

ALUMINUM ELECTROLYTIC CAPACITORS

NP series NON-POLAR TYPE

- Non-polar capacitors are designed for circuits with reversing polarity
- Units of ϕ 6.3 or more are furnished with safety case vents.
- Solvent proof.

SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-------------------|------|------|------|------|------|------|-----|-----|--|------|------|------|------|------|------|------|------|--|----|---|---|---|---|---|---|---|
| Operating Temperature Range | -40~+85°C | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 6.3~100W.V. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Range | 0.47~6800uF | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz , 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current (MAX) | After 5 minutes application of rated voltage, leakage current is not more than 0.05CV or 7 (uA) , whichever is greater. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tan δ) | For capacitance of more than 1000uF, add 0.02 for every increase of 1000uF, Measurement frequency: 120Hz, Temperature:25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Tan δ (MAX)</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> </tr> </table> | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | Tan δ (MAX) | 0.26 | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | | | | | | | | | |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | | | | | | | | | | | |
| Tan δ (MAX) | 0.26 | 0.22 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Stability Impedance Ratio | Measurement frequency: 120Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Rated Voltage(V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td rowspan="2">Impedance ratio $Z(25^\circ\text{C})/Z(+20^\circ\text{C})$</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>$Z(40^\circ\text{C})/Z(+20^\circ\text{C})$</td> <td>10</td> <td>8</td> <td>6</td> <td>5</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table> | Rated Voltage(V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | Impedance ratio $Z(25^\circ\text{C})/Z(+20^\circ\text{C})$ | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | $Z(40^\circ\text{C})/Z(+20^\circ\text{C})$ | 10 | 8 | 6 | 5 | 4 | 4 | 3 | 3 |
| | Rated Voltage(V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | | | | | | | | | | |
| Impedance ratio $Z(25^\circ\text{C})/Z(+20^\circ\text{C})$ | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | |
| | $Z(40^\circ\text{C})/Z(+20^\circ\text{C})$ | 10 | 8 | 6 | 5 | 4 | 4 | 3 | 3 | | | | | | | | | | | | | | | | | | | |
| $Z(20^\circ\text{C})/Z(40^\circ\text{C})$ (MAX) | 10 | 8 | 6 | 5 | 4 | 4 | 3 | 3 | | | | | | | | | | | | | | | | | | | | |

Load Life

After 2000 hours' application of rated voltage at 85°C with the polarity inverted every 250hours, capacitors meet the characteristics requirements listed at right

| | |
|--------------------|---------------------------------|
| Leakage Current | Specified value or less |
| Capacitance Change | Within ±25% of initial value. |
| tan δ | 200% or less of specified value |

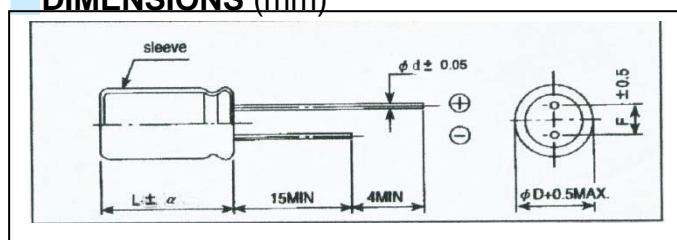
Shelf Life

After leaving capacitors under no load at 85°C for 1000 hours and applying voltage according to JIS C-5102 4-3, they meet the specified value for load life characteristics listed above.

Standard

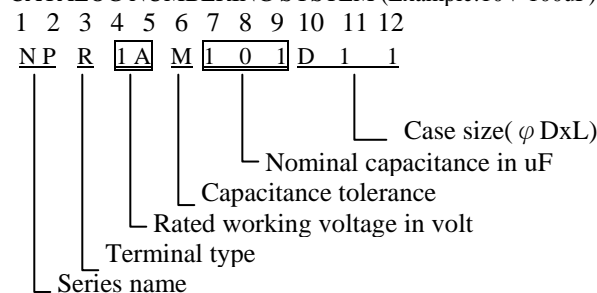
According to JIS C 5141

DIMENSIONS (mm)



| | | | | | | | |
|----------|---|-----|-----|-----|------|-----|-----|
| ϕD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
| ϕd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| α | L ≤ 16: $\alpha = 1.5$, L ≥ 20: $\alpha = 2.0$ | | | | | | |

CATALOG NUMBERING SYSTEM (Example: 10V 100uF)





ALUMINUM ELECTROLYTIC CAPACITORS

NP series NON-POLAR TYPE

STANDARD SIZES AND PERMISSIBLE RIPPLE CURRENT

DxL(mm)

| W.V | | 6.3 | | 10 | | 16 | | 25 | | 35 | | 50 | | 63 | | 100 | |
|---------|-----|---------|------|---------|------|---------|------|---------|------|---------|------|---------|-----|---------|-----|---------|-----|
| Cap(μF) | | 0J | | 1A | | 1C | | 1E | | 1V | | 1H | | 1J | | 2A | |
| 0.47 | R47 | | | | | | | | | | | 5x11 | 11 | | | 5x11 | 14 |
| 1 | 010 | | | | | | | | | | | 5x11 | 17 | | | 5x11 | 21 |
| 2.2 | 2R2 | | | | | | | | | | | 5x11 | 25 | | | 5x11 | 27 |
| 3.3 | 3R3 | | | | | | | | | | | 5x11 | 27 | 5x11 | 28 | 6.3x11 | 39 |
| 4.7 | 4R7 | | | | | | | 5x11 | 34 | 5x11 | 34 | 5x11 | 34 | 6.3x11 | 34 | 6.3x11 | 47 |
| 10 | 100 | | | | | 5x11 | 42 | 5x11 | 45 | 5x11 | 43 | 6.3x11 | 52 | 6.3x11 | 57 | 8x11.5 | 71 |
| 22 | 220 | | | 5x11 | 57 | 5x11 | 57 | 5x11 | 55 | 6.3x11 | 73 | 8x11.5 | 89 | 8x11.5 | 95 | 10x16 | 135 |
| 33 | 330 | 5x11 | 64 | 5x11 | 67 | 5x11 | 70 | 6.3x11 | 80 | 8x11.5 | 100 | 8x11.5 | 105 | 10x12.5 | 135 | 12.5x20 | 220 |
| 47 | 470 | 5x11 | 76 | 5x11 | 80 | 6.3x11 | 95 | 6.3x11 | 100 | 8x11.5 | 120 | 10x12.5 | 150 | 10x16 | 180 | 12.5x20 | 240 |
| 100 | 101 | 6.3x11 | 125 | 6.3x11 | 140 | 8x11.5 | 160 | 8x11.5 | 160 | 10x16 | 230 | 10x20 | 265 | 12.5x20 | 320 | 16x25 | 425 |
| 220 | 221 | 8x11.5 | 215 | 8x11.5 | 230 | 10x12.5 | 275 | 10x16 | 305 | 12.5x20 | 410 | 12.5x25 | 480 | 16x25 | 575 | 18x35.5 | 720 |
| 330 | 331 | 8x11.5 | 265 | 10x12.5 | 345 | 10x16 | 375 | 12.5x20 | 450 | 12.5x20 | 505 | 16x25 | 650 | 16x31.5 | 655 | | |
| 470 | 471 | 10x12.5 | 370 | 10x16 | 410 | 10x20 | 485 | 12.5x20 | 540 | 12.5x25 | 655 | 16x31.5 | 835 | 18x35.5 | 965 | | |
| 1000 | 102 | 10x20 | 650 | 12.5x20 | 720 | 12.5x25 | 855 | 16x25 | 950 | 16x31.5 | 1140 | | | | | | |
| 2200 | 222 | 12.5x25 | 1160 | 16x25 | 1280 | 16x31.5 | 1510 | 18x35.5 | 1620 | | | | | | | | |
| 3300 | 332 | 16x25 | 1570 | 16x31.5 | 1690 | 18x35.5 | 1980 | | | | | | | | | | |
| 4700 | 332 | 16x31.5 | 2020 | 18x35.5 | 2160 | | | | | | | | | | | | |
| 6800 | 332 | 18x35.5 | 2600 | | | | | | | | | | | | | | |

Ripple Current (mA 85°C, 120Hz) r.m.s

MULTIPLIER FOR RIPPLE CURRENT

Frequency coefficient

| W.V. | FREQUENCY (Hz) | | | | | |
|---------|----------------|--------|------|------|------|------|
| | Cap(μF) | 60(50) | 120 | 300 | 1K | 10K~ |
| 6.3~100 | 0.1~47 | 0.80 | 1.00 | 1.35 | 1.57 | 2.00 |
| | 100~470 | 0.80 | 1.00 | 1.23 | 1.34 | 1.50 |
| | 1000~6800 | 0.80 | 1.00 | 1.10 | 1.13 | 1.15 |