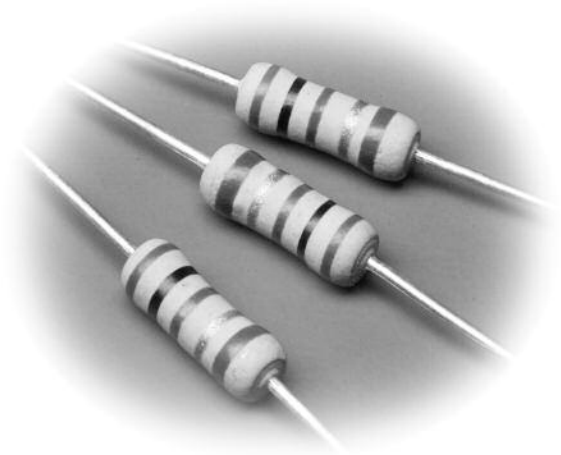
KOA SPEER ELECTRONICS, INC.

RCR

anti-surge power type leaded resistor

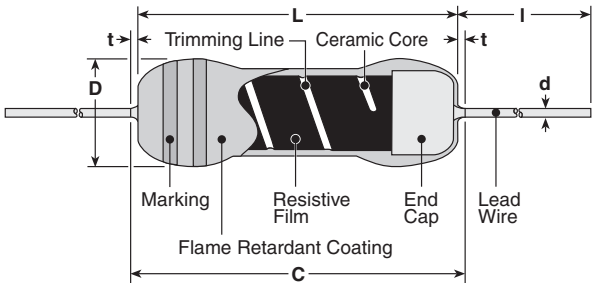
EU RoHS COMPLIANT



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 EN60065 14.1 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.)	l*
RCR16	.126±.008 (3.2±0.2)	.134 (3.4)	—	.067 +.008 -.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 +.039 -.004 (9.5 +1.0 -0.2)					
RCR75	.472±.039 (12±1.0)	—	.118 (3.0)	.157±.02 (4.0±0.5)	.031 (0.8)	
RCR100	.610±.039 (15.5±1.0)	—	.118 (3.0)	.236 +.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

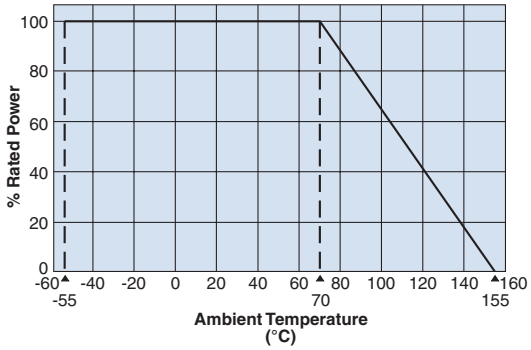
Part Designation	Power Rating @ 70°C	Minimum Dielectric Withstanding Voltage	Resistance Range E-24, E-96 (F±1%)	Resistance Range E-24 (J±5%)	Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage	Operating Temperature Range
RCR16	0.25W	300V	100kΩ - 5.1MΩ	100kΩ - 5.1MΩ	500V	1000V	-55°C to +155°C
RCR25 RCR25EN		700V	100kΩ - 9.1MΩ	100kΩ - 33MΩ	DC 1600V AC 1150V	DC 2000V AC 1500V	
RCR50	0.5W		3.3Ω - 910kΩ	3.3Ω - 910kΩ	2000V	2500V	
				13MΩ - 33MΩ			
RCR50+			1MΩ - 9.1MΩ	1MΩ - 12MΩ			
RCR50EN			100kΩ - 9.1MΩ	100kΩ - 33MΩ			
RCR60	1.0W		100kΩ - 9.1MΩ	100kΩ - 56MΩ	4000V	5000V	
RCR75	2.0W		100kΩ - 9.1MΩ	100kΩ - 100MΩ	5000V		
RCR100	3.0W	1000V	100kΩ - 9.1MΩ	100kΩ - 51MΩ			

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. 11/15/17

environmental applications

Derating Curve



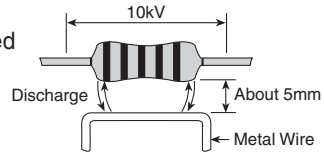
For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.

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

<table>
<tr><th>Parameter</th><th>Requirement Δ R ±(% + 0.05Ω)
Limit</th><th>Typical</th><th>Test Method</th></tr>
<tr><td>Resistance</td><td>Within regulated tolerance</td><td>—</td><td>Measuring points are 10mm ± 1mm from the end cap</td></tr>
<tr><td>T.C.R.</td><td>
<table>
<tr><th>Type</th><th>T.C.R.</th><th>Resistance Range</th></tr>
<tr><td>RCR16</td><td>±200ppm/°C</td><td>100kΩ - 5.1MΩ</td></tr>
<tr><td>RCR25 (EN)</td><td>±350ppm/°C</td><td>100kΩ - 33MΩ</td></tr>
<tr><td rowspan="2">RCR50 (+)</td><td>±500ppm/°C</td><td>3.3Ω - 91kΩ</td></tr>
<tr><td>±350ppm/°C</td><td>100kΩ - 33MΩ</td></tr>
<tr><td>RCR50EN</td><td>±350ppm/°C</td><td>100kΩ - 33MΩ</td></tr>
<tr><td>RCR60</td><td>±350ppm/°C</td><td>100kΩ - 56MΩ</td></tr>
<tr><td>RCR75</td><td>±350ppm/°C</td><td>100kΩ - 100MΩ</td></tr>
<tr><td>RCR100</td><td>±200ppm/°C</td><td>100KΩ - 51MΩ</td></tr>
</table>
</td><td>—</td><td>+25°C/+125°C</td></tr>
<tr><td>Overload</td><td>1%</td><td>0.5%</td><td>Rated voltage x 2.5 or maximum overload voltage for 5 seconds, whichever is less</td></tr>
<tr><td>Resistance to Solder Heat</td><td>1%</td><td>0.5%</td><td>260°C ± 5°C, 10 seconds ± 1 second or 350°C ± 10°C, 3.5 seconds ± 0.5 seconds</td></tr>
<tr><td>Terminal Strength</td><td>No mechanical damage</td><td>—</td><td>Twist 360°, 5 times</td></tr>
<tr><td>Rapid Change of Temperature</td><td>1%</td><td>0.5%</td><td>-55°C (30 minutes)/+155°C (30 minutes), 5 cycles</td></tr>
<tr><td>Moisture Resistance</td><td>5%</td><td>2.5%</td><td>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</td></tr>
<tr><td>Endurance @ 70°C</td><td>5%</td><td>2.5%</td><td>70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle</td></tr>
<tr><td>Resistance to Solvent</td><td>No visible damage to protective coating and marking</td><td>—</td><td>Isopropyl alcohol with ultrasonic washing, 2 minutes
Power: 0.3W/cm², f: 28kHz, Temperature: 35°C ± 5°C</td></tr>
<tr><td>Surge Withstanding</td><td>10%</td><td>2.5%</td><td>Discharge test: 2kV - 10kV, 0.01μF capacitor discharge pulse, 10 times (1 pulse/5 seconds maximum)
<table>
<tr><th>Type</th><th>RCR16</th><th>RCR25
RCR25EN</th><th>RCR50, RCR50+</th><th>RCR50EN,
RCR60, RCR75,
RCR100</th></tr>
<tr><td rowspan="5">Applied Voltage</td><td rowspan="5">2kV</td><td rowspan="5">3kV</td><td>3.3Ω - 6.2Ω: 10kV</td><td rowspan="5">10kV</td></tr>
<tr><td>6.8Ω - 10Ω: 7kV</td></tr>
<tr><td>11Ω - 9.1kΩ: 5kV</td></tr>
<tr><td>10kΩ - 91kΩ: 7kV</td></tr>
<tr><td>100kΩ - 33MΩ: 10kV</td></tr>
</table>
</td></tr>
<tr><td>EN60065 Test
(RCR50EN, RCR60 only)</td><td>20%</td><td>—</td><td>Discharge test: 10kV, 1000pF capacitor discharge pulse, 50 times (1 pulse/5 seconds maximum)</td></tr>
</table>