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DIRECT

Electronics Tech.

(RCR)

Pulse Load

Anti-Surge Resistors

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▶ Product Introduction**||| Thick-film anti-surge resistor handles large pulse loading.****Features :**

- High power at small sizes
- Max working voltage up to 3000V
- Lead (Pb)-free and RoHS compliant
- Operating temperature range: -20°C ~+155°C
- Metal glaze power film, axial leaded type
- Max overload voltage 5000V,
Tolerances: J (±5%)

Applications :

- Ballasts
- Amplifiers
- Industrial power supplies
- Telecommunications
- Household appliances
- Automotive circuits, Computer, Instrumentation

A new range of anti-surge axial leaded power resistors, metal glaze resistive element on ceramic substrates, from Direct Electronics.

A carbon film resistor replacement, the new RCR series thick-film style resistors offer numerous benefits over the previous style devices, namely reduced costs, excellent thermal compliance, optimized a variety of surge capabilities and better solder joint reliability against temperature cycles.

Direct succeeded in commercializing the compact thick-film type leaded resistors with high power and high anti surge characteristics, meeting latest design engineer requirements and making the parts suitable for industrial, measurement and telecommunication applications as well as for automotive circuits, like Electrical Control Units (ECU) and Air-Bag Systems.

The anti-surge characteristics of Direct's latest metal glaze power film style resistors are superior to standard metal film resistors. The power film types of RCR resistors are available: 0.25W to 10W power rating, max working voltage up to 3000V and max overload voltage 5000V. The resistance range is 1Ω ~ 100MΩ at operating temperature range -20°C ~+155°C.

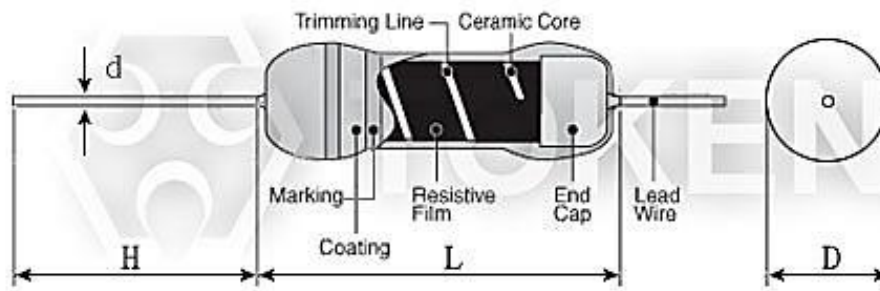
All RCR series devices are RoHS-compliant, and compatible with high temperature soldering processes normally employed for lead free solders. Resistors are also available in various forming styles and different leads for different applications. Contact us with your specific needs. For more information, please link to Direct official website "[General Purpose Resistors](#)".



► **General Specifications**

General Specifications (RCR) (Unit: mm)

Type	Power Rating	L	D	d ± 0.05	H
RCR25	1/4W	6.5±1	2.3±0.5	0.5 ~ 0.6	26±3
RCR50	1/2W	9.5±1	3.4±0.5		
RCR100	1W	12.0±1	4.0±0.5	0.7 ~ 0.8	
RCR200	2W	16.0±1	6.1±0.5		
RCR300	3W	17.5±1	6.0±0.5		
RCR500	5W	24.0±1	8.0±0.5		
RCR1000 *	10W	max.50	max.10		



Anti-Surge (RCR) Dimensions (Unit: mm)

● Remark: RCR1000 is custom design and on request.

► **Power Rating**

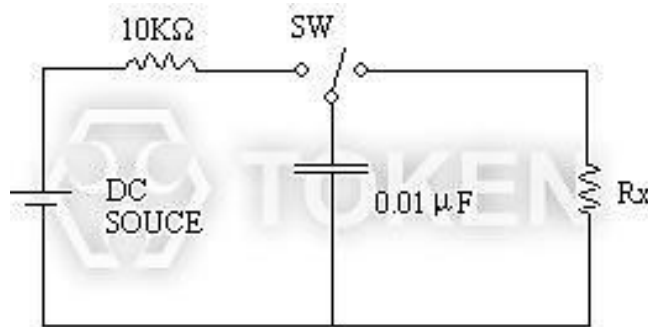
Anti-Surge Resistors (RCR)

Type	Power Rating	Max Working Voltage	Max Overload Voltage	Dielectric With-standing Voltage	TCP.(ppm/°C)	Resistance Range E24.J(±5%)(Ω)	Operating Temperature
RCR25	1/4W	500V	700V	500V	±350	1 ~ 33M	-20°C ~+155°C
RCR50	1/2W	1000V	1500V	600V	±350	1 ~ 68M	
RCR100	1W	1500V	2500V	800V	±350	1 ~ 100M	
RCR200	2W	2000V	3000V	800V	±350	1 ~ 100M	
RCR300	3W	2500V	4000V	1000V	±350	1 ~ 100M	
RCR500	5W	3000V	5000V	1000V	±350	1 ~ 100M	

▶ **Loading Conditions**

Anti-Surge Resistors (RCR)

Power	Resistance Range (Ω)	Surge Voltage	Anti-Surge Characteristics	Surge Test Condition
0.25 W	$50K < R$	3KV	(2.5 Sec. ON + 2.5 Sec. Off) \times 10 Cycles ; $\Delta R \leq \pm(50\%R+0.1\Omega)$	In accordance with IEC 65 Safety specification.
0.5 W	$10K \leq R < 100K$	3KV		
	$100K \leq R < 360K$	5KV		
	$360K \leq R < 1M$	7KV		
	$1M \leq R$	10KV		



Test Circuit

Anti-Surge (RCR) Test Circuit

▶ **Order Codes**

Anti-Surge Resistors (RCR)

RCR50	1/2W	220KR	J	TB
Part Number	Rated Power (W)	Resistance Value (Ω)	Resistance Tolerance (%)	Package
RCR		1R0 1.0 Ω	J $\pm 5\%$	P Bulk
		100R 100 Ω		TB Taping Box
		220K 220K Ω		
		22M 22M Ω		

► General Information

General Purpose Resistors with Customized Service

Direct Electronics is expanding business to include a broad range of General Purpose Resistor products designed for high volume applications. This expanded range of commercial resistor presents a more comprehensive product offering for Customer Experience Management (CEM) and other high volume customers that require quality products at competitive pricing.

Backed by the same customer service, technical support and quality assurance that Direct has always provided, these new commercial products enable you the opportunity to source a wider range of resistors from a trusted supplier.

General Use

When an ambient temperature exceeds a rated ambient temperature, resistor shall be applied on the derating curve by derating the load power. General purpose resistor under overloads is not combustion resistant and is likely to emit, flame, gas, smoke, red heat, etc. Flame retardant resistor generally emits smoke and red heat in a certain power and over but do not emit fire or flame.

When resistors are shielded or coated with resin etc., stress from the storage heat and the resins are applied. So, performance and reliability should be checked well before use.

When a voltage higher than rated is applied in a short time (single pulse, repeated pulses, surge, etc.), it does not necessarily ensure safety that an effective wattage is not higher than a rated wattage. Then consult with us with your specified pulse wave shape. Resistors shall be used in a condition causing no dew condensation.

Keep temperature from rising by choosing resistor with a higher rated capacity; do not use a component having the exact load value required. For considerations of safety in extended period applications, the rating should be more than four times higher than the actual wattage involved, but never use resistors at less than 25% of its rated power.

In applications where resistors are subject to intermittent current surges and spikes, be sure in advance that the components selected are capable of withstanding brief durations of increased load.

Do not exceed the recommended rated load. Resistor must use within the rated voltage range to prevent the shortening of service life and/or failure of the wound resistance elements.

Minimum load: Resistor must be utilized at 1/10 or more of the rated voltage to prevent poor conductance due to oxidation build-up. For basic particulars for cautions, refer to EIAJ Technical Report RCR-2121 "Guidance for care note on fixed-resistors".

