



# Cement Power Resistors (RoHS Compliant)

# PRM-RC Series

## FEATURES

- 5% tolerance
- Exceptionally small, sturdy, and reliable
- Sealed with a special cement
- Excellent moisture resistance
- High temperature stability
- Ceramic flame retardant package
- Recommended wash method is alcohol



LEAD-FREE

RoHS Compliant

## DERATING CHART



## HEAT RISE CHART



## PART NUMBERING SYSTEM



## SERIES, WATTAGE, VALUE RANGE, AND DIMENSIONS



| Series | Watts (W) | Leads        | Value Ranges (Ω) |            | Dimensions (mm) |      |      |          |      |
|--------|-----------|--------------|------------------|------------|-----------------|------|------|----------|------|
|        |           |              | Wirewound        | Power Film | W ±1            | D ±1 | L ±1 | ød ±0.05 | P ±1 |
| PRM    | 5         | Centered     | 0.1 ~ 47         | 48 ~ 100K  | 12.5            | 9    | 25   | 0.75     | 5    |
| PRM    | 7         | Not Centered | 0.1 ~ 680        | 681 ~ 200K | 12.5            | 9    | 38   | 0.75     | 5    |
| PRM    | 10        | Not Centered | 0.1 ~ 910        | 911 ~ 200K | 12.5            | 9    | 50   | 0.75     | 5    |

## STANDARD STOCKED VALUES (Ω) All standard E-24 values not listed are available special order.

|      |      |      |     |     |     |    |    |    |    |    |     |     |     |     |     |     |     |    |    |      |     |
|------|------|------|-----|-----|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|----|----|------|-----|
| 0.1  | 0.3  | 0.51 | 1.0 | 3.0 | 6.8 | 15 | 33 | 56 | 68 | 75 | 100 | 150 | 200 | 300 | 330 | 470 | 680 | 1K | 2K | 4.7K | 10K |
| 0.22 | 0.47 | 0.68 | 2.2 | 4.7 | 10  | 20 | 47 |    |    |    |     |     |     |     |     |     |     |    |    |      |     |

## CONSTRUCTION

| No. | Subpart Name                       | Material   | Material Generic Name                             |
|-----|------------------------------------|--|---|
| 1   | Body                               | Rod Type Ceramics  | Al <sub>2</sub> O <sub>3</sub> , SiO <sub>2</sub> |
| 2   | End Cap                            | Tin plated iron surface  | Tin : 5%, Iron : 95%                              |
| 3   | Lead                               | Annealed copper wire<br>(Electrosolder plated surface) Pb Free | Tin-Coated Copper wire                            |
| 4   | Ceramic Case                       | Ceramic  | Al <sub>2</sub> O <sub>3</sub> , SiO <sub>2</sub> |
| 5   | Resistance wire<br>Resistance Film | Ni-Cr Alloy<br>Metal Oxide Film                                | Ni-Cr Alloy<br>Metal Oxide Film                   |
| 6   | Filling Materials                  | Quartz mixed sand  | SiO <sub>2</sub>                                  |





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## CHARACTERISTICS

| Characteristics                 | Limits  | Test Methods ( JIS C 5201-1 )   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|---------------------------------|---|---|---------------|--------------|------|--------------------|---------------|---------|-------|--|--------------|---|----------------|---------|---|------------|--------------|
| Temperature coefficient         | ± 350 PPM / °C Max.<br><20Ω ± 400 PPM / °C  | 5.2 Natural resistance change per temp. degree centigrade.<br>$\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM / } ^\circ\text{C)}$ R1: Resistance value at room temperature (t1)<br>R2: Resistance value at room temp. plus 100 °C (t2)   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Dielectric withstanding voltage | No evidence of flashover, mechanical damage, arcing or insulation break down  | 5.7 Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively for 60 +10/ -0 secs.  |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Temperature cycling             | Resistance change rate is ± (2% + 0.05Ω) Max. with no evidence of mechanical damage   | 7.4 Resistance change after continuous 5 cycles for duty shown below:   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|                                 |   | <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55 °C ± 3 °C</td> <td>30 mins</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>10 ~ 15 mins</td> </tr> <tr> <td>3</td> <td>+155 °C ± 2 °C</td> <td>30 mins</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>10 ~ 15 mins</td> </tr> </tbody> </table>                    | Step          | Temperature  | Time | 1                  | -55 °C ± 3 °C | 30 mins | 2     | Room temp.   | 10 ~ 15 mins | 3 | +155 °C ± 2 °C | 30 mins | 4 | Room temp. | 10 ~ 15 mins |
|                                 |   | Step  | Temperature   | Time         |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|                                 |   | 1   | -55 °C ± 3 °C | 30 mins      |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|                                 |   | 2   | Room temp.    | 10 ~ 15 mins |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| 3                               | +155 °C ± 2 °C  | 30 mins   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| 4                               | Room temp.  | 10 ~ 15 mins  |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|                                 |   |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|                                 |   |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|                                 |   |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Short time overload             | Resistance change rate is ± (5% + 0.05Ω) Max. with no evidence of mechanical damage   | 5.5 Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds  |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Load life in humidity           | <table border="1"> <thead> <tr> <th>Resistance value</th> <th>Δ R/R</th> </tr> </thead> <tbody> <tr> <td>Wire-wound</td> <td>± 5%</td> </tr> <tr> <td>Power film: &lt;100KΩ</td> <td>± 5%</td> </tr> <tr> <td>&gt;100KΩ</td> <td>± 10%</td> </tr> </tbody> </table> | Resistance value  | Δ R/R         | Wire-wound   | ± 5% | Power film: <100KΩ | ± 5%          | >100KΩ  | ± 10% | 7.9 Resistance change after 1,000 hours operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") in a humidity test chamber controlled at 40 °C ± 2 °C and 90 to 95 % relative humidity |              |   |                |         |   |            |              |
|                                 | Resistance value  | Δ R/R   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Wire-wound                      | ± 5%  |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Power film: <100KΩ              | ± 5%  |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| >100KΩ                          | ± 10%   |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|                                 |   |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Load life                       | <table border="1"> <thead> <tr> <th>Resistance value</th> <th>Δ R/R</th> </tr> </thead> <tbody> <tr> <td>Wire-wound</td> <td>± 5%</td> </tr> <tr> <td>Power film: &lt;100KΩ</td> <td>± 5%</td> </tr> <tr> <td>&gt;100KΩ</td> <td>± 10%</td> </tr> </tbody> </table> | Resistance value  | Δ R/R         | Wire-wound   | ± 5% | Power film: <100KΩ | ± 5%          | >100KΩ  | ± 10% | 7.10 Permanent resistance change after 1,000 hours operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") at 70 °C ± 2 °C   |              |   |                |         |   |            |              |
|                                 | Resistance value  | Δ R/R   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Wire-wound                      | ± 5%  |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Power film: <100KΩ              | ± 5%  |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| >100KΩ                          | ± 10%   |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
|                                 |   |   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Terminal strength               | No evidence of mechanical damage  | <b>6.1 Direct load :</b><br>Resistance to a 2.5 kgs direct load for 10 secs. in the direction of the longitudinal axis of the terminal leads<br><b>Twist test :</b><br>Terminal leads shall be bent through 90 ° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Resistance to soldering heat    | Resistance change rate is ± (1% + 0.05Ω) Max. with no evidence of mechanical damage   | 6.4 Permanent resistance change when leads immersed to 3.2 to 4.8 mm from the body in 350 °C ± 10 °C solder for 3 ± 0.5 secs.   |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |
| Solderability                   | 95 % coverage Min.  | 6.5 The area covered with a new , smooth clean , shiny and continuous surface free from concentrated pinholes.<br>Test temp. of solder : 245 °C ± 3 °C<br>Dwell time in solder : 2 ~ 3 seconds  |               |              |      |                    |               |         |       |  |              |   |                |         |   |            |              |





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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