| 4.7         | 475  |                                                           |         | A*      | B      | B      | C      | D       |
| 6.8         | 685  |                                                           | A       | B       | B      | C      | C      | D       |
| 10          | 106  | A                                                         | A       | B       | B/C    | C      | C      | E       |
| 15          | 156  | A                                                         | B       | B       | C      | C      | D      |         |
| 22          | 226  | B                                                         | B       | C       | C      | D      | D      |         |
| 33          | 336  | B                                                         | C       | C       | D      | D      | E      |         |
| 47          | 476  | B/C                                                       | C       | D       | D      | D      |        |         |
| 68          | 686  | B/C                                                       | C       | D       | E      |        |        |         |
| 100         | 107  | B/C                                                       | D       | E       | E      |        |        |         |
| 150         | 157  | D                                                         | D       | E       |        |        |        |         |
| 220         | 227  | D                                                         | E       | U       |        |        |        |         |
| 330         | 337  | E                                                         | E       |         |        |        |        |         |
| 470         | 477  | E                                                         | U       |         |        |        |        |         |
| 680         | 687  | U                                                         |         |         |        |        |        |         |

Available Ratings

Engineering samples - please contact manufacturer

\*Codes under development

Please contact the factory for codes not listed in the table.

Note: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards with customer written approval.



# T4J – Medical Series



## HRC4000 Implantable Non Life Support and Non Implantable Life Support

### HOW TO ORDER

| T4J  | E                            | 336                                                                                                                                                  | K                     | 035                                                                                                                           | C                                                             | □                                    | L                                         | Q                                                  | 4                                     | ^                                                                                                                  | 00                                     |
|------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------|-------------------------------------------|----------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Type | Case Size<br>See table above | Capacitance<br>Code<br>pF code:<br>1st two digits represent<br>significant figures<br>3rd digit represents multiplier<br>(number of zeros to follow) | Tolerance<br>K = ±10% | Rated DC<br>Voltage<br>006 = 6.3Vdc<br>010 = 10Vdc<br>016 = 16Vdc<br>020 = 20Vdc<br>025 = 25Vdc<br>035 = 35Vdc<br>050 = 50Vdc | Standard or<br>Low ESR<br>Range<br>C = Std ESR<br>L = Low ESR | Packaging<br>R = 7" Reel<br>B = Bulk | Inspection<br>Level<br>L = Lab Inspection | Reliability<br>Grade<br>Q = Q-Process<br>Screening | Qualification<br>Level<br>4 = HCR4000 | Termination<br>7 = 100% Tin<br>9 = Gold Plated<br>H = SnPb Non RoHS<br>H,9 = (Contact<br>Manufacturer)<br>Non RoHS | Suffix<br>00 = Standard<br>XX = Custom |

### TECHNICAL SPECIFICATIONS

|                                    |                                                                               |     |    |    |    |    |    |    |  |
|------------------------------------|-------------------------------------------------------------------------------|-----|----|----|----|----|----|----|--|
| Technical Data:                    | All technical data relate to an ambient temperature of +25°C                  |     |    |    |    |    |    |    |  |
| Capacitance Range:                 | 1 µF to 680 µF                                                                |     |    |    |    |    |    |    |  |
| Capacitance Tolerance:             | ±10%                                                                          |     |    |    |    |    |    |    |  |
| Leakage Current DCL:               | 0.01CV (Custom potential down to 0.005CV available upon request)              |     |    |    |    |    |    |    |  |
| Rated Voltage (V <sub>R</sub> )    | ≤ 85°C:                                                                       | 6.3 | 10 | 16 | 20 | 25 | 35 | 50 |  |
| Category Voltage (V <sub>C</sub> ) | ≤ 125°C:                                                                      | 4   | 7  | 10 | 13 | 17 | 23 | 33 |  |
| Surge Voltage (V <sub>S</sub> )    | ≤ 85°C:                                                                       | 8   | 13 | 20 | 26 | 32 | 46 | 65 |  |
| Surge Voltage (V <sub>S</sub> )    | ≤ 125°C:                                                                      | 5   | 8  | 13 | 16 | 20 | 28 | 40 |  |
| Temperature Range:                 | -55°C to +125°C                                                               |     |    |    |    |    |    |    |  |
| Reliability:                       | 0.1% / 1000hrs at 25°C, VR with 0.1Ω/V series impedance, 90% confidence level |     |    |    |    |    |    |    |  |

# T4J – Medical Series



HRC4000 Implantable Non Life Support and Non Implantable Life Support

## RATINGS & PART NUMBER REFERENCE

| AVX<br>Part No.      | Case<br>Size | Capacitance<br>(µF) | Rated<br>Voltage<br>(V) | Rated<br>Temperature<br>(°C) | Category<br>Voltage<br>(V) | Category<br>Temperature<br>(°C) | DCL<br>Max.<br>(µA) | DF<br>Max.<br>(%) | ESR<br>Max.<br>@ 100kHz<br>(mΩ) | MSL | 100kHz RMS Current (mA) |      |       |
|----------------------|--------------|---------------------|-------------------------|------------------------------|----------------------------|---------------------------------|---------------------|-------------------|---------------------------------|-----|-------------------------|------|-------|
|                      |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     | 25°C                    | 85°C | 125°C |
| 6.3 Volt @ 85°C      |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     |                         |      |       |
| T4JA106K006C□□LQ4^00 | A            | 10                  | 6.3                     | 85                           | 4                          | 125                             | 0.6                 | 6                 | 1500                            | 3   | 224                     | 201  | 89    |
| T4JA156K006C□□LQ4^00 | A            | 15                  | 6.3                     | 85                           | 4                          | 125                             | 0.9                 | 6                 | 1500                            | 3   | 224                     | 201  | 89    |
| T4JB226K006C□□LQ4^00 | B            | 22                  | 6.3                     | 85                           | 4                          | 125                             | 1.4                 | 6                 | 600                             | 3   | 376                     | 339  | 151   |
| T4JB336K006C□□LQ4^00 | B            | 33                  | 6.3                     | 85                           | 4                          | 125                             | 2.1                 | 6                 | 600                             | 3   | 376                     | 339  | 151   |
| T4JB476K006C□□LQ4^00 | B            | 47                  | 6.3                     | 85                           | 4                          | 125                             | 2.8                 | 8                 | 1500                            | 3   | 238                     | 214  | 95    |
| T4JC476K006C□□LQ4^00 | C            | 47                  | 6.3                     | 85                           | 4                          | 125                             | 3.0                 | 6                 | 300                             | 3   | 606                     | 545  | 242   |
| T4JB686K006C□□LQ4^00 | B            | 68                  | 6.3                     | 85                           | 4                          | 125                             | 4.0                 | 8                 | 900                             | 3   | 307                     | 277  | 123   |
| T4JC686K006C□□LQ4^00 | C            | 68                  | 6.3                     | 85                           | 4                          | 125                             | 4.3                 | 6                 | 300                             | 3   | 606                     | 545  | 242   |
| T4JB107K006C□□LQ4^00 | B            | 100                 | 6.3                     | 85                           | 4                          | 125                             | 3.0                 | 10                | 1400                            | 3   | 246                     | 222  | 99    |
| T4JC107K006C□□LQ4^00 | C            | 100                 | 6.3                     | 85                           | 4                          | 125                             | 6.3                 | 6                 | 300                             | 3   | 606                     | 545  | 242   |
| T4JD157K006C□□LQ4^00 | D            | 150                 | 6.3                     | 85                           | 4                          | 125                             | 9.5                 | 6                 | 200                             | 3   | 866                     | 779  | 346   |
| T4JD227K006C□□LQ4^00 | D            | 220                 | 6.3                     | 85                           | 4                          | 125                             | 13.9                | 8                 | 200                             | 3   | 866                     | 779  | 346   |
| T4JE337K006C□□LQ4^00 | E            | 330                 | 6.3                     | 85                           | 4                          | 125                             | 20.8                | 8                 | 200                             | 3   | 908                     | 817  | 363   |
| T4JE477K006C□□LQ4^00 | E            | 470                 | 6.3                     | 85                           | 4                          | 125                             | 29.6                | 8                 | 200                             | 3   | 908                     | 817  | 363   |
| T4JU687K006C□□LQ4^00 | U            | 680                 | 6.3                     | 85                           | 4                          | 125                             | 42.8                | 12                | 250                             | 3   | 812                     | 731  | 325   |
| 10 Volt @ 85°C       |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     |                         |      |       |
| T4JA685K010C□□LQ4^00 | A            | 6.8                 | 10                      | 85                           | 7                          | 125                             | 0.7                 | 6                 | 2000                            | 3   | 194                     | 174  | 77    |
| T4JA106K010C□□LQ4^00 | A            | 10                  | 10                      | 85                           | 7                          | 125                             | 1                   | 6                 | 2000                            | 3   | 194                     | 174  | 77    |
| T4JB156K010C□□LQ4^00 | B            | 15                  | 10                      | 85                           | 7                          | 125                             | 1.5                 | 6                 | 700                             | 3   | 348                     | 314  | 139   |
| T4JB226K010C□□LQ4^00 | B            | 22                  | 10                      | 85                           | 7                          | 125                             | 2.2                 | 6                 | 700                             | 3   | 348                     | 314  | 139   |
| T4JC336K010C□□LQ4^00 | C            | 33                  | 10                      | 85                           | 7                          | 125                             | 3.3                 | 6                 | 300                             | 3   | 606                     | 545  | 242   |
| T4JC476K010C□□LQ4^00 | C            | 47                  | 10                      | 85                           | 7                          | 125                             | 4.7                 | 6                 | 300                             | 3   | 606                     | 545  | 242   |
| T4JC686K010C□□LQ4^00 | C            | 68                  | 10                      | 85                           | 7                          | 125                             | 6.8                 | 6                 | 300                             | 3   | 606                     | 545  | 242   |
| T4JD107K010C□□LQ4^00 | D            | 100                 | 10                      | 85                           | 7                          | 125                             | 10.0                | 6                 | 150                             | 3   | 1000                    | 900  | 400   |
| T4JD157K010C□□LQ4^00 | D            | 150                 | 10                      | 85                           | 7                          | 125                             | 15.0                | 8                 | 150                             | 3   | 1000                    | 900  | 400   |
| T4JE227K010C□□LQ4^00 | E            | 220                 | 10                      | 85                           | 7                          | 125                             | 22.0                | 8                 | 150                             | 3   | 1049                    | 944  | 420   |
| T4JE337K010C□□LQ4^00 | E            | 330                 | 10                      | 85                           | 7                          | 125                             | 33.0                | 8                 | 150                             | 3   | 1049                    | 944  | 420   |
| T4JU477K010C□□LQ4^00 | U            | 470                 | 10                      | 85                           | 7                          | 125                             | 47.0                | 12                | 200                             | 3   | 908                     | 817  | 363   |
| 16 Volt @ 85°C       |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     |                         |      |       |
| T4JB685K016C□□LQ4^00 | B            | 6.8                 | 16                      | 85                           | 10                         | 125                             | 1.1                 | 6                 | 1200                            | 3   | 266                     | 240  | 106   |
| T4JB106K016C□□LQ4^00 | B            | 10                  | 16                      | 85                           | 10                         | 125                             | 1.6                 | 6                 | 1200                            | 3   | 266                     | 240  | 106   |
| T4JB156K016C□□LQ4^00 | B            | 15                  | 16                      | 85                           | 10                         | 125                             | 2.4                 | 6                 | 1200                            | 3   | 266                     | 240  | 106   |
| T4JC226K016C□□LQ4^00 | C            | 22                  | 16                      | 85                           | 10                         | 125                             | 3.5                 | 6                 | 350                             | 3   | 561                     | 505  | 224   |
| T4JC336K016C□□LQ4^00 | C            | 33                  | 16                      | 85                           | 10                         | 125                             | 5.3                 | 6                 | 350                             | 3   | 561                     | 505  | 224   |
| T4JD476K016C□□LQ4^00 | D            | 47                  | 16                      | 85                           | 10                         | 125                             | 7.5                 | 6                 | 200                             | 3   | 866                     | 779  | 346   |
| T4JD686K016C□□LQ4^00 | D            | 68                  | 16                      | 85                           | 10                         | 125                             | 10.9                | 6                 | 200                             | 3   | 866                     | 779  | 346   |
| T4JE107K016C□□LQ4^00 | E            | 100                 | 16                      | 85                           | 10                         | 125                             | 16.0                | 6                 | 150                             | 3   | 1049                    | 944  | 420   |
| T4JE157K016C□□LQ4^00 | E            | 150                 | 16                      | 85                           | 10                         | 125                             | 24.0                | 6                 | 150                             | 3   | 1049                    | 944  | 420   |
| T4JU227K016C□□LQ4^00 | U            | 220                 | 16                      | 85                           | 10                         | 125                             | 35.2                | 12                | 200                             | 3   | 908                     | 817  | 363   |
| 20 Volt @ 85°C       |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     |                         |      |       |
| T4JB475K020C□□LQ4^00 | B            | 4.7                 | 20                      | 85                           | 13                         | 125                             | 1.0                 | 6                 | 1000                            | 3   | 292                     | 262  | 117   |
| T4JB685K020C□□LQ4^00 | B            | 6.8                 | 20                      | 85                           | 13                         | 125                             | 1.4                 | 6                 | 1000                            | 3   | 292                     | 262  | 117   |
| T4JB106K020C□□LQ4^00 | B            | 10                  | 20                      | 85                           | 13                         | 125                             | 1.0                 | 6                 | 1000                            | 3   | 292                     | 262  | 117   |
| T4JB106K020L□□LQ4^00 | B            | 10                  | 20                      | 85                           | 13                         | 125                             | 1.0                 | 6                 | 500                             | 3   | 412                     | 371  | 165   |
| T4JC106K020C□□LQ4^00 | C            | 10                  | 20                      | 85                           | 13                         | 125                             | 2.0                 | 6                 | 500                             | 3   | 469                     | 422  | 188   |
| T4JC156K020C□□LQ4^00 | C            | 15                  | 20                      | 85                           | 13                         | 125                             | 3.0                 | 6                 | 500                             | 3   | 469                     | 422  | 188   |
| T4JC226K020C□□LQ4^00 | C            | 22                  | 20                      | 85                           | 13                         | 125                             | 4.4                 | 6                 | 500                             | 3   | 469                     | 422  | 188   |
| T4JD336K020C□□LQ4^00 | D            | 33                  | 20                      | 85                           | 13                         | 125                             | 6.6                 | 6                 | 250                             | 3   | 775                     | 697  | 310   |
| T4JD476K020C□□LQ4^00 | D            | 47                  | 20                      | 85                           | 13                         | 125                             | 9.4                 | 6                 | 250                             | 3   | 775                     | 697  | 310   |
| T4JE686K020C□□LQ4^00 | E            | 68                  | 20                      | 85                           | 13                         | 125                             | 13.6                | 6                 | 200                             | 3   | 908                     | 817  | 363   |
| T4JE107K020C□□LQ4^00 | E            | 100                 | 20                      | 85                           | 13                         | 125                             | 20.0                | 6                 | 200                             | 3   | 908                     | 817  | 363   |

# T4J – Medical Series



## HRC4000 Implantable Non Life Support and Non Implantable Life Support

| AVX<br>Part No.      | Case<br>Size | Capacitance<br>(µF) | Rated<br>Voltage<br>(V) | Rated<br>Temperature<br>(°C) | Category<br>Voltage<br>(V) | Category<br>Temperature<br>(°C) | DCL<br>Max.<br>(µA) | DF<br>Max.<br>(%) | ESR<br>Max.<br>@ 100kHz<br>(mΩ) | MSL | 100kHz RMS Current (mA) |      |       |
|----------------------|--------------|---------------------|-------------------------|------------------------------|----------------------------|---------------------------------|---------------------|-------------------|---------------------------------|-----|-------------------------|------|-------|
|                      |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     | 25°C                    | 85°C | 125°C |
| 25 Volt @ 85°C       |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     |                         |      |       |
| T4JA155K025C□□LQ4^00 | A            | 1.5                 | 25                      | 85                           | 17                         | 125                             | 0.4                 | 6                 | 3000                            | 3   | 158                     | 142  | 63    |
| T4JB225K025C□□LQ4^00 | B            | 2.2                 | 25                      | 85                           | 17                         | 125                             | 0.6                 | 6                 | 2000                            | 3   | 206                     | 186  | 82    |
| T4JB335K025C□□LQ4^00 | B            | 3.3                 | 25                      | 85                           | 17                         | 125                             | 0.8                 | 6                 | 2000                            | 3   | 206                     | 186  | 82    |
| T4JB475K025C□□LQ4^00 | B            | 4.7                 | 25                      | 85                           | 17                         | 125                             | 1.2                 | 6                 | 2000                            | 3   | 206                     | 186  | 82    |
| T4JC685K025C□□LQ4^00 | C            | 6.8                 | 25                      | 85                           | 17                         | 125                             | 1.7                 | 6                 | 600                             | 3   | 428                     | 385  | 171   |
| T4JC106K025C□□LQ4^00 | C            | 10                  | 25                      | 85                           | 17                         | 125                             | 2.5                 | 6                 | 600                             | 3   | 428                     | 385  | 171   |
| T4JC156K025C□□LQ4^00 | C            | 15                  | 25                      | 85                           | 17                         | 125                             | 3.8                 | 6                 | 600                             | 3   | 428                     | 385  | 171   |
| T4JD226K025C□□LQ4^00 | D            | 22                  | 25                      | 85                           | 17                         | 125                             | 5.5                 | 6                 | 400                             | 3   | 612                     | 551  | 245   |
| T4JD336K025C□□LQ4^00 | D            | 33                  | 25                      | 85                           | 17                         | 125                             | 8.3                 | 6                 | 400                             | 3   | 612                     | 551  | 245   |
| T4JD476K025C□□LQ4^00 | D            | 47                  | 25                      | 85                           | 17                         | 125                             | 11.8                | 6                 | 400                             | 3   | 612                     | 551  | 245   |
| 35 Volt @ 85°C       |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     |                         |      |       |
| T4JA105K035C□□LQ4^00 | A            | 1.0                 | 35                      | 85                           | 23                         | 125                             | 0.4                 | 6                 | 3000                            | 3   | 158                     | 142  | 63    |
| T4JA105K035L□□LQ4^00 | A            | 1.0                 | 35                      | 85                           | 23                         | 125                             | 0.2                 | 6                 | 1000                            | 3   | 274                     | 246  | 110   |
| T4JB155K035C□□LQ4^00 | B            | 1.5                 | 35                      | 85                           | 23                         | 125                             | 0.5                 | 6                 | 2500                            | 3   | 184                     | 166  | 74    |
| T4JB225K035C□□LQ4^00 | B            | 2.2                 | 35                      | 85                           | 23                         | 125                             | 0.8                 | 6                 | 2500                            | 3   | 184                     | 166  | 74    |
| T4JB335K035C□□LQ4^00 | B            | 3.3                 | 35                      | 85                           | 23                         | 125                             | 1.2                 | 6                 | 2500                            | 3   | 184                     | 166  | 74    |
| T4JC475K035C□□LQ4^00 | C            | 4.7                 | 35                      | 85                           | 23                         | 125                             | 1.6                 | 6                 | 600                             | 3   | 428                     | 385  | 171   |
| T4JC685K035C□□LQ4^00 | C            | 6.8                 | 35                      | 85                           | 23                         | 125                             | 2.4                 | 6                 | 600                             | 3   | 428                     | 385  | 171   |
| T4JC106K035C□□LQ4^00 | C            | 10                  | 35                      | 85                           | 23                         | 125                             | 3.5                 | 6                 | 600                             | 3   | 428                     | 385  | 171   |
| T4JD156K035C□□LQ4^00 | D            | 15                  | 35                      | 85                           | 23                         | 125                             | 5.3                 | 6                 | 400                             | 3   | 612                     | 551  | 245   |
| T4JD226K035C□□LQ4^00 | D            | 22                  | 35                      | 85                           | 23                         | 125                             | 7.7                 | 6                 | 400                             | 3   | 612                     | 551  | 245   |
| T4JE336K035C□□LQ4^00 | E            | 33                  | 35                      | 85                           | 23                         | 125                             | 11.6                | 6                 | 250                             | 3   | 812                     | 731  | 325   |
| 50 Volt @ 85°C       |              |                     |                         |                              |                            |                                 |                     |                   |                                 |     |                         |      |       |
| T4JC105K050C□□LQ4^00 | C            | 1                   | 50                      | 85                           | 33                         | 125                             | 0.5                 | 4                 | 1500                            | 3   | 271                     | 244  | 108   |
| T4JC155K050C□□LQ4^00 | C            | 1.5                 | 50                      | 85                           | 33                         | 125                             | 0.8                 | 6                 | 1500                            | 3   | 271                     | 244  | 108   |
| T4JC225K050C□□LQ4^00 | C            | 2.2                 | 50                      | 85                           | 33                         | 125                             | 1.1                 | 6                 | 1500                            | 3   | 271                     | 244  | 108   |
| T4JC335K050C□□LQ4^00 | C            | 3.3                 | 50                      | 85                           | 33                         | 125                             | 1.7                 | 6                 | 1500                            | 3   | 271                     | 244  | 108   |
| T4JD475K050C□□LQ4^00 | D            | 4.7                 | 50                      | 85                           | 33                         | 125                             | 2.4                 | 4.5               | 600                             | 3   | 500                     | 450  | 200   |
| T4JD685K050C□□LQ4^00 | D            | 6.8                 | 50                      | 85                           | 33                         | 125                             | 3.4                 | 4.5               | 600                             | 3   | 500                     | 450  | 200   |
| T4JE106K050C□□LQ4^00 | E            | 10                  | 50                      | 85                           | 33                         | 125                             | 5.0                 | 4.5               | 400                             | 3   | 642                     | 578  | 257   |

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

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.

The EIA & CECC standards for low ESR Solid Tantalum Capacitors allow an ESR movement to 1.25 times catalogue limit post mounting.

# T4J – Medical Series



## HRC4000 Implantable Non Life Support and Non Implantable Life Support

### QUALIFICATION TABLE

| TEST                  | T4J HRC4000 (Temperature range -55°C to +125°C)                                                                                                                                                                                                                                                |               |                |                    |                              |           |            |            |            |            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|--------------------|------------------------------|-----------|------------|------------|------------|------------|
|                       | Condition                                                                                                                                                                                                                                                                                      |               |                | Characteristics    |                              |           |            |            |            |            |
| Endurance             | Determine after application of rated voltage for 2000 +48/-0 hours at 85±2°C and then leaving 1-2 hours at room temperature. Also determine of 125°C temperature, category voltage for 2000 +48/-0 hours and then leaving 1-2 hours at room temperature. Power supply impedance to be ≤0.1Ω/V. |               |                | Visual examination | no visible damage            |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | DCL                | 1.25 x initial limit         |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | ΔC/C               | within ±10% of initial value |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | DF                 | initial limit                |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | ESR                | 1.25 x initial limit         |           |            |            |            |            |
| Storage Life          | 125°C, 0V, 2000h                                                                                                                                                                                                                                                                               |               |                | Visual examination | no visible damage            |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | DCL                | 1.25 x initial limit         |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | ΔC/C               | within ±10% of initial value |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | DF                 | initial limit                |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | ESR                | 1.25 x initial limit         |           |            |            |            |            |
| Temperature Stability | Step                                                                                                                                                                                                                                                                                           | Temperature°C | Duration (min) |                    | +20°C                        | -55°C     | +20°C      | +85°C      | +125°C     | +20°C      |
|                       | 1                                                                                                                                                                                                                                                                                              | +20±2         | 15             | DCL                | IL*                          | n/a       | IL*        | 10 x IL*   | 12.5 x IL* | IL*        |
|                       | 2                                                                                                                                                                                                                                                                                              | -55+0/-3      | 15             |                    |                              |           |            |            |            |            |
|                       | 3                                                                                                                                                                                                                                                                                              | +20±2         | 15             | ΔC/C               | n/a                          | +0/-10%   | ±5%        | +10/-0%    | +12/-0%    | ±5%        |
|                       | 4                                                                                                                                                                                                                                                                                              | +85+3/-0      | 15             | DF                 | IL*                          | 1.5 x IL* | IL*        | 1.5 x IL*  | 2 x IL*    | IL*        |
|                       | 5                                                                                                                                                                                                                                                                                              | +125+3/-0     | 15             | ESR                |                              |           |            |            |            |            |
|                       | 6                                                                                                                                                                                                                                                                                              | +20±2         | 15             |                    | 1.25 x IL*                   | 2.5 x IL* | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* |
| Surge Voltage         | Test temperature: 125°C+3/0°C<br>Test voltage: Category voltage at 125°C<br>Surge voltage: 1.3x category voltage at 125°C<br>Series protection resistance 1000±100Ω<br>Discharge resistance: 1000Ω<br>Number of cycles: 1000x<br>Cycle duration: 6min; 30 sec charge, 5min 30 sec discharge    |               |                | Visual examination | no visible damage            |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | DCL                | initial limit                |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | ΔC/C               | within ±5% of initial value  |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | DF                 | initial limit                |           |            |            |            |            |
|                       |                                                                                                                                                                                                                                                                                                |               |                | ESR                | 1.25 x initial limit         |           |            |            |            |            |

\*Initial Limit

### LOT ACCEPTANCE TESTING

| TEST                | T4J HRC4000 (Temperature range -55°C to +125°C)                                                                                                                                                                                                                                                                                                        |                    |                             |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------|
|                     | Condition                                                                                                                                                                                                                                                                                                                                              | Characteristics    |                             |
| Lot Acceptance Test | 25 Pieces from each lot <ul style="list-style-type: none"> <li>• Read and Record Initial Electricals</li> <li>• Bake Out @ 125°C for 2 Hours</li> <li>• Mount using AVX recommended profile</li> <li>• Read and Record Post Mounting Electricals</li> <li>• Life Test: 6 hours, 2/3 R.V., 125°C</li> <li>• Read and Record Post Electricals</li> </ul> | DCL                | initial limit               |
|                     |                                                                                                                                                                                                                                                                                                                                                        | ΔC/C               | within ±5% of initial value |
|                     |                                                                                                                                                                                                                                                                                                                                                        | DF                 | initial limit               |
|                     |                                                                                                                                                                                                                                                                                                                                                        | ESR                | 1.25 x initial limit        |
|                     |                                                                                                                                                                                                                                                                                                                                                        | 0 Failures Allowed |                             |
|                     |                                                                                                                                                                                                                                                                                                                                                        |                    |                             |



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