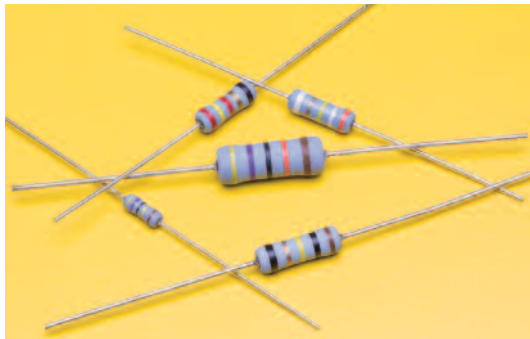


anti-surge power type leaded resistor

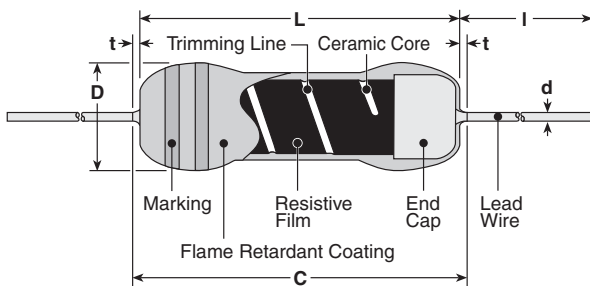


features

- Excellent anti-surge characteristics
- Stable characteristics of moisture resistance up to high resistance range
- RCR50 +(1MΩ - 12MΩ), RCR50EN (1MΩ - 12MΩ) and RCR60 (1MΩ - 12MΩ) are discharge resistors recognized by UL1676 and c-UL(CSA-C22.2 No.1-M94)
- RCR25EN (100kΩ~33MΩ), RCR50EN (100kΩ - 33MΩ) and RCR60 (100kΩ - 56MΩ) is approved by EN6234-68-1 G.10 safety
- 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.

| Type | Dimensions inches (mm) | | | | | |
|---------------------|---|---------------|---------------|---|----------------|--------------------------|
| | L | C (max.) | t (max.) | D | d (nom.) | I* |
| RCR16 | .126±.008 (3.2±0.2) | .134 (3.4) | — | .067 ^{+0.08} _{-.004} (1.7 ^{+0.2} _{-0.1}) | .018 (0.45) | .787 Min. (20.0 Min.) |
| RCR25 RCR25EN | .248±.02 (6.3±0.5) | .28 (7.1) | — | .098±.02 (2.5±0.5) | .024 (0.6) | |
| RCR50(+) RCR50EN | .374±.039 (9.5±1.0) | — | .118 (3.0) | .138±.016 (3.5±0.4) | .028 (0.7) | |
| RCR60 | .374 ^{+0.039} _{-.004} (9.5 ^{+1.0} _{-0.2}) | — | .118 (3.0) | .157±.02 (4.0±0.5) | .031 (0.8) | |
| RCR75 | .472±.039 (12±1.0) | — | .118 (3.0) | .236 ^{+0.039} _{-.016} (6.0 ^{+1.0} _{-0.4}) | .031 (0.8) | |
| RCR100 | .610±.039 (15.5±1.0) | — | .118 (3.0) | .236 ^{+0.039} _{-.016} (6.0 ^{+1.0} _{-0.4}) | .031 (0.8) | |

ordering information

| RCR | 50 | EN | C | T52 | A | 105 | J |
|------|---|---|----------------------|--|---|--|------------------|
| Type | Power Rating | Safety Appr. Marking | Termination Material | Taping and Forming | Packaging | Nominal Resistance | Tolerance |
| RCR | 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 ±5% 3 significant figures + 1 multiplier for ±1% | F: ±1% J: ±5% |

applications and ratings

| Part Designation | Power Rating @ 70°C | Minimum Dielectric Withstanding Voltage | Resistance Range E-24, E-96 (F±1%) | Resistance Range E-24 (J±5%) | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temperature Range |
|------------------|---------------------|---|------------------------------------|------------------------------|----------------------------------|-----------------------------------|-----------------------------|
| RCR16 | 0.25W | 300V | 100kΩ - 5.1MΩ | 100kΩ - 5.1MΩ | 500V | 1000V | -55°C to +155°C |
| RCR25 RCR25EN | | | 100kΩ - 9.1MΩ | 100kΩ - 33MΩ | DC 1600V AC 1150V | DC 2000V AC 1500V | |
| RCR50 | 0.5W | 700V | 3.3Ω - 910kΩ | 3.3Ω - 910kΩ | 2000V | 2500V | |
| RCR50+ | | | 1MΩ - 9.1MΩ | 1MΩ - 12MΩ | | | |
| RCR50EN | | | 100kΩ - 9.1MΩ | 100kΩ - 33MΩ | | | |
| RCR60 | 1.0W | 700V | 100kΩ - 9.1MΩ | 100kΩ - 56MΩ | 4000V | 5000V | |
| RCR75 | 2.0W | | 100kΩ - 9.1MΩ | 100kΩ - 100MΩ | | | |
| RCR100 | 3.0W | 1000V | 100kΩ - 9.1MΩ | 100kΩ - 51MΩ | 5000V | | |

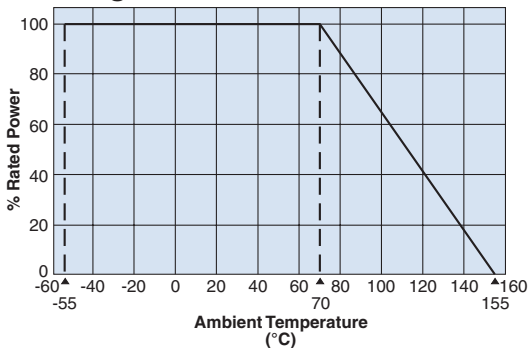
For further information on packaging, please refer to Appendix C.

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

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environmental applications

Derating Curve

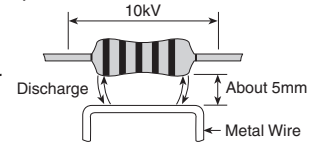


For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.

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.

Approvals Awarded

| Type | UL1676 & c-UL (CSA-C22.2 No.1-M94) | EN60065 14.1 Test a | EN60065 14.1 Test b | EN62368-1 G.10 |
|---------|------------------------------------|---------------------|---------------------|----------------|
| RCR25EN | — | — | ○ | ○ |
| RCR50+ | — | — | — | — |
| RCR50EN | ○(1MΩ~12MΩ) | ○ | ○ | ○ |
| RCR60 | — | ○ | ○ | ○ |

Performance Characteristics

| Parameter | Requirement Δ R ±(% + 0.05%) | | | Typical | Test Method | | |
|------------------------------------|---|--------------|------------------|---------|---|-------------------|-------------------------------|
| | Limit | | | | | | |
| Resistance | Within regulated tolerance | | | — | Measuring points are 10mm ± 1mm from the end cap | | |
| T.C.R. | Type | T.C.R. | Resistance Range | — | +25°C/+125°C | | |
| | RCR16 | ±200ppm/°C | 100kΩ - 5.1MΩ | | | | |
| | RCR25 (EN) | ±350ppm/°C | 100kΩ - 33MΩ | | | | |
| | RCR50 (+) | ±500ppm/°C | 3.3Ω - 91kΩ | | | | |
| | | ±350ppm/°C | 100kΩ - 33MΩ | | | | |
| | RCR50EN | ±350ppm/°C | 100kΩ - 33MΩ | | | | |
| | RCR60 | ±350ppm/°C | 100kΩ - 56MΩ | | | | |
| | RCR75 | ±350ppm/°C | 100kΩ - 100MΩ | | | | |
| RCR100 | ±200ppm/°C | 100kΩ - 51MΩ | | | | | |
| 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 ± 5°C, 10 seconds ± 1 second or 350°C ± 10°C, 3.5 seconds ± 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 ± 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 ± 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/cm², f: 28kHz, Temperature: 35°C ± 5°C | | |
| Surge Withstanding | 10% | | | 2.5% | Discharge test: 2kV - 10kV, 0.01μF capacitor discharge pulse, 10 times (1 pulse/5 seconds maximum) | | |
| | Type | RCR16 | RCR25 RCR25EN | | | RCR50, RCR50+ | RCR50EN, RCR60, RCR75, RCR100 |
| | Applied Voltage | 2kV | 3kV | | | 3.3Ω - 6.2Ω: 10kV | 10kV |
| | | | | | | 6.8Ω - 10Ω: 7kV | |
| | | | | | | 11Ω - 9.1kΩ: 5kV | |
| 10kΩ - 91kΩ: 7kV | | | | | | | |
| 100kΩ - 33MΩ: 10kV | | | | | | | |
| EN60065 Test (RCR50EN, RCR60 only) | 20% | | | — | Discharge test: 10kV, 1000pF capacitor discharge pulse, 50 times (1 pulse/5 seconds maximum) | | |

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