

Type 3186 85 °C Aluminum Electrolytic, Screw Terminal

Best Value 85 °C High Capacitance Screw Terminal Type



While Type 3186's standard encasement is by compression with the capacitor element captured on an aluminum peg in the can bottom and a phenolic peg in the top, rilled construction is available. With rilled construction the element is secured by rills, spoon shaped dimples in the side of the can. Rilled construction offers the industry's highest vibration and shock withstanding and excellent heat transfer. Besides increasing ripple current handling, the rilled construction extends the great value of the Type 3186 into military and transportation applications that require rugged mechanical capability.

Highlights

- Rilled cans withstand high shock and vibration
- High ripple current capability
- High capacitance per can

Specifications

| Temperature Range | -40 °C to +85 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|---|--------|--------|---------|---------|-------|------|------|------|------|------|--|-------|--------|--------|---------|---------|-------------------|------|------|------|------|------|--------------------|------|------|------|------|------|
| Rated Voltage Range | 16 Vdc to 500 Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 220 uF to 1.0 F | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | -10% +75% ≤ 160 Vdc -10% +50% ≥ 200 Vdc | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | ≤ 6√CV μA (6 mA max.) at 5 minutes | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ripple Current Multipliers | <p>Ambient Temperature</p> <table border="1"> <thead> <tr> <th>45 °C</th> <th>55 °C</th> <th>65 °C</th> <th>75 °C</th> <th>85 °C</th> </tr> </thead> <tbody> <tr> <td>2.24</td> <td>2.00</td> <td>1.73</td> <td>1.41</td> <td>1.00</td> </tr> </tbody> </table> <p>Frequency</p> <table border="1"> <thead> <tr> <th></th> <th>60 Hz</th> <th>120 Hz</th> <th>300 Hz</th> <th>1000 Hz</th> <th>≥10 kHz</th> </tr> </thead> <tbody> <tr> <td>16 – 100 V</td> <td>0.90</td> <td>1.00</td> <td>1.15</td> <td>1.25</td> <td>1.30</td> </tr> <tr> <td>200 – 500 V</td> <td>0.90</td> <td>1.00</td> <td>1.25</td> <td>1.40</td> <td>1.50</td> </tr> </tbody> </table> | 45 °C | 55 °C | 65 °C | 75 °C | 85 °C | 2.24 | 2.00 | 1.73 | 1.41 | 1.00 | | 60 Hz | 120 Hz | 300 Hz | 1000 Hz | ≥10 kHz | 16 – 100 V | 0.90 | 1.00 | 1.15 | 1.25 | 1.30 | 200 – 500 V | 0.90 | 1.00 | 1.25 | 1.40 | 1.50 |
| 45 °C | 55 °C | 65 °C | 75 °C | 85 °C | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.24 | 2.00 | 1.73 | 1.41 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 60 Hz | 120 Hz | 300 Hz | 1000 Hz | ≥10 kHz | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 – 100 V | 0.90 | 1.00 | 1.15 | 1.25 | 1.30 | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 – 500 V | 0.90 | 1.00 | 1.25 | 1.40 | 1.50 | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics | Impedance ratio: $Z_{-20^{\circ}\text{C}}/Z_{+25^{\circ}\text{C}}$ ≤ 8 (16–50 Vdc) ≤ 4 (63–100 Vdc) ≤ 3 (150–500 Vdc) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance Life Test | 2,000 h @ full load at 85 °C ΔCapacitance ±10% ESR 200% of limit DCL 100% of limit | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life Test | 500 h @ 85 °C ΔCapacitance ±10% ESR 175% of limit DCL 100% of limit | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vibration | 10 to 55 Hz, 0.06" & 10 g max for compression, 15 g max for rilled, 1.5 h each of 2 axes | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RoHS Compliant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Part Numbering System

| | | | | | | | |
|---------------------------------|------------------------------------|--|---|--|---|--|--|
| 3186 Type | GH Case Code | 562 Capacitance 562=5600 µF 223=22000 µF 821=820 µF | T Tolerance M= ±20% S= -10 +30% T= -10 +50% U= -10 +75% | 400 Voltage 016=16 Vdc 450=450 Vdc | M Terminal A=high post B=low post D=high current low post K=high current high post M=M5 high post J=M6 low post | P Insulation P=0.008" PVC N=none with mounting clamp/bracket R=0.008" PVC X=none | A1 Construction* A1=compression R1=rilled S1=stud & compression** T1=stud & rilled** |
|---------------------------------|------------------------------------|--|---|--|---|--|--|

Outline Drawing

* Construction code is also a sequence number, e.g., A1, A2,---,A9, B1,B2,---, for customer specifications. Sequence number 1 in A1, R1, S1 and T1 denotes the standard catalog capacitor with no special requirements.



Stud Dimensions

| Case | Stud | P ± 0.039" |
|-------|--------|---------------|
| Diam. | Thread | (±1.0 mm) |
| 1.375 | M8 | 0.470" (12.0) |
| 1.750 | M8 | 0.470" (12.0) |
| 2.000 | M12 | 0.630" (16.0) |
| 2.500 | M12 | 0.630" (16.0) |
| 3.000 | M12 | 0.630" (16.0) |

Can Dimensions Insulation Adders

| | Diameter (D) | | Length (L) | | Standing Height (H) | |
|------------|--------------|------|------------|------|---------------------|------|
| | (in) | (mm) | (in) | (mm) | (in) | (mm) |
| 0.008" PVC | 0.02 | 0.51 | 0.032 | 0.81 | 0.024 | 0.61 |

Terminal Dimensions

| Terminal Style | For Case Diameters | Code | Post Diameter | | H max | | Thread | min Full Thread | | Torque | |
|--------------------|--------------------|------|---------------|------|-------|-----|--------|-----------------|------|--------|------|
| | | | in | mm | in | mm | | in | mm | in-lb | N-m |
| Low Post | 1 3/8 to 3 | B | 0.314 | 8.0 | 0.094 | 2.4 | 10-32 | 0.218 | 5.5 | 25 | 2.82 |
| High Post | 1 3/8 to 3 | A | 0.314 | 8.0 | 0.281 | 7.1 | 10-32 | 0.375 | 9.5 | 25 | 2.82 |
| High Current, Low | 2 1/2 & 3 | D | 0.684 | 17.4 | 0.125 | 3.2 | 1/4-28 | 0.344 | 8.7 | 60 | 6.78 |
| High Current, High | 2 1/2 & 3 | K | 0.684 | 17.4 | 0.281 | 7.1 | 1/4-28 | 0.469 | 11.9 | 60 | 6.78 |
| M5 Post, Small | 1 3/8 to 2 | M | 0.314 | 8.0 | 0.281 | 7.1 | M5 | 0.375 | 9.5 | 25 | 2.82 |
| M6 Low Post | 3 | J | 0.684 | 17.4 | 0.125 | 3.2 | M6 | 0.344 | 8.7 | 60 | 6.78 |

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Case Dimensions, Uninsulated Bare Can

| Case Code | Diam. (D) | | Length (L) | | Terminal Space(P) | | Vent Plug (A) | | Typical Weight | | Optional Bracket Part No. |
|-----------|-----------|------|------------|-------|-------------------|------|---------------|------|----------------|------|---------------------------|
| | ±0.031 | ±0.8 | ±0.062 | ±1.6 | ±0.014 | ±0.4 | (in) | (mm) | (oz) | (g) | |
| | (in) | (mm) | (in) | (mm) | (in) | (mm) | | | | | |
| BA | 1.375 | 34.9 | 2.125 | 54.0 | 0.5 | 12.7 | 0.39 | 8.0 | 2.5 | 72 | 115058-06 |
| BB | 1.375 | 34.9 | 2.625 | 66.7 | 0.5 | 12.7 | 0.39 | 8.0 | 3.2 | 90 | 115058-06 |
| BC | 1.375 | 34.9 | 3.125 | 79.4 | 0.5 | 12.7 | 0.39 | 8.0 | 3.7 | 105 | 115058-06 |
| BD | 1.375 | 34.9 | 3.625 | 92.1 | 0.5 | 12.7 | 0.39 | 8.0 | 4.2 | 120 | 115058-06 |
| BE | 1.375 | 34.9 | 4.125 | 104.8 | 0.5 | 12.7 | 0.39 | 8.0 | 4.7 | 135 | 115058-06 |
| BF | 1.375 | 34.9 | 4.625 | 117.5 | 0.5 | 12.7 | 0.39 | 8.0 | 6.0 | 170 | 115058-06 |
| BG | 1.375 | 34.9 | 5.125 | 130.2 | 0.5 | 12.7 | 0.39 | 8.0 | 7.7 | 220 | 115058-06 |
| BH | 1.375 | 34.9 | 5.625 | 142.9 | 0.5 | 12.7 | 0.39 | 8.0 | 9.5 | 270 | 115058-06 |
| DA | 1.750 | 44.5 | 2.125 | 54.0 | 0.75 | 19.1 | 0.453 | 11.5 | 5.6 | 160 | 115058-15 |
| DB | 1.750 | 44.5 | 2.625 | 66.7 | 0.75 | 19.1 | 0.453 | 11.5 | 6.1 | 175 | 115058-15 |
| DC | 1.750 | 44.5 | 3.125 | 79.4 | 0.75 | 19.1 | 0.453 | 11.5 | 6.3 | 180 | 115058-15 |
| DD | 1.750 | 44.5 | 3.625 | 92.1 | 0.75 | 19.1 | 0.453 | 11.5 | 7.2 | 205 | 115058-15 |
| DE | 1.750 | 44.5 | 4.125 | 104.8 | 0.75 | 19.1 | 0.453 | 11.5 | 7.7 | 220 | 115058-15 |
| DF | 1.750 | 44.5 | 4.625 | 117.5 | 0.75 | 19.1 | 0.453 | 11.5 | 8.2 | 235 | 115058-15 |
| DG | 1.750 | 44.5 | 5.125 | 130.2 | 0.75 | 19.1 | 0.453 | 11.5 | 8.8 | 250 | 115058-15 |
| DH | 1.750 | 44.5 | 5.625 | 142.9 | 0.75 | 19.1 | 0.453 | 11.5 | 9.5 | 270 | 115058-15 |
| EA | 2.000 | 50.8 | 2.125 | 54.0 | 0.875 | 22.2 | 0.5 | 12.7 | 6.0 | 170 | 115058-09 |
| EB | 2.000 | 50.8 | 2.625 | 66.7 | 0.875 | 22.2 | 0.5 | 12.7 | 6.3 | 180 | 115058-09 |
| EC | 2.000 | 50.8 | 3.125 | 79.4 | 0.875 | 22.2 | 0.5 | 12.7 | 6.7 | 190 | 115058-09 |
| ED | 2.000 | 50.8 | 3.625 | 92.1 | 0.875 | 22.2 | 0.5 | 12.7 | 7.7 | 220 | 115058-09 |
| EE | 2.000 | 50.8 | 4.125 | 104.8 | 0.875 | 22.2 | 0.5 | 12.7 | 8.9 | 255 | 115058-09 |
| EF | 2.000 | 50.8 | 4.625 | 117.5 | 0.875 | 22.2 | 0.5 | 12.7 | 10.2 | 290 | 115058-09 |
| EG | 2.000 | 50.8 | 5.125 | 130.2 | 0.875 | 22.2 | 0.5 | 12.7 | 11.2 | 320 | 115058-09 |
| EH | 2.000 | 50.8 | 5.625 | 142.9 | 0.875 | 22.2 | 0.5 | 12.7 | 12.3 | 350 | 115058-09 |
| FB | 2.500 | 63.5 | 2.625 | 66.7 | 1.125 | 28.6 | 0.625 | 15.9 | 10.5 | 300 | 115058-14 |
| FC | 2.500 | 63.5 | 3.125 | 79.4 | 1.125 | 28.6 | 0.625 | 15.9 | 13.0 | 370 | 115058-14 |
| FD | 2.500 | 63.5 | 3.625 | 92.1 | 1.125 | 28.6 | 0.625 | 15.9 | 14.0 | 400 | 115058-14 |
| FE | 2.500 | 63.5 | 4.125 | 104.8 | 1.125 | 28.6 | 0.625 | 15.9 | 15.6 | 445 | 115058-14 |
| FF | 2.500 | 63.5 | 4.625 | 117.5 | 1.125 | 28.6 | 0.625 | 15.9 | 21.0 | 600 | 115058-14 |
| FG | 2.500 | 63.5 | 5.125 | 130.2 | 1.125 | 28.6 | 0.625 | 15.9 | 22.8 | 650 | 115058-14 |
| FH | 2.500 | 63.5 | 5.625 | 142.9 | 1.125 | 28.6 | 0.625 | 15.9 | 21.0 | 600 | 115058-14 |
| GC | 3.000 | 76.2 | 3.125 | 79.4 | 1.25 | 31.8 | 0.75 | 19.0 | 18.2 | 520 | 115058-11 |
| GD | 3.000 | 76.2 | 3.625 | 92.1 | 1.25 | 31.8 | 0.75 | 19.0 | 20.0 | 570 | 115058-11 |
| GE | 3.000 | 76.2 | 4.125 | 104.8 | 1.25 | 31.8 | 0.75 | 19.0 | 21.0 | 600 | 115058-11 |
| GF | 3.000 | 76.2 | 4.625 | 117.5 | 1.25 | 31.8 | 0.75 | 19.0 | 25.2 | 720 | 115058-11 |
| GG | 3.000 | 76.2 | 5.125 | 130.2 | 1.25 | 31.8 | 0.75 | 19.0 | 29.8 | 850 | 115058-11 |
| GH | 3.000 | 76.2 | 5.625 | 142.9 | 1.25 | 31.8 | 0.75 | 19.0 | 34.0 | 970 | 115058-11 |
| GJ | 3.000 | 76.2 | 5.875 | 149.2 | 1.25 | 31.8 | 0.75 | 19.0 | 36.8 | 1050 | 115058-11 |
| GN | 3.000 | 76.2 | 8.625 | 219.1 | 1.25 | 31.8 | 0.75 | 19.0 | 51.1 | 1460 | 115058-11 |

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Ratings

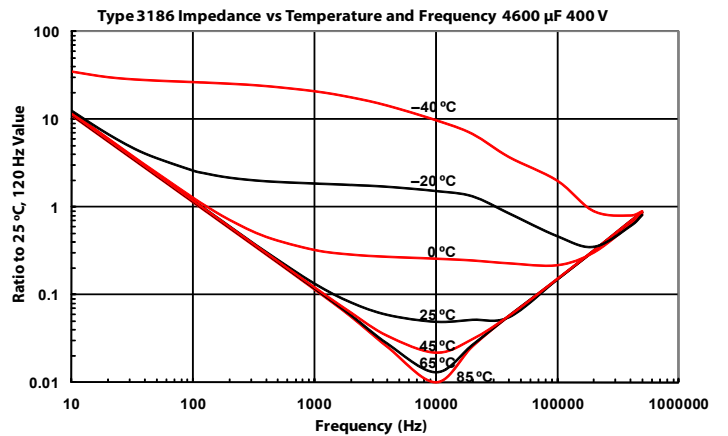
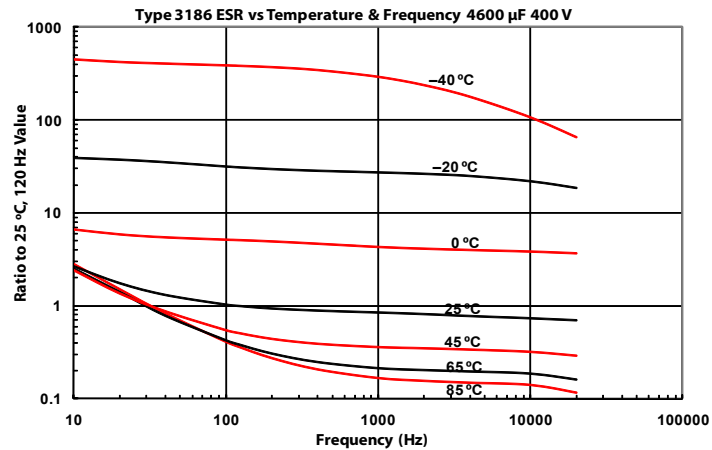
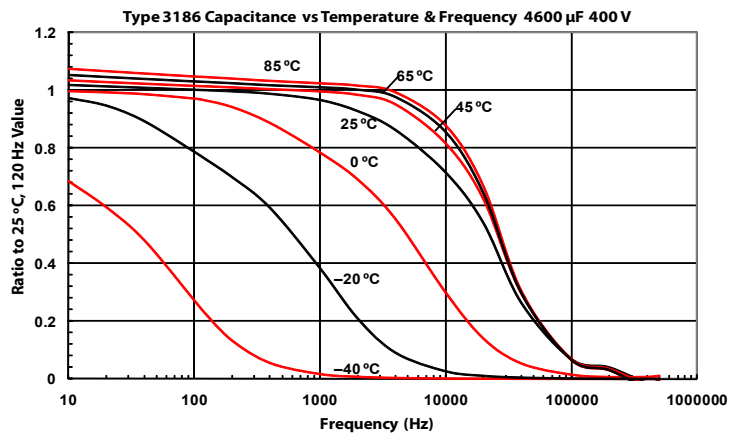
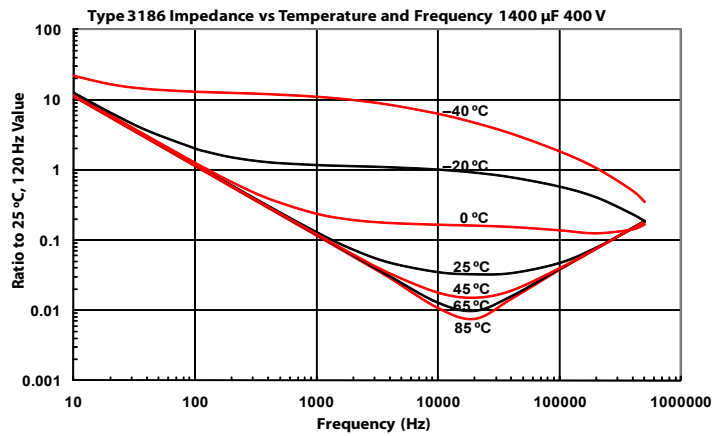
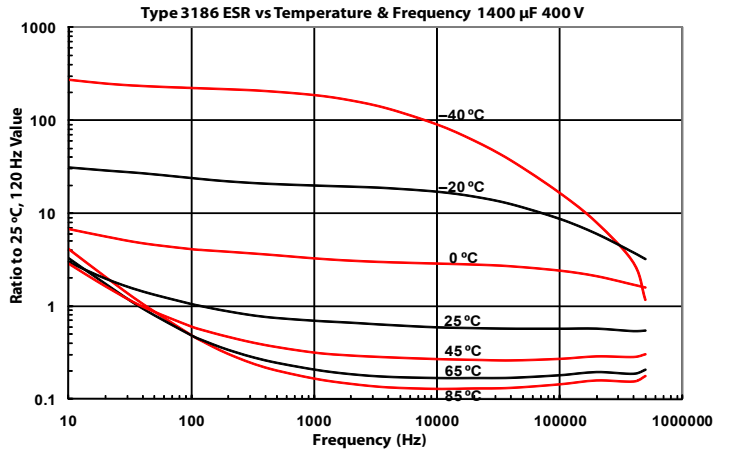
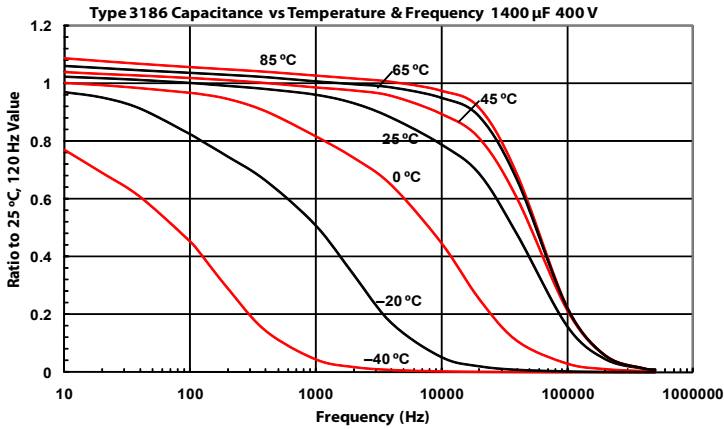
Additional Low Voltages and Smaller Sizes available at <http://www.cde.com/catalogs/3186.pdf>

| Capacitance (μ F) | Catalog Part Number | ESR max | Ripple max | Case Size |
|------------------------------------|------------------------|--------------------------------|----------------------|--------------|
| | | 120 Hz, 25 °C (m Ω) | 120 Hz, 85 °C (A) | DxL (in) |
| 200 Volts (250 Volts Surge) | | | | |
| 10000 | 3186FE103T200APA1 | 22.0 | 11.0 | 2.50 X 4.125 |
| 12000 | 3186FF123T200APA1 | 17.0 | 12.0 | 2.50 X 4.625 |
| 12000 | 3186GE123T200APA1 | 26.0 | 11.0 | 3.00 X 4.125 |
| 15000 | 3186FH153T200APA1 | 16.0 | 14.0 | 2.50 X 5.625 |
| 15000 | 3186GF153T200APA1 | 23.0 | 12.0 | 3.00 X 4.625 |
| 22000 | 3186GH223T200APA1 | 17.0 | 15.0 | 3.00 X 5.625 |
| 33000 | 3186GN333T200APA1 | 15.0 | 17.0 | 3.00 X 8.625 |
| 250 Volts (300 Volts Surge) | | | | |
| 6800 | 3186FE682T250APA1 | 24.0 | 10.0 | 2.50 X 4.125 |
| 8200 | 3186FF822T250APA1 | 19.0 | 11.0 | 2.50 X 4.625 |
| 10000 | 3186FH103T250APA1 | 17.0 | 14.0 | 2.50 X 5.625 |
| 10000 | 3186GE103T250APA1 | 25.0 | 11.0 | 3.00 X 4.125 |
| 12000 | 3186GF123T250APA1 | 22.0 | 12.0 | 3.00 X 4.625 |
| 15000 | 3186GH153T250APA1 | 19.0 | 14.0 | 3.00 X 5.625 |
| 22000 | 3186GN223T250APA1 | 16.0 | 17.0 | 3.00 X 8.625 |
| 350 Volts (400 Volts Surge) | | | | |
| 2700 | 3186FE272T350APA1 | 54.0 | 6.6 | 2.50 X 4.125 |
| 3900 | 3186FF392T350APA1 | 37.0 | 8.7 | 2.50 X 4.625 |
| 4700 | 3186FH472T350APA1 | 33.0 | 9.6 | 2.50 X 5.625 |
| 4700 | 3186GE472T350APA1 | 33.0 | 9.6 | 3.00 X 4.125 |
| 5600 | 3186GF562T350APA1 | 33.0 | 10.0 | 3.00 X 4.625 |
| 6800 | 3186GH682T350APA1 | 28.0 | 11.0 | 3.00 X 5.625 |
| 12000 | 3186GN123T350APA1 | 18.0 | 18.0 | 3.00 X 8.625 |
| 400 Volts (450 Volts Surge) | | | | |
| 2700 | 3186FE272T400APA1 | 48.0 | 7.3 | 2.50 X 4.125 |
| 3300 | 3186FF332T400APA1 | 39.0 | 8.5 | 2.50 X 4.625 |
| 3900 | 3186FH392T400APA1 | 37.0 | 9.4 | 2.50 X 5.625 |
| 3900 | 3186GE392T400APA1 | 37.0 | 9.4 | 3.00 X 4.125 |
| 4700 | 3186GF472T400APA1 | 34.0 | 10.0 | 3.00 X 4.625 |
| 5600 | 3186GH562T400APA1 | 28.0 | 11.0 | 3.00 X 5.625 |
| 10000 | 3186GN103T400APA1 | 18.0 | 18.0 | 3.00 X 8.625 |
| 450 Volts (525 Volts Surge) | | | | |
| 2200 | 3186FE222T450APA1 | 53.0 | 6.7 | 2.50 X 4.125 |
| 2700 | 3186FF272T450APA1 | 45.0 | 7.7 | 2.50 X 4.625 |
| 3300 | 3186FH332T450APA1 | 35.0 | 9.5 | 2.50 X 5.625 |
| 3300 | 3186GE332T450APA1 | 35.0 | 9.5 | 3.00 X 4.125 |
| 3900 | 3186GF392T450APA1 | 36.0 | 9.8 | 3.00 X 4.625 |
| 4700 | 3186GH472T450APA1 | 31.0 | 11.0 | 3.00 X 5.625 |
| 8200 | 3186GN822T450APA1 | 23.0 | 14.0 | 3.00 X 8.625 |
| 500 Volts (550 Volts Surge) | | | | |
| 820 | 3186EE821T500APA1 | 132.0 | 3.4 | 2.00 X 4.125 |
| 1200 | 3186EG122T500APA1 | 90.0 | 4.6 | 2.00 X 5.125 |
| 2200 | 3186FG222T500APA1 | 59.0 | 6.6 | 2.50 X 5.125 |
| 3300 | 3186GH332T500APA1 | 43.0 | 8.6 | 3.00 X 5.625 |

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Typical Performance Curves



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