

# 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<br>-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 √CV μA, 4 mA max, 5 minutes                                                                |       |        |         |        |             |
| Ripple Current Multipliers      | Ambient Temperature                                                                           |       |        |         |        |             |
|                                 | 45 °C                                                                                         | 60 °C | 70 °C  | 85 °C   | 105 °C |             |
|                                 | 2.35                                                                                          | 2.20  | 2.00   | 1.70    | 1.00   |             |
|                                 | Frequency                                                                                     |       |        |         |        |             |
|                                 | 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 <sub>-20°C</sub> /Z <sub>+25°C</sub><br>≤ 3 (200–450Vdc)                   |       |        |         |        |             |
| Endurance Life Test             | 3000 h at full load at 105 °C<br>Δ Capacitance ±20%<br>ESR 200% of limit<br>DCL 100% of limit |       |        |         |        |             |
| Shelf Life Test                 | 1000 h at 105 °C<br>Δ Capacitance ±20%<br>ESR 200% of limit<br>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

381LR

Type

381LR

271

Cap

271 = 270  $\mu$ F  
222 = 2200  $\mu$ F

M

Tolerance

M =  $\pm 20\%$

200

Voltage

160 = 160 Vdc  
450 = 450 Vdc

H01

Case  
Code

2

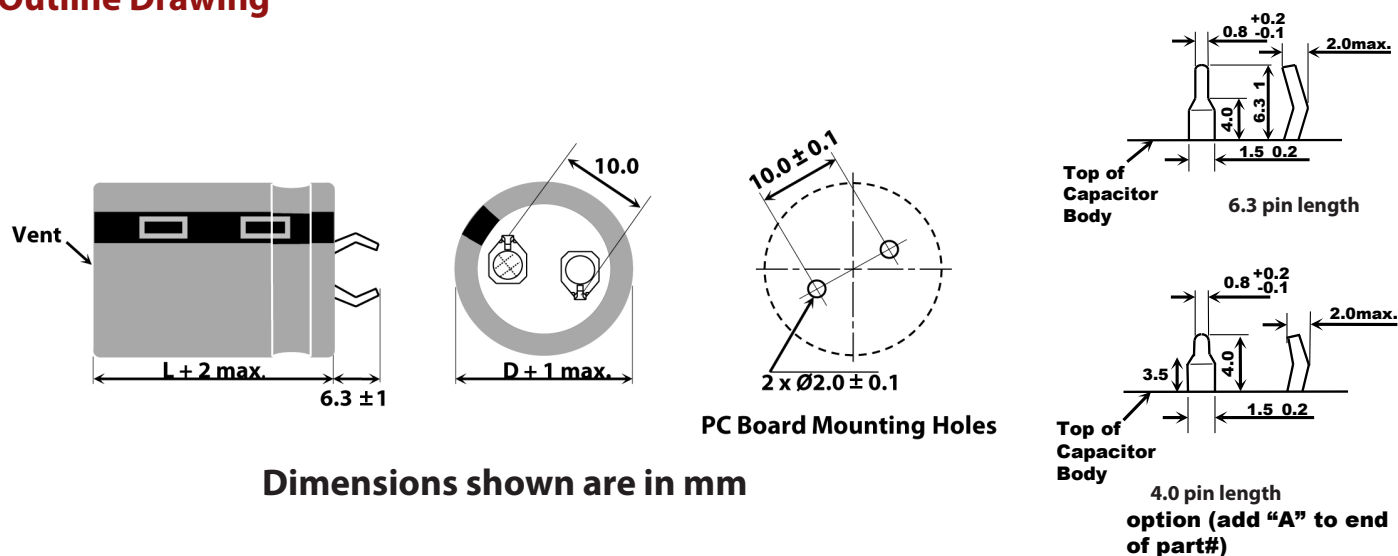
Insulating  
Sleeve

2 = PVC

+D

Blank = no end disk if <250 V  
D = end disk, any voltage

## Outline Drawing



Note that for 200 volts and under the insulating end disc is optional - If one is needed add a (+D) to the end of the part numbering system.

## 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

|                         |                  | ESR Max |        | Ripple Amps |        | Nominal |
|-------------------------|------------------|---------|--------|-------------|--------|---------|
|                         |                  | @ 25° C |        | @ 105 °C    |        | Size    |
| Cap.                    | Catalog          | 120 Hz  | 20 kHz | 120 Hz      | 20 kHz | D x L   |
| (µF)                    | Part Number      | (Ω)     | (Ω)    | (A)         | (A)    | (mm)    |
| 200 Vdc (250 Vdc Surge) |                  |         |        |             |        |         |
| 270                     | 381LR271M200H012 | 0.553   | 0.249  | 1.42        | 2.03   | 22 X 25 |
| 330                     | 381LR331M200H022 | 0.452   | 0.203  | 1.56        | 2.23   | 22 X 30 |
| 390                     | 381LR391M200H022 | 0.383   | 0.172  | 1.71        | 2.44   | 22 X 30 |
| 390                     | 381LR391M200J012 | 0.383   | 0.172  | 1.71        | 2.44   | 25 X 25 |
| 470                     | 381LR471M200H032 | 0.317   | 0.143  | 1.85        | 2.64   | 22 X 35 |
| 470                     | 381LR471M200J022 | 0.317   | 0.143  | 1.85        | 2.64   | 25 X 30 |
| 560                     | 381LR561M200H042 | 0.266   | 0.120  | 2.14        | 3.05   | 22 X 40 |
| 560                     | 381LR561M200J022 | 0.266   | 0.120  | 2.14        | 3.05   | 25 X 30 |
| 560                     | 381LR561M200K012 | 0.266   | 0.120  | 2.14        | 3.05   | 30 X 25 |
| 680                     | 381LR681M200H452 | 0.219   | 0.099  | 2.42        | 3.45   | 22 X 45 |
| 680                     | 381LR681M200J032 | 0.219   | 0.099  | 2.42        | 3.45   | 25 X 35 |
| 680                     | 381LR681M200K022 | 0.219   | 0.099  | 2.42        | 3.45   | 30 X 30 |
| 820                     | 381LR821M200H052 | 0.182   | 0.082  | 2.63        | 3.76   | 22 X 50 |
| 820                     | 381LR821M200J042 | 0.182   | 0.082  | 2.63        | 3.76   | 25 X 40 |
| 820                     | 381LR821M200K022 | 0.182   | 0.082  | 2.63        | 3.76   | 30 X 30 |
| 820                     | 381LR821M200A012 | 0.182   | 0.082  | 2.63        | 3.76   | 35 X 25 |
| 1000                    | 381LR102M200J452 | 0.149   | 0.067  | 2.84        | 4.06   | 25 X 45 |
| 1000                    | 381LR102M200K032 | 0.149   | 0.067  | 2.84        | 4.06   | 30 X 35 |
| 1000                    | 381LR102M200A022 | 0.149   | 0.067  | 2.84        | 4.06   | 35 X 30 |
| 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                     | 381LR221M250H022 | 0.678   | 0.305  | 1.28        | 1.83   | 22 X 30 |
| 270                     | 381LR271M250H022 | 0.553   | 0.249  | 1.42        | 2.03   | 22 X 30 |
| 270                     | 381LR271M250J012 | 0.553   | 0.249  | 1.42        | 2.03   | 25 X 25 |
| 330                     | 381LR331M250H032 | 0.452   | 0.203  | 1.64        | 2.34   | 22 X 35 |
| 330                     | 381LR331M250J022 | 0.452   | 0.203  | 1.64        | 2.34   | 25 X 30 |
| 390                     | 381LR391M250H042 | 0.383   | 0.172  | 1.72        | 2.45   | 22 X 40 |
| 390                     | 381LR391M250J022 | 0.383   | 0.172  | 1.72        | 2.45   | 25 X 30 |
| 390                     | 381LR391M250K012 | 0.383   | 0.172  | 1.72        | 2.45   | 30 X 25 |
| 470                     | 381LR471M250H452 | 0.317   | 0.143  | 1.85        | 2.64   | 22 X 45 |
| 470                     | 381LR471M250J032 | 0.317   | 0.143  | 1.85        | 2.64   | 25 X 35 |
| 470                     | 381LR471M250K022 | 0.317   | 0.143  | 1.85        | 2.64   | 30 X 30 |
| 560                     | 381LR561M250J042 | 0.266   | 0.120  | 2.14        | 3.05   | 25 X 40 |
| 560                     | 381LR561M250K022 | 0.266   | 0.120  | 2.14        | 3.05   | 30 X 30 |
| 560                     | 381LR561M250A012 | 0.266   | 0.120  | 2.14        | 3.05   | 35 X 25 |
| 680                     | 381LR681M250J452 | 0.219   | 0.099  | 2.42        | 3.45   | 25 X 45 |

|                         |                  | ESR Max |        | Ripple Amps |        | Nominal |
|-------------------------|------------------|---------|--------|-------------|--------|---------|
|                         |                  | @ 25° C |        | @ 105 °C    |        | Size    |
| Cap.                    | Catalog          | 120 Hz  | 20 kHz | 120 Hz      | 20 kHz | D x L   |
| (µF)                    | Part Number      | (Ω)     | (Ω)    | (A)         | (A)    | (mm)    |
| 250 Vdc (300 Vdc Surge) |                  |         |        |             |        |         |
| 680                     | 381LR681M250K032 | 0.219   | 0.099  | 2.42        | 3.45   | 30 X 35 |
| 680                     | 381LR681M250A022 | 0.219   | 0.099  | 2.42        | 3.45   | 35 X 30 |
| 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 | 1.617   | 0.728  | 0.8         | 1.14   | 22 X 25 |
| 100                     | 381LR101M400H022 | 1.326   | 0.597  | 0.91        | 1.3    | 22 X 30 |
| 100                     | 381LR101M400J012 | 1.960   | 0.960  | 0.91        | 1.3    | 25 X 25 |
| 120                     | 381LR121M400H032 | 1.105   | 0.497  | 1.02        | 1.46   | 22 X 35 |
| 120                     | 381LR121M400J022 | 1.105   | 0.497  | 1.02        | 1.46   | 25 X 30 |
| 150                     | 381LR151M400H042 | 1.105   | 0.387  | 1.07        | 1.53   | 22 X 40 |
| 150                     | 381LR151M400J022 | 1.105   | 0.387  | 1.07        | 1.53   | 25 X 30 |
| 150                     | 381LR151M400K012 | 1.105   | 0.387  | 1.07        | 1.53   | 30 X 25 |
| 180                     | 381LR181M400H452 | 0.737   | 0.322  | 1.12        | 1.6    | 22 X 45 |
| 180                     | 381LR181M400J032 | 0.737   | 0.322  | 1.12        | 1.6    | 25 X 35 |
| 180                     | 381LR181M400K022 | 0.737   | 0.322  | 1.12        | 1.6    | 30 X 30 |
| 220                     | 381LR221M400H052 | 0.603   | 0.271  | 1.42        | 2.03   | 22 X 50 |
| 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                     | 381LR271M400J452 | 0.491   | 0.221  | 1.56        | 2.23   | 25 X 45 |
| 270                     | 381LR271M400K032 | 0.491   | 0.221  | 1.56        | 2.23   | 30 X 35 |
| 270                     | 381LR271M400A022 | 0.491   | 0.221  | 1.56        | 2.23   | 35 X 30 |
| 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                     | 381LR391M400K452 | 0.34    | 0.153  | 1.85        | 2.64   | 30 X 45 |
| 390                     | 381LR391M400A032 | 0.34    | 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 | 1.95    | 0.878  | 0.76        | 1.08   | 22 X 25 |
| 82                      | 381LR820M420H022 | 1.617   | 0.728  | 0.8         | 1.14   | 22 X 30 |
| 82                      | 381LR820M420J012 | 1.617   | 0.728  | 0.8         | 1.14   | 25 X 25 |
| 100                     | 381LR101M420H022 | 1.326   | 0.597  | 0.91        | 1.3    | 22 X 30 |
| 100                     | 381LR101M420J012 | 1.326   | 0.597  | 0.91        | 1.3    | 25 X 25 |
| 120                     | 381LR121M420H032 | 1.105   | 0.497  | 1.02        | 1.46   | 22 X 35 |
| 120                     | 381LR121M420J022 | 1.105   | 0.497  | 1.02        | 1.46   | 25 X 30 |

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

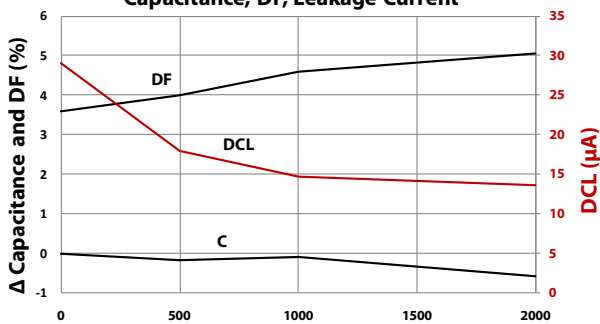
## Ultra-High Ripple Capabilities

|                         |                  | ESR Max |        | Ripple Amps |        | Nominal |
|-------------------------|------------------|---------|--------|-------------|--------|---------|
|                         |                  | @ 25° C |        | @ 105 °C    |        | Size    |
| Cap.                    | Catalog          | 120 Hz  | 20 kHz | 120 Hz      | 20 kHz | D x L   |
| (μF)                    | Part Number      | (Ω)     | (Ω)    | (A)         | (A)    | (mm)    |
| 420 Vdc (470 Vdc Surge) |                  |         |        |             |        |         |
| 150                     | 381LR151M420K012 | 0.884   | 0.398  | 1.07        | 1.53   | 30 X 25 |
| 180                     | 381LR181M420H452 | 0.737   | 0.332  | 1.12        | 1.6    | 22 X 45 |
| 180                     | 381LR181M420J042 | 0.737   | 0.332  | 1.12        | 1.6    | 25 X 40 |
| 180                     | 381LR181M420K022 | 0.737   | 0.332  | 1.12        | 1.6    | 30 X 30 |
| 180                     | 381LR181M420A012 | 0.737   | 0.332  | 1.12        | 1.6    | 35 X 25 |
| 220                     | 381LR221M420J452 | 0.603   | 0.271  | 1.42        | 2.03   | 25 X 45 |
| 220                     | 381LR221M420K032 | 0.603   | 0.271  | 1.42        | 2.03   | 30 X 35 |
| 220                     | 381LR221M420A022 | 0.603   | 0.271  | 1.42        | 2.03   | 35 X 30 |
| 270                     | 381LR271M420J052 | 0.491   | 0.221  | 1.68        | 2.4    | 25 X 50 |
| 270                     | 381LR271M420K042 | 0.491   | 0.221  | 1.68        | 2.4    | 30 X 40 |
| 270                     | 381LR271M420A022 | 0.491   | 0.221  | 1.68        | 2.4    | 35 X 30 |
| 330                     | 381LR331M420K452 | 0.402   | 0.181  | 1.78        | 2.54   | 30 X 45 |
| 330                     | 381LR331M420A032 | 0.402   | 0.181  | 1.78        | 2.54   | 35 X 35 |
| 390                     | 381LR391M420K052 | 0.34    | 0.153  | 1.91        | 2.73   | 30 X 50 |
| 390                     | 381LR391M420A042 | 0.34    | 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 | 2.368   | 1.066  | 0.67        | 0.95   | 22 X 25 |
| 68                      | 381LR680M450H022 | 1.95    | 0.878  | 0.76        | 1.08   | 22 X 30 |
| 68                      | 381LR680M450J012 | 1.95    | 0.878  | 0.76        | 1.08   | 25 X 25 |
| 82                      | 381LR820M450H022 | 1.617   | 0.728  | 0.8         | 1.14   | 22 X 30 |
| 82                      | 381LR820M450J012 | 1.617   | 0.728  | 0.8         | 1.14   | 25 X 25 |

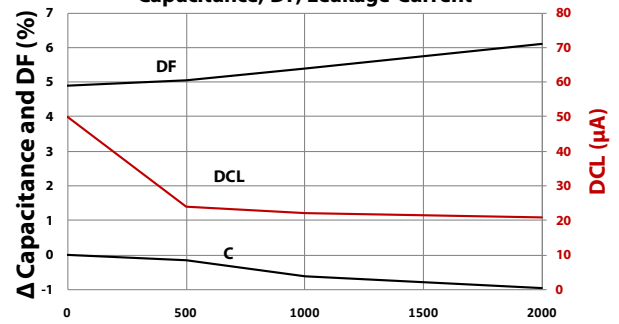
| Cap.                    | Catalog          | ESR Max |        | Ripple Amps |        | Nominal |
|-------------------------|------------------|---------|--------|-------------|--------|---------|
|                         |                  | @ 25° C |        | @ 105 °C    |        | Size    |
|                         |                  | 120 Hz  | 20 kHz | 120 Hz      | 20 kHz | D x L   |
| (μF)                    | Part Number      | (Ω)     | (Ω)    | (A)         | (A)    | (mm)    |
| 450 Vdc (500 Vdc Surge) |                  |         |        |             |        |         |
| 100                     | 381LR101M450H032 | 1.326   | 0.597  | 0.91        | 1.3    | 22 X 35 |
| 100                     | 381LR101M450J022 | 1.326   | 0.597  | 0.91        | 1.3    | 25 X 30 |
| 120                     | 381LR121M450H042 | 1.105   | 0.497  | 1.02        | 1.46   | 22 X 40 |
| 120                     | 381LR121M450J032 | 1.105   | 0.497  | 1.02        | 1.46   | 25 X 35 |
| 120                     | 381LR121M450K012 | 1.105   | 0.497  | 1.02        | 1.46   | 30 X 25 |
| 150                     | 381LR151M450H452 | 0.884   | 0.396  | 1.07        | 1.53   | 22 X 45 |
| 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 |
| 150                     | 381LR151M450A012 | 0.884   | 0.396  | 1.07        | 1.53   | 35 X 25 |
| 180                     | 381LR181M450H052 | 0.737   | 0.332  | 1.12        | 1.6    | 22 X 50 |
| 180                     | 381LR181M450J042 | 0.737   | 0.332  | 1.12        | 1.6    | 25 X 40 |
| 180                     | 381LR181M450K022 | 0.737   | 0.332  | 1.12        | 1.6    | 30 X 30 |
| 180                     | 381LR181M450A012 | 0.737   | 0.332  | 1.12        | 1.6    | 35 X 25 |
| 220                     | 381LR221M450J452 | 0.603   | 0.271  | 1.42        | 2.03   | 25 X 45 |
| 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 | 0.34    | 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

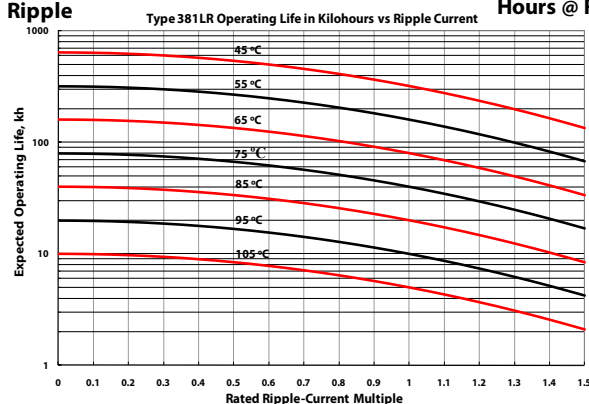


Life Test 105 °C, Full Load, 330 μF, 400 Vdc  
Capacitance, DF, Leakage Current



Hours @ Rated Max Temp, Voltage, Ripple

Hours @ Rated Max Temp, Voltage, Ripple





**Стандарт  
Электрон  
Связь**

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

**Наши контакты:**

**Телефон:** +7 812 627 14 35

**Электронная почта:** [sales@st-electron.ru](mailto:sales@st-electron.ru)

**Адрес:** 198099, Санкт-Петербург,  
Промышленная ул, дом № 19, литера Н,  
помещение 100-Н Офис 331