KOA SPEER ELECTRONICS, INC.

RCR

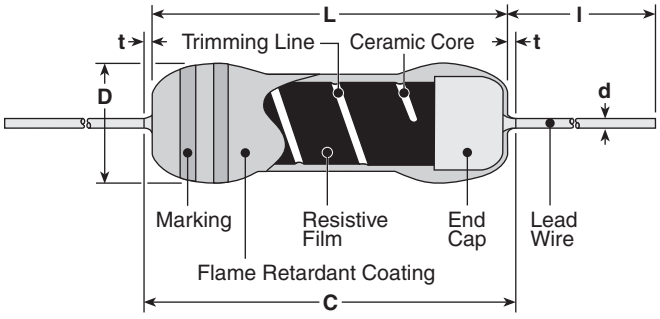
anti-surge power type leaded resistor

EU RoHS COMPLIANT

features

- Excellent anti-surge characteristics
- High resistance range
- RCR50EN (1MΩ - 12MΩ), RCR50+ and RCR60 (resistance range 1MΩ - 12MΩ) is recognized by UL1676 (File #E159326) CSA-C22.2 No. 1-M94
- RCR50EN (100kΩ - 33MΩ) and RCR60 (resistance range 470kΩ - 56MΩ) approved to EN60065 safety requirements (BSI, VDE)
- High working voltage available in RCR60
- RuO_2 thick film resistive film
- Marking: Blue-gray body color with color-coded bands
- Products with lead-free terminations meet EU RoHS requirements. Pb located in glass material, electrode and resistor element is exempt per Annex 1, exemption 5 of EU directive 2005/95/EC

dimensions and construction



	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	.248±.02 (6.3±0.5)	.28 (7.1)	—	.098±.02 (2.5±0.5)	.024 (0.6)	
NEW	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

New Part #

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+: + RCR50EN: EN Blank: Others	C: SnCu	RCR16: T26, T52 RCR25: T26, T52 RCR50(+, EN): T52 RCR60: T52 RCR75: T52 RCR100: T521, T631 L,M Forming	A: Ammo R: Reel	2 significant figures + 1 multiplier for ±5% 3 significant figures + 1 multiplier for ±1%	F: ±1% J: ±5%

applications and ratings

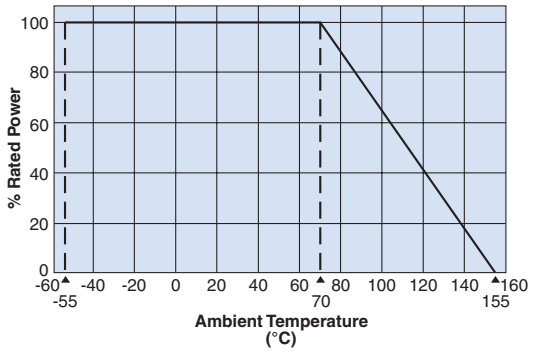
	Part Designation	Power Rating @ 70°C	Minimum Dielectric Withstanding Voltage	Resistance Range E-24, E-96 (F±1%)	Resistance Range E-24 (J±5%)	Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage	Operating Temperature Range
	RCR16	0.25W	300V	100kΩ - 1MΩ	100kΩ - 5.1MΩ	500V	1000V	-55°C to +155°C
	RCR25		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			
NEW	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 - 33MΩ			

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. 12/29/08

environmental applications

Derating Curve

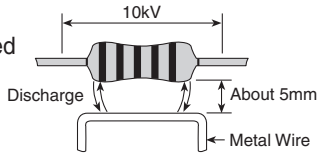


Notice of Surge Load

Surge withstanding load voltage for the resistors cannot be guarantee 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. Peck 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 Δ R ±(% + 0.05Ω) Limit	Typical	Test Method
Resistance	Within regulated tolerance	—	Measuring points are 10mm ± 1mm from the end cap
T.C.R.	Type / T.C.R. / Resistance Range: RCR16: ±200ppm/°C: 100kΩ - 5.1MΩ RCR25: ±350ppm/°C: 100kΩ - 33MΩ RCR50 (+): ±500ppm/°C: 3.3Ω - 91kΩ RCR50 (+): ±350ppm/°C: 100kΩ - 33MΩ RCR50EN: ±350ppm/°C: 100kΩ - 33MΩ RCR60: ±350ppm/°C: 100kΩ - 56MΩ RCR75: ±350ppm/°C: 100kΩ - 100MΩ RCR100: ±350ppm/°C: 470kΩ - 33MΩ	—	Room temperature/100°C up
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 / RCR50, RCR50+ / RCR50EN, RCR60, RCR75, RCR100 Applied Voltage / 2kV / 3kV / 3.3Ω - 6.2Ω: 10kV; 6.8Ω - 10Ω: 7kV; 11Ω - 9.1kΩ: 5kV; 10kΩ - 91kΩ: 7kV; 100kΩ - 33MΩ: 10kV / 10kV
EN60065 Test (RCR50EN, RCR60 only)	20	—	Discharge test: 10kV, 1000pF capacitor discharge pulse, 50 times (1 pulse/5 seconds maximum)