

Carbon Composition Resistors

The High Pulse Withstanding Carbon Composition Resistors Handle Big Peaks and Pulses

► Preview

The high pulse withstanding capability of the CCR series of carbon composition resistors from Token Electronics offers designers a compact solution for applications involving high voltages and high-energy pulses.

Though, many resistor manufacturers claim to offer carbon composition replacements. However, these wirewound or thick film alternatives do not fully match the pulse performance and low inductance of carbon composition.

Token's CCR series now offers the industry a carbon composition resistor made up of a solid rod of conductive composite material, the chemical composition of which is altered to produce different resistance values.

The main advantage of carbon composition is their pulse handling capability. This is due to the fact that the entire rod conducts and so the thermal mass is far higher, which results in a higher energy capability. Due to the need for higher peak voltages, the CCR range is perfect for vehicle ignition system applications, medical monitoring equipment and as output resistors in defibrillators.

The standard carbon composition CCR resistor offers a power rating of 1/4W and 1/2W at 25°C and is made up of a solid rod of conductive composition material, which can be altered to produce different resistance values. With a typical resistance range of $2.2\Omega \sim 22M\Omega$, resistance tolerance is J($\pm 5\%$) and K($\pm 10\%$). Resistors with 5% and 10% tolerance have four bands indicating value and tolerance in accordance with IEC62.

Our custom solutions are designed to address your need for technical and economic success in a timely manner. Contact us with your specific needs.



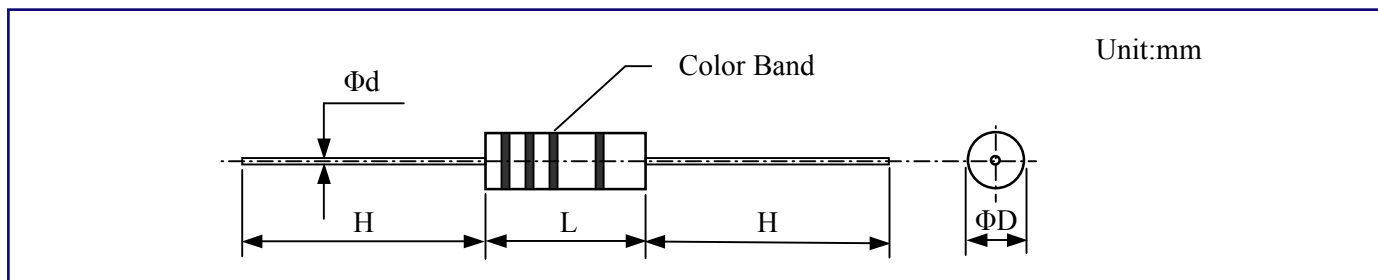
► Features

- Low inductance
- Solid rod carbon composition
- Power rating 1/4W and 1/2W
- Resistance range $2.2\Omega \sim 22M\Omega$
- Resistance tolerance J($\pm 5\%$) and K($\pm 10\%$)
- High pulse withstanding and high energy capability
- Products with Pb-free Terminations and RoHS compliant

► Applications

- Strobe Lighting
- High Power Lighting
- Medical defibrillators
- Welding, Automotive
- Inrush Current Limiting
- High Voltage Power Supplies
- Protection (e.g. Discharge Circuits, Surge Protection)

► Dimensions (Unit: mm)



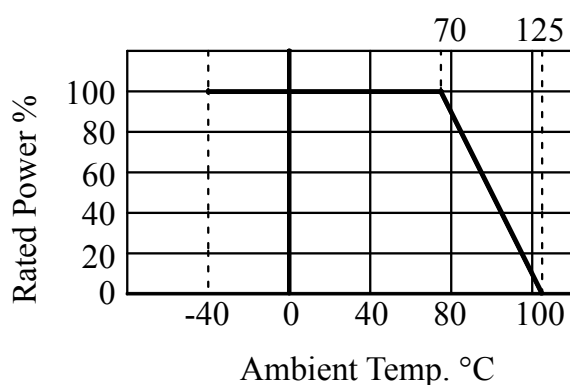
Type	Power Rating	L		Φ D	H	Φ d
CCR	1/4W	6.3	+1.0 -1.5	2.3±0.3	27±3	0.60±0.05
CCR	1/2W	10	+0.5 -1.5	3.5±0.3	27±3	0.68±0.05

► Ratings Specifications

Type	Power Rating	Resistance Range	Tolerance E12,E24	Max Working voltage	Max overload Voltage	Rated Ambient Temp.	Operating Temp. Range
CCR	1/4W	2.2Ω ~12MΩ	J(±5%)K±10%	250V	350V	+70°C	-40°C~+125°C
CCR	1/2W	2.2Ω ~22MΩ		400V	700V	+70°C	-40°C~+125°C

Rated Voltage= $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$ or Max. working voltage, whichever is lower.

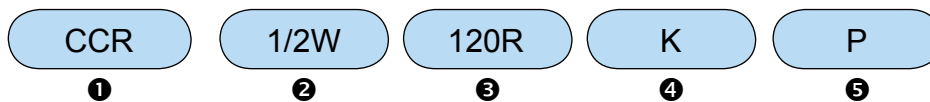
► Derating Curve



Performance

Description		Performance Requirements		Test Method
Resistance Temperature Coefficient	Resistance Range	Maximum Resistance Value Change %		Test Temperature +20°C /-40°C /+20°C /+100°C /+20°C
		-40~+20°C	+20~+100°C	
	<1KΩ	±6.5%	±5.0%	
	1.1KΩ ~10KΩ	±10%	±6.0%	
	11KΩ ~100KΩ	±13%	±7.5%	
	11KΩ ~1MΩ	±15%	±10%	
	1.1MΩ ~10MΩ	±20%	±15%	
	>11MΩ	±25%	±20%	
Short-time Overload		$\Delta R \leq \pm 2.5\%$		Rate Voltage*2.5 or maximum overload voltage (the lower)5sec.
With Standing Voltage		No flashover or breakdown		2times maximum working voltage 1 minute
Terminal Strength	Pulled	$\Delta R \leq \pm 2\%$ No visible damage		Load 10N 10s
	Winded			Load 10N 4*90°
	Twisted			3*360° in opposite direction
Resistance to vibration		No visible damage		10~50Hz 3 direction 2 hours each
Solder-heat Resistance		$\Delta R \leq \pm 5\%$ Marks legible, no visible damage		350°C 4mm from the body, 3 seconds
Solderability		At least 95% if the dipping surface must be covered by new solder, no flaws gathered.		235°C 2mm from the body, 2 seconds
Temperature Cycle		$\Delta R \leq \pm 2\%$ No visible damage		-40°C(30min.)/85°C(30min.)5 cycles
Humidity		$\Delta R \leq \pm 10\%$ No visible damage		40°C 95% RH 240 hours
Load Life		$\Delta R \leq \pm 10\%$ No visible damage, marks legible		Rated voltage or maximum working voltage, 1.5 hours on, 0.5 hours off, 40°C 1000 hours

How to Order



① Part Number: CCR

② Rated Power (W)

③ Resistance Value (Ω)

Code	Resistance Value
2R2	2.2Ω
120R	120Ω
1M2	1.2MΩ
22M	22MΩ

④ Resistance Tolerance (%)

Code	Resistance Tolerance
J	±5%
K	±10%

⑤ Package

Code	Package
P	Bulk

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