# METAL FILM PRECISION RESISTOR
# - CMR SERIES -

## FEATURES

- Excellent overall stability
- TIght tilerance down to ±0.1%
- Extremely low TCR down to ±10 PPM/°C
- High power rating up to 1 Watts

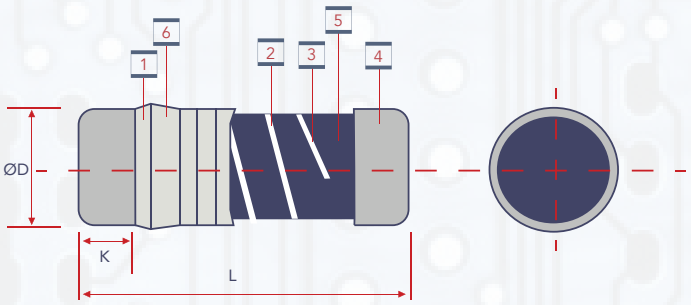
## APPLICATIONS

- Automotive
- Telecommunication
- Medical Equipment
- Measurement / Testing Equipment

## PART NUMBERING

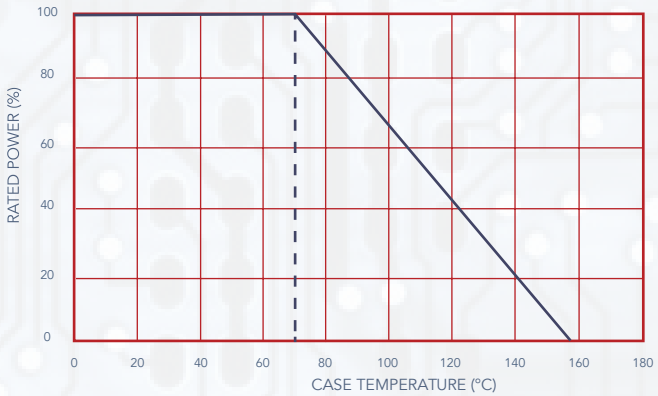
| CMR | 0204 | D | 1000 | D | V | T |
|---|---|---|---|---|---|---|
| TYPE | DIMENSIONS (L x ØD) | RESISTANCE TOLERANCE | RESISTANCE | TCR (PPM/°C) | POWER RATING | PACKAGING CODE |
| CMR SERIES | 0204: 3.5 x 1.4<br>0207: 5.9 x 2.2 | B: ±0.1%<br>C: ±0.25%<br>D: ±1%<br>F: ±2%<br>J: ±5% | 0100: 10Ω<br>1000: 100Ω<br>2201: 2200Ω<br>1001: 1KΩ<br>1004: 1MΩ<br>R0R0: 0Ω<br>R050: 0.05Ω<br>R100: 0.1Ω | B: ±10<br>N: ±15<br>C: ±25<br>D: ±50<br>E: ±100<br>: No Specified | T: 1W<br>U: 1/2W<br>V: 1/4W | T: Taping Reel<br>B: Bulk |

## CONSTRUCTION




1 Insulation Coating
2 Trimming Line
3 Ceramic Rod
4 Resistor Layer
5 Electrode Cap
6 Marking

## DERATING CURVE




| TYPE | L | ØD | K MIN | WEIGHT (G) (1000PCS) | PACKAGING |
|---|---|---|---|---|---|
| | | | | | 180MM (7") |
| CMR0204 | 3.50±0.20 | 1.40±0.15 | 0.5 | 18.7 | 3,000 EA |
| CMR0207 | 5.90±0.20 | 2.20±0.20 | | 80.9 | 2,000 EA |

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RoHS

## STANDARD ELECTRICAL SPECIFICATIONS

| TYPE | POWER RATING AT 70°C | OPERATING TEMP RANGE | MAX OPERATING VOLTAGE | MAX OVERLAOD VOLTAGE | RESISTANCE RANGE | | | | | T.C.R. (PPM / °C) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ±0.1% | ±0.25% | ±0.5% | ±1`% | ±5% | |
| 0204 | 1/4 W | -55~+155°C | 200V | 400V | 49.9Ω - 20KΩ | | | | | ±10 |
| | | | | | 49.9Ω - 300KΩ | | | | | ±15 |
| | | | | | 10Ω - 1MΩ | | | 10Ω-4.7MΩ | | ±25 |
| | | | | | 10Ω - 1MΩ | 1Ω - 1MΩ | | 1Ω-10MΩ | | ±50 |
| | | | | | - | | | 0.1Ω-10MΩ | | ±100 |
| | JUMPER: 2A | | | | 0Ω(<15mΩ) | | | | | - |
| 0207 | 1/2 W | | 300V | 500V | 49.9Ω-20KΩ | | | | | ±10 |
| | | | | | 49.9Ω-300KΩ | | | | | ±15 |
| | | | | | 10Ω-1MΩ | | | 10Ω-4.7MΩ | | ±25 |
| | | | | | 10Ω-1MΩ | 1Ω-1MΩ | | 1Ω-10MΩ | | ±50 |
| | | | | | - | | | 0.1Ω-10MΩ | | ±100 |
| | JUMPER: 4A | | | | 0Ω(<15mΩ) | | | | | - |

## HIGH POWER RATING ELECTRICAL SPECIFICATIONS

| TYPE | POWER RATING AT 70°C | OPERATING TEMP RANGE | MAX OPERATING VOLTAGE | MAX OVERLAOD VOLTAGE | RESISTANCE RANGE | | | | | T.C.R. (PPM / °C) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ±0.1% | ±0.25% | ±0.5% | ±1`% | ±5% | |
| 0207 | 1W | -55~+155°C | 350V | 700V | 49.9Ω-100KΩ | | | | | ±15 |
| | | | | | 10Ω-1MΩ | | | | | ±25 |
| | | | | | 10Ω-1MΩ | 1Ω-1MΩ | | 1Ω-10MΩ | | ±50 |
| | | | | | - | | | 0.1Ω-10MΩ | | ±100 |

## ENVIRONMENTAL CHARACTERISTICS

| ITEMS | REQUIREMENT | TEST METHOD |
|---|---|---|
| Temperature Coefficient of Resistance (T.C.R.) | As Spec. | -55°C ~+125°C, 25°C is the reference temperature |
| Short Time Overload | ±(0.15%+0.05Ω) | RCWV*2.5 or Max. overload voltage for 5 seconds |
| Insulation Resistance | ≥10G | Max. overload voltage for 1 minute |
| Endurance | ±(0.5%+0.05Ω) | 70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Damp Heat with Load | ±(1.0% + 0.05Ω) | 40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Dry Heat | ±(1.0%+0.05Ω) | at +155°C for 1000 hrs |
| Bending Strength | ±(0.5%+0.05Ω) | Bending once for 5 seconds 2mm |
| Solderability | 95% coverage Min. | 245±5°C for 3 seconds |
| Resistance to Soldering Heat | ±(0.5% + 0.05Ω) | 260±5°C for 10 seconds |
| Voltage Proof | No breakdown or flashover | 1.42 times RCWV (RMS) for 1 minute |
| Leaching | Individual leaching area ≤5%<br>Total leaching area ≤10% | 260±5°C for 30 seconds |
| Rapid Change of Temperature | ±(0.5% + 0.05Ω) | -55°C to +155°C, 5 cycles |

Reference Standards: IEC 60115-1, JIS-C 5201-1
Storage Temperature: 25±3°C: Humidity <80%RH

RoHS