

# TWA SERIES

## COTS-Plus – Wet Electrolytic Tantalum Capacitor

### GENERAL DESCRIPTION

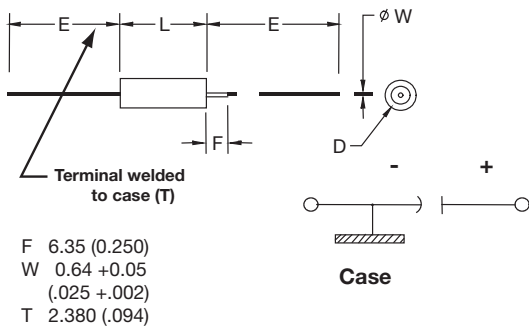
The TWA series is an axial leaded wet electrolytic tantalum capacitor with a unique cathode system that promotes very high CV (Capacitance/Voltage) per cc in traditional MIL-PRF-39006 case sizes.

The series also utilizes a welded tantalum can and header assembly to provide a hermetic seal and subsequent long operating lifetime.

The construction is similar to DLA 93026 with capability of meeting harsh shock and vibration conditions.



### OUTLINE DIMENSIONS



### CASE DIMENSIONS: millimeters (inches)

| DLA Case Size | Case Size | L<br>+0.79 (0.031)<br>-0.41 (0.016) | D<br>Without Insulating Sleeve<br>±0.41 (0.016) | D<br>With Insulating Sleeve Max | E<br>±6.35 (0.250) |
|---------------|-----------|-------------------------------------|---|---------------------------------|--------------------|
| T1            | A         | 11.51 (0.453)                       | 4.78 (0.188)                                    | 5.56 (0.219)                    | 38.10 (1.500)      |
| T2            | B         | 16.28 (0.641)                       | 7.14 (0.281)                                    | 7.92 (0.312)                    | 57.15 (2.250)      |
| T3            | D         | 19.46 (0.766)                       | 9.52 (0.375)                                    | 10.31 (0.406)                   | 57.15 (2.250)      |
| T4            | E         | 26.97 (1.062)                       | 9.52 (0.375)                                    | 10.31 (0.406)                   | 57.15 (2.250)      |

### VOLTAGE RATINGS (Operating Temperature -55°C to 125°C)

| Voltage (DC)                       |       |      |      |      |      |    |      |     |     |
|------------------------------------|-------|------|------|------|------|----|------|-----|-----|
| Rated Voltage: (V <sub>R</sub> )   | 85°C  | 15   | 25   | 30   | 50   | 60 | 75   | 100 | 125 |
| Derated Voltage: (V <sub>D</sub> ) | 125°C | 10   | 15   | 20   | 30   | 40 | 50   | 65  | 85  |
| Surge Voltage: (V <sub>S</sub> )   | 85°C  | 17.3 | 28.8 | 34.5 | 57.5 | 69 | 86.3 | 115 | 144 |

### HOW TO ORDER PART NUMBER:

|            |           |  |   |              |  |                            |   |                           |                                |  |  |
|------------|-----------|--|---|--------------|--|----------------------------|---|---------------------------|--------------------------------|--|--|
| <b>TWA</b> | <b>E</b>  | <b>407</b>   | <b>*</b>                                      | <b>100</b>   | <b>□</b>   | <b>B</b>                   | <b>#</b>  | <b>Z</b>                  | <b>0</b>                       | <b>^</b>   | <b>00</b>  |
| Type       | Case Size | Capacitance Code<br>pF code:<br>1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance<br>K = ±10%<br>M = ±20% | Voltage Code | Insulation Sleeve<br>C = Without Sleeve<br>S = With Sleeve | Packaging<br>B = Tray Pack | Qualification<br>E = Extended range<br>S = COTS+<br>L = Group A | Reliability<br>Z = Non-ER | Qualification Level<br>0 = N/A | Termination Finish<br>0 = Sn/Pb 60/40<br>7 = Matte tin | Custom Test Options<br>00 = Standard<br>01 = Random vibration* |



For RoHS compliant products, please select correct termination style.

\* Please contact the factory for additional details and availability.

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### RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage<sup>1/2/</sup>

| Frequency of Applied Ripple Current |      | 120Hz |      |      |      | 800Hz |      |      |      | 1kHz |      |      |      |
|-------------------------------------|------|-------|------|------|------|-------|------|------|------|------|------|------|------|
| Ambient Still Air Temperature (°C)  |      | ≤55   | 85   | 105  | 125  | ≤55   | 85   | 105  | 125  | ≤55  | 85   | 105  | 125  |
| % of 85°C                           | 100% | 0.60  | 0.39 | –    | –    | 0.71  | 0.43 | –    | –    | 0.72 | 0.45 | –    | –    |
|                                     | 90%  | 0.60  | 0.46 | –    | –    | 0.71  | 0.55 | –    | –    | 0.72 | 0.55 | –    | –    |
| Rated Peak Voltage                  | 80%  | 0.60  | 0.52 | 0.35 | –    | 0.71  | 0.62 | 0.42 | –    | 0.72 | 0.62 | 0.42 | –    |
|                                     | 70%  | 0.60  | 0.58 | 0.44 | –    | 0.71  | 0.69 | 0.52 | –    | 0.72 | 0.70 | 0.52 | –    |
| 66-2/3%                             |      | 0.60  | 0.60 | 0.46 | 0.27 | 0.71  | 0.71 | 0.55 | 0.32 | 0.72 | 0.72 | 0.55 | 0.32 |

| Frequency of Applied Ripple Current |      | 10kHz |      |      |      | 40kHz |      |      |      | 100kHz |      |      |      |
|-------------------------------------|------|-------|------|------|------|-------|------|------|------|--------|------|------|------|
| Ambient Still Air Temperature (°C)  |      | ≤55   | 85   | 105  | 125  | ≤55   | 85   | 105  | 125  | ≤55    | 85   | 105  | 125  |
| % of 85°C                           | 100% | 0.88  | 0.55 | –    | –    | 1.00  | 0.63 | –    | –    | 1.10   | 0.69 | –    | –    |
|                                     | 90%  | 0.88  | 0.67 | –    | –    | 1.00  | 0.77 | –    | –    | 1.10   | 0.85 | –    | –    |
| Rated Peak Voltage                  | 80%  | 0.88  | 0.76 | 0.52 | –    | 1.00  | 0.87 | 0.59 | –    | 1.10   | 0.96 | 0.65 | –    |
|                                     | 70%  | 0.88  | 0.85 | 0.64 | –    | 1.00  | 0.97 | 0.73 | –    | 1.10   | 1.07 | 0.80 | –    |
| 66-2/3%                             |      | 0.88  | 0.88 | 0.68 | 0.40 | 1.00  | 1.00 | 0.77 | 0.45 | 1.10   | 1.10 | 0.85 | 0.50 |

1/At 125°C the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.

2/The peak of the applied ac ripple voltage plus the applied dc voltage must not exceed the dc voltage rating of the capacitors.

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

| Capacitance |      | Rated Voltage DC (VR) to 85°C |     |     |                  |                  |                  |                  |      |
|-------------|------|-------------------------------|-----|-----|------------------|------------------|------------------|------------------|------|
| µF          | Code | 15V                           | 25V | 30V | 50V              | 60V              | 75V              | 100V             | 125V |
| 10          | 106  |                               |     |     |                  |                  |                  | A <sup>(M)</sup> | A    |
| 15          | 156  |                               |     |     |                  |                  |                  | A                |      |
| 22          | 226  |                               |     |     |                  |                  |                  | B                |      |
| 27          | 276  |                               |     |     |                  |                  |                  |                  | B    |
| 33          | 336  |                               |     |     |                  |                  | A                |                  |      |
| 47          | 476  |                               |     |     | B                | A                |                  |                  | B    |
| 68          | 686  |                               | A   |     | A                |                  | A <sup>(M)</sup> | B                |      |
| 82          | 826  |                               |     |     |                  |                  |                  |                  | E    |
| 100         | 107  |                               |     | A   | A <sup>(M)</sup> | B                | B                |                  | D    |
| 110         | 117  |                               |     |     |                  |                  | B                |                  |      |
| 120         | 127  |                               | A   |     | B                |                  |                  |                  | D    |
| 150         | 157  |                               |     |     | B                | B                |                  | D                | E    |
| 220         | 227  |                               |     | B   | B                |                  | E                | D,E              | E    |
| 270         | 277  |                               | B   |     |                  |                  |                  |                  |      |
| 330         | 337  |                               | B   |     | E                |                  | D,E              | E                | E    |
| 390         | 397  | D                             |     |     |                  | D                |                  |                  |      |
| 400         | 407  |                               |     |     |                  |                  |                  | E                |      |
| 470         | 477  |                               |     | B   | D,E              |                  | E                | E                | E    |
| 560         | 567  |                               | B   |     |                  | E                |                  | E                | E    |
| 660         | 667  |                               |     |     |                  |                  | E                |                  |      |
| 680         | 687  |                               | E   | D,E | E                | E                | E                |                  |      |
| 750         | 757  |                               | D,E | D,E | E                | E                | E                | E                |      |
| 1000        | 108  |                               | D,E | D,E | D,E              | E                | E                |                  |      |
| 1200        | 128  |                               | D   |     | E                |                  |                  |                  |      |
| 1500        | 158  |                               | E   | E   | E                |                  |                  |                  |      |
| 1800        | 188  |                               | E   |     |                  |                  |                  |                  |      |
| 2200        | 228  |                               | E   |     |                  | E <sup>(M)</sup> |                  |                  |      |
| 3000        | 308  |                               |     |     | E                |                  |                  |                  |      |
| 4700        | 478  |                               | E   |     |                  |                  |                  |                  |      |
| 5600        | 568  |                               |     |     |                  |                  |                  |                  |      |

Available Ratings <sup>(M tolerance only)</sup>

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### RATINGS & PART NUMBER REFERENCE

### ENERGY

| Part Number          | Cap (µF)<br>at 120Hz | DC Rated Voltage (V)<br>at 85°C | ESR max (ohms)<br>at 120Hz | DC Leakage max (µA) |                | Impedance max (Ohms)<br>-55°C at 120Hz | Maximum Capacitance Change (%) |       |        | AC Ripple (mA rms)<br>85°C at 40kHz | Case Size |     | Energy (mJ) | Energy / volume (mJ/mm <sup>3</sup> ) |
|----------------------|----------------------|---------------------------------|----------------------------|---------------------|----------------|--|--------------------------------|-------|--------|-------------------------------------|-----------|-----|-------------|---------------------------------------|
|                      |                      |                                 |                            | +25°C               | +85°C & +125°C |  | -55°C                          | +85°C | +125°C |                                     | KAVX      | DLA |             |                                       |
| <b>15 Volts</b>      |                      |                                 |                            |                     |                |  |                                |       |        |                                     |           |     |             |                                       |
| TWAD397*015□BSZ0*00  | 390                  | 15                              | 1.7                        | 7                   | 28             | 48                                     | -70                            | 25    | 25     | 1396                                | D         | T3  | 33.78       | 0.024                                 |
| <b>25 Volts</b>      |                      |                                 |                            |                     |                |  |                                |       |        |                                     |           |     |             |                                       |
| TWAA686*025□BEZ0*00  | 68                   | 25                              | 2.5                        | 0.6                 | 3              | 45                                     | -40                            | 12    | 15     | 850                                 | A         | T1  | 13.29       | 0.064                                 |
| TWAA127*025□BSZ0000  | 120                  | 25                              | 1.3                        | 1                   | 5              | 25                                     | -42                            | 8     | 12     | 1250                                | A         | T1  | 23.46       | 0.114                                 |
| TWAA127*025□BEZ0*00* | 120                  | 25                              | 2.3                        | 2                   | 10             | 35                                     | -42                            | 20    | 25     | 1250                                | A         | T1  | 23.46       | 0.114                                 |
| TWAB277*025□BEZ0*00  | 270                  | 25                              | 0.9                        | 4                   | 20             | 17.5                                   | -50                            | 18    | 28     | 1800                                | B         | T2  | 52.79       | 0.081                                 |
| TWAB337*025□BEZ0*00  | 330                  | 25                              | 1.3                        | 2                   | 20             | 25                                     | -60                            | 10    | 15     | 1550                                | B         | T2  | 64.52       | 0.099                                 |
| TWAB567*025□BSZ0*00  | 560                  | 25                              | 0.83                       | 2                   | 10             | 12                                     | -65                            | 10    | 15     | 2100                                | B         | T2  | 109.48      | 0.168                                 |
| TWAE687*025□BEZ0*00  | 680                  | 25                              | 0.75                       | 3                   | 12             | 12                                     | -50                            | 8     | 15     | 2100                                | E         | T4  | 132.94      | 0.069                                 |
| TWAD757*025□BEZ0*00  | 750                  | 25                              | 1                          | 3                   | 25             | 15                                     | -50                            | 8     | 15     | 2000                                | D         | T3  | 146.63      | 0.106                                 |
| TWAE757*025□BEZ0*00  | 750                  | 25                              | 0.75                       | 3.5                 | 16             | 9                                      | -55                            | 10    | 18     | 2200                                | E         | T4  | 146.63      | 0.076                                 |
| TWAD108*025□BSZ0*00  | 1000                 | 25                              | 1                          | 4                   | 30             | 15                                     | -50                            | 8     | 15     | 2300                                | D         | T3  | 195.50      | 0.141                                 |
| TWAE108*025□BEZ0*00  | 1000                 | 25                              | 0.7                        | 4                   | 20             | 9                                      | -55                            | 10    | 18     | 2400                                | E         | T4  | 195.50      | 0.102                                 |
| TWAD128*025□B#Z0*00  | 1200                 | 25                              | 0.65                       | 5                   | 20             | 7                                      | -70                            | 12    | 18     | 2600                                | D         | T3  | 234.60      | 0.169                                 |
| TWAE158*025□BEZ0*00  | 1500                 | 25                              | 0.5                        | 6                   | 24             | 7                                      | -65                            | 15    | 20     | 2850                                | E         | T4  | 293.25      | 0.153                                 |
| TWAE188*025□BSZ0*00  | 1800                 | 25                              | 0.5                        | 6                   | 25             | 7                                      | -75                            | 12    | 20     | 3100                                | E         | T4  | 351.90      | 0.183                                 |
| TWAE228*025□BSZ0*00  | 2200                 | 25                              | 0.5                        | 10                  | 80             | 10                                     | -90                            | 30    | 50     | 3200                                | E         | T4  | 430.10      | 0.224                                 |
| TWAE478*025□B#Z0*00  | 4700                 | 25                              | 0.5                        | 30                  | 180            | 5                                      | -90                            | 60    | 80     | 4250                                | E         | T4  | 918.85      | 0.479                                 |
| <b>30 Volts</b>      |                      |                                 |                            |                     |                |  |                                |       |        |                                     |           |     |             |                                       |
| TWAA107*030□BSZ0000  | 100                  | 30                              | 1.3                        | 1                   | 5              | 25                                     | -38                            | 8     | 12     | 1200                                | A         | T1  | 28.35       | 0.137                                 |
| TWAA107*030□BEZ0*00* | 100                  | 30                              | 2.3                        | 2                   | 10             | 35                                     | -38                            | 20    | 25     | 1200                                | A         | T1  | 28.35       | 0.137                                 |
| TWAB227*030□BEZ0*00  | 220                  | 30                              | 2                          | 1.9                 | 10             | 40                                     | -40                            | 18    | 28     | 1200                                | B         | T2  | 62.37       | 0.096                                 |
| TWAB477*030□BSZ0*00  | 470                  | 30                              | 0.85                       | 2                   | 10             | 15                                     | -65                            | 10    | 18     | 1800                                | B         | T2  | 133.25      | 0.205                                 |
| TWAD687*030□BEZ0*00  | 680                  | 30                              | 1                          | 3.3                 | 25             | 15                                     | -50                            | 8     | 15     | 1900                                | D         | T3  | 192.78      | 0.139                                 |
| TWAE687*030□BEZ0*00  | 680                  | 30                              | 0.8                        | 4.5                 | 18             | 10                                     | -60                            | 8     | 15     | 2100                                | E         | T4  | 192.78      | 0.100                                 |
| TWAD757*030□BEZ0*00  | 750                  | 30                              | 1                          | 3.6                 | 30             | 15                                     | -50                            | 8     | 15     | 2000                                | D         | T3  | 212.63      | 0.154                                 |
| TWAE757*030□BEZ0*00  | 750                  | 30                              | 0.8                        | 5                   | 20             | 10                                     | -65                            | 10    | 18     | 2200                                | E         | T4  | 212.63      | 0.111                                 |
| TWAD108*030□B#Z0*00  | 1000                 | 30                              | 0.7                        | 7                   | 25             | 7                                      | -70                            | 10    | 18     | 2500                                | D         | T3  | 283.50      | 0.205                                 |
| TWAE108*030□BEZ0*00  | 1000                 | 30                              | 0.7                        | 5                   | 20             | 7                                      | -70                            | 10    | 18     | 2500                                | E         | T4  | 283.50      | 0.148                                 |
| TWAE158*030□BSZ0*00  | 1500                 | 30                              | 0.6                        | 12                  | 35             | 6                                      | -72                            | 10    | 20     | 3000                                | E         | T4  | 425.25      | 0.222                                 |
| <b>50 Volts</b>      |                      |                                 |                            |                     |                |  |                                |       |        |                                     |           |     |             |                                       |
| TWAB476*050□BSZ0*00  | 47                   | 50                              | 3                          | 0.8                 | 8              | 70                                     | -28                            | 13    | 15     | 1155                                | B         | T2  | 37.39       | 0.057                                 |
| TWAA686*050□BSZ0000  | 68                   | 50                              | 1.5                        | 1                   | 5              | 35                                     | -25                            | 8     | 15     | 1050                                | A         | T1  | 54.09       | 0.262                                 |
| TWAA686*050□BEZ0*00* | 68                   | 50                              | 2.5                        | 2                   | 10             | 45                                     | -25                            | 20    | 25     | 1050                                | A         | T1  | 54.09       | 0.262                                 |
| TWAA107M050□BSZ0*00  | 100                  | 50                              | 5                          | 2                   | 15             | 70                                     | -45                            | 50    | 95     | 1500                                | A         | T1  | 79.55       | 0.385                                 |
| TWAB127*050□BEZ0*00  | 120                  | 50                              | 2                          | 2                   | 10             | 40                                     | -45                            | 8     | 15     | 1200                                | B         | T2  | 95.46       | 0.147                                 |
| TWAB157*050□BEZ0*00  | 150                  | 50                              | 2                          | 2                   | 10             | 25                                     | -50                            | 8     | 15     | 1400                                | B         | T2  | 119.33      | 0.183                                 |
| TWAB227*050□BSZ0*00  | 220                  | 50                              | 0.9                        | 2                   | 10             | 17.5                                   | -50                            | 8     | 15     | 1800                                | B         | T2  | 175.01      | 0.269                                 |
| TWAB227*050□BEZ0*00* | 220                  | 50                              | 0.9                        | 4                   | 20             | 17.5                                   | -50                            | 18    | 28     | 1800                                | B         | T2  | 175.01      | 0.269                                 |
| TWAE337*050□B#Z0*00  | 330                  | 50                              | 0.8                        | 2.5                 | 25             | 15                                     | -50                            | 8     | 15     | 1900                                | E         | T4  | 262.52      | 0.137                                 |
| TWAD477*050□BSZ0*00  | 470                  | 50                              | 0.75                       | 3                   | 25             | 10                                     | -50                            | 8     | 15     | 2100                                | D         | T3  | 373.89      | 0.270                                 |
| TWAD477*050□BEZ0*00* | 470                  | 50                              | 1                          | 3                   | 25             | 11                                     | -50                            | 8     | 15     | 2100                                | D         | T3  | 373.89      | 0.270                                 |
| TWAE477*050□B#Z0*00  | 470                  | 50                              | 0.75                       | 3                   | 30             | 10                                     | -50                            | 8     | 15     | 2200                                | E         | T4  | 373.89      | 0.195                                 |
| TWAE687*050□B#Z0*00  | 680                  | 50                              | 0.7                        | 5                   | 40             | 8                                      | -58                            | 10    | 20     | 2750                                | E         | T4  | 540.94      | 0.282                                 |
| TWAE757*050□BEZ0*00  | 750                  | 50                              | 0.6                        | 12                  | 60             | 8                                      | -50                            | 15    | 20     | 2800                                | E         | T4  | 596.63      | 0.311                                 |
| TWAD108*050□BEZ0*00  | 1000                 | 50                              | 1.5                        | 20                  | 125            | 12                                     | -90                            | 100   | 140    | 2500                                | D         | T3  | 795.50      | 0.575                                 |
| TWAE108*050□BSZ0*00  | 1000                 | 50                              | 1.0                        | 12                  | 90             | 20                                     | -90                            | 30    | 50     | 3200                                | E         | T4  | 795.50      | 0.415                                 |
| TWAE108*050□BEZ0*00* | 1000                 | 50                              | 0.7                        | 11                  | 110            | 20                                     | -70                            | 30    | 40     | 3200                                | E         | T4  | 795.50      | 0.415                                 |
| TWAE128*050□BSZ0*00  | 1200                 | 50                              | 1.0                        | 12                  | 90             | 20                                     | -90                            | 30    | 50     | 3200                                | E         | T4  | 954.60      | 0.498                                 |
| TWAE158*050□BSZ0*00  | 1500                 | 50                              | 1                          | 35                  | 130            | 6                                      | -75                            | 45    | 55     | 3500                                | E         | T4  | 1193.25     | 0.622                                 |
| TWAE308M050□B#Z0*00  | 3000                 | 50                              | 0.3                        | 30                  | 150            | 3.5                                    | -80                            | 60    | 85     | 3100                                | E         | T4  | 2386.50     | 1.244                                 |
| TWAE308K050□BSZ0*00  | 3000                 | 50                              | 0.6                        | 30                  | 150            | 5                                      | -90                            | 90    | 100    | 3100                                | E         | T4  | 2386.50     | 1.244                                 |
| <b>60 Volts</b>      |                      |                                 |                            |                     |                |  |                                |       |        |                                     |           |     |             |                                       |
| TWAA476*060□BSZ0000  | 47                   | 60                              | 2                          | 1                   | 5              | 44                                     | -25                            | 8     | 12     | 1050                                | A         | T1  | 53.93       | 0.261                                 |
| TWAA476*060□BEZ0*00* | 47                   | 60                              | 2                          | 2                   | 10             | 55                                     | -25                            | 15    | 25     | 1050                                | A         | T1  | 53.93       | 0.261                                 |
| TWAB107*060□BSZ0*00  | 100                  | 60                              | 1.5                        | 1.7                 | 10             | 30                                     | -35                            | 12    | 20     | 1650                                | B         | T2  | 114.75      | 0.176                                 |
| TWAB107*060□BEZ0*00* | 100                  | 60                              | 2.5                        | 1.7                 | 10             | 40                                     | -40                            | 8     | 15     | 1100                                | B         | T2  | 114.75      | 0.176                                 |
| TWAB157*060□BSZ0000  | 150                  | 60                              | 1.1                        | 2                   | 10             | 20                                     | -40                            | 8     | 15     | 1650                                | B         | T2  | 172.13      | 0.264                                 |
| TWAB157*060□BEZ0*00* | 150                  | 60                              | 1.5                        | 2                   | 10             | 30                                     | -35                            | 12    | 20     | 1650                                | B         | T2  | 172.13      | 0.264                                 |
| TWAD397*060□B#Z0*00  | 390                  | 60                              | 0.9                        | 3                   | 25             | 15                                     | -60                            | 8     | 15     | 2100                                | D         | T3  | 447.53      | 0.323                                 |
| TWAE567*060□B#Z0*00  | 560                  | 60                              | 0.8                        | 5                   | 40             | 10                                     | -58                            | 8     | 15     | 2750                                | E         | T4  | 642.60      | 0.335                                 |
| TWAE687*060□BEZ0*00  | 680                  | 60                              | 0.6                        | 13                  | 65             | 8                                      | -50                            | 15    | 20     | 2800                                | E         | T4  | 780.30      | 0.407                                 |
| TWAE757*060□BEZ0*00  | 750                  | 60                              | 0.6                        | 15                  | 75             | 8                                      | -50                            | 15    | 20     | 2800                                | E         | T4  | 860.63      | 0.449                                 |
| TWAE108*060□BSZ0*00  | 1000                 | 60                              | 1                          | 12                  | 90             | 20                                     | -90                            | 30    | 50     | 3200                                | E         | T4  | 1147.50     | 0.598                                 |

# TWA SERIES

## COTS-Plus Wet Electrolytic Tantalum Capacitor of Contents



### RATINGS & PART NUMBER REFERENCE

### ENERGY

| Part Number          | Cap (µF)<br>25°C<br>at 120Hz | DC Rated<br>Voltage<br>(V)<br>at 85°C | ESR max<br>(ohms)<br>at 120Hz | DC Leakage max (µA) |                   | Impedance<br>max (Ohms)<br>-55°C at<br>120Hz | Maximum Capacitance<br>Change (%) |       |        | AC Ripple<br>(mA rms)<br>85°C at<br>40kHz | Case Size |     | Energy<br>(mJ) | Energy /<br>volume<br>(mJ/mm <sup>3</sup> ) |
|----------------------|------------------------------|---------------------------------------|-------------------------------|---------------------|-------------------|--|-----------------------------------|-------|--------|---|-----------|-----|----------------|---|
|                      |                              |                                       |                               | +25°C               | +85°C &<br>+125°C |  | -55°C                             | +85°C | +125°C |   | KAVX      | DLA |                |   |
| TWAE108*060□BEZ0*00* | 1000                         | 60                                    | 0.5                           | 20                  | 60                | 4.5  | -70                               | 30    | 60     | 3200                                      | E         | T4  | 1147.50        | 0.598                                       |
| TWAE228M060□BEZ0*00  | 2200                         | 60                                    | 0.5                           | 40                  | 120               | 3.0  | -80                               | 60    | 80     | 3000                                      | E         | T4  | 2524.50        | 1.316                                       |
| <b>75 Volt</b>       |                              |                                       |                               |                     |                   |  |                                   |       |        |   |           |     |                |   |
| TWAA336*075□BSZ0000  | 33                           | 75                                    | 2.5                           | 1                   | 5                 | 66   | -25                               | 5     | 9      | 1050                                      | A         | T1  | 59.25          | 0.287                                       |
| TWAA336*075□BEZ0*00* | 33                           | 75                                    | 2.5                           | 2                   | 10                | 70   | -25                               | 15    | 25     | 1050                                      | A         | T1  | 59.25          | 0.287                                       |
| TWAA686M075□BSZ0*00  | 68                           | 75                                    | 5                             | 2                   | 15                | 70   | -45                               | 50    | 95     | 1500                                      | A         | T1  | 122.09         | 0.591                                       |
| TWAB107*075□BEZ0*00  | 100                          | 75                                    | 2.5                           | 2                   | 10                | 40   | -35                               | 6     | 10     | 1400                                      | B         | T2  | 179.55         | 0.276                                       |
| TWAB117*075□BSZ0000  | 110                          | 75                                    | 1.3                           | 2                   | 10                | 24   | -35                               | 6     | 10     | 1650                                      | B         | T2  | 197.51         | 0.303                                       |
| TWAB117*075□BEZ0*00* | 110                          | 75                                    | 1.5                           | 2                   | 10                | 30   | -35                               | 12    | 20     | 1650                                      | B         | T2  | 197.51         | 0.303                                       |
| TWAE227*075□B#Z0*00  | 220                          | 75                                    | 1.1                           | 2.5                 | 30                | 20   | -50                               | 6     | 10     | 1800                                      | E         | T4  | 395.01         | 0.206                                       |
| TWAD337*075□BSZ0*00  | 330                          | 75                                    | 1                             | 3                   | 30                | 12   | -45                               | 6     | 10     | 2100                                      | D         | T3  | 592.52         | 0.428                                       |
| TWAD337*075□BEZ0*00* | 330                          | 75                                    | 1.2                           | 3                   | 30                | 15   | -60                               | 10    | 20     | 2100                                      | D         | T3  | 592.52         | 0.428                                       |
| TWAE337*075□BEZ0*00  | 330                          | 75                                    | 1                             | 3                   | 40                | 12   | -50                               | 6     | 10     | 2200                                      | E         | T4  | 592.52         | 0.309                                       |
| TWAE477*075□B#Z0*00  | 470                          | 75                                    | 0.9                           | 5                   | 50                | 12   | -55                               | 6     | 10     | 2750                                      | E         | T4  | 843.89         | 0.440                                       |
| TWAE667*075□BSZ0*00  | 660                          | 75                                    | 0.7                           | 12                  | 120               | 10   | -70                               | 30    | 40     | 2750                                      | E         | T4  | 1185.03        | 0.418                                       |
| TWAE687*075□BEZ0*00* | 680                          | 75                                    | 0.9                           | 11                  | 110               | 10   | -70                               | 30    | 40     | 2750                                      | E         | T4  | 1220.94        | 0.636                                       |
| TWAE757*075□B#Z0*00  | 750                          | 75                                    | 0.7                           | 12                  | 120               | 10   | -70                               | 30    | 40     | 3800                                      | E         | T4  | 1346.63        | 0.702                                       |
| TWAE108*075□BEZ0*00  | 1000                         | 75                                    | 0.5                           | 30                  | 90                | 4.5  | -70                               | 30    | 60     | 3500                                      | E         | T4  | 1795.50        | 0.936                                       |
| <b>100 Volt</b>      |                              |                                       |                               |                     |                   |  |                                   |       |        |   |           |     |                |   |
| TWAA106M100□BSZ0*00  | 10                           | 100                                   | 3.5                           | 5                   | 25                | 190  | -18                               | 10    | 30     | 1050                                      | A         | T1  | 31.96          | 0.155                                       |
| TWAA156*100□BSZ0000  | 15                           | 100                                   | 3.5                           | 1                   | 5                 | 125  | -18                               | 3     | 10     | 1050                                      | A         | T1  | 47.93          | 0.232                                       |
| TWAA156*100□BEZ0*00* | 15                           | 100                                   | 5.5                           | 7                   | 35                | 140  | -18                               | 10    | 30     | 1050                                      | A         | T1  | 47.93          | 0.232                                       |
| TWAB226*100□BSZ0*00  | 22                           | 100                                   | 4                             | 1                   | 5                 | 100  | -10                               | 8     | 15     | 1065                                      | B         | T2  | 70.30          | 0.108                                       |
| TWAB686*100□BSZ0000  | 68                           | 100                                   | 2.1                           | 2                   | 10                | 37   | -30                               | 4     | 12     | 1650                                      | B         | T2  | 217.29         | 0.334                                       |
| TWAB686*100□BEZ0*00* | 68                           | 100                                   | 2.5                           | 2                   | 10                | 37   | -30                               | 4     | 12     | 1650                                      | B         | T2  | 217.29         | 0.334                                       |
| TWAD157*100□B#Z0*00  | 150                          | 100                                   | 1.6                           | 3                   | 25                | 22   | -35                               | 6     | 12     | 2100                                      | D         | T3  | 479.33         | 0.346                                       |
| TWAD227*100□BEZ0*00  | 220                          | 100                                   | 1.4                           | 5                   | 25                | 18   | -50                               | 10    | 15     | 2500                                      | D         | T3  | 703.01         | 0.508                                       |
| TWAE227*100□B#Z0*00  | 220                          | 100                                   | 1.2                           | 5                   | 50                | 15   | -40                               | 6     | 12     | 2750                                      | E         | T4  | 703.01         | 0.366                                       |
| TWAE337*100□B#Z0*00  | 330                          | 100                                   | 0.8                           | 6                   | 60                | 10   | -45                               | 7     | 20     | 3600                                      | E         | T4  | 1054.52        | 0.550                                       |
| TWAE407*100□B#Z0*00  | 400                          | 100                                   | 0.8                           | 10                  | 150               | 10   | -50                               | 10    | 35     | 4100                                      | E         | T4  | 1278.20        | 0.666                                       |
| TWAE477*100□BSZ0*00  | 470                          | 100                                   | 0.7                           | 15                  | 150               | 10   | -50                               | 10    | 35     | 4100                                      | E         | T4  | 1501.89        | 0.783                                       |
| TWAE567*100□BSZ0*00  | 560                          | 100                                   | 1.0                           | 25                  | 200               | 10   | -60                               | 45    | 110    | 4100                                      | E         | T4  | 1789.48        | 0.933                                       |
| TWAE757*100□BEZ0*00  | 750                          | 100                                   | 0.6                           | 30                  | 150               | 5  | -60                               | 50    | 120    | 4200                                      | E         | T4  | 2396.63        | 1.249                                       |
| <b>125 Volt</b>      |                              |                                       |                               |                     |                   |  |                                   |       |        |   |           |     |                |   |
| TWAA106*125□BSZ0000  | 10                           | 125                                   | 5.5                           | 1                   | 5                 | 175  | -15                               | 3     | 10     | 1050                                      | A         | T1  | 49.96          | 0.242                                       |
| TWAA106M125□BEZ0*00* | 10                           | 125                                   | 5.5                           | 1                   | 5                 | 190  | -15                               | 10    | 30     | 1050                                      | A         | T1  | 49.96          | 0.242                                       |
| TWAB276*125□BSZ0*00  | 27                           | 125                                   | 4                             | 2                   | 10                | 100  | -10                               | 8     | 15     | 1200                                      | B         | T2  | 134.88         | 0.207                                       |
| TWAB476*125□B#Z0*00  | 47                           | 125                                   | 2.3                           | 2                   | 10                | 47   | -25                               | 5     | 12     | 1650                                      | B         | T2  | 234.79         | 0.360                                       |
| TWAE826*125□BSZ0*00  | 82                           | 125                                   | 1.6                           | 2                   | 10                | 39   | -24                               | 10    | 20     | 1900                                      | E         | T4  | 409.63         | 0.213                                       |
| TWAD107*125□B#Z0*00  | 100                          | 125                                   | 1.8                           | 3                   | 25                | 35   | -35                               | 5     | 12     | 2100                                      | D         | T3  | 499.55         | 0.361                                       |
| TWAD127*125□BEZ0*00  | 120                          | 125                                   | 1.8                           | 3                   | 25                | 35   | -35                               | 5     | 12     | 2100                                      | D         | T3  | 599.46         | 0.433                                       |
| TWAE157*125□B#Z0*00  | 150                          | 125                                   | 1.6                           | 5                   | 50                | 20   | -35                               | 6     | 12     | 2750                                      | E         | T4  | 749.33         | 0.391                                       |
| TWAE227*125□BEZ0*00  | 220                          | 125                                   | 1.4                           | 10                  | 50                | 12   | -40                               | 8     | 15     | 3600                                      | E         | T4  | 1099.01        | 0.573                                       |
| TWAE337*125□B#Z0*00  | 330                          | 125                                   | 1                             | 15                  | 150               | 20   | -60                               | 20    | 60     | 2500                                      | E         | T4  | 1648.52        | 0.859                                       |
| TWAE477*125□BSZ0*00  | 470                          | 125                                   | 1                             | 30                  | 160               | 25   | -70                               | 30    | 70     | 3500                                      | E         | T4  | 2347.89        | 1.224                                       |
| TWAE567*125□BSZ0*00  | 560                          | 125                                   | 1                             | 30                  | 160               | 25   | -70                               | 40    | 120    | 4200                                      | E         | T4  | 2797.48        | 1.458                                       |

Energy is calculated by this formula (consider derating factor):

$$\text{Energy} = \frac{1}{2} C \times ((V_r \times X)^2 - V_x^2)$$

where C = Capacitance

V<sub>r</sub> = Rated Voltage

X = Recommended derating factor

V<sub>x</sub> = 3V (invariable)

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: KYOCERA AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.

\*Not recommended for new designs, for new design use part number with Inspection level "S" – COTS-Plus

$$\text{DF} = 2\pi fC \times (\text{ESR})$$

$$2\pi = 6.28$$

$$f = 120\text{Hz}$$

C = Actual measured capacitance

ESR = Actual measured ESR



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