

**PCR**

Chip Type, High Reliability



For SMD



High Ripple Current



Low Impedance



For High Frequency



Long Life



Anti-Solvent Feature

- 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.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).
- ESR after Endurance at -40°C.
- AEC-Q200 compliant. Please contact us for details.

**PCH**  
**PCZ**

High Temperature

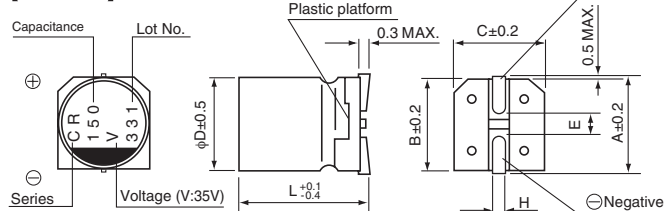
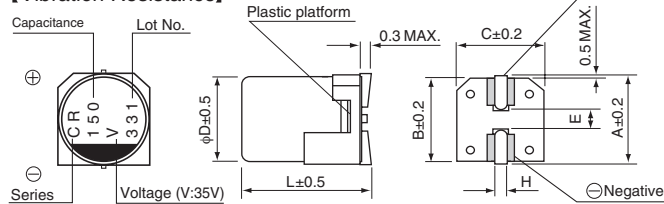
**PCR**High Capacitance  
Long Life Assurance**PCX****Specifications**

| 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<br>(Max.Impedance Ratio) | Z+125°C / Z+20°C ≤ 1.25 (100kHz)<br>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.                                                                                                                                                                                                                                                                                                                                      | 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<br>(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.                                                                                                                                                                                                                                                                                                                               | 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<br>Soldering Heat                      | After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right.<br>Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec.<br>The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds.<br>In case peak temperature is 260°C or less, reflow soldering shall be two times maximum.<br>Measurement for solder temperature profile shall be made at the capacitor top. | 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.

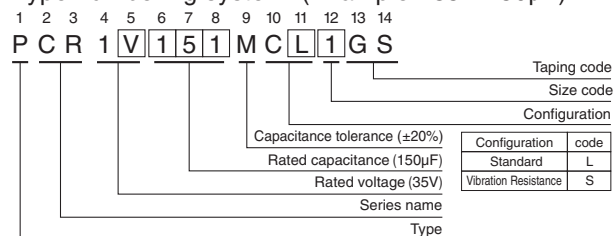
※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.

※ 3 Initial value : The value before test of examination of resistance to soldering.

**Dimensions****[Standard]****[Vibration Resistance]**

Aid electrode

●Dimension table in next page.

**Type numbering system (Example : 35V 150μF)****Standard**

|      | (mm)       |            |            |            |            |             | Vibration Resistance (mm) |            |             |             |
|------|------------|------------|------------|------------|------------|-------------|---------------------------|------------|-------------|-------------|
| Size | φ8 × 7L    | φ8 × 10L   | φ8 × 12L   | φ10 × 8L   | φ10 × 10L  | φ10 × 12.7L | Size                      | φ8 × 10.5L | φ10 × 10.5L | φ10 × 13.2L |
| φD   | 8.0        | 8.0        | 8.0        | 10.0       | 10.0       | 10.0        | φD                        | 8.0        | 10.0        | 10.0        |
| L    | 6.9        | 9.9        | 11.9       | 7.9        | 9.9        | 12.6        | L                         | 10.0       | 10.0        | 12.7        |
| A    | 9.0        | 9.0        | 9.0        | 11.0       | 11.0       | 11.0        | A                         | 9.0        | 11.0        | 11.0        |
| B    | 8.3        | 8.3        | 8.3        | 10.3       | 10.3       | 10.3        | B                         | 8.3        | 10.3        | 10.3        |
| C    | 8.3        | 8.3        | 8.3        | 10.3       | 10.3       | 10.3        | C                         | 8.3        | 10.3        | 10.3        |
| E    | 3.2        | 3.2        | 3.2        | 4.6        | 4.6        | 4.6         | E                         | 3.1        | 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  | H                         | 1.1 to 1.5 | 1.1 to 1.5  | 1.1 to 1.5  |

**Voltage**

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

**Frequency coefficient of rated ripple current**

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

※ φ8 × 10L (φ8 × 10.5L), φ10 × 10L (φ10 × 10.5L), φ10 × 12.7L (φ10 × 13.2L) :

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

( ) : Size of the vibration structure-resistant product.

**CAT.8100I**

PCR

## ■ Dimensions

| Rated Voltage<br>(V)(code) | Surge Voltage<br>(V) | Rated Capacitance<br>(μF) | Case Size<br>φD × L (mm) | tan δ | Initial<br>ESR<br>(mΩ)<br>(20°C / 100kHz) | Low temp.<br>ESR after<br>Endurance<br>(mΩ)<br>(-40°C / 100kHz) | Rated Ripple<br>(mAmps)<br>(125°C / 100kHz) | Part Number    |
|----------------------------|----------------------|---------------------------|--------------------------|-------|-------------------------------------------|-----------------------------------------------------------------|---------------------------------------------|----------------|
| 16<br>(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<br>(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<br>(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<br>(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<br>(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<br>(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<br>(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.

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9