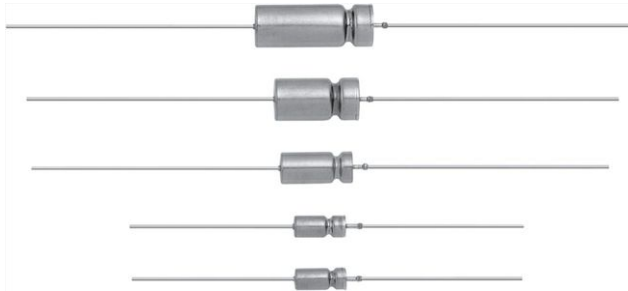


Wet Tantalum Capacitors Tantalum-Case with Glass-to-Tantalum Hermetic Seal for - 55 °C to + 125 °C Operation, Low ESR



FEATURES

- Military specification MIL-PRF-39006/30 and 39006/31. model 136D capacitors are commercial equivalents of Military style CLR90 and CLR91
- Capacitors to meet the MIL-specs must be ordered by M39006 part numbers shown in the relative specification
- Axial through-hole terminations: standard tin/lead (SnPb), 100 % tin (RoHS compliant) available
- Standard and extended ratings
- Low ESR
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS*
COMPLIANT

Note

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

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 and above: 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.

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 | | | | | | |
|----------------------|---|--|---|----------------------------------|---|--|
| 136D | 306 | X0 | 006 | C | 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 % X9 = ± 10 % X5 = ± 5 % | 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 | Std. temperature (max. + 125 °C) 0 = No insulating sleeve 2 = Polyester insulation sleeve 3 = High temperature film insulation | E3 = 100 % tin termination (RoHS compliant design) 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 recommended due to the unit weight.

| DIMENSIONS in inches [millimeters] | | | | | | |
|------------------------------------|-------------------|--------------------------------|--|-----------------------|---------------------------------|-------------------|
| | | | | | | |
| CASE CODE | DCLR 90/91 EQUIV. | D | L ₁ | L ₂ (Max.) | E | WEIGHT (g) (Max.) |
| 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 |

Note

- 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 (1) | MAX. ESR | MAX. IMP. | MAX. DCL (μA) AT | | MAX. CAPACITANCE CHANGE (%) AT | | | MAX. RIPPLE 40 kHz I _{RMS} (mA) |
| | | | AT + 25 °C 120 Hz (Ω) | AT - 55 °C 120 Hz (Ω) | + 25 °C | + 85 °C + 125 °C | - 55 °C | + 85 °C | + 125 °C | |
| 6 V_{DC} AT + 85 °C; 4 V_{DC} AT + 125 °C | | | | | | | | | | |
| 30 | C | 136D306X0006C2 | 1.99 | 100 | 1.0 | 2.0 | - 40 | + 10.5 | + 12 | 820 |
| 68 | C | 136D686X0006C2 | 1.58 | 60 | 1.0 | 2.0 | - 40 | + 14 | + 16 | 960 |
| 140 | F | 136D147X0006F2 | 0.99 | 40 | 1.0 | 3.0 | - 40 | + 14 | + 16 | 1200 |
| 270 | F | 136D277X0006F2 | 1.11 | 25 | 1.0 | 6.5 | - 44 | + 17.5 | + 20 | 1375 |
| 330 | T | 136D337X0006T2 | 0.73 | 20 | 2.0 | 7.9 | - 44 | + 14 | + 16 | 1800 |
| 560 | T | 136D567X0006T2 | 0.65 | 25 | 2.0 | 13.0 | - 64 | + 17.5 | + 20 | 1900 |
| 1200 | K | 136D128X0006K2 | 0.50 | 20 | 3.0 | 14.0 | - 80 | + 25 | + 25 | 2265 |
| 8 V_{DC} AT + 85 °C; 5 V_{DC} AT + 125 °C | | | | | | | | | | |
| 25 | C | 136D256X0008C2 | 1.99 | 100 | 1.0 | 2.0 | - 40 | + 10.5 | + 12 | 820 |
| 56 | C | 136D566X0008C2 | 1.66 | 59 | 1.0 | 2.0 | - 40 | + 14 | + 16 | 900 |
| 120 | F | 136D127X0008F2 | 1.11 | 50 | 1.0 | 2.0 | - 44 | + 17.5 | + 20 | 1230 |
| 220 | F | 136D227X0008F2 | 1.12 | 30 | 1.0 | 7.0 | - 44 | + 17.5 | + 20 | 1370 |
| 290 | T | 136D297X0008T2 | 0.78 | 25 | 2.0 | 6.0 | - 64 | + 17.5 | + 20 | 1770 |
| 430 | T | 136D437X0008T2 | 0.71 | 25 | 2.0 | 14.0 | - 64 | + 17.5 | + 20 | 1825 |
| 850 | K | 136D857X0008K2 | 0.47 | 22 | 4.0 | 16.0 | - 80 | + 25 | + 25 | 2330 |
| 10 V_{DC} AT + 85 °C; 7 V_{DC} AT + 125 °C | | | | | | | | | | |
| 20 | C | 136D206X0010C2 | 1.99 | 175 | 1.0 | 2.0 | - 32 | + 10.5 | + 12 | 820 |
| 47 | C | 136D476X0010C2 | 1.84 | 100 | 1.0 | 2.0 | - 36 | + 14 | + 16 | 855 |
| 100 | F | 136D107X0010F2 | 0.99 | 60 | 1.0 | 4.0 | - 36 | + 14 | + 16 | 1200 |
| 180 | F | 136D187X0010F2 | 1.11 | 40 | 1.0 | 7.0 | - 36 | + 14 | + 16 | 1365 |
| 250 | T | 136D257X0010T2 | 0.80 | 30 | 2.0 | 10.0 | - 40 | + 14 | + 16 | 1720 |
| 390 | T | 136D397X0010T2 | 0.75 | 25 | 2.0 | 16.0 | - 64 | + 17.5 | + 20 | 1800 |
| 750 | K | 136D757X0010K2 | 0.44 | 23 | 4.0 | 16.0 | - 80 | + 25 | + 25 | 2360 |

Note

- (1) 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 "3". For RoHS compliant add "E3".



| STANDARD RATINGS | | | | | | | | | | |
|--|--------------|-----------------|--------------------------------------|--------------------------------------|---------------------|---------|-------------------------|----------|------|-----------------------------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER (1) | MAX. ESR | MAX. IMP. | MAX. DCL (μ A) | | MAX. CAPACITANCE CHANGE | | | MAX. RIPPLE |
| | | | AT + 25 °C 120 Hz (Ω) | AT - 55 °C 120 Hz (Ω) | AT | | (% AT) | | | 40 kHz I_{RMS} (mA) |
| | | | | + 25 °C | + 85 °C | - 55 °C | + 85 °C | + 125 °C | | |
| 15 V_{DC} AT + 85 °C; 10 V_{DC} AT + 125 °C | | | | | | | | | | |
| 15 | C | 136D156X0015C2 | 1.99 | 155 | 1.0 | 2.0 | - 24 | + 10.5 | + 12 | 780 |
| 33 | C | 136D336X0015C2 | 1.66 | 90 | 1.0 | 2.0 | - 28 | + 14 | + 16 | 820 |
| 70 | F | 136D706X0015F2 | 1.11 | 75 | 1.0 | 4.0 | - 28 | + 14 | + 16 | 1150 |
| 120 | F | 136D127X0015F2 | 1.12 | 50 | 1.0 | 7.0 | - 28 | + 17.5 | + 20 | 1450 |
| 170 | T | 136D177X0015T2 | 0.78 | 35 | 2.0 | 10.0 | - 32 | + 14 | + 16 | 1480 |
| 270 | T | 136D277X0015T2 | 0.71 | 30 | 2.0 | 16.0 | - 56 | + 17.5 | + 20 | 1740 |
| 540 | K | 136D547X0015K2 | 0.47 | 23 | 6.0 | 24.0 | - 80 | + 25 | + 25 | 2330 |
| 25 V_{DC} AT + 85 °C; 15 V_{DC} AT + 125 °C | | | | | | | | | | |
| 10 | C | 136D106X0025C2 | 2.66 | 220 | 1.0 | 2.0 | - 16 | + 8 | + 9 | 715 |
| 22 | C | 136D226X0025C2 | 1.99 | 140 | 1.0 | 2.0 | - 20 | + 10.5 | + 12 | 800 |
| 50 | F | 136D506X0025F2 | 1.46 | 70 | 1.0 | 2.0 | - 28 | + 13 | + 15 | 1130 |
| 100 | F | 136D107X0025F2 | 0.99 | 50 | 1.0 | 10.0 | - 28 | + 13 | + 15 | 1435 |
| 120 | T | 136D127X0025T2 | 1.16 | 38 | 2.0 | 6.0 | - 32 | + 13 | + 15 | 1450 |
| 180 | T | 136D187X0025T2 | 0.96 | 32 | 2.0 | 18.0 | - 48 | + 13 | + 15 | 1525 |
| 350 | K | 136D357X0025K2 | 0.67 | 24 | 7.0 | 28.0 | - 70 | + 25 | + 25 | 1970 |
| 30 V_{DC} AT + 85 °C; 20 V_{DC} AT + 125 °C | | | | | | | | | | |
| 8 | C | 136D805X0030C2 | 3.32 | 275 | 1.0 | 2.0 | - 16 | + 8 | + 12 | 640 |
| 15 | C | 136D156X0030C2 | 2.21 | 175 | 1.0 | 2.0 | - 20 | + 10.5 | + 12 | 780 |
| 40 | F | 136D406X0030F2 | 1.66 | 65 | 1.0 | 5.0 | - 24 | + 10.5 | + 12 | 1120 |
| 68 | F | 136D686X0030F2 | 1.27 | 60 | 1.0 | 8.0 | - 24 | + 13 | + 15 | 1285 |
| 100 | T | 136D107X0030T2 | 1.13 | 40 | 2.0 | 12.0 | - 28 | + 10.5 | + 12 | 1450 |
| 150 | T | 136D157X0030T2 | 1.02 | 35 | 2.0 | 18.0 | - 48 | + 13 | + 15 | 1525 |
| 300 | K | 136D307X0030K2 | 0.69 | 25 | 8.0 | 32.0 | - 60 | + 25 | + 25 | 1950 |
| 35 V_{DC} AT + 85 °C; 22 V_{DC} AT + 125 °C | | | | | | | | | | |
| 15 | C | 136D156X0035C2 | 3.10 | 175 | 0.75 | 1.5 | - 20 | + 10.5 | + 12 | 660 |
| 68 | F | 136D686X0035F2 | 1.45 | 60 | 1.0 | 2.0 | - 24 | + 13 | + 15 | 1195 |
| 270 | K | 136D277X0035K2 | 0.70 | 26 | 3.0 | 12.0 | - 58 | + 25 | + 25 | 1950 |
| 50 V_{DC} AT + 85 °C; 30 V_{DC} AT + 125 °C | | | | | | | | | | |
| 5 | C | 136D505X0050C2 | 3.98 | 400 | 1.0 | 2.0 | - 16 | + 5 | + 6 | 580 |
| 10 | C | 136D106X0050C2 | 2.66 | 250 | 1.0 | 2.0 | - 24 | + 8 | + 9 | 715 |
| 25 | F | 136D256X0050F2 | 2.13 | 95 | 1.0 | 5.0 | - 20 | + 10.5 | + 12 | 1005 |
| 47 | F | 136D476X0050F2 | 1.56 | 70 | 1.0 | 9.0 | - 28 | + 13 | + 15 | 1155 |
| 60 | T | 136D606X0050T2 | 1.33 | 45 | 2.0 | 12.0 | - 16 | + 10.5 | + 12 | 1335 |
| 82 | T | 136D826X0050T2 | 1.22 | 45 | 2.0 | 16.0 | - 32 | + 13 | + 15 | 1400 |
| 160 | K | 136D167X0050K2 | 0.71 | 27 | 8.0 | 32.0 | - 50 | + 25 | + 25 | 1900 |

Note

(1) 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 "3". For RoHS compliant add "E3".



| STANDARD RATINGS | | | | | | | | | | |
|---|--------------|-----------------|--------------|--------------|---------------------|----------|-------------------------|---------|----------|-----------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER (1) | MAX. ESR | MAX. IMP. | MAX. DCL (μ A) | | MAX. CAPACITANCE CHANGE | | | MAX. |
| | | | AT + 25 °C | AT - 55 °C | AT | | (%) AT | | | RIPPLE |
| | | | 120 Hz | 120 Hz | + 25 °C | + 85 °C | - 55 °C | + 85 °C | + 125 °C | 40 kHz |
| | | | (Ω) | (Ω) | | + 125 °C | | | | I_{RMS} |
| | | | | | | | | | | (mA) |
| 60 V_{DC} AT + 85 °C; 40 V_{DC} AT + 125 °C | | | | | | | | | | |
| 4 | C | 136D405X0060C2 | 4.65 | 550 | 1.0 | 2.0 | - 16 | + 5 | + 6 | 525 |
| 8.2 | C | 136D825X0060C2 | 3.24 | 275 | 1.0 | 2.0 | - 24 | + 8 | + 9 | 625 |
| 20 | F | 136D206X0060F2 | 2.32 | 105 | 1.0 | 5.0 | - 16 | + 8 | + 12 | 930 |
| 39 | F | 136D396X0060F2 | 1.70 | 90 | 1.0 | 9.0 | - 28 | + 10.5 | + 12 | 1110 |
| 50 | T | 136D506X0060T2 | 1.33 | 50 | 2.0 | 12.0 | - 16 | + 10.5 | + 12 | 1330 |
| 68 | T | 136D686X0060T2 | 1.27 | 50 | 2.0 | 16.0 | - 32 | + 10.5 | + 15 | 1365 |
| 140 | K | 136D147X0060K2 | 0.76 | 28 | 8.0 | 32.0 | - 40 | + 20 | + 20 | 1850 |
| 75 V_{DC} AT + 85 °C; 50 V_{DC} AT + 125 °C | | | | | | | | | | |
| 3.5 | C | 136D355X0075C2 | 4.74 | 650 | 1.0 | 2.0 | - 16 | + 5 | + 6 | 525 |
| 6.8 | C | 136D685X0075C2 | 3.42 | 300 | 1.0 | 2.0 | - 20 | + 8 | + 9 | 610 |
| 15 | F | 136D156X0075F2 | 2.66 | 150 | 1.0 | 5.0 | - 16 | + 10.5 | + 9 | 890 |
| 33 | F | 136D336X0075F2 | 2.01 | 90 | 1.0 | 10.0 | - 24 | + 10.5 | + 15 | 1000 |
| 40 | T | 136D406X0075T2 | 1.50 | 60 | 2.0 | 12.0 | - 16 | + 10.5 | + 12 | 1250 |
| 56 | T | 136D566X0075T2 | 1.31 | 60 | 2.0 | 17.0 | - 28 | + 10.5 | + 15 | 1335 |
| 110 | K | 136D117X0075K2 | 0.73 | 29 | 9.0 | 36.0 | - 35 | + 20 | + 20 | 1850 |
| 100 V_{DC} AT + 85 °C; 65 V_{DC} AT + 125 °C | | | | | | | | | | |
| 2.5 | C | 136D255X0100C2 | 5.31 | 950 | 1.0 | 4.0 | - 16 | + 8 | + 8 | 505 |
| 4.7 | C | 136D475X0100C2 | 4.24 | 500 | 1.0 | 2.0 | - 16 | + 7 | + 8 | 565 |
| 11 | F | 136D116X0100F2 | 3.02 | 200 | 1.0 | 4.0 | - 16 | + 7 | + 8 | 835 |
| 22 | F | 136D226X0100F2 | 2.26 | 100 | 1.0 | 9.0 | - 16 | + 7 | + 8 | 965 |
| 25 | T | 136D256X0100T2 | 1.60 | 93 | 2.0 | 13.0 | - 16 | + 7 | + 8 | 1200 |
| 30 | T | 136D306X0100T2 | 1.55 | 80 | 2.0 | 12.0 | - 16 | + 8 | + 8 | 1240 |
| 43 | T | 136D436X0100T2 | 1.31 | 70 | 2.0 | 17.0 | - 20 | + 8 | + 8 | 1335 |
| 56 | K | 136D566X0100K2 | 0.80 | 32 | 10.0 | 40.0 | - 25 | + 15 | + 15 | 1800 |
| 86 | K | 136D866X0100K2 | 0.77 | 30 | 9.0 | 36.0 | - 25 | + 15 | + 15 | 1800 |
| 125 V_{DC} AT + 85 °C; 85 V_{DC} AT + 125 °C | | | | | | | | | | |
| 1.7 | C | 136D175X0125C2 | 7.81 | 1250 | 1.0 | 2.0 | - 16 | + 7 | + 8 | 415 |
| 3.6 | C | 136D365X0125C2 | 4.98 | 600 | 1.0 | 2.0 | - 16 | + 7 | + 8 | 520 |
| 9 | F | 136D905X0125F2 | 3.69 | 240 | 1.0 | 5.0 | - 16 | + 7 | + 8 | 755 |
| 14 | F | 136D146X0125F2 | 2.85 | 167 | 1.0 | 7.0 | - 16 | + 7 | + 8 | 860 |
| 18 | T | 136D186X0125T2 | 1.85 | 129 | 2.0 | 9.0 | - 16 | + 7 | + 8 | 1130 |
| 25 | T | 136D256X0125T2 | 1.59 | 93 | 2 | 13 | - 16 | + 7 | + 8 | 1200 |
| 56 | K | 136D566X0125K2 | 0.77 | 32 | 10 | 40 | - 25 | + 15 | + 15 | 1800 |

Note

(1) 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 "3". For RoHS compliant add "E3".



| EXTENDED RATINGS | | | | | | | | | | |
|--|--------------|-----------------|--------------|--------------|---------------------|----------|-------------------------|---------|----------|------------------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER (1) | MAX. ESR | MAX. IMP. | MAX. DCL (μ A) | | MAX. CAPACITANCE CHANGE | | | MAX. |
| | | | AT + 25 °C | AT - 55 °C | AT | | (%) AT | | | RIPPLE |
| | | | 120 Hz | 120 Hz | + 25 °C | + 85 °C | - 55 °C | + 85 °C | + 125 °C | 40 kHz |
| | | | (Ω) | (Ω) | | + 125 °C | | | | I _{RMS} |
| | | | | | | | | | | (mA) |
| 6 V_{DC} AT + 85 °C; 4 V_{DC} AT + 125 °C | | | | | | | | | | |
| 220 | C | 136D227X0006C2 | 1.50 | 36 | 2 | 9 | - 64 | + 13 | + 16 | 1000 |
| 560 | F | 136D567X0006F2 | 1.25 | 21 | 3 | 9 | - 77 | + 16 | + 20 | 1500 |
| 820 | F | 136D827X0006F2 | 1.25 | 18 | 3 | 14 | - 88 | + 16 | + 20 | 1500 |
| 1200 | T | 136D128X0006T2 | 0.75 | 18 | 5 | 18 | - 88 | + 20 | + 25 | 1900 |
| 1500 | T | 136D158X0006T2 | 0.75 | 18 | 5 | 20 | - 90 | + 20 | + 25 | 1900 |
| 2200 | K | 136D228X0006K2 | 0.50 | 13 | 6 | 24 | - 90 | + 25 | + 30 | 2300 |
| 8 V_{DC} AT + 85 °C; 5 V_{DC} AT + 125 °C | | | | | | | | | | |
| 180 | C | 136D187X0008C2 | 1.50 | 45 | 2 | 9 | - 60 | + 13 | + 16 | 1000 |
| 680 | F | 136D687X0008F2 | 1.25 | 22 | 3 | 14 | - 83 | + 16 | + 20 | 1500 |
| 1500 | T | 136D158X0008T2 | 0.75 | 18 | 5 | 20 | - 90 | + 20 | + 25 | 1900 |
| 1800 | K | 136D188X0008K2 | 0.50 | 14 | 7 | 25 | - 90 | + 25 | + 30 | 2300 |
| 10 V_{DC} AT + 85 °C; 7 V_{DC} AT + 125 °C | | | | | | | | | | |
| 120 | C | 136D127X0010C2 | 1.60 | 54 | 2 | 6 | - 40 | + 14 | + 16 | 900 |
| 150 | C | 136D157X0010C2 | 1.50 | 54 | 2 | 9 | - 55 | + 13 | + 16 | 900 |
| 390 | F | 136D397X0010F2 | 1.25 | 27 | 3 | 9 | - 66 | + 16 | + 20 | 1450 |
| 560 | F | 136D567X0010F2 | 1.25 | 27 | 3 | 16 | - 77 | + 16 | + 20 | 1450 |
| 1200 | T | 136D128X0010T2 | 0.75 | 18 | 5 | 20 | - 88 | + 20 | + 25 | 1850 |
| 1500 | K | 136D158X0010K2 | 0.50 | 15 | 7 | 25 | - 88 | + 25 | + 30 | 2300 |
| 15 V_{DC} AT + 85 °C; 10 V_{DC} AT + 125 °C | | | | | | | | | | |
| 82 | C | 136D826X0015C2 | 0.95 | 72 | 2 | 6 | - 35 | + 12 | + 16 | 900 |
| 100 | C | 136D107X0015C2 | 0.95 | 72 | 2 | 9 | - 44 | + 13 | + 16 | 900 |
| 270 | F | 136D277X0015F2 | 1.25 | 31 | 3 | 9 | - 62 | + 16 | + 15 | 1450 |
| 390 | F | 136D397X0015F2 | 1.25 | 31 | 3 | 16 | - 66 | + 16 | + 20 | 1450 |
| 680 | T | 136D687X0015T2 | 0.90 | 22 | 6 | 18 | - 74 | + 20 | + 25 | 1800 |
| 820 | T | 136D827X0015T2 | 0.90 | 22 | 6 | 24 | - 77 | + 20 | + 25 | 1800 |
| 1000 | K | 136D108X0015K2 | 0.60 | 17 | 8 | 32 | - 77 | + 25 | + 30 | 2330 |
| 25 V_{DC} AT + 85 °C; 15 V_{DC} AT + 125 °C | | | | | | | | | | |
| 47 | C | 136D476X0025C2 | 2.60 | 100 | 2 | 6 | - 23 | + 12 | + 15 | 800 |
| 56 | C | 136D566X0025C2 | 2.15 | 90 | 2 | 6 | - 25 | + 12 | + 15 | 850 |
| 68 | C | 136D686X0025C2 | 2.15 | 90 | 2 | 9 | - 40 | + 12 | + 15 | 850 |
| 180 | F | 136D187X0025F2 | 1.35 | 33 | 3 | 9 | - 54 | + 13 | + 15 | 1400 |
| 270 | F | 136D277X0025F2 | 1.35 | 33 | 3 | 16 | - 62 | + 13 | + 16 | 1400 |
| 470 | T | 136D477X0025T2 | 0.90 | 24 | 6 | 18 | - 65 | + 18 | + 25 | 1750 |
| 560 | T | 136D567X0025T2 | 0.90 | 24 | 7 | 28 | - 72 | + 20 | + 25 | 1750 |
| 680 | K | 136D687X0025K2 | 0.60 | 19 | 8 | 32 | - 72 | + 25 | + 30 | 2100 |
| 30 V_{DC} AT + 85 °C; 20 V_{DC} AT + 125 °C | | | | | | | | | | |
| 47 | C | 136D476X0030C2 | 2.60 | 100 | 2 | 6 | - 23 | + 12 | + 15 | 800 |
| 56 | C | 136D566X0030C2 | 2.60 | 100 | 2 | 9 | - 38 | + 12 | + 15 | 800 |
| 150 | F | 136D157X0030F2 | 1.25 | 36 | 3 | 9 | - 42 | + 13 | + 15 | 1200 |
| 220 | F | 136D227X0030F2 | 1.25 | 36 | 3 | 16 | - 60 | + 13 | + 16 | 1200 |
| 390 | T | 136D397X0030T2 | 0.90 | 25 | 6 | 18 | - 55 | + 18 | + 25 | 1500 |
| 470 | T | 136D477X0030T2 | 0.90 | 25 | 8 | 32 | - 65 | + 20 | + 25 | 1500 |
| 560 | K | 136D567X0030K2 | 0.65 | 20 | 9 | 36 | - 65 | + 25 | + 30 | 2000 |

Note

(1) 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 "3". For RoHS compliant add "E3".



| EXTENDED RATINGS | | | | | | | | | | |
|---|--------------|----------------------------|--------------|--------------|---------------------|----------|-------------------------|---------|----------|------------------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER ⁽¹⁾ | MAX. ESR | MAX. IMP. | MAX. DCL (μ A) | | MAX. CAPACITANCE CHANGE | | | MAX. |
| | | | AT + 25 °C | AT - 55 °C | AT | | (%) AT | | | RIPPLE |
| | | | 120 Hz | 120 Hz | + 25 °C | + 85 °C | - 55 °C | + 85 °C | + 125 °C | 40 kHz |
| | | | (Ω) | (Ω) | | + 125 °C | | | | I _{RMS} |
| | | | | | | | | | | (mA) |
| 35 V_{DC} AT + 85 °C; 22 V_{DC} AT + 125 °C | | | | | | | | | | |
| 39 | C | 136D396X0035C2 | 2.05 | 61 | 2 | 6 | - 22 | + 12 | + 14 | 820 |
| 120 | F | 136D127X0035F2 | 1.25 | 31 | 3 | 10 | - 40 | + 13 | + 15 | 1315 |
| 330 | T | 136D337X0035T2 | 0.90 | 20 | 6 | 18 | - 50 | + 16 | + 25 | 1640 |
| 370 | K | 136D377X0035K2 | 0.65 | 15 | 9 | 36 | - 60 | + 25 | + 30 | 2040 |
| 40 V_{DC} AT + 85 °C; 25 V_{DC} AT + 125 °C | | | | | | | | | | |
| 39 | C | 136D396X0040C2 | 2.05 | 61 | 2 | 6 | - 22 | + 12 | + 14 | 820 |
| 50 V_{DC} AT + 85 °C; 30 V_{DC} AT + 125 °C | | | | | | | | | | |
| 33 | C | 136D336X0050C2 | 2.50 | 135 | 2 | 9 | - 29 | + 10 | + 12 | 700 |
| 100 | F | 136D107X0050F2 | 1.40 | 49 | 4 | 12 | - 36 | + 13 | + 15 | 1200 |
| 120 | F | 136D127X0050F2 | 1.25 | 49 | 4 | 24 | - 42 | + 12 | + 15 | 1200 |
| 270 | T | 136D277X0050T2 | 1.00 | 30 | 8 | 32 | - 46 | + 20 | + 25 | 1450 |
| 330 | K | 136D337X0050K2 | 0.75 | 30 | 9 | 36 | - 46 | + 25 | + 30 | 1900 |
| 60 V_{DC} AT + 85 °C; 40 V_{DC} AT + 125 °C | | | | | | | | | | |
| 18 | C | 136D186X0060C2 | 3.50 | 160 | 2 | 12 | - 20 | + 7 | + 8 | 700 |
| 27 | C | 136D276X0060C2 | 2.51 | 144 | 3 | 12 | - 24 | + 10 | + 12 | 700 |
| 82 | F | 136D826X0060F2 | 1.45 | 54 | 4 | 16 | - 30 | + 15 | + 15 | 1100 |
| 100 | F | 136D107X0060F2 | 1.25 | 54 | 4 | 20 | - 36 | + 12 | + 15 | 1100 |
| 220 | T | 136D227X0060T2 | 0.90 | 29 | 8 | 32 | - 40 | + 16 | + 20 | 1400 |
| 270 | K | 136D277X0060K2 | 0.70 | 23 | 9 | 36 | - 45 | + 20 | + 25 | 1850 |
| 330 | K | 136D337X0060K2 | 0.65 | 31 | 10 | 40 | - 72 | + 25 | + 25 | 1850 |
| 63 V_{DC} AT + 85 °C; 40 V_{DC} AT + 125 °C | | | | | | | | | | |
| 100 | F | 136D107X0063F2 | 1.25 | 54 | 2 | 12 | - 36 | + 12 | + 15 | 1100 |
| 75 V_{DC} AT + 85 °C; 50 V_{DC} AT + 125 °C | | | | | | | | | | |
| 12 | C | 136D126X0075C2 | 2.55 | 157 | 3 | 12 | - 19 | + 10 | + 12 | 600 |
| 22 | C | 136D226X0075C2 | 2.57 | 157 | 3 | 12 | - 19 | + 10 | + 12 | 600 |
| 68 | F | 136D686X0075F2 | 1.50 | 63 | 4 | 16 | - 25 | + 12 | + 15 | 1000 |
| 82 | F | 136D826X0075F2 | 1.23 | 63 | 4 | 24 | - 30 | + 12 | + 15 | 1000 |
| 180 | T | 136D187X0075T2 | 0.90 | 30 | 9 | 36 | - 35 | + 16 | + 20 | 1300 |
| 220 | K | 136D227X0075K2 | 1.12 | 24 | 10 | 40 | - 40 | + 20 | + 25 | 1800 |
| 300 | K | 136D307X0075K2 | 0.90 | 32 | 12 | 48 | - 60 | + 22 | + 22 | 2000 |
| 100 V_{DC} AT + 85 °C; 65 V_{DC} AT + 125 °C | | | | | | | | | | |
| 10 | C | 136D106X0100C2 | 2.99 | 200 | 3 | 12 | - 17 | + 10 | + 12 | 800 |
| 39 | F | 136D396X0100F2 | 1.77 | 80 | 5 | 24 | - 20 | + 12 | + 15 | 1300 |
| 56 | T | 136D566X0100T2 | 1.22 | 50 | 5.0 | 20.0 | - 25 | + 12 | + 12 | 1400 |
| 68 | T | 136D686X0100T2 | 1.11 | 40 | 10 | 40 | - 30 | + 14 | + 16 | 1600 |
| 120 | K | 136D127X0100K2 | 1.38 | 30 | 12 | 48 | - 35 | + 15 | + 17 | 2000 |
| 125 V_{DC} AT + 85 °C; 85 V_{DC} AT + 125 °C | | | | | | | | | | |
| 6.8 | C | 136D685X0125C2 | 5.86 | 300 | 3 | 12 | - 14 | + 10 | + 12 | 700 |
| 27 | F | 136D276X0125F2 | 1.77 | 90 | 5 | 24 | - 18 | + 12 | + 15 | 1200 |
| 47 | T | 136D476X0125T2 | 1.12 | 50 | 10 | 40 | - 26 | + 14 | + 16 | 1500 |
| 68 | K | 136D686X0125K2 | 1.10 | 32 | 11 | 44 | - 28 | + 15 | + 16 | 1850 |
| 82 | K | 136D826X0125K2 | 1.41 | 32 | 12 | 48 | - 30 | + 15 | + 17 | 1900 |

Note

⁽¹⁾ 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 "3". For RoHS compliant add "E3".



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