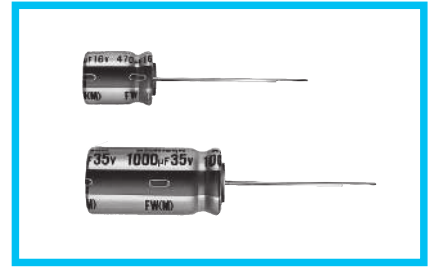
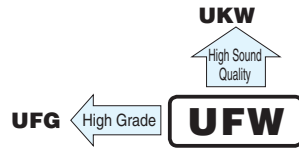


UFW

Standard, For Audio Equipment



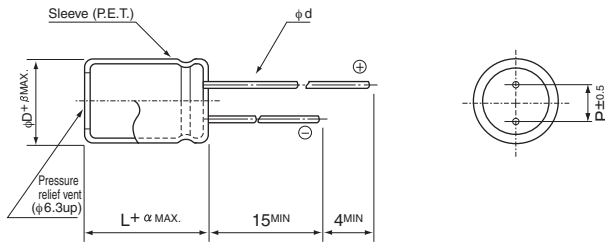
- Compliant to the RoHS directive (2011/65/EU).



Specifications

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|--|--------------------|--|-------|---|-----------------|---|------|-----|-----|--------------|-----------------|-----------------|------|------|------|------|------|------|---|---|-----------------|-----------------|----|----|---|---|---|---|---|---|
| Category Temperature Range | -40 to +85°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 6.3 to 100V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Capacitance Range | 0.1 to 33000µF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03 CV or 4 (µA), whichever is greater. After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01 CV or 3 (µA), whichever is greater. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tangent of loss angle (tan δ) | <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>0.28</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> </tr> </table> <p>Measurement frequency : 120Hz at 20°C For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF.</p> | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | tan δ (MAX.) | 0.28 | 0.24 | 0.20 | 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.) | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | | | | | | | | | | | | | | | | | | | | | | | |
| Stability at Low Temperature | <table border="1"> <tr> <td colspan="2">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>Impedance ratio</td> <td>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> </tr> <tr> <td>ZT / Z20 (MAX.)</td> <td>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> </tr> </table> <p>Measurement frequency : 120Hz</p> | Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | Impedance ratio | Z-25°C / Z+20°C | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | ZT / Z20 (MAX.) | Z-40°C / Z+20°C | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 |
| Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | | | | | | | | | | | | | |
| Impedance ratio | Z-25°C / Z+20°C | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | |
| ZT / Z20 (MAX.) | Z-40°C / Z+20°C | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | <p>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.</p> <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 black color letter on Gold sleeve. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

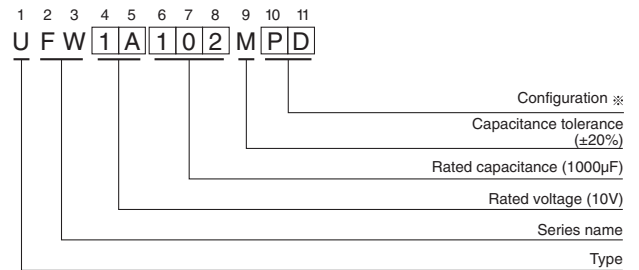
Radial Lead Type



| | (mm) | | | | | | | | | |
|----|------|-----|-----|-----|------|-----|-----|-----|-----|------|
| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 20 | 22 | 25 |
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 | 10 | 12.5 |
| φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0 | 1.0 | 1.0 |
| β | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1.0 | 1.0 |

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

Type numbering system (Example : 10V 1000µF)



※ Configuration

| φ D | Pb-free leadwire Pb-free PET sleeve |
|------------|--|
| 5 | DD |
| 6.3 | ED |
| 8 · 10 | PD |
| 12.5 to 18 | HD |
| 20 to 25 | RD |

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

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.

UFW

■ Dimensions

| | | V | | 6.3 | | 10 | | 16 | | 25 | | 35 | | 50 | | 63 | | 100 | |
|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------------------|--------------|
| Cap. (μF) | Code | 0J | | 1A | | 1C | | 1E | | 1V | | 1H | | 1J | | 2A | | | |
| 0.1 | 0R1 | | | | | | | | | | | | | 5 × 11 | 1.1 | | | 5 × 11 | 2.1 |
| 0.22 | R22 | | | | | | | | | | | | | 5 × 11 | 2.4 | | | 5 × 11 | 4.7 |
| 0.33 | R33 | | | | | | | | | | | | | 5 × 11 | 3.5 | | | 5 × 11 | 7.0 |
| 0.47 | R47 | | | | | | | | | | | | | 5 × 11 | 5.0 | | | 5 × 11 | 10 |
| 1 | 010 | | | | | | | | | | | | | 5 × 11 | 10 | | | 5 × 11 | 21 |
| 2.2 | 2R2 | | | | | | | | | | | | | 5 × 11 | 23 | | | 5 × 11 | 30 |
| 3.3 | 3R3 | | | | | | | | | | | | | 5 × 11 | 35 | | | 5 × 11 | 40 |
| 4.7 | 4R7 | | | | | | | | | | | | | 5 × 11 | 40 | | | 5 × 11 | 45 |
| 10 | 100 | | | | | | | | | | | | | 5 × 11 | 65 | 5 × 11 | 70 | 6.3 × 11 | 75 |
| 22 | 220 | | | | | | | | | | | | | 5 × 11 | 95 | 5 × 11 | 100 | 6.3 × 11 | 120 |
| 33 | 330 | | | | | | | | | 5 × 11 | 105 | 5 × 11 | 120 | 6.3 × 11 | 140 | 8 × 11.5 | 160 | | |
| 47 | 470 | | | | | | | 5 × 11 | 115 | 5 × 11 | 120 | 6.3 × 11 | 150 | 6.3 × 11 | 165 | 10 × 12.5 | 210 | | |
| 100 | 101 | | | 5 × 11 | 145 | 5 × 11 | 155 | 6.3 × 11 | 185 | 6.3 × 11 | 200 | 8 × 11.5 | 250 | 10 × 12.5 | 300 | 10 × 20 | 350 | | |
| 220 | 221 | | | 6.3 × 11 | 230 | 6.3 × 11 | 250 | 8 × 11.5 | 320 | 10 × 12.5 | 370 | 10 × 12.5 | 410 | 10 × 16 | 470 | 12.5 × 25 | 600 | | |
| 330 | 331 | 6.3 × 11 | 265 | 6.3 × 11 | 270 | 8 × 11.5 | 360 | 10 × 12.5 | 420 | 10 × 12.5 | 470 | 10 × 16 | 570 | 10 × 20 | 650 | 12.5 × 25 | 750 | | |
| 470 | 471 | 6.3 × 11 | 310 | 6.3 × 11 | 330 | 8 × 11.5 | 420 | 10 × 12.5 | 530 | 10 × 16 | 630 | 12.5 × 20 | 760 | 12.5 × 20 | 880 | 16 × 25 | 1000 | | |
| 1000 | 102 | 8 × 11.5 | 530 | 10 × 12.5 | 630 | 10 × 16 | 770 | 10 × 20 | 950 | 12.5 × 20 | 1100 | 12.5 × 25 | 1300 | 16 × 25 | 1300 | 18 × 40 | 1370 | | |
| 2200 | 222 | 10 × 20 | 980 | 10 × 20 | 1050 | 12.5 × 20 | 1250 | 12.5 × 25 | 1550 | 16 × 25 | 1800 | 16 × 35.5 | 2090 | 18 × 35.5 | 2200 | 22 × 50 | 2400 | | |
| 3300 | 332 | 10 × 20 | 1170 | 12.5 × 20 | 1420 | 12.5 × 25 | 1700 | 16 × 25 | 1950 | 16 × 35.5 | 2220 | 18 × 35.5 | 2360 | 20 × 40 | 2700 | 25 × 50 | 2900 | | |
| 4700 | 472 | 12.5 × 20 | 1350 | 12.5 × 25 | 1800 | 16 × 25 | 2100 | 16 × 31.5 | 2360 | 18 × 35.5 | 2490 | 20 × 40 | 2900 | 22 × 50 | 3400 | | | | |
| 6800 | 682 | 12.5 × 25 | 1600 | 16 × 25 | 2150 | 16 × 35.5 | 2500 | 18 × 35.5 | 2590 | 20 × 40 | 3000 | 22 × 50 | 3500 | 25 × 50 | 3500 | | | | |
| 10000 | 103 | 16 × 25 | 2000 | 16 × 35.5 | 2500 | 18 × 35.5 | 2640 | 20 × 40 | 3000 | 22 × 50 | 3700 | 25 × 50 | 4000 | | | | | | |
| 15000 | 153 | 16 × 35.5 | 2550 | 18 × 35.5 | 2720 | 20 × 40 | 3400 | 22 × 50 | 3800 | 25 × 50 | 4300 | | | | | | | | |
| 22000 | 223 | 18 × 40 | 3200 | 20 × 40 | 3700 | 22 × 50 | 4200 | 25 × 50 | 4500 | | | | | | | | | | |
| 33000 | 333 | 22 × 50 | 3900 | 22 × 50 | 4500 | 25 × 50 | 4800 | | | | | | | | | | | Case size φD × L (mm) | Rated ripple |

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

● Frequency coefficient of rated ripple current

| Cap. (μF) | Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|---------------|-----------|------|-------|-------|------|---------------|
| 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 33000 | | 0.85 | 1.00 | 1.10 | 1.13 | 1.15 |