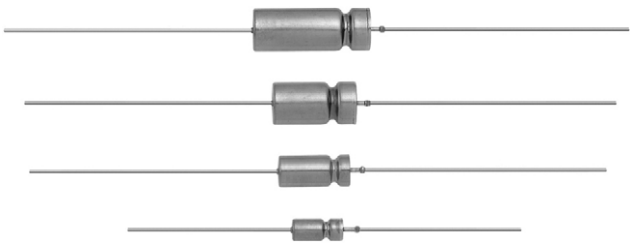
# Wet Tantalum Capacitors Silver Case with Glass-to-Metal Hermetic Seal, TANTALEX™



## FEATURES

- Terminations: axial, standard tin / lead (SnPb), 100 % tin (RoHS-compliant) available
- High CV per unit volume
- Extremely low leakage current
- Improved reliability through the use of a glass-to-metal true hermetic anode seal is the prime feature of the 738D TANTALEX capacitors
- The construction offers outstanding resistance to thermal shock
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

RoHS* Available

HALOGEN FREE GREEN (5-2008) Available

**Note**

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

## PERFORMANCE CHARACTERISTICS

**Operating Temperature:** -55 °C to +85 °C
(+125 °C with voltage derating)

**Capacitance Range:**
3.3 µF to 1200 µF

**Capacitance Tolerance:**
± 10 %, ± 20 %, ± 5 % (special order)

**Voltage Rating:** 6 $V_{DC}$ to 125 $V_{DC}$

**DC Leakage Current (DCL Max.):** at +25 °C, +85 °C, and +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 rated DC working voltage.

## ORDERING INFORMATION

| 738D | 226 | X0 | 100 | B | 2 | E3 |
|---|---|---|---|---|---|---|
| MODEL | 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 %<br>X5 = ± 5 %<br>special order | 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 | 0 = bare case<br>2 = outer polyester film insulation<br>6 = high temperature film insulation | E3 = 100 % tin termination (RoHS-compliant design)<br>Blank = SnPb termination (standard design) |

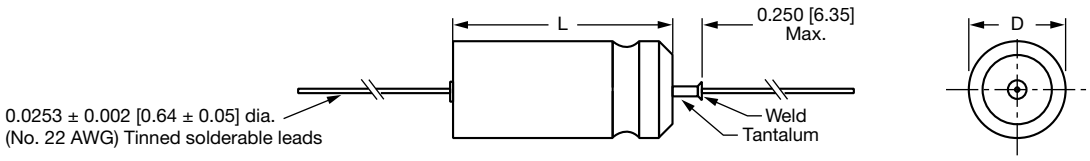
**Note**

- 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



For technical questions, contact: tantalum@vishay.com

## DIMENSIONS in inches [millimeters]




| CASE CODE | D | L | D (MAX.) | L (1) | LEAD LENGTH | MAX. WEIGHT (oz. / g) |
|---|---|---|---|---|---|---|
| | BARE TUBE | | WITH OUTER PLASTIC-FILM INSULATION | | | |
| A | 0.188 ± 0.016 [4.78 ± 0.41] | 0.453 + 0.031 / - 0.016 [11.51 + 0.79 / - 0.41] | 0.219 [5.56] | 0.608 [15.45] | 1.500 ± 0.250 [38.10 ± 6.35] | 0.07 [2.0] |
| B | 0.281 ± 0.016 [7.14 ± 0.41] | 0.641 + 0.031 / - 0.016 [16.28 + 0.79 / - 0.41] | 0.312 [7.92] | 0.796 [20.22] | 2.250 ± 0.250 [57.15 ± 6.35] | 0.18 [5.1] |
| C | 0.375 ± 0.016 [9.53 ± 0.41] | 0.766 + 0.031 / - 0.016 [19.46 + 0.79 / - 0.41] | 0.406 [10.31] | 0.921 [23.40] | 2.250 ± 0.250 [57.15 ± 6.35] | 0.36 [10.2] |
| D | 0.375 ± 0.016 [9.53 ± 0.41] | 1.062 + 0.031 / - 0.023 [26.97 + 0.79 / - 0.58] | 0.406 [10.31] | 1.127 [30.91] | 2.250 ± 0.250 [57.15 ± 6.35] | 0.49 [13.9] |

**Note**

(1) For reference only

## RATINGS AND CASE CODES

| µF | 6.3 | 8 | 10 | 16 | 25 | 30 | 40 | 50 | 63 | 75 | 100 | 125 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.3 | | | | | | | | | | | | A |
| 3.9 | | | | | | | | | | | A | A |
| 4.7 | | | | | | | | | | | A | |
| 5.6 | | | | | | | | | | A | | |
| 6.8 | | | | | | | | | | A | | |
| 8.2 | | | | | | | | | A | | | |
| 10 | | | | | | | | A | | | | B |
| 12 | | | | | | | A | | | | | B |
| 15 | | | | | | A | | | | | | B |
| 18 | | | | | A | | | | | | B | C |
| 22 | | | | | A | | | | | | B | C |
| 27 | | | | A | | | | | A | B | | C |
| 33 | | | | A | | | | | | B | C | |
| 39 | | | A | | | | | | B | | C | D |
| 47 | | | A | | | | | B | | | C | D |
| 50 | | | | | B | | | | | | | |
| 56 | | A | | | | | B | | | C | | D |
| 68 | A | | | | | B | | | C | | D | |
| 82 | | | | | B | | | C | | | D | |
| 100 | | | | A | B | | C | | | D | | |
| 120 | | | | B | | C | | | | D | | |
| 150 | | | B | | | C | | | D | | | |
| 180 | | | B | | C | | | D | | | | |
| 220 | | B | | C | | | D | | | | | |
| 270 | B | | | C | | D | | | | | | |
| 300 | | | | | | C | | | | | | |
| 330 | | | C | | D | | | | | | | |
| 390 | | | C | | D | | | | | | | |
| 470 | | C | | D | | | | | | | | |
| 560 | C | | | D | | | | | | | | |
| 680 | | | D | | | | | | | | | |
| 820 | | D | | | | | | | | | | |
| 1000 | D | | | | | | | | | | | |
| 1200 | D | | | | | | | | | | | |

## STANDARD RATINGS

| CAPACITANCE (µF) | CASE CODE | PART NUMBER | MAX. DF AT +20 °C (%) | MAX. IMP. AT -55 °C 100 kHz (Ω) | MAX. IMP. AT +20°C 100 kHz (Ω) | MAX. DCL (µA) AT +20 °C | MAX. DCL (µA) AT +85 °C +125 °C | MAX. CAPACITANCE CHANGE (%) AT -55 °C | MAX. CAPACITANCE CHANGE (%) AT +85 °C | MAX. CAPACITANCE CHANGE (%) AT +125 °C | MAX. IMPEDANCE [1] AT -55 °C 100 Hz (Ω) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.3 $V_{DC}$ AT +85 °C; 4 $V_{DC}$ AT +125 °C; 3 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 68 | A | 738D686X06R3A2 | 17.1 | 10 | 1.0 | 1 | 2 | -40 | +10.5 | +17.5 | 72 |
| 270 | B | 738D277X06R3B2 | 67.8 | 10 | 1.0 | 1 | 7 | -44 | +17.5 | +20 | 30 |
| 560 | C | 738D567X06R3C2 | 151.9 | 10 | 1.0 | 2 | 13 | -64 | +17.5 | +20 | 30 |
| 1000 | D | 738D108X06R3D2 | 100.5 | 10 | 1.0 | 3 | 14 | -80 | +25 | +25 | - |
| 1200 | D | 738D128X06R3D2 | 120.6 | 10 | 1.0 | 3 | 14 | -80 | +25 | +25 | 24 |
| **8 $V_{DC}$ AT +85 °C; 5 $V_{DC}$ AT +125 °C; 4 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 56 | A | 738D566X0008A2 | 14.1 | 10 | 1.0 | 1 | 2 | -40 | +10.5 | +16 | - |
| 220 | B | 738D227X0008B2 | 55.2 | 10 | 1.0 | 1 | 7 | -44 | +17.5 | +20 | - |
| 470 | C | 738D477X0008C2 | 82.6 | 10 | 1.0 | 2 | 14 | -64 | +17.5 | +20 | - |
| 820 | D | 738D827X0008D2 | 51.5 | 10 | 1.0 | 4 | 16 | -80 | +25 | +25 | - |
| **10 $V_{DC}$ AT +85 °C; 6.3 $V_{DC}$ AT +125 °C; 5 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 39 | A | 738D396X0010A2 | 15.1 | 10 | 1.0 | 1 | 2 | -36 | +12 | +16 | - |
| 47 | A | 738D476X0010A2 | 15.1 | 10 | 1.0 | 1 | 2 | -36 | +14 | +16 | 120 |
| 150 | B | 738D157X0010B2 | 28.2 | 10 | 1.0 | 1 | 6 | -36 | +14 | +16 | - |
| 180 | B | 738D187X0010B2 | 45.2 | 10 | 1.0 | 1 | 7 | -36 | +14 | +16 | 48 |
| 330 | C | 738D337X0010C2 | 51.9 | 10 | 1.0 | 2 | 16 | -60 | +17.5 | +20 | - |
| 390 | C | 738D397X0010C2 | 73.5 | 10 | 1.0 | 2 | 16 | -64 | +17.5 | +20 | 30 |
| 680 | D | 738D687X0010D2 | 42.7 | 10 | 1.0 | 4 | 16 | -80 | +25 | +25 | - |
| **16 $V_{DC}$ AT +85 °C; 10 $V_{DC}$ AT +125 °C; 8 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 27 | A | 738D276X0016A2 | 10.3 | 10 | 1.0 | 1 | 2 | -28 | +10.5 | +16 | - |
| 33 | A | 738D336X0016A2 | 10.3 | 10 | 1.0 | 1 | 2 | -28 | +14 | +16 | 108 |
| 100 | A | 738D107X9016A2 | 25.0 | 10 | 1.0 | 1 | 10 | -44 | +13 | +16 | 88 |
| 120 | B | 738D127X0016B2 | 30.2 | 10 | 1.0 | 1 | 7 | -28 | +17.5 | +20 | 60 |
| 220 | C | 738D227X0016C2 | 34.5 | 10 | 1.0 | 2 | 16 | -50 | +17.5 | +18 | - |
| 270 | C | 738D277X0016C2 | 50.8 | 10 | 1.0 | 2 | 16 | -56 | +17.5 | +20 | 36 |
| 470 | D | 738D477X0016D2 | 35.4 | 10 | 1.0 | 6 | 24 | -80 | +25 | +25 | - |
| 560 | D | 738D567X0016D2 | 42.2 | 10 | 1.0 | 6 | 24 | -80 | +25 | +25 | 28 |
| **25 $V_{DC}$ AT +85 °C; 16 $V_{DC}$ AT +125 °C; 13 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 18 | A | 738D186X0025A2 | 6.9 | 10 | 1.0 | 1 | 2 | -20 | +10.5 | +12 | - |
| 22 | A | 738D226X0025A2 | 6.9 | 10 | 1.0 | 1 | 2 | -20 | +10.5 | +12 | 168 |
| 50 | B | 738D506X0025B2 | 15.0 | 10 | 1.0 | 1 | 5 | -28 | +13 | +15 | - |
| 82 | B | 738D826X0025B2 | 20.6 | 10 | 1.0 | 1 | 10 | -28 | +13 | +15 | - |
| 100 | B | 738D107X0025B2 | 25.1 | 10 | 1.0 | 1 | 10 | -28 | +13 | +15 | 60 |
| 180 | C | 738D187X0025C2 | 42.2 | 10 | 1.0 | 2 | 18 | -48 | +13 | +15 | 39 |
| 330 | D | 738D337X0025D2 | 27.2 | 10 | 1.0 | 7 | 28 | -70 | +25 | +25 | - |
| 390 | D | 738D397X0025D2 | 31.8 | 10 | 1.0 | 7 | 28 | -70 | +25 | +25 | 29 |
| **30 $V_{DC}$ AT +85 °C; 19 $V_{DC}$ AT +125 °C; 15 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 15 | A | 738D156X0030A2 | 7.5 | 10 | 1.0 | 1 | 2 | -20 | +10.5 | +12 | - |
| 68 | B | 738D686X0030B2 | 25.6 | 10 | 1.0 | 1 | 8 | -24 | +13 | +15 | - |
| 120 | C | 738D127X0030C2 | 24.4 | 10 | 1.0 | 2 | 17 | -44 | +13 | +15 | - |
| 150 | C | 738D157X0030C2 | 37.7 | 10 | 1.0 | 2 | 18 | -48 | +13 | +15 | - |
| 270 | D | 738D277X0030D2 | 27.2 | 10 | 1.0 | 8 | 32 | -60 | +25 | +25 | - |
| 300 | C | 738D307X0030C2 | 40.7 | 10 | 1.0 | 8 | 32 | -60 | +20 | +25 | - |
| **40 $V_{DC}$ AT +85 °C; 25 $V_{DC}$ AT +125 °C; 20 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 12 | A | 738D126X0040A2 | 6.7 | 10 | 1.0 | 1 | 2 | -24 | +8 | +10 | 234 |
| 56 | B | 738D566X0040B2 | 21.1 | 10 | 1.0 | 1 | 9 | -28 | +13 | +15 | 78 |
| 100 | C | 738D107X0040C2 | 15.7 | 10 | 1.0 | 2 | 17 | -40 | +13 | +15 | 48 |
| 220 | D | 738D227X0040D2 | 25.0 | 10 | 1.0 | 8 | 32 | -55 | +25 | +25 | 31 |

## STANDARD RATINGS

| CAPACITANCE (µF) | CASE CODE | PART NUMBER | MAX. DF AT +20 °C (%) | MAX. IMP. AT -55 °C 100 kHz (Ω) | MAX. IMP. AT +20°C 100 kHz (Ω) | MAX. DCL (µA) AT | | MAX. CAPACITANCE CHANGE (%) AT | | | MAX. IMPEDANCE [1] AT -55 °C 100 Hz (Ω) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | +20 °C | +85 °C +125 °C | -55 °C | +85 °C | +125 °C | |
| **50 $V_{DC}$ AT +85 °C; 32 $V_{DC}$ AT +125 °C; 25 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 10 | A | 738D106X0050A2 | 5.7 | 10 | 1.0 | 1 | 2 | -24 | +8 | +9 | - |
| 47 | B | 738D476X0050B2 | 17.7 | 10 | 1.0 | 1 | 9 | -28 | +12 | +15 | - |
| 82 | C | 738D826X0050C2 | 20.6 | 10 | 1.0 | 2 | 16 | -32 | +12 | +15 | - |
| 180 | D | 738D187X0050D2 | 23.7 | 10 | 1.0 | 8 | 32 | -50 | +25 | +25 | - |
| **63 $V_{DC}$ AT +85 °C; 40 $V_{DC}$ AT +125 °C; 32 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 8.2 | A | 738D825X0063A2 | 4.1 | 10 | 1.0 | 1 | 2 | -24 | +8 | +9 | 330 |
| 27 | A | 738D276X9063A2 | 8.0 | 10 | 1.0 | 2 | 15 | -24 | +10 | +12 | 180 |
| 39 | B | 738D396X0063B2 | 17.2 | 10 | 1.0 | 1 | 9 | -28 | +10.5 | +12 | 108 |
| 68 | C | 738D686X0063C2 | 25.6 | 10 | 1.0 | 2 | 16 | -32 | +10.5 | +12 | 60 |
| 150 | D | 738D157X0063D2 | 23.6 | 10 | 1.0 | 8 | 32 | -40 | +20 | +20 | 34 |
| **75 $V_{DC}$ AT +85 °C; 50 $V_{DC}$ AT +125 °C; 38 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 5.6 | A | 738D565X0075A2 | 3.4 | 10 | 1.0 | 1 | 2 | -20 | +8 | +9 | - |
| 6.8 | A | 738D685X0075A2 | 3.4 | 10 | 1.0 | 1 | 2 | -20 | +8 | +9 | - |
| 27 | B | 738D276X0075B2 | 11.8 | 10 | 1.0 | 1 | 9 | -22 | +11 | +13 | - |
| 33 | B | 738D336X0075B2 | 14.5 | 10 | 1.0 | 1 | 10 | -24 | +15 | +15 | - |
| 56 | C | 738D566X0075C2 | 21.8 | 10 | 1.0 | 2 | 17 | -28 | +15 | +15 | - |
| 100 | D | 738D107X0075D2 | 19.5 | 10 | 1.0 | 9 | 36 | -35 | +20 | +20 | - |
| 120 | D | 738D127X0075D2 | 23.3 | 10 | 1.0 | 9 | 36 | -35 | +20 | +20 | - |
| **100 $V_{DC}$ AT +85 °C; 63 $V_{DC}$ AT +125 °C; 50 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 3.9 | A | 738D395X0100A2 | 2.0 | 30 | 3.0 | 1 | 2 | -16 | +7 | +8 | - |
| 4.7 | A | 738D475X0100A2 | 2.9 | 30 | 3.0 | 1 | 2 | -16 | +7 | +8 | 600 |
| 18 | B | 738D186X0100B2 | 7.8 | 15 | 1.5 | 1 | 8 | -16 | +7 | +8 | - |
| 22 | B | 738D226X0100B2 | 9.7 | 15 | 1.5 | 1 | 9 | -16 | +7 | +8 | 132 |
| 33 | C | 738D336X0100C2 | 9.3 | 15 | 1.0 | 2 | 15 | -16 | +7 | +8 | - |
| 39 | C | 738D396X0100C2 | 14.7 | 15 | 1.0 | 2 | 17 | -20 | +7 | +8 | - |
| 47 | C | 738D476X0100C2 | 17.7 | 15 | 1.0 | 2 | 17 | -20 | +7 | +8 | 84 |
| 68 | D | 738D686X0100D2 | 13.7 | 15 | 1.5 | 9 | 36 | -25 | +15 | +15 | - |
| 82 | D | 738D826X0100D2 | 16.4 | 15 | 1.5 | 9 | 36 | -25 | +15 | +15 | 40 |
| **125 $V_{DC}$ AT +85 °C; 80 $V_{DC}$ AT +125 °C; 63 $V_{DC}$ AT +175 °C** | | | | | | | | | | | |
| 3.3 | A | 738D335X0125A2 | 3.4 | 30 | 3.0 | 1 | 2 | -10 | +7 | +8 | - |
| 3.9 | A | 738D395X0125A2 | 3.4 | 30 | 3.0 | 1 | 2 | -16 | +7 | +8 | 720 |
| 10 | B | 738D106X0125B2 | 9.4 | 15 | 1.5 | 1 | 5 | -16 | +7 | +8 | - |
| 12 | B | 738D126X0125B2 | 8.3 | 15 | 1.5 | 1 | 6 | -16 | +7 | +8 | - |
| 15 | B | 738D156X0125B2 | 11.2 | 15 | 1.5 | 1 | 7 | -16 | +7 | +8 | 200 |
| 18 | C | 738D186X0125C2 | 10 | 15 | 1.0 | 2 | 9 | -16 | +7 | +8 | - |
| 22 | C | 738D226X0125C2 | 12.1 | 15 | 1.0 | 2 | 11 | -16 | +7 | +8 | - |
| 27 | C | 738D276X0125C2 | 16.7 | 15 | 1.0 | 2 | 13 | -16 | +7 | +8 | 106 |
| 39 | D | 738D396X0125D2 | 7.5 | 15 | 1.5 | 10 | 40 | -25 | +15 | +15 | - |
| 47 | D | 738D476X0125D2 | 9.2 | 15 | 1.5 | 10 | 40 | -25 | +15 | +15 | - |
| 56 | D | 738D566X0125D2 | 14.2 | 15 | 1.5 | 10 | 40 | -25 | +15 | +15 | 58 |

**Note**

[1] Data only applies to the former CT9 ratings

# Disclaimer

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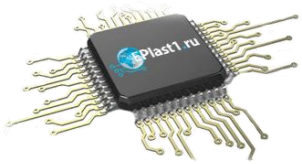
Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.




**Как с нами связаться**

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