



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 ₂ O ₃ , SiO ₂ |
| 2 | End Cap | Tin plated iron surface | Tin : 5%, Iron : 95% |
| 3 | Lead | Annealed copper wire (Electrosolder plated surface) Pb Free | Tin-Coated Copper wire |
| 4 | Ceramic Case | Ceramic | Al ₂ O ₃ , SiO ₂ |
| 5 | Resistance wire Resistance Film | Ni-Cr Alloy Metal Oxide Film | Ni-Cr Alloy Metal Oxide Film |
| 6 | Filling Materials | Quartz mixed sand | SiO ₂ |





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CHARACTERISTICS

| Characteristics | Limits | Test Methods (JIS C 5201-1) | | | | | | | | | | | | | | | |
|---------------------------------|---|---|------|-------------|------|---|---------------|---------|---|------------|--------------|---|----------------|---------|---|------------|--------------|
| Temperature coefficient | ± 350 PPM / °C Max. <20Ω ± 400 PPM / °C | 5.2 Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM / } ^\circ\text{C)}$ R1: Resistance value at room temperature (t1) 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" style="margin-left: 20px;"> <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 | | | | | | | | | | | | | | | |
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| 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 | Resistance value Wire-wound | 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 | | | | | | | | | | | | | | | |
| | Power film: <100KΩ >100KΩ | | | | | | | | | | | | | | | | |
| Load life | Resistance value Wire-wound | 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 | | | | | | | | | | | | | | | |
| | Power film: <100KΩ >100KΩ | | | | | | | | | | | | | | | | |
| Terminal strength | No evidence of mechanical damage | 6.1 Direct load : Resistance to a 2.5 kgs direct load for 10 secs. in the direction of the longitudinal axis of the terminal leads Twist test : 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. Test temp. of solder : 245 °C ± 3 °C Dwell time in solder : 2 ~ 3 seconds | | | | | | | | | | | | | | | |



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