

Type 381LR 105 °C Highest Ripple, Snap-In Aluminum

Ultra-High Ripple Capabilities



Compared to standard 105 °C snap-ins like the Type 381L/LX Type 381LR can handle an extra 25% ripple current or more. This remarkable capability stems from advances in electrolyte that give extremely low ESR values. In high ripple current applications like motor drives you can save by using fewer capacitors.

Highlights

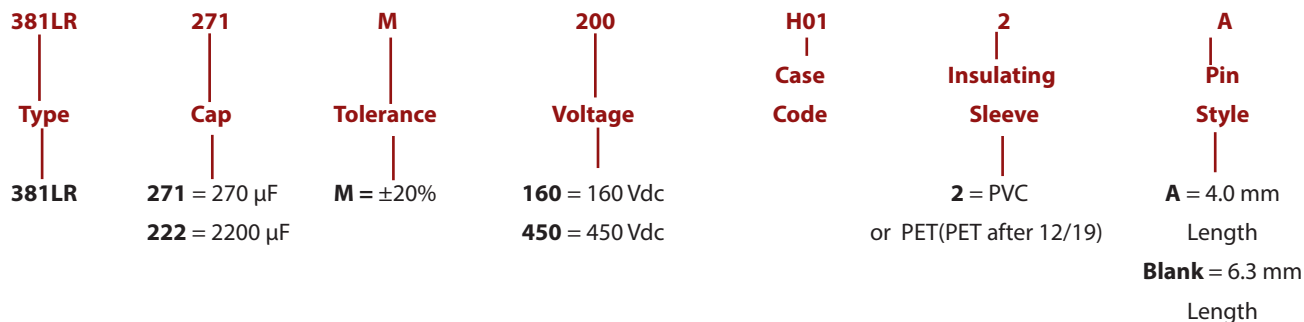
- The right choice for motor drive bus capacitors
- The right choice for UPS bus capacitors
- Compare to Type 381L
- Up to 2 times the ripple current

Specifications

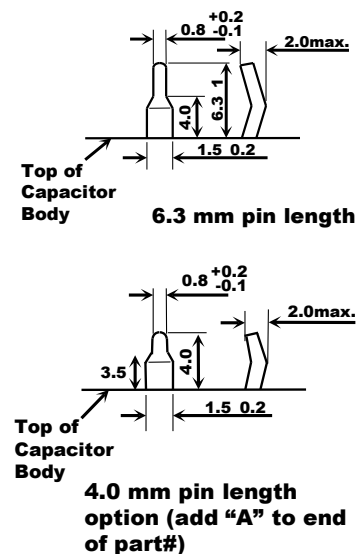
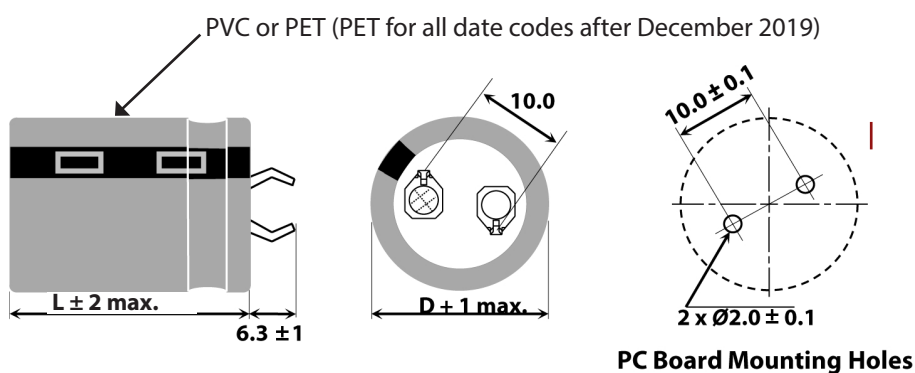
| Temperature Range | -40 °C to + 105 °C ≤ 315 Vdc -25 °C to + 105 °C ≥ 350 Vdc | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|--|--------|---------|--------|-------------|--------|------|------|------|------|------|-------|-------|--------|---------|-------|-------------|------|------|------|------|------|------|
| Rated Voltage Range | 200 Vdc to 450 Vdc | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 56 µF to 2,200 µF | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ± 20% | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | ≤ 3 \sqrt{CV} µA, 4 mA max, 5 minutes | | | | | | | | | | | | | | | | | | | | | | |
| Ripple Current Multipliers | <p>Ambient Temperature</p> <table border="1"> <thead> <tr> <th>45 °C</th> <th>60 °C</th> <th>70 °C</th> <th>85 °C</th> <th>105 °C</th> </tr> </thead> <tbody> <tr> <td>2.35</td> <td>2.20</td> <td>2.00</td> <td>1.70</td> <td>1.00</td> </tr> </tbody> </table> <p>Frequency</p> <table border="1"> <thead> <tr> <th>50 Hz</th> <th>60 Hz</th> <th>120 Hz</th> <th>500 kHz</th> <th>1 kHz</th> <th>10 kHz & Up</th> </tr> </thead> <tbody> <tr> <td>0.75</td> <td>0.80</td> <td>1.00</td> <td>1.20</td> <td>1.25</td> <td>1.40</td> </tr> </tbody> </table> | 45 °C | 60 °C | 70 °C | 85 °C | 105 °C | 2.35 | 2.20 | 2.00 | 1.70 | 1.00 | 50 Hz | 60 Hz | 120 Hz | 500 kHz | 1 kHz | 10 kHz & Up | 0.75 | 0.80 | 1.00 | 1.20 | 1.25 | 1.40 |
| 45 °C | 60 °C | 70 °C | 85 °C | 105 °C | | | | | | | | | | | | | | | | | | | |
| 2.35 | 2.20 | 2.00 | 1.70 | 1.00 | | | | | | | | | | | | | | | | | | | |
| 50 Hz | 60 Hz | 120 Hz | 500 kHz | 1 kHz | 10 kHz & Up | | | | | | | | | | | | | | | | | | |
| 0.75 | 0.80 | 1.00 | 1.20 | 1.25 | 1.40 | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics | Impedance ratio: $Z_{-20^{\circ}\text{C}}/Z_{+25^{\circ}\text{C}}$ ≤ 3 (200–450Vdc) | | | | | | | | | | | | | | | | | | | | | | |
| Endurance Life Test | 3000 h at full load at 105 °C Δ Capacitance ±20% ESR 200% of limit DCL 100% of limit | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life Test | 1000 h at 105 °C Δ Capacitance ±20% ESR 200% of limit DCL 100% of limit | | | | | | | | | | | | | | | | | | | | | | |
| Vibration | 10 to 55 Hz, 0.06" and 10 g max, 2 h each plane | | | | | | | | | | | | | | | | | | | | | | |
| RoHS Compliant | | | | | | | | | | | | | | | | | | | | | | | |

Type 381LR 105 °C Highest Ripple, Snap-In Aluminum

Ultra-High Ripple Capabilities Part Numbering System



Outline Drawing



Dimensions shown are in mm

Insulated Case Dimensions

| Case Code | DIAMETER D | | LENGTH L | | Typical Weight (grams) | Case Code | DIAMETER D | | LENGTH L | | Typical Weight (grams) |
|-----------|------------|--------|----------|--------|------------------------|-----------|------------|--------|----------|--------|------------------------|
| | mm | inches | mm | inches | | | mm | inches | mm | inches | |
| H01 | 22 | 0.87 | 25 | 0.98 | 16 | K01 | 30 | 1.18 | 25 | 0.98 | 30 |
| H02 | 22 | 0.87 | 30 | 1.18 | 19 | K02 | 30 | 1.18 | 30 | 1.18 | 35 |
| H03 | 22 | 0.87 | 35 | 1.38 | 22 | K03 | 30 | 1.18 | 35 | 1.38 | 40 |
| H04 | 22 | 0.87 | 40 | 1.57 | 24 | K04 | 30 | 1.18 | 40 | 1.57 | 44 |
| H45 | 22 | 0.87 | 45 | 1.77 | 28 | K45 | 30 | 1.18 | 45 | 1.77 | 49 |
| H05 | 22 | 0.87 | 50 | 1.97 | 31 | K05 | 30 | 1.18 | 50 | 1.97 | 53 |
| J01 | 25 | 0.98 | 25 | 0.98 | 20 | A01 | 35 | 1.38 | 25 | 0.98 | 42 |
| J02 | 25 | 0.98 | 30 | 1.18 | 24 | A02 | 35 | 1.38 | 30 | 1.18 | 48 |
| J03 | 25 | 0.98 | 35 | 1.38 | 27 | A03 | 35 | 1.38 | 35 | 1.38 | 54 |
| J04 | 25 | 0.98 | 40 | 1.57 | 31 | A04 | 35 | 1.38 | 40 | 1.57 | 60 |
| J45 | 25 | 0.98 | 45 | 1.77 | 35 | A45 | 35 | 1.38 | 45 | 1.77 | 67 |
| J05 | 25 | 0.98 | 50 | 1.97 | 38 | A05 | 35 | 1.38 | 50 | 1.97 | 74 |
| | | | | | | A55 | 35 | 1.38 | 55 | 2.17 | 80 |

Type 381LR 105 °C Highest Ripple, Snap-In Aluminum

Ultra-High Ripple Capabilities

Ratings

| Cap. (uF) | Catalog Part Number | Max. ESR | | Ripple Amps | | Nominal |
|--------------------------------|------------------------|------------------|------------------|---------------|---------------|---------------|
| | | @ +25°C | | @ +105°C | | Size |
| | | 120 Hz (ohms) | 20 kHz (ohms) | 120 Hz (A) | 20 kHz (A) | D x L (mm) |
| 200 Vdc (250 Vdc Surge) | | | | | | |
| 330 | 381LR331M200H012 | 0.603 | 0.271 | 1.25 | 1.79 | 22 x 25 |
| 390 | 381LR391M200H022 | 0.510 | 0.229 | 1.35 | 1.93 | 22 x 30 |
| 470 | 381LR471M200H032 | 0.423 | 0.191 | 1.50 | 2.14 | 22 x 35 |
| 470 | 381LR471M200J022 | 0.317 | 0.143 | 1.85 | 2.64 | 25 x 30 |
| 560 | 381LR561M200H042 | 0.355 | 0.180 | 1.67 | 2.38 | 22 x 40 |
| 680 | 381LR681M200J032 | 0.293 | 0.132 | 1.72 | 2.45 | 25 x 35 |
| 680 | 381LR681M200K022 | 0.219 | 0.099 | 2.42 | 3.45 | 30 x 30 |
| 820 | 381LR821M200J042 | 0.243 | 0.109 | 0.20 | 2.92 | 25 x 40 |
| 820 | 381LR821M200K022 | 0.182 | 0.082 | 2.63 | 3.76 | 30 x 30 |
| 1000 | 381LR102M200J452 | 0.149 | 0.067 | 2.84 | 4.06 | 25 x 45 |
| 1000 | 381LR102M200J052 | 0.199 | 0.090 | 2.42 | 3.46 | 25 x 50 |
| 1000 | 381LR102M200K032 | 0.149 | 0.067 | 2.84 | 4.06 | 30 x 35 |
| 1200 | 381LR122M200J052 | 0.166 | 0.083 | 2.63 | 3.76 | 25 x 50 |
| 1200 | 381LR122M200K042 | 0.124 | 0.062 | 3.13 | 4.47 | 30 x 40 |
| 1200 | 381LR122M200A032 | 0.124 | 0.062 | 3.13 | 4.47 | 35 x 35 |
| 1500 | 381LR152M200K052 | 0.099 | 0.050 | 3.56 | 5.06 | 30 x 50 |
| 1500 | 381LR152M200A042 | 0.099 | 0.050 | 3.56 | 5.06 | 35 x 40 |
| 1800 | 381LR182M200A452 | 0.083 | 0.041 | 3.84 | 5.48 | 35 x 45 |
| 2200 | 381LR222M200A052 | 0.066 | 0.040 | 4.12 | 5.89 | 35 x 50 |
| 250 Vdc (300 Vdc Surge) | | | | | | |
| 220 | 381LR221M250H012 | 0.905 | 0.407 | 1.00 | 1.43 | 22 x 25 |
| 270 | 381LR271M250H022 | 0.737 | 0.332 | 1.18 | 1.69 | 22 x 30 |
| 330 | 381LR331M250H022 | 0.603 | 0.271 | 1.30 | 1.65 | 22 x 30 |
| 390 | 381LR391M250J032 | 0.510 | 0.229 | 1.49 | 2.12 | 25 x 35 |
| 470 | 381LR471M250J032 | 0.423 | 0.191 | 1.65 | 2.35 | 25 x 35 |
| 470 | 381LR471M250K022 | 0.317 | 0.143 | 1.85 | 2.64 | 30 x 30 |
| 560 | 381LR561M250J032 | 0.355 | 0.160 | 1.80 | 2.57 | 25 x 35 |
| 560 | 381LR561M250K022 | 0.266 | 0.120 | 2.14 | 3.05 | 30 x 30 |
| 680 | 381LR681M250H052 | 0.219 | 0.099 | 2.42 | 3.45 | 22 x 50 |
| 680 | 381LR681M250J452 | 0.293 | 0.132 | 2.00 | 2.85 | 25 x 45 |
| 680 | 381LR681M250K032 | 0.219 | 0.099 | 2.42 | 3.45 | 30 x 35 |
| 820 | 381LR821M250K042 | 0.182 | 0.082 | 2.63 | 3.76 | 30 x 40 |
| 820 | 381LR821M250A032 | 0.182 | 0.082 | 2.63 | 3.76 | 35 x 35 |
| 1000 | 381LR102M250K052 | 0.149 | 0.067 | 2.84 | 4.06 | 30 x 50 |
| 1000 | 381LR102M250A042 | 0.149 | 0.067 | 2.84 | 4.06 | 35 x 40 |
| 1200 | 381LR122M250A452 | 0.124 | 0.062 | 3.13 | 4.47 | 35 x 45 |
| 1500 | 381LR152M250A052 | 0.099 | 0.050 | 3.56 | 5.06 | 35 x 50 |
| 400 Vdc (450 Vdc Surge) | | | | | | |
| 82 | 381LR820M400H012 | 2.440 | 0.853 | 0.55 | 0.80 | 22 x 25 |
| 100 | 381LR101M400H012 | 1.990 | 0.700 | 0.50 | 0.70 | 22 x 25 |
| 100 | 381LR101M400H022 * | 1.326 | 0.700 | 0.50 | 0.70 | 22 x 30 |
| 100 | 381LR101M400J012 | 1.326 | 0.597 | 0.91 | 1.30 | 25 x 25 |

*Denotes Discontinued Part

Type 381LR 105 °C Highest Ripple, Snap-In Aluminum

Ultra-High Ripple Capabilities

| Cap. (uF) | Catalog Part Number | Max. ESR @ +25°C | | Ripple Amps @ +105°C | | Nominal Size D x L (mm) |
|--------------------------------|------------------------|---------------------|--------|-------------------------|--------|----------------------------------|
| | | 120 Hz | 20 kHz | 120 Hz | 20 kHz | |
| | | (ohms) | (ohms) | (A) | (A) | |
| 400 Vdc (450 Vdc Surge) | | | | | | |
| 120 | 381LR121M400H022 | 1.659 | 0.746 | 0.70 | 0.98 | 22 x 30 |
| 150 | 381LR151M400H032 | 1.327 | 0.464 | 0.80 | 1.10 | 22 x 35 |
| 180 | 381LR181M400J032 | 1.106 | 0.500 | 0.95 | 1.33 | 25 x 35 |
| 180 | 381LR181M400K022 | 0.737 | 0.322 | 1.12 | 1.60 | 30 x 30 |
| 220 | 381LR221M400H452 | 0.905 | 0.407 | 1.00 | 1.40 | 22 x 45 |
| 220 | 381LR221M400J042 | 0.603 | 0.271 | 1.42 | 2.03 | 25 x 40 |
| 220 | 381LR221M400K022 | 0.603 | 0.271 | 1.42 | 2.03 | 30 x 30 |
| 220 | 381LR221M400A012 | 0.603 | 0.271 | 1.42 | 2.03 | 35 x 25 |
| 270 | 381LR271M400H452 | 0.603 | 0.271 | 1.42 | 2.03 | 22 x 45 |
| 270 | 381LR271M400K022 | 0.737 | 0.332 | 1.22 | 1.71 | 30 x 30 |
| 270 | 381LR271M400K032 | 0.491 | 0.221 | 1.56 | 2.23 | 30 x 35 |
| 330 | 381LR331M400K032 | 0.603 | 0.272 | 1.39 | 1.95 | 30 x 35 |
| 330 | 381LR331M400K042 | 0.402 | 0.181 | 1.71 | 2.44 | 30 x 40 |
| 330 | 381LR331M400A022 | 0.402 | 0.181 | 1.71 | 2.44 | 35 x 30 |
| 390 | 381LR391M400J452 | 0.340 | 0.153 | 1.85 | 2.64 | 25 x 45 |
| 390 | 381LR391M400K452 | 0.340 | 0.153 | 1.85 | 2.64 | 30 x 45 |
| 390 | 381LR391M400A032 | 0.340 | 0.153 | 1.85 | 2.64 | 35 x 35 |
| 470 | 381LR471M400A042 | 0.282 | 0.127 | 2.01 | 2.87 | 35 x 40 |
| 560 | 381LR561M400A452 | 0.237 | 0.107 | 2.35 | 3.36 | 35 x 45 |
| 420 Vdc (470 Vdc Surge) | | | | | | |
| 68 | 381LR680M420H012 | 2.930 | 1.320 | 0.56 | 0.80 | 22 x 25 |
| 82 | 381LR820M420H012 | 2.430 | 1.090 | 0.64 | 0.91 | 22 x 25 |
| 100 | 381LR101M420H012 | 1.990 | 0.900 | 0.70 | 1.00 | 22 x 25 |
| 120 | 381LR121M420H022 | 1.660 | 0.750 | 0.70 | 1.00 | 22 x 30 |
| 180 | 381LR181M420K022 | 0.737 | 0.332 | 1.12 | 1.60 | 30 x 30 |
| 220 | 381LR221M420H452 | 0.900 | 0.410 | 1.05 | 1.51 | 22 x 45 |
| 220 | 381LR221M420K032 | 0.603 | 0.271 | 1.42 | 2.03 | 30 x 35 |
| 270 | 381LR271M420J452 | 0.740 | 0.330 | 1.20 | 1.71 | 25 x 45 |
| 270 | 381LR271M420K042 | 0.491 | 0.221 | 1.68 | 2.40 | 30 x 40 |
| 330 | 381LR331M420A032 | 0.402 | 0.181 | 1.78 | 2.54 | 35 x 35 |
| 330 | 381LR331M420K452 | 0.402 | 0.181 | 1.78 | 2.54 | 30 x 45 |
| 390 | 381LR391M420K052 | 0.340 | 0.153 | 1.91 | 2.73 | 30 x 50 |
| 390 | 381LR391M420A042 | 0.340 | 0.153 | 1.91 | 2.73 | 35 x 40 |
| 470 | 381LR471M420A452 | 0.282 | 0.127 | 2.23 | 3.18 | 35 x 45 |
| 450 Vdc (500 Vdc Surge) | | | | | | |
| 56 | 381LR560M450H012 | 3.550 | 1.600 | 0.50 | 0.71 | 22 x 25 |
| 68 | 381LR680M450H012 | 2.930 | 1.320 | 0.53 | 0.75 | 22 x 25 |
| 82 | 381LR820M450H012 | 1.617 | 0.728 | 0.80 | 1.01 | 22 x 25 |
| 82 | 381LR820M450H022 | 2.430 | 1.090 | 0.64 | 0.91 | 22 x 30 |
| 100 | 381LR101M450H022 | 1.990 | 0.900 | 0.70 | 1.00 | 22 x 30 |
| 100 | 381LR101M450J022 | 1.326 | 0.597 | 0.91 | 1.30 | 25 x 30 |
| 120 | 381LR121M450H032 | 1.660 | 0.750 | 0.80 | 1.15 | 22 x 35 |

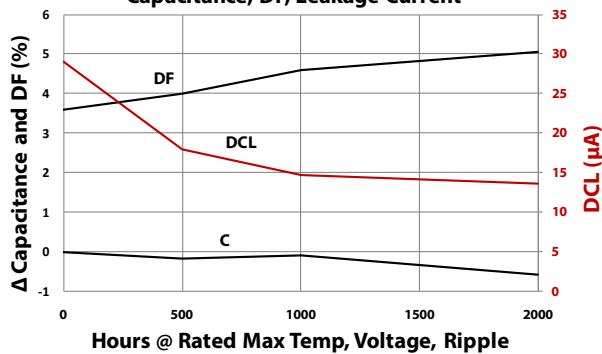
Type 381LR 105 °C Highest Ripple, Snap-In Aluminum

Ultra-High Ripple Capabilities

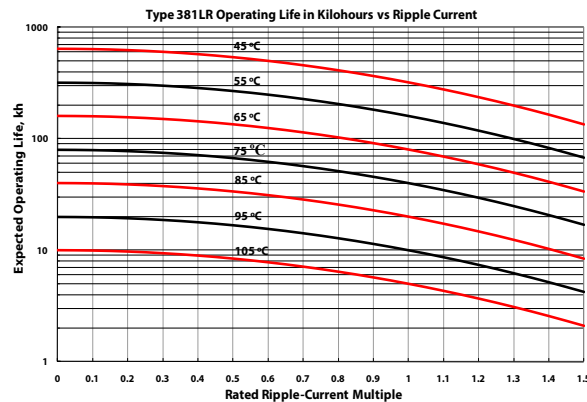
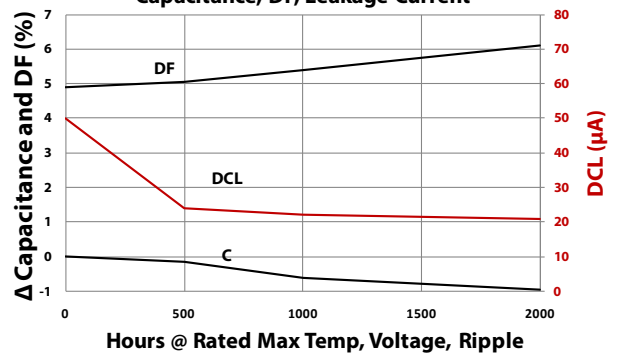
| Cap. (uF) | Catalog Part Number | Max. ESR @ +25°C | | Ripple Amps @ +105°C | | Nominal Size D x L (mm) |
|--------------------------------|------------------------|---------------------|--------|-------------------------|--------|----------------------------------|
| | | 120 Hz | 20 kHz | 120 Hz | 20 kHz | |
| | | (ohms) | (ohms) | (A) | (A) | |
| 450 Vdc (500 Vdc Surge) | | | | | | |
| 150 | 381LR151M450H032 | 1.327 | 0.594 | 0.88 | 1.26 | 22 x 35 |
| 150 | 381LR151M450J022 | 1.330 | 0.464 | 0.830 | 1.04 | 25 x 30 |
| 150 | 381LR151M450J042 | 0.884 | 0.396 | 1.07 | 1.53 | 25 x 40 |
| 150 | 381LR151M450K022 | 0.884 | 0.396 | 1.07 | 1.53 | 30 x 30 |
| 180 | 381LR181M450H042 | 1.110 | 0.500 | 1.00 | 1.43 | 22 x 40 |
| 180 | 381LR181M450K022 | 0.737 | 0.332 | 1.12 | 1.60 | 30 x 30 |
| 220 | 381LR221M450J042 | 0.603 | 0.271 | 1.42 | 2.03 | 25 x 40 |
| 220 | 381LR221M450K032 | 0.603 | 0.271 | 1.42 | 2.03 | 30 x 35 |
| 220 | 381LR221M450A022 | 0.603 | 0.271 | 1.42 | 2.03 | 35 x 30 |
| 270 | 381LR271M450K042 | 0.491 | 0.221 | 1.72 | 2.45 | 30 x 40 |
| 270 | 381LR271M450A032 | 0.491 | 0.221 | 1.72 | 2.45 | 35 x 35 |
| 330 | 381LR331M450K052 | 0.402 | 0.181 | 1.85 | 2.64 | 30 x 50 |
| 330 | 381LR331M450A042 | 0.402 | 0.181 | 1.85 | 2.64 | 35 x 40 |
| 390 | 381LR391M450A042 | 0.340 | 0.153 | 1.97 | 2.82 | 35 x 40 |
| 470 | 381LR471M450A052 | 0.282 | 0.127 | 2.47 | 3.53 | 35 x 50 |

Typical Performance Curves

Life Test 105 °C, Full Load, 220 µF, 400 Vdc
Capacitance, DF, Leakage Current



Life Test 105 °C, Full Load, 330 µF, 400 Vdc
Capacitance, DF, Leakage Current



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