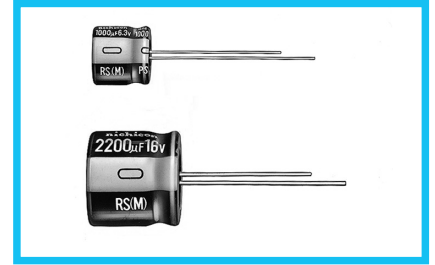
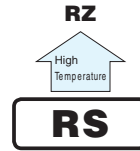


ALUMINUM ELECTROLYTIC CAPACITORS

RS series Compact & Low-profile Sized



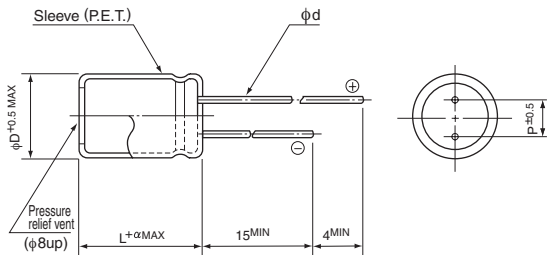
- Compact & low profile case size.
- Compliant to the RoHS directive (2011/65/EU).



Specifications

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|---|--|--|------------|---|--|--|------|------|------|------|------|-----|-----|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------------------|----|----|---|---|---|---|---|---|---|---|---|----|
| Category Temperature Range | -40 to +85°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 6.3 to 400V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Capacitance Range | 0.1 to 10000µF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | <table border="1"> <tr> <th>Rated voltage (V)</th> <th>6.3 to 100</th> <th>160 to 400</th> </tr> <tr> <td>_____</td> <td>After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV or 4 (µA), whichever is greater. After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV or 3 (µA), whichever is greater.</td> <td>After 1 minute's application of rated voltage at 20°C, I = 0.04CV+100 (µA) or less</td> </tr> </table> | Rated voltage (V) | 6.3 to 100 | 160 to 400 | _____ | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV or 4 (µA), whichever is greater. After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV or 3 (µA), whichever is greater. | After 1 minute's application of rated voltage at 20°C, I = 0.04CV+100 (µA) or less | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Rated voltage (V) | 6.3 to 100 | 160 to 400 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| _____ | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV or 4 (µA), whichever is greater. After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV or 3 (µA), whichever is greater. | After 1 minute's application of rated voltage at 20°C, I = 0.04CV+100 (µA) or less | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tangent of loss angle (tan δ) | For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF. Measurement frequency : 120Hz at 20°C <table border="1"> <tr> <th>Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160</th> <th>200</th> <th>250</th> <th>400</th> </tr> <tr> <td>tan δ (MAX.)</td> <td>0.28</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.20</td> <td>0.20</td> <td>0.20</td> <td>0.25</td> </tr> </table> | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 400 | tan δ (MAX.) | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.20 | 0.20 | 0.20 | 0.25 | | | | | | | | | | | | | |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 400 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tan δ (MAX.) | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.20 | 0.20 | 0.20 | 0.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stability at Low Temperature | Measurement frequency : 120Hz <table border="1"> <tr> <th>Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160</th> <th>200</th> <th>250</th> <th>400</th> </tr> <tr> <td>Impedance ratio Z-25°C / Z+20°C</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td>3</td> <td>3</td> <td>6</td> </tr> <tr> <td>ZT / Z20 (MAX.) Z-40°C / Z+20°C</td> <td>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>4</td> <td>6</td> <td>10</td> </tr> </table> | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 400 | Impedance ratio Z-25°C / Z+20°C | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 6 | ZT / Z20 (MAX.) Z-40°C / Z+20°C | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 4 | 4 | 6 | 10 |
| | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 400 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Impedance ratio Z-25°C / Z+20°C | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZT / Z20 (MAX.) Z-40°C / Z+20°C | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 4 | 4 | 6 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C. <table border="1"> <tr> <td>Capacitance change</td> <td>Within ±20% of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>200% 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> </table> | Capacitance change | Within ±20% of the initial capacitance value | tan δ | 200% or less than the initial specified value | Leakage current | Less than or equal to the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance change | Within ±20% of the initial capacitance value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tan δ | 200% or less than the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | Less than or equal to the initial specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | 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 specified values for the endurance characteristics listed above. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Marking | Printed with white color letter on black sleeve. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Radial Lead Type

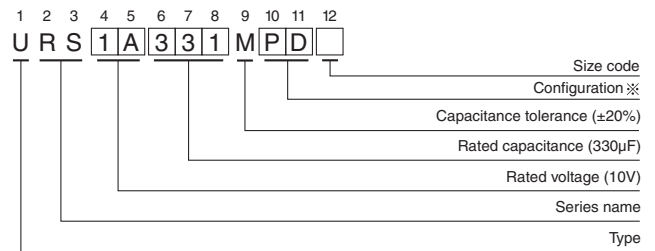


| | (mm) | | | | | | | |
|----|------|-----|-----|-----|------|-----|-----|------|
| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 20 |
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 |
| φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0 |

| | |
|---|---------------|
| α | (φD < 20) 1.5 |
| | (φD ≥ 20) 2.0 |

• Please refer to page 20 about the end seal configuration.

Type numbering system (Example : 10V 330µF)



※ Configuration

| φ D | Pb-free leadwire Pb-free PET sleeve |
|------------|--|
| 5 · 6.3 | DD |
| 8 · 10 | PD |
| 12.5 to 18 | HD |
| 20 | RD |

Please refer to page 20, 21, 22 about the formed or taped product spec.
Please refer to page 4 for the minimum order quantity.

● Dimension table in next page.

■ Dimensions

| V | | 6.3 | | 10 | | 16 | | 25 | | 35 | | 50 | |
|----------------|------|-----------|------|-----------|------|-------------|------|-----------|------|-------------|------|--------------------------------|-----------------|
| Cap.(μ F) | Code | 0J | | 1A | | 1C | | 1E | | 1V | | 1H | |
| 0.1 | 0R1 | | | | | | | | | | | 5 × 9 | 1.1 |
| 0.22 | R22 | | | | | | | | | | | 5 × 9 | 2.3 |
| 0.33 | R33 | | | | | | | | | | | 5 × 9 | 3.5 |
| 0.47 | R47 | | | | | | | | | | | 5 × 9 | 5 |
| 1 | 010 | | | | | | | | | | | 5 × 9 | 13 |
| 2.2 | 2R2 | | | | | | | | | | | 5 × 9 | 26 |
| 3.3 | 3R3 | | | | | | | | | | | 5 × 9 | 35 |
| 4.7 | 4R7 | | | | | | | 5 × 9 | 30 | 5 × 9 | 35 | 5 × 9 | 40 |
| 10 | 100 | | | | | 5 × 9 | 40 | 5 × 9 | 50 | 5 × 9 | 55 | 5 × 9 | 65 |
| 22 | 220 | 5 × 9 | 35 | 5 × 9 | 55 | 5 × 9 | 70 | 5 × 9 | 75 | 5 × 9 | 95 | 5 × 9 | 90 |
| 33 | 330 | 5 × 9 | 55 | 5 × 9 | 75 | 5 × 9 | 85 | 5 × 9 | 95 | 5 × 9 | 100 | 6.3 × 9 | 120 |
| 47 | 470 | 5 × 9 | 75 | 5 × 9 | 90 | 5 × 9 | 100 | 5 × 9 | 110 | 6.3 × 9 | 130 | 6.3 × 9 | 140 |
| 100 | 101 | 5 × 9 | 125 | 5 × 9 | 135 | 6.3 × 9 | 160 | 6.3 × 9 | 180 | 8 × 9 | 220 | 10 × 9 | 240 |
| 220 | 221 | 6.3 × 9 | 200 | 6.3 × 9 | 220 | 8 × 9 | 290 | 10 × 9 | 310 | 10 × 9 | 340 | 10 × 12.5 | 420 |
| 330 | 331 | 6.3 × 9 | 250 | 8 × 9 | 300 | 10 × 9 | 360 | 10 × 9 | 380 | 10 × 12.5 | 480 | 12.5 × 12.5 | 530 |
| 470 | 471 | 8 × 9 | 330 | 8 × 9 | 360 | 10 × 9 | 410 | 10 × 12.5 | 530 | 12.5 × 12.5 | 590 | 16 × 15 | 750 |
| 1000 | 102 | 10 × 9 | 510 | 10 × 12.5 | 620 | 12.5 × 12.5 | 720 | 12.5 × 15 | 830 | 16 × 15 | 1010 | 18 × 20 | 1160 |
| 2200 | 222 | 12.5 × 15 | 890 | 12.5 × 15 | 960 | 16 × 15 | 1160 | 18 × 15 | 1360 | 18 × 20 | 1560 | 20 × 25 | 1750 |
| 3300 | 332 | 16 × 15 | 1200 | 16 × 15 | 1300 | 18 × 15 | 1460 | 18 × 20 | 1720 | 20 × 25 | 2000 | | |
| 4700 | 472 | 16 × 15 | 1410 | 18 × 15 | 1550 | 18 × 20 | 1770 | 18 × 25 | 2050 | | | | |
| 6800 | 682 | 18 × 15 | 1660 | 18 × 20 | 1850 | 18 × 25 | 2170 | | | | | | |
| 10000 | 103 | 18 × 20 | 2020 | 18 × 25 | 2350 | | | | | | | Case size ϕ D × L (mm) | Rated ripple |

| V | | 63 | | 100 | | 160 | | 200 | | 250 | | 400 | |
|----------------|------|-------------|-----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|--------------------------------|-----------------|
| Cap.(μ F) | Code | 1J | | 2A | | 2C | | 2D | | 2E | | 2G | |
| 0.1 | 0R1 | | | 5 × 9 | 1.9 | | | | | | | | |
| 0.22 | R22 | | | 5 × 9 | 4.5 | | | | | | | | |
| 0.33 | R33 | | | 5 × 9 | 6.5 | | | | | | | | |
| 0.47 | R47 | | | 5 × 9 | 8 | | | | | | | | |
| 1 | 010 | | | 5 × 9 | 17 | | | | | | | | |
| 2.2 | 2R2 | | | 5 × 9 | 26 | | | | | | | | |
| 3.3 | 3R3 | | | 5 × 9 | 35 | | | | | | | | |
| 4.7 | 4R7 | | | 6.3 × 9 | 45 | | | | | | | | |
| 10 | 100 | 5 × 9 | 60 | 6.3 × 9 | 70 | | | | | | | 16 × 15 | 140 |
| 22 | 220 | 6.3 × 9 | 100 | 8 × 9 | 130 | | | | | 16 × 15 | 280 | ● 18 × 15 | 280 |
| 33 | 330 | 8 × 9 | 140 | 10 × 9 | 180 | | | 16 × 15 | 350 | ● 18 × 15 | 350 | 18 × 20 | 350 |
| 47 | 470 | 8 × 9 | 170 | 10 × 12.5 | 230 | 16 × 15 | 420 | ● 18 × 15 | 420 | △ 18 × 20 | 420 | ★ 18 × 25 | 420 |
| 68 | 680 | | | | | ● 18 × 15 | 490 | △ 18 × 20 | 490 | 18 × 20 | 490 | 20 × 25 | 490 |
| 100 | 101 | 10 × 9 | 250 | 12.5 × 15 | 370 | △ 18 × 20 | 590 | ★ 18 × 25 | 590 | 18 × 25 | 590 | | |
| 150 | 151 | | | | | ★ 18 × 25 | 710 | 18 × 25 | 710 | | | | |
| 220 | 221 | 12.5 × 12.5 | 490 | 16 × 15 | 620 | 20 × 25 | 770 | | | | | | |
| 330 | 331 | 12.5 × 15 | 710 | 18 × 15 | 760 | | | | | | | Case size ϕ D × L (mm) | Rated ripple |
| 470 | 471 | 16 × 15 | 900 | | | | | | | | | | |

Rated ripple current (mA_{rms}) at 85°C 120Hz

Size ϕ 16 × 20 is available for capacitors marked "●"
 Size ϕ 20 × 15 is available for capacitors marked "△"
 Size ϕ 20 × 20 is available for capacitors marked "★"

In this case, [] will be put at 12th digit of type numbering system.

● Frequency coefficient of rated ripple current

| V | Cap.(μ F) | Frequency | | | | |
|------------|----------------|-----------|-------|-------|-------|---------------|
| | | 50Hz | 120Hz | 300Hz | 1 kHz | 10kHz or more |
| 6.3 to 100 | 0.1 to 47 | 0.75 | 1.00 | 1.35 | 1.57 | 2.00 |
| | 100 to 470 | 0.80 | 1.00 | 1.23 | 1.34 | 1.50 |
| | 1000 to 10000 | 0.85 | 1.00 | 1.10 | 1.13 | 1.15 |
| 160 to 400 | 10 to 220 | 0.80 | 1.00 | 1.25 | 1.40 | 1.60 |