# Wet Tantalum Capacitors with Hermetic Seal

Vishay STA represents a major breakthrough in Wet Tantalum capacitor technology. Its unique cathode system, also used in the ST, provides the highest capacitance per unit volume available. The STA combines the inherent reliability of wet tantalum with the capacitance stability of solid tantalum, and there are no circuit impedance restrictions. The range is exceptionally well suited for low voltage filtering and energy storage applications.

## FEATURES

- All tantalum, hermetically sealed case
- Terminations: Axial leaded
- Utilizes proven Vishay SuperTan® technology
- High and stable capacitance
- High reliability, rugged design
- 150 µF to 4700 µF
- 6 $V_{DC}$ to 15 $V_{DC}$
- - 55 °C to + 125 °C

## APPLICATIONS NOTES

a) No continuous reverse voltage permissible.

b) Transient reverse voltage surges are acceptable under the following conditions:

The peak reverse voltage does not exceed 1.5 V and the peak current times the duration of the reverse transient does not exceed 0.05 As. In addition, the repetition frequency of the reverse voltage surge is less than 10 Hz.

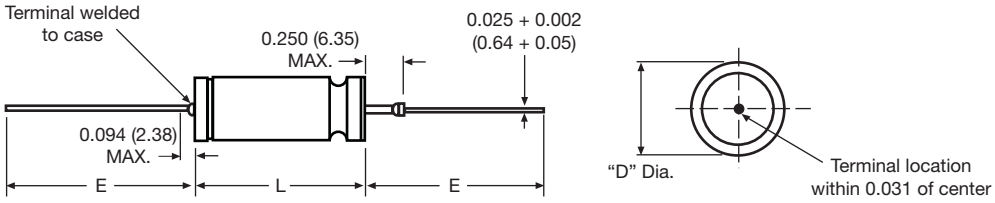
c) The peak of the applied AC ripple and the applied DC voltage must not exceed the DC voltage rating of the capacitor.

d) Ripple current ratings by part number at 85 °C and 40 kHz are included in the table. Ripple current correction factors for other temperatures and frequencies are given on the next page.

## ORDERING INFORMATION

| STA | 2700 | 15 | T4 | M | I |
|---|---|---|---|---|---|
| STYLE | CAPACITANCE µF | 85 °C RATED DC VOLTAGE | CASE CODE | CAPACITANCE TOLERANCE | INSULATING SLEEVE |
| | | | | M = ± 20 %<br>K = ± 10 % | I = Insulated<br>X = Uninsulated |

## DIMENSIONS in inches [millimeters]




| CASE CODE | D MAX. INSULATED | D ± 0.016 [0.41] UNINSULATED | L + 0.031/- 0.016 [+ 0.79/- 0.41] | E ± 0.250 [6.35] |
|---|---|---|---|---|
| T1 | 0.219 [5.56] | 0.188 [4.78] | 0.453 [11.51] | 1.500 [38.10] |
| T2 | 0.312 [7.92] | 0.281 [7.14] | 0.641 [16.28] | 2.250 [57.15] |
| T3 | 0.406 [10.31] | 0.375 [9.52] | 0.766 [19.46] | 2.250 [57.15] |
| T4 | 0.406 [10.31] | 0.375 [9.52] | 1.062 [26.97] | 2.250 [57.15] |

**Notes**

- Material at egress is tantalum.
- Insulation sleeving will lap over the ends of the capacitor case.
- Tinned nickel leads, solderable and weldable.
- Approx. weight
  T1: 2.3 g, T2: 5.7 g
  T3: 9.4 g, T4: 14.8 g

## STANDARD RATINGS

| CAPACITANCE AT 25 °C 120 Hz (µF) | CASE CODE | MAX. ESR (Ω) | | MAX. DCL (µA) | | MAX. DF AT 120 Hz (%) | MAX. IMP AT - 55 °C AND 120 Hz (Ω) | MAX. CAPACITANCE CHANGE (%) | | AC RIPPLE 85 °C 40 kHz (mA) RMS | PART NUMBER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 120 Hz | 140 Hz | 25 °C | 85 °C | | | - 55 °C | 85 °C | | |
| **6 $V_{DC}$ AT 85 °C** | | | | | | | | | | | |
| 470 | T1 | 0.9 | 0.4 | 1 | 3 | 46 | 12 | - 75 | + 10 | 1500 | STA470-6T1MI |
| 1500 | T2 | 0.7 | 0.3 | 3 | 8 | 101 | 9 | - 80 | + 10 | 2200 | STA1500-6T2MI |
| 3300 | T3 | 0.5 | 0.2 | 8 | 30 | 150 | 7 | - 90 | + 18 | 2800 | STA3300-6T3MI |
| 4700 | T4 | 0.3 | 0.2 | 10 | 35 | 155 | 5 | - 90 | + 18 | 3500 | STA4700-6T4MI |
| **10 $V_{DC}$ AT 85 °C** | | | | | | | | | | | |
| 330 | T1 | 1.0 | 0.5 | 1 | 3 | 35 | 15 | - 70 | + 8 | 1400 | STA330-10T1MI |
| 1000 | T2 | 0.8 | 0.3 | 3 | 10 | 70 | 8 | - 80 | + 10 | 2200 | STA1000-10T2MI |
| 2200 | T3 | 0.5 | 0.3 | 5 | 30 | 109 | 6 | - 85 | + 15 | 2800 | STA2200-10T3MI |
| 3300 | T4 | 0.4 | 0.2 | 8 | 30 | 119 | 3 | - 85 | + 18 | 3500 | STA3300-10T4MI |
| **15 $V_{DC}$ AT 85 °C** | | | | | | | | | | | |
| 150 | T1 | 1.1 | 0.5 | 1 | 3 | 16 | 25 | - 45 | + 8 | 1400 | STA150-15T1MI |
| 680 | T2 | 0.8 | 0.3 | 2 | 10 | 49 | 10 | - 65 | + 10 | 2200 | STA680-15T2MI |
| 1500 | T3 | 0.6 | 0.2 | 5 | 25 | 81 | 9 | - 80 | + 10 | 2700 | STA1500-15T3MI |
| 2700 | T4 | 0.4 | 0.2 | 4 | 25 | 109 | 4 | - 80 | + 15 | 3400 | STA2700-15T4MI |

## RIPPLE CURRENT MULTIPLIERS VS. FREQUENCY, TEMPERATURE, AND APPLIES PEAK VOLTAGE

| FREQUENCY OF APPLIED RIPPLE CURRENT | | 120 Hz | | | | 800 Hz | | | | 1 kHz | | | | 10 kHz | | | | 40 kHz | | | | 100 kHz | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AMBIENT STILL AIR TEMP. IN °C | | ≤ 55 | 85 | 105 | 125 | ≤ 55 | 85 | 105 | 125 | ≤ 55 | 85 | 105 | 125 | ≤ 55 | 85 | 105 | 125 | ≤ 55 | 85 | 105 | 125 | ≤ 55 | 85 | 105 | 125 |
| % of 85 °C rated peak voltage | 100 % | 0.60 | 0.39 | - | - | 0.71 | 0.43 | - | - | 0.72 | 0.46 | - | - | 0.88 | 0.55 | - | - | 1.0 | 0.63 | - | - | 1.1 | 0.69 | - | - |
| | 90 % | 0.60 | 0.46 | - | - | 0.71 | 0.55 | - | - | 0.72 | 0.55 | - | - | 0.88 | 0.67 | - | - | 1.0 | 0.77 | - | - | 1.1 | 0.85 | - | - |
| | 80 % | 0.60 | 0.52 | 0.35 | - | 0.71 | 0.62 | 0.42 | - | 0.72 | 0.62 | 0.42 | - | 0.88 | 0.76 | 0.52 | - | 1.0 | 0.87 | 0.59 | - | 1.1 | 0.96 | 0.65 | - |
| | 70 % | 0.60 | 0.58 | 0.44 | - | 0.71 | 0.69 | 0.52 | - | 0.72 | 0.70 | 0.52 | - | 0.88 | 0.85 | 0.64 | - | 1.0 | 0.97 | 0.73 | - | 1.1 | 1.07 | 0.80 | - |
| | 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 | 0.88 | 0.88 | 0.68 | 0.40 | 1.0 | 1.0 | 0.77 | 0.45 | 1.1 | 1.1 | 0.85 | 0.50 |

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