

# TRM Professional Multianode

## Tantalum Ultra Low ESR Capacitor



### FEATURES

- Improved reliability – 0.5%/1khrs (twice better than standard)
- DCL reduced by 25% to 0.0075 CV
- Robust against higher thermo-mechanical stresses during assembly process
- Multi-anode construction
- Super low ESR
- CV range 4.7-1500µF / 2.5-50V
- “Mirror” construction used with D case capacitors reduces ESL to half
- Automotive, industrial and other higher end applications



SnPb termination option is not  
RoHS compliant.

### APPLICATIONS

- Automotive, Avionics and Industrial high power DC/DC converters



#### MULTIANODE CONSTRUCTION



#### MULTIANODE TPM D, Y LOW SELF INDUCTANCE CONSTRUCTION “MIRROR” DESIGN



### MARKING

#### D, E, U CASE



### 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.       |
|------|----------|------------|----------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| 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 (0.122)                 | 1.30 (0.051)                 | 4.40 (0.173) |

W1 dimension applies to the termination width for A dimensional area only.

### HOW TO ORDER

TRM

Type

E

Case Size  
See table above

108

Capacitance Code  
pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)

\*

Tolerance  
K = ±10%  
M = ±20%

004

Rated DC Voltage  
002 = 2.5Vdc  
004 = 4Vdc  
006 = 6.3Vdc  
010 = 10Vdc  
012 = 12Vdc  
016 = 16Vdc  
020 = 20Vdc  
025 = 25Vdc  
035 = 35Vdc  
050 = 50Vdc

R

Packaging  
R = Pure Tin 7" Reel  
S = Pure Tin 13" Reel  
H = Tin Lead 7" Reel (Contact Manufacturer)  
K = Tin Lead 13" Reel (Contact Manufacturer)  
H, K = Non RoHS

0023

ESR in mΩ

### TECHNICAL SPECIFICATIONS

|                                    |  |     |     |     |    |    |    |    |    |    |    |
|------------------------------------|--|-----|-----|-----|----|----|----|----|----|----|----|
| Technical Data:                    | All technical data relate to an ambient temperature of +25°C                                   |     |     |     |    |    |    |    |    |    |    |
| Capacitance Range:                 | 4.7 µF to 1500 µF  |     |     |     |    |    |    |    |    |    |    |
| Capacitance Tolerance:             | ±10%; ±20%   |     |     |     |    |    |    |    |    |    |    |
| Rated Voltage (V <sub>R</sub> )    | ≤ +85°C:   | 2.5 | 4   | 6.3 | 10 | 12 | 16 | 20 | 25 | 35 | 50 |
| Category Voltage (V <sub>C</sub> ) | ≤ +125°C:  | 1.7 | 2.7 | 4   | 7  | 8  | 10 | 13 | 17 | 23 | 33 |
| Surge Voltage (V <sub>S</sub> )    | ≤ +85°C:   | 3.3 | 5.2 | 8   | 13 | 16 | 20 | 26 | 32 | 46 | 65 |
| Surge Voltage (V <sub>S</sub> )    | ≤ +125°C:  | 2.2 | 3.4 | 5   | 8  | 10 | 13 | 16 | 20 | 28 | 40 |
| Temperature Range:                 | -55°C to +125°C  |     |     |     |    |    |    |    |    |    |    |
| Reliability:                       | 0.5% per 1000 hours at 85°C, V <sub>R</sub> with 0.1Ω/V series impedance, 60% confidence level |     |     |     |    |    |    |    |    |    |    |
|                                    | Meets requirements of AEC-Q200   |     |     |     |    |    |    |    |    |    |    |



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## Tantalum Ultra Low ESR Capacitor



### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

| Capacitance |      | Rated Voltage DC (V <sub>R</sub> ) to 85°C |                   |          |          |         |          |          |         |                    |         |
|-------------|------|--|-------------------|----------|----------|---------|----------|----------|---------|--------------------|---------|
| µF          | Code | 2.5V (e)                                   | 4V (G)            | 6.3V (J) | 10V (A)  | 12V (B) | 16V (C)  | 20V (D)  | 25V (E) | 35V (V)            | 50V (T) |
| 4.7         | 475  |  |                   |          |          |         |          |          |         |                    | D(200)  |
| 6.8         | 685  |  |                   |          |          |         |          |          |         |                    |         |
| 10          | 106  |  |                   |          |          |         |          |          |         | D(120)             |         |
| 15          | 156  |  |                   |          |          |         |          |          |         |                    |         |
| 22          | 226  |  |                   |          |          |         |          |          |         | D(70)<br>E(60,100) |         |
| 33          | 336  |  |                   |          |          |         |          |          | D(65)   | E(50,65)           |         |
| 47          | 476  |  |                   |          |          |         | D(100)   | D(55)    | E(65)   |                    |         |
| 68          | 686  |  |                   |          |          |         |          |          |         |                    |         |
| 100         | 107  |  |                   |          |          |         |          | E(35,45) |         |                    |         |
| 150         | 157  |  |                   |          | D(45)    |         | E(30,40) |          |         |                    |         |
| 220         | 227  |  |                   |          | D(35)    | E(35)   | U(30,40) |          |         |                    |         |
| 330         | 337  |  | D(35)             | D(35)    | E(35)    |         |          |          |         |                    |         |
| 470         | 477  |  | D(35)             | E(30)    | U(23,30) |         |          |          |         |                    |         |
| 680         | 687  |  | E(23)             | U(18,23) |          |         |          |          |         |                    |         |
| 1000        | 108  | D(25)                                      | E(23)<br>U(18,23) |          |          |         |          |          |         |                    |         |
| 1500        | 158  | E(18)<br>U(18,23)                          |                   |          |          |         |          |          |         |                    |         |

Released ratings, (ESR ratings in mOhms in parentheses)

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

# TRM Professional Multianode Tantalum Ultra Low ESR Capacitor



## RATINGS & PART NUMBER REFERENCE

| AVX Part No.           | Case Size | Capacitance (µF) | Rated Voltage (V) | Rated Temperature (°C) | Category Voltage (V) | Category Temperature (°C) | DCL Max. (µA) | DF Max. (%) | ESR Max. @ 100kHz (mΩ) | 100kHz RMS Current (A) |       |       | MSL |
|------------------------|-----------|------------------|-------------------|------------------------|----------------------|---------------------------|---------------|-------------|------------------------|------------------------|-------|-------|-----|
|                        |           |                  |                   |                        |                      |                           |               |             |                        | 25°C                   | 85°C  | 125°C |     |
| <b>2.5 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD108*002#0025       | D         | 1000             | 2.5               | 85                     | 1.7                  | 125                       | 18.8          | 8           | 25                     | 3.194                  | 2.874 | 1.277 | 3   |
| TRME158*002#0018       | E         | 1500             | 2.5               | 85                     | 1.7                  | 125                       | 28.1          | 6           | 18                     | 3.873                  | 3.486 | 1.549 | 3   |
| TRMU158*002R0018       | U         | 1500             | 2.5               | 85                     | 1.7                  | 125                       | 22.5          | 6           | 18                     | 4.048                  | 3.643 | 1.619 | 3   |
| TRMU158*002R0023       | U         | 1500             | 2.5               | 85                     | 1.7                  | 125                       | 22.5          | 6           | 23                     | 3.581                  | 3.223 | 1.433 | 3   |
| <b>4 Volt @ 85°C</b>   |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD337*004#0035       | D         | 330              | 4                 | 85                     | 2.7                  | 125                       | 9.9           | 8           | 35                     | 2.699                  | 2.429 | 1.080 | 3   |
| TRMD477*004#0035       | D         | 470              | 4                 | 85                     | 2.7                  | 125                       | 14.1          | 8           | 35                     | 2.699                  | 2.429 | 1.080 | 3   |
| TRME687*004#0023       | E         | 680              | 4                 | 85                     | 2.7                  | 125                       | 20.4          | 6           | 23                     | 3.426                  | 3.084 | 1.370 | 3   |
| TRME108*004#0023       | E         | 1000             | 4                 | 85                     | 2.7                  | 125                       | 30            | 6           | 23                     | 3.426                  | 3.084 | 1.370 | 3   |
| TRMU108*004R0018       | U         | 1000             | 4                 | 85                     | 2.7                  | 125                       | 30            | 6           | 18                     | 4.048                  | 3.643 | 1.619 | 3   |
| TRMU108*004R0023       | U         | 1000             | 4                 | 85                     | 2.7                  | 125                       | 30            | 6           | 23                     | 3.581                  | 3.223 | 1.433 | 3   |
| <b>6.3 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD337*006#0035       | D         | 330              | 6.3               | 85                     | 4                    | 125                       | 14.9          | 8           | 35                     | 2.699                  | 2.429 | 1.080 | 3   |
| TRME477*006#0030       | E         | 470              | 6.3               | 85                     | 4                    | 125                       | 21.2          | 6           | 30                     | 3.000                  | 2.700 | 1.200 | 3   |
| TRMU687*006R0018       | U         | 680              | 6.3               | 85                     | 4                    | 125                       | 30.6          | 6           | 18                     | 4.048                  | 3.643 | 1.619 | 3   |
| TRMU687*006R0023       | U         | 680              | 6.3               | 85                     | 4                    | 125                       | 30.6          | 6           | 23                     | 3.581                  | 3.223 | 1.433 | 3   |
| <b>10 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD157*010#0045       | D         | 150              | 10                | 85                     | 7                    | 125                       | 11.3          | 8           | 45                     | 2.380                  | 2.142 | 0.952 | 3   |
| TRMD227*010#0035       | D         | 220              | 10                | 85                     | 7                    | 125                       | 16.5          | 8           | 35                     | 2.699                  | 2.429 | 1.080 | 3   |
| TRME337*010#0035       | E         | 330              | 10                | 85                     | 7                    | 125                       | 24.8          | 6           | 35                     | 2.777                  | 2.500 | 1.111 | 3   |
| TRMU477*010R0023       | U         | 470              | 10                | 85                     | 7                    | 125                       | 35.3          | 8           | 23                     | 3.581                  | 3.223 | 1.433 | 3   |
| TRMU477*010R0030       | U         | 470              | 10                | 85                     | 7                    | 125                       | 35.3          | 8           | 30                     | 3.136                  | 2.822 | 1.254 | 3   |
| <b>12 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRME227*012#0035       | E         | 220              | 12                | 85                     | 8.4                  | 125                       | 19.8          | 6           | 35                     | 2.777                  | 2.500 | 1.111 | 3   |
| <b>16 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD476*016#0100       | D         | 47               | 16                | 85                     | 10                   | 125                       | 5.6           | 8           | 100                    | 1.597                  | 1.437 | 0.639 | 3   |
| TRME157*016#0030       | E         | 150              | 16                | 85                     | 10                   | 125                       | 18            | 6           | 30                     | 3.000                  | 2.700 | 1.200 | 3   |
| TRME157*016#0040       | E         | 150              | 16                | 85                     | 10                   | 125                       | 18            | 6           | 40                     | 2.598                  | 2.338 | 1.039 | 3   |
| TRMU227*016R0030       | U         | 220              | 16                | 85                     | 10                   | 125                       | 26.4          | 8           | 30                     | 3.136                  | 2.822 | 1.254 | 3   |
| TRMU227*016R0040       | U         | 220              | 16                | 85                     | 10                   | 125                       | 26.4          | 8           | 40                     | 2.716                  | 2.444 | 1.086 | 3   |
| <b>20 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD476*020#0055       | D         | 47               | 20                | 85                     | 13                   | 125                       | 7.1           | 8           | 55                     | 2.153                  | 1.938 | 0.861 | 3   |
| TRME107*020#0035       | E         | 100              | 20                | 85                     | 13                   | 125                       | 15            | 6           | 35                     | 2.777                  | 2.500 | 1.111 | 3   |
| TRME107*020#0045       | E         | 100              | 20                | 85                     | 13                   | 125                       | 15            | 6           | 45                     | 2.449                  | 2.205 | 0.980 | 3   |
| <b>25 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD336*025#0065       | D         | 33               | 25                | 85                     | 17                   | 125                       | 6.2           | 8           | 65                     | 1.981                  | 1.783 | 0.792 | 3   |
| TRME476*025#0065       | E         | 47               | 25                | 85                     | 17                   | 125                       | 8.8           | 6           | 65                     | 2.038                  | 1.834 | 0.815 | 3   |
| <b>35 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD106*035#0120       | D         | 10               | 35                | 85                     | 23                   | 125                       | 2.6           | 8           | 120                    | 1.458                  | 1.312 | 0.583 | 3   |
| TRMD226*035#0070       | D         | 22               | 35                | 85                     | 23                   | 125                       | 5.8           | 8           | 70                     | 1.909                  | 1.718 | 0.763 | 3   |
| TRME226*035#0060       | E         | 22               | 35                | 85                     | 23                   | 125                       | 5.8           | 6           | 60                     | 2.121                  | 1.909 | 0.849 | 3   |
| TRME226*035#0100       | E         | 22               | 35                | 85                     | 23                   | 125                       | 5.8           | 6           | 100                    | 1.643                  | 1.479 | 0.657 | 3   |
| TRME336*035#0050       | E         | 33               | 35                | 85                     | 23                   | 125                       | 8.7           | 6           | 50                     | 2.324                  | 2.091 | 0.930 | 3   |
| TRME336*035#0065       | E         | 33               | 35                | 85                     | 23                   | 125                       | 8.7           | 6           | 65                     | 2.038                  | 1.834 | 0.815 | 3   |
| <b>50 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                        |       |       |     |
| TRMD475*050#0200       | D         | 4.7              | 50                | 85                     | 33                   | 125                       | 1.8           | 8           | 200                    | 1.129                  | 1.016 | 0.452 | 3   |

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.

For typical weight and composition see page 274.

**NOTE: AVX reserves the right to supply higher voltage ratings or tighter tolerance part in the same case size, to the same reliability standards.**



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# TRM Professional Multianode

## Tantalum Ultra Low ESR Capacitor



### QUALIFICATION TABLE

| TEST                         | TRM professional multianode series (Temperature range -55°C to +125°C)  |               |               |                    |                                    |           |            |            |            |            |  |
|------------------------------|---|---------------|---------------|--------------------|------------------------------------|-----------|------------|------------|------------|------------|--|
|                              | Condition   |               |               | Characteristics    |                                    |           |            |            |            |            |  |
| <b>Endurance</b>             | Apply rated voltage (Ur) at 85°C and / or category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$ . Stabilize at room temperature for 1-2 hours before measuring. |               |               | Visual examination | no visible damage                  |           |            |            |            |            |  |
|                              |   |               |               | DCL                | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | $\Delta C/C$       | within $\pm 10\%$ of initial value |           |            |            |            |            |  |
|                              |   |               |               | DF                 | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | ESR                | 1.25 x initial limit               |           |            |            |            |            |  |
| <b>Storage Life</b>          | Store at 125°C, no voltage applied, for 2000 hours. Stabilize at room temperature for 1-2 hours before measuring.   |               |               | Visual examination | no visible damage                  |           |            |            |            |            |  |
|                              |   |               |               | DCL                | 1.25 x initial limit               |           |            |            |            |            |  |
|                              |   |               |               | $\Delta C/C$       | within $\pm 10\%$ of initial value |           |            |            |            |            |  |
|                              |   |               |               | DF                 | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | ESR                | 1.25 x initial limit               |           |            |            |            |            |  |
| <b>Humidity</b>              | Store at 65°C and 95% relative humidity for 500 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.  |               |               | Visual examination | no visible damage                  |           |            |            |            |            |  |
|                              |   |               |               | DCL                | 1.5 x initial limit                |           |            |            |            |            |  |
|                              |   |               |               | $\Delta C/C$       | within $\pm 10\%$ of initial value |           |            |            |            |            |  |
|                              |   |               |               | DF                 | 1.2 x initial limit                |           |            |            |            |            |  |
|                              |   |               |               | ESR                | 1.25 x initial limit               |           |            |            |            |            |  |
| <b>Biased Humidity</b>       | Apply rated voltage (Ur) at 85°C, 85% relative humidity for 1000 hours. Stabilize at room temperature and humidity for 1-2 hours before measuring.  |               |               | Visual examination | no visible damage                  |           |            |            |            |            |  |
|                              |   |               |               | DCL                | 2 x initial limit                  |           |            |            |            |            |  |
|                              |   |               |               | $\Delta C/C$       | within $\pm 10\%$ of initial value |           |            |            |            |            |  |
|                              |   |               |               | DF                 | 1.2 x initial limit                |           |            |            |            |            |  |
|                              |   |               |               | ESR                | 1.25 x initial limit               |           |            |            |            |            |  |
| <b>Temperature Stability</b> | Step  | Temperature°C | Duration(min) |                    | +20°C                              | -55°C     | +20°C      | +85°C      | +125°C     | +20°C      |  |
|                              | 1   | +20           | 15            | DCL                | IL*                                | n/a       | IL*        | 10 x IL*   | 12.5 x IL* | IL*        |  |
|                              | 2   | -55           | 15            | $\Delta C/C$       | n/a                                | +0/-10%   | $\pm 5\%$  | +10/-0%    | +12/-0%    | $\pm 5\%$  |  |
|                              | 3   | +20           | 15            | DF                 | IL*                                | 1.5 x IL* | IL*        | 1.5 x IL*  | 2 x IL*    | IL*        |  |
|                              | 4   | +85           | 15            | ESR                | 1.25 x IL*                         | 2.5 x IL* | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* |  |
|                              | 5   | +125          | 15            |                    |                                    |           |            |            |            |            |  |
|                              | 6   | +20           | 15            |                    |                                    |           |            |            |            |            |  |
| <b>Surge Voltage</b>         | Apply 1.3x category voltage (Uc) at 125°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 $\Omega$                              |               |               | Visual examination | no visible damage                  |           |            |            |            |            |  |
|                              |   |               |               | DCL                | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | $\Delta C/C$       | within $\pm 5\%$ of initial value  |           |            |            |            |            |  |
|                              |   |               |               | DF                 | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | ESR                | 1.25 x initial limit               |           |            |            |            |            |  |
| <b>Mechanical Shock</b>      | MIL-STD-202, Method 213, Condition F  |               |               | Visual examination | no visible damage                  |           |            |            |            |            |  |
|                              |   |               |               | DCL                | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | $\Delta C/C$       | within $\pm 5\%$ of initial value  |           |            |            |            |            |  |
|                              |   |               |               | DF                 | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | ESR                | 1.25 x initial limit               |           |            |            |            |            |  |
| <b>Vibration</b>             | MIL-STD-202, Method 204, Condition D  |               |               | Visual examination | no visible damage                  |           |            |            |            |            |  |
|                              |   |               |               | DCL                | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | $\Delta C/C$       | within $\pm 5\%$ of initial value  |           |            |            |            |            |  |
|                              |   |               |               | DF                 | initial limit                      |           |            |            |            |            |  |
|                              |   |               |               | ESR                | 1.25 x initial limit               |           |            |            |            |            |  |

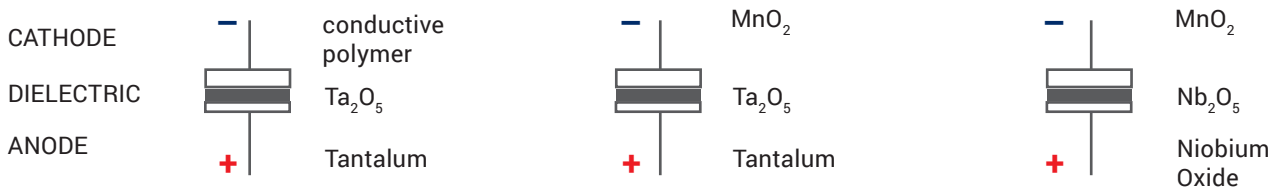
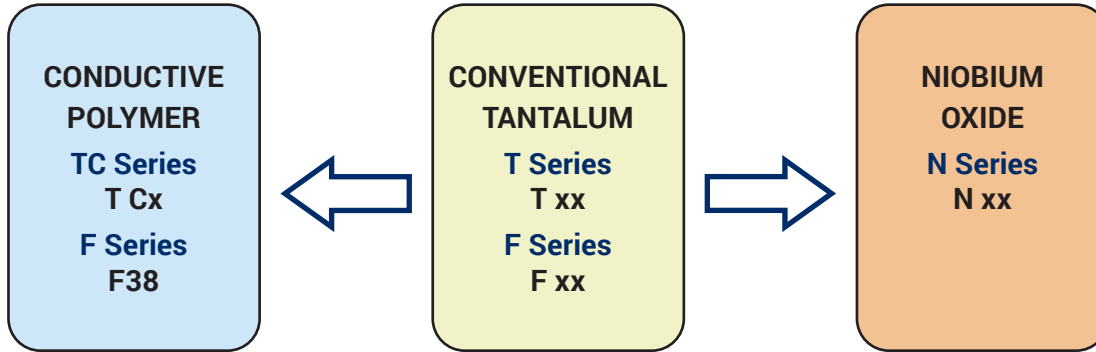
\*Initial Limit

# TRM Professional Multianode

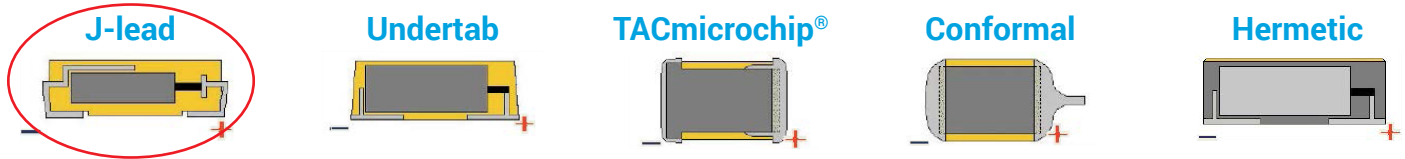
## Tantalum Ultra Low ESR Capacitor



### AVX SOLID ELECTROLYTIC CAPACITOR ROADMAP



### FIVE CAPACITOR CONSTRUCTION STYLES



### SERIES LINE UP: CONVENTIONAL SMD MnO<sub>2</sub>



## IMPORTANT INFORMATION/DISCLAIMER

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Unless specifically agreed to in writing, AVX 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. Customer understands and agrees that AVX makes no assurances that the products, services or deliverables are suitable for any high-risk uses. Under no circumstances does AVX warrant or guarantee suitability for any customer design or manufacturing process.

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Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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