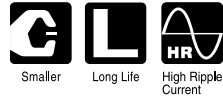
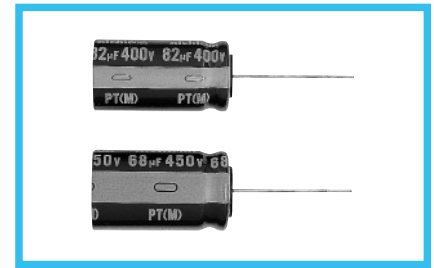
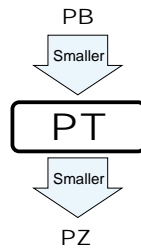


ALUMINUM ELECTROLYTIC CAPACITORS

PT series Miniature Sized, High Ripple Current, Long Life



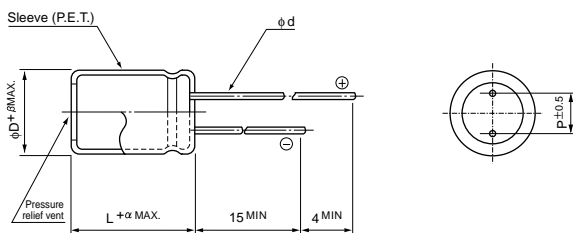
- High ripple current.
- Suited for ballast application.
- Compliant to the RoHS directive (2002/95/EC).



Specifications

| Item | Performance Characteristics | | | | | | | | | | | | | | |
|---------------------------------|--|--|--|-------|---|-----------------|---|-----|---------------------------------|-----------------|------|------|------|------|------|
| Category Temperature Range | -25 to +105°C | | | | | | | | | | | | | | |
| Rated Voltage Range | 200 to 450V | | | | | | | | | | | | | | |
| Rated Capacitance Range | 15 to 820µF | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | | | | | | | |
| Leakage Current | After 2 minutes' application of rated voltage, leakage current is not more than 0.06CV+10 (µA) | | | | | | | | | | | | | | |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz, Temperature : 20°C | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>200</th> <th>220</th> <th>250</th> <th>400</th> <th>420</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>tan δ (MAX.)</td> <td>0.12</td> <td>0.12</td> <td>0.12</td> <td>0.15</td> <td>0.20</td> <td>0.20</td> </tr> </tbody> </table> | Rated voltage (V) | 200 | 220 | 250 | 400 | 420 | 450 | tan δ (MAX.) | 0.12 | 0.12 | 0.12 | 0.15 | 0.20 | 0.20 |
| Rated voltage (V) | 200 | 220 | 250 | 400 | 420 | 450 | | | | | | | | | |
| tan δ (MAX.) | 0.12 | 0.12 | 0.12 | 0.15 | 0.20 | 0.20 | | | | | | | | | |
| Stability at Low Temperature | Measurement frequency : 120Hz | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>200</th> <th>220</th> <th>250</th> <th>400</th> <th>420</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>Impedance ratio ZT / Z20 (MAX.)</td> <td>Z-25°C / Z+20°C</td> <td>3</td> <td>3</td> <td>3</td> <td>8</td> <td>8</td> <td>8</td> </tr> </tbody> </table> | Rated voltage (V) | 200 | 220 | 250 | 400 | 420 | 450 | Impedance ratio ZT / Z20 (MAX.) | Z-25°C / Z+20°C | 3 | 3 | 3 | 8 | 8 |
| Rated voltage (V) | 200 | 220 | 250 | 400 | 420 | 450 | | | | | | | | | |
| Impedance ratio ZT / Z20 (MAX.) | Z-25°C / Z+20°C | 3 | 3 | 3 | 8 | 8 | 8 | | | | | | | | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 5000 hours at 105°C, the peak voltage shall not exceed the rated voltage. | | | | | | | | | | | | | | |
| | <table border="1"> <tbody> <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> </tbody> </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 105°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 dark brown sleeve. | | | | | | | | | | | | | | |

Radial Lead Type



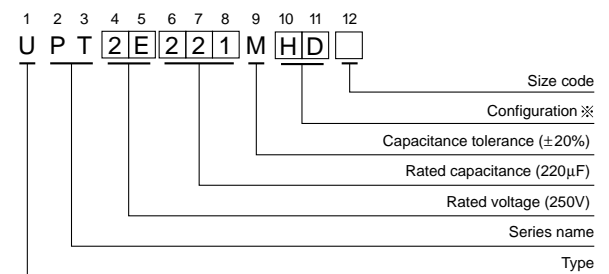
| | (mm) | | | | | | |
|----|------|------------------|-----|-----|------|------|------|
| φD | 10 | 12.5 | 16 | 18 | 20 | 22 | 25 |
| P | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 | 10.0 | 12.5 |
| φd | 0.6 | 0.6 [⊖] | 0.8 | 0.8 | 1.0 | 1.0 | 1.0 |
| β | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1.0 | 1.0 |

※ In case L > 25 for the φ12.5 dia. unit, lead dia. φd = 0.8mm.

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

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

Type numbering system (Example : 250V 220µF)



※ Configuration

| φ D | Pb-free leadwire Pb-free PET sleeve |
|------------|--|
| 10 | PD |
| 12.5 to 18 | HD |
| 20 to 25 | 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 | | 200 | | 220 | | 250 | | 400 | | 420 | | 450 | |
|-----|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|---------------------------|------|
| Cap | Code | 2D | | 2P | | 2E | | 2G | | W6 | | 2W | |
| 15 | 150 | | | | | | | | | | | 10 × 31.5 | 0.15 |
| 18 | 180 | | | | | | | | | 10 × 31.5 | 0.17 | 12.5 × 25 | 0.18 |
| 22 | 220 | | | | | | | 10 × 31.5 | 0.21 | 12.5 × 25 | 0.20 | 12.5 × 31.5 | 0.22 |
| 27 | 270 | | | | | | | 12.5 × 25 | 0.24 | 12.5 × 31.5 | 0.24 | 12.5 × 31.5 | 0.25 |
| 33 | 330 | | | | | | | 12.5 × 31.5 | 0.29 | 12.5 × 31.5 | 0.27 | 12.5 × 35.5 | 0.28 |
| 39 | 390 | | | | | | | 12.5 × 31.5 | 0.32 | 12.5 × 35.5 | 0.31 | 12.5 × 40 | 0.32 |
| 47 | 470 | | | | | 10 × 31.5 | 0.27 | 12.5 × 35.5 | 0.37 | 12.5 × 40 | 0.36 | 16 × 31.5 | 0.38 |
| 56 | 560 | | | 10 × 31.5 | 0.29 | 12.5 × 25 | 0.31 | 12.5 × 40 | 0.42 | 16 × 31.5 | 0.43 | 16 × 35.5 | 0.44 |
| 68 | 680 | 10 × 31.5 | 0.35 | 12.5 × 25 | 0.34 | 12.5 × 31.5 | 0.36 | 16 × 31.5 | 0.46 | 16 × 35.5 | 0.51 | 16 × 40 | 0.49 |
| | | | | | | | | | | ▲ 18 × 31.5 | 0.51 | ▲ 18 × 31.5 | 0.48 |
| 82 | 820 | 12.5 × 25 | 0.41 | 12.5 × 31.5 | 0.39 | 12.5 × 31.5 | 0.40 | 16 × 31.5 | 0.50 | 16 × 40 | 0.57 | 18 × 35.5 | 0.55 |
| | | | | | | | | | | ▲ 18 × 31.5 | 0.57 | | |
| 100 | 101 | 12.5 × 31.5 | 0.48 | 12.5 × 31.5 | 0.43 | 12.5 × 35.5 | 0.46 | 16 × 35.5 | 0.58 | 18 × 35.5 | 0.61 | 18 × 40 | 0.65 |
| | | | | | | | | ▲ 18 × 31.5 | 0.58 | | | | |
| 120 | 121 | 12.5 × 31.5 | 0.53 | 12.5 × 35.5 | 0.49 | 12.5 × 40 | 0.53 | 16 × 40 | 0.66 | 18 × 40 | 0.66 | 22 × 40 | 0.77 |
| | | | | | | | | ▲ 18 × 35.5 | 0.67 | | | | |
| 150 | 151 | 12.5 × 35.5 | 0.62 | 12.5 × 40 | 0.58 | 16 × 31.5 | 0.62 | 18 × 40 | 0.77 | 22 × 40 | 0.80 | 22 × 50 | 0.92 |
| | | | | | | | | | | | | ▲ 25 × 40 | 0.92 |
| 180 | 181 | 12.5 × 40 | 0.70 | 16 × 31.5 | 0.67 | 16 × 35.5 | 0.72 | 22 × 40 | 0.85 | 22 × 50 | 0.95 | 25 × 50 | 1.10 |
| | | | | | | ▲ 18 × 31.5 | 0.72 | | | ▲ 25 × 40 | 0.95 | | |
| 220 | 221 | 16 × 31.5 | 0.76 | 16 × 35.5 | 0.77 | 16 × 40 | 0.83 | | | | | | |
| | | ▲ 18 × 31.5 | 0.81 | ▲ 18 × 31.5 | 0.77 | ▲ 18 × 35.5 | 0.83 | | | | | | |
| 270 | 271 | 16 × 35.5 | 0.88 | 16 × 40 | 0.88 | 18 × 40 | 0.95 | 22 × 50 | 1.30 | 25 × 50 | 1.20 | | |
| | | ▲ 18 × 31.5 | 0.87 | ▲ 18 × 35.5 | 0.88 | ▲ 25 × 40 | 1.30 | | | | | | |
| 330 | 331 | 18 × 35.5 | 1.01 | 18 × 40 | 1.01 | 22 × 40 | 1.05 | 25 × 50 | 1.40 | | | | |
| 390 | 391 | 18 × 40 | 1.13 | 22 × 40 | 1.15 | | | | | | | | |
| 470 | 471 | 22 × 40 | 1.20 | | | 22 × 50 | 1.45 | | | | | | |
| | | | | ▲ 25 × 40 | 1.45 | | | | | | | | |
| 560 | 561 | | | 22 × 50 | 1.50 | 25 × 50 | 1.55 | | | | | | |
| | | ▲ 25 × 40 | 1.50 | | | | | | | | | | |
| 680 | 681 | 22 × 50 | 1.50 | 25 × 50 | 1.60 | | | | | | | | |
| | | ▲ 25 × 40 | 1.50 | | | | | | | | | | |
| 820 | 821 | 25 × 50 | 1.60 | | | | | | | | | Case size φ D × L (mm) | ※ |

※ : Rated ripple current (Arms) at 105°C 120Hz

▲ : In this case, 6 will be put at 12th digit of type numbering system.

• Frequency coefficient of rated ripple current

| Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|-------------|------|-------|-------|------|---------------|
| Coefficient | 0.80 | 1.00 | 1.25 | 1.40 | 1.60 |