

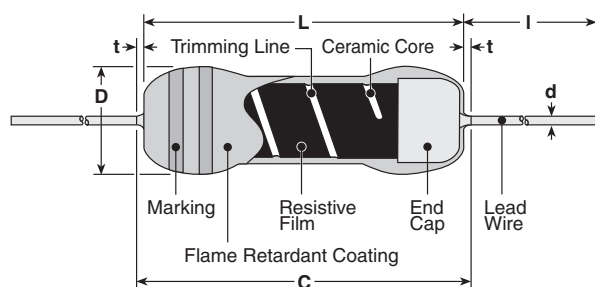
anti-surge power type leaded resistor



features

- Excellent anti-surge characteristics
- Stable characteristics of moisture resistance up to high resistance range
- RCR50 +(1M Ω - 12M Ω), RCR50EN (1M Ω - 12M Ω) and RCR60 (1M Ω - 12M Ω) are discharge resistors recognized by UL1676 and c-UL(CSA-C22.2 No.1-M94)
- RCR25EN (100 Ω ~33M Ω), RCR50EN (100k Ω - 33M Ω) and RCR60 (470k Ω - 56M Ω) is approved by EN60065 14.1 safety
- Marking: Blue-gray body color with color-coded bands
- Products with lead-free terminations meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- Surface mount style "N" forming is suitable for automatic mounting

dimensions and construction



* Lead length changes depending on taping and forming.

ordering information

| New Part # | RCR | 50 | EN | C | T52 | A | 105 | J |
|------------|-----|---|---|----------------------|---|---|--|------------------------------|
| Type | RCR | Power Rating | Safety Appr. Marking | Termination Material | Taping and Forming | Packaging | Nominal Resistance | Tolerance |
| | | 16: 0.25W 25: 0.25W 50: 0.5W 60: 1W 75: 2W 100: 3W | RCR50+: + RCR25EN, RCR50EN: EN Blank: Others | C: SnCu | RCR16: T26, T52 RCR25, RCR25EN: T26, T52 RCR50(+, EN): T52 RCR60: T52 RCR75: T52 RCR100: T521, T631 L, M, N Forming | A: Ammo R: Reel TEB: Plastic embossed: N forming | 2 significant figures + 1 multiplier for $\pm 5\%$ 3 significant figures + 1 multiplier for $\pm 1\%$ | F: $\pm 1\%$ J: $\pm 5\%$ |

applications and ratings

| Part Designation | Power Rating @ 70°C | Minimum Dielectric Withstanding Voltage | Resistance Range E-24, E-96 (F $\pm 1\%$) | Resistance Range E-24 (J $\pm 5\%$) | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temperature Range |
|----------------------|---------------------|---|--|---|----------------------------------|-----------------------------------|-----------------------------|
| RCR16 | 0.25W | 300V | 100k Ω - 5.1M Ω | 100k Ω - 5.1M Ω | 500V | 1000V | -55°C to +155°C |
| RCR25 NEW RCR25EN | | | 100k Ω - 9.1M Ω | 100k Ω - 33M Ω | DC 1600V AC 1150V | DC 2000V AC 1500V | |
| RCR50 | 0.5W | 700V | 3.3 Ω - 910k Ω | 3.3 Ω - 910k Ω 13M Ω - 33M Ω | 2000V | 2500V | |
| RCR50+ | | | 1M Ω - 9.1M Ω | 1M Ω - 12M Ω | | | |
| RCR50EN | | | 100k Ω - 9.1M Ω | 100k Ω - 33M Ω | | | |
| RCR60 | 1.0W | 1000V | 100k Ω - 9.1M Ω | 100k Ω - 56M Ω | 4000V | 5000V | |
| RCR75 | 2.0W | | 100k Ω - 9.1M Ω | 100k Ω - 100M Ω | | | |
| RCR100 | 3.0W | | 100k Ω - 9.1M Ω | 100k Ω - 33M Ω | 5000V | | |

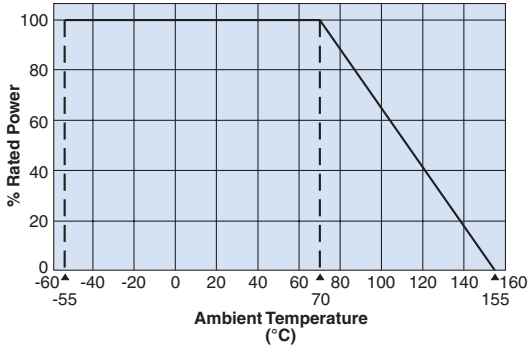
For further information on packaging, please refer to Appendix C.

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

1/03/14

environmental applications

Derating Curve



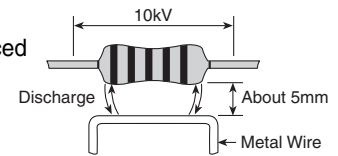
For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.

Notice of Surge Load

Surge withstanding load voltage for the resistors cannot be guaranteed when the undermentioned 4 items get to a remarkable overload in comparison with the conditions shown by surge withstanding voltage in Anti-surge characteristics. Please contact KOA in advance if such a case is anticipated.

1. Peak voltage to be applied
2. Pulse width
3. Conditions of protecting insulation around the resistor
4. Situation of proximity conductivity object

For example: In the figure, a metal wire is placed less than 5mm away from the resistor body, there is such a case that causes an electric discharge by a surge load 10kV and then destroys the outer coating.



Performance Characteristics

| Parameter | Requirement $\Delta R \pm(\% + 0.05\Omega)$ | | | Typical | Test Method | | |
|------------------------------------|---|------------------------------------|-------------------------------------|---------|---|------------------------------------|-------------------------------------|
| | Limit | | | | | | |
| Resistance | Within regulated tolerance | | | — | Measuring points are 10mm \pm 1mm from the end cap | | |
| T.C.R. | Type | T.C.R. | Resistance Range | — | Room temperature/100°C up | | |
| | RCR16 | $\pm 200\text{ppm}/^\circ\text{C}$ | 100k Ω - 5.1M Ω | | | | |
| | RCR25 (EN) | $\pm 350\text{ppm}/^\circ\text{C}$ | 100k Ω - 33M Ω | | | | |
| | RCR50 (+) | $\pm 500\text{ppm}/^\circ\text{C}$ | 3.3 Ω - 91k Ω | | | | |
| | | $\pm 350\text{ppm}/^\circ\text{C}$ | 100k Ω - 33M Ω | | | | |
| | RCR50EN | $\pm 350\text{ppm}/^\circ\text{C}$ | 100k Ω - 33M Ω | | | | |
| | RCR60 | $\pm 350\text{ppm}/^\circ\text{C}$ | 100k Ω - 56M Ω | | | | |
| | RCR75 | $\pm 350\text{ppm}/^\circ\text{C}$ | 100k Ω - 100M Ω | | | | |
| RCR100 | $\pm 200\text{ppm}/^\circ\text{C}$ | 100k Ω - 33M Ω | | | | | |
| Overload | 1% | | | 0.5% | Rated voltage x 2.5 or maximum overload voltage for 5 seconds, whichever is less | | |
| Resistance to Solder Heat | 1% | | | 0.5% | 260°C \pm 5°C, 10 seconds \pm 1 second or 350°C \pm 10°C, 3.5 seconds \pm 0.5 seconds | | |
| Terminal Strength | No mechanical damage | | | — | Twist 360°, 5 times | | |
| Rapid Change of Temperature | 1% | | | 0.5% | -55°C (30 minutes)/+155°C (30 minutes), 5 cycles | | |
| Moisture Resistance | 5% | | | 2.5% | 40°C \pm 2°C, 90-95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle RCR16, 25, 50 (+), 60: W; RCR75, 100: Wx0.1 | | |
| Endurance @ 70°C | 5% | | | 2.5% | 70°C \pm 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle | | |
| Resistance to Solvent | No visible damage to protective coating and marking | | | — | Isopropyl alcohol with ultrasonic washing, 2 minutes Power: 0.3W/cm ² , f: 28kHz, Temperature: 35°C \pm 5°C | | |
| Surge Withstanding | 10% | | | 2.5% | Discharge test: 2kV - 10kV, 0.01 μ F capacitor discharge pulse, 10 times (1 pulse/5 seconds maximum) | | |
| | Type | RCR16 | RCR25 RCR25EN | | | RCR50, RCR50+ | RCR50EN, RCR60, RCR75, RCR100 |
| | Applied Voltage | 2kV | 3kV | | | 3.3 Ω - 6.2 Ω : 10kV | 10kV |
| | | | | | | 6.8 Ω - 10 Ω : 7kV | |
| | | | | | | 11 Ω - 9.1k Ω : 5kV | |
| 10k Ω - 91k Ω : 7kV | | | | | | | |
| | | | 100k Ω - 33M Ω : 10kV | | | | |
| EN60065 Test (RCR50EN, RCR60 only) | 20% | | | — | Discharge test: 10kV, 1000pF capacitor discharge pulse, 50 times (1 pulse/5 seconds maximum) | | |