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# Panasonic

## Tantalum Solid Electrolytic Capacitors/TES

### Surface Mount Type

Series: TES

Japan  
China



- Features Low profile  
Height: H=1.2mm max.

#### ■ Specifications

|                              |  |   |
|------------------------------|--|---|
| Category temp. range         | -55 to 125°C   |   |
| Rated W.V. Range             | 4 to 16 V .DC  |   |
| Nominal Cap. Range           | 0.47 to 15 μ F   |   |
| Capacitance Tolerance        | ±20 % (120Hz/20°C)   |   |
| DC Leakage Current           | I ≤ 0.01CV or 0.5 (μA) after 2 minutes application of rated working voltage at 20°C (Whichever is greater)                                   |   |
| tanδ                         | Please see the attached standard products list   |   |
| Resistance to Soldering Heat | The capacitor shall withstand dipping into solder for 5±1 seconds at 260±5°C   |   |
| Moisture Resistance          | After 500 hours exposure at 40 °C and 90 to 95 % R.H. without load, the capacitor shall meet the following limits.                           |   |
|                              | Capacitance change   | ±10% of initial measured value  |
|                              | tanδ.  | ≤ initial specified value, miniaturized size : ≤ 150% of initial specified value. |
| Endurance                    | After 2000 hours application of rated DC working voltage at 85°C or derated voltage at 125°C, the capacitor shall meet the following limits. |   |
|                              | Capacitance change   | ±10% of initial measured value  |
|                              | tanδ.  | ≤ initial specified value   |
|                              | DC leakage current   | ≤ 125 % of initial specified value  |

#### ■ Marking

● Size Z

W.V. code

|          |   |     |    |    |
|----------|---|-----|----|----|
| W.V. (V) | 4 | 6.3 | 10 | 16 |
| code     | G | J   | A  | C  |

Capacitance code

|                 |          |          |   |     |     |     |     |     |          |          |
|-----------------|----------|----------|---|-----|-----|-----|-----|-----|----------|----------|
| Capacitance(μF) | 0.47     | 0.68     | 1 | 1.5 | 2.2 | 3.3 | 4.7 | 6.8 | 10       | 15       |
| 1st code        | <u>S</u> | <u>W</u> | A | E   | J   | N   | S   | W   | <u>A</u> | <u>E</u> |

(Ex.) JE : 6.3V 1.5μF

#### ■ Dimensions in mm (not to scale)

| EIA code | Size code | L±0.2 | W1±0.2 | W2±0.1 | H max. | P       |
|----------|-----------|-------|--------|--------|--------|---------|
| 2012     | Z         | 2.0   | 1.25   | 0.9    | 1.2    | 0.5±0.2 |

#### ■ Case size

| W.V.(V.DC)<br>Cap(μF) | 4(0G)    |           | 6.3(0J)  |           | 10(1A)   |           | 16(1C)   |           |
|-----------------------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|                       | Standard | Miniature | Standard | Miniature | Standard | Miniature | Standard | Miniature |
| 0.47 (474)            |          |           |          |           |          |           | Z        |           |
| 0.68 (684)            |          |           |          |           |          |           | Z        |           |
| 1.0 (105)             |          |           |          |           | Z        |           |          | Z         |
| 1.5 (155)             |          |           | Z        |           |          | Z         |          |           |
| 2.2 (225)             | Z        |           | Z        |           |          | Z         |          |           |
| 3.3 (335)             | Z        |           |          |           |          | Z         |          |           |
| 4.7 (475)             |          |           |          | Z         |          | Z         |          |           |
| 6.8 (685)             |          | Z         |          | Z         |          |           |          |           |
| 10 (106)              |          | Z         |          | Z         |          |           |          |           |
| 15 (156)              |          | Z         |          |           |          |           |          |           |

Note : 1. ( ) indicates W.V. and capacitance code.

2. When selecting W.V. refer to page 20.

3. We recommend current sizes shown in the above table for new design, but conventional case size is available on request.

4. Other rating upon request (voltage, capacitance, tolerance)

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## Tantalum Solid Electrolytic Capacitors/TES

### ■ Standard Products

| W.V. | Cap.<br>(±20%)<br>(μF) | Case Size         |           | Specification |                            |                                  | Part No.    | Min.PackagingQ'ty |
|------|------------------------|-------------------|-----------|---------------|----------------------------|----------------------------------|-------------|-------------------|
|      |                        | L x W x H<br>(mm) | Size Code | L.C<br>(μA)   | tan δ<br>(120Hz)<br>(20°C) | ESR<br>(100kHz)<br>(20°C)<br>(Ω) |             | Taping<br>(pcs)   |
| 4    | 2.2                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.10                       | 25                               | ECST0GZ225R | 3000              |
|      | 3.3                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.15                       | 20                               | ECST0GZ335R | 3000              |
|      | 6.8                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.20                       | 20                               | ECST0GZ685R | 3000              |
|      | 10                     | 2.0x1.25x1.2      | Z         | 0.5           | 0.20                       | 15                               | ECST0GZ106R | 3000              |
|      | 15                     | 2.0x1.25x1.2      | Z         | 0.6           | 0.20                       | 15                               | ECST0GZ156R | 3000              |
| 6.3  | 1.5                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.10                       | 25                               | ECST0JZ155R | 3000              |
|      | 2.2                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.12                       | 20                               | ECST0JZ225R | 3000              |
|      | 4.7                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.20                       | 20                               | ECST0JZ475R | 3000              |
|      | 6.8                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.20                       | 15                               | ECST0JZ685R | 3000              |
|      | 10                     | 2.0x1.25x1.2      | Z         | 0.7           | 0.20                       | 15                               | ECST0JZ106R | 3000              |
| 10   | 1                      | 2.0x1.25x1.2      | Z         | 0.5           | 0.10                       | 25                               | ECST1AZ105R | 3000              |
|      | 1.5                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.12                       | 20                               | ECST1AZ155R | 3000              |
|      | 2.2                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.20                       | 15                               | ECST1AZ225R | 3000              |
|      | 3.3                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.20                       | 15                               | ECST1AZ335R | 3000              |
|      | 4.7                    | 2.0x1.25x1.2      | Z         | 0.5           | 0.20                       | 15                               | ECST1AZ475R | 3000              |
| 16   | 0.47                   | 2.0x1.25x1.2      | Z         | 0.5           | 0.10                       | 28                               | ECST1CZ474R | 3000              |
|      | 0.68                   | 2.0x1.25x1.2      | Z         | 0.5           | 0.10                       | 25                               | ECST1CZ684R | 3000              |
|      | 1                      | 2.0x1.25x1.2      | Z         | 0.5           | 0.20                       | 20                               | ECST1CZ105R | 3000              |