



**THE DATASHEET OF
PCV1E181MCL1GS**

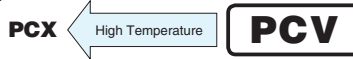


PCV

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).
- AEC-Q200 compliant. Please contact us for details.

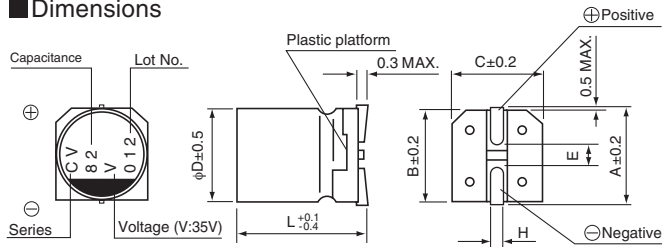


■ Specifications

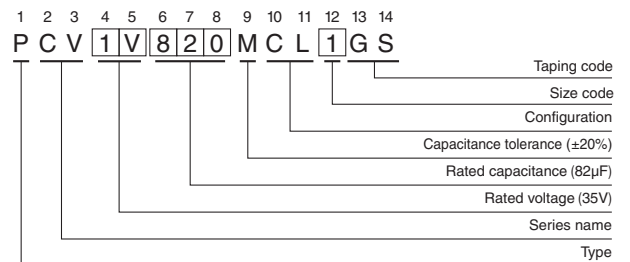
| Item | Performance Characteristics | | |
|---|---|-----------------------|---|
| Category Temperature Range | -55 to +105°C | | |
| Rated Voltage Range | 16 to 125V | | |
| Rated Capacitance Range | 5.6 to 680μF | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | |
| Tangent of loss angle (tan 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)



| 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 |

● Frequency coefficient of rated ripple current

| | | | | |
|-------------|-------|------|-------|----------------|
| Frequency | 120Hz | 1kHz | 10kHz | 100kHz or more |
| Coefficient | 0.05 | 0.30 | 0.70 | 1.00 |



■ Dimensions

| 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 | | |



■ Dimensions

| 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.

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