

# TMJ Tantalum

## SMD S1gma™ Series Capacitors



The S1gma™ series is offering a next generation of statistical screening and process control enhancement of tantalum capacitors for professional applications with improved reliability and extremely low DCL needs.



### FEATURES

- 55 to +125°C Operation Temperature
- Basic Reliability Better than 0.5%/1000 hours
- 100% Surge Current Tested
- (2x Improvement Over Commercial Series)
- Improved DCL Limits 0.001CV\* and 0.005CV

**S1gma™ Prime** – Utilizes 3 S1gma™ electrical screening to remove possible maverick parts from the distribution.

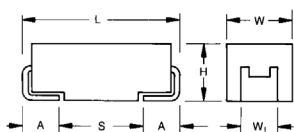
**S1gma™ Premium** – S1gma™ Prime, with addition of capability statistical screening utilizing the KYOCERA AVX patented Q-Process to effectively remove components that may experience excessive parametric shifts or instability in operational life.

**S1gma™ Pro Custom** – A custom option where specific parameter limits and screening methods can be agreed based on 3 S1gma™ and Q-Process statistical screening based on capability techniques.

\*selected codes, 0.001CV limit is available with S1gma™ Premium and Pro Custom options only



### TMJ CONSTRUCTION



### APPLICATIONS

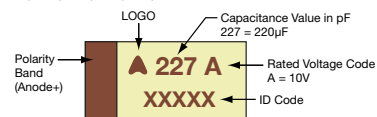
- Wireless Battery Operated Sensors
- TPM
- Automotive
- Avionics
- Safety Systems
- Energy Harvesting

For additional information on Q-process please consult the KYOCERA AVX technical publication "Reaching the Highest Reliability for Tantalum Capacitors"

(see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

### MARKING

#### A, B, C, 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) | Wt±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 (0.122)    | 1.30 (0.051)                 | 4.40 (0.173) |

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

### HOW TO ORDER

|             |                                     |   |                              |   |   |   |   |  |
|-------------|-------------------------------------|---|------------------------------|---|---|---|---|--|
| <b>TMJ</b>  | <b>D</b>                            | <b>227</b>  | <b>K</b>                     | <b>006</b>  | <b>#</b>  | <b>C</b>  | <b>^</b>  | <b>A</b>                                 |
| <b>Type</b> | <b>Case Size</b><br>See table above | <b>Capacitance Code</b><br>pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow) | <b>Tolerance</b><br>K = ±10% | <b>Rated DC Voltage</b><br>006 = 6.3Vdc<br>010 = 10Vdc<br>016 = 16Vdc<br>020 = 20Vdc<br>025 = 25Vdc<br>035 = 35Vdc<br>050 = 50Vdc | <b>Packaging</b><br>R = Pure Tin 7" Reel<br>H = Tin Lead 7" Reel<br>H = Non RoHS<br>H = Please Contact Manufacturer | <b>ESR Range</b><br>C = Standard<br>L = Low ESR | <b>Suffix</b><br>QX = S1gma™ Prime<br>QY = S1gma™ Premium<br>xx = S1gma™ Pro Custom | <b>DCL</b><br>A = 0.001CV<br>C = 0.005CV |

### TECHNICAL SPECIFICATIONS

|                                    |   |     |    |    |    |    |    |    |  |
|------------------------------------|---|-----|----|----|----|----|----|----|--|
| Technical Data:                    | All technical data relate to an ambient temperature of +25°C  |     |    |    |    |    |    |    |  |
| Capacitance Range:                 | 0.22 µF to 680 µF   |     |    |    |    |    |    |    |  |
| Capacitance Tolerance:             | ±10%  |     |    |    |    |    |    |    |  |
| Leakage Current DCL:               | (A) 0.001CV, (C) 0.005CV  |     |    |    |    |    |    |    |  |
| 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:                       | 0.5% per 1000 hours at 85°C, V <sub>R</sub> with 0.1Ω/V series impedance, 60% confidence level AEC-Q200 per request |     |    |    |    |    |    |    |  |

# TMJ Tantalum

## SMD S1gma™ Series Capacitors



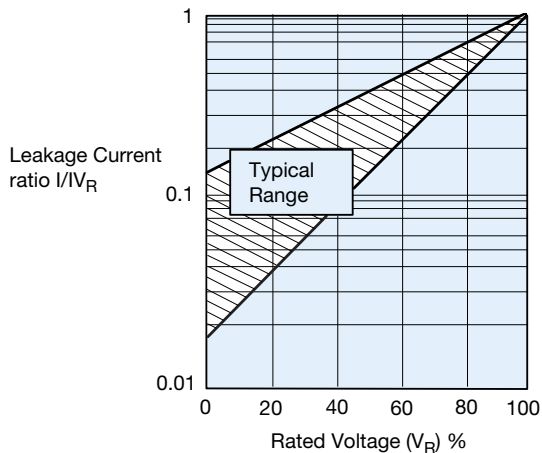
### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

| Capacitance |      | Rated voltage (V <sub>R</sub> ) to 85°C (Voltage Code) |         |         |         |         |         |         |
|-------------|------|--|---------|---------|---------|---------|---------|---------|
| μF          | Code | 6.3V (J)   | 10V (A) | 16V (C) | 20V (D) | 25V (E) | 35V (V) | 50V (T) |
| 0.22        | 224  |  |         |         |         |         |         | A       |
| 0.33        | 334  |  |         |         |         |         | A       | A       |
| 0.47        | 474  |  |         |         |         |         | A       | B       |
| 0.68        | 684  |  |         |         |         |         | A       | B       |
| 1.0         | 105  |  |         |         |         | A       | B       | C       |
| 1.5         | 155  |  |         |         | A       | A       | B       | C       |
| 2.2         | 225  |  |         | A       | A       | B       | B       | C       |
| 3.3         | 335  |  |         | A       | A       | B       | B       | C       |
| 4.7         | 475  |  | A       | A       | B       | B       | C       | D       |
| 6.8         | 685  |  | A       | B       | B       | C       | C       | D       |
| 10          | 106  | A  | A       | B       | C       | C       | C       | E       |
| 15          | 156  | A  | B       | B       | C       | C       | D       | U       |
| 22          | 226  | B  | B       | C       | C       | D       | D       | U       |
| 33          | 336  | B  | C       | C       | D       | D       | E       |         |
| 47          | 476  | C  | C       | D       | D       | D       | U       |         |
| 68          | 686  | C  | C       | D       | E       | U       |         |         |
| 100         | 107  | C  | D       | E       | E       | U       |         |         |
| 150         | 157  | D  | D       | E       | U       |         |         |         |
| 220         | 227  | D  | E       | U       |         |         |         |         |
| 330         | 337  | E  | E       |         |         |         |         |         |
| 470         | 477  | E  | U       |         |         |         |         |         |
| 680         | 687  | U  |         |         |         |         |         |         |

Released ratings

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

### LEAKAGE CURRENT vs. RATED VOLTAGE



# TMJ Tantalum

## SMD S1sigma™ Series Capacitors



### RATINGS & PART NUMBER REFERENCE

| Part Number            | 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 (mA) |      |       | MSL |
|------------------------|-----------|------------------|-------------------|------------------------|----------------------|---------------------------|---------------|-------------|------------------------|-------------------------|------|-------|-----|
|                        |           |                  |                   |                        |                      |                           |               |             |                        | 25°C                    | 85°C | 125°C |     |
| <b>6.3 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                        |                         |      |       |     |
| TMJA106K006#CQYA       | A         | 10               | 6.3               | 85                     | 4                    | 125                       | 0.1           | 6           | 1500                   | 224                     | 201  | 89    | 3   |
| TMJA106K006#C°C        | A         | 10               | 6.3               | 85                     | 4                    | 125                       | 0.3           | 6           | 1500                   | 224                     | 201  | 89    | 3   |
| TMJA156K006#CQYA       | A         | 15               | 6.3               | 85                     | 4                    | 125                       | 0.1           | 6           | 1500                   | 224                     | 201  | 89    | 3   |
| TMJA156K006#C°C        | A         | 15               | 6.3               | 85                     | 4                    | 125                       | 0.45          | 6           | 1500                   | 224                     | 201  | 89    | 3   |
| TMJB226K006#C°C        | B         | 22               | 6.3               | 85                     | 4                    | 125                       | 0.66          | 6           | 600                    | 376                     | 339  | 151   | 3   |
| TMJB336K006#C°C        | B         | 33               | 6.3               | 85                     | 4                    | 125                       | 0.99          | 6           | 600                    | 376                     | 339  | 151   | 3   |
| TMJC476K006#CQYA       | C         | 47               | 6.3               | 85                     | 4                    | 125                       | 0.28          | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJC476K006#C°C        | C         | 47               | 6.3               | 85                     | 4                    | 125                       | 1.41          | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJC686K006#CQYA       | C         | 68               | 6.3               | 85                     | 4                    | 125                       | 0.41          | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJC686K006#C°C        | C         | 68               | 6.3               | 85                     | 4                    | 125                       | 2.04          | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJC107K006#CQYA       | C         | 100              | 6.3               | 85                     | 4                    | 125                       | 0.60          | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJC107K006#C°C        | C         | 100              | 6.3               | 85                     | 4                    | 125                       | 3             | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJD157K006#CQYA       | D         | 150              | 6.3               | 85                     | 4                    | 125                       | 0.90          | 6           | 200                    | 866                     | 779  | 346   | 3   |
| TMJD157K006#C°C        | D         | 150              | 6.3               | 85                     | 4                    | 125                       | 4.5           | 6           | 200                    | 866                     | 779  | 346   | 3   |
| TMJD227K006#CQYA       | D         | 220              | 6.3               | 85                     | 4                    | 125                       | 1.32          | 8           | 200                    | 866                     | 779  | 346   | 3   |
| TMJD227K006#C°C        | D         | 220              | 6.3               | 85                     | 4                    | 125                       | 6.6           | 8           | 200                    | 866                     | 779  | 346   | 3   |
| TMJE337K006#C°C        | E         | 330              | 6.3               | 85                     | 4                    | 125                       | 9.9           | 8           | 200                    | 908                     | 817  | 363   | 3   |
| TMJE477K006#CQYA       | E         | 470              | 6.3               | 85                     | 4                    | 125                       | 2.82          | 8           | 200                    | 908                     | 817  | 363   | 3   |
| TMJE477K006#C°C        | E         | 470              | 6.3               | 85                     | 4                    | 125                       | 14.1          | 8           | 200                    | 908                     | 817  | 363   | 3   |
| TMJU687K006#C°C        | U         | 680              | 6.3               | 85                     | 4                    | 125                       | 20.4          | 12          | 250                    | 812                     | 731  | 325   | 3   |
| <b>10 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                         |      |       |     |
| TMJA475K010#CQXC       | A         | 4.7              | 10                | 85                     | 7                    | 125                       | 0.24          | 6           | 2000                   | 194                     | 174  | 77    | 3   |
| TMJA685K010#CQYA       | A         | 6.8              | 10                | 85                     | 7                    | 125                       | 0.1           | 6           | 2000                   | 194                     | 174  | 77    | 3   |
| TMJA685K010#C°C        | A         | 6.8              | 10                | 85                     | 7                    | 125                       | 0.34          | 6           | 2000                   | 194                     | 174  | 77    | 3   |
| TMJA106K010#CQYA       | A         | 10               | 10                | 85                     | 7                    | 125                       | 0.10          | 6           | 2000                   | 194                     | 174  | 77    | 3   |
| TMJA106K010#C°C        | A         | 10               | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 2000                   | 194                     | 174  | 77    | 3   |
| TMJB156K010#C°C        | B         | 15               | 10                | 85                     | 7                    | 125                       | 0.75          | 6           | 700                    | 348                     | 314  | 139   | 3   |
| TMJB226K010#C°C        | B         | 22               | 10                | 85                     | 7                    | 125                       | 1.1           | 6           | 700                    | 348                     | 314  | 139   | 3   |
| TMJC336K010#C°C        | C         | 33               | 10                | 85                     | 7                    | 125                       | 1.65          | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJC476K010#C°C        | C         | 47               | 10                | 85                     | 7                    | 125                       | 2.35          | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJC686K010#C°C        | C         | 68               | 10                | 85                     | 7                    | 125                       | 3.4           | 6           | 300                    | 606                     | 545  | 242   | 3   |
| TMJD107K010#C°C        | D         | 100              | 10                | 85                     | 7                    | 125                       | 5.00          | 6           | 150                    | 1000                    | 900  | 400   | 3   |
| TMJD157K010#C°C        | D         | 150              | 10                | 85                     | 7                    | 125                       | 7.50          | 8           | 150                    | 1000                    | 900  | 400   | 3   |
| TMJE227K010#C°C        | E         | 220              | 10                | 85                     | 7                    | 125                       | 11            | 8           | 150                    | 1049                    | 944  | 420   | 3   |
| TMJE337K010#CQYA       | E         | 330              | 10                | 85                     | 7                    | 125                       | 3.3           | 8           | 150                    | 1049                    | 944  | 420   | 3   |
| TMJE337K010#C°C        | E         | 330              | 10                | 85                     | 7                    | 125                       | 16.5          | 8           | 150                    | 1049                    | 944  | 420   | 3   |
| TMJU477K010#C°C        | U         | 470              | 10                | 85                     | 7                    | 125                       | 23.5          | 12          | 200                    | 908                     | 817  | 363   | 3   |
| <b>16 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                         |      |       |     |
| TMJA225K016#CQXC       | A         | 2.2              | 16                | 85                     | 10                   | 125                       | 0.18          | 6           | 3500                   | 146                     | 132  | 59    | 3   |
| TMJA335K016#CQXC       | A         | 3.3              | 16                | 85                     | 10                   | 125                       | 0.26          | 6           | 3500                   | 146                     | 132  | 59    | 3   |
| TMJA475K016#C°C        | A         | 4.7              | 16                | 85                     | 10                   | 125                       | 0.38          | 6           | 3500                   | 146                     | 132  | 59    | 3   |
| TMJB685K016#C°C        | B         | 6.8              | 16                | 85                     | 10                   | 125                       | 0.54          | 6           | 1200                   | 266                     | 240  | 106   | 3   |
| TMJB106K016#C°C        | B         | 10               | 16                | 85                     | 10                   | 125                       | 0.80          | 6           | 1200                   | 266                     | 240  | 106   | 3   |
| TMJB156K016#C°C        | B         | 15               | 16                | 85                     | 10                   | 125                       | 1.20          | 6           | 1200                   | 266                     | 240  | 106   | 3   |
| TMJC226K016#C°C        | C         | 22               | 16                | 85                     | 10                   | 125                       | 1.76          | 6           | 350                    | 561                     | 505  | 224   | 3   |
| TMJC336K016#C°C        | C         | 33               | 16                | 85                     | 10                   | 125                       | 2.64          | 6           | 350                    | 561                     | 505  | 224   | 3   |
| TMJD476K016#C°C        | D         | 47               | 16                | 85                     | 10                   | 125                       | 3.76          | 6           | 200                    | 866                     | 779  | 346   | 3   |
| TMJD686K016#C°C        | D         | 68               | 16                | 85                     | 10                   | 125                       | 5.44          | 6           | 200                    | 866                     | 779  | 346   | 3   |
| TMJE107K016#C°C        | E         | 100              | 16                | 85                     | 10                   | 125                       | 8.00          | 6           | 150                    | 1049                    | 944  | 420   | 3   |
| TMJE157K016#C°C        | E         | 150              | 16                | 85                     | 10                   | 125                       | 12            | 6           | 150                    | 1049                    | 944  | 420   | 3   |
| TMJU227K016#C°C        | U         | 220              | 16                | 85                     | 10                   | 125                       | 17.6          | 1           | 200                    | 908                     | 817  | 363   | 3   |
| <b>20 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                         |      |       |     |
| TMJA155K020#CQXC       | A         | 1.5              | 20                | 85                     | 13                   | 125                       | 0.15          | 6           | 3000                   | 158                     | 142  | 63    | 3   |
| TMJA225K020#CQXC       | A         | 2.2              | 20                | 85                     | 13                   | 125                       | 0.22          | 6           | 3000                   | 158                     | 142  | 63    | 3   |
| TMJA335K020#C°C        | A         | 3.3              | 20                | 85                     | 13                   | 125                       | 0.33          | 6           | 3000                   | 158                     | 142  | 63    | 3   |
| TMJB475K020#C°C        | B         | 4.7              | 20                | 85                     | 13                   | 125                       | 0.47          | 6           | 1000                   | 292                     | 262  | 117   | 3   |
| TMJB685K020#C°C        | B         | 6.8              | 20                | 85                     | 13                   | 125                       | 0.68          | 6           | 1000                   | 292                     | 262  | 117   | 3   |
| TMJC106K020#C°C        | C         | 10               | 20                | 85                     | 13                   | 125                       | 1             | 6           | 500                    | 469                     | 422  | 188   | 3   |
| TMJC156K020#C°C        | C         | 15               | 20                | 85                     | 13                   | 125                       | 1.5           | 6           | 500                    | 469                     | 422  | 188   | 3   |
| TMJC226K020#C°C        | C         | 22               | 20                | 85                     | 13                   | 125                       | 2.2           | 6           | 500                    | 469                     | 422  | 188   | 3   |
| TMJD336K020#C°C        | D         | 33               | 20                | 85                     | 13                   | 125                       | 3.3           | 6           | 250                    | 775                     | 697  | 310   | 3   |
| TMJD476K020#C°C        | D         | 47               | 20                | 85                     | 13                   | 125                       | 4.70          | 6           | 250                    | 775                     | 697  | 310   | 3   |
| TMJE686K020#C°C        | E         | 68               | 20                | 85                     | 13                   | 125                       | 6.8           | 6           | 200                    | 908                     | 817  | 363   | 3   |
| TMJE107K020#C°C        | E         | 100              | 20                | 85                     | 13                   | 125                       | 10            | 6           | 200                    | 908                     | 817  | 363   | 3   |
| TMJU157K020#CQXC       | U         | 150              | 20                | 85                     | 13                   | 125                       | 15            | 12          | 250                    | 812                     | 731  | 325   | 3   |
| <b>25 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                        |                         |      |       |     |
| TMJA105K025#CQXC       | A         | 1                | 25                | 85                     | 17                   | 125                       | 0.13          | 4           | 3000                   | 158                     | 142  | 63    | 3   |
| TMJA155K025#CQXC       | A         | 1.5              | 25                | 85                     | 17                   | 125                       | 0.19          | 6           | 3000                   | 158                     | 142  | 63    | 3   |
| TMJB225K025#C°C        | B         | 2.2              | 25                | 85                     | 17                   | 125                       | 0.28          | 6           | 2000                   | 206                     | 186  | 82    | 3   |
| TMJB335K025#C°C        | B         | 3.3              | 25                | 85                     | 17                   | 125                       | 0.41          | 6           | 2000                   | 206                     | 186  | 82    | 3   |

# TMJ Tantalum

## SMD S1gma™ Series Capacitors



### RATINGS & PART NUMBER REFERENCE

| Part Number           | 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 (mA) |      |       | MSL |
|-----------------------|-----------|------------------|-------------------|------------------------|----------------------|---------------------------|---------------|-------------|------------------------|-------------------------|------|-------|-----|
|                       |           |                  |                   |                        |                      |                           |               |             |                        | 25°C                    | 85°C | 125°C |     |
| TMJB475K025#C^C       | B         | 4.7              | 25                | 85                     | 17                   | 125                       | 0.59          | 6           | 2000                   | 206                     | 186  | 82    | 3   |
| TMJC685K025#C^C       | C         | 6.8              | 25                | 85                     | 17                   | 125                       | 0.85          | 6           | 600                    | 428                     | 385  | 171   | 3   |
| TMJC106K025#C^C       | C         | 10               | 25                | 85                     | 17                   | 125                       | 1.25          | 6           | 600                    | 428                     | 385  | 171   | 3   |
| TMJC156K025#C^C       | C         | 15               | 25                | 85                     | 17                   | 125                       | 1.88          | 6           | 600                    | 428                     | 385  | 171   | 3   |
| TMJD226K025#CQYA      | D         | 22               | 25                | 85                     | 17                   | 125                       | 0.55          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJD226K025#C^C       | D         | 22               | 25                | 85                     | 17                   | 125                       | 2.75          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJD336K025#CQYA      | D         | 33               | 25                | 85                     | 17                   | 125                       | 0.82          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJD336K025#C^C       | D         | 33               | 25                | 85                     | 17                   | 125                       | 4.13          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJD476K025#C^C       | D         | 47               | 25                | 85                     | 17                   | 125                       | 5.88          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJU686K025#CQXC      | U         | 68               | 25                | 85                     | 17                   | 125                       | 8.5           | 12          | 450                    | 606                     | 545  | 242   | 3   |
| TMJU107K025#CQXC      | U         | 100              | 25                | 85                     | 17                   | 125                       | 12.5          | 12          | 450                    | 606                     | 545  | 242   | 3   |
| <b>35 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                        |                         |      |       |     |
| TMJA334K035#CQXC      | A         | 0.33             | 35                | 85                     | 23                   | 125                       | 0.1           | 4           | 6000                   | 112                     | 101  | 45    | 3   |
| TMJA474K035#CQXC      | A         | 0.47             | 35                | 85                     | 23                   | 125                       | 0.1           | 4           | 6000                   | 112                     | 101  | 45    | 3   |
| TMJA684K035#CQXC      | A         | 0.68             | 35                | 85                     | 23                   | 125                       | 0.12          | 4           | 6000                   | 112                     | 101  | 45    | 3   |
| TMJB105K035#CQXC      | B         | 1                | 35                | 85                     | 23                   | 125                       | 0.18          | 4           | 2500                   | 184                     | 166  | 74    | 3   |
| TMJB155K035#C^C       | B         | 1.5              | 35                | 85                     | 23                   | 125                       | 0.26          | 6           | 2500                   | 184                     | 166  | 74    | 3   |
| TMJB225K035#C^C       | B         | 2.2              | 35                | 85                     | 23                   | 125                       | 0.39          | 6           | 2500                   | 184                     | 166  | 74    | 3   |
| TMJB335K035#C^C       | B         | 3.3              | 35                | 85                     | 23                   | 125                       | 0.58          | 6           | 2500                   | 184                     | 166  | 74    | 3   |
| TMJC475K035#CQYA      | C         | 4.7              | 35                | 85                     | 23                   | 125                       | 0.16          | 6           | 600                    | 428                     | 385  | 171   | 3   |
| TMJC475K035#C^C       | C         | 4.7              | 35                | 85                     | 23                   | 125                       | 0.82          | 6           | 600                    | 428                     | 385  | 171   | 3   |
| TMJC685K035#C^C       | C         | 6.8              | 35                | 85                     | 23                   | 125                       | 1.19          | 6           | 600                    | 428                     | 385  | 171   | 3   |
| TMJC106K035#C^C       | C         | 10               | 35                | 85                     | 23                   | 125                       | 1.75          | 6           | 600                    | 428                     | 385  | 171   | 3   |
| TMJD156K035#CQYA      | D         | 15               | 35                | 85                     | 23                   | 125                       | 0.52          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJD156K035#C^C       | D         | 15               | 35                | 85                     | 23                   | 125                       | 2.63          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJD226K035#CQYA      | D         | 22               | 35                | 85                     | 23                   | 125                       | 0.77          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJD226K035#C^C       | D         | 22               | 35                | 85                     | 23                   | 125                       | 3.85          | 6           | 400                    | 612                     | 551  | 245   | 3   |
| TMJE336K035#CQYA      | E         | 33               | 35                | 85                     | 23                   | 125                       | 1.15          | 6           | 250                    | 812                     | 731  | 325   | 3   |
| TMJE336K035#C^C       | E         | 33               | 35                | 85                     | 23                   | 125                       | 5.78          | 6           | 250                    | 812                     | 731  | 325   | 3   |
| TMJU476K035#CQXC      | U         | 47               | 35                | 85                     | 23                   | 125                       | 8.23          | 12          | 300                    | 742                     | 667  | 297   | 3   |
| TMJU476K035#CQYA      | U         | 47               | 35                | 85                     | 23                   | 125                       | 1.64          | 12          | 300                    | 742                     | 667  | 297   | 3   |
| <b>50 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                        |                         |      |       |     |
| TMJA224K050#CQXC      | A         | 0.22             | 50                | 85                     | 33                   | 125                       | 0.1           | 4           | 7000                   | 104                     | 93   | 41    | 3   |
| TMJA334K050#CQXC      | A         | 0.33             | 50                | 85                     | 33                   | 125                       | 0.1           | 4           | 7000                   | 104                     | 93   | 41    | 3   |
| TMJB474K050#CQXC      | B         | 0.47             | 50                | 85                     | 33                   | 125                       | 0.12          | 4           | 2000                   | 206                     | 186  | 82    | 3   |
| TMJB684K050#CQXC      | B         | 0.68             | 50                | 85                     | 33                   | 125                       | 0.17          | 4           | 2000                   | 206                     | 186  | 82    | 3   |
| TMJC105K050#C^C       | C         | 1                | 50                | 85                     | 33                   | 125                       | 0.25          | 4           | 1500                   | 271                     | 244  | 108   | 3   |
| TMJC155K050#C^C       | C         | 1.5              | 50                | 85                     | 33                   | 125                       | 0.38          | 6           | 1500                   | 271                     | 244  | 108   | 3   |
| TMJC225K050#CQYA      | C         | 2.2              | 50                | 85                     | 33                   | 125                       | 0.11          | 6           | 1500                   | 271                     | 244  | 108   | 3   |
| TMJC225K050#C^C       | C         | 2.2              | 50                | 85                     | 33                   | 125                       | 0.55          | 6           | 1500                   | 271                     | 244  | 108   | 3   |
| TMJC335K050#CQYA      | C         | 3.3              | 50                | 85                     | 33                   | 125                       | 0.17          | 6           | 1500                   | 271                     | 244  | 108   | 3   |
| TMJC335K050#C^C       | C         | 3.3              | 50                | 85                     | 33                   | 125                       | 0.83          | 6           | 1500                   | 271                     | 244  | 108   | 3   |
| TMJD475K050#C^C       | D         | 4.7              | 50                | 85                     | 33                   | 125                       | 1.18          | 4.5         | 600                    | 500                     | 450  | 200   | 3   |
| TMJD685K050#C^C       | D         | 6.8              | 50                | 85                     | 33                   | 125                       | 1.7           | 4.5         | 600                    | 500                     | 450  | 200   | 3   |
| TMJE106K050#CQYA      | E         | 10               | 50                | 85                     | 33                   | 125                       | 0.5           | 4.5         | 400                    | 642                     | 578  | 257   | 3   |
| TMJE106K050#C^C       | E         | 10               | 50                | 85                     | 33                   | 125                       | 2.5           | 4.5         | 400                    | 642                     | 578  | 257   | 3   |
| TMJU156K050#CQXC      | U         | 15               | 50                | 85                     | 33                   | 125                       | 3.75          | 12          | 450                    | 606                     | 545  | 242   | 3   |
| TMJU226K050#CQXC      | U         | 22               | 50                | 85                     | 33                   | 125                       | 5.5           | 12          | 450                    | 606                     | 545  | 242   | 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 259.

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

# TMJ Tantalum

## SMD S1gma™ Series Capacitors



### QUALIFICATION TABLE

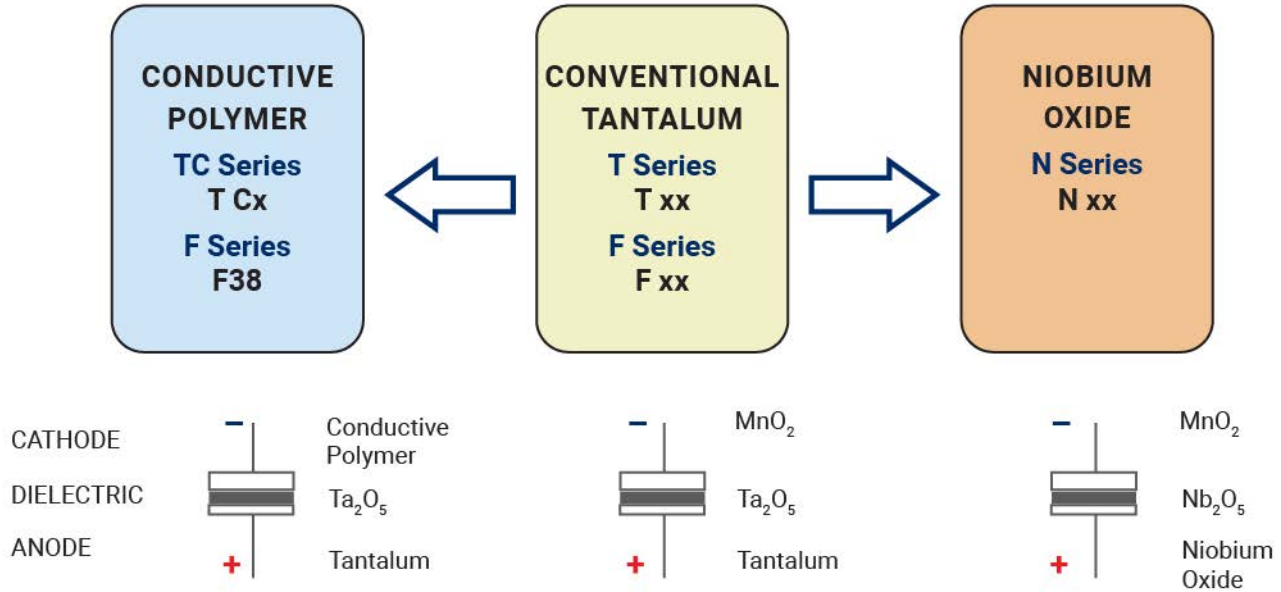
| TEST                         | TMJ S1gma™ series (Temperature range -55°C to +125°C)   |               |               |                    |                                    |           |           |           |          |           |  |
|------------------------------|---|---------------|---------------|--------------------|------------------------------------|-----------|-----------|-----------|----------|-----------|--|
|                              | 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                | 2 x 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                | 2 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 90 - 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                | 3 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                | 3 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            |                    |                                    |           |           |           |          |           |  |
|                              | 2   | -55           | 15            | DCL                | IL*                                | n/a       | IL*       | 10 x IL*  | 15 x IL* | 1.5 x IL* |  |
|                              | 3   | +20           | 15            | $\Delta C/C$       | n/a                                | +0/-10%   | $\pm 5\%$ | +10/-0%   | +15/-0%  | $\pm 5\%$ |  |
|                              | 4   | +85           | 15            | DF                 | IL*                                | 1.5 x IL* | IL*       | 1.5 x IL* | 2 x IL*  | IL*       |  |
|                              | 5   | +125          | 15            |                    |                                    |           |           |           |          |           |  |
|                              | 6   | +20           | 15            | ESR                | 1.25xIL*                           | 2.5xIL*   | 1.25xIL*  | 1.25xIL*  | 1.25xIL* | 1.25xIL*  |  |
| <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                | 2 x 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 C  |               |               | Visual examination | no visible damage                  |           |           |           |          |           |  |
|                              |   |               |               | DCL                | initial limit                      |           |           |           |          |           |  |
|                              |   |               |               | $\Delta C/C$       | within $\pm 5\%$ of initial value  |           |           |           |          |           |  |
|                              |   |               |               | DF                 | initial limit                      |           |           |           |          |           |  |
|                              |   |               |               | ESR                | 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                | initial limit                      |           |           |           |          |           |  |

\*Initial Limit

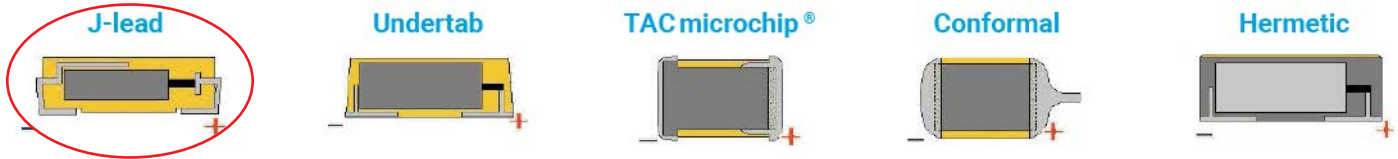
# TMJ Tantalum

## SMD S1gma™ Series Capacitors

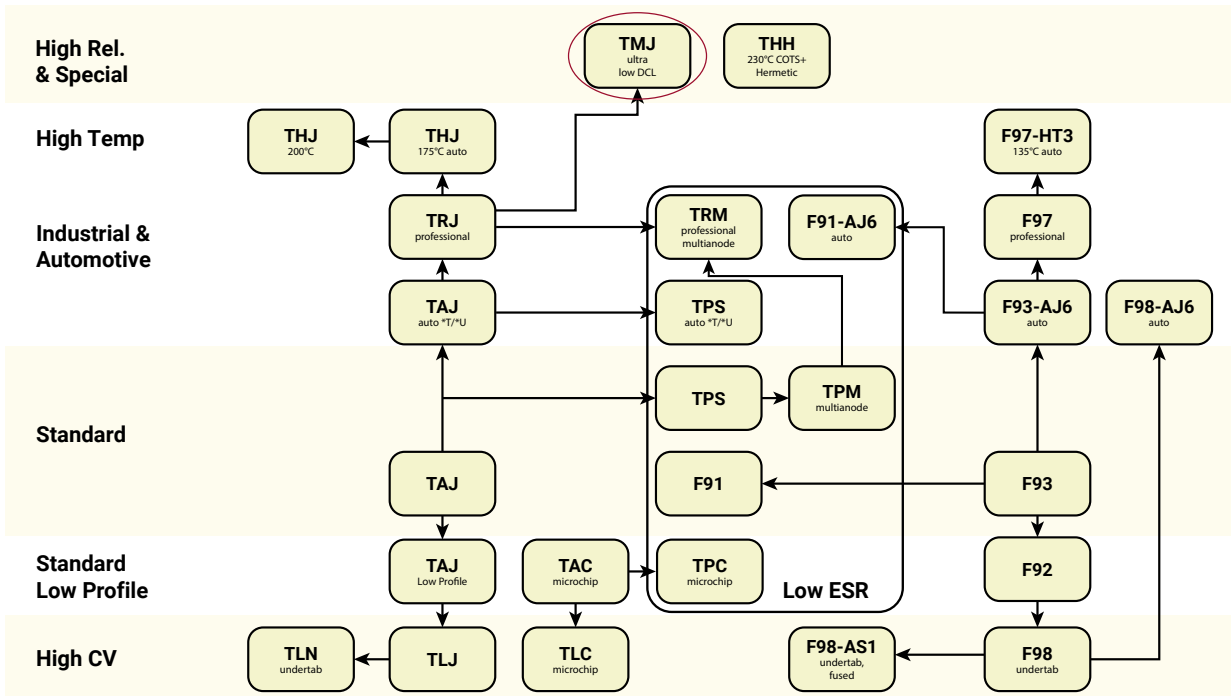
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[293D155X9020A2DE3](#) [CWR29FC106KDBC](#) [CWR09NC224KB](#) [CWR09NC684KM](#) [CWR29HH155KCBB](#) [CWR29HC106KCDC](#)  
[CWR29FC336KDGC](#) [CWR09NC225KDB](#) [CWR29FC475KDDC](#)