

# Large Can Aluminum Electrolytic Capacitors

NRLR Series

## FEATURES

- EXPANDED VALUE RANGE
- LONG LIFE AT +85°C (3,000 HOURS)
- HIGH RIPPLE CURRENT
- LOW PROFILE, HIGH DENSITY DESIGN
- SUITABLE FOR SWITCHING POWER SUPPLIES

**RoHS Compliant**  
includes all homogeneous materials

\*See Part Number System for Details



## SPECIFICATIONS

|   |                       |   |      |      |      |                  |              |      |      |         |         |
|---|-----------------------|---|------|------|------|------------------|--------------|------|------|---------|---------|
| Operating Temperature Range   |                       | -40 ~ +85°C                               |      |      |      |                  | -25 ~ +85°C  |      |      |         |         |
| Rated Voltage Range   |                       | 10 ~ 250Vdc                               |      |      |      |                  | 315 ~ 450Vdc |      |      |         |         |
| Rated Capacitance Range   |                       | 180 ~ 82,000µF                            |      |      |      |                  | 56 ~ 1,000µF |      |      |         |         |
| Capacitance Tolerance   |                       | ±20% (M)                                  |      |      |      |                  |              |      |      |         |         |
| Max. Leakage Current (µA)<br>After 5 minutes (20°C)   |                       | $3 \times \sqrt{C(\mu F)V}$               |      |      |      |                  |              |      |      |         |         |
| Max. Tan δ<br>at 120Hz/20°C   | W.V. (Vdc)            | 10  | 16   | 25   | 35   | 50               | 63           | 80   | 100  | 160~400 | 420~450 |
|   | Tan δ max.            | 0.55                                      | 0.50 | 0.45 | 0.40 | 0.35             | 0.30         | 0.25 | 0.20 | 0.15    | 0.25    |
| Surge Voltage   | W.V. (Vdc)            | 10  | 16   | 25   | 35   | 50               | 63           | 80   | 100  | 160     | 180     |
|   | S.V. (Vdc)            | 13  | 20   | 32   | 44   | 63               | 79           | 100  | 125  | 200     | 220     |
|   | W.V. (Vdc)            | 200                                       | 220  | 250  | 315  | 350              | 385          | 400  | 420  | 450     | -       |
|   | S.V. (Vdc)            | 250                                       | 270  | 300  | 365  | 400              | 435          | 450  | 470  | 500     | -       |
| Ripple Current<br>Correction Factors  | Frequency (Hz)        | 50 (60)                                   | 120  | 500  | 1K   | 10K <sub>≥</sub> | -            | -    | -    | -       | -       |
|   | Multiplier<br>at 85°C | 10 ~ 100Vdc                               | 0.90 | 1.00 | 1.05 | 1.10             | 1.15         | -    | -    | -       | -       |
|   |                       | 160 ~ 250Vdc                              | 0.80 | 1.00 | 1.20 | 1.30             | 1.50         | -    | -    | -       | -       |
|   |                       | 315 ~ 450Vdc                              | 0.80 | 1.00 | 1.20 | 1.25             | 1.40         | -    | -    | -       | -       |
| Low Temperature<br>Stability (10 to 250Vdc)   | Temperature (°C)      | 0   | -25  | -40  | -    | -                | -            | -    | -    | -       | -       |
|   | Capacitance Change    | -5%                                       | -15% | -30% | -    | -                | -            | -    | -    | -       | -       |
|   | Impedance Ratio       | 1.5                                       | 3    | 12   | -    | -                | -            | -    | -    | -       | -       |
| Load Life Test<br>3,000 hours at +85°C  | Capacitance Change    | Within ±20% of initial measured value     |      |      |      |                  |              |      |      |         |         |
|   | Tan δ                 | Less than 200% of specified maximum value |      |      |      |                  |              |      |      |         |         |
|   | Leakage Current       | Less than specified maximum value         |      |      |      |                  |              |      |      |         |         |
| Shelf Life Test<br>1,000 hours at +85°C<br>(no load)  | Capacitance Change    | Within ±20% of initial measured value     |      |      |      |                  |              |      |      |         |         |
|   | Tan δ                 | Less than 200% of specified maximum value |      |      |      |                  |              |      |      |         |         |
|   | Leakage Current       | Less than specified maximum value         |      |      |      |                  |              |      |      |         |         |
| Surge Voltage Test<br>Per JIS-C-5141 (table #6, #4)<br>Surge voltage applied: 30 seconds<br>"On" and 5.5 minutes no voltage "Off" | Capacitance Change    | Within ±20% of initial measured value     |      |      |      |                  |              |      |      |         |         |
|   | Tan δ                 | Less than 200% of specified maximum value |      |      |      |                  |              |      |      |         |         |
|   | Leakage Current       | Less than specified maximum value         |      |      |      |                  |              |      |      |         |         |
| Soldering Effect<br>Refer to<br>JISC5102.8.5  | Capacitance Change    | Within ±10% of initial measured value     |      |      |      |                  |              |      |      |         |         |
|   | Tan δ                 | Less than specified maximum value         |      |      |      |                  |              |      |      |         |         |
|   | Leakage Current       | Less than specified maximum value         |      |      |      |                  |              |      |      |         |         |

## MECHANICAL CHARACTERISTICS:

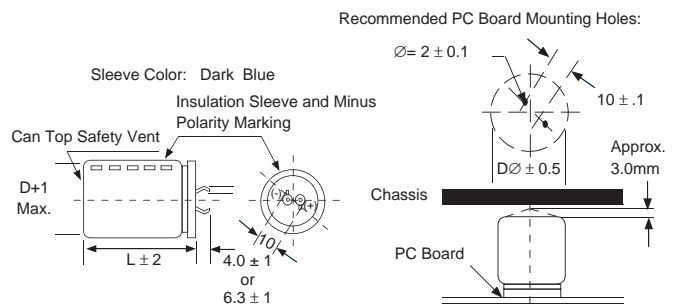
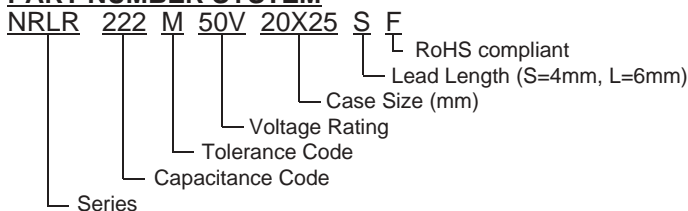
### 1. Safety Vent:

The capacitors are provided with a pressure sensitive safety vent on the top of can. The vent is designed to rupture in the event that high internal gas pressure is developed by circuit malfunction or mis-use like reverse voltage.

### 2. Terminal Strength:

Each terminal of the capacitor shall withstand an axial pull force of 4.5Kg for a period 10 seconds or a radial bent force of 2.5Kg for a period of 30 seconds.

## PART NUMBER SYSTEM



**PRECAUTIONS**  
Please review the notes on correct use, safety and precautions found on pages T10 & T11 of NIC's Electrolytic Capacitor catalog.  
Also found at [www.niccomp.com/precautions](http://www.niccomp.com/precautions)  
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

### Notice for Mounting

The space from the top of the can shall be more than (3mm) from chassis or other construction materials so that safety vent has room to expand in case of emergency.

# Large Can Aluminum Electrolytic Capacitors

NRLR Series

## STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V.   | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|--------|----------|-----------|----------------|-------|---------------------------------|-------------|
|        |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 10     | 10,000   | 20x25     | 0.092          | 0.071 | 2.22                            | 2.55        |
|        | 12,000   | 20x30     | 0.076          | 0.059 | 2.44                            | 2.80        |
|        |          | 22x25     | 0.076          | 0.059 | 2.41                            | 2.77        |
|        | 15,000   | 20x35     | 0.061          | 0.047 | 2.90                            | 3.33        |
|        |          | 22x30     | 0.061          | 0.047 | 2.88                            | 3.31        |
|        |          | 25x25     | 0.061          | 0.047 | 2.88                            | 3.31        |
|        | 18,000   | 20x40     | 0.051          | 0.039 | 3.31                            | 3.80        |
|        |          | 22x35     | 0.051          | 0.039 | 3.32                            | 3.81        |
|        |          | 25x30     | 0.051          | 0.039 | 3.08                            | 3.54        |
|        | 22,000   | 22x40     | 0.042          | 0.032 | 3.79                            | 4.35        |
|        |          | 25x30     | 0.042          | 0.032 | 3.66                            | 4.20        |
|        |          | 30x25     | 0.042          | 0.032 | 3.58                            | 4.11        |
|        | 27,000   | 22x45     | 0.034          | 0.026 | 4.04                            | 4.64        |
|        |          | 25x35     | 0.034          | 0.026 | 4.04                            | 4.64        |
|        |          | 30x30     | 0.034          | 0.026 | 3.99                            | 4.58        |
|        | 33,000   | 22x50     | 0.028          | 0.022 | 4.58                            | 5.26        |
|        |          | 25x40     | 0.028          | 0.022 | 4.56                            | 5.24        |
|        | 39,000   | 30x30     | 0.028          | 0.022 | 4.58                            | 5.26        |
|        |          | 25x45     | 0.024          | 0.018 | 5.29                            | 6.08        |
|        |          | 30x35     | 0.024          | 0.018 | 5.21                            | 5.99        |
| 47,000 | 35x30    | 0.024     | 0.018          | 5.05  | 5.80                            |             |
|        | 25x50    | 0.020     | 0.015          | 5.78  | 6.64                            |             |
|        | 30x40    | 0.020     | 0.015          | 5.78  | 6.64                            |             |
| 56,000 | 35x35    | 0.020     | 0.015          | 5.55  | 6.38                            |             |
|        | 30x45    | 0.017     | 0.013          | 6.59  | 7.57                            |             |
| 68,000 | 35x35    | 0.017     | 0.013          | 6.40  | 7.36                            |             |
|        | 30x50    | 0.014     | 0.011          | 7.50  | 8.62                            |             |
| 82,000 | 35x40    | 0.014     | 0.011          | 7.48  | 8.60                            |             |
|        | 35x50    | 0.012     | 0.009          | 8.50  | 9.77                            |             |
| 16     | 8,200    | 20x25     | 0.102          | 0.078 | 2.56                            | 2.94        |
|        | 10,000   | 20x30     | 0.083          | 0.064 | 2.85                            | 3.27        |
|        |          | 22x25     | 0.083          | 0.064 | 2.85                            | 3.27        |
|        | 12,000   | 20x35     | 0.070          | 0.054 | 3.20                            | 3.68        |
|        |          | 22x30     | 0.070          | 0.054 | 3.20                            | 3.68        |
|        | 15,000   | 20x40     | 0.056          | 0.043 | 3.70                            | 4.25        |
|        |          | 22x35     | 0.056          | 0.043 | 3.70                            | 4.25        |
|        |          | 25x25     | 0.056          | 0.043 | 3.70                            | 4.25        |
|        | 18,000   | 22x40     | 0.047          | 0.036 | 3.98                            | 4.57        |
|        |          | 25x30     | 0.047          | 0.036 | 3.98                            | 4.57        |
|        | 22,000   | 22x45     | 0.038          | 0.029 | 4.52                            | 5.19        |
|        |          | 25x35     | 0.038          | 0.029 | 4.52                            | 5.19        |
|        |          | 30x25     | 0.038          | 0.029 | 4.52                            | 5.19        |
|        | 27,000   | 22x50     | 0.031          | 0.024 | 4.98                            | 5.72        |
|        |          | 25x40     | 0.031          | 0.024 | 4.98                            | 5.72        |
|        |          | 30x30     | 0.031          | 0.024 | 4.98                            | 5.72        |
|        | 33,000   | 25x45     | 0.026          | 0.020 | 5.49                            | 6.31        |
|        |          | 30x35     | 0.026          | 0.020 | 5.49                            | 6.31        |
|        |          | 35x30     | 0.026          | 0.020 | 5.49                            | 6.31        |
|        | 39,000   | 25x50     | 0.022          | 0.017 | 6.11                            | 7.02        |
| 30x40  |          | 0.022     | 0.017          | 6.11  | 7.02                            |             |
| 35x35  |          | 0.022     | 0.017          | 6.11  | 7.02                            |             |
| 47,000 | 30x45    | 0.018     | 0.014          | 6.80  | 7.82                            |             |
|        | 35x35    | 0.018     | 0.014          | 6.80  | 7.82                            |             |
| 56,000 | 30x50    | 0.015     | 0.012          | 7.62  | 8.76                            |             |
|        | 35x40    | 0.015     | 0.012          | 7.62  | 8.76                            |             |
| 68,000 | 35x45    | 0.013     | 0.010          | 8.45  | 9.71                            |             |
| 82,000 | 35x50    | 0.011     | 0.008          | 9.14  | 10.51                           |             |



### STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V.   | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|--------|----------|-----------|----------------|-------|---------------------------------|-------------|
|        |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 25     | 5,600    | 20x25     | 0.134          | 0.103 | 2.33                            | 2.67        |
|        | 6,800    | 20x30     | 0.110          | 0.085 | 2.56                            | 2.94        |
|        |          | 22x25     | 0.110          | 0.085 | 2.56                            | 2.94        |
|        | 8,200    | 20x35     | 0.091          | 0.070 | 2.91                            | 3.34        |
|        |          | 22x30     | 0.091          | 0.070 | 2.91                            | 3.34        |
|        | 10,000   | 20x40     | 0.075          | 0.058 | 3.18                            | 3.65        |
|        |          | 22x35     | 0.075          | 0.058 | 3.18                            | 3.65        |
|        |          | 25x25     | 0.075          | 0.058 | 3.18                            | 3.65        |
|        | 12,000   | 22x40     | 0.063          | 0.048 | 3.53                            | 4.05        |
|        |          | 25x30     | 0.063          | 0.048 | 3.53                            | 4.05        |
|        | 15,000   | 22x45     | 0.050          | 0.039 | 4.08                            | 4.69        |
|        |          | 25x35     | 0.050          | 0.039 | 4.08                            | 4.69        |
|        |          | 30x25     | 0.050          | 0.039 | 4.08                            | 4.69        |
|        | 18,000   | 22x50     | 0.042          | 0.032 | 4.68                            | 5.38        |
|        |          | 25x40     | 0.042          | 0.032 | 4.68                            | 5.38        |
|        |          | 30x30     | 0.042          | 0.032 | 4.68                            | 5.38        |
|        | 22,000   | 25x45     | 0.034          | 0.027 | 5.19                            | 5.96        |
|        |          | 30x35     | 0.034          | 0.027 | 5.19                            | 5.96        |
|        |          | 35x30     | 0.034          | 0.027 | 5.19                            | 5.96        |
|        | 27,000   | 25x50     | 0.028          | 0.022 | 6.02                            | 6.92        |
| 30x40  |          | 0.028     | 0.022          | 6.02  | 6.92                            |             |
| 35x35  |          | 0.028     | 0.022          | 6.02  | 6.92                            |             |
| 33,000 | 30x45    | 0.023     | 0.018          | 6.75  | 7.76                            |             |
|        | 35x40    | 0.023     | 0.018          | 6.75  | 7.76                            |             |
|        | 30x50    | 0.020     | 0.015          | 7.56  | 8.69                            |             |
| 39,000 | 35x45    | 0.020     | 0.015          | 7.56  | 8.69                            |             |
|        | 47,000   | 35x50     | 0.016          | 0.013 | 8.30                            | 9.54        |
| 35     | 3,300    | 20x25     | 0.201          | 0.155 | 2.14                            | 2.46        |
|        | 3,900    | 20x30     | 0.171          | 0.131 | 2.28                            | 2.62        |
|        | 4,700    | 20x35     | 0.142          | 0.109 | 2.46                            | 2.82        |
|        |          | 22x25     | 0.142          | 0.109 | 2.46                            | 2.82        |
|        | 5,600    | 20x40     | 0.119          | 0.092 | 2.79                            | 3.20        |
|        |          | 22x30     | 0.119          | 0.092 | 2.79                            | 3.20        |
|        |          | 25x25     | 0.119          | 0.092 | 2.79                            | 3.20        |
|        | 6,800    | 22x35     | 0.098          | 0.076 | 2.89                            | 3.32        |
|        |          | 25x30     | 0.098          | 0.076 | 2.89                            | 3.32        |
|        | 8,200    | 22x40     | 0.081          | 0.063 | 3.47                            | 3.99        |
|        |          | 25x30     | 0.081          | 0.063 | 3.47                            | 3.99        |
|        |          | 30x25     | 0.081          | 0.063 | 3.47                            | 3.99        |
|        | 10,000   | 22x45     | 0.067          | 0.052 | 3.59                            | 4.12        |
|        |          | 25x35     | 0.067          | 0.052 | 3.59                            | 4.12        |
|        |          | 30x30     | 0.067          | 0.052 | 3.59                            | 4.12        |
|        | 12,000   | 22x50     | 0.056          | 0.043 | 4.51                            | 5.18        |
|        |          | 25x40     | 0.056          | 0.043 | 4.51                            | 5.18        |
|        |          | 30x30     | 0.056          | 0.043 | 4.51                            | 5.18        |
|        | 15,000   | 25x45     | 0.045          | 0.035 | 4.80                            | 5.52        |
|        |          | 30x35     | 0.045          | 0.035 | 4.80                            | 5.52        |
| 35x30  |          | 0.045     | 0.035          | 4.80  | 5.52                            |             |
| 22,000 | 30x45    | 0.031     | 0.024          | 6.38  | 7.33                            |             |
|        | 35x40    | 0.031     | 0.024          | 6.38  | 7.33                            |             |
| 27,000 | 35x45    | 0.025     | 0.019          | 6.90  | 7.93                            |             |
| 33,000 | 35x50    | 0.021     | 0.016          | 7.49  | 8.61                            |             |

# Large Can Aluminum Electrolytic Capacitors

NRLR Series

## STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V.   | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|--------|----------|-----------|----------------|-------|---------------------------------|-------------|
|        |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 50     | 2,200    | 20x25     | 0.264          | 0.203 | 2.07                            | 2.38        |
|        | 2,700    | 20x30     | 0.215          | 0.166 | 2.21                            | 2.54        |
|        |          | 22x25     | 0.215          | 0.166 | 2.21                            | 2.54        |
|        | 3,300    | 20x35     | 0.176          | 0.136 | 2.41                            | 2.77        |
|        |          | 22x30     | 0.176          | 0.136 | 2.41                            | 2.77        |
|        | 3,900    | 20x40     | 0.149          | 0.115 | 2.72                            | 3.12        |
|        |          | 22x30     | 0.149          | 0.115 | 2.72                            | 3.12        |
|        |          | 25x25     | 0.149          | 0.115 | 2.72                            | 3.12        |
|        | 4,700    | 22x35     | 0.124          | 0.095 | 3.01                            | 3.46        |
|        |          | 25x30     | 0.124          | 0.095 | 3.01                            | 3.46        |
|        | 5,600    | 22x40     | 0.104          | 0.080 | 3.43                            | 3.94        |
|        |          | 25x35     | 0.104          | 0.080 | 3.43                            | 3.94        |
|        |          | 30x25     | 0.104          | 0.080 | 3.43                            | 3.94        |
|        | 6,800    | 22x45     | 0.086          | 0.066 | 3.94                            | 4.53        |
|        |          | 25x35     | 0.086          | 0.066 | 3.94                            | 4.53        |
|        |          | 30x30     | 0.086          | 0.066 | 3.94                            | 4.53        |
|        | 8,200    | 25x40     | 0.071          | 0.055 | 4.37                            | 5.02        |
|        |          | 30x35     | 0.071          | 0.055 | 4.37                            | 5.02        |
| 10,000 | 25x50    | 0.059     | 0.045          | 5.02  | 5.77                            |             |
|        | 30x40    | 0.059     | 0.045          | 5.02  | 5.77                            |             |
|        | 35x30    | 0.059     | 0.045          | 5.02  | 5.77                            |             |
| 12,000 | 30x45    | 0.049     | 0.038          | 5.60  | 6.44                            |             |
|        | 35x35    | 0.049     | 0.038          | 5.60  | 6.44                            |             |
| 15,000 | 30x50    | 0.039     | 0.030          | 6.44  | 7.40                            |             |
|        | 35x40    | 0.039     | 0.030          | 6.44  | 7.40                            |             |
| 18,000 | 35x45    | 0.033     | 0.025          | 6.71  | 7.71                            |             |
| 63     | 1,500    | 20x25     | 0.332          | 0.256 | 1.69                            | 1.94        |
|        | 1,800    | 20x30     | 0.277          | 0.213 | 2.04                            | 2.34        |
|        |          | 22x25     | 0.277          | 0.213 | 2.04                            | 2.34        |
|        | 2,200    | 20x35     | 0.227          | 0.174 | 2.40                            | 2.76        |
|        |          | 22x30     | 0.227          | 0.174 | 2.40                            | 2.76        |
|        | 2,700    | 20x40     | 0.185          | 0.142 | 2.52                            | 2.89        |
|        |          | 22x35     | 0.185          | 0.142 | 2.52                            | 2.89        |
|        |          | 25x25     | 0.185          | 0.142 | 2.52                            | 2.89        |
|        | 3,300    | 22x40     | 0.151          | 0.116 | 2.69                            | 3.09        |
|        |          | 25x30     | 0.151          | 0.116 | 2.69                            | 3.09        |
|        | 3,900    | 22x45     | 0.128          | 0.099 | 3.10                            | 3.56        |
|        |          | 25x35     | 0.128          | 0.099 | 3.10                            | 3.56        |
|        |          | 30x25     | 0.128          | 0.099 | 3.10                            | 3.56        |
|        | 4,700    | 22x50     | 0.106          | 0.082 | 3.49                            | 4.01        |
|        |          | 25x40     | 0.106          | 0.082 | 3.49                            | 4.01        |
|        |          | 30x30     | 0.106          | 0.082 | 3.49                            | 4.01        |
|        | 5,600    | 25x45     | 0.089          | 0.069 | 3.81                            | 4.38        |
|        |          | 30x35     | 0.089          | 0.069 | 3.81                            | 4.38        |
| 6,800  | 25x50    | 0.074     | 0.057          | 4.41  | 5.07                            |             |
|        | 30x40    | 0.074     | 0.057          | 4.41  | 5.07                            |             |
|        | 35x30    | 0.074     | 0.057          | 4.41  | 5.07                            |             |
| 8,200  | 30x45    | 0.061     | 0.047          | 4.90  | 5.63                            |             |
|        | 35x35    | 0.061     | 0.047          | 4.90  | 5.63                            |             |
| 10,000 | 30x50    | 0.050     | 0.039          | 5.49  | 6.31                            |             |
|        | 35x40    | 0.050     | 0.039          | 5.49  | 6.31                            |             |
| 12,000 | 35x45    | 0.042     | 0.032          | 6.30  | 7.24                            |             |



### STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V.   | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|--------|----------|-----------|----------------|-------|---------------------------------|-------------|
|        |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 80     | 1,000    | 20x25     | 0.415          | 0.319 | 1.56                            | 1.79        |
|        | 2,200    | 20x30     | 0.346          | 0.266 | 1.80                            | 2.07        |
|        |          | 22x25     | 0.346          | 0.266 | 1.80                            | 2.07        |
|        | 1,500    | 20x30     | 0.277          | 0.213 | 2.10                            | 2.41        |
|        |          | 22x30     | 0.277          | 0.213 | 2.10                            | 2.41        |
|        | 1,800    | 20x35     | 0.231          | 0.178 | 2.30                            | 2.64        |
|        |          | 22x30     | 0.231          | 0.178 | 2.30                            | 2.64        |
|        |          | 25x25     | 0.231          | 0.178 | 2.30                            | 2.64        |
|        | 2,200    | 20x40     | 0.189          | 0.145 | 2.53                            | 2.90        |
|        |          | 22x35     | 0.189          | 0.145 | 2.53                            | 2.90        |
|        |          | 25x30     | 0.189          | 0.145 | 2.53                            | 2.90        |
|        | 2,700    | 22x40     | 0.154          | 0.119 | 2.93                            | 3.36        |
|        |          | 25x35     | 0.154          | 0.119 | 2.93                            | 3.36        |
|        |          | 30x25     | 0.154          | 0.119 | 2.93                            | 3.36        |
|        | 3,300    | 22x45     | 0.126          | 0.097 | 3.25                            | 3.73        |
|        |          | 25x35     | 0.126          | 0.097 | 3.25                            | 3.73        |
|        |          | 30x30     | 0.126          | 0.097 | 3.25                            | 3.73        |
|        | 3,900    | 25x40     | 0.107          | 0.082 | 3.62                            | 4.16        |
|        |          | 30x35     | 0.107          | 0.082 | 3.62                            | 4.16        |
|        | 4,700    | 25x45     | 0.089          | 0.068 | 4.28                            | 4.92        |
| 30x40  |          | 0.089     | 0.068          | 4.28  | 4.92                            |             |
| 35x30  |          | 0.089     | 0.068          | 4.28  | 4.92                            |             |
| 5,600  | 30x45    | 0.075     | 0.057          | 4.55  | 5.23                            |             |
|        | 35x35    | 0.075     | 0.057          | 4.55  | 5.23                            |             |
| 6,800  | 30x45    | 0.061     | 0.047          | 5.83  | 6.70                            |             |
|        | 35x40    | 0.061     | 0.047          | 5.83  | 6.70                            |             |
| 8,200  | 35x40    | 0.061     | 0.047          | 5.83  | 6.70                            |             |
| 10,000 | 35x50    | 0.042     | 0.032          | 7.03  | 8.08                            |             |
| 100    | 680      | 20x25     | 0.488          | 0.376 | 1.66                            | 1.90        |
|        | 820      | 20x30     | 0.405          | 0.312 | 1.86                            | 2.13        |
|        |          | 22x25     | 0.405          | 0.312 | 1.86                            | 2.13        |
|        | 1,000    | 20x30     | 0.332          | 0.256 | 2.02                            | 2.32        |
|        |          | 22x30     | 0.332          | 0.256 | 2.02                            | 2.32        |
|        | 1,200    | 20x35     | 0.277          | 0.213 | 2.12                            | 2.43        |
|        |          | 22x30     | 0.277          | 0.213 | 2.12                            | 2.43        |
|        |          | 25x25     | 0.277          | 0.213 | 2.12                            | 2.43        |
|        | 1,500    | 20x40     | 0.222          | 0.171 | 2.45                            | 2.81        |
|        |          | 22x35     | 0.222          | 0.171 | 2.45                            | 2.81        |
|        |          | 25x30     | 0.222          | 0.171 | 2.45                            | 2.81        |
|        | 1,800    | 22x40     | 0.185          | 0.142 | 2.77                            | 3.18        |
|        |          | 25x30     | 0.185          | 0.142 | 2.77                            | 3.18        |
|        |          | 30x25     | 0.185          | 0.142 | 2.77                            | 3.18        |
|        | 2,200    | 22x45     | 0.151          | 0.116 | 3.12                            | 3.58        |
|        |          | 25x35     | 0.151          | 0.116 | 3.12                            | 3.58        |
|        |          | 30x30     | 0.151          | 0.116 | 3.12                            | 3.58        |
|        | 2,700    | 25x40     | 0.123          | 0.095 | 3.61                            | 4.15        |
|        |          | 30x30     | 0.123          | 0.095 | 3.61                            | 4.15        |
|        | 3,300    | 25x50     | 0.101          | 0.078 | 4.06                            | 4.66        |
|        |          | 30x35     | 0.101          | 0.078 | 4.06                            | 4.66        |
|        |          | 35x30     | 0.101          | 0.078 | 4.06                            | 4.66        |
|        | 3,900    | 30x40     | 0.086          | 0.066 | 4.60                            | 5.29        |
|        |          | 35x35     | 0.086          | 0.066 | 4.60                            | 5.29        |
| 4,700  | 30x45    | 0.071     | 0.055          | 5.13  | 5.89                            |             |
|        | 35x40    | 0.071     | 0.055          | 5.13  | 5.89                            |             |
| 5,600  | 35x45    | 0.06      | 0.046          | 5.75  | 6.61                            |             |
| 6,800  | 35x50    | 0.049     | 0.038          | 6.01  | 6.91                            |             |

# Large Can Aluminum Electrolytic Capacitors

NRLR Series

## STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V.  | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|-------|----------|-----------|----------------|-------|---------------------------------|-------------|
|       |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 160   | 270      | 20x25     | 0.922          | 0.709 | 1.28                            | 1.92        |
|       | 330      | 20x25     | 0.754          | 0.580 | 1.55                            | 2.32        |
|       | 390      | 20x30     | 0.638          | 0.491 | 1.63                            | 2.44        |
|       |          | 22x25     | 0.638          | 0.491 | 1.63                            | 2.44        |
|       | 470      | 20x30     | 0.53           | 0.408 | 1.90                            | 2.85        |
|       |          | 22x30     | 0.53           | 0.408 | 1.86                            | 2.79        |
|       |          | 25x25     | 0.53           | 0.408 | 1.86                            | 2.79        |
|       | 560      | 20x35     | 0.445          | 0.342 | 2.14                            | 3.21        |
|       |          | 22x30     | 0.445          | 0.342 | 2.15                            | 3.22        |
|       |          | 25x25     | 0.445          | 0.342 | 2.15                            | 3.22        |
|       | 680      | 20x40     | 0.366          | 0.282 | 2.35                            | 3.52        |
|       |          | 22x35     | 0.366          | 0.282 | 2.35                            | 3.52        |
|       |          | 25x30     | 0.366          | 0.282 | 2.33                            | 3.49        |
|       |          | 30x25     | 0.366          | 0.282 | 2.33                            | 3.49        |
|       | 820      | 22x40     | 0.304          | 0.234 | 2.68                            | 4.02        |
|       |          | 25x30     | 0.304          | 0.234 | 2.65                            | 3.97        |
|       |          | 30x25     | 0.304          | 0.234 | 2.64                            | 3.96        |
|       | 1,000    | 22x45     | 0.249          | 0.192 | 3.02                            | 4.53        |
|       |          | 25x35     | 0.249          | 0.192 | 3.00                            | 4.50        |
|       |          | 30x30     | 0.249          | 0.192 | 2.96                            | 4.44        |
|       | 1,200    | 25x40     | 0.208          | 0.160 | 3.43                            | 5.14        |
|       |          | 30x30     | 0.208          | 0.160 | 3.41                            | 5.11        |
|       |          | 35x30     | 0.208          | 0.160 | 3.40                            | 5.10        |
|       | 1,500    | 25x50     | 0.166          | 0.128 | 3.96                            | 5.94        |
| 30x35 |          | 0.166     | 0.128          | 3.96  | 5.94                            |             |
| 35x30 |          | 0.166     | 0.128          | 3.94  | 5.91                            |             |
| 1,800 | 30x40    | 0.139     | 0.107          | 4.31  | 6.46                            |             |
|       | 35x35    | 0.139     | 0.107          | 4.28  | 6.42                            |             |
| 2,200 | 30x50    | 0.114     | 0.087          | 4.96  | 7.44                            |             |
|       | 35x40    | 0.114     | 0.087          | 4.96  | 7.44                            |             |
| 2,700 | 35x45    | 0.093     | 0.071          | 5.57  | 8.35                            |             |
| 180   | 270      | 20x25     | 0.922          | 0.709 | 1.29                            | 1.93        |
|       | 330      | 20x30     | 0.754          | 0.580 | 1.77                            | 2.65        |
|       |          | 22x25     | 0.754          | 0.580 | 1.49                            | 2.23        |
|       | 390      | 20x30     | 0.638          | 0.491 | 1.84                            | 2.76        |
|       |          | 22x25     | 0.638          | 0.491 | 1.84                            | 2.76        |
|       | 470      | 20x35     | 0.530          | 0.408 | 1.91                            | 2.86        |
|       |          | 22x30     | 0.530          | 0.408 | 1.91                            | 2.86        |
|       |          | 25x25     | 0.530          | 0.408 | 2.08                            | 3.12        |
|       | 560      | 20x40     | 0.445          | 0.342 | 2.15                            | 3.22        |
|       |          | 22x35     | 0.445          | 0.342 | 2.25                            | 3.37        |
|       |          | 25x25     | 0.445          | 0.342 | 2.25                            | 3.37        |
|       | 680      | 22x35     | 0.366          | 0.282 | 2.48                            | 3.72        |
|       |          | 25x30     | 0.366          | 0.282 | 2.50                            | 3.75        |
|       |          | 30x25     | 0.366          | 0.282 | 2.46                            | 3.69        |
|       | 820      | 22x40     | 0.304          | 0.234 | 2.86                            | 4.29        |
|       |          | 25x35     | 0.304          | 0.234 | 2.75                            | 4.12        |
|       |          | 30x25     | 0.304          | 0.234 | 2.69                            | 4.03        |
|       | 1,000    | 22x50     | 0.249          | 0.192 | 3.10                            | 4.65        |
|       |          | 25x40     | 0.249          | 0.192 | 3.06                            | 4.59        |
|       |          | 30x30     | 0.249          | 0.192 | 3.10                            | 4.65        |
|       | 1,200    | 25x45     | 0.208          | 0.160 | 3.63                            | 5.44        |
|       |          | 30x35     | 0.208          | 0.160 | 3.55                            | 5.32        |
|       |          | 35x30     | 0.208          | 0.160 | 3.49                            | 5.23        |
|       | 1,500    | 30x40     | 0.166          | 0.128 | 4.10                            | 6.15        |
| 35x35 |          | 0.166     | 0.128          | 4.02  | 6.03                            |             |

180Vdc Continued next page



### STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V. | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|------|----------|-----------|----------------|-------|---------------------------------|-------------|
|      |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 180  | 1,800    | 30x45     | 0.139          | 0.107 | 4.55                            | 6.82        |
|      |          | 35x35     | 0.139          | 0.107 | 4.54                            | 6.81        |
|      | 2,200    | 35x40     | 0.114          | 0.087 | 4.83                            | 7.24        |
|      | 2,700    | 35x50     | 0.093          | 0.071 | 5.3                             | 7.95        |
| 200  | 220      | 20x25     | 1.131          | 0.870 | 1.19                            | 1.78        |
|      | 270      | 20x25     | 0.922          | 0.709 | 1.39                            | 2.08        |
|      |          | 22x25     | 0.922          | 0.709 | 1.37                            | 2.05        |
|      | 330      | 20x30     | 0.754          | 0.580 | 1.56                            | 2.34        |
|      |          | 22x25     | 0.754          | 0.580 | 1.51                            | 2.26        |
|      | 390      | 20x35     | 0.638          | 0.491 | 1.74                            | 2.61        |
|      |          | 22x30     | 0.638          | 0.491 | 1.73                            | 2.59        |
|      |          | 25x25     | 0.638          | 0.491 | 1.71                            | 2.56        |
|      | 470      | 20x35     | 0.530          | 0.408 | 2.03                            | 3.04        |
|      |          | 22x30     | 0.530          | 0.408 | 1.97                            | 2.95        |
|      |          | 25x25     | 0.530          | 0.408 | 1.95                            | 2.92        |
|      | 560      | 20x40     | 0.445          | 0.342 | 2.18                            | 3.27        |
|      |          | 22x35     | 0.445          | 0.342 | 2.18                            | 3.27        |
|      |          | 25x30     | 0.445          | 0.342 | 2.15                            | 3.22        |
|      |          | 30x25     | 0.445          | 0.342 | 2.15                            | 3.22        |
|      | 680      | 22x40     | 0.366          | 0.282 | 2.48                            | 3.72        |
|      |          | 25x30     | 0.366          | 0.282 | 2.48                            | 3.72        |
|      |          | 30x25     | 0.366          | 0.282 | 2.48                            | 3.72        |
|      | 820      | 22x45     | 0.304          | 0.234 | 2.81                            | 4.21        |
|      |          | 25x35     | 0.304          | 0.234 | 2.79                            | 4.18        |
|      |          | 30x30     | 0.304          | 0.234 | 2.75                            | 4.12        |
|      | 1,000    | 22x50     | 0.249          | 0.192 | 3.28                            | 4.92        |
|      |          | 25x40     | 0.249          | 0.192 | 3.28                            | 4.92        |
|      |          | 30x35     | 0.249          | 0.192 | 3.15                            | 4.72        |
|      | 1,200    | 25x45     | 0.208          | 0.160 | 3.61                            | 5.41        |
|      |          | 30x35     | 0.208          | 0.160 | 3.61                            | 5.41        |
|      |          | 35x30     | 0.208          | 0.160 | 3.57                            | 5.35        |
|      | 1,500    | 30x45     | 0.166          | 0.128 | 4.13                            | 6.19        |
|      |          | 35x35     | 0.166          | 0.128 | 4.06                            | 6.09        |
|      | 1,800    | 30x50     | 0.139          | 0.107 | 4.60                            | 6.90        |
|      |          | 35x40     | 0.139          | 0.107 | 4.59                            | 6.88        |
|      | 2,200    | 35x45     | 0.114          | 0.087 | 5.25                            | 7.87        |
| 220  | 220      | 20x25     | 1.131          | 0.870 | 1.23                            | 1.84        |
|      | 270      | 20x30     | 0.922          | 0.709 | 1.46                            | 2.19        |
|      |          | 22x25     | 0.922          | 0.709 | 1.42                            | 2.13        |
|      | 330      | 20x35     | 0.754          | 0.580 | 1.64                            | 2.46        |
|      |          | 22x30     | 0.754          | 0.580 | 1.59                            | 2.38        |
|      | 390      | 20x35     | 0.638          | 0.491 | 1.79                            | 2.68        |
|      |          | 22x30     | 0.638          | 0.491 | 1.80                            | 2.70        |
|      |          | 25x25     | 0.638          | 0.491 | 1.75                            | 2.62        |
|      | 470      | 20x40     | 0.530          | 0.408 | 2.12                            | 3.18        |
|      |          | 22x35     | 0.530          | 0.408 | 2.06                            | 3.09        |
|      |          | 25x30     | 0.530          | 0.408 | 2.08                            | 3.12        |
|      | 560      | 22x40     | 0.445          | 0.342 | 2.22                            | 3.33        |
|      |          | 25x35     | 0.445          | 0.342 | 2.38                            | 3.57        |
|      |          | 30x25     | 0.445          | 0.342 | 2.18                            | 3.27        |
|      | 680      | 22x45     | 0.366          | 0.282 | 2.62                            | 3.93        |
|      |          | 25x35     | 0.366          | 0.282 | 2.56                            | 3.84        |
|      |          | 30x30     | 0.366          | 0.282 | 2.52                            | 3.78        |

220Vdc Continued on next page

### STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V.  | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|-------|----------|-----------|----------------|-------|---------------------------------|-------------|
|       |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 220   | 820      | 25x45     | 0.304          | 0.234 | 2.91                            | 4.36        |
|       |          | 30x35     | 0.304          | 0.234 | 2.84                            | 4.26        |
|       |          | 35x30     | 0.304          | 0.234 | 2.79                            | 4.18        |
|       | 1,000    | 30x35     | 0.249          | 0.192 | 3.36                            | 5.04        |
|       |          | 35x30     | 0.249          | 0.192 | 3.29                            | 4.93        |
|       | 1,200    | 30x40     | 0.208          | 0.160 | 3.72                            | 5.58        |
|       |          | 35x35     | 0.208          | 0.160 | 3.68                            | 5.52        |
|       | 1,500    | 30x50     | 0.166          | 0.128 | 4.18                            | 6.27        |
| 35x40 |          | 0.166     | 0.128          | 4.10  | 6.15                            |             |
| 1,800 | 35x45    | 0.139     | 0.107          | 4.52  | 6.78                            |             |
| 250   | 180      | 20x25     | 1.382          | 1.063 | 1.20                            | 1.80        |
|       | 220      | 20x25     | 1.131          | 0.870 | 1.26                            | 1.89        |
|       |          | 22x25     | 1.131          | 0.870 | 1.24                            | 1.86        |
|       | 270      | 20x30     | 0.922          | 0.709 | 1.42                            | 2.13        |
|       |          | 22x25     | 0.922          | 0.709 | 1.50                            | 2.25        |
|       | 330      | 20x35     | 0.754          | 0.580 | 1.68                            | 2.52        |
|       |          | 22x30     | 0.754          | 0.580 | 1.66                            | 2.49        |
|       |          | 25x25     | 0.754          | 0.580 | 1.61                            | 2.41        |
|       | 390      | 20x40     | 0.638          | 0.491 | 1.92                            | 2.88        |
|       |          | 22x35     | 0.638          | 0.491 | 1.88                            | 2.82        |
|       |          | 25x30     | 0.638          | 0.491 | 1.88                            | 2.82        |
|       | 470      | 22x35     | 0.530          | 0.408 | 2.15                            | 3.22        |
|       |          | 25x35     | 0.530          | 0.408 | 2.15                            | 3.22        |
|       |          | 30x25     | 0.530          | 0.408 | 2.04                            | 3.06        |
|       | 560      | 22x40     | 0.445          | 0.342 | 2.48                            | 3.72        |
|       |          | 25x35     | 0.445          | 0.342 | 2.35                            | 3.52        |
|       |          | 30x25     | 0.445          | 0.342 | 2.35                            | 3.52        |
|       | 680      | 25x40     | 0.366          | 0.282 | 2.67                            | 4.00        |
|       |          | 30x30     | 0.366          | 0.282 | 2.71                            | 4.06        |
|       | 820      | 25x45     | 0.304          | 0.234 | 3.01                            | 4.51        |
|       |          | 30x35     | 0.304          | 0.234 | 2.98                            | 4.47        |
|       |          | 35x30     | 0.304          | 0.234 | 2.96                            | 4.44        |
|       | 1,000    | 30x40     | 0.249          | 0.192 | 3.56                            | 5.34        |
|       |          | 35x35     | 0.249          | 0.192 | 3.48                            | 5.22        |
|       | 1,200    | 30x45     | 0.208          | 0.160 | 3.99                            | 5.98        |
|       |          | 35x35     | 0.208          | 0.160 | 3.84                            | 5.76        |
|       | 1,500    | 35x40     | 0.166          | 0.128 | 4.33                            | 6.49        |
|       | 1,800    | 35x50     | 0.139          | 0.107 | 4.54                            | 6.81        |
| 315   | 150      | 20x30     | 1.658          | 1.276 | 1.00                            | 1.40        |
|       | 180      | 20x35     | 1.382          | 1.063 | 1.13                            | 1.58        |
|       |          | 22x30     | 1.382          | 1.063 | 1.29                            | 1.80        |
|       |          | 25x25     | 1.382          | 1.063 | 1.38                            | 1.93        |
|       | 220      | 20x35     | 1.131          | 0.870 | 1.29                            | 1.80        |
|       |          | 22x30     | 1.131          | 0.870 | 1.41                            | 1.97        |
|       |          | 25x25     | 1.131          | 0.870 | 1.47                            | 2.05        |
|       | 270      | 22x35     | 0.922          | 0.709 | 1.68                            | 2.35        |
|       |          | 25x30     | 0.922          | 0.709 | 1.70                            | 2.38        |
|       | 330      | 22x40     | 0.754          | 0.580 | 1.91                            | 2.67        |
|       |          | 25x35     | 0.754          | 0.580 | 1.94                            | 2.71        |
|       |          | 30x25     | 0.754          | 0.580 | 1.98                            | 2.77        |
|       | 390      | 22x45     | 0.638          | 0.491 | 2.07                            | 2.89        |
|       |          | 25x40     | 0.638          | 0.491 | 2.11                            | 2.95        |
|       |          | 30x30     | 0.638          | 0.491 | 2.15                            | 3.01        |
|       | 470      | 25x50     | 0.530          | 0.408 | 2.31                            | 3.23        |
|       |          | 30x35     | 0.530          | 0.408 | 2.38                            | 3.33        |
|       |          | 35x30     | 0.530          | 0.408 | 2.36                            | 3.30        |

315Vdc Continued on next page



# Large Can Aluminum Electrolytic Capacitors

NRLR Series

## STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V.  | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|-------|----------|-----------|----------------|-------|---------------------------------|-------------|
|       |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 315   | 560      | 30x35     | 0.445          | 0.342 | 2.63                            | 3.68        |
|       |          | 35x30     | 0.445          | 0.342 | 2.69                            | 3.76        |
|       | 680      | 30x45     | 0.366          | 0.282 | 2.80                            | 3.92        |
|       |          | 35x35     | 0.366          | 0.282 | 3.05                            | 4.27        |
|       | 820      | 30x50     | 0.304          | 0.234 | 3.28                            | 4.59        |
|       |          | 35x40     | 0.304          | 0.234 | 3.45                            | 4.83        |
| 1,000 | 35x45    | 0.249     | 0.192          | 3.57  | 4.99                            |             |
| 350   | 120      | 20x30     | 2.073          | 1.595 | 0.96                            | 1.34        |
|       |          | 22x25     | 2.073          | 1.595 | 1.04                            | 1.45        |
|       | 150      | 20x30     | 1.658          | 1.276 | 1.10                            | 1.54        |
|       |          | 22x30     | 1.658          | 1.276 | 1.20                            | 1.68        |
|       |          | 25x25     | 1.658          | 1.276 | 1.22                            | 1.70        |
|       | 180      | 20x35     | 1.382          | 1.063 | 1.24                            | 1.73        |
|       |          | 22x30     | 1.382          | 1.063 | 1.34                            | 1.87        |
|       |          | 25x25     | 1.382          | 1.063 | 1.37                            | 1.91        |
|       | 220      | 22x35     | 1.131          | 0.870 | 1.47                            | 2.05        |
|       |          | 25x30     | 1.131          | 0.870 | 1.53                            | 2.14        |
|       |          | 30x25     | 1.131          | 0.870 | 1.54                            | 2.15        |
|       | 270      | 22x40     | 0.922          | 0.709 | 1.70                            | 2.38        |
|       |          | 25x35     | 0.922          | 0.709 | 1.73                            | 2.42        |
|       |          | 30x25     | 0.922          | 0.709 | 1.80                            | 2.52        |
|       | 330      | 22x45     | 0.754          | 0.580 | 1.87                            | 2.61        |
|       |          | 25x35     | 0.754          | 0.580 | 1.97                            | 2.75        |
|       |          | 30x30     | 0.754          | 0.580 | 2.03                            | 2.84        |
|       | 390      | 25x40     | 0.638          | 0.491 | 2.14                            | 2.99        |
|       |          | 30x35     | 0.638          | 0.491 | 2.23                            | 3.12        |
|       |          | 35x30     | 0.638          | 0.491 | 2.30                            | 3.22        |
|       | 470      | 25x50     | 0.530          | 0.408 | 2.55                            | 3.57        |
|       |          | 30x35     | 0.530          | 0.408 | 2.53                            | 3.54        |
|       |          | 35x30     | 0.530          | 0.408 | 2.55                            | 3.57        |
|       | 560      | 30x40     | 0.445          | 0.342 | 2.73                            | 3.82        |
|       |          | 35x35     | 0.445          | 0.342 | 2.75                            | 3.85        |
|       | 680      | 30x50     | 0.366          | 0.282 | 3.15                            | 4.41        |
|       |          | 35x40     | 0.366          | 0.282 | 3.15                            | 4.41        |
| 820   | 35x45    | 0.304     | 0.234          | 3.47  | 4.85                            |             |
| 1,000 | 35x50    | 0.249     | 0.192          | 3.60  | 5.04                            |             |
| 385   | 68       | 20x25     | 3.658          | 2.814 | 0.68                            | 0.95        |
|       |          | 20x30     | 3.033          | 2.333 | 0.74                            | 1.03        |
|       | 82       | 22x25     | 3.033          | 2.333 | 0.76                            | 1.06        |
|       |          | 20x30     | 2.487          | 1.913 | 0.86                            | 1.2         |
|       | 100      | 22x30     | 2.487          | 1.913 | 0.89                            | 1.24        |
|       |          | 20x35     | 2.073          | 1.595 | 0.96                            | 1.34        |
|       | 120      | 22x30     | 2.073          | 1.595 | 0.98                            | 1.37        |
|       |          | 25x25     | 2.073          | 1.595 | 1.02                            | 1.42        |
|       |          | 20x35     | 1.658          | 1.276 | 1.10                            | 1.54        |
|       | 150      | 22x35     | 1.658          | 1.276 | 1.12                            | 1.56        |
|       |          | 25x30     | 1.658          | 1.276 | 1.14                            | 1.59        |
|       |          | 20x40     | 1.382          | 1.063 | 1.27                            | 1.77        |
|       | 180      | 22x35     | 1.382          | 1.063 | 1.27                            | 1.77        |
|       |          | 25x30     | 1.382          | 1.063 | 1.30                            | 1.82        |
|       |          | 30x25     | 1.382          | 1.063 | 1.37                            | 1.91        |
|       | 220      | 22x40     | 1.131          | 0.870 | 1.42                            | 1.98        |
|       |          | 25x35     | 1.131          | 0.870 | 1.48                            | 2.07        |
|       |          | 30x30     | 1.131          | 0.870 | 1.49                            | 2.08        |
|       | 270      | 22x50     | 0.922          | 0.709 | 1.60                            | 2.24        |
|       |          | 25x40     | 0.922          | 0.709 | 1.61                            | 2.25        |
|       |          | 30x30     | 0.922          | 0.709 | 1.64                            | 2.29        |

385Vdc Continued on next page



# Large Can Aluminum Electrolytic Capacitors

NRLR Series

## STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V. | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|------|----------|-----------|----------------|-------|---------------------------------|-------------|
|      |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 385  | 330      | 25x45     | 0.754          | 0.580 | 1.80                            | 2.52        |
|      |          | 30x35     | 0.754          | 0.580 | 1.85                            | 2.59        |
|      |          | 35x30     | 0.754          | 0.580 | 1.87                            | 2.61        |
|      | 390      | 25x50     | 0.638          | 0.491 | 2.04                            | 2.85        |
|      |          | 30x40     | 0.638          | 0.491 | 2.05                            | 2.87        |
|      |          | 35x35     | 0.638          | 0.491 | 2.07                            | 2.89        |
|      | 470      | 30x45     | 0.530          | 0.408 | 2.26                            | 3.16        |
|      |          | 35x35     | 0.530          | 0.408 | 2.26                            | 3.16        |
|      | 560      | 30x50     | 0.445          | 0.342 | 2.57                            | 3.59        |
|      |          | 35x40     | 0.445          | 0.342 | 2.59                            | 3.62        |
| 680  | 35x45    | 0.366     | 0.282          | 2.80  | 3.92                            |             |
| 400  | 68       | 20x25     | 3.658          | 2.814 | 0.75                            | 1.05        |
|      | 82       | 20x30     | 3.033          | 2.333 | 0.82                            | 1.14        |
|      |          | 22x25     | 3.033          | 2.333 | 0.84                            | 1.17        |
|      | 100      | 20x30     | 2.487          | 1.913 | 0.95                            | 1.33        |
|      |          | 22x30     | 2.487          | 1.913 | 0.99                            | 1.38        |
|      | 120      | 20x35     | 2.073          | 1.595 | 1.07                            | 1.49        |
|      |          | 22x30     | 2.073          | 1.595 | 1.09                            | 1.52        |
|      |          | 25x25     | 2.073          | 1.595 | 1.13                            | 1.58        |
|      | 150      | 20x40     | 1.658          | 1.276 | 1.22                            | 1.70        |
|      |          | 22x35     | 1.658          | 1.276 | 1.24                            | 1.73        |
|      |          | 25x30     | 1.658          | 1.276 | 1.27                            | 1.77        |
|      | 180      | 22x40     | 1.382          | 1.063 | 1.41                            | 1.97        |
|      |          | 25x30     | 1.382          | 1.063 | 1.44                            | 2.01        |
|      |          | 30x25     | 1.382          | 1.063 | 1.52                            | 2.12        |
|      | 220      | 22x45     | 1.131          | 0.870 | 1.58                            | 2.21        |
|      |          | 25x35     | 1.131          | 0.870 | 1.64                            | 2.29        |
|      |          | 30x30     | 1.131          | 0.870 | 1.66                            | 2.32        |
|      | 270      | 25x40     | 0.922          | 0.709 | 1.79                            | 2.50        |
|      |          | 30x30     | 0.922          | 0.709 | 1.82                            | 2.54        |
|      | 330      | 25x45     | 0.754          | 0.580 | 2.00                            | 2.80        |
|      |          | 30x35     | 0.754          | 0.580 | 2.05                            | 2.87        |
|      |          | 35x30     | 0.754          | 0.580 | 2.05                            | 2.87        |
|      | 390      | 30x40     | 0.638          | 0.491 | 2.26                            | 3.16        |
|      |          | 35x35     | 0.638          | 0.491 | 2.28                            | 3.19        |
|      | 470      | 30x45     | 0.530          | 0.408 | 2.51                            | 3.51        |
|      |          | 35x40     | 0.530          | 0.408 | 2.54                            | 3.55        |
|      | 560      | 30x50     | 0.445          | 0.342 | 2.85                            | 3.99        |
|      |          | 35x40     | 0.445          | 0.342 | 2.85                            | 3.99        |
|      | 680      | 35x50     | 0.366          | 0.282 | 3.10                            | 4.34        |
|      | 420      | 68        | 20x25          | 6.096 | 4.689                           | 0.70        |
| 82   |          | 20x30     | 5.055          | 3.889 | 0.80                            | 1.12        |
|      |          | 22x25     | 5.055          | 3.889 | 0.85                            | 1.19        |
| 100  |          | 20x35     | 4.145          | 3.189 | 0.90                            | 1.26        |
|      |          | 22x30     | 4.145          | 3.189 | 0.97                            | 1.35        |
|      |          | 25x25     | 4.145          | 3.189 | 0.98                            | 1.37        |
| 120  |          | 20x35     | 3.454          | 2.657 | 1.04                            | 1.45        |
|      |          | 22x30     | 3.454          | 2.657 | 1.07                            | 1.49        |
|      |          | 25x25     | 3.454          | 2.657 | 1.08                            | 1.51        |
| 150  |          | 20x40     | 2.764          | 2.126 | 1.17                            | 1.63        |
|      |          | 22x35     | 2.764          | 2.126 | 1.21                            | 1.69        |
|      |          | 25x30     | 2.764          | 2.126 | 1.26                            | 1.76        |
|      |          | 30x25     | 2.764          | 2.126 | 1.30                            | 1.82        |
| 180  |          | 22x40     | 2.303          | 1.772 | 1.33                            | 1.86        |
|      |          | 25x35     | 2.303          | 1.772 | 1.42                            | 1.98        |
|      |          | 30x25     | 2.303          | 1.772 | 1.48                            | 2.07        |

420Vdc Continued on next page

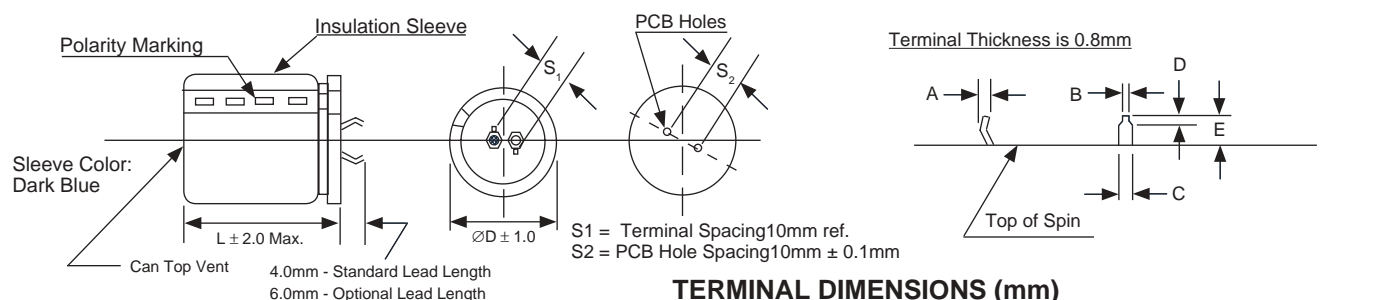


# Large Can Aluminum Electrolytic Capacitors

NRLR Series

## STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

| W.V.  | Cap (μF) | Case Size | ESR (Ω @ 20°C) |       | Max. Ripple Current (Arms@85°C) |             |
|-------|----------|-----------|----------------|-------|---------------------------------|-------------|
|       |          |           | 120Hz          | 20KHz | 120Hz                           | 10K ~ 50KHz |
| 420   | 220      | 22x45     | 1.884          | 1.450 | 1.55                            | 2.17        |
|       |          | 25x35     | 1.884          | 1.450 | 1.58                            | 2.21        |
|       |          | 30x30     | 1.884          | 1.450 | 1.65                            | 2.31        |
|       | 270      | 25x40     | 1.536          | 1.181 | 1.74                            | 2.43        |
|       |          | 30x35     | 1.536          | 1.181 | 1.90                            | 2.66        |
|       |          | 35x30     | 1.536          | 1.181 | 1.94                            | 2.71        |
|       | 330      | 25x50     | 1.256          | 0.967 | 2.20                            | 3.08        |
|       |          | 30x35     | 1.256          | 0.967 | 1.98                            | 2.77        |
|       |          | 35x35     | 1.256          | 0.967 | 2.17                            | 3.03        |
|       | 390      | 30x40     | 1.063          | 0.818 | 2.22                            | 3.10        |
|       |          | 35x35     | 1.063          | 0.818 | 2.27                            | 3.17        |
|       | 470      | 30x45     | 0.882          | 0.679 | 2.50                            | 3.50        |
| 35x40 |          | 0.882     | 0.679          | 2.61  | 3.65                            |             |
| 560   | 35x45    | 0.741     | 0.570          | 2.95  | 4.13                            |             |
| 450   | 56       | 20x25     | 7.402          | 5.694 | 0.61                            | 0.85        |
|       | 68       | 20x30     | 6.096          | 4.689 | 0.70                            | 0.98        |
|       |          | 22x25     | 6.096          | 4.689 | 0.71                            | 0.99        |
|       | 82       | 20x35     | 5.055          | 3.889 | 0.80                            | 1.12        |
|       |          | 22x25     | 5.055          | 3.889 | 0.86                            | 1.20        |
|       | 100      | 20x35     | 4.145          | 3.189 | 0.88                            | 1.23        |
|       |          | 22x30     | 4.145          | 3.189 | 0.95                            | 1.33        |
|       |          | 25x25     | 4.145          | 3.189 | 0.97                            | 1.35        |
|       | 120      | 20x40     | 3.454          | 2.657 | 0.99                            | 1.38        |
|       |          | 22x35     | 3.454          | 2.657 | 1.07                            | 1.49        |
|       |          | 25x30     | 3.454          | 2.657 | 1.09                            | 1.52        |
|       |          | 30x25     | 3.454          | 2.657 | 1.12                            | 1.56        |
|       | 150      | 22x40     | 2.764          | 2.126 | 1.18                            | 1.65        |
|       |          | 25x30     | 2.764          | 2.126 | 1.25                            | 1.75        |
|       |          | 30x25     | 2.764          | 2.126 | 1.29                            | 1.80        |
|       | 180      | 22x45     | 2.303          | 1.772 | 1.32                            | 1.84        |
|       |          | 25x35     | 2.303          | 1.772 | 1.40                            | 1.96        |
|       |          | 30x30     | 2.303          | 1.772 | 1.45                            | 2.03        |
|       | 220      | 25x40     | 1.884          | 1.450 | 1.59                            | 2.22        |
|       |          | 30x30     | 1.884          | 1.450 | 1.64                            | 2.29        |
|       |          | 35x30     | 1.884          | 1.450 | 1.66                            | 2.32        |
|       | 270      | 25x45     | 1.536          | 1.181 | 1.73                            | 2.42        |
|       |          | 30x35     | 1.536          | 1.181 | 1.89                            | 2.64        |
|       |          | 35x30     | 1.536          | 1.181 | 1.90                            | 2.66        |
|       | 330      | 25x50     | 1.256          | 0.967 | 2.12                            | 2.96        |
|       |          | 30x40     | 1.256          | 0.967 | 2.12                            | 2.96        |
|       |          | 35x35     | 1.256          | 0.967 | 2.15                            | 3.01        |
|       | 390      | 30x45     | 1.063          | 0.818 | 2.35                            | 3.29        |
|       |          | 35x40     | 1.063          | 0.818 | 2.38                            | 3.33        |
|       | 470      | 30x50     | 0.882          | 0.679 | 2.65                            | 3.71        |
|       |          | 35x45     | 0.882          | 0.679 | 2.68                            | 3.75        |
|       | 560      | 35x50     | 0.741          | 0.570 | 2.88                            | 4.03        |



### TERMINAL DIMENSIONS (mm)

| Terminal Length | A        | B         | C         | D         | E          |
|-----------------|----------|-----------|-----------|-----------|------------|
| S = 4.0         | 2.0 max. | 0.9 ± 0.1 | 1.5 ± 0.1 | 1.5 ± 0.3 | 4.0 ± 0.50 |
| L = 6.0         |          |           |           | 2.7 ± 0.3 | 6.0 ± 1.00 |

