

# NON-POLAR ALUMINUM ELECTROLYTIC

## NPR, NPA (Non-Polarized) SERIES

### SUBMINIATURE NON-POLARIZED (NPR: Radial Leads, NPA: Axial Leads)

The NPR and NPA Series subminiature aluminum electrolytic capacitors are especially designed for use in circuits whose polarity is reversed or unknown or in crossover networks which do not require tough characteristic requirements.

### RATINGS

**Capacitance Range:** 0.47 $\mu$ f to 1000 $\mu$ f

**Tolerance:**  $\pm 20\%$

**Voltage Range:** 16V to 100V

### PERFORMANCE SPECIFICATIONS

#### Operating Temperature Range:

$-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $+185^{\circ}\text{F}$ )

**Leakage Current:**  $I \leq 0.002CV + 3\mu\text{A}$  (measured after 5 minutes of applied voltage)

I = Leakage Current ( $\mu\text{A}$ )

C = Nominal Capacitance ( $\mu\text{f}$ )

V = Rated Voltage (V)

**Capacitance Tolerance (M):**  $\pm 20\%$   
measured at  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ ), 120Hz

**Dissipation Factor:** measured at  $+20^{\circ}\text{C}$  ( $+68^{\circ}\text{F}$ ), 120Hz

| Rated Voltage               | 16   | 25   | 50   | 63   | 100  |
|-----------------------------|------|------|------|------|------|
| 0.1 $\mu$ f to 1000 $\mu$ f | 0.16 | 0.12 | 0.08 | 0.06 | 0.06 |

#### Impedance Ratio at Low Temperature: 120Hz

| Comparison Z WV                                                                                              | 16 | 25  | 50  | 63 | 100 |
|--------------------------------------------------------------------------------------------------------------|----|-----|-----|----|-----|
| Z @ $-25^{\circ}\text{C}$ ( $-13^{\circ}\text{F}$ ) /<br>Z @ $+20^{\circ}\text{C}$ ( $+68^{\circ}\text{F}$ ) | 2  | 1.5 | 1.5 | 2  | 2   |
| Z @ $-40^{\circ}\text{C}$ ( $-40^{\circ}\text{F}$ ) /<br>Z @ $+20^{\circ}\text{C}$ ( $+68^{\circ}\text{F}$ ) | 3  | 2   | 2   | 4  | 4   |

#### Surge Voltage:

| DC Rated Voltage | 16 | 25 | 50 | 63 | 100 |
|------------------|----|----|----|----|-----|
| Surge Voltage    | 20 | 32 | 63 | 79 | 125 |

**Load Life:** 1000  $\pm 12$ Hrs @  $+85^{\circ}\text{C}$  ( $+185^{\circ}\text{F}$ ),  
at rated voltage

Leakage Current: Within values specified above

Dissipation Factor: Within  $\pm 150\%$  of specified value

Capacitance Change Max:  $\pm 15\%$  of initial value

| Rated Voltage | Capacitance Change Max          |
|---------------|---------------------------------|
| 160V to 450V  | Within 30% of the initial value |

**Shelf Life:** 1000 Hrs @  $+85^{\circ}\text{C}$  ( $+185^{\circ}\text{F}$ ),  
no voltage applied

Leakage Current: Within values specified above

Dissipation Factor: Within  $\pm 150\%$  of specified value

Capacitance Change Max: Within  $\pm 15\%$  of initial value

### MECHANICAL SPECIFICATIONS

#### Lead Solderability:

Meets the requirements of MIL-STD 202, Method 208

#### Marking:

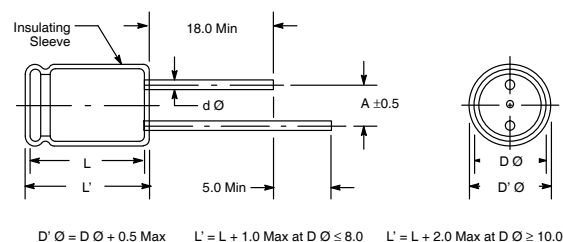
Consists of series type, nominal capacitance, rated voltage, temperature range, anode and/or cathode identification, vendor identification.

#### Recommended Cleaning Solvents:

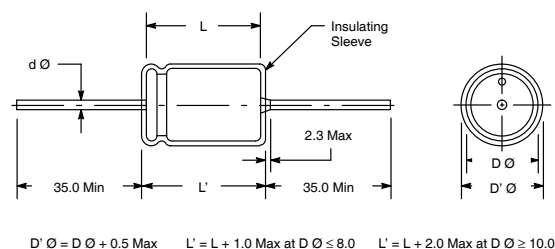
Methanol, isopropanol ethanol, isobutanol, petroleum ether, propanol and/or commercial detergents. Halogenated hydrocarbon cleaning agents such as Freon (MF, TF, or TC), trichloroethylene, trichloroethane, or methylchloride are not recommended as they may damage the capacitor.

### CASE SIZES AND DIMENSIONS:

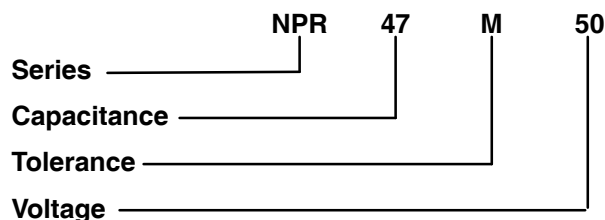
#### NPR SERIES



#### NPA SERIES



### ORDERING INFORMATION



# NON-POLAR ALUMINUM ELECTROLYTIC

## NPR, NPA (Non-Polarized) SERIES

### NPR Series (Radial Type) Dimensions: Diameter (D Ø) x Length (L): mm

| Rated Voltage (WV) | 16        | 25        | 50        | 63        | 100       |
|--------------------|-----------|-----------|-----------|-----------|-----------|
| Surge Voltage (V)  |           |           |           |           |           |
| Cap (µf)           | 20        | 32        | 63        | 79        | 125       |
| 0.47               |           |           | 5 x 11    |           | 5 x 11    |
| 1.0                |           |           | 5 x 11    | 5 x 11    | 5 x 11    |
| 2.2                |           |           | 5 x 11    | 5 x 11    | 6 x 11    |
| 3.3                |           |           | 5 x 11    | 6 x 11    | 8 x 11.5  |
| 4.7                |           | 5 x 11    | 6 x 11    | 6 x 11    | 8 x 11.5  |
| 10                 | 5 x 11    | 5 x 11    | 8 x 11.5  | 8 x 11.5  | 10 x 12.5 |
| 22                 | 6 x 11    | 6 x 11    | 10 x 12.5 | 10 x 12.5 | 10 x 20   |
| 33                 | 6 x 11    | 8 x 11.5  | 10 x 16   | 10 x 16   | 13 x 20   |
| 47                 | 8 x 11.5  | 10 x 12.5 | 10 x 20   | 10 x 20   | 13 x 25   |
| 100                | 10 x 12.5 | 10 x 16   | 13 x 25   | 13 x 25   | 16 x 25   |
| 220                | 10 x 20   | 13 x 25   | 16 x 25   | 16 x 30   |           |
| 330                | 13 x 20   | 13 x 25   | 16 x 30.5 |           |           |
| 470                | 13 x 25   | 16 x 25   |           |           |           |
| 1000               | 16 x 25   | 16 x 30.5 |           |           |           |

\* These dimensions are for reference only, please consult the factory for actual size.

### NPR Series (Radial Type) Mechanical Specifications: mm

| Outside Diameter (D Ø) | 5   | 6   | 8   | 10  | 13  | 16  |
|------------------------|-----|-----|-----|-----|-----|-----|
| Lead Spacing (A)       | 2   | 2.5 | 3.5 | 5   | 5   | 7.5 |
| Lead Diameter (d Ø)    | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 |

\* These dimensions are for reference only, please consult the factory for actual size.

### NPA Series (Axial Type) Dimensions: Diameter (D Ø) x Length (L): mm

| Rated Voltage (WV) | 16      | 25      | 50      | 63      | 100     |
|--------------------|---------|---------|---------|---------|---------|
| Surge Voltage (V)  |         |         |         |         |         |
| Cap (µf)           | 20      | 32      | 63      | 79      | 125     |
| 0.47               |         |         | 6 x 15  |         | 6 x 15  |
| 1.0                |         |         | 6 x 15  | 6 x 15  | 6 x 15  |
| 2.2                |         |         | 6 x 15  | 6 x 15  | 6 x 15  |
| 3.3                |         |         | 6 x 15  | 6 x 15  | 6 x 19  |
| 4.7                |         |         | 6 x 15  | 6 x 15  | 8 x 19  |
| 10                 |         | 6 x 15  | 6 x 19  | 8 x 19  | 10 x 21 |
| 22                 | 6 x 15  | 6 x 19  | 10 x 21 | 10 x 21 | 10 x 25 |
| 33                 | 6 x 19  | 8 x 19  | 10 x 21 | 10 x 25 | 13 x 30 |
| 47                 | 8 x 19  | 8 x 19  | 10 x 25 | 10 x 25 | 13 x 30 |
| 100                | 10 x 21 | 10 x 25 | 13 x 30 | 13 x 30 | 16 x 30 |
| 220                | 10 x 25 | 13 x 30 | 16 x 30 | 16 x 30 |         |
| 330                | 10 x 30 | 13 x 30 | 16 x 41 | 16 x 41 |         |
| 470                | 13 x 30 | 16 x 30 |         |         |         |
| 1000               | 16 x 30 |         |         |         |         |

\* These dimensions are for reference only, please consult the factory for actual size.

### NPA Series (Axial Type) Mechanical Specifications: mm

| Outside Diameter (D Ø) | 6   | 8   | 10  | 13  | 16  |
|------------------------|-----|-----|-----|-----|-----|
| Lead Diameter (d Ø)    | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |

\* These dimensions are for reference only, please consult the factory for actual size.