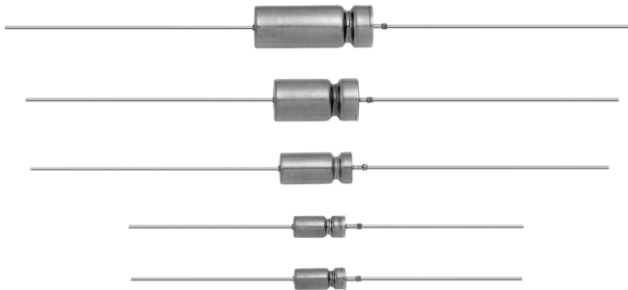


Wet Tantalum Capacitors

Tantalum-Case with Glass-to-Tantalum Hermetic Seal

For - 55 °C to + 200 °C Operation



FEATURES

Terminations : standard Tin/lead (SnPb), 100 % Tin (RoHS compliant) available



Standard and Extended Ratings



Model 135D tantalum-case tantalum electrolytic capacitors incorporate the advantages of all the varieties of electrolytic capacitors and eliminate most of the disadvantages. These units have a 3 volt reverse voltage capability at + 85 °C and a higher ripple current capability than any other electrolytic type with similar combinations of capacitance and case size.

Designed for the aerospace applications, this capacitor was developed under partial sponsorship of the Marshall Space Flight Center, National Aeronautics and Space Administration. The capacitors have a high resistance to damage from shock and vibration. Extended range ratings and high temperature designs are available.

Model 135D capacitors are commercial equivalents of Tansitor Style; AQ, AR, HAQ, HAR, Mallory-NACC Style; TLT, TXT, THT, THX and Military Style CLR79 and CLR81, designed to meet the performance requirements of Military Specification MIL-PRF-39006/22/25. Capacitors to meet MILPRF- 39006/22/25 should be ordered by part numbers shown in that specification.

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 %, ± 5 % available as special.

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 2000 hour life test at a temperature of + 85 °C or + 125 °C at the applicable rated DC working voltage.

Following life test:

1. DCL, measured at + 85 °C rated voltage, shall not be in excess of the original requirement.
2. The equivalent series resistance shall not exceed 150 % of the initial requirement.
3. Change in capacitance shall not exceed 10 % from the initial measurement.

| ORDERING INFORMATION | | | | | | |
|--|--|--|--|---|--|--|
| 135D | 306 | X0 | 006 | C | 2 | E3 |
| MODEL | CAPACITANCE | CAPACITANCE TOLERANCE | DC VOLTAGE RATING AT + 85 °C | CASE CODE | STYLE NUMBER | RoHS COMPLIANT |
| | <div style="border: 1px solid black; padding: 2px;"> This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow. </div> | <div style="border: 1px solid black; padding: 2px;"> X0 = ± 20 % X9 = ± 10 % X5 = ± 5 % </div> | <div style="border: 1px solid black; padding: 2px;"> 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). </div> | <div style="border: 1px solid black; padding: 2px;"> See Ratings and Case Codes Table. </div> | <div style="border: 1px solid black; padding: 2px;"> <p style="text-align: center;">Standard</p> 0 = No outer tube. 2 = Outer polyesterfilm insulation. <p style="text-align: center;">High Temperature</p> 8 = No outer tube. 6 = High temperature film insulation (above + 125 °C). </div> | <div style="border: 1px solid black; padding: 2px;"> E3 = 100 % tin termination (RoHS compliant design) Blank = SnPb termination (standard design) </div> |
| <p>Packaging: The use of formed plastic trays for packaging these axial lead components is standard. Tape and reel is not recommended due to the unit weight.</p> | | | | | | |

* Pb containing terminations are not RoHS compliant, exemptions may apply

Wet Tantalum Capacitors
Tantalum-Case with Glass-to-Tantalum Hermetic Seal
For - 55 °C to + 200 °C Operation

| DIMENSIONS in inches [millimeters] | | | | | | |
|---|--------------------------|--------------------------------|--|------------------|---------------------------------|-------------------------------|
| | | | | | | |
| CASE CODE | | D | L1 | L2 (Max.) | E | WEIGHT IN GRAMS (Max.) |
| TYPE 135D | DCLR 79/81 EQUIV. | | | | | |
| C | T1 | 0.188 ± 0.016 [4.78 ± 0.41] | 0.453 + 0.031 - 0.016 [11.51 + 0.79 - 0.41] | 0.734 [18.64] | 1.500 ± 0.250 [38.10 ± 6.35] | 2.6 |
| F | T2 | 0.281 ± 0.016 [7.14 ± 0.41] | 0.641 + 0.031 - 0.016 [16.28 + 0.79 - 0.41] | 0.922 [23.42] | 2.250 ± 0.250 [57.15 ± 6.35] | 6.2 |
| T | T3 | 0.375 ± 0.016 [9.53 ± 0.41] | 0.766 + 0.031 - 0.016 [19.46 + 0.79 - 0.41] | 1.047 [26.59] | 2.250 ± 0.250 [57.15 ± 6.35] | 11.6 |
| K | T4 | 0.375 ± 0.016 [9.53 ± 0.41] | 1.062 + 0.031 - 0.016 [26.97 + 0.79 - 0.41] | 1.343 [34.11] | 2.250 ± 0.250 [57.15 ± 6.35] | 17.7 |

*For insulated parts, add 0.015" [0.38] to the diameter. The insulation shall lap over the ends of the capacitor body.

| STANDARD RATINGS | | | | | | | | | | | | |
|--|------------------|---------------------|--------------------|----------------|---------------------|----------------|-------------------------|----------------|---------------------------------------|----------------|-----------------|------------------------------------|
| CAPACITANCE (µF) | CASE CODE | PART NUMBER* | Max. ESR at | | Max. IMP. at | | Max. DCL (µA) at | | Max. CAPACITANCE CHANGE (%) at | | | Max. RIPPLE 40 kHz rms (mA) |
| | | | + 25 °C | - 55 °C | + 25 °C | - 55 °C | + 25 °C | + 85 °C | - 55 °C | + 85 °C | + 125 °C | |
| 6 WVDC at + 85 °C ... 4 WVDC at + 125 °C ... 3.6 WVDC at + 200 °C | | | | | | | | | | | | |
| 30 | C | 135D306X0006C2 | 4.0 | 100 | 1.0 | 2.0 | - 40 | + 10.5 | + 12 | | 820 | |
| 68 | C | 135D686X0006C2 | 3.2 | 60 | 1.0 | 2.0 | - 40 | + 14 | + 16 | | 960 | |
| 140 | F | 135D147X0006F2 | 2.0 | 40 | 1.0 | 3.0 | - 40 | + 14 | + 16 | | 1200 | |
| 270 | F | 135D277X0006F2 | 2.2 | 25 | 1.0 | 6.5 | - 44 | + 17.5 | + 20 | | 1375 | |
| 330 | T | 135D337X0006T2 | 1.4 | 20 | 2.0 | 7.9 | - 44 | + 14 | + 16 | | 1800 | |
| 560 | T | 135D567X0006T2 | 1.3 | 25 | 2.0 | 13.0 | - 64 | + 17.5 | + 20 | | 1900 | |
| 1200 | K | 135D128X0006K2 | 1.0 | 20 | 3.0 | 14.0 | - 80 | + 25 | + 25 | | 2265 | |
| 8 WVDC at + 85 °C ... 5 WVDC at + 125 °C ... 4.8 WVDC at + 200 °C | | | | | | | | | | | | |
| 25 | C | 135D256X0008C2 | 4.0 | 100 | 1.0 | 2.0 | - 40 | + 10.5 | + 12 | | 820 | |
| 56 | C | 135D566X0008C2 | 3.3 | 59 | 1.0 | 2.0 | - 40 | + 14 | + 16 | | 900 | |
| 120 | F | 135D127X0008F2 | 2.6 | 50 | 1.0 | 2.0 | - 44 | + 17.5 | + 20 | | 1230 | |
| 220 | F | 135D227X0008F2 | 2.4 | 30 | 1.0 | 7.0 | - 44 | + 17.5 | + 20 | | 1370 | |
| 290 | T | 135D297X0008T2 | 1.8 | 25 | 2.0 | 6.0 | - 64 | + 17.5 | + 20 | | 1770 | |
| 430 | T | 135D437X0008T2 | 1.4 | 25 | 2.0 | 14.0 | - 64 | + 17.5 | + 20 | | 1825 | |
| 850 | K | 135D857X0008K2 | 1.0 | 22 | 4.0 | 16.0 | - 80 | + 25 | + 25 | | 2330 | |
| 10 WVDC at + 85 °C ... 7 WVDC at + 125 °C ... 6 WVDC at + 200 °C | | | | | | | | | | | | |
| 20 | C | 135D206X0010C2 | 4.0 | 120 | 1.0 | 2.0 | - 32 | + 10.5 | + 12 | | 820 | |
| 47 | C | 135D476X0010C2 | 3.7 | 90 | 1.0 | 2.0 | - 36 | + 14 | + 16 | | 855 | |
| 100 | F | 135D107X0010F2 | 2.4 | 60 | 1.0 | 4.0 | - 36 | + 14 | + 16 | | 1200 | |
| 180 | F | 135D187X0010F2 | 2.2 | 40 | 1.0 | 7.0 | - 36 | + 14 | + 16 | | 1365 | |
| 250 | T | 135D257X0010T2 | 1.8 | 30 | 2.0 | 10.0 | - 40 | + 14 | + 16 | | 1720 | |
| 390 | T | 135D397X0010T2 | 1.5 | 25 | 2.0 | 16.0 | - 64 | + 17.5 | + 20 | | 1800 | |
| 750 | K | 135D757X0010K2 | 1.0 | 23 | 4.0 | 16.0 | - 80 | + 25 | + 25 | | 2360 | |
| 15 WVDC at + 85 °C ... 10 WVDC at + 125 °C ... 9 WVDC at + 200 °C | | | | | | | | | | | | |
| 15 | C | 135D156X0015C2 | 4.4 | 155 | 1.0 | 2.0 | - 24 | + 10.5 | + 12 | | 780 | |
| 33 | C | 135D336X0015C2 | 4.0 | 90 | 1.0 | 2.0 | - 28 | + 14 | + 16 | | 820 | |
| 70 | F | 135D706X0015F2 | 2.8 | 75 | 1.0 | 4.0 | - 28 | + 14 | + 16 | | 1150 | |
| 120 | F | 135D127X0015F2 | 2.6 | 50 | 1.0 | 7.0 | - 28 | + 17.5 | + 20 | | 1450 | |
| 170 | T | 135D177X0015T2 | 2.4 | 35 | 2.0 | 10.0 | - 32 | + 14 | + 16 | | 1480 | |
| 270 | T | 135D277X0015T2 | 2.2 | 30 | 2.0 | 16.0 | - 56 | + 17.5 | + 20 | | 1740 | |
| 540 | K | 135D547X0015K2 | 1.0 | 23 | 6.0 | 24.0 | - 80 | + 25 | + 25 | | 2330 | |

* Part Numbers listed are for units with ± 20 % capacitance tolerance insulated capacitors. For ± 10 % tolerance capacitors, change the digit following the letter "X" from "0" to "9"; for ± 5 %, change the digit following the letter "X" from "0" to "5". For capacitors without outer polyester-film insulation, change the last digit in the part number from "2" to "0". For capacitors with a high temperature insulating sleeve, change the last digit in the part number from "2" to "6". For RoHS compliant add "E3".

Wet Tantalum Capacitors
Tantalum-Case with Glass-to-Tantalum Hermetic Seal
For - 55 °C to + 200 °C Operation

| STANDARD RATINGS | | | | | | | | | | | |
|--|--------------|----------------|-----------------------------------|-----------------------------------|---|---------------------------|---------------------|-----------------------------------|---------|----------|---|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER* | Max. ESR at | | Max. IMP. at 120 Hz (Ω) | Max. DCL (μ A) at | | Max. CAPACITANCE CHANGE (%) at | | | Max. RIPPLE 40 kHz rms (mA) |
| | | | + 25 °C 120 Hz (Ω) | - 55 °C 120 Hz (Ω) | | + 25 °C | + 85 °C + 125 °C | - 55 °C | + 85 °C | + 125 °C | |
| 25 WVDC at + 85 °C ... 15 WVDC at + 125 °C ... 12 WVDC at + 200 °C | | | | | | | | | | | |
| 10 | C | 135D106X0025C2 | 5.3 | 220 | 1.0 | 2.0 | - 16 | + 8 | + 9 | 715 | |
| 22 | C | 135D226X0025C2 | 4.2 | 140 | 1.0 | 2.0 | - 20 | + 10.5 | + 12 | 800 | |
| 50 | F | 135D506X0025F2 | 3.0 | 70 | 1.0 | 2.0 | - 28 | + 13 | + 15 | 1130 | |
| 100 | F | 135D107X0025F2 | 2.8 | 50 | 1.0 | 10.0 | - 28 | + 13 | + 15 | 1435 | |
| 120 | T | 135D127X0025T2 | 2.6 | 38 | 2.0 | 6.0 | - 32 | + 13 | + 15 | 1450 | |
| 180 | T | 135D187X0025T2 | 2.2 | 32 | 2.0 | 18.0 | - 48 | + 13 | + 15 | 1525 | |
| 350 | K | 135D357X0025K2 | 1.3 | 24 | 7.0 | 28.0 | - 70 | + 25 | + 25 | 1970 | |
| 30 WVDC at + 85 °C ... 20 WVDC at + 125 °C ... 18 WVDC at + 200 °C | | | | | | | | | | | |
| 8 | C | 135D805X0030C2 | 6.6 | 275 | 1.0 | 2.0 | - 16 | + 8 | + 12 | 640 | |
| 15 | C | 135D156X0030C2 | 6.2 | 175 | 1.0 | 2.0 | - 20 | + 10.5 | + 12 | 780 | |
| 40 | F | 135D406X0030F2 | 4.0 | 65 | 1.0 | 5.0 | - 24 | + 10.5 | + 12 | 1120 | |
| 68 | F | 135D686X0030F2 | 2.9 | 60 | 1.0 | 8.0 | - 24 | + 13 | + 15 | 1285 | |
| 100 | T | 135D107X0030T2 | 2.7 | 40 | 2.0 | 12.0 | - 28 | + 10.5 | + 12 | 1450 | |
| 150 | T | 135D157X0030T2 | 2.3 | 35 | 2.0 | 18.0 | - 48 | + 13 | + 15 | 1525 | |
| 300 | K | 135D307X0030K2 | 1.4 | 25 | 8.0 | 32.0 | - 60 | + 25 | + 25 | 1950 | |
| 35 WVDC at + 85 °C ... 22 WVDC at + 125 °C ... 21 WVDC at + 200 °C | | | | | | | | | | | |
| 15 | C | 135D156X0035C2 | 6.2 | 175 | 0.75 | 1.5 | - 20 | + 10.5 | + 12 | 660 | |
| 68 | F | 135D686X0035F2 | 2.9 | 60 | 1.0 | 2.0 | - 24 | + 13 | + 15 | 1195 | |
| 270 | K | 135D277X0035K2 | 1.4 | 26 | 3.0 | 12.0 | - 58 | + 25 | + 25 | 1950 | |
| 50 WVDC at + 85 °C ... 30 WVDC at + 125 °C ... 30 WVDC at + 200 °C | | | | | | | | | | | |
| 5 | C | 135D505X0050C2 | 8.0 | 400 | 1.0 | 2.0 | - 16 | + 5 | + 6 | 580 | |
| 10 | C | 135D106X0050C2 | 6.4 | 250 | 1.0 | 2.0 | - 24 | + 8 | + 9 | 715 | |
| 25 | F | 135D256X0050F2 | 4.6 | 95 | 1.0 | 5.0 | - 20 | + 10.5 | + 12 | 1005 | |
| 47 | F | 135D476X0050F2 | 3.7 | 70 | 1.0 | 9.0 | - 28 | + 13 | + 15 | 1155 | |
| 60 | T | 135D606X0050T2 | 2.9 | 45 | 2.0 | 12.0 | - 16 | + 10.5 | + 12 | 1335 | |
| 82 | T | 135D826X0050T2 | 2.5 | 45 | 2.0 | 16.0 | - 32 | + 13 | + 15 | 1400 | |
| 160 | K | 135D167X0050K2 | 1.5 | 27 | 8.0 | 32.0 | - 50 | + 25 | + 25 | 1900 | |
| 60 WVDC at + 85 °C ... 40 WVDC at + 125 °C ... 36 WVDC at + 200 °C | | | | | | | | | | | |
| 4 | C | 135D405X0060C2 | 9.3 | 550 | 1.0 | 2.0 | - 16 | + 5 | + 6 | 525 | |
| 8.2 | C | 135D825X0060C2 | 6.6 | 275 | 1.0 | 2.0 | - 24 | + 8 | + 9 | 625 | |
| 20 | F | 135D206X0060F2 | 4.7 | 105 | 1.0 | 5.0 | - 16 | + 8 | + 9 | 930 | |
| 39 | F | 135D396X0060F2 | 3.4 | 90 | 1.0 | 9.0 | - 28 | + 10.5 | + 15 | 1110 | |
| 50 | T | 135D506X0060T2 | 2.9 | 50 | 2.0 | 12.0 | - 16 | + 10.5 | + 12 | 1330 | |
| 68 | T | 135D686X0060T2 | 2.5 | 50 | 2.0 | 16.0 | - 32 | + 10.5 | + 15 | 1365 | |
| 140 | K | 135D147X0060K2 | 1.5 | 28 | 8.0 | 32.0 | - 40 | + 20 | + 20 | 1850 | |
| 75 WVDC at + 85 °C ... 50 WVDC at + 125 °C ... 45 WVDC at + 200 °C | | | | | | | | | | | |
| 3.5 | C | 135D355X0075C2 | 9.5 | 650 | 1.0 | 2.0 | - 16 | + 5 | + 6 | 525 | |
| 6.8 | C | 135D685X0075C2 | 6.8 | 300 | 1.0 | 2.0 | - 20 | + 8 | + 9 | 610 | |
| 15 | F | 135D156X0075F2 | 5.3 | 150 | 1.0 | 5.0 | - 16 | + 8 | + 9 | 890 | |
| 33 | F | 135D336X0075F2 | 4.2 | 90 | 1.0 | 10.0 | - 24 | + 10.5 | + 15 | 1000 | |
| 40 | T | 135D406X0075T2 | 3.0 | 60 | 2.0 | 12.0 | - 16 | + 10.5 | + 12 | 1250 | |
| 56 | T | 135D566X0075T2 | 2.6 | 60 | 2.0 | 17.0 | - 28 | + 10.5 | + 15 | 1335 | |
| 110 | K | 135D117X0075K2 | 1.5 | 29 | 9.0 | 36.0 | - 35 | + 20 | + 20 | 1850 | |
| 100 WVDC at + 85 °C ... 65 WVDC at + 125 °C ... 60 WVDC at + 200 °C | | | | | | | | | | | |
| 2.5 | C | 135D255X0100C2 | 10.6 | 950 | 1.0 | 2.0 | - 16 | + 7 | + 8 | 505 | |
| 4.7 | C | 135D475X0100C2 | 8.5 | 500 | 1.0 | 2.0 | - 16 | + 7 | + 8 | 565 | |
| 11 | F | 135D116X0100F2 | 6.0 | 200 | 1.0 | 4.0 | - 16 | + 7 | + 8 | 835 | |
| 22 | F | 135D226X0100F2 | 4.8 | 100 | 1.0 | 9.0 | - 16 | + 7 | + 8 | 965 | |
| 25 | T | 135D256X0125T2 | 3.2 | 93 | 2.0 | 13.0 | - 16 | + 7 | + 8 | 1200 | |
| 30 | T | 135D306X0100T2 | 3.3 | 80 | 2.0 | 12.0 | - 16 | + 7 | + 8 | 1240 | |
| 43 | T | 135D436X0100T2 | 2.6 | 70 | 2.0 | 17.0 | - 20 | + 7 | + 8 | 1335 | |
| 56 | K | 135D566X0125K2 | 1.6 | 32 | 10.0 | 40.0 | - 25 | + 15 | + 15 | 1800 | |
| 86 | K | 135D866X0100K2 | 1.6 | 30 | 9.0 | 36.0 | - 25 | + 15 | + 15 | 1800 | |
| 125 WVDC at + 85 °C ... 85 WVDC at + 125 °C ... 75 WVDC at + 200 °C | | | | | | | | | | | |
| 1.7 | C | 135D175X0125C2 | 15.6 | 1250 | 1.0 | 2.0 | - 16 | + 7 | + 8 | 415 | |
| 3.6 | C | 135D365X0125C2 | 10.0 | 600 | 1.0 | 2.0 | - 16 | + 7 | + 8 | 520 | |
| 9 | F | 135D905X0125F2 | 7.4 | 240 | 1.0 | 5.0 | - 16 | + 7 | + 8 | 755 | |
| 14 | F | 135D146X0125F2 | 5.7 | 167 | 1.0 | 7.0 | - 16 | + 7 | + 8 | 860 | |
| 18 | T | 135D186X0125T2 | 3.7 | 129 | 2.0 | 9.0 | - 16 | + 7 | + 8 | 1130 | |

* Part Numbers listed are for units with $\pm 20\%$ capacitance tolerance insulated capacitors. For $\pm 10\%$ tolerance capacitors, change the digit following the letter "X" from "0" to "9"; for $\pm 5\%$, change the digit following the letter "X" from "0" to "5". For capacitors without outer polyester-film insulation, change the last digit in the part number from "2" to "0". For capacitors with a high temperature insulating sleeve, change the last digit in the part number from "2" to "6". For RoHS compliant add "E3".



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Tantalum-Case with Glass-to-Tantalum Hermetic Seal
For - 55 °C to + 200 °C Operation

| EXTENDED RATINGS | | | | | | | | | | |
|---|--------------|----------------|--------------------------------|--------------------------------|---------------|---------------------|-------------------------|---------|----------|---|
| CAPACITANCE (µF) | CASE CODE | PART NUMBER* | Max. ESR | Max. IMP. | Max. DCL (µA) | | Max. CAPACITANCE CHANGE | | | Max. RIPPLE 40 kHz rms (mA) |
| | | | at + 25 °C 120 Hz (Ω) | at - 55 °C 120 Hz (Ω) | at | | (%) at | | | |
| | | | | | + 25 °C | + 85 °C + 125 °C | - 55 °C | + 85 °C | + 125 °C | |
| 6 WVDC at + 85 °C . . . 4 WVDC at + 125 °C . . . 3.6 WVDC at + 200 °C | | | | | | | | | | |
| 220 | C | 135D227X0006C2 | 3.0 | 36 | 2 | 9 | - 64 | +13 | +16 | 1000 |
| 560 | F | 135D567X0006F2 | 2.5 | 21 | 3 | 9 | - 77 | +16 | +20 | 1500 |
| 820 | F | 135D827X0006F2 | 2.5 | 18 | 3 | 14 | - 88 | +16 | +20 | 1500 |
| 1200 | T | 135D128X0006T2 | 1.5 | 18 | 5 | 18 | - 88 | +20 | +25 | 1900 |
| 1500 | T | 135D158X0006T2 | 1.5 | 18 | 5 | 20 | - 90 | +20 | +25 | 1900 |
| 2200 | K | 135D228X0006K2 | 1.0 | 13 | 6 | 24 | - 90 | +25 | +30 | 2300 |
| 8 WVDC at + 85 °C . . . 5 WVDC at + 125 °C . . . 4.8 WVDC at + 200 °C | | | | | | | | | | |
| 180 | C | 135D187X0008C2 | 3.0 | 45 | 2 | 9 | - 60 | +13 | +16 | 1000 |
| 680 | F | 135D687X0008F2 | 2.5 | 22 | 3 | 14 | - 83 | +16 | +20 | 1500 |
| 1500 | T | 135D158X0008T2 | 1.5 | 18 | 5 | 20 | - 90 | +20 | +25 | 1900 |
| 1800 | K | 135D188X0008K2 | 1.0 | 14 | 7 | 25 | - 90 | +25 | +30 | 2300 |
| 10 WVDC at + 85 °C . . . 7 WVDC at + 125 °C . . . 6 WVDC at + 200 °C | | | | | | | | | | |
| 120 | C | 135D127X0010C2 | 3.2 | 54 | 2 | 6 | - 40 | +14 | +16 | 900 |
| 150 | C | 135D157X0010C2 | 3.0 | 54 | 2 | 9 | - 55 | +13 | +16 | 900 |
| 390 | F | 135D397X0010F2 | 2.5 | 27 | 3 | 9 | - 66 | +16 | +20 | 1450 |
| 560 | F | 135D567X0010F2 | 2.5 | 27 | 3 | 16 | - 77 | +16 | +20 | 1450 |
| 1200 | T | 135D128X0010T2 | 1.5 | 18 | 5 | 20 | - 88 | +20 | +25 | 1850 |
| 1500 | K | 135D158X0010K2 | 1.0 | 15 | 7 | 25 | - 88 | +25 | +30 | 2300 |
| 15 WVDC at + 85 °C . . . 10 WVDC at + 125 °C . . . 9 WVDC at + 200 °C | | | | | | | | | | |
| 82 | C | 135D826X0015C2 | 3.9 | 72 | 2 | 6 | - 35 | +12 | +16 | 900 |
| 100 | C | 135D107X0015C2 | 3.9 | 72 | 2 | 9 | - 44 | +13 | +16 | 900 |
| 270 | F | 135D277X0015F2 | 2.5 | 31 | 3 | 9 | - 62 | +16 | +15 | 1450 |
| 390 | F | 135D397X0015F2 | 2.5 | 31 | 3 | 16 | - 66 | +16 | +20 | 1450 |
| 680 | T | 135D687X0015T2 | 1.8 | 22 | 6 | 18 | - 74 | +20 | +25 | 1800 |
| 820 | T | 135D827X0015T2 | 1.8 | 22 | 6 | 24 | - 77 | +20 | +25 | 1800 |
| 1000 | K | 135D108X0015K2 | 1.2 | 17 | 8 | 32 | - 77 | +25 | +30 | 2330 |
| 25 WVDC at + 85 °C . . . 15 WVDC at + 125 °C . . . 12 WVDC at + 200 °C | | | | | | | | | | |
| 56 | C | 135D566X0025C2 | 4.3 | 90 | 2 | 6 | - 25 | +12 | +15 | 850 |
| 68 | C | 135D686X0025C2 | 4.3 | 90 | 2 | 9 | - 40 | +12 | +15 | 850 |
| 180 | F | 135D187X0025F2 | 2.7 | 33 | 3 | 9 | - 54 | +13 | +15 | 1400 |
| 270 | F | 135D277X0025F2 | 2.7 | 33 | 3 | 16 | - 62 | +13 | +16 | 1400 |
| 470 | T | 135D477X0025T2 | 1.8 | 24 | 6 | 18 | - 65 | +18 | +25 | 1750 |
| 560 | T | 135D567X0025T2 | 1.8 | 24 | 7 | 28 | - 72 | +20 | +25 | 1750 |
| 680 | K | 135D687X0025K2 | 1.2 | 19 | 8 | 32 | - 72 | +25 | +30 | 2100 |
| 30 WVDC at + 85 °C . . . 20 WVDC at + 125 °C . . . 18 WVDC at + 200 °C | | | | | | | | | | |
| 47 | C | 135D476X0030C2 | 5.2 | 100 | 2 | 6 | - 23 | +12 | +15 | 800 |
| 56 | C | 135D566X0030C2 | 5.2 | 100 | 2 | 9 | - 38 | +12 | +15 | 800 |
| 150 | F | 135D157X0030F2 | 2.5 | 36 | 3 | 9 | - 42 | +13 | +15 | 1200 |
| 220 | F | 135D227X0030F2 | 2.5 | 36 | 3 | 16 | - 60 | +13 | +16 | 1200 |
| 390 | T | 135D397X0030T2 | 1.8 | 25 | 6 | 18 | - 55 | +18 | +25 | 1500 |
| 470 | T | 135D477X0030T2 | 1.8 | 25 | 8 | 32 | - 65 | +20 | +25 | 1500 |
| 560 | K | 135D567X0030K2 | 1.3 | 20 | 9 | 36 | - 65 | +25 | +30 | 2000 |

* Part Numbers listed are for units with ± 20 % capacitance tolerance insulated capacitors. For ± 10 % tolerance capacitors, change the digit following the letter "X" from "0" to "9"; for ± 5 %, change the digit following the letter "X" from "0" to "5". For capacitors without outer polyester-film insulation, change the last digit in the part number from "2" to "0". For capacitors with a high temperature insulating sleeve, change the last digit in the part number from "2" to "6". For RoHS compliant add "E3".

Wet Tantalum Capacitors
Tantalum-Case with Glass-to-Tantalum Hermetic Seal
For - 55 °C to + 200 °C Operation



| EXTENDED RATINGS | | | | | | | | | | | | |
|--|--------------|----------------|-----------------------------------|-----------------------------------|-----------------|---------------------|---------------------------|---------|-----------------------------------|------|--|---|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER* | Max. ESR at | | Max. IMP. at | | Max. DCL (μ A) at | | Max. CAPACITANCE CHANGE (%) at | | | Max. RIPPLE 40 kHz rms (mA) |
| | | | + 25 °C 120 Hz (Ω) | - 55 °C 120 Hz (Ω) | + 25 °C | + 85 °C + 125 °C | - 55 °C | + 85 °C | + 125 °C | | | |
| 35 WVDC at + 85 °C . . . 22 WVDC at + 125 °C . . . 21 WVDC at + 200 °C | | | | | | | | | | | | |
| 39 | C | 135D396X0035C2 | 4.1 | 61 | 2 | 6 | - 22 | +12 | +14 | 820 | | |
| 120 | F | 135D127X0035F2 | 2.5 | 31 | 3 | 10 | - 40 | +13 | +15 | 1315 | | |
| 330 | T | 135D337X0035T2 | 1.8 | 20 | 6 | 18 | - 50 | +16 | +25 | 1640 | | |
| 370 | K | 135D477X0035K2 | 1.3 | 15 | 9 | 36 | - 60 | +25 | +30 | 2040 | | |
| 50 WVDC at + 85 °C . . . 30 WVDC at + 125 °C . . . 30 WVDC at + 200 °C | | | | | | | | | | | | |
| 33 | C | 135D336X0050C2 | 5.0 | 135 | 2 | 9 | - 29 | +10 | +12 | 700 | | |
| 100 | F | 135D107X0050F2 | 2.8 | 49 | 4 | 12 | - 36 | +13 | +15 | 1200 | | |
| 120 | F | 135D127X0050F2 | 2.5 | 49 | 4 | 24 | - 42 | +12 | +15 | 1200 | | |
| 270 | T | 135D277X0050T2 | 2.0 | 30 | 8 | 32 | - 46 | +20 | +25 | 1450 | | |
| 330 | K | 135D337X0050K2 | 1.5 | 30 | 9 | 36 | - 46 | +25 | +30 | 1900 | | |
| 60 WVDC at + 85 °C . . . 40 WVDC at + 125 °C . . . 36 WVDC at + 200 °C | | | | | | | | | | | | |
| 27 | C | 135D276X0060C2 | 5.0 | 144 | 3 | 12 | - 24 | +10 | +12 | 700 | | |
| 82 | F | 135D826X0060F2 | 2.9 | 54 | 4 | 16 | - 30 | +15 | +15 | 1100 | | |
| 100 | F | 135D107X0060F2 | 2.5 | 54 | 4 | 20 | - 36 | +12 | +15 | 1100 | | |
| 220 | T | 135D227X0060T2 | 1.8 | 29 | 8 | 32 | - 40 | +16 | +20 | 1400 | | |
| 270 | K | 135D277X0060K2 | 1.4 | 23 | 9 | 36 | - 45 | +20 | +25 | 1850 | | |
| 75 WVDC at + 85 °C . . . 50 WVDC at + 125 °C . . . 45 WVDC at + 200 °C | | | | | | | | | | | | |
| 22 | C | 135D226X0075C2 | 5.1 | 157 | 3 | 12 | - 19 | +10 | +12 | 600 | | |
| 68 | F | 135D686X0075F2 | 3.0 | 63 | 4 | 16 | - 25 | +12 | +15 | 1000 | | |
| 82 | F | 135D826X0075F2 | 2.5 | 63 | 4 | 24 | - 30 | +12 | +15 | 1000 | | |
| 180 | T | 135D187X0075T2 | 2.2 | 30 | 9 | 36 | - 35 | +16 | +20 | 1300 | | |
| 220 | K | 135D227X0075K2 | 1.8 | 24 | 10 | 40 | - 40 | +20 | +25 | 1800 | | |
| 100 WVDC at + 85 °C . . . 65 WVDC at + 125 °C . . . 60 WVDC at + 200 °C | | | | | | | | | | | | |
| 10 | C | 135D106X0100C2 | 5.9 | 200 | 3 | 12 | - 17 | +10 | +12 | 800 | | |
| 39 | F | 135D396X0100F2 | 3.5 | 80 | 5 | 24 | - 20 | +12 | +15 | 1300 | | |
| 68 | T | 135D686X0100T2 | 2.2 | 40 | 10 | 40 | - 30 | +14 | +16 | 1600 | | |
| 120 | K | 135D127X0100K2 | 2.7 | 30 | 12 | 48 | - 35 | +15 | +17 | 2000 | | |
| 125 WVDC at + 85 °C . . . 85 WVDC at + 125 °C . . . 75 WVDC at + 200 °C | | | | | | | | | | | | |
| 6.8 | C | 135D685X0125C2 | 11.7 | 300 | 3 | 12 | - 14 | +10 | +12 | 700 | | |
| 27 | F | 135D276X0125F2 | 3.5 | 90 | 5 | 24 | - 18 | +12 | +15 | 1200 | | |
| 47 | T | 135D476X0125T2 | 2.2 | 50 | 10 | 40 | - 26 | +14 | +16 | 1500 | | |
| 68 | K | 135D686X0125K2 | 2.2 | 32 | 11 | 44 | - 28 | +15 | +16 | 1850 | | |
| 82 | K | 135D826X0125K2 | 2.8 | 32 | 12 | 48 | - 30 | +15 | +17 | 1900 | | |

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