Wet Tantalum Capacitors Sintered Anode TANTALEX™ Capacitors for Operation to +125 °C, Elastomer-Sealed

**FEATURES**
- Axial through-hole terminations: standard tin / lead (SnPb), 100 % tin (RoHS-compliant) available
- Vishay Sprague model 109D tubular elastomer-sealed, sintered anode TANTALEX capacitors fill the basic requirements for applications where a superior quality, reliable design for industrial, automotive and telecommunications application is desired
- Model 109D capacitors are the commercial equivalents of Tansitor style WC, UWC, Mallory-NACC style TLS, TLH and the military style CL64 and CL65, designed to meet the performance requirements of military specification MIL-DTL-3965

**PERFORMANCE CHARACTERISTICS**

- **Operating Temperature:** -55 °C to +85 °C (to +125 °C with voltage derating)
- **Capacitance Tolerance:** at 120 Hz, +25 °C. ± 20 % standard, ± 10 %, ± 5 % available as special.
- **DC Leakage Current (DCL max.):** at +25 °C, +85 °C, +125 °C: leakage current shall not exceed the values listed in the Standard Ratings tables.
- **Life Test:** capacitors are capable of withstanding a 2000 h life test at a temperature of +85 °C or +125 °C at the applicable DC working voltage.

Following the life test:
1. DCL shall not exceed the initial requirements or 1 μA, whichever is greater.
2. The ESR shall meet the initial requirement.
3. Change in capacitance shall not exceed 10 % from the initial measurement. For capacitors with voltage ratings of 15 V DC and below, change in capacitance shall not exceed +10 %, -25 % from the initial measurement.

**ORDERING INFORMATION**

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<td>DC VOLTAGE RATING AT +85 °C</td>
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<td>RoHS-COMPLIANT</td>
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<td>X0 = ± 20 %</td>
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<td>X5 = ± 5 % special order</td>
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- **Note:**
  - Packaging: the use of formed plastic trays for packaging these axial lead components is standard. Tape and reel is not available due to the unit weight

**3D Models**

**Available**

**RoHS**

**Available**

**HALOGEN FREE**

**GREEN**

**Available**

For technical questions, contact: tantalum@vishay.com

**DIMENSIONS** in inches [millimeters]

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<td>0.453 ± 0.031 / - 0.016 [11.51 + 0.79 / - 0.41]</td>
<td>0.219 [5.56]</td>
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<td>0.281 ± 0.016 [7.14 ± 0.41]</td>
<td>0.641 + 0.031 / - 0.016 [16.28 + 0.79 / - 0.41]</td>
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<td>0.375 ± 0.016 [9.53 ± 0.41]</td>
<td>0.766 ± 0.031 / - 0.016 [19.46 + 0.79 / - 0.41]</td>
<td>0.406 [10.31]</td>
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**Notes**

(1) For reference only

(2) Replaces previous W case

**RATINGS AND CASE CODES (Standard)**

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Note:

- Part numbers shown are for units with ±20% capacitance tolerance and uninsulated capacitors. For ±10% units, change the digit following the letter “X” from “0” to “9”.
- For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number.
- For RoHS-compliant add “E3”

Revision: 11-Jan-2022

4 Document Number: 40023

For technical questions, contact: tantalum@vishay.com

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**Note**

(1) Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3”
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<th>MAX. IMP. AT -55 °C (Ω)</th>
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<th>MAX. DCL (μA) AT -55 °C</th>
<th>MAX. DCL (μA) AT +85 °C</th>
<th>MAX. DCL (μA) AT +125 °C</th>
<th>MAX. CAPACITANCE CHANGE (%) AT +25 °C</th>
<th>MAX. CAPACITANCE CHANGE (%) AT -55 °C</th>
<th>MAX. RMS RIPPLE CURRENT 120 Hz (mA)</th>
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**Note**

(1) Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3”
### EXTENDED RATINGS

<table>
<thead>
<tr>
<th>Capacitance (μF)</th>
<th>Case Code</th>
<th>Part Number (1)</th>
<th>Max. ESR AT +25 °C (Ω)</th>
<th>Max. Imp. AT -55 °C (μA)</th>
<th>Max. DCL AT +25 °C (μA)</th>
<th>Max. Capacitance Change (%) AT +55 °C</th>
<th>Max. RMS Ripple Current 120 Hz (mA)</th>
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<tr>
<td>6 VDC AT +85 °C; 7 VDC AT +125 °C</td>
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<td>+25</td>
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</table>

**Note**

(1) Part numbers shown are for units with ±20% capacitance tolerance and uninsulated capacitors. For ± 10% units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3”
**EXTENDED RATINGS**

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<tr>
<th>CAPACITANCE (μF)</th>
<th>CASE CODE</th>
<th>PART NUMBER (1)</th>
<th>MAX. ESR AT +25 °C</th>
<th>MAX. IMP. AT -55 °C</th>
<th>MAX. DCL (μA) AT +25 °C</th>
<th>MAX. DCL +85 °C AT +125 °C</th>
<th>MAX. CAPACITANCE CHANGE (%) AT -55 °C</th>
<th>MAX. CAPACITANCE CHANGE (%) AT +85 °C</th>
<th>MAX. CAPACITANCE CHANGE (%) AT +125 °C</th>
<th>MAX. RMS RIPPLE CURRENT AT 120 Hz (mA)</th>
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<tbody>
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<td>120 Hz (Ω)</td>
<td>120 Hz (Ω)</td>
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<td>+85 °C +125 °C</td>
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</table>

**Note**

(1) Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3”
## EXTENDED RATINGS

| CAPACITANCE (μF) | CASE CODE | PART NUMBER (1) | MAX. ESR AT +25 °C 120 Hz (Ω) | MAX. IMP. AT -55 °C 120 Hz (Ω) | MAX. DCL (μA) AT +25 °C | MAX. DCL (μA) AT +85 °C | MAX. DCL (μA) AT +125 °C | MAX. CAPACITANCE CHANGE (%) AT +55 °C | MAX. CAPACITANCE CHANGE (%) AT +85 °C | MAX. CAPACITANCE CHANGE (%) AT +125 °C | MAX. RMS RIPPLE CURRENT 120 Hz (mA) |
|-----------------|-----------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 100 VDC AT +85 °C; 65 VDC AT +125 °C |
| 2.0 C          | 109D205X0100C0 | 14.0 | 870 | 3.0 | 12 | -20 | +12 | +12 | 100 |
| 8.2 C          | 109D825X0100C0 | 6.0  | 250 | 3.0 | 12 | -12 | +12 | +12 | 130 |
| 10 C           | 109D106X0100C0 | 6.0  | 200 | 3.0 | 12 | -17 | +10 | +12 | 130 |
| 33 F           | 109D336X0100F0 | 3.5  | 85  | 4.0 | 24 | -18 | +15 | +15 | 250 |
| 39 F           | 109D396X0100F0 | 3.5  | 80  | 5.0 | 24 | -20 | +12 | +15 | 250 |
| 56 T           | 109D566X0100T0 | 2.2  | 45  | 9.0 | 36 | -20 | +15 | +15 | 400 |
| 68 T           | 109D686X0100T0 | 2.2  | 40  | 10 | 40 | -30 | +14 | +16 | 400 |
| 86 T           | 109D866X0100T0 | 3.2  | 30  | 10 | 40 | -25 | +15 | +15 | 370 |
| 120 K          | 109D127X0100K0 | 2.8  | 30  | 12 | 48 | -35 | +15 | +17 | 440 |
| 125 VDC AT +85 °C; 85 VDC AT +125 °C |
| 6.8 C          | 109D685X0125C0 | 11.7 | 300 | 3.0 | 12 | -14 | +10 | +12 | 130 |
| 27 F           | 109D276X0125F0 | 3.5  | 90  | 5.0 | 24 | -18 | +12 | +15 | 250 |
| 39 T           | 109D396X0125T0 | 2.2  | 60  | 10 | 40 | -16 | +14 | +16 | 400 |
| 47 T           | 109D476X0125T0 | 2.2  | 50  | 10 | 40 | -26 | +14 | +16 | 400 |
| 56 K           | 109D566X0125K0 | 4.1  | 32  | 10 | 40 | -25 | +15 | +15 | 330 |
| 82 K           | 109D826X0125K0 | 2.8  | 32  | 12 | 48 | -30 | +15 | +17 | 440 |

### Note

(1) Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3”.
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