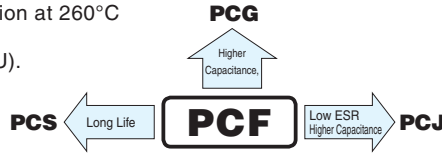


PCF

Chip Type, Standard



- Low ESR, High ripple current.
- Load life of 2000 hours at 105°C.
- SMD type : Lead free reflow soldering condition at 260°C peak correspondence.
- Compliant to the RoHS directive (2011/65/EU).

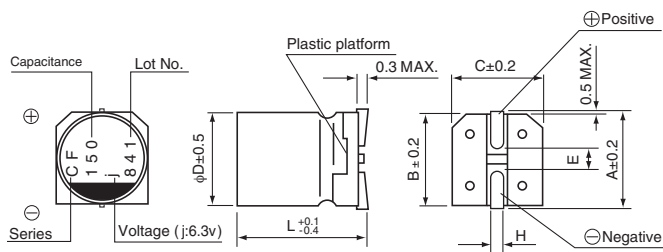


Specifications

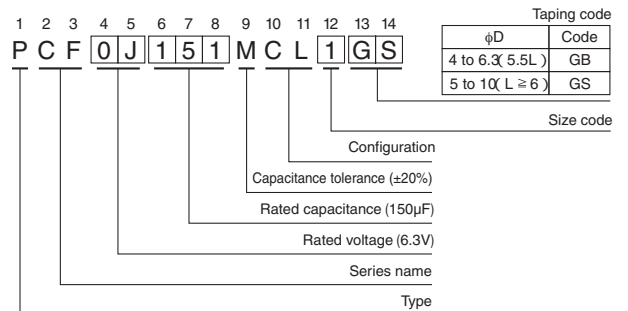
| Item | Performance Characteristics | | | | | | | | | |
|---|---|--|--------------------|---|-------|---|-----------|---|-----------------------|---|
| Category Temperature Range | -55 to +105°C | | | | | | | | | |
| Rated Voltage Range | 2.5 to 25V | | | | | | | | | |
| Rated Capacitance Range | 3.3 to 1500µF | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | | | | | | | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | | | | | | | | |
| Leakage Current (※ 2) | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C | | | | | | | | | |
| Temperature Characteristics (Max.Impedance Ratio) | $Z+105^{\circ}\text{C} / Z+20^{\circ}\text{C} \leq 1.25$ (100kHz) $Z-55^{\circ}\text{C} / Z+20^{\circ}\text{C} \leq 1.25$ | | | | | | | | | |
| 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 105°C | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※ 3)</td></tr> <tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) | tan δ | 150% or less than the initial specified value | ESR (※ 1) | 150% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of the initial capacitance value (※ 3) | | | | | | | | | |
| tan δ | 150% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 150% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※ 3)</td></tr> <tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) | tan δ | 150% or less than the initial specified value | ESR (※ 1) | 150% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of the initial capacitance value (※ 3) | | | | | | | | | |
| tan δ | 150% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 150% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In case peak temperature is 250°C or less, reflow soldering shall be two times maximum. In case peak temperature is 260°C or less, reflow soldering shall be once. Measurement for solder temperature profile shall be made at the capacitor top and the terminal. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 10% of the initial capacitance value (※ 3)</td></tr> <tr><td>tan δ</td><td>130% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>130% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 10% of the initial capacitance value (※ 3) | tan δ | 130% or less than the initial specified value | ESR (※ 1) | 130% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 10% of the initial capacitance value (※ 3) | | | | | | | | | |
| tan δ | 130% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 130% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Marking | Navy blue print on the case top | | | | | | | | | |

※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
 ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
 ※ 3 Initial value : The value before test of examination of resistance to soldering.

Dimensions



Type numbering system (Example : 6.3V 150µF)



| Size | φ4 × 5.5L | φ5 × 6L | φ6.3 × 5.5L | φ6.3 × 6L | φ8 × 7L | φ8 × 12L | φ10 × 8L | φ10 × 10L | φ10 × 12.7L |
|------|------------|------------|-------------|------------|------------|------------|------------|------------|-------------|
| φD | 4.0 | 5.0 | 6.3 | 6.3 | 8.0 | 8.0 | 10.0 | 10.0 | 10.0 |
| L | 5.4 | 5.9 | 5.4 | 5.9 | 6.9 | 11.9 | 7.9 | 9.9 | 12.6 |
| A | 5.0 | 6.0 | 7.3 | 7.3 | 9.0 | 9.0 | 11.0 | 11.0 | 11.0 |
| B | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 |
| C | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 |
| E | 1.0 | 1.6 | 2.1 | 2.1 | 3.2 | 3.2 | 4.6 | 4.6 | 4.6 |
| H | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 |

Voltage

| | | | | | | | |
|------|-----|---|-----|----|----|----|----|
| V | 2.5 | 4 | 6.3 | 10 | 16 | 20 | 25 |
| Code | e | g | j | A | C | D | E |

● Dimension table in next page.

PCF

■ Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mA _{rms}) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|-----------------------------------|----------------|
| 2.5 (0E) | 2.8 | 100 | 6.3 × 6 | 0.12 | 100 | 22 | 2600 | PCF0E101MCL1GS |
| | | 220 | ■ 6.3 × 5.5 | 0.12 | 110 | 20 | 2800 | PCF0E221MCL4GB |
| | | 220 | 6.3 × 6 | 0.12 | 110 | 20 | 2800 | PCF0E221MCL1GS |
| | | 470 | 8 × 7 | 0.12 | 235 | 20 | 3300 | PCF0E471MCL1GS |
| | | 820 | 10 × 8 | 0.12 | 410 | 17 | 4400 | PCF0E821MCL1GS |
| | | 1500 | 10 × 10 | 0.12 | 750 | 13 | 4700 | PCF0E152MCL1GS |
| | | 1500 | ● 10 × 12.7 | 0.12 | 750 | 12 | 5440 | PCF0E152MCL9GS |
| 4 (0G) | 4.6 | 33 | 4 × 5.5 | 0.12 | 100 | 200 | 700 | PCF0G330MCL1GB |
| | | 100 | ■ 6.3 × 5.5 | 0.12 | 100 | 22 | 2600 | PCF0G101MCL4GB |
| | | 100 | 6.3 × 6 | 0.12 | 80 | 22 | 2600 | PCF0G101MCL1GS |
| | | 150 | ■ 6.3 × 5.5 | 0.12 | 120 | 22 | 2800 | PCF0G151MCL4GB |
| | | 150 | ▲ 5 × 6 | 0.12 | 300 | 30 | 2000 | PCF0G151MCL6GS |
| | | 150 | 6.3 × 6 | 0.12 | 120 | 22 | 2800 | PCF0G151MCL1GS |
| | | 220 | 8 × 7 | 0.12 | 176 | 21 | 3200 | PCF0G221MCL1GS |
| | | 330 | 8 × 7 | 0.12 | 264 | 21 | 3400 | PCF0G331MCL1GS |
| | | 470 | 10 × 8 | 0.12 | 376 | 17 | 4200 | PCF0G471MCL1GS |
| | | 560 | ■ 8 × 12 | 0.12 | 448 | 13 | 4520 | PCF0G561MCL4GS |
| | | 680 | 10 × 8 | 0.12 | 544 | 17 | 4400 | PCF0G681MCL1GS |
| | | 820 | 10 × 10 | 0.12 | 656 | 13 | 4800 | PCF0G821MCL1GS |
| | | 1200 | 10 × 12.7 | 0.12 | 960 | 10 | 5500 | PCF0G122MCL1GS |
| 6.3 (0J) | 7.2 | 22 | 4 × 5.5 | 0.12 | 100 | 200 | 700 | PCF0J220MCL1GB |
| | | 47 | 5 × 6 | 0.12 | 148 | 35 | 1600 | PCF0J470MCL1GS |
| | | 82 | ■ 6.3 × 5.5 | 0.12 | 103 | 23 | 2600 | PCF0J820MCL4GB |
| | | 82 | 6.3 × 6 | 0.12 | 103 | 23 | 2600 | PCF0J820MCL1GS |
| | | 100 | ■ 6.3 × 5.5 | 0.12 | 126 | 23 | 2800 | PCF0J101MCL4GB |
| | | 100 | ▲ 5 × 6 | 0.12 | 315 | 25 | 2200 | PCF0J101MCL6GS |
| | | 100 | 6.3 × 6 | 0.12 | 126 | 23 | 2800 | PCF0J101MCL1GS |
| | | 120 | 6.3 × 6 | 0.12 | 151 | 23 | 3000 | PCF0J121MCL1GS |
| | | 150 | 8 × 7 | 0.12 | 189 | 22 | 3200 | PCF0J151MCL1GS |
| | | 220 | 8 × 7 | 0.12 | 277 | 22 | 3400 | PCF0J221MCL1GS |
| | | 330 | 10 × 8 | 0.12 | 416 | 18 | 4200 | PCF0J331MCL1GS |
| | | 470 | ■ 8 × 12 | 0.12 | 592 | 12 | 5300 | PCF0J471MCL4GS |
| | | 470 | ▲ 10 × 8 | 0.12 | 592 | 18 | 4300 | PCF0J471MCL6GS |
| | | 470 | 10 × 10 | 0.12 | 592 | 16 | 4600 | PCF0J471MCL1GS |
| | | 680 | 10 × 10 | 0.12 | 857 | 14 | 5000 | PCF0J681MCL1GS |
| 680 | ● 10 × 12.7 | 0.12 | 857 | 10 | 5500 | PCF0J681MCL9GS | | |
| 820 | 10 × 12.7 | 0.12 | 1033 | 10 | 5800 | PCF0J821MCL1GS | | |
| 10 (1A) | 11.5 | 4.7 | 4 × 5.5 | 0.12 | 100 | 240 | 670 | PCF1A4R7MCL1GB |
| | | 6.8 | 4 × 5.5 | 0.12 | 100 | 240 | 670 | PCF1A6R8MCL1GB |
| | | 10 | 4 × 5.5 | 0.12 | 100 | 220 | 700 | PCF1A100MCL1GB |
| | | 15 | 4 × 5.5 | 0.12 | 100 | 200 | 700 | PCF1A150MCL1GB |
| | | 33 | 5 × 6 | 0.12 | 165 | 35 | 1500 | PCF1A330MCL1GS |
| | | 47 | ▲ 5 × 6 | 0.12 | 235 | 26 | 2600 | PCF1A470MCL6GS |
| | | 47 | 6.3 × 6 | 0.12 | 94 | 26 | 2600 | PCF1A470MCL1GS |
| | | 56 | ■ 6.3 × 5.5 | 0.12 | 112 | 25 | 2500 | PCF1A560MCL4GB |
| | | 56 | 6.3 × 6 | 0.12 | 112 | 25 | 2500 | PCF1A560MCL1GS |
| | | 120 | 8 × 7 | 0.12 | 240 | 23 | 3000 | PCF1A121MCL1GS |
| | | 150 | ▲ 8 × 7 | 0.12 | 300 | 23 | 3200 | PCF1A151MCL6GS |
| | | 150 | 10 × 8 | 0.12 | 300 | 21 | 3300 | PCF1A151MCL1GS |
| | | 270 | ■ 8 × 12 | 0.12 | 540 | 13 | 4500 | PCF1A271MCL4GS |
| | | 270 | 10 × 8 | 0.12 | 540 | 20 | 3600 | PCF1A271MCL1GS |
| | | 330 | ■ 8 × 12 | 0.12 | 660 | 14 | 4000 | PCF1A331MCL4GS |
| | | 330 | 10 × 8 | 0.12 | 660 | 20 | 3700 | PCF1A331MCL1GS |
| | | 470 | 10 × 10 | 0.12 | 940 | 16 | 4600 | PCF1A471MCL1GS |
| | | 470 | ● 10 × 12.7 | 0.12 | 940 | 12 | 5300 | PCF1A471MCL9GS |
| | | 560 | 10 × 10 | 0.12 | 1120 | 15 | 4800 | PCF1A561MCL1GS |
| 560 | ● 10 × 12.7 | 0.12 | 1120 | 13 | 5230 | PCF1A561MCL9GS | | |

PCF

Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|----------------|
| 16 (1C) | 18.4 | 3.3 | 4 × 5.5 | 0.12 | 100 | 260 | 660 | PCF1C3R3MCL1GB |
| | | 22 | 5 × 6 | 0.12 | 176 | 45 | 1210 | PCF1C220MCL1GS |
| | | 33 | 6.3 × 6 | 0.12 | 106 | 31 | 2400 | PCF1C330MCL1GS |
| | | 39 | ■ 6.3 × 5.5 | 0.12 | 125 | 31 | 2400 | PCF1C390MCL4GB |
| | | 39 | 6.3 × 6 | 0.12 | 125 | 31 | 2400 | PCF1C390MCL1GS |
| | | 56 | 8 × 7 | 0.12 | 179 | 30 | 2900 | PCF1C560MCL1GS |
| | | 82 | 8 × 7 | 0.12 | 262 | 28 | 3200 | PCF1C820MCL1GS |
| | | 100 | 10 × 8 | 0.12 | 320 | 27 | 3300 | PCF1C101MCL1GS |
| | | 150 | 10 × 8 | 0.12 | 480 | 25 | 3500 | PCF1C151MCL1GS |
| | | 180 | ■ 8 × 12 | 0.12 | 576 | 16 | 4400 | PCF1C181MCL4GS |
| | | 180 | 10 × 8 | 0.12 | 576 | 25 | 3600 | PCF1C181MCL1GS |
| | | 220 | 10 × 10 | 0.12 | 704 | 20 | 3900 | PCF1C221MCL1GS |
| | | 220 | ● 10 × 12.7 | 0.12 | 704 | 14 | 5050 | PCF1C221MCL9GS |
| | 330 | 10 × 12.7 | 0.12 | 1056 | 14 | 5000 | PCF1C331MCL1GS | |
| 20 (1D) | 23 | 10 | 5 × 6 | 0.12 | 100 | 120 | 900 | PCF1D100MCL1GS |
| | | 22 | ■ 6.3 × 5.5 | 0.12 | 100 | 50 | 1700 | PCF1D220MCL4GB |
| | | 22 | 6.3 × 6 | 0.12 | 88 | 50 | 1700 | PCF1D220MCL1GS |
| | | 39 | 8 × 7 | 0.12 | 156 | 45 | 2000 | PCF1D390MCL1GS |
| | | 47 | 8 × 7 | 0.12 | 188 | 45 | 2000 | PCF1D470MCL1GS |
| | | 56 | 10 × 8 | 0.12 | 224 | 40 | 2400 | PCF1D560MCL1GS |
| | | 68 | 10 × 8 | 0.12 | 272 | 40 | 2600 | PCF1D680MCL1GS |
| | | 82 | 10 × 8 | 0.12 | 328 | 40 | 2600 | PCF1D820MCL1GS |
| | | 100 | 8 × 12 | 0.12 | 400 | 22 | 3200 | PCF1D101MCL1GS |
| | | 120 | 10 × 10 | 0.12 | 480 | 35 | 2800 | PCF1D121MCL1GS |
| | 150 | 10 × 12.7 | 0.12 | 600 | 20 | 4320 | PCF1D151MCL1GS | |
| 25 (1E) | 28.7 | 6.8 | 6.3 × 6 | 0.12 | 85 | 80 | 1200 | PCF1E6R8MCL1GS |
| | | 10 | 8 × 7 | 0.12 | 125 | 60 | 1600 | PCF1E100MCL1GS |
| | | 22 | 10 × 8 | 0.12 | 275 | 50 | 2200 | PCF1E220MCL1GS |
| | | 33 | 8 × 12 | 0.12 | 413 | 30 | 2800 | PCF1E330MCL1GS |
| | | 47 | ■ 8 × 12 | 0.12 | 588 | 30 | 3000 | PCF1E470MCL4GS |
| | | 47 | 10 × 10 | 0.12 | 588 | 45 | 2400 | PCF1E470MCL1GS |
| | | 56 | 10 × 12.7 | 0.12 | 700 | 28 | 3800 | PCF1E560MCL1GS |

Rated ripple current (mArms) at 105°C 100kHz

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

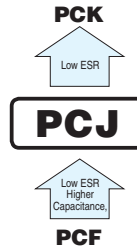
- No marked, [1] will be put at 12th digit of type numbering system.
- : In this case, [4] will be put at 12th digit of type numbering system.
 - ▲ : In this case, [6] will be put at 12th digit of type numbering system.
 - : In this case, [9] will be put at 12th digit of type numbering system.

PCJ

Chip Type, Low ESR,
Higher Capacitance



- Low ESR, Higher Capacitance, High ripple current.
- Load life of 2000 hours at 105°C.
- SMD type : Lead free reflow soldering condition at 260°C peak correspondence.
- Compliant to the RoHS directive (2011/65/EU).

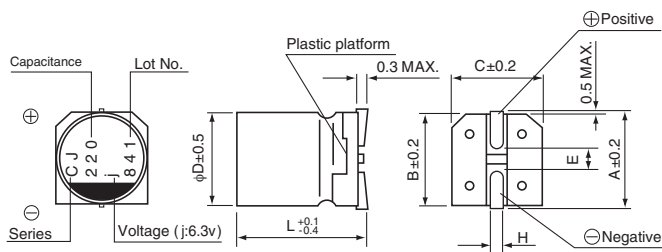


■ Specifications

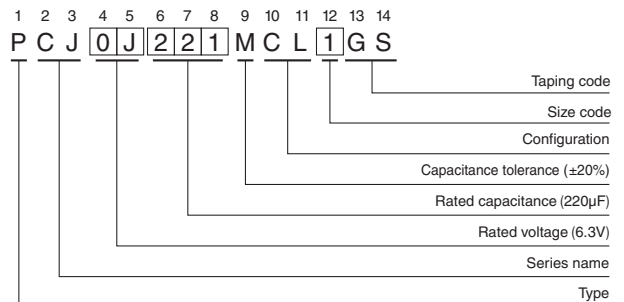
| Item | Performance Characteristics | | | | | | | | | |
|---|--|---|--------------------|--|-------|---|-----------|---|-----------------------|---|
| Category Temperature Range | -55 to +105°C | | | | | | | | | |
| Rated Voltage Range | 2.5 to 16V | | | | | | | | | |
| Rated Capacitance Range | 33 to 2700µF | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | | | | | | | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | | | | | | | | |
| Leakage Current (※ 2) | Less than or equal to the specified value . After 2 minutes' application of rated voltage at 20°C | | | | | | | | | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | | | | | | | | | |
| 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 105°C. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of the initial capacitance value (※3) | tan δ | 150% or less than the initial specified value | ESR (※ 1) | 150% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of the initial capacitance value (※3) | | | | | | | | | |
| tan δ | 150% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 150% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of the initial capacitance value (※3) | tan δ | 150% or less than the initial specified value | ESR (※ 1) | 150% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of the initial capacitance value (※3) | | | | | | | | | |
| tan δ | 150% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 150% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In case peak temperature is 250°C or less, reflow soldering shall be two times maximum. In case peak temperature is 260°C or less, reflow soldering shall be once. Measurement for solder temperature profile shall be made at the capacitor top and the terminal. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 10% of the initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>130% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>130% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 10% of the initial capacitance value (※3) | tan δ | 130% or less than the initial specified value | ESR (※ 1) | 130% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 10% of the initial capacitance value (※3) | | | | | | | | | |
| tan δ | 130% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 130% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Marking | Navy blue print on the case top | | | | | | | | | |

- ※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions



Type numbering system (Example : 6.3V 220µF)



| Size | φ5 × 6L | φ6.3 × 6L | φ6.3 × 8L | φ8 × 7L | φ8 × 8L | φ8 × 10L | φ8 × 12L | φ10 × 8L | φ10 × 10L | φ10 × 12.7L |
|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| φD | 5.0 | 6.3 | 6.3 | 8.0 | 8.0 | 8.0 | 8.0 | 10.0 | 10.0 | 10.0 |
| L | 5.9 | 5.9 | 7.9 | 6.9 | 7.9 | 9.9 | 11.9 | 7.9 | 9.9 | 12.6 |
| A | 6.0 | 7.3 | 7.3 | 9.0 | 9.0 | 9.0 | 9.0 | 11.0 | 11.0 | 11.0 |
| B | 5.3 | 6.6 | 6.6 | 8.3 | 8.3 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 |
| C | 5.3 | 6.6 | 6.6 | 8.3 | 8.3 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 |
| E | 1.6 | 2.1 | 2.1 | 3.2 | 3.2 | 3.2 | 3.2 | 4.6 | 4.6 | 4.6 |
| H | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 |

Voltage

| | | | | | |
|------|-----|---|-----|----|----|
| V | 2.5 | 4 | 6.3 | 10 | 16 |
| Code | e | g | j | A | C |

● Dimension table in next page.



■ Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|----------------|
| 2.5 (0E) | 2.8 | 180 | 5 × 6 | 0.12 | 90 | 21 | 2670 | PCJ0E181MCL1GS |
| | | 390 | 6.3 × 6 | 0.12 | 195 | 15 | 3400 | PCJ0E391MCL1GS |
| | | 470 | 6.3 × 8 | 0.12 | 235 | 13 | 3600 | PCJ0E471MCL1GS |
| | | 560 | ■ 6.3 × 8 | 0.12 | 280 | 13 | 3600 | PCJ0E561MCL4GS |
| | | 560 | 8 × 7 | 0.12 | 280 | 13 | 4100 | PCJ0E561MCL1GS |
| | | 680 | 8 × 7 | 0.12 | 340 | 13 | 4100 | PCJ0E681MCL1GS |
| | | 820 | ▲ 8 × 8 | 0.12 | 410 | 12 | 4260 | PCJ0E821MCL6GS |
| | | 820 | 8 × 12 | 0.12 | 410 | 9 | 5400 | PCJ0E821MCL1GS |
| | | 1000 | 8 × 8 | 0.12 | 500 | 12 | 4260 | PCJ0E102MCL1GS |
| | | 1200 | 10 × 8 | 0.12 | 600 | 13 | 4800 | PCJ0E122MCL1GS |
| | | 1500 | ▲ 8 × 10 | 0.12 | 750 | 10 | 5220 | PCJ0E152MCL6GS |
| | | 1500 | 8 × 12 | 0.12 | 750 | 9 | 5400 | PCJ0E152MCL1GS |
| | | 2200 | 10 × 10 | 0.12 | 1100 | 10 | 5500 | PCJ0E222MCL1GS |
| | | 2700 | 10 × 12.7 | 0.12 | 1350 | 9 | 5800 | PCJ0E272MCL1GS |
| 4 (0G) | 4.6 | 100 | 5 × 6 | 0.12 | 80 | 22 | 2610 | PCJ0G101MCL1GS |
| | | 150 | 5 × 6 | 0.12 | 120 | 22 | 2610 | PCJ0G151MCL1GS |
| | | 270 | 6.3 × 6 | 0.12 | 216 | 15 | 3200 | PCJ0G271MCL1GS |
| | | 330 | 6.3 × 6 | 0.12 | 264 | 15 | 3300 | PCJ0G331MCL1GS |
| | | 390 | 6.3 × 8 | 0.12 | 312 | 14 | 3470 | PCJ0G391MCL1GS |
| | | 470 | 8 × 7 | 0.12 | 376 | 14 | 3950 | PCJ0G471MCL1GS |
| | | 560 | 8 × 7 | 0.12 | 448 | 14 | 4000 | PCJ0G561MCL1GS |
| | | 560 | ● 8 × 12 | 0.12 | 448 | 9 | 5200 | PCJ0G561MCL9GS |
| | | 680 | 8 × 8 | 0.12 | 544 | 13 | 3950 | PCJ0G681MCL1GS |
| | | 1000 | ■ 8 × 10 | 0.12 | 800 | 10 | 5220 | PCJ0G102MCL4GS |
| | | 1000 | 10 × 8 | 0.12 | 800 | 13 | 4300 | PCJ0G102MCL1GS |
| | | 1200 | 8 × 12 | 0.12 | 960 | 9 | 5400 | PCJ0G122MCL1GS |
| | | 1200 | ▲ 10 × 10 | 0.12 | 960 | 10 | 5500 | PCJ0G122MCL6GS |
| | | 1500 | ■ 8 × 12 | 0.12 | 1200 | 9 | 5200 | PCJ0G152MCL4GS |
| | | 1500 | 10 × 10 | 0.12 | 1200 | 10 | 5500 | PCJ0G152MCL1GS |
| | | 1800 | 10 × 10 | 0.12 | 1440 | 10 | 5500 | PCJ0G182MCL1GS |
| | | 1800 | ● 10 × 12.7 | 0.12 | 1440 | 9 | 5600 | PCJ0G182MCL9GS |
| | | 2200 | 10 × 12.7 | 0.12 | 1760 | 9 | 5700 | PCJ0G222MCL1GS |
| 6.3 (0J) | 7.2 | 100 | 5 × 6 | 0.12 | 126 | 24 | 2500 | PCJ0J101MCL1GS |
| | | 120 | 5 × 6 | 0.12 | 151 | 24 | 2500 | PCJ0J121MCL1GS |
| | | 220 | 6.3 × 6 | 0.12 | 277 | 15 | 3200 | PCJ0J221MCL1GS |
| | | 270 | 6.3 × 8 | 0.12 | 340 | 14 | 3470 | PCJ0J271MCL1GS |
| | | 330 | ■ 6.3 × 8 | 0.12 | 416 | 14 | 3470 | PCJ0J331MCL4GS |
| | | 330 | 8 × 7 | 0.12 | 416 | 14 | 3950 | PCJ0J331MCL1GS |
| | | 390 | 8 × 7 | 0.12 | 491 | 14 | 3950 | PCJ0J391MCL1GS |
| | | 470 | 8 × 8 | 0.12 | 592 | 13 | 3950 | PCJ0J471MCL1GS |
| | | 820 | ▲ 8 × 10 | 0.12 | 1033 | 12 | 4770 | PCJ0J821MCL6GS |
| | | 820 | ■ 8 × 12 | 0.12 | 1033 | 10 | 5150 | PCJ0J821MCL4GS |
| | | 820 | 10 × 8 | 0.12 | 1033 | 13 | 4500 | PCJ0J821MCL1GS |
| | | 1200 | 10 × 10 | 0.12 | 1512 | 12 | 5025 | PCJ0J122MCL1GS |
| | | 1500 | 10 × 10 | 0.12 | 1890 | 12 | 5025 | PCJ0J152MCL1GS |
| | | 1500 | ● 10 × 12.7 | 0.12 | 1890 | 10 | 5500 | PCJ0J152MCL9GS |
| | | 1800 | 10 × 12.7 | 0.12 | 2268 | 11 | 5200 | PCJ0J182MCL1GS |
| | | 10 (1A) | 11.5 | 47 | 5 × 6 | 0.12 | 94 | 28 |
| 56 | 5 × 6 | | | 0.12 | 112 | 28 | 2310 | PCJ1A560MCL1GS |
| 68 | 5 × 6 | | | 0.12 | 136 | 28 | 2310 | PCJ1A680MCL1GS |
| 120 | 6.3 × 6 | | | 0.12 | 240 | 25 | 2530 | PCJ1A121MCL1GS |
| 150 | 6.3 × 8 | | | 0.12 | 300 | 21 | 2880 | PCJ1A151MCL1GS |
| 220 | 8 × 7 | | | 0.12 | 440 | 21 | 3220 | PCJ1A221MCL1GS |
| 270 | 8 × 7 | | | 0.12 | 540 | 21 | 3220 | PCJ1A271MCL1GS |
| 330 | 8 × 8 | | | 0.12 | 660 | 19 | 3390 | PCJ1A331MCL1GS |
| 390 | 8 × 10 | | | 0.12 | 780 | 17 | 4000 | PCJ1A391MCL1GS |
| 470 | 10 × 8 | | | 0.12 | 940 | 19 | 3800 | PCJ1A471MCL1GS |
| 680 | 10 × 10 | | | 0.12 | 1360 | 13 | 4820 | PCJ1A681MCL1GS |
| 16 (1C) | 18.4 | | | 33 | 5 × 6 | 0.12 | 105 | 35 |
| | | 39 | 5 × 6 | 0.12 | 125 | 35 | 2070 | PCJ1C390MCL1GS |
| | | 68 | 6.3 × 6 | 0.12 | 217 | 28 | 2390 | PCJ1C680MCL1GS |
| | | 82 | 6.3 × 8 | 0.12 | 262 | 24 | 2700 | PCJ1C820MCL1GS |
| | | 100 | ■ 6.3 × 8 | 0.12 | 320 | 24 | 2700 | PCJ1C101MCL4GS |
| | | 100 | 8 × 7 | 0.12 | 320 | 24 | 3010 | PCJ1C101MCL1GS |
| | | 120 | 8 × 7 | 0.12 | 384 | 24 | 3010 | PCJ1C121MCL1GS |
| | | 150 | 8 × 8 | 0.12 | 480 | 22 | 3150 | PCJ1C151MCL1GS |
| | | 180 | 8 × 10 | 0.12 | 576 | 18 | 3890 | PCJ1C181MCL1GS |
| | | 220 | ■ 8 × 10 | 0.12 | 704 | 18 | 3890 | PCJ1C221MCL4GS |
| | | 220 | 10 × 8 | 0.12 | 704 | 22 | 3450 | PCJ1C221MCL1GS |
| | | 270 | 8 × 12 | 0.12 | 864 | 16 | 4070 | PCJ1C271MCL1GS |
| | | 330 | 10 × 10 | 0.12 | 1056 | 16 | 4350 | PCJ1C331MCL1GS |

Rated ripple current (mArms) at 105°C 100kHz

No marked, [1] will be put at 12th digit of type numbering system.

■: In this case, [4] will be put at 12th digit of type numbering system.

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

●: In this case, [9] will be put at 12th digit of type numbering system.

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

PCK

Chip Type, Ultra-low ESR



- Ultra-low ESR, Higher Capacitance, High ripple current.
- Load life of 2000 hours at 105°C.
- SMD type : Lead free reflow soldering condition at 260°C peak correspondence.
- Compliant to the RoHS directive (2011/65/EU).

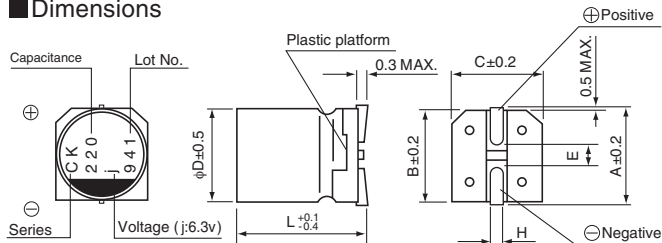


Specifications

| Item | Performance Characteristics | | |
|---|--|-----------------------|---|
| Category Temperature Range | -55 to +105°C | | |
| Rated Voltage Range | 2.5 to 6.3V | | |
| Rated Capacitance Range | 220 to 2200µF | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | |
| Leakage Current (※ 2) | Less than or equal to the specified value . After 2 minutes' application of rated voltage at 20°C | | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | | |
| 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 105°C. | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In case peak temperature is 250°C or less, reflow soldering shall be two times maximum. In case peak temperature is 260°C or less, reflow soldering shall be once. Measurement for solder temperature profile shall be made at the capacitor top and the terminal. | Capacitance change | Within ± 10% of the initial capacitance value (※ 3) |
| | | tan δ | 130% or less than the initial specified value |
| | | ESR (※ 1) | 130% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | | |

- ※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

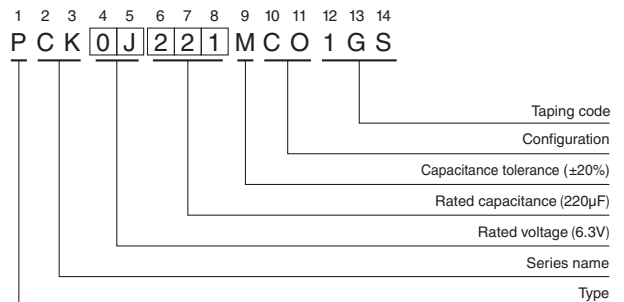
Dimensions



| | (mm) | | | |
|------|------------|------------|------------|------------|
| Size | φ6.3 × 6L | φ8 × 7L | φ10 × 8L | φ10 × 10L |
| φD | 6.3 | 8.0 | 10.0 | 10.0 |
| L | 5.9 | 6.9 | 7.9 | 9.9 |
| A | 7.3 | 9.0 | 11.0 | 11.0 |
| B | 6.6 | 8.3 | 10.3 | 10.3 |
| C | 6.6 | 8.3 | 10.3 | 10.3 |
| E | 2.1 | 3.2 | 4.6 | 4.6 |
| H | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 |

| Voltage | | | |
|---------|-----|---|-----|
| V | 2.5 | 4 | 6.3 |
| Code | e | g | j |

Type numbering system (Example : 6.3V 220µF)



● Dimension table in next page.

PCK

■ Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mA _{rms}) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|-----------------------------------|----------------|
| 2.5 (OE) | 2.8 | 390 | 6.3 × 6 | 0.12 | 293 | 10 | 3900 | PCK0E391MCO1GS |
| | | 560 | 8 × 7 | 0.12 | 420 | 9 | 4500 | PCK0E561MCO1GS |
| | | 680 | 8 × 7 | 0.12 | 510 | 9 | 4500 | PCK0E681MCO1GS |
| | | 1200 | 10 × 8 | 0.12 | 900 | 9 | 5000 | PCK0E122MCO1GS |
| | | 2200 | 10 × 10 | 0.12 | 1650 | 8 | 6000 | PCK0E222MCO1GS |
| 4 (OG) | 4.6 | 330 | 6.3 × 6 | 0.12 | 396 | 10 | 3900 | PCK0G331MCO1GS |
| | | 470 | 8 × 7 | 0.12 | 564 | 9 | 4500 | PCK0G471MCO1GS |
| | | 560 | 8 × 7 | 0.12 | 672 | 9 | 4500 | PCK0G561MCO1GS |
| | | 1000 | 10 × 8 | 0.12 | 1200 | 9 | 5000 | PCK0G102MCO1GS |
| | | 1800 | 10 × 10 | 0.12 | 2160 | 8 | 6000 | PCK0G182MCO1GS |
| 6.3 (OJ) | 7.2 | 220 | 6.3 × 6 | 0.12 | 416 | 10 | 3900 | PCK0J221MCO1GS |
| | | 330 | 8 × 7 | 0.12 | 624 | 9 | 4500 | PCK0J331MCO1GS |
| | | 390 | 8 × 7 | 0.12 | 737 | 9 | 4500 | PCK0J391MCO1GS |
| | | 820 | 10 × 8 | 0.12 | 1550 | 9 | 5000 | PCK0J821MCO1GS |
| | | 1500 | 10 × 10 | 0.12 | 2835 | 8 | 6000 | PCK0J152MCO1GS |

Rated ripple current (mA_{rms}) at 105°C 100kHz

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

PCG Chip Type, Higher Capacitance



- Higher Capacitance, Low ESR, High ripple current.
- Load life of 2000 hours at 105°C.
- SMD type : Lead free reflow soldering condition at 260°C peak correspondence.
- Compliant to the RoHS directive (2011/65/EU).

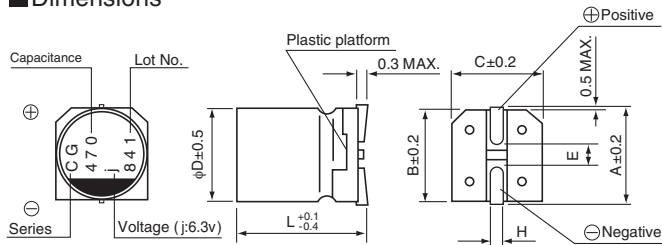


■ Specifications

| Item | Performance Characteristics | |
|---|--|---|
| Category Temperature Range | -55 to +105°C | |
| Rated Voltage Range | 2.5 to 16V | |
| Rated Capacitance Range | 47 to 4700µF | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | |
| Leakage Current (※ 2) | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | |
| 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 105°C. | Capacitance change Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ 150% or less than the initial specified value |
| | | ESR (※ 1) 150% or less than the initial specified value |
| | | Leakage current (※ 2) Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ 150% or less than the initial specified value |
| | | ESR (※ 1) 150% or less than the initial specified value |
| | | Leakage current (※ 2) Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In case peak temperature is 250°C or less, reflow soldering shall be two times maximum. In case peak temperature is 260°C or less, reflow soldering shall be once. Measurement for solder temperature profile shall be made at the capacitor top and the terminal. | Capacitance change Within ± 10% of the initial capacitance value (※ 3) |
| | | tan δ 130% or less than the initial specified value |
| | | ESR (※ 1) 130% or less than the initial specified value |
| | | Leakage current (※ 2) Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | |

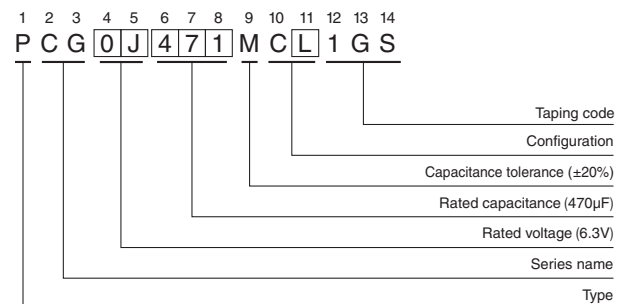
- ※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions



| | (mm) | | | | | |
|------|------------|------------|------------|------------|------------|-------------|
| Size | φ5 × 6L | φ6.3 × 6L | φ8 × 7L | φ10 × 8L | φ10 × 10L | φ10 × 12.7L |
| φD | 5.0 | 6.3 | 8.0 | 10.0 | 10.0 | 10.0 |
| L | 5.9 | 5.9 | 6.9 | 7.9 | 9.9 | 12.6 |
| A | 6.0 | 7.3 | 9.0 | 11.0 | 11.0 | 11.0 |
| B | 5.3 | 6.6 | 8.3 | 10.3 | 10.3 | 10.3 |
| C | 5.3 | 6.6 | 8.3 | 10.3 | 10.3 | 10.3 |
| E | 1.6 | 2.1 | 3.2 | 4.6 | 4.6 | 4.6 |
| H | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 |

Type numbering system (Example : 6.3V 470µF)



Voltage

| | | | | | |
|------|-----|---|-----|----|----|
| V | 2.5 | 4 | 6.3 | 10 | 16 |
| Code | e | g | j | A | C |

● Dimension table in next page.



Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mA _{rms}) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|-----------------------------------|----------------|
| 2.5 (0E) | 2.8 | 220 | 5 × 6 | 0.12 | 110 | 30 | 2100 | PCG0E221MCL1GS |
| | | 330 | 5 × 6 | 0.12 | 500 | 30 | 2200 | PCG0E331MCL1GS |
| | | 330 | 5 × 6 | 0.12 | 500 | 10 | 3300 | PCG0E331MCO1GS |
| | | 470 | 6.3 × 6 | 0.12 | 235 | 20 | 2900 | PCG0E471MCL1GS |
| | | 560 | 6.3 × 6 | 0.12 | 280 | 20 | 3000 | PCG0E561MCL1GS |
| | | 820 | 8 × 7 | 0.12 | 410 | 20 | 3300 | PCG0E821MCL1GS |
| | | 1500 | 10 × 8 | 0.12 | 750 | 17 | 4100 | PCG0E152MCL1GS |
| | | 2700 | 10 × 10 | 0.12 | 1350 | 12 | 4700 | PCG0E272MCL1GS |
| | | 3300 | 10 × 12.7 | 0.12 | 1650 | 10 | 5500 | PCG0E332MCL1GS |
| 4 (0G) | 4.6 | 180 | 5 × 6 | 0.12 | 144 | 32 | 1900 | PCG0G181MCL1GS |
| | | 220 | 5 × 6 | 0.12 | 300 | 32 | 2000 | PCG0G221MCL1GS |
| | | 220 | 5 × 6 | 0.12 | 300 | 15 | 2900 | PCG0G221MCO1GS |
| | | 390 | 6.3 × 6 | 0.12 | 312 | 22 | 2700 | PCG0G391MCL1GS |
| | | 680 | 8 × 7 | 0.12 | 544 | 21 | 3200 | PCG0G681MCL1GS |
| | | 1200 | 10 × 8 | 0.12 | 960 | 17 | 4000 | PCG0G122MCL1GS |
| | | 2200 | 10 × 10 | 0.12 | 1760 | 13 | 4600 | PCG0G222MCL1GS |
| | | 2700 | 10 × 12.7 | 0.12 | 2160 | 11 | 5300 | PCG0G272MCL1GS |
| | | 3300 | 10 × 12.7 | 0.12 | 2640 | 11 | 5400 | PCG0G332MCL1GS |
| 6.3 (0J) | 7.2 | 150 | 5 × 6 | 0.12 | 189 | 33 | 1800 | PCG0J151MCL1GS |
| | | 180 | 5 × 6 | 0.12 | 500 | 33 | 1900 | PCG0J181MCL1GS |
| | | 180 | 5 × 6 | 0.12 | 500 | 17 | 3000 | PCG0J181MCO1GS |
| | | 270 | 6.3 × 6 | 0.12 | 340 | 23 | 2600 | PCG0J271MCL1GS |
| | | 330 | 6.3 × 6 | 0.12 | 416 | 23 | 2700 | PCG0J331MCL1GS |
| | | 470 | 8 × 7 | 0.12 | 592 | 22 | 3100 | PCG0J471MCL1GS |
| | | 1000 | 10 × 8 | 0.12 | 1260 | 18 | 3800 | PCG0J102MCL1GS |
| | | 1800 | 10 × 10 | 0.12 | 2268 | 14 | 4400 | PCG0J182MCL1GS |
| | | 2200 | 10 × 12.7 | 0.12 | 2772 | 12 | 5000 | PCG0J222MCL1GS |
| 10 (1A) | 11.5 | 82 | 5 × 6 | 0.12 | 164 | 35 | 1700 | PCG1A820MCL1GS |
| | | 100 | 5 × 6 | 0.12 | 250 | 35 | 1800 | PCG1A101MCL1GS |
| | | 150 | 6.3 × 6 | 0.12 | 300 | 25 | 2500 | PCG1A151MCL1GS |
| | | 180 | 6.3 × 6 | 0.12 | 360 | 25 | 2600 | PCG1A181MCL1GS |
| | | 330 | 8 × 7 | 0.12 | 660 | 23 | 3100 | PCG1A331MCL1GS |
| | | 560 | 10 × 8 | 0.12 | 1120 | 20 | 3600 | PCG1A561MCL1GS |
| | | 820 | 10 × 10 | 0.12 | 1640 | 15 | 4300 | PCG1A821MCL1GS |
| | | 1000 | 10 × 12.7 | 0.12 | 2000 | 13 | 4800 | PCG1A102MCL1GS |
| | | 1500 | 10 × 12.7 | 0.12 | 3000 | 13 | 4900 | PCG1A152MCL1GS |
| 16 (1C) | 18.4 | 47 | 5 × 6 | 0.12 | 150 | 40 | 1500 | PCG1C470MCL1GS |
| | | 56 | 5 × 6 | 0.12 | 240 | 40 | 1600 | PCG1C560MCL1GS |
| | | 82 | 6.3 × 6 | 0.12 | 262 | 30 | 2300 | PCG1C820MCL1GS |
| | | 100 | 6.3 × 6 | 0.12 | 320 | 30 | 2400 | PCG1C101MCL1GS |
| | | 150 | 8 × 7 | 0.12 | 480 | 28 | 2800 | PCG1C151MCL1GS |
| | | 270 | 10 × 8 | 0.12 | 864 | 25 | 3300 | PCG1C271MCL1GS |
| | | 470 | 10 × 10 | 0.12 | 1504 | 20 | 3700 | PCG1C471MCL1GS |
| | | 680 | 10 × 12.7 | 0.12 | 2176 | 18 | 4100 | PCG1C681MCL1GS |
| | | 820 | 10 × 12.7 | 0.12 | 2624 | 18 | 4200 | PCG1C821MCL1GS |

Rated ripple current (mA_{rms}) at 105°C 100kHz

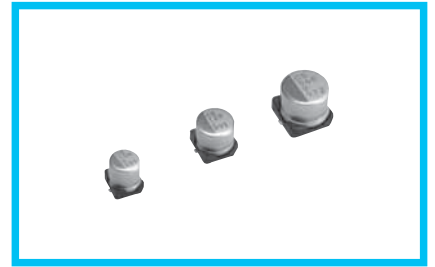
- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.



Chip Type, LongLife Assurance



- Load life of 5000 hours at 105°C.
- SMD type : Lead free reflow soldering condition at 260°C peak correspondence.
- Compliant to the RoHS directive (2011/65/EU).

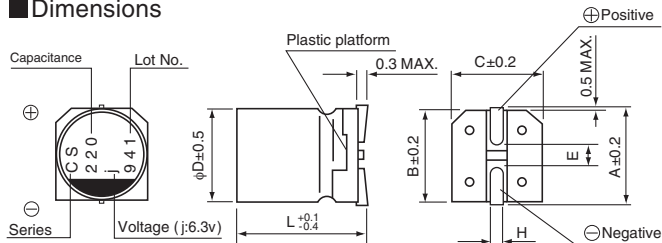


■ Specifications

| Item | Performance Characteristics | |
|---|--|---|
| Category Temperature Range | -55 to +105°C | |
| Rated Voltage Range | 4 to 16V | |
| Rated Capacitance Range | 22 to 560μF | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | |
| Leakage Current (※ 2) | Less than or equal to the specified value . After 2 minutes' application of rated voltage at 20°C | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours at 105°C. | Capacitance change Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ 150% or less than the initial specified value |
| | | ESR (※ 1) 150% or less than the initial specified value |
| | | Leakage current (※ 2) Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ 150% or less than the initial specified value |
| | | ESR (※ 1) 150% or less than the initial specified value |
| | | Leakage current (※ 2) Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In case peak temperature is 250°C or less, reflow soldering shall be two times maximum. In case peak temperature is 260°C or less, reflow soldering shall be once. Measurement for solder temperature profile shall be made at the capacitor top and the terminal. | Capacitance change Within ± 10% of the initial capacitance value (※ 3) |
| | | tan δ 130% or less than the initial specified value |
| | | ESR (※ 1) 130% or less than the initial specified value |
| | | Leakage current (※ 2) Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | |

- ※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions

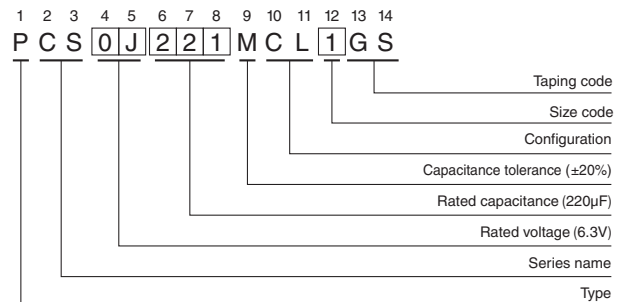


| Size | φ5 × 6L | φ6.3 × 6L | φ8 × 7L |
|------|------------|------------|------------|
| φD | 5.0 | 6.3 | 8.0 |
| L | 5.9 | 5.9 | 6.9 |
| A | 6.0 | 7.3 | 9.0 |
| B | 5.3 | 6.6 | 8.3 |
| C | 5.3 | 6.6 | 8.3 |
| E | 1.6 | 2.1 | 3.2 |
| H | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 |

Voltage

| V | 4 | 6.3 | 10 | 16 |
|------|---|-----|----|----|
| Code | g | j | A | C |

Type numbering system (Example : 6.3V 220μF)



● Dimension table in next page.



■ Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|----------------|
| 4 (0G) | 4.6 | 150 | 5 × 6 | 0.12 | 120 | 25 | 2200 | PCS0G151MCL1GS |
| | | 330 | 6.3 × 6 | 0.12 | 264 | 20 | 2800 | PCS0G331MCL1GS |
| | | 330 | ● 8 × 7 | 0.12 | 264 | 22 | 3200 | PCS0G331MCL9GS |
| | | 560 | 8 × 7 | 0.12 | 448 | 18 | 3600 | PCS0G561MCL1GS |
| 6.3 (0J) | 7.2 | 47 | 5 × 6 | 0.12 | 100 | 35 | 1600 | PCS0J470MCL1GS |
| | | 100 | 5 × 6 | 0.12 | 126 | 25 | 2400 | PCS0J101MCL1GS |
| | | 100 | ● 6.3 × 6 | 0.12 | 126 | 22 | 2800 | PCS0J101MCL9GS |
| | | 120 | ● 6.3 × 6 | 0.12 | 151 | 22 | 2800 | PCS0J121MCL9GS |
| | | 220 | 6.3 × 6 | 0.12 | 277 | 20 | 2800 | PCS0J221MCL1GS |
| | | 220 | ● 8 × 7 | 0.12 | 277 | 22 | 3200 | PCS0J221MCL9GS |
| | | 390 | 8 × 7 | 0.12 | 491 | 22 | 3200 | PCS0J391MCL1GS |
| 10 (1A) | 11.5 | 33 | 5 × 6 | 0.12 | 100 | 40 | 1300 | PCS1A330MCL1GS |
| | | 56 | ● 6.3 × 6 | 0.12 | 112 | 27 | 2300 | PCS1A560MCL9GS |
| | | 68 | 5 × 6 | 0.12 | 136 | 30 | 2100 | PCS1A680MCL1GS |
| | | 120 | 6.3 × 6 | 0.12 | 240 | 27 | 2300 | PCS1A121MCL1GS |
| | | 150 | ● 8 × 7 | 0.12 | 300 | 30 | 2600 | PCS1A151MCL9GS |
| | | 270 | 8 × 7 | 0.12 | 540 | 22 | 3200 | PCS1A271MCL1GS |
| 16 (1C) | 18.4 | 22 | 5 × 6 | 0.12 | 100 | 45 | 1100 | PCS1C220MCL1GS |
| | | 39 | 5 × 6 | 0.12 | 125 | 35 | 2000 | PCS1C390MCL1GS |
| | | 39 | ● 6.3 × 6 | 0.12 | 125 | 30 | 2200 | PCS1C390MCL9GS |
| | | 68 | 6.3 × 6 | 0.12 | 218 | 30 | 2200 | PCS1C680MCL1GS |
| | | 82 | ● 8 × 7 | 0.12 | 262 | 28 | 2800 | PCS1C820MCL9GS |
| | | 120 | 8 × 7 | 0.12 | 384 | 28 | 2800 | PCS1C121MCL1GS |

Rated ripple current (mArms) at 105°C 100kHz

No marked, [1] will be put at 12th digit of type numbering system.
 ● : In this case, [9] will be put at 12th digit of type numbering system.

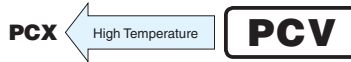
- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

PCV

Chip Type, High Voltage / Long Life



- High voltage (to 125V), Low ESR, High ripple current.
- Load life of 3000 hours at 105°C.
- SMD type : Lead free reflow soldering condition at 260°C peak correspondence.
- Compliant to the RoHS directive (2011/65/EU).

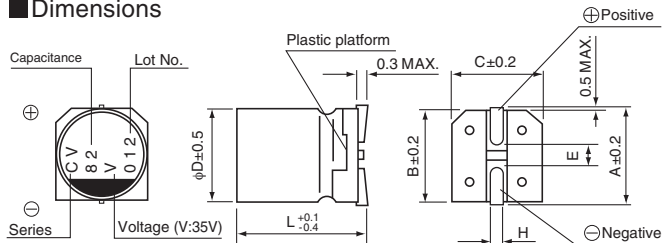


■ Specifications

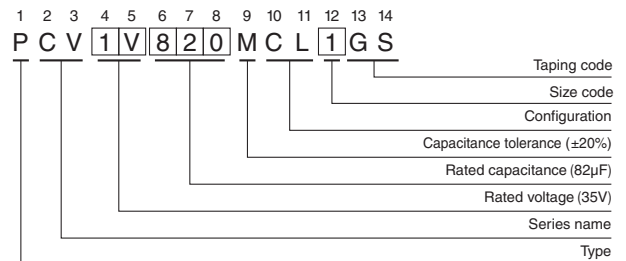
| Item | Performance Characteristics | | |
|---|--|-----------------------|--|
| Category Temperature Range | -55 to +105°C | | |
| Rated Voltage Range | 16 to 125V | | |
| Rated Capacitance Range | 5.6 to 680μF | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | |
| Leakage Current (※ 2) | Less than or equal to the specified value . After 2 minutes' application of rated voltage at 20°C | | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours at 105°C. | Capacitance change | Within ± 20% of the initial capacitance value (※3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change | Within ± 20% of the initial capacitance value (※3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In case peak temperature is 250°C or less, reflow soldering shall be two times maximum. In case peak temperature is 260°C or less, reflow soldering shall be once. Measurement for solder temperature profile shall be made at the capacitor top and the terminal. | Capacitance change | Within ± 10% of the initial capacitance value (※3) |
| | | tan δ | 130% or less than the initial specified value |
| | | ESR (※ 1) | 130% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | | |

- ※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions



Type numbering system (Example : 35V 82μF)



(mm)

| Size | φ6.3x6L | φ8x7L | φ8x10L | φ8x12L | φ10x8L | φ10x10L | φ10x12.7L |
|------|------------|------------|------------|------------|------------|------------|------------|
| φD | 6.3 | 8.0 | 8.0 | 8.0 | 10.0 | 10.0 | 10.0 |
| L | 5.9 | 6.9 | 9.9 | 11.9 | 7.9 | 9.9 | 12.6 |
| A | 7.3 | 9.0 | 9.0 | 9.0 | 11.0 | 11.0 | 11.0 |
| B | 6.6 | 8.3 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 |
| C | 6.6 | 8.3 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 |
| E | 2.1 | 3.2 | 3.2 | 3.2 | 4.6 | 4.6 | 4.6 |
| H | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 |

Voltage

| | | | | | | | | | |
|------|----|----|----|----|----|----|----|-----|-----|
| V | 16 | 20 | 25 | 35 | 50 | 63 | 80 | 100 | 125 |
| Code | C | D | E | V | H | J | K | 2A | 2B |

● Dimension table in next page.

PCV

■ Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|----------------|
| 16 (1C) | 18.4 | 56 | 6.3 × 6 | 0.12 | 179 | 50 | 1000 | PCV1C560MCL1GS |
| | | 82 | △ 6.3 × 6 | 0.12 | 262 | 47 | 1300 | PCV1C820MCL2GS |
| | | 100 | 8 × 7 | 0.12 | 320 | 36 | 1500 | PCV1C101MCL1GS |
| | | 150 | △ 8 × 7 | 0.12 | 480 | 34 | 1700 | PCV1C151MCL2GS |
| | | 220 | ▲ 8 × 10 | 0.12 | 704 | 27 | 2000 | PCV1C221MCL6GS |
| | | 220 | 10 × 8 | 0.12 | 704 | 31 | 2000 | PCV1C221MCL1GS |
| | | 270 | □ 8 × 10 | 0.12 | 864 | 21 | 3800 | PCV1C271MCL7GS |
| | | 270 | 8 × 12 | 0.12 | 864 | 26 | 2300 | PCV1C271MCL1GS |
| | | 270 | △ 10 × 8 | 0.12 | 864 | 24 | 3200 | PCV1C271MCL2GS |
| | | 330 | 10 × 10 | 0.12 | 1056 | 26 | 2400 | PCV1C331MCL1GS |
| | | 390 | △ 8 × 12 | 0.12 | 1248 | 20 | 4100 | PCV1C391MCL2GS |
| | | 470 | △ 10 × 10 | 0.12 | 1504 | 21 | 3900 | PCV1C471MCL2GS |
| | | 470 | 10 × 12.7 | 0.12 | 1504 | 25 | 2800 | PCV1C471MCL1GS |
| 680 | △ 10 × 12.7 | 0.12 | 2176 | 19 | 4400 | PCV1C681MCL2GS | | |
| 20 (1D) | 23.0 | 47 | 6.3 × 6 | 0.12 | 188 | 55 | 1000 | PCV1D470MCL1GS |
| | | 56 | △ 6.3 × 6 | 0.12 | 224 | 48 | 1300 | PCV1D560MCL2GS |
| | | 68 | 8 × 7 | 0.12 | 272 | 45 | 1300 | PCV1D680MCL1GS |
| | | 100 | △ 8 × 7 | 0.12 | 400 | 42 | 1400 | PCV1D101MCL2GS |
| | | 150 | ▲ 8 × 10 | 0.12 | 600 | 28 | 2000 | PCV1D151MCL6GS |
| | | 150 | 10 × 8 | 0.12 | 600 | 33 | 1900 | PCV1D151MCL1GS |
| | | 180 | △ 10 × 8 | 0.12 | 720 | 25 | 3100 | PCV1D181MCL2GS |
| | | 220 | □ 8 × 10 | 0.12 | 880 | 22 | 3700 | PCV1D221MCL7GS |
| | | 220 | 8 × 12 | 0.12 | 880 | 27 | 2300 | PCV1D221MCL1GS |
| | | 270 | △ 8 × 12 | 0.12 | 1080 | 21 | 4000 | PCV1D271MCL2GS |
| | | 270 | 10 × 10 | 0.12 | 1080 | 27 | 2300 | PCV1D271MCL1GS |
| | | 330 | △ 10 × 10 | 0.12 | 1320 | 22 | 3800 | PCV1D331MCL2GS |
| | | 330 | 10 × 12.7 | 0.12 | 1320 | 26 | 2700 | PCV1D331MCL1GS |
| 470 | △ 10 × 12.7 | 0.12 | 1880 | 20 | 4300 | PCV1D471MCL2GS | | |
| 25 (1E) | 28.7 | 33 | 6.3 × 6 | 0.12 | 165 | 60 | 1000 | PCV1E330MCL1GS |
| | | 47 | △ 6.3 × 6 | 0.12 | 235 | 49 | 1300 | PCV1E470MCL2GS |
| | | 56 | 8 × 7 | 0.12 | 280 | 50 | 1300 | PCV1E560MCL1GS |
| | | 82 | △ 8 × 7 | 0.12 | 410 | 47 | 1400 | PCV1E820MCL2GS |
| | | 120 | ▲ 8 × 10 | 0.12 | 600 | 29 | 1900 | PCV1E121MCL6GS |
| | | 120 | 10 × 8 | 0.12 | 600 | 35 | 1800 | PCV1E121MCL1GS |
| | | 150 | □ 8 × 10 | 0.12 | 750 | 23 | 3600 | PCV1E151MCL7GS |
| | | 150 | 8 × 12 | 0.12 | 750 | 28 | 2200 | PCV1E151MCL1GS |
| | | 150 | △ 10 × 8 | 0.12 | 750 | 26 | 3000 | PCV1E151MCL2GS |
| | | 180 | 10 × 10 | 0.12 | 900 | 28 | 2300 | PCV1E181MCL1GS |
| | | 220 | △ 8 × 12 | 0.12 | 1100 | 22 | 3800 | PCV1E221MCL2GS |
| | | 270 | △ 10 × 10 | 0.12 | 1350 | 23 | 3700 | PCV1E271MCL2GS |
| | | 270 | 10 × 12.7 | 0.12 | 1350 | 27 | 2700 | PCV1E271MCL1GS |
| 390 | △ 10 × 12.7 | 0.12 | 1950 | 21 | 4200 | PCV1E391MCL2GS | | |
| 35 (1V) | 40.2 | 18 | 6.3 × 6 | 0.12 | 126 | 64 | 900 | PCV1V180MCL1GS |
| | | 22 | △ 6.3 × 6 | 0.12 | 154 | 50 | 1300 | PCV1V220MCL2GS |
| | | 27 | 8 × 7 | 0.12 | 189 | 55 | 1200 | PCV1V270MCL1GS |
| | | 39 | △ 8 × 7 | 0.12 | 273 | 52 | 1400 | PCV1V390MCL2GS |
| | | 56 | 8 × 10 | 0.12 | 392 | 31 | 1900 | PCV1V560MCL1GS |
| | | 68 | 10 × 8 | 0.12 | 476 | 37 | 1800 | PCV1V680MCL1GS |
| | | 82 | □ 8 × 10 | 0.12 | 574 | 24 | 3600 | PCV1V820MCL7GS |
| | | 82 | 8 × 12 | 0.12 | 574 | 29 | 2200 | PCV1V820MCL1GS |
| | | 82 | △ 10 × 8 | 0.12 | 574 | 27 | 3000 | PCV1V820MCL2GS |
| | | 100 | 10 × 10 | 0.12 | 700 | 29 | 2200 | PCV1V101MCL1GS |
| | | 120 | □ 8 × 12 | 0.12 | 840 | 23 | 3800 | PCV1V121MCL7GS |
| | | 120 | △ 10 × 10 | 0.12 | 840 | 24 | 3700 | PCV1V121MCL2GS |
| | | 150 | 10 × 12.7 | 0.12 | 1050 | 28 | 2600 | PCV1V151MCL1GS |
| 180 | △ 10 × 12.7 | 0.12 | 1260 | 22 | 4100 | PCV1V181MCL2GS | | |

PCV

■ Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|----------------|
| 50 (1H) | 57.5 | 8.2 | 6.3×6 | 0.12 | 82 | 81 | 800 | PCV1H8R2MCL1GS |
| | | 12 | △ 6.3×6 | 0.12 | 120 | 55 | 1200 | PCV1H120MCL2GS |
| | | 15 | 8×7 | 0.12 | 150 | 63 | 1100 | PCV1H150MCL1GS |
| | | 22 | △ 8×7 | 0.12 | 220 | 60 | 1300 | PCV1H220MCL2GS |
| | | 33 | ▲ 8×10 | 0.12 | 330 | 36 | 1700 | PCV1H330MCL6GS |
| | | 33 | 10×8 | 0.12 | 330 | 49 | 1500 | PCV1H330MCL1GS |
| | | 39 | 8×12 | 0.12 | 390 | 34 | 2000 | PCV1H390MCL1GS |
| | | 47 | □ 8×10 | 0.12 | 470 | 29 | 3300 | PCV1H470MCL7GS |
| | | 47 | △ 10×8 | 0.12 | 470 | 37 | 2600 | PCV1H470MCL2GS |
| | | 47 | 10×10 | 0.12 | 470 | 30 | 2200 | PCV1H470MCL1GS |
| | | 56 | △ 8×12 | 0.12 | 560 | 28 | 3400 | PCV1H560MCL2GS |
| | | 68 | △ 10×10 | 0.12 | 680 | 29 | 3400 | PCV1H680MCL2GS |
| 68 | 10×12.7 | 0.12 | 680 | 29 | 2600 | PCV1H680MCL1GS | | |
| 100 | △ 10×12.7 | 0.12 | 1000 | 27 | 3600 | PCV1H101MCL2GS | | |
| 63 (1J) | 72.4 | 5.6 | 6.3×6 | 0.12 | 71 | 105 | 700 | PCV1J5R6MCL1GS |
| | | 8.2 | △ 6.3×6 | 0.12 | 103 | 56 | 1200 | PCV1J8R2MCL2GS |
| | | 10 | 8×7 | 0.12 | 126 | 75 | 1000 | PCV1J100MCL1GS |
| | | 12 | △ 8×7 | 0.12 | 151 | 70 | 1100 | PCV1J120MCL2GS |
| | | 22 | ▲ 8×10 | 0.12 | 277 | 37 | 1700 | PCV1J220MCL6GS |
| | | 22 | 10×8 | 0.12 | 277 | 56 | 1400 | PCV1J220MCL1GS |
| | | 27 | □ 8×10 | 0.12 | 340 | 30 | 3200 | PCV1J270MCL7GS |
| | | 27 | 8×12 | 0.12 | 340 | 35 | 2000 | PCV1J270MCL1GS |
| | | 27 | △ 10×8 | 0.12 | 340 | 38 | 2500 | PCV1J270MCL2GS |
| | | 33 | 10×10 | 0.12 | 416 | 31 | 2200 | PCV1J330MCL1GS |
| | | 39 | △ 8×12 | 0.12 | 491 | 29 | 3400 | PCV1J390MCL2GS |
| | | 47 | △ 10×10 | 0.12 | 592 | 30 | 3300 | PCV1J470MCL2GS |
| | | 47 | 10×12.7 | 0.12 | 592 | 30 | 2500 | PCV1J470MCL1GS |
| | | 56 | △ 10×12.7 | 0.12 | 706 | 28 | 3400 | PCV1J560MCL2GS |
| 80 (1K) | 92.0 | 10 | 8×10 | 0.12 | 160 | 43 | 1600 | PCV1K100MCL1GS |
| | | 12 | 8×12 | 0.12 | 192 | 41 | 1800 | PCV1K120MCL1GS |
| | | 15 | 10×10 | 0.12 | 240 | 39 | 1900 | PCV1K150MCL1GS |
| | | 22 | 10×12.7 | 0.12 | 352 | 38 | 2200 | PCV1K220MCL1GS |
| 100 (2A) | 115 | 6.8 | 8×10 | 0.12 | 136 | 48 | 1500 | PCV2A6R8MCL1GS |
| | | 10 | 8×12 | 0.12 | 200 | 45 | 1700 | PCV2A100MCL1GS |
| | | 12 | 10×10 | 0.12 | 240 | 42 | 1900 | PCV2A120MCL1GS |
| | | 18 | 10×12.7 | 0.12 | 360 | 41 | 2100 | PCV2A180MCL1GS |
| 125 (2B) | 143 | 6.8 | 8×10 | 0.12 | 170 | 93 | 1100 | PCV2B6R8MCL1GS |
| | | 8.2 | 8×12 | 0.12 | 205 | 84 | 1300 | PCV2B8R2MCL1GS |
| | | 12 | 10×10 | 0.12 | 300 | 69 | 1400 | PCV2B120MCL1GS |
| | | 15 | 10×12.7 | 0.12 | 375 | 48 | 2000 | PCV2B150MCL1GS |

Rated ripple current (mArms) at 105°C 100kHz

No marked, [1] will be put at 12th digit of type numbering system.
 △ : In this case, [2] will be put at 12th digit of type numbering system.
 ▲ : In this case, [6] will be put at 12th digit of type numbering system.
 □ : In this case, [7] will be put at 12th digit of type numbering system.

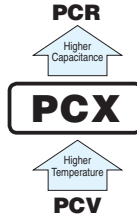
- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

PCX

Chip Type, High Voltage / Long Life



- High reliability, High voltage (to 50V).
- Low ESR, High ripple current.
- Long life of 1500 to 3000 hours at 125°C.
- SMD type : Lead free reflow soldering condition at 260°C peak complete correspondence.
- Adapted to the RoHS directive (2011/65/EU).



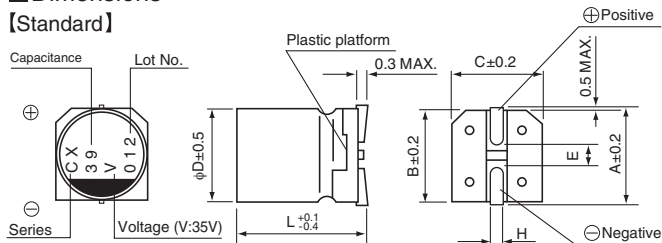
■ Specifications

| Item | Performance Characteristics | | |
|---|--|-----------------------|--|
| Category Temperature Range | -55 to +125°C | | |
| Rated Voltage Range | 16 to 50V | | |
| Rated Capacitance Range | 5.6 to 390µF | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | |
| Leakage Current (※ 2) | Less than or equal to the specified value . After 2 minutes' application of rated voltage at 20°C | | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+125°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours (φD = 6.3:1500hours) at 125°C. | Capacitance change | Within ± 20% of initial capacitance value (※3) |
| | | tan δ | 150% or less of the initial specified value |
| | | ESR (※ 1) | 150% or less of the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change | Within ± 20% of initial capacitance value (※3) |
| | | tan δ | 150% or less of the initial specified value |
| | | ESR (※ 1) | 150% or less of the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In case peak temperature is 250°C or less, reflow soldering shall be two times maximum. In case peak temperature is 260°C or less, reflow soldering shall be once. Measurement for solder temperature profile shall be made at the capacitor top and the terminal. | Capacitance change | Within ± 10% of the initial capacitance value (※3) |
| | | tan δ | 130% or less than the initial specified value |
| | | ESR (※ 1) | 130% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | | |

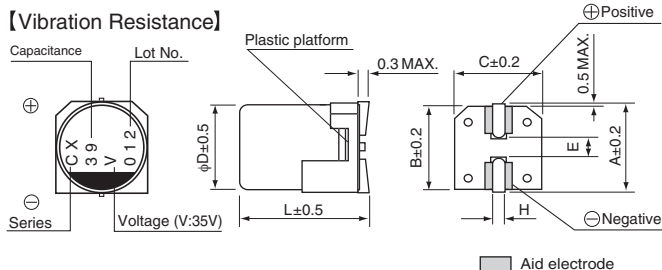
- ※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions

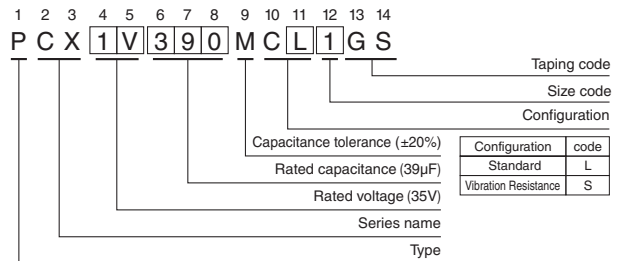
[Standard]



[Vibration Resistance]



Type numbering system (Example : 35V 39µF)



Standard

| Size | φ6.3x6L | φ6.3x8L | φ8x7L | φ8x10L | φ8x12L | φ10x8L | φ10x10L | φ10x12.7L | Size | φ6.3x8L | φ8x7.5L | φ8x10.5L | φ10x15L |
|------|------------|------------|------------|------------|------------|------------|------------|------------|------|------------|------------|------------|------------|
| φD | 6.3 | 6.3 | 8.0 | 8.0 | 8.0 | 10.0 | 10.0 | 10.0 | φD | 6.3 | 8.0 | 8.0 | 10.0 |
| L | 5.9 | 7.9 | 6.9 | 9.9 | 11.9 | 7.9 | 9.9 | 12.6 | L | 7.5 | 7.0 | 10.0 | 10.0 |
| A | 7.3 | 7.3 | 9.0 | 9.0 | 9.0 | 11.0 | 11.0 | 11.0 | A | 7.3 | 9.0 | 9.0 | 11.0 |
| B | 6.6 | 6.6 | 8.3 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 | B | 6.6 | 8.3 | 8.3 | 10.3 |
| C | 6.6 | 6.6 | 8.3 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 | C | 6.6 | 8.3 | 8.3 | 10.3 |
| E | 2.1 | 2.1 | 3.2 | 3.2 | 3.2 | 4.6 | 4.6 | 4.6 | E | 2.5 | 2.5 | 3.1 | 4.6 |
| H | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | H | 0.5 to 0.8 | 0.8 to 1.1 | 1.1 to 1.5 | 1.1 to 1.5 |

Voltage

| | | | | | |
|------|----|----|----|----|----|
| V | 16 | 20 | 25 | 35 | 50 |
| Code | C | D | E | V | H |

● Dimension table in next page.



Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple(mArms) ≤105°C (*3) 105°C < ≤125°C (*3) | | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|--|-----|----------------|
| 16 (1C) | 18.4 | 47 | 6.3 × 6 | 0.12 | 150 | 55 | 1000 | 390 | PCX1C470MCL1GS |
| | | 82 | 8 × 7 | 0.12 | 262 | 45 | 1300 | 530 | PCX1C820MCL1GS |
| | | 82 | 8 × 7.5 | 0.12 | 262 | 45 | 1300 | 530 | PCX1C820MCS1GS |
| | | 100 | 6.3 × 8 | 0.12 | 320 | 33 | 1500 | 460 | PCX1C101MCL1GS |
| | | 100 | 6.3 × 8 | 0.12 | 320 | 33 | 1500 | 460 | PCX1C101MCS1GS |
| | | 150 | ▲8 × 10 | 0.12 | 480 | 28 | 2000 | 780 | PCX1C151MCL6GS |
| | | 150 | 8 × 10.5 | 0.12 | 480 | 28 | 2000 | 780 | PCX1C151MCS1GS |
| | | 150 | 10 × 8 | 0.12 | 480 | 33 | 1900 | 830 | PCX1C151MCL1GS |
| | | 220 | 8 × 12 | 0.12 | 704 | 27 | 2300 | 870 | PCX1C221MCL1GS |
| | | 270 | 10 × 10 | 0.12 | 864 | 27 | 2300 | 830 | PCX1C271MCL1GS |
| | | 270 | 10 × 10.5 | 0.12 | 864 | 27 | 2300 | 830 | PCX1C271MCS1GS |
| 390 | 10 × 12.7 | 0.12 | 1248 | 26 | 2700 | 1040 | PCX1C391MCL1GS | | |
| 20 (1D) | 23.0 | 33 | 6.3 × 6 | 0.12 | 132 | 60 | 900 | 380 | PCX1D330MCL1GS |
| | | 56 | 8 × 7 | 0.12 | 224 | 50 | 1300 | 500 | PCX1D560MCL1GS |
| | | 56 | 8 × 7.5 | 0.12 | 224 | 50 | 1300 | 500 | PCX1D560MCS1GS |
| | | 68 | 6.3 × 8 | 0.12 | 272 | 34 | 1450 | 470 | PCX1D680MCL1GS |
| | | 68 | 6.3 × 8 | 0.12 | 272 | 34 | 1450 | 470 | PCX1D680MCS1GS |
| | | 120 | ▲8 × 10 | 0.12 | 480 | 29 | 1900 | 770 | PCX1D121MCL6GS |
| | | 120 | 8 × 10.5 | 0.12 | 480 | 29 | 1900 | 770 | PCX1D121MCS1GS |
| | | 120 | 10 × 8 | 0.12 | 480 | 35 | 1800 | 810 | PCX1D121MCL1GS |
| | | 150 | 8 × 12 | 0.12 | 600 | 28 | 2200 | 860 | PCX1D151MCL1GS |
| | | 180 | 10 × 10 | 0.12 | 720 | 28 | 2300 | 800 | PCX1D181MCL1GS |
| | | 180 | 10 × 10.5 | 0.12 | 720 | 28 | 2300 | 800 | PCX1D181MCS1GS |
| 270 | 10 × 12.7 | 0.12 | 1080 | 27 | 2700 | 1020 | PCX1D271MCL1GS | | |
| 25 (1E) | 28.7 | 22 | 6.3 × 6 | 0.12 | 110 | 65 | 900 | 360 | PCX1E220MCL1GS |
| | | 39 | 8 × 7 | 0.12 | 195 | 55 | 1200 | 480 | PCX1E390MCL1GS |
| | | 39 | 8 × 7.5 | 0.12 | 195 | 55 | 1200 | 480 | PCX1E390MCS1GS |
| | | 56 | 6.3 × 8 | 0.12 | 280 | 35 | 1400 | 450 | PCX1E560MCL1GS |
| | | 56 | 6.3 × 8 | 0.12 | 280 | 35 | 1400 | 450 | PCX1E560MCS1GS |
| | | 82 | ▲8 × 10 | 0.12 | 410 | 30 | 1900 | 760 | PCX1E820MCL6GS |
| | | 82 | 8 × 10.5 | 0.12 | 410 | 30 | 1900 | 760 | PCX1E820MCS1GS |
| | | 82 | 10 × 8 | 0.12 | 410 | 36 | 1800 | 800 | PCX1E820MCL1GS |
| | | 120 | ▲8 × 12 | 0.12 | 600 | 29 | 2200 | 850 | PCX1E121MCL6GS |
| | | 120 | 10 × 10 | 0.12 | 600 | 29 | 2200 | 790 | PCX1E121MCL1GS |
| | | 120 | 10 × 10.5 | 0.12 | 600 | 29 | 2200 | 790 | PCX1E121MCS1GS |
| 180 | 10 × 12.7 | 0.12 | 900 | 28 | 2600 | 1010 | PCX1E181MCL1GS | | |
| 35 (1V) | 40.2 | 10 | 6.3 × 6 | 0.12 | 70 | 85 | 800 | 310 | PCX1V100MCL1GS |
| | | 18 | 8 × 7 | 0.12 | 126 | 60 | 1100 | 450 | PCX1V180MCL1GS |
| | | 18 | 8 × 7.5 | 0.12 | 126 | 60 | 1100 | 450 | PCX1V180MCS1GS |
| | | 27 | 6.3 × 8 | 0.12 | 189 | 45 | 1300 | 450 | PCX1V270MCL1GS |
| | | 27 | 6.3 × 8 | 0.12 | 189 | 45 | 1300 | 450 | PCX1V270MCS1GS |
| | | 39 | ▲8 × 10 | 0.12 | 273 | 35 | 1800 | 700 | PCX1V390MCL6GS |
| | | 39 | 8 × 10.5 | 0.12 | 273 | 35 | 1800 | 700 | PCX1V390MCS1GS |
| | | 39 | 10 × 8 | 0.12 | 273 | 41 | 1700 | 750 | PCX1V390MCL1GS |
| | | 56 | 8 × 12 | 0.12 | 392 | 33 | 2000 | 780 | PCX1V560MCL1GS |
| | | 68 | 10 × 10 | 0.12 | 476 | 30 | 2200 | 740 | PCX1V680MCL1GS |
| | | 68 | 10 × 10.5 | 0.12 | 476 | 30 | 2200 | 740 | PCX1V680MCS1GS |
| 100 | 10 × 10.5 | 0.12 | 700 | 25 | 2400 | 800 | PCX1V101MCL1GS | | |
| 100 | 10 × 12.7 | 0.12 | 700 | 29 | 2600 | 990 | PCX1V101MCL1GS | | |
| 50 (1H) | 57.5 | 5.6 | 6.3 × 6 | 0.12 | 56 | 105 | 700 | 280 | PCX1H5R6MCL1GS |
| | | 10 | 8 × 7 | 0.12 | 100 | 75 | 1000 | 410 | PCX1H100MCL1GS |
| | | 10 | 8 × 7.5 | 0.12 | 100 | 75 | 1000 | 410 | PCX1H100MCS1GS |
| | | 12 | 6.3 × 8 | 0.12 | 120 | 65 | 1100 | 380 | PCX1H120MCL1GS |
| | | 12 | 6.3 × 8 | 0.12 | 120 | 65 | 1100 | 380 | PCX1H120MCS1GS |
| | | 22 | ▲8 × 10 | 0.12 | 220 | 37 | 1700 | 680 | PCX1H220MCL6GS |
| | | 22 | 8 × 10.5 | 0.12 | 220 | 37 | 1700 | 680 | PCX1H220MCS1GS |
| | | 22 | 10 × 8 | 0.12 | 220 | 56 | 1400 | 730 | PCX1H220MCL1GS |
| | | 27 | 8 × 12 | 0.12 | 270 | 35 | 2000 | 760 | PCX1H270MCL1GS |
| | | 33 | 10 × 10 | 0.12 | 330 | 31 | 2200 | 630 | PCX1H330MCL1GS |
| | | 33 | 10 × 10.5 | 0.12 | 330 | 31 | 2200 | 630 | PCX1H330MCS1GS |
| 47 | 10 × 12.7 | 0.12 | 470 | 30 | 2500 | 970 | PCX1H470MCL1GS | | |

(*3) Ambient temperature of a capacitor

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

No marked, [1] will be put at 12th digit of type numbering system.
 ▲ : In this case, [6] will be put at 12th digit of type numbering system.

PCR

Chip Type, High Reliability



- High reliability, High voltage (to 80V).
- Low ESR, High ripple current.
- Long life of 4000 hours at 125°C.
- SMD type : Lead free reflow soldering condition at 260°C peak complete correspondence.
- Adapted to the RoHS directive (2011/65/EU).
- ESR after Endurance at -40°C.

PCR High Capacitance Long Life Assurance **PCX**

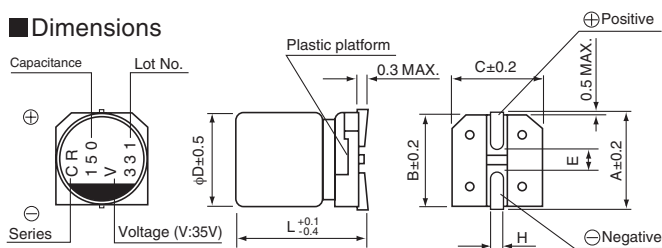


■ Specifications

| Item | Performance Characteristics | | | | | | | | | |
|---|---|---|--------------------|--|-------|---|-----------|---|-----------------------|---|
| Category Temperature Range | -55 to +125°C | | | | | | | | | |
| Rated Voltage Range | 16 to 80V | | | | | | | | | |
| Rated Capacitance Range | 22 to 1000µF | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | | | | | | | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | | | | | | | | |
| Leakage Current (※ 2) | After 2 minutes' application of rated voltage, leakage current is not more than 0.03CV or 3(µA), whichever is greater. | | | | | | | | | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+125°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | | | | | | | | | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 4000 hours at 125°C. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>150% or less of the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>200% or less of the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of initial capacitance value (※3) | tan δ | 150% or less of the initial specified value | ESR (※ 1) | 200% or less of the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of initial capacitance value (※3) | | | | | | | | | |
| tan δ | 150% or less of the initial specified value | | | | | | | | | |
| ESR (※ 1) | 200% or less of the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Shelf Life | After storing the capacitors under no load at 125°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. | | | | | | | | | |
| ESR after Endurance (※ 1) | Less than or equal to the specified value at 100kHz, -40°C | | | | | | | | | |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 85°C, 85% RH. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>150% or less of the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>200% or less of the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of initial capacitance value (※3) | tan δ | 150% or less of the initial specified value | ESR (※ 1) | 200% or less of the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of initial capacitance value (※3) | | | | | | | | | |
| tan δ | 150% or less of the initial specified value | | | | | | | | | |
| ESR (※ 1) | 200% or less of the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In case peak temperature is 260°C or less, reflow soldering shall be two times maximum. Measurement for solder temperature profile shall be made at the capacitor top and the terminal. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 10% of the initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>130% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>130% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 10% of the initial capacitance value (※3) | tan δ | 130% or less than the initial specified value | ESR (※ 1) | 130% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 10% of the initial capacitance value (※3) | | | | | | | | | |
| tan δ | 130% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 130% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Marking | Navy blue print on the case top | | | | | | | | | |

- ※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions

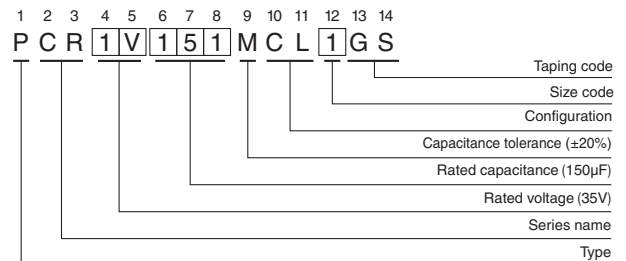


| Size | φ8 × 7L | φ8 × 10L | φ8 × 12L | φ10 × 8L | φ10 × 10L | φ10 × 12.7L |
|------|------------|------------|------------|------------|------------|-------------|
| φD | 8.0 | 8.0 | 8.0 | 10.0 | 10.0 | 10.0 |
| L | 6.9 | 9.9 | 11.9 | 7.9 | 9.9 | 12.6 |
| A | 9.0 | 9.0 | 9.0 | 11.0 | 11.0 | 11.0 |
| B | 8.3 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 |
| C | 8.3 | 8.3 | 8.3 | 10.3 | 10.3 | 10.3 |
| E | 3.2 | 3.2 | 3.2 | 4.6 | 4.6 | 4.6 |
| H | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 | 0.8 to 1.1 |

Voltage

| | | | | | | | |
|------|----|----|----|----|----|----|----|
| V | 16 | 20 | 25 | 35 | 50 | 63 | 80 |
| Code | C | D | E | V | H | J | K |

Type numbering system (Example : 35V 150µF)



※φ8 × 7L, φ8 × 10L, φ10 × 10L :

The vibration structure-resistant product is also available upon request, please ask for details.

● Dimension table in next page.



■ Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Initial ESR (mΩ) (20°C / 100kHz) | Low temp. ESR after Endurance (mΩ) (-40°C / 100kHz) | Rated Ripple (mAmps) (125°C / 100kHz) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------------------|---|---------------------------------------|----------------|
| 16 (1C) | 20 | 220 | 8 × 7 | 0.08 | 30 | 60 | 1500 | PCR1C221MCL1GS |
| | | 470 | ▲ 8 × 10 | 0.08 | 17 | 34 | 3400 | PCR1C471MCL6GS |
| | | 470 | 10 × 8 | 0.08 | 32 | 64 | 2200 | PCR1C471MCL1GS |
| | | 560 | 8 × 12 | 0.08 | 16 | 32 | 3800 | PCR1C561MCL1GS |
| | | 680 | 10 × 10 | 0.08 | 19 | 38 | 3200 | PCR1C681MCL1GS |
| | | 1000 | 10 × 12.7 | 0.08 | 13 | 26 | 4300 | PCR1C102MCL1GS |
| 20 (1D) | 25 | 150 | 8 × 7 | 0.08 | 39 | 78 | 1200 | PCR1D151MCL1GS |
| | | 330 | ▲ 8 × 10 | 0.08 | 19 | 38 | 3300 | PCR1D331MCL6GS |
| | | 330 | 10 × 8 | 0.08 | 33 | 66 | 2100 | PCR1D331MCL1GS |
| | | 470 | 8 × 12 | 0.08 | 18 | 36 | 3500 | PCR1D471MCL1GS |
| | | 560 | 10 × 10 | 0.08 | 20 | 40 | 3100 | PCR1D561MCL1GS |
| | | 680 | 10 × 12.7 | 0.08 | 14 | 28 | 4200 | PCR1D681MCL1GS |
| 25 (1E) | 31 | 100 | 8 × 7 | 0.08 | 41 | 82 | 1200 | PCR1E101MCL1GS |
| | | 220 | ▲ 8 × 10 | 0.08 | 20 | 40 | 3200 | PCR1E221MCL6GS |
| | | 220 | 10 × 8 | 0.08 | 33 | 66 | 2100 | PCR1E221MCL1GS |
| | | 270 | 8 × 12 | 0.08 | 19 | 38 | 3300 | PCR1E271MCL1GS |
| | | 330 | 10 × 10 | 0.08 | 20 | 40 | 3100 | PCR1E331MCL1GS |
| | | 470 | 10 × 12.7 | 0.08 | 15 | 30 | 4100 | PCR1E471MCL1GS |
| 35 (1V) | 43 | 68 | 8 × 7 | 0.08 | 44 | 88 | 1200 | PCR1V680MCL1GS |
| | | 150 | ▲ 8 × 10 | 0.08 | 22 | 44 | 3100 | PCR1V151MCL6GS |
| | | 150 | 10 × 8 | 0.08 | 33 | 66 | 2100 | PCR1V151MCL1GS |
| | | 220 | 8 × 12 | 0.08 | 21 | 42 | 3300 | PCR1V221MCL1GS |
| | | 270 | 10 × 10 | 0.08 | 20 | 40 | 3100 | PCR1V271MCL1GS |
| | | 330 | 10 × 12.7 | 0.08 | 16 | 32 | 3900 | PCR1V331MCL1GS |
| 50 (1H) | 63 | 39 | 8 × 7 | 0.08 | 45 | 90 | 1300 | PCR1H390MCL1GS |
| | | 82 | ▲ 8 × 10 | 0.08 | 26 | 52 | 2900 | PCR1H820MCL6GS |
| | | 82 | 10 × 8 | 0.08 | 42 | 84 | 1900 | PCR1H820MCL1GS |
| | | 120 | △ 8 × 12 | 0.08 | 25 | 50 | 2900 | PCR1H121MCL2GS |
| | | 120 | 10 × 10 | 0.08 | 25 | 50 | 3000 | PCR1H121MCL1GS |
| | | 180 | 10 × 12.7 | 0.08 | 19 | 38 | 3500 | PCR1H181MCL1GS |
| 63 (1J) | 79 | 22 | 8 × 7 | 0.08 | 48 | 96 | 1100 | PCR1J220MCL1GS |
| | | 39 | 8 × 10 | 0.08 | 28 | 56 | 2700 | PCR1J390MCL1GS |
| | | 47 | 10 × 8 | 0.08 | 47 | 94 | 1800 | PCR1J470MCL1GS |
| | | 56 | 8 × 12 | 0.08 | 27 | 54 | 2900 | PCR1J560MCL1GS |
| | | 68 | 10 × 10 | 0.08 | 28 | 56 | 2800 | PCR1J680MCL1GS |
| | | 100 | 10 × 12.7 | 0.08 | 24 | 48 | 3000 | PCR1J101MCL1GS |
| 80 (1K) | 100 | 27 | 8 × 10 | 0.08 | 38 | 76 | 1400 | PCR1K270MCL1GS |
| | | 39 | 8 × 12 | 0.08 | 35 | 70 | 1600 | PCR1K390MCL1GS |
| | | 47 | 10 × 10 | 0.08 | 33 | 66 | 1700 | PCR1K470MCL1GS |
| | | 68 | 10 × 12.7 | 0.08 | 28 | 56 | 2100 | PCR1K680MCL1GS |

Rated ripple current (mAmps) at 125°C 100kHz
 No marked, [1] will be put at 12th digit of type numbering system.
 △ : In this case, [2] will be put at 12th digit of type numbering system.
 ▲ : In this case, [6] will be put at 12th digit of type numbering system.

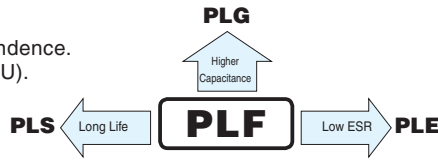
- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

PLF

Radial Lead Type, Standard



- Low ESR, High ripple current.
- Load life of 2000 hours at 105°C.
- Radial lead type :
Lead free flow soldering condition correspondence.
- Compliant to the RoHS directive (2011/65/EU).

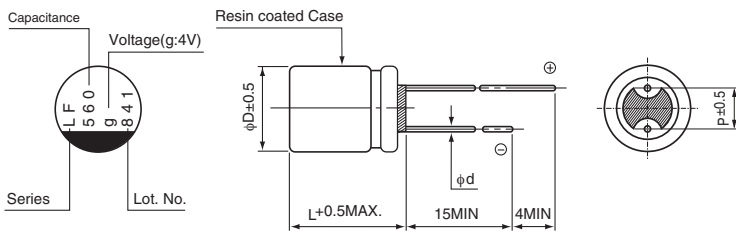


■ Specifications

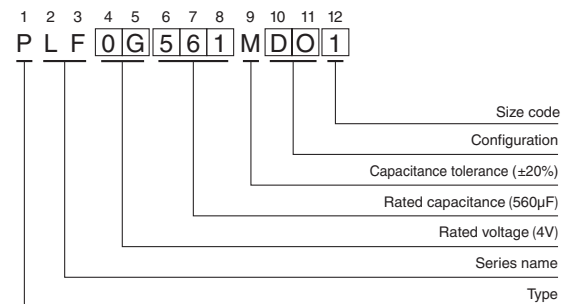
| Item | Performance Characteristics | | |
|--|--|-----------------------|---|
| Category Temperature Range | -55 to +105°C | | |
| Rated Voltage Range | 2.5 to 25V | | |
| Rated Capacitance Range | 6.8 to 1500μF | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | |
| Leakage Current (※ 2) | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C | | |
| Temperature Characteristics (Max. Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | | |
| 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 105°C. | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here as preheat at 150 to 200°C for 60 to 180 seconds and peak temperature at 265°C for 10 seconds or less, the capacitor shall meet the specifications listed at right, provided that its temperature profile is measured at both of terminal ends facing the soldering side. | Capacitance change | Within ± 10% of the initial capacitance value (※ 3) |
| | | tan δ | 130% or less than the initial specified value |
| | | ESR (※ 1) | 130% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | | |

※ 1 ESR should be measured at both of the terminal ends closest to the capacitor body.
 ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
 ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions



Type numbering system (Example : 4V 560μF)



| Size | φ6.3 × 6L | φ6.3 × 9L | φ6.3 × 10.5L | φ8 × 7L | φ8 × 9L | φ8 × 12L | φ10 × 8L | φ10 × 10L | φ10 × 13L |
|------|-----------|-----------|--------------|---------|---------|----------|----------|-----------|-----------|
| φD | 6.3 | 6.3 | 6.3 | 8.0 | 8.0 | 8.0 | 10.0 | 10.0 | 10.0 |
| L | 5.5 | 8.5 | 10.0 | 6.5 | 8.5 | 11.5 | 7.5 | 9.5 | 12.5 |
| P | 2.5 | 2.5 | 2.5 | 3.5 | 3.5 | 3.5 | 5.0 | 5.0 | 5.0 |
| φd | 0.45 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |

| Voltage | 2.5 | 4 | 6.3 | 10 | 16 | 20 | 25 |
|---------|-----|---|-----|----|----|----|----|
| Code | e | g | j | A | C | D | E |

Please refer to page 20 about the end seal configuration.

● Dimension table in next page.

PLF

Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|--------------|
| 2.5 (0E) | 2.8 | 330 | ○ 6.3 × 9 | 0.08 | 500 | 7 | 5600 | PLF0E331MCO8 |
| | | 390 | ■ 6.3 × 10.5 | 0.08 | 195 | 20 | 3200 | PLF0E391MDL4 |
| | | 560 | ○ 6.3 × 9 | 0.08 | 500 | 7 | 5600 | PLF0E561MCO8 |
| | | 560 | 8 × 9 | 0.08 | 280 | 6 | 4800 | PLF0E561MCO1 |
| | | 680 | ▲ 8 × 9 | 0.08 | 340 | 7 | 4800 | PLF0E681MCO6 |
| | | 680 | 8 × 12 | 0.08 | 340 | 6 | 5700 | PLF0E681MDO1 |
| | | 820 | ○ 6.3 × 9 | 0.08 | 500 | 7 | 5600 | PLF0E821MCO8 |
| | | 820 | ▲ 8 × 9 | 0.08 | 410 | 7 | 5200 | PLF0E821MCO6 |
| | | 820 | 8 × 12 | 0.08 | 410 | 6 | 6200 | PLF0E821MDO1 |
| | | 1000 | 10 × 13 | 0.08 | 500 | 6 | 6500 | PLF0E102MDO1 |
| | | 1200 | 10 × 13 | 0.08 | 600 | 8 | 5300 | PLF0E122MDO1 |
| | | 1500 | ▲ 8 × 12 | 0.08 | 750 | 7 | 6100 | PLF0E152MDO6 |
| 1500 | 10 × 13 | 0.08 | 750 | 8 | 5500 | PLF0E152MDO1 | | |
| 4 (0G) | 4.6 | 270 | ○ 6.3 × 9 | 0.08 | 500 | 7 | 5600 | PLF0G271MCO8 |
| | | 270 | ■ 6.3 × 10.5 | 0.08 | 216 | 20 | 3200 | PLF0G271MDL4 |
| | | 390 | ■ 6.3 × 10.5 | 0.08 | 312 | 24 | 3300 | PLF0G391MDL4 |
| | | 560 | ▲ 8 × 9 | 0.08 | 448 | 7 | 5200 | PLF0G561MCO6 |
| | | 560 | 8 × 12 | 0.08 | 448 | 7 | 5500 | PLF0G561MDO1 |
| | | 680 | 8 × 12 | 0.08 | 544 | 6 | 6200 | PLF0G681MDO1 |
| | | 820 | 10 × 13 | 0.08 | 656 | 6 | 6500 | PLF0G821MDO1 |
| | | 1000 | 10 × 13 | 0.08 | 800 | 6 | 6640 | PLF0G102MDO1 |
| | | 1200 | 10 × 13 | 0.08 | 960 | 8 | 5600 | PLF0G122MDO1 |
| 6.3 (0J) | 7.2 | 220 | ■ 6.3 × 10.5 | 0.08 | 277 | 20 | 3200 | PLF0J221MDL4 |
| | | 330 | ■ 6.3 × 10.5 | 0.08 | 416 | 24 | 3300 | PLF0J331MDL4 |
| | | 470 | ▲ 8 × 9 | 0.08 | 592 | 7 | 5200 | PLF0J471MCO6 |
| | | 470 | 8 × 12 | 0.08 | 592 | 7 | 5500 | PLF0J471MDO1 |
| | | 680 | 10 × 13 | 0.08 | 857 | 6 | 6300 | PLF0J681MDO1 |
| 10 (1A) | 11.5 | 47 | ■ 6.3 × 10.5 | 0.08 | 94 | 25 | 2900 | PLF1A470MDL4 |
| | | 68 | ■ 6.3 × 10.5 | 0.08 | 136 | 25 | 2900 | PLF1A680MDL4 |
| | | 100 | ■ 6.3 × 10.5 | 0.08 | 200 | 25 | 2900 | PLF1A101MDL4 |
| | | 150 | ■ 6.3 × 10.5 | 0.08 | 300 | 25 | 2900 | PLF1A151MDL4 |
| | | 270 | 8 × 12 | 0.08 | 540 | 8 | 4900 | PLF1A271MDO1 |
| | | 470 | 10 × 13 | 0.08 | 940 | 7 | 5700 | PLF1A471MDO1 |
| | | 560 | 10 × 13 | 0.08 | 1120 | 7 | 5900 | PLF1A561MDO1 |
| | | 680 | 10 × 13 | 0.08 | 1360 | 7 | 6100 | PLF1A681MDO1 |
| 16 (1C) | 18.4 | 100 | ■ 6.3 × 10.5 | 0.08 | 320 | 24 | 2900 | PLF1C101MDL4 |
| | | 180 | 8 × 12 | 0.08 | 576 | 9 | 5000 | PLF1C181MDO1 |
| | | 270 | 8 × 12 | 0.08 | 864 | 9 | 5100 | PLF1C271MDO1 |
| | | 330 | 10 × 13 | 0.08 | 1056 | 9 | 6100 | PLF1C331MDO1 |
| | | 470 | 10 × 13 | 0.08 | 1504 | 9 | 6100 | PLF1C471MDO1 |
| 20 (1D) | 23 | 22 | △ 6.3 × 6 | 0.12 | 88 | 50 | 1700 | PLF1D220MCL2 |
| | | 39 | △ 8 × 7 | 0.12 | 156 | 45 | 2000 | PLF1D390MCL2 |
| | | 47 | △ 8 × 7 | 0.12 | 188 | 45 | 2000 | PLF1D470MCL2 |
| | | 56 | △ 10 × 8 | 0.12 | 224 | 40 | 2400 | PLF1D560MCL2 |
| | | 68 | △ 10 × 8 | 0.12 | 272 | 40 | 2600 | PLF1D680MCL2 |
| | | 82 | △ 10 × 8 | 0.12 | 328 | 40 | 2600 | PLF1D820MCL2 |
| | | 100 | △ 8 × 12 | 0.12 | 400 | 22 | 3320 | PLF1D101MDO2 |
| | | 120 | △ 10 × 10 | 0.12 | 480 | 35 | 2800 | PLF1D121MCL2 |
| 150 | △ 10 × 13 | 0.12 | 600 | 20 | 4320 | PLF1D151MDO2 | | |
| 25 (1E) | 28.7 | 6.8 | △ 6.3 × 6 | 0.12 | 85 | 80 | 1200 | PLF1E6R8MCL2 |
| | | 10 | □ 6.3 × 6 | 0.12 | 125 | 65 | 1500 | PLF1E100MCL7 |
| | | 10 | △ 8 × 7 | 0.12 | 125 | 60 | 1500 | PLF1E100MCL2 |
| | | 22 | □ 8 × 7 | 0.12 | 275 | 50 | 1800 | PLF1E220MCL7 |
| | | 47 | △ 10 × 13 | 0.12 | 588 | 30 | 3000 | PLF1E470MDO2 |
| | | 56 | △ 10 × 13 | 0.12 | 700 | 28 | 3800 | PLF1E560MDO2 |

Rated ripple current (mArms) at 105°C 100kHz

- Please refer to page 20, 21, 22 about the formed or taped product spec.
- Please refer to page 3 for the minimum order quantity.

No marked, [1] will be put at 12th digit of type numbering system.
 △ : In this case, [2] will be put at 12th digit of type numbering system.
 ■ : In this case, [4] will be put at 12th digit of type numbering system.
 ▲ : In this case, [6] will be put at 12th digit of type numbering system.
 □ : In this case, [7] will be put at 12th digit of type numbering system.
 ○ : In this case, [8] will be put at 12th digit of type numbering system.

PLE

Radial Lead Type, Ultra-low ESR



- Ultra-low ESR, High ripple current.
- Load life of 2000 hours at 105°C.
- Radial lead type :
Lead free flow soldering condition correspondence
- Compliant to the RoHS directive (2011/65/EU).

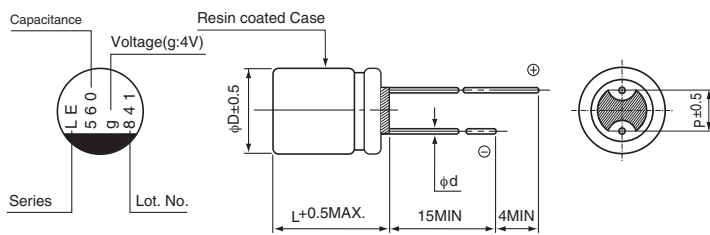


■ Specifications

| Item | Performance Characteristics | | | | | | | | | |
|---|--|---|--------------------|--|-------|---|-----------|---|-----------------------|---|
| Category Temperature Range | -55 to +105°C | | | | | | | | | |
| Rated Voltage Range | 2.5 to 6.3V | | | | | | | | | |
| Rated Capacitance Range | 470 to 1500µF | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | | | | | | | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | | | | | | | | |
| Leakage Current (※ 2) | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C | | | | | | | | | |
| Temperature Characteristics (Max.Impedance Ratio) | $Z+105^{\circ}\text{C} / Z+20^{\circ}\text{C} \leq 1.25$ (100kHz) $Z-55^{\circ}\text{C} / Z+20^{\circ}\text{C} \leq 1.25$ | | | | | | | | | |
| 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 105°C. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of the initial capacitance value (※3) | tan δ | 150% or less than the initial specified value | ESR (※ 1) | 150% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of the initial capacitance value (※3) | | | | | | | | | |
| tan δ | 150% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 150% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of the initial capacitance value (※3) | tan δ | 150% or less than the initial specified value | ESR (※ 1) | 150% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of the initial capacitance value (※3) | | | | | | | | | |
| tan δ | 150% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 150% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here as preheat at 150 to 200°C for 60 to 180 seconds and peak temperature at 265°C for 10 seconds or less, the capacitor shall meet the specifications listed at right, provided that its temperature profile is measured at both of terminal ends facing the soldering side. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 10% of the initial capacitance value (※3)</td></tr> <tr><td>tan δ</td><td>130% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>130% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 10% of the initial capacitance value (※3) | tan δ | 130% or less than the initial specified value | ESR (※ 1) | 130% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 10% of the initial capacitance value (※3) | | | | | | | | | |
| tan δ | 130% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 130% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Marking | Navy blue print on the case top | | | | | | | | | |

- ※ 1 ESR should be measured at both of the terminal ends closest to the capacitor body.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions

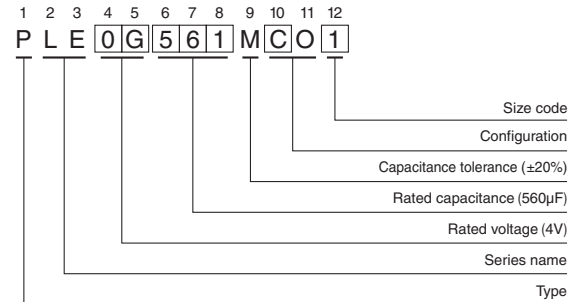


| | (mm) | | |
|------|---------|----------|-----------|
| Size | φ8 × 9L | φ8 × 12L | φ10 × 13L |
| φD | 8.0 | 8.0 | 10.0 |
| L | 8.5 | 11.5 | 12.5 |
| P | 3.5 | 3.5 | 5.0 |
| φd | 0.6 | 0.6 | 0.6 |

| Voltage | | | | |
|---------|-----|---|-----|--|
| V | 2.5 | 4 | 6.3 | |
| Code | e | g | j | |

Please refer to page 20 about the end seal configuration.

Type numbering system (Example : 4V 560µF)



● Dimension table in next page.

PLE

■ Standard Ratings

| Rated Voltage (V) Code | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|--------------|
| 2.5 (0E) | 2.8 | 560 | 8 × 9 | 0.08 | 280 | 5 | 6100 | PLE0E561MCO1 |
| | | 820 | ▲ 8 × 9 | 0.08 | 410 | 5 | 6300 | PLE0E821MCO6 |
| | | 820 | 8 × 12 | 0.08 | 410 | 5 | 6600 | PLE0E821MDO1 |
| | | 1000 | 10 × 13 | 0.08 | 500 | 5 | 7100 | PLE0E102MDO1 |
| | | 1500 | 10 × 13 | 0.08 | 750 | 5 | 7300 | PLE0E152MDO1 |
| 4 (0G) | 4.6 | 560 | 8 × 9 | 0.08 | 448 | 5 | 6000 | PLE0G561MCO1 |
| | | 680 | 8 × 12 | 0.08 | 544 | 5 | 6500 | PLE0G681MDO1 |
| | | 820 | 10 × 13 | 0.08 | 656 | 5 | 7000 | PLE0G821MDO1 |
| | | 1200 | 10 × 13 | 0.08 | 960 | 5 | 7200 | PLE0G122MDO1 |
| 6.3 (0J) | 7.2 | 470 | 8 × 12 | 0.08 | 592 | 5 | 6400 | PLE0J471MDO1 |
| | | 680 | 10 × 13 | 0.08 | 857 | 5 | 6700 | PLE0J681MDO1 |
| | | 820 | 10 × 13 | 0.08 | 1033 | 5 | 6800 | PLE0J821MDO1 |

Rated ripple current (mArms) at 105°C 100kHz

No marked, [1] will be put at 12th digit of type numbering system.

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

- Please refer to page 20, 21, 22 about the formed or taped product spec.
- Please refer to page 3 for the minimum order quantity.

PLG Radial Lead Type, Higher Capacitance



- Higher Capacitance, Low ESR, High ripple current.
- Load life of 2000 hours at 105°C.
- Radial lead type :
Lead free flow soldering condition correspondence
- Compliant to the RoHS directive (2011/65/EU).

PLG

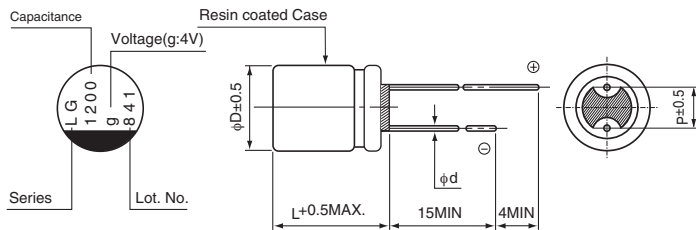


Specifications

| Item | Performance Characteristics | | | | | | | | | |
|---|--|--|--------------------|---|-------|---|-----------|---|-----------------------|---|
| Category Temperature Range | -55 to +105°C | | | | | | | | | |
| Rated Voltage Range | 2.5 to 16V | | | | | | | | | |
| Rated Capacitance Range | 330 to 3900µF | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | | | | | | | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | | | | | | | | |
| Leakage Current (※ 2) | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C | | | | | | | | | |
| Temperature Characteristics (Max.Impedance Ratio) | $Z+105^{\circ}\text{C} / Z+20^{\circ}\text{C} \leq 1.25$ (100kHz) $Z-55^{\circ}\text{C} / Z+20^{\circ}\text{C} \leq 1.25$ | | | | | | | | | |
| 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 105°C. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※ 3)</td></tr> <tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) | tan δ | 150% or less than the initial specified value | ESR (※ 1) | 150% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of the initial capacitance value (※ 3) | | | | | | | | | |
| tan δ | 150% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 150% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 20% of the initial capacitance value (※ 3)</td></tr> <tr><td>tan δ</td><td>150% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>150% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) | tan δ | 150% or less than the initial specified value | ESR (※ 1) | 150% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 20% of the initial capacitance value (※ 3) | | | | | | | | | |
| tan δ | 150% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 150% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here as preheat at 150 to 200°C for 60 to 180 seconds and peak temperature at 265°C for 10 seconds or less, the capacitor shall meet the specifications listed at right, provided that its temperature profile is measured at both of terminal ends facing the soldering side. | <table border="1"> <tr><td>Capacitance change</td><td>Within ± 10% of the initial capacitance value (※ 3)</td></tr> <tr><td>tan δ</td><td>130% or less than the initial specified value</td></tr> <tr><td>ESR (※ 1)</td><td>130% or less than the initial specified value</td></tr> <tr><td>Leakage current (※ 2)</td><td>Less than or equal to the initial specified value</td></tr> </table> | Capacitance change | Within ± 10% of the initial capacitance value (※ 3) | tan δ | 130% or less than the initial specified value | ESR (※ 1) | 130% or less than the initial specified value | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Capacitance change | Within ± 10% of the initial capacitance value (※ 3) | | | | | | | | | |
| tan δ | 130% or less than the initial specified value | | | | | | | | | |
| ESR (※ 1) | 130% or less than the initial specified value | | | | | | | | | |
| Leakage current (※ 2) | Less than or equal to the initial specified value | | | | | | | | | |
| Marking | Navy blue print on the case top | | | | | | | | | |

- ※ 1 ESR should be measured at both of the terminal ends closest to the capacitor body.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

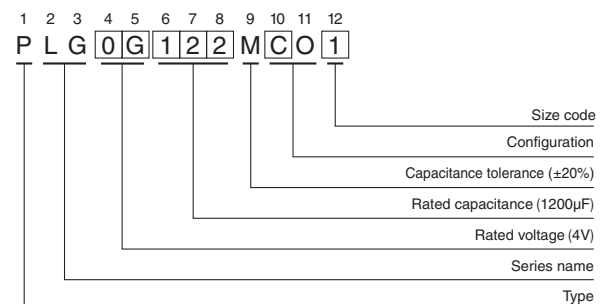
Dimensions



| Size | φ8 × 9L | φ8 × 12L | φ10 × 13L |
|------|---------|----------|-----------|
| φD | 8.0 | 8.0 | 10.0 |
| L | 8.5 | 11.5 | 12.5 |
| P | 3.5 | 3.5 | 5.0 |
| φd | 0.6 | 0.6 | 0.6 |

| Voltage | 2.5 | 4 | 6.3 | 10 | 16 |
|---------|-----|---|-----|----|----|
| Code | e | g | j | A | C |

Type numbering system (Example : 4V 1200µF)



Please refer to page 20 about the end seal configuration.

● Dimension table in next page.

PLG

■ Standard Ratings

| Rated Voltage (V) Code | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mA _{rms}) | Part Number |
|------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|-----------------------------------|--------------|
| 2.5 (0E) | 2.8 | 1800 | 8 × 9 | 0.08 | 900 | 9 | 6000 | PLG0E182MCO1 |
| | | 2200 | 8 × 12 | 0.08 | 1100 | 8 | 6700 | PLG0E222MDO1 |
| | | 2700 | 10 × 13 | 0.08 | 1350 | 8 | 5560 | PLG0E272MDO1 |
| | | 3900 | 10 × 13 | 0.08 | 1950 | 8 | 7000 | PLG0E392MDO1 |
| 4 (0G) | 4.6 | 1200 | 8 × 9 | 0.08 | 960 | 9 | 5900 | PLG0G122MCO1 |
| | | 1800 | 8 × 12 | 0.08 | 1440 | 9 | 6500 | PLG0G182MDO1 |
| | | 2700 | 10 × 13 | 0.08 | 2160 | 8 | 6900 | PLG0G272MDO1 |
| 6.3 (0J) | 7.2 | 820 | 8 × 9 | 0.08 | 1033 | 9 | 5700 | PLG0J821MCO1 |
| | | 1200 | 8 × 12 | 0.08 | 1512 | 9 | 6100 | PLG0J122MDO1 |
| | | 1500 | 10 × 13 | 0.08 | 1890 | 9 | 6300 | PLG0J152MDO1 |
| | | 1800 | 10 × 13 | 0.08 | 2268 | 8 | 6600 | PLG0J182MDO1 |
| 10 (1A) | 11.5 | 560 | 8 × 9 | 0.08 | 1120 | 11 | 5100 | PLG1A561MCO1 |
| | | 820 | 8 × 12 | 0.08 | 1640 | 10 | 5800 | PLG1A821MDO1 |
| | | 1200 | 10 × 13 | 0.08 | 2400 | 9 | 6200 | PLG1A122MDO1 |
| 16 (1C) | 18.4 | 330 | 8 × 9 | 0.08 | 1056 | 13 | 4700 | PLG1C331MCO1 |
| | | 470 | 8 × 12 | 0.08 | 1504 | 11 | 5400 | PLG1C471MDO1 |
| | | 820 | 10 × 13 | 0.08 | 2624 | 11 | 5600 | PLG1C821MDO1 |

Rated ripple current (mA_{rms}) at 105°C 100kHz

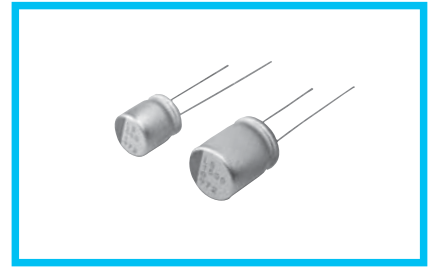
- Please refer to page 20, 21, 22 about the formed or taped product spec.
- Please refer to page 3 for the minimum order quantity.

PLS

Radial Lead Type, Long Life Assurance



- Ultra-low ESR, High ripple current.
- Load life of 5000 hours at 105°C.
- Radial lead type :
Lead free flow soldering condition correspondence.
- Compliant to the RoHS directive (2011/65/EU).

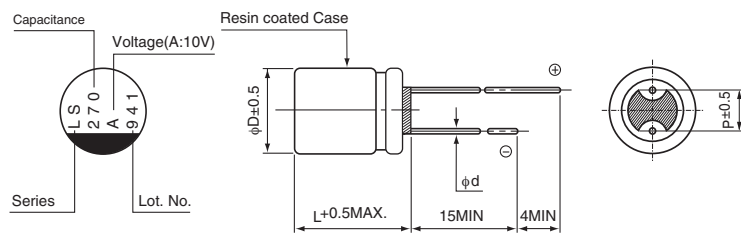


■ Specifications

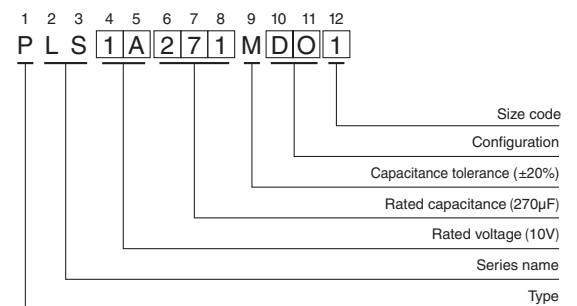
| Item | Performance Characteristics | | |
|---|--|-----------------------|---|
| Category Temperature Range | -55 to +105°C | | |
| Rated Voltage Range | 2.5 to 16V | | |
| Rated Capacitance Range | 100 to 1500µF | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | |
| Leakage Current (※ 2) | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C | | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours at 105°C. | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change | Within ± 20% of the initial capacitance value (※ 3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here as preheat at 150 to 200°C for 60 to 180 seconds and peak temperature at 265°C for 10 seconds or less, the capacitor shall meet the specifications listed at right, provided that its temperature profile is measured at both of terminal ends facing the soldering side. | Capacitance change | Within ± 10% of the initial capacitance value (※ 3) |
| | | tan δ | 130% or less than the initial specified value |
| | | ESR (※ 1) | 130% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | | |

- ※ 1 ESR should be measured at both of the terminal ends closest to the capacitor body.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions



Type numbering system (Example : 10V 270µF)



(mm)

| Size | φ6.3 × 9L | φ6.3 × 10.5L | φ8 × 7L | φ8 × 9L | φ8 × 12L | φ10 × 13L |
|------|-----------|--------------|---------|---------|----------|-----------|
| φD | 6.3 | 6.3 | 8.0 | 8.0 | 8.0 | 10.0 |
| L | 8.5 | 10.0 | 6.5 | 8.5 | 11.5 | 12.5 |
| P | 2.5 | 2.5 | 3.5 | 3.5 | 3.5 | 5.0 |
| φd | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 |

| Voltage | 2.5 | 4 | 6.3 | 10 | 16 |
|---------|-----|---|-----|----|----|
| Code | e | g | j | A | C |

Please refer to page 20 about the end seal configuration.

● Dimension table in next page.

PLS

■ Standard Ratings

| Rated Voltage (V) code | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|--------------|
| 2.5 (0E) | 2.8 | 330 | ○ 6.3 × 9 | 0.08 | 500 | 8 | 4800 | PLS0E331MCO8 |
| | | 680 | △ 8 × 7 | 0.08 | 340 | 15 | 3900 | PLS0E681MCL2 |
| | | 820 | ○ 6.3 × 9 | 0.08 | 500 | 8 | 4800 | PLS0E821MCO8 |
| | | 820 | ▲ 8 × 9 | 0.08 | 410 | 7 | 5200 | PLS0E821MCO6 |
| | | 820 | 8 × 12 | 0.08 | 410 | 7 | 5800 | PLS0E821MDO1 |
| | | 1500 | 10 × 13 | 0.08 | 750 | 8 | 5500 | PLS0E152MDO1 |
| 4 (0G) | 4.6 | 270 | ○ 6.3 × 9 | 0.08 | 500 | 8 | 4800 | PLS0G271MCO8 |
| | | 560 | △ 8 × 7 | 0.08 | 448 | 15 | 3900 | PLS0G561MCL2 |
| | | 560 | ▲ 8 × 9 | 0.08 | 448 | 7 | 5200 | PLS0G561MCO6 |
| | | 680 | 8 × 12 | 0.08 | 544 | 7 | 5800 | PLS0G681MDO1 |
| | | 1200 | 10 × 13 | 0.08 | 960 | 8 | 5500 | PLS0G122MDO1 |
| 6.3 (0J) | 7.2 | 330 | ■ 6.3 × 10.5 | 0.08 | 416 | 20 | 3000 | PLS0J331MDL4 |
| | | 390 | △ 8 × 7 | 0.08 | 491 | 15 | 3900 | PLS0J391MCL2 |
| | | 470 | 8 × 12 | 0.08 | 592 | 7 | 5500 | PLS0J471MDO1 |
| | | 560 | ○ 6.3 × 9 | 0.08 | 706 | 9 | 4300 | PLS0J561MCO8 |
| | | 560 | ▲ 8 × 9 | 0.08 | 706 | 8 | 5000 | PLS0J561MCO6 |
| | | 820 | 10 × 13 | 0.08 | 1033 | 8 | 5500 | PLS0J821MDO1 |
| 10 (1A) | 11.5 | 150 | ■ 6.3 × 10.5 | 0.08 | 300 | 20 | 3000 | PLS1A151MDL4 |
| | | 270 | 8 × 12 | 0.08 | 540 | 8 | 4900 | PLS1A271MDO1 |
| | | 470 | 10 × 13 | 0.08 | 940 | 8 | 5500 | PLS1A471MDO1 |
| 16 (1C) | 18.4 | 100 | ■ 6.3 × 10.5 | 0.08 | 320 | 24 | 2800 | PLS1C101MDL4 |
| | | 270 | 8 × 12 | 0.08 | 864 | 9 | 4500 | PLS1C271MDO1 |
| | | 330 | 10 × 13 | 0.08 | 1056 | 9 | 4700 | PLS1C331MDO1 |
| | | 470 | 10 × 13 | 0.08 | 1504 | 9 | 4700 | PLS1C471MDO1 |

Rated ripple current (mArms) at 105°C 100kHz

No marked, 1 will be put at 12th digit of type numbering system.
 △ : In this case, 2 will be put at 12th digit of type numbering system.
 ■ : In this case, 4 will be put at 12th digit of type numbering system.
 ▲ : In this case, 6 will be put at 12th digit of type numbering system.
 ○ : In this case, 8 will be put at 12th digit of type numbering system.

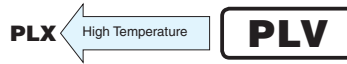
- Please refer to page 20, 21, 22 about the formed or taped product spec.
- Please refer to page 3 for the minimum order quantity.

PLV

Radial Lead Type,
Long Life Assurance



- High voltage (to 100V), Low ESR, High ripple current.
- Long life of 3000 hours at 105°C.
- Radial lead type:
Lead free flow soldering condition correspondence.
- Compliant to the RoHS directive (2011/65/EU).

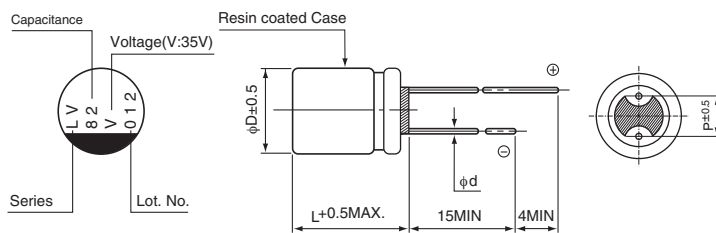


■ Specifications

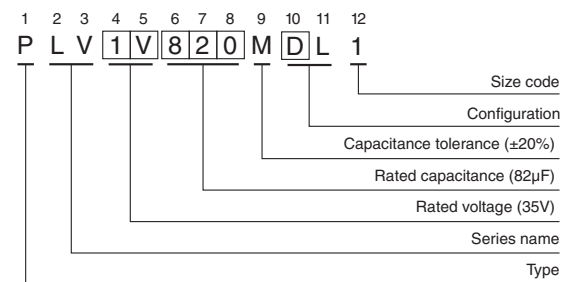
| Item | Performance Characteristics | | |
|---|--|-----------------------|--|
| Category Temperature Range | -55 to +105°C | | |
| Rated Voltage Range | 16 to 100V | | |
| Rated Capacitance Range | 6.8 to 470μF | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | |
| Leakage Current (※ 2) | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C | | |
| Temperature Characteristics (Max.Impedance Ratio) | Z+105°C / Z+20°C ≤ 1.25 (100kHz) Z-55°C / Z+20°C ≤ 1.25 | | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours at 105°C. | Capacitance change | Within ± 20% of the initial capacitance value (※3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change | Within ± 20% of the initial capacitance value (※3) |
| | | tan δ | 150% or less than the initial specified value |
| | | ESR (※ 1) | 150% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here as preheat at 150 to 200°C for 60 to 180 seconds and peak temperature at 265°C for 10 seconds or less, the capacitor shall meet the specifications listed at right, provided that its temperature profile is measured at both of terminal ends facing the soldering side. | Capacitance change | Within ± 10% of the initial capacitance value (※3) |
| | | tan δ | 130% or less than the initial specified value |
| | | ESR (※ 1) | 130% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | | |

- ※ 1 ESR should be measured at both of the terminal ends closest to the capacitor body.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions



Type numbering system (Example : 35V 82μF)



(mm)

| Size | φ8 × 9L | φ8 × 12L | φ10 × 13L |
|------|---------|----------|-----------|
| φD | 8.0 | 8.0 | 10.0 |
| L | 8.5 | 11.5 | 12.5 |
| P | 3.5 | 3.5 | 5.0 |
| φd | 0.6 | 0.6 | 0.6 |

| Voltage | | | | | | | | |
|---------|----|----|----|----|----|----|----|-----|
| V | 16 | 20 | 25 | 35 | 50 | 63 | 80 | 100 |
| Code | C | D | E | V | H | J | K | 2A |

Please refer to page 20 about the end seal configuration.

● Dimension table in next page.

PLV

■ Standard Ratings

| Rated Voltage (V) code | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | Part Number |
|------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|--------------|
| 16 (1C) | 18.4 | 220 | 8 × 9 | 0.12 | 704 | 26 | 2100 | PLV1C221MCL1 |
| | | 270 | 8 × 12 | 0.12 | 864 | 24 | 2500 | PLV1C271MDL1 |
| | | 470 | 10 × 13 | 0.12 | 1504 | 23 | 2900 | PLV1C471MDL1 |
| 20 (1D) | 23.0 | 150 | 8 × 9 | 0.12 | 600 | 27 | 2000 | PLV1D151MCL1 |
| | | 220 | 8 × 12 | 0.12 | 880 | 25 | 2400 | PLV1D221MDL1 |
| | | 330 | 10 × 13 | 0.12 | 1320 | 24 | 2800 | PLV1D331MDL1 |
| 25 (1E) | 28.7 | 120 | 8 × 9 | 0.12 | 600 | 28 | 2000 | PLV1E121MCL1 |
| | | 150 | 8 × 12 | 0.12 | 750 | 26 | 2400 | PLV1E151MDL1 |
| | | 270 | 10 × 13 | 0.12 | 1350 | 25 | 2800 | PLV1E271MDL1 |
| 35 (1V) | 40.2 | 56 | 8 × 9 | 0.12 | 392 | 29 | 1900 | PLV1V560MCL1 |
| | | 82 | 8 × 12 | 0.12 | 574 | 27 | 2300 | PLV1V820MDL1 |
| | | 150 | 10 × 13 | 0.12 | 1050 | 26 | 2700 | PLV1V151MDL1 |
| 50 (1H) | 57.5 | 33 | 8 × 9 | 0.12 | 330 | 32 | 1900 | PLV1H330MCL1 |
| | | 39 | 8 × 12 | 0.12 | 390 | 29 | 2200 | PLV1H390MDL1 |
| | | 68 | 10 × 13 | 0.12 | 680 | 28 | 2600 | PLV1H680MDL1 |
| 63 (1J) | 72.4 | 22 | 8 × 9 | 0.12 | 277 | 35 | 1800 | PLV1J220MCL1 |
| | | 27 | 8 × 12 | 0.12 | 340 | 33 | 2100 | PLV1J270MDL1 |
| | | 47 | 10 × 13 | 0.12 | 592 | 29 | 2600 | PLV1J470MDL1 |
| 80 (1K) | 92 | 10 | 8 × 9 | 0.12 | 160 | 40 | 1700 | PLV1K100MCL1 |
| | | 12 | 8 × 12 | 0.12 | 192 | 38 | 1900 | PLV1K120MDL1 |
| | | 22 | 10 × 13 | 0.12 | 352 | 35 | 2300 | PLV1K220MDL1 |
| 100 (2A) | 115 | 6.8 | 8 × 9 | 0.12 | 136 | 45 | 1600 | PLV2A6R8MCL1 |
| | | 10 | 8 × 12 | 0.12 | 200 | 42 | 1800 | PLV2A100MDL1 |
| | | 18 | 10 × 13 | 0.12 | 360 | 38 | 2200 | PLV2A180MDL1 |

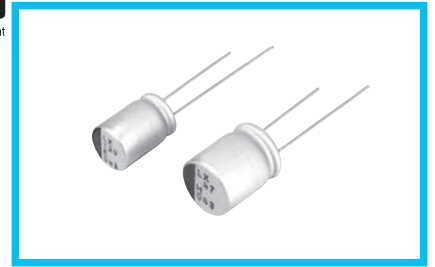
Rated ripple current (mArms) at 105°C 100kHz

- Please refer to page 20, 21, 22 about the formed or taped product spec.
- Please refer to page 3 for the minimum order quantity.

PLX Radial Lead Type, Long Life Assurance



- High reliability, High voltage (to 50V).
- Low ESR, High ripple current.
- Long life of 3000 hours at 125°C.
- Radial lead type:
 - Lead free flow soldering condition correspondence.
- Adapted to the RoHS directive (2011/65/EU).

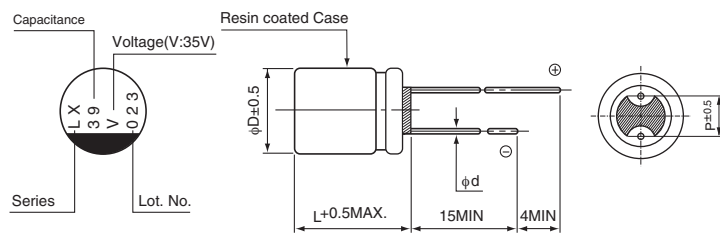


■ Specifications

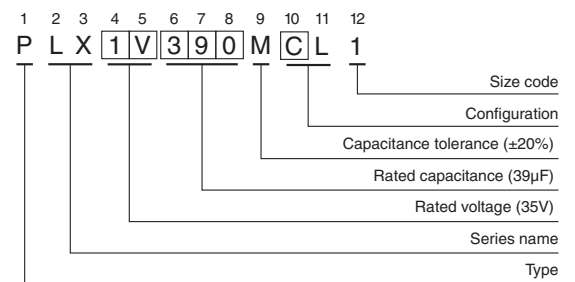
| Item | Performance Characteristics | | |
|---|--|-----------------------|--|
| Category Temperature Range | -55 to +125°C | | |
| Rated Voltage Range | 16 to 50V | | |
| Rated Capacitance Range | 22 to 390µF | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | |
| Tangent of loss angle (tan δ) | Less than or equal to the specified value at 120Hz, 20°C | | |
| ESR (※ 1) | Less than or equal to the specified value at 100kHz, 20°C | | |
| Leakage Current (※ 2) | Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C | | |
| Temperature Characteristics (Max.Impedance Ratio) | $Z+125^{\circ}\text{C} / Z+20^{\circ}\text{C} \leq 1.25$ (100kHz) $Z-55^{\circ}\text{C} / Z+20^{\circ}\text{C} \leq 1.25$ | | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours at 125°C. | Capacitance change | Within ± 20% of initial value (※3) |
| | | tan δ | 150% or less of the initial specified value |
| | | ESR (※ 1) | 150% or less of the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Damp Heat (Steady State) | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60°C, 90% RH. | Capacitance change | Within ± 20% of initial value (※3) |
| | | tan δ | 150% or less of the initial specified value |
| | | ESR (※ 1) | 150% or less of the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Resistance to Soldering Heat | After soldering the capacitor under the soldering conditions prescribed here as preheat at 150 to 200°C for 60 to 180 seconds and peak temperature at 265°C for 10 seconds or less, the capacitor shall meet the specifications listed at right, provided that its temperature profile is measured at both of terminal ends facing the soldering side. | Capacitance change | Within ± 10% of the initial capacitance value (※3) |
| | | tan δ | 130% or less than the initial specified value |
| | | ESR (※ 1) | 130% or less than the initial specified value |
| | | Leakage current (※ 2) | Less than or equal to the initial specified value |
| Marking | Navy blue print on the case top | | |

- ※ 1 ESR should be measured at both of the terminal ends closest to the capacitor body.
- ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.
- ※ 3 Initial value : The value before test of examination of resistance to soldering.

■ Dimensions



Type numbering system (Example : 35V 39µF)



| (mm) | | | |
|------|---------|----------|-----------|
| Size | φ8 × 9L | φ8 × 12L | φ10 × 13L |
| φD | 8.0 | 8.0 | 10.0 |
| L | 8.5 | 11.5 | 12.5 |
| P | 3.5 | 3.5 | 5.0 |
| φd | 0.6 | 0.6 | 0.6 |

| Voltage | | | | | |
|---------|----|----|----|----|----|
| V | 16 | 20 | 25 | 35 | 50 |
| Code | C | D | E | V | H |

Please refer to page 20 about the end seal configuration.

● Dimension table in next page.

PLX

■ Standard Ratings

| Rated Voltage (V)(code) | Surge Voltage (V) | Rated Capacitance (μF) | Case Size φD × L (mm) | tan δ | Leakage Current (μA) | ESR (mΩ) (at 100kHz 20°C) | Rated Ripple (mArms) | | Part Number |
|-------------------------|-------------------|------------------------|-----------------------|-------|----------------------|---------------------------|----------------------|---------------------|--------------|
| | | | | | | | ≤105°C (*3) | 105°C < ≤125°C (*3) | |
| 16 (1C) | 18.4 | 150 | 8 × 9 | 0.12 | 480 | 26 | 2100 | 810 | PLX1C151MCL1 |
| | | 220 | 8 × 12 | 0.12 | 704 | 25 | 2400 | 930 | PLX1C221MDL1 |
| | | 390 | 10 × 13 | 0.12 | 1248 | 23 | 2900 | 1130 | PLX1C391MDL1 |
| 20 (1D) | 23.0 | 120 | 8 × 9 | 0.12 | 480 | 27 | 2000 | 800 | PLX1D121MCL1 |
| | | 150 | 8 × 12 | 0.12 | 600 | 26 | 2300 | 910 | PLX1D151MDL1 |
| | | 270 | 10 × 13 | 0.12 | 1080 | 24 | 2800 | 1110 | PLX1D271MDL1 |
| 25 (1E) | 28.7 | 82 | 8 × 9 | 0.12 | 410 | 28 | 2000 | 780 | PLX1E820MCL1 |
| | | 120 | 8 × 12 | 0.12 | 600 | 27 | 2300 | 890 | PLX1E121MDL1 |
| | | 180 | 10 × 13 | 0.12 | 900 | 25 | 2800 | 1080 | PLX1E181MDL1 |
| 35 (1V) | 40.2 | 39 | 8 × 9 | 0.12 | 273 | 33 | 1800 | 720 | PLX1V390MCL1 |
| | | 56 | 8 × 12 | 0.12 | 392 | 31 | 2100 | 830 | PLX1V560MDL1 |
| | | 100 | 10 × 13 | 0.12 | 700 | 28 | 2700 | 1040 | PLX1V101MDL1 |
| 50 (1H) | 57.5 | 22 | 8 × 9 | 0.12 | 220 | 35 | 1800 | 700 | PLX1H220MCL1 |
| | | 27 | 8 × 12 | 0.12 | 270 | 33 | 2000 | 810 | PLX1H270MDL1 |
| | | 47 | 10 × 13 | 0.12 | 470 | 29 | 2600 | 1020 | PLX1H470MDL1 |

(*3) Ambient temperature of a capacitor

Rated ripple current (mArms) at 105°C 100kHz

- Please refer to page 20, 21, 22 about the formed or taped product spec.
- Please refer to page 3 for the minimum order quantity.