

ALUMINUM ELECTROLYTIC CAPACITORS



NR series Screw Terminal Type, 85°C Standard



High Ripple Current

- Load life of 5000 hours application of rated ripple current at 85°C.
- Extended range up to $\phi 100 \times 250L$ size.
- Compliant to the RoHS directive (2002/95/EC).

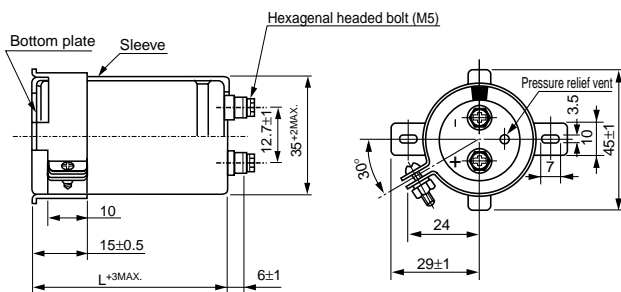


Specifications

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------|--------------|-----------------------------------------------|-----------------|---------------------------------------------------|-------------------|-------------------|------------|-----|------------|----|-----------|-----|-----|------|-----|------|------|-----|------|------|-----|-----|------|-----|-----|------|------|-----|------|------|----|-----------|-----|-----|------|------|------|------|-----|------|------|------------|-----|-----|-----|-----|-----|------|-----|------|------|------|-----|-----|---|---|-----|------|-----|------|---|-----|------------|-----|------|------|---|---|-----|-----|-----|-----|------|-----|-----|---|---|------|---|---|---|---|-----|------------|-----|-----|------|------|------|-----|------|-----|-----|----|------------|-----|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|------|
| Category Temperature Range | - 40 to +85°C (10 to 100V) , - 25 to +85°C (160 to 250V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 10 to 250V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Capacitance Range | 1000 to 2200000 μ F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | $\pm 20\%$ at 120Hz, 20°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | After 5 minutes' application of rated voltage, leakage current is not more than $3\sqrt{CV}$ (μ A) or 5 mA, whichever is smaller (at 20°C) . [C:Rated Capacitance (μ F) , V:Voltage(V)] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tangent of loss angle (tan δ) (MAX) | <table border="1"> <thead> <tr> <th>ϕ</th> <th>V</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> <th>160 to 250</th> </tr> </thead> <tbody> <tr> <td rowspan="2">35</td> <td>80 to 100</td> <td>0.6</td> <td>0.4</td> <td>0.35</td> <td>0.3</td> <td>0.25</td> <td>0.25</td> <td>0.2</td> <td>0.12</td> <td>0.15</td> </tr> <tr> <td>120</td> <td>0.7</td> <td>0.55</td> <td>0.4</td> <td>0.3</td> <td>0.25</td> <td>0.25</td> <td>0.2</td> <td>0.15</td> <td>0.15</td> </tr> <tr> <td rowspan="2">51</td> <td>70 to 100</td> <td>0.9</td> <td>0.6</td> <td>0.45</td> <td>0.35</td> <td>0.25</td> <td>0.25</td> <td>0.2</td> <td>0.15</td> <td>0.15</td> </tr> <tr> <td>120 to 140</td> <td>1.0</td> <td>0.8</td> <td>0.5</td> <td>0.4</td> <td>0.3</td> <td>0.25</td> <td>0.2</td> <td>0.15</td> <td>0.15</td> </tr> <tr> <td rowspan="2">63.5</td> <td>100</td> <td>0.9</td> <td>—</td> <td>—</td> <td>0.5</td> <td>0.35</td> <td>0.3</td> <td>0.25</td> <td>—</td> <td>0.2</td> </tr> <tr> <td>120 to 140</td> <td>1.2</td> <td>0.75</td> <td>0.65</td> <td>—</td> <td>—</td> <td>0.3</td> <td>0.3</td> <td>0.2</td> <td>0.2</td> </tr> <tr> <td rowspan="2">76.2</td> <td>100</td> <td>1.6</td> <td>—</td> <td>—</td> <td>0.65</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>0.2</td> </tr> <tr> <td>120 to 140</td> <td>1.6</td> <td>1.1</td> <td>0.75</td> <td>0.75</td> <td>0.55</td> <td>0.5</td> <td>0.35</td> <td>0.3</td> <td>0.2</td> </tr> <tr> <td>90</td> <td>140 to 220</td> <td>2.0</td> <td>1.5</td> <td>1.0</td> <td>0.9</td> <td>0.75</td> <td>0.6</td> <td>0.4</td> <td>0.3</td> <td>0.25</td> </tr> <tr> <td>100</td> <td>250</td> <td>2.4</td> <td>1.5</td> <td>1.0</td> <td>0.9</td> <td>0.75</td> <td>0.6</td> <td>0.4</td> <td>0.3</td> <td>0.25</td> </tr> </tbody> </table> <p>Measurement frequency: 120Hz at 20°C</p> | ϕ | V | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160 to 250 | 35 | 80 to 100 | 0.6 | 0.4 | 0.35 | 0.3 | 0.25 | 0.25 | 0.2 | 0.12 | 0.15 | 120 | 0.7 | 0.55 | 0.4 | 0.3 | 0.25 | 0.25 | 0.2 | 0.15 | 0.15 | 51 | 70 to 100 | 0.9 | 0.6 | 0.45 | 0.35 | 0.25 | 0.25 | 0.2 | 0.15 | 0.15 | 120 to 140 | 1.0 | 0.8 | 0.5 | 0.4 | 0.3 | 0.25 | 0.2 | 0.15 | 0.15 | 63.5 | 100 | 0.9 | — | — | 0.5 | 0.35 | 0.3 | 0.25 | — | 0.2 | 120 to 140 | 1.2 | 0.75 | 0.65 | — | — | 0.3 | 0.3 | 0.2 | 0.2 | 76.2 | 100 | 1.6 | — | — | 0.65 | — | — | — | — | 0.2 | 120 to 140 | 1.6 | 1.1 | 0.75 | 0.75 | 0.55 | 0.5 | 0.35 | 0.3 | 0.2 | 90 | 140 to 220 | 2.0 | 1.5 | 1.0 | 0.9 | 0.75 | 0.6 | 0.4 | 0.3 | 0.25 | 100 | 250 | 2.4 | 1.5 | 1.0 | 0.9 | 0.75 | 0.6 | 0.4 | 0.3 | 0.25 |
| ϕ | V | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160 to 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | 80 to 100 | 0.6 | 0.4 | 0.35 | 0.3 | 0.25 | 0.25 | 0.2 | 0.12 | 0.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 120 | 0.7 | 0.55 | 0.4 | 0.3 | 0.25 | 0.25 | 0.2 | 0.15 | 0.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51 | 70 to 100 | 0.9 | 0.6 | 0.45 | 0.35 | 0.25 | 0.25 | 0.2 | 0.15 | 0.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 120 to 140 | 1.0 | 0.8 | 0.5 | 0.4 | 0.3 | 0.25 | 0.2 | 0.15 | 0.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63.5 | 100 | 0.9 | — | — | 0.5 | 0.35 | 0.3 | 0.25 | — | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 120 to 140 | 1.2 | 0.75 | 0.65 | — | — | 0.3 | 0.3 | 0.2 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 76.2 | 100 | 1.6 | — | — | 0.65 | — | — | — | — | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 120 to 140 | 1.6 | 1.1 | 0.75 | 0.75 | 0.55 | 0.5 | 0.35 | 0.3 | 0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | 140 to 220 | 2.0 | 1.5 | 1.0 | 0.9 | 0.75 | 0.6 | 0.4 | 0.3 | 0.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 250 | 2.4 | 1.5 | 1.0 | 0.9 | 0.75 | 0.6 | 0.4 | 0.3 | 0.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stability at Low Temperature | <table border="1"> <thead> <tr> <th rowspan="2">Rated voltage(V)</th> <th colspan="2">Measurement frequency : 120Hz</th> </tr> <tr> <th>10 to 100</th> <th>160 to 250</th> </tr> </thead> <tbody> <tr> <td>Impedance ratio ZT/Z20(MAX.)</td> <td>Z - 40°C / Z+20°C</td> <td>Z - 25°C / Z+20°C</td> </tr> <tr> <td></td> <td>12</td> <td>8</td> </tr> </tbody> </table> | Rated voltage(V) | Measurement frequency : 120Hz | | 10 to 100 | 160 to 250 | Impedance ratio ZT/Z20(MAX.) | Z - 40°C / Z+20°C | Z - 25°C / Z+20°C | | 12 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated voltage(V) | Measurement frequency : 120Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 10 to 100 | 160 to 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Impedance ratio ZT/Z20(MAX.) | Z - 40°C / Z+20°C | Z - 25°C / Z+20°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 12 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | <p>The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 5000 hours at 85°C, the peak voltage shall not exceed the rated voltage.</p> <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within $\pm 15\%$ of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>175% or less than the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Less than or equal to the initial specified value</td> </tr> </tbody> </table> | Capacitance change | Within $\pm 15\%$ of the initial capacitance value | tan δ | 175% or less than the initial specified value | Leakage current | Less than or equal to the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| tan δ | 175% or less than the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Shelf Life | <p>After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the requirements listed at right.</p> <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within $\pm 20\%$ of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>175% or less than the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Less than or equal to the initial specified value</td> </tr> </tbody> </table> | Capacitance change | Within $\pm 20\%$ of the initial capacitance value | tan δ | 175% or less than the initial specified value | Leakage current | Less than or equal to the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| tan δ | 175% or less than the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | Less than or equal to the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Marking | Printed with black color letter on light blue sleeve. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Drawing

$\phi 35$ Screw terminal type



Type numbering system (Example : 250V 2200 μ F)



Please refer to page 282 for schematic of dimensions.
 ※ Please contact to us if PVCless products are required.

● Dimension table in next page.

NR series

Screw terminal types for $\phi 51$ and larger



Note:
 Capacitors with body dia. $\phi 51$ or larger are furnished with 3-leg brackets shown above as standard.
 If these capacitors are preferred to have 2-leg brackets as shown right, add "B" in the 12th digit of type numbering system.

● Dimension of terminal pitch (W) and length (ℓ) and Nominal dia. of bolt (mm)

| ϕD | W | ℓ | α | Nominal dia. of bolt |
|----------|------|--------|----------|----------------------|
| 51 | 22.0 | 6 | 3 | M5 |
| 63.5 | 28.6 | 6 | 3 | M5 |
| 76.2 | 31.8 | 6 | 3 | M5 |
| 90 | 31.8 | 6 | 3 | M5 |
| 100 | 41.5 | 10 | 4 | M8 |

● Dimensions of mounting bracket (mm)

| Symbol | Leg Shape ϕD | | | | | | | | | |
|----------------|--------------------|------|------|------|------|--------|------|------|-----|--|
| | 3-Legs | | | | | 2-Legs | | | | |
| | 51 | 63.5 | 76.2 | 90 | 100 | 51 | 63.5 | 76.2 | 90 | |
| P | 32.5 | 38.1 | 44.5 | 50.8 | 56.3 | 33.2 | 40.5 | 46.5 | 53 | |
| A | 38.5 | 43 | 49.2 | 58.5 | 62 | 40 | 46.5 | 53 | 59 | |
| T | 7.5 | 8.0 | 7.0 | 8.0 | 8.0 | 6.0 | 7.0 | 6.0 | 6.0 | |
| S | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | |
| U | 12 | 14 | 14 | 18 | 16 | 14 | 14 | 14 | 14 | |
| θ° | 60 | 60 | 60 | 60 | 60 | 30 | 30 | 30 | 30 | |
| H | 20 | 25 | 30 | 35 | 36 | 25 | 35 | 35 | 35 | |
| h | 15 | 20 | 24 | 25 | 30 | 15 | 20 | 20 | 20 | |

■ Dimensions

| 10V (1A) | | | | | |
|------------------|-----------------------------|---------------------|---------------|----------------------|-------------|
| Cap. (μF) | Size $\phi D \times L$ (mm) | Rated ripple (Arms) | $\tan \delta$ | Leakage Current (mA) | Code |
| 47000 | 35×80 | 6.0 | 0.60 | 2.05 | LNR1A473MSE |
| 68000 | 35×80 | 7.2 | 0.60 | 2.47 | LNR1A683MSE |
| 100000 | 35×100 | 8.8 | 0.60 | 3.00 | LNR1A104MSE |
| 150000 | 51×80 | 10.7 | 0.90 | 3.67 | LNR1A154MSE |
| 220000 | 51×100 | 13.0 | 0.90 | 4.44 | LNR1A224MSE |
| 330000 | 63.5×100 | 15.9 | 0.90 | 5.00 | LNR1A334MSE |
| 470000 | 63.5×120 | 19.0 | 1.20 | 5.00 | LNR1A474MSE |
| 680000 | 76.2×120 | 22.8 | 1.60 | 5.00 | LNR1A684MSE |
| 1000000 | 90×170 | 27.7 | 2.00 | 5.00 | LNR1A105MSE |
| 1500000 | 90×220 | 33.9 | 2.00 | 5.00 | LNR1A155MSE |
| 2200000 | 100×250 | 41.1 | 2.40 | 5.00 | LNR1A225MSE |

| 16V (1C) | | | | | |
|------------------|-----------------------------|---------------------|---------------|----------------------|-------------|
| Cap. (μF) | Size $\phi D \times L$ (mm) | Rated ripple (Arms) | $\tan \delta$ | Leakage Current (mA) | Code |
| 47000 | 35×80 | 6.4 | 0.40 | 2.60 | LNR1C473MSE |
| 68000 | 35×100 | 7.9 | 0.40 | 3.12 | LNR1C683MSE |
| 100000 | 35×120 | 10.6 | 0.55 | 3.79 | LNR1C104MSE |
| 150000 | 51×100 | 11.5 | 0.60 | 4.64 | LNR1C154MSE |
| 220000 | 51×120 | 15.6 | 0.80 | 5.00 | LNR1C224MSE |
| 330000 | 63.5×120 | 25.1 | 0.75 | 5.00 | LNR1C334MSE |
| 470000 | 76.2×120 | 30.5 | 1.10 | 5.00 | LNR1C474MSE |
| 680000 | 90×170 | 33.0 | 1.50 | 5.00 | LNR1C684MSE |
| 1000000 | 90×220 | 36.0 | 1.50 | 5.00 | LNR1C105MSE |
| 1500000 | 100×250 | 39.7 | 1.50 | 5.00 | LNR1C155MSE |

Rated ripple current (Arms) at 85°C 120Hz

■Dimensions

| 25V (1E) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 33000 | 35×80 | 6.2 | 0.35 | 2.72 | LNR1E333MSE |
| 47000 | 35×100 | 8.2 | 0.35 | 3.25 | LNR1E473MSE |
| 68000 | 35×120 | 9.4 | 0.40 | 3.91 | LNR1E683MSE |
| 100000 | 51×100 | 12.0 | 0.45 | 4.74 | LNR1E104MSE |
| 150000 | 51×120 | 15.3 | 0.50 | 5.00 | LNR1E154MSE |
| 220000 | 63.5×120 | 18.9 | 0.65 | 5.00 | LNR1E224MSE |
| 330000 | 76.2×120 | 24.8 | 0.75 | 5.00 | LNR1E334MSE |
| 470000 | 90×170 | 30.8 | 1.00 | 5.00 | LNR1E474MSE |
| 680000 | 90×220 | 33.3 | 1.00 | 5.00 | LNR1E684MSE |
| 1000000 | 100×250 | 36.4 | 1.00 | 5.00 | LNR1E105MSE |

| 35V (1V) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 33000 | 35×80 | 6.2 | 0.30 | 3.22 | LNR1V333MSE |
| 47000 | 35×120 | 8.2 | 0.30 | 3.84 | LNR1V473MSE |
| 68000 | 51×80 | 9.3 | 0.35 | 4.62 | LNR1V683MSE |
| 100000 | 51×120 | 13.6 | 0.40 | 5.00 | LNR1V104MSE |
| 150000 | 63.5×100 | 14.5 | 0.50 | 5.00 | LNR1V154MSE |
| 220000 | 76.2×100 | 16.8 | 0.65 | 5.00 | LNR1V224MSE |
| 330000 | 76.2×140 | 24.8 | 0.75 | 5.00 | LNR1V334MSE |
| 470000 | 90×170 | 32.6 | 0.90 | 5.00 | LNR1V474MSE |
| 680000 | 90×220 | 35.2 | 0.90 | 5.00 | LNR1V684MSE |
| 1000000 | 100×250 | 38.5 | 0.90 | 5.00 | LNR1V105MSE |

| 50V (1H) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 15000 | 35×80 | 5.4 | 0.25 | 2.59 | LNR1H153MSE |
| 22000 | 35×100 | 6.1 | 0.25 | 3.14 | LNR1H223MSE |
| 33000 | 51×70 | 7.0 | 0.25 | 3.85 | LNR1H333MSE |
| 47000 | 51×90 | 8.6 | 0.25 | 4.59 | LNR1H473MSE |
| 68000 | 51×100 | 11.0 | 0.25 | 5.00 | LNR1H683MSE |
| 100000 | 63.5×100 | 14.2 | 0.35 | 5.00 | LNR1H104MSE |
| 150000 | 76.2×120 | 18.6 | 0.55 | 5.00 | LNR1H154MSE |
| 220000 | 90×140 | 20.3 | 0.75 | 5.00 | LNR1H224MSE |
| 330000 | 90×170 | 25.3 | 0.75 | 5.00 | LNR1H334MSE |
| 470000 | 90×220 | 33.2 | 0.75 | 5.00 | LNR1H474MSE |
| 680000 | 100×250 | 36.0 | 0.75 | 5.00 | LNR1H684MSE |

| 63V (1J) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 10000 | 35×80 | 4.1 | 0.25 | 2.38 | LNR1J103MSE |
| 15000 | 35×100 | 5.5 | 0.25 | 2.91 | LNR1J153MSE |
| 22000 | 35×120 | 7.1 | 0.25 | 3.53 | LNR1J223MSE |
| 33000 | 51×80 | 8.8 | 0.25 | 4.32 | LNR1J333MSE |
| 47000 | 51×120 | 11.7 | 0.25 | 5.00 | LNR1J473MSE |
| 68000 | 63.5×100 | 15.0 | 0.30 | 5.00 | LNR1J683MSE |
| 100000 | 63.5×140 | 20.8 | 0.30 | 5.00 | LNR1J104MSE |
| 150000 | 76.2×140 | 26.0 | 0.50 | 5.00 | LNR1J154MSE |
| 220000 | 90×170 | 28.3 | 0.60 | 5.00 | LNR1J224MSE |
| 330000 | 90×220 | 31.2 | 0.60 | 5.00 | LNR1J334MSE |
| 470000 | 100×250 | 33.6 | 0.60 | 5.00 | LNR1J474MSE |

| 80V (1K) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 10000 | 35×80 | 4.2 | 0.20 | 2.68 | LNR1K103MSE |
| 15000 | 35×120 | 6.0 | 0.20 | 3.28 | LNR1K153MSE |
| 22000 | 51×80 | 6.5 | 0.20 | 3.97 | LNR1K223MSE |
| 33000 | 51×120 | 9.2 | 0.20 | 4.87 | LNR1K333MSE |
| 47000 | 63.5×100 | 12.7 | 0.25 | 5.00 | LNR1K473MSE |
| 68000 | 63.5×140 | 15.5 | 0.30 | 5.00 | LNR1K683MSE |
| 100000 | 76.2×140 | 21.3 | 0.35 | 5.00 | LNR1K104MSE |
| 150000 | 90×170 | 26.5 | 0.40 | 5.00 | LNR1K154MSE |
| 220000 | 90×220 | 28.9 | 0.40 | 5.00 | LNR1K224MSE |
| 330000 | 100×250 | 31.8 | 0.40 | 5.00 | LNR1K334MSE |

| 100V (2A) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 4700 | 35×80 | 3.8 | 0.12 | 2.05 | LNR2A472MSE |
| 6800 | 35×100 | 4.5 | 0.12 | 2.47 | LNR2A682MSE |
| 10000 | 35×120 | 5.3 | 0.15 | 3.00 | LNR2A103MSE |
| 15000 | 51×80 | 6.0 | 0.15 | 3.67 | LNR2A153MSE |
| 22000 | 51×100 | 6.8 | 0.15 | 4.45 | LNR2A223MSE |
| 33000 | 51×140 | 10.0 | 0.15 | 5.00 | LNR2A333MSE |
| 47000 | 63.5×140 | 14.4 | 0.20 | 5.00 | LNR2A473MSE |
| 68000 | 76.2×140 | 18.2 | 0.30 | 5.00 | LNR2A683MSE |
| 100000 | 90×170 | 22.1 | 0.30 | 5.00 | LNR2A104MSE |
| 150000 | 90×220 | 27.0 | 0.30 | 5.00 | LNR2A154MSE |
| 220000 | 100×250 | 32.7 | 0.30 | 5.00 | LNR2A224MSE |

Rated ripple current (Arms) at 85°C, 120Hz

NR series

■Dimensions

| 160V (2C) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 2200 | 35×80 | 3.2 | 0.15 | 1.77 | LNR2C222MSE |
| 3300 | 35×120 | 4.7 | 0.15 | 2.17 | LNR2C332MSE |
| 4700 | 51×80 | 5.0 | 0.15 | 2.60 | LNR2C472MSE |
| 6800 | 51×100 | 6.4 | 0.15 | 3.12 | LNR2C682MSE |
| 10000 | 63.5×100 | 9.1 | 0.20 | 3.79 | LNR2C103MSE |
| 15000 | 76.2×100 | 12.0 | 0.20 | 4.64 | LNR2C153MSE |
| 22000 | 76.2×140 | 16.9 | 0.20 | 5.00 | LNR2C223MSE |
| 33000 | 90×140 | 19.2 | 0.25 | 5.00 | LNR2C333MSE |
| 47000 | 90×170 | 20.6 | 0.25 | 5.00 | LNR2C473MSE |
| 68000 | 90×220 | 22.3 | 0.25 | 5.00 | LNR2C683MSE |
| 100000 | 100×250 | 24.4 | 0.25 | 5.00 | LNR2C104MSE |

| 200V (2D) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 1500 | 35×80 | 2.9 | 0.15 | 1.64 | LNR2D152MSE |
| 2200 | 35×100 | 3.5 | 0.15 | 1.99 | LNR2D222MSE |
| 3300 | 51×80 | 4.8 | 0.15 | 2.43 | LNR2D332MSE |
| 4700 | 51×100 | 6.3 | 0.15 | 2.90 | LNR2D472MSE |
| 6800 | 51×140 | 7.3 | 0.15 | 3.49 | LNR2D682MSE |
| 10000 | 63.5×120 | 9.8 | 0.20 | 4.24 | LNR2D103MSE |
| 15000 | 76.2×120 | 13.0 | 0.20 | 5.00 | LNR2D153MSE |
| 22000 | 90×140 | 15.9 | 0.25 | 5.00 | LNR2D223MSE |
| 33000 | 90×170 | 19.5 | 0.25 | 5.00 | LNR2D333MSE |
| 47000 | 90×220 | 20.9 | 0.25 | 5.00 | LNR2D473MSE |
| 68000 | 100×250 | 22.6 | 0.25 | 5.00 | LNR2D683MSE |

| 250V (2E) | | | | | |
|-----------|-----------------|---------------------|-------|----------------------|-------------|
| Cap. (μF) | Size φD × L(mm) | Rated ripple (Arms) | tan δ | Leakage Current (mA) | Code |
| 1000 | 35×80 | 2.4 | 0.15 | 1.50 | LNR2E102MSE |
| 1500 | 35×100 | 3.0 | 0.15 | 1.83 | LNR2E152MSE |
| 2200 | 51×80 | 4.0 | 0.15 | 2.22 | LNR2E222MSE |
| 3300 | 51×100 | 5.4 | 0.15 | 2.72 | LNR2E332MSE |
| 4700 | 63.5×100 | 7.3 | 0.20 | 3.25 | LNR2E472MSE |
| 6800 | 63.5×120 | 8.9 | 0.20 | 3.91 | LNR2E682MSE |
| 10000 | 76.2×120 | 11.8 | 0.20 | 4.74 | LNR2E103MSE |
| 15000 | 90×140 | 16.4 | 0.25 | 5.00 | LNR2E153MSE |
| 22000 | 90×170 | 17.9 | 0.25 | 5.00 | LNR2E223MSE |
| 33000 | 90×220 | 19.7 | 0.25 | 5.00 | LNR2E333MSE |
| 47000 | 100×250 | 21.2 | 0.25 | 5.00 | LNR2E473MSE |

Rated ripple current (Arms) at 85°C, 120Hz

●Frequency coefficient of rated ripple current

| Coeff. | Frequency (Hz) | 60 | 120 | 360 | 1k | 10k or more |
|-------------|----------------|------|------|------|------|-------------|
| | 10 to 100V | 0.90 | 1.00 | 1.08 | 1.15 | 1.15 |
| 160 to 250V | 0.88 | 1.00 | 1.08 | 1.15 | 1.20 | |

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