

# Wet Tantalum HI-TMP<sup>®</sup> Capacitors Tantalum Case with Glass-to-Tantalum Hermetic Seal for - 55 °C to + 200 °C Operation



## FEATURES

- High capacitance
- Hermetically sealed, tantalum case
- + 200 °C high temperature
- Terminations: Axial, standard tin/lead (SnPb)
- 100 % tin (RoHS-compliant) available
- Mounting: Through-hole
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS\***  
COMPLIANT

## Note

\* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

## APPLICATIONS

- Industrial
- Petroleum exploration
- High temperature/high stress environment

## PERFORMANCE CHARACTERISTICS

**Operating Temperature:** - 55 °C to + 85 °C (to + 200 °C with voltage derating)

**Capacitance Tolerance:** At 120 Hz, + 25 °C; ± 20 % standard; ± 10 %

**DC Leakage Current (DCL Max.):** At + 25 °C and above: Leakage current shall not exceed the values listed in the Standard Ratings tables.

**Life Test:** Capacitors are capable of withstanding a 500 h life test at a temperature of + 200 °C at the applicable derated DC working voltage.

| ORDERING INFORMATION |   |                            |   |                                  |   |  |
|----------------------|---|----------------------------|---|----------------------------------|---|--|
| 134D                 | 227   | X0                         | 100   | K                                | 6   | E3   |
| TYPE                 | CAPACITANCE   | CAPACITANCE TOLERANCE      | DC VOLTAGE RATING AT + 85 °C  | CASE CODE                        | STYLE NUMBER  | RoHS COMPLIANT   |
|                      | This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow | X0 = ± 20 %<br>X9 = ± 10 % | This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 V) | See Ratings and Case Codes table | High temperature<br>8 = No outer insulating sleeve<br>6 = High temperature film insulation (above + 125 °C) | E3 = 100 % tin termination (RoHS compliant design)<br>Blank = SnPb termination (standard design) |

## 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.

| DIMENSIONS in inches [millimeters] |                  |                                |  |                       |                                 |                   |
|------------------------------------|------------------|--------------------------------|--|-----------------------|---------------------------------|-------------------|
|                                    |                  |                                |  |                       |                                 |                   |
| CASE CODE                          |                  | D                              | L <sub>1</sub> <sup>(1)</sup>                  | L <sub>2</sub> (Max.) | E                               | WEIGHT (g) (Max.) |
| TYPE 134D                          | CLR 79/81 EQUIV. |                                |  |                       |                                 |                   |
| C                                  | T1               | 0.188 ± 0.016<br>[4.78 ± 0.41] | 0.453 + 0.031/- 0.016<br>[11.51 + 0.79/- 0.41] | 0.734<br>[18.64]      | 1.500 ± 0.250<br>[38.10 ± 6.35] | 2.6               |
| F                                  | T2               | 0.281 ± 0.016<br>[7.14 ± 0.41] | 0.641 + 0.031/- 0.016<br>[16.28 + 0.79/- 0.41] | 0.922<br>[23.42]      | 2.250 ± 0.250<br>[57.15 ± 6.35] | 6.2               |
| T                                  | T3               | 0.375 ± 0.016<br>[9.53 ± 0.41] | 0.766 + 0.031/- 0.016<br>[19.46 + 0.79/- 0.41] | 1.047<br>[26.59]      | 2.250 ± 0.250<br>[57.15 ± 6.35] | 11.6              |
| K                                  | T4               | 0.375 ± 0.016<br>[9.53 ± 0.41] | 1.062 + 0.031/- 0.016<br>[26.97 + 0.79/- 0.41] | 1.343<br>[34.11]      | 2.250 ± 0.250<br>[57.15 ± 6.35] | 17.7              |

## Note

<sup>(1)</sup> For insulated parts, add 0.015 inches [0.38 mm] to the diameter. The insulation shall lap over the ends of the capacitor body.



| STANDARD RATINGS   |              |                              |                  |                  |                                      |                                    |                                      |                                    |                   |        |   |                      |
|--|--------------|------------------------------|------------------|------------------|--------------------------------------|------------------------------------|--------------------------------------|------------------------------------|-------------------|--------|---|----------------------|
| CAPACITANCE<br>AT 25 °C<br>120 Hz<br>(μF)  | CASE<br>CODE | MAX.<br>120 Hz<br>ESR<br>(Ω) | MAX. DCL<br>(μA) |                  | MAX.<br>IMP., Z<br>AT - 25 °C<br>(Ω) | MAX.<br>ΔCAP.<br>AT - 25 °C<br>(%) | TYP.<br>IMP., Z<br>AT - 55 °C<br>(Ω) | TYP.<br>ΔCAP.<br>AT - 55 °C<br>(%) | TYP.<br>ΔCAP. (%) |        | AC<br>RIPPLE<br>85 °C<br>40 kHz<br>(mA) RMS | PART NUMBER          |
|  |              |                              | 25 °C            | 85 °C/<br>125 °C |                                      |                                    |                                      |                                    | 85 °C             | 125 °C |   |                      |
| <b>50 V<sub>DC</sub> AT 85 °C; 30 V<sub>DC</sub> AT 125 °C; 30 V<sub>DC</sub> AT 200 °C</b>  |              |                              |                  |                  |                                      |                                    |                                      |                                    |                   |        |   |                      |
| 68   | C            | 1.50                         | 1                | 5                | 22                                   | - 6                                | 25                                   | - 11                               | 12                | 55     | 1400  | 134D686(1)050C(2)(3) |
| 220  | F            | 0.90                         | 2                | 10               | 9                                    | - 15                               | 10                                   | - 25                               | 13                | 50     | 2300  | 134D227(1)050F(2)(3) |
| 470  | T            | 0.75                         | 3                | 25               | 6                                    | - 24                               | 8                                    | - 50                               | 10                | 25     | 2650  | 134D477(1)050T(2)(3) |
| 680  | K            | 0.70                         | 5                | 40               | 4                                    | - 22                               | 5                                    | - 40                               | 12                | 40     | 2900  | 134D687(1)050K(2)(3) |
| <b>60 V<sub>DC</sub> AT 85 °C; 40 V<sub>DC</sub> AT 125 °C; 36 V<sub>DC</sub> AT 200 °C</b>  |              |                              |                  |                  |                                      |                                    |                                      |                                    |                   |        |   |                      |
| 47   | C            | 2.00                         | 1                | 5                | 34                                   | - 8                                | 40                                   | - 20                               | 8                 | 12     | 1250  | 134D476(1)060C(2)(3) |
| 150  | F            | 1.10                         | 2                | 10               | 13                                   | - 11                               | 15                                   | - 25                               | 10                | 30     | 2050  | 134D157(1)060F(2)(3) |
| 390  | T            | 0.90                         | 3                | 25               | 7                                    | - 27                               | 10                                   | - 50                               | 10                | 25     | 2450  | 134D397(1)060T(2)(3) |
| 560  | K            | 0.80                         | 5                | 40               | 5                                    | - 21                               | 6                                    | - 40                               | 12                | 40     | 2700  | 134D567(1)060K(2)(3) |
| <b>75 V<sub>DC</sub> AT 85 °C; 50 V<sub>DC</sub> AT 125 °C; 45 V<sub>DC</sub> AT 200 °C</b>  |              |                              |                  |                  |                                      |                                    |                                      |                                    |                   |        |   |                      |
| 33   | C            | 2.50                         | 1                | 5                | 45                                   | - 3.5                              | 50                                   | - 6                                | 8                 | 25     | 1100  | 134D336(1)075C(2)(3) |
| 110  | F            | 1.30                         | 2                | 10               | 16                                   | - 8                                | 20                                   | - 18                               | 8                 | 30     | 1900  | 134D117(1)075F(2)(3) |
| 330  | T            | 1.00                         | 3                | 30               | 8                                    | - 30                               | 12                                   | - 50                               | 10                | 25     | 2300  | 134D337(1)075T(2)(3) |
| 470  | K            | 0.90                         | 5                | 50               | 6                                    | - 20                               | 7                                    | - 40                               | 10                | 40     | 2550  | 134D477(1)075K(2)(3) |
| <b>100 V<sub>DC</sub> AT 85 °C; 65 V<sub>DC</sub> AT 125 °C; 60 V<sub>DC</sub> AT 200 °C</b> |              |                              |                  |                  |                                      |                                    |                                      |                                    |                   |        |   |                      |
| 15   | C            | 3.50                         | 1                | 5                | 95                                   | - 2.5                              | 100                                  | - 4                                | 8                 | 25     | 950   | 134D156(1)100C(2)(3) |
| 68   | F            | 2.10                         | 2                | 10               | 25                                   | - 6                                | 30                                   | - 14                               | 8                 | 25     | 1500  | 134D686(1)100F(2)(3) |
| 150  | T            | 1.60                         | 3                | 25               | 14                                   | - 12                               | 18                                   | - 30                               | 8                 | 22     | 1800  | 134D157(1)100T(2)(3) |
| 220  | K            | 1.20                         | 5                | 50               | 13                                   | - 44                               | 16                                   | - 55                               | 8                 | 15     | 2200  | 134D227(1)100K(2)(3) |
| <b>125 V<sub>DC</sub> AT 85 °C; 85 V<sub>DC</sub> AT 125 °C; 75 V<sub>DC</sub> AT 200 °C</b> |              |                              |                  |                  |                                      |                                    |                                      |                                    |                   |        |   |                      |
| 10   | C            | 5.50                         | 1                | 5                | 145                                  | - 2.5                              | 150                                  | - 4                                | 8                 | 20     | 750   | 134D106(1)125C(2)(3) |
| 47   | F            | 2.30                         | 2                | 10               | 35                                   | - 5                                | 40                                   | - 12                               | 7                 | 20     | 1450  | 134D476(1)125F(2)(3) |
| 50   | F            | 2.30                         | 3                | 10               | 35                                   | - 5                                | 40                                   | - 12                               | 7                 | 20     | 1450  | 134D506(1)125F(2)(3) |
| 100  | T            | 1.80                         | 3                | 25               | 24                                   | - 20                               | 30                                   | - 35                               | 8                 | 20     | 1700  | 134D107(1)125T(2)(3) |
| 150  | K            | 1.60                         | 5                | 50               | 13                                   | - 10                               | 16                                   | - 28                               | 6                 | 12     | 1900  | 134D157(1)125K(2)(3) |

**Note**

- Part number definitions:
  - Capacitance tolerance: X9 = 10 %, X0 = 20 %
  - Style number: 8 = No film insulation, 6 = High temperature film insulation
  - Termination: Blank = Standard tin/lead, E3 = RoHS compliant 100 % tin



| EXTENDED RATINGS   |              |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|--|--------------|------------------------------|------------------|------------------|-------------------------------------|------------------------------------|--------------------------------------|------------------------------------|-------------------|--------|---|----------------------|
| CAPACITANCE<br>AT 25 °C<br>120 Hz<br>(μF)  | CASE<br>CODE | MAX.<br>120 Hz<br>ESR<br>(Ω) | MAX.<br>DCL (μA) |                  | MAX.<br>IMP, Z<br>AT - 25 °C<br>(Ω) | MAX.<br>ΔCAP.<br>AT - 25 °C<br>(%) | TYP.<br>IMP., Z<br>AT - 55 °C<br>(Ω) | TYP.<br>ΔCAP.<br>AT - 55 °C<br>(%) | TYP.<br>ΔCAP. (%) |        | AC<br>RIPPLE<br>85 °C<br>40 kHz<br>(mA) RMS | PART NUMBER          |
|  |              |                              | 25 °C            | 85 °C/<br>125 °C |                                     |                                    |                                      |                                    | 85 °C             | 125 °C |   |                      |
| <b>50 V<sub>DC</sub> AT 85 °C; 30 V<sub>DC</sub> AT 125 °C; 30 V<sub>DC</sub> AT 200 °C</b>  |              |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | C            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | F            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | T            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | K            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
| <b>60 V<sub>DC</sub> AT 85 °C; 40 V<sub>DC</sub> AT 125 °C; 36 V<sub>DC</sub> AT 200 °C</b>  |              |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | C            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | F            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | T            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
| 1000   | K            | 0.50                         | 20               | 120              | 3                                   | - 25                               | < 4.5                                | < - 55                             | < 12              | < 15   | 3500  | 134D108(1)060K(2)(3) |
| <b>75 V<sub>DC</sub> AT 85 °C; 50 V<sub>DC</sub> AT 125 °C; 45 V<sub>DC</sub> AT 200 °C</b>  |              |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | C            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
| 180  | F            | 1.50                         | 5                | 25               |                                     |                                    | 30                                   | - 35                               | 15                | 20     | 2000  | 134D187(1)075C(2)(3) |
|  | T            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
| 750  | K            | 0.60                         | 20               | 120              | 3                                   | - 25                               | < 6.0                                | < - 60                             | < 10              | < 15   | 3500  | 134D757(1)075K(2)(3) |
| <b>100 V<sub>DC</sub> AT 85 °C; 65 V<sub>DC</sub> AT 125 °C; 60 V<sub>DC</sub> AT 200 °C</b> |              |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | C            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | F            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
| 220  | T            | 1.60                         | 5                | 30               | 15                                  | - 40                               | 15                                   | - 45                               | 10                | 15     | 1800  | 134D227(1)100T(2)(3) |
| 400  | K            | 0.70                         | 10               | 120              | 5                                   | - 15                               | 15                                   | - 55                               | 10                | 15     | 3250  | 134D407(1)100K(2)(3) |
| <b>125 V<sub>DC</sub> AT 85 °C; 85 V<sub>DC</sub> AT 125 °C; 75 V<sub>DC</sub> AT 200 °C</b> |              |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | C            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | F            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | T            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |
|  | K            |                              |                  |                  |                                     |                                    |                                      |                                    |                   |        |   |                      |

**Note**

- Part number definitions:
  - Capacitance tolerance: X9 = 10 %, X0 = 20 %
  - Style number: 8 = No film insulation, 6 = High temperature film insulation
  - Termination: Blank = Standard tin/lead, E3 = RoHS compliant 100 % tin



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