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# **DIRECT**

## **Electronics Tech.**

### **(RMCC)**

# **High Voltage Metal Ceramic Resistor**

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**▶ Product Introduction****Metal Ceramic Resistor is The Way Allows Energy and Power to be Uniformly Distributed.****Features :**

- Operating Temperature  $-40^{\circ}\text{C} \sim 155^{\circ}\text{C}$ .
- Resistance Tolerance K( $\pm 10\%$ ), M( $\pm 20\%$ ).
- Typical resistance range 470 ohm  $\sim$  100 Kohm.
- Replaces 1 and 2 watt carbon composition resistors.
- Suitable for noise suppressor of engine ignition system.
- High peak power, Reliable with non-disconnection failure.
- Rated Wattage up 5W, meets high energy density demands.

**Applications :**

- Radar, Motor Drives, Broadcast Transmitters,
- X-Ray, Lasers, Medical Defibrillators,
- Dynamic Braking, Soft-start/Current-limit,
- Snubber Circuits, Dummy Loads, Energy Research,
- RF Amplifiers, Semiconductor Process, Power Conditioning.

Following market demands, Direct Electronics provided an extent of Bulk Ceramic Composition RMCA, RMCB Series to RMCC Series. The cap and lead assemblies are pressed onto the RMCC resistor core, finishing the resistor and providing rugged terminal attachment.

Direct Surge Resistors - RMCC Series are primarily designed for high voltage, power charging/discharging circuits, surge energy applications and conform to the RoHS directive and Lead-free. For customized designs, tighter tolerances, non-standard technical requirements, or custom special applications, please contact us, or link to Direct official website "[High Voltage Resistors](http://www.direct-token.com)" to get more information.

**Bulk Ceramic Construction:**

- Bulk metal ceramic resistors that consists of a clay, alumina, and ceramic filler that has been blended and pressurized into a resistive core and then covered with a molded outer insulating core.

**Replacement Carbon-Composition Resistors:**

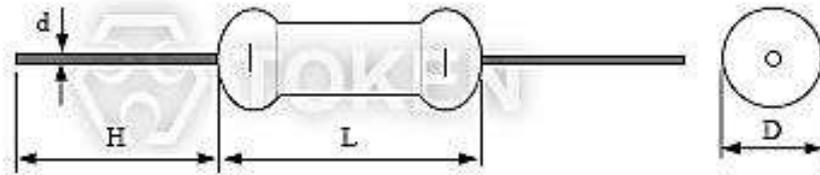
- Design requirements for custom sizes, surface mount, or special footprints can be met easily.
- In cases where several carbon-composition resistors have been used together in an array to achieve a particular rating, they have been replaced with a single bulk ceramic resistor, frequently at a lower installed cost.



► **General Specifications**

**General Specifications (RMCC)(Unit: mm)**

| Model | Style | Rated Wattage | Dimensions (mm) |         |      |          |
|-------|-------|---------------|-----------------|---------|------|----------|
|       |       |               | L               | D       | H    | d        |
| RMC   | C     | 1             | 11±1.5          | 4.8±0.5 | 25±2 | 0.8±0.05 |
|       | C     | 2             | 19±1.5          | 4.8±0.5 | 25±2 | 0.8±0.05 |
|       | C     | 3             | 25±2.0          | 4.8±0.5 | 25±2 | 0.8±0.05 |
|       | C     | 5             | 25±2.0          | 7.8±0.5 | 30±3 | 1.0±0.05 |



**Bulk Ceramic Composition Resistors (RMCC) Dimensions**

## ► Electrical Characteristics

### Electrical Characteristics (RMCA, RMCB)

| Item                       | RMCC               |           |           |           |
|----------------------------|--------------------|-----------|-----------|-----------|
| Power Rating at 25°C (W)   | 1                  | 2         | 3         | 5         |
| Operating Temp. Range (°C) | -40~155            |           |           |           |
| Resistance Tolerance       | K (±10%), M (±20%) |           |           |           |
| Resistance Range (Ω)       | 470~33K            | 1K~56K    | 1K~100K   | 470~33K   |
| Max. Working Voltage (V)   | 300                | 350       | 400       | 500       |
| T.C.R (PPM/°C)             | -40°C~25°C         | -750~3300 | -750~3300 | -750~3300 |
|                            | 25°C~155°C         | -750~2600 | -750~2600 | -750~2600 |
| Max. Pulse Voltage (KV)    | 8                  | 15        | 20        | 25        |
| Moisture Resistance (%)    | 10                 | 10        | 10        | 10        |

#### Non-Inductive Performance:

- Chemically inert and thermally stable, the resistors are inherently non-inductive because of their bulk ceramic construction, which allows energy and power to be uniformly distributed through the entire ceramic resistor body with no film or wire to fail.
- The bulk ceramic material also allows simple efficient resistor designs that enable the designer to minimize the resistor package size while providing the required performance and reliability.

## ► Order Codes

### Order Codes (RMCC)

| RMC         | 2W              | c       | 51K                  |       | K                        |      |
|-------------|-----------------|---------|----------------------|-------|--------------------------|------|
| Part Number | Rated Power (W) | Style   | Resistance Value (Ω) |       | Resistance Tolerance (%) |      |
| RMC         | 1W              | c Style | 510R                 | 510Ω  | K                        | ±10% |
|             | 2W              |         | 5K1                  | 5.1KΩ | M                        | ±20% |
|             | 3W              |         | 51K                  | 51KΩ  |                          |      |
|             | 5W              |         | 68K                  | 68KΩ  |                          |      |



## ► General Information

### Cost Effective Complete Selection of High Voltage Components

Direct high voltage series can be specified for use in industrial and general purpose high voltage systems, as well as a complete selection of high resistance, Hi-Meg, high-voltage, high frequency, and bulk ceramic resistors for higher average power dissipation. These High Resistance, High Frequency, High Resistance resistors combine the proven performance of Direct resistance system with new cost efficient design elements and high voltage applications.

Detailed specifications, both mechanical and electrical, please contact our sales representative for more information.

### High Voltage Applications

Resistors produced from Serpentine Pattern Screen Printing Design or bulk ceramic materials have displayed several key advantages in demanding high-voltage situations, including both continuous-wave and pulse applications. These include radar and broadcast transmitters, x-ray systems, defibrillators, lasers, and high-voltage semiconductor process equipment applications, where resistors must handle peak voltage anywhere from 8KV to 75KV.

Typical applications include current limit in capacitor charge/discharge, crowbar, and tube-arc circuits. In these uses, bulk ceramic resistors provide low inductance, high average power per unit size, stability at high voltage, and durability at extreme peak-power levels. Film resistors typically cannot withstand high-voltage pulse applications.

### RF/Digital Loads and High-Frequency Applications

Direct Non-Inductive Voltage Resistors are used extensively for high-frequency RF loads in broadcast and communication equipment because of their non-inductive characteristics. They provide excellent non-inductive power-handling capacity at frequencies up to the gigahertz range, with no sacrifice in power dissipation.

Film resistors may provide the needed non-inductive characteristics required by such RF applications, but they have size limitations and present reliability problems due to potential film burnout. This is especially true in advanced digital applications such as digital radio and TV transmitters involving pulses at high frequencies.

### Application Notes

- Due to the high voltage which can appear between the end cap and any adjacent metal part, resistors should be mounted at an adequate distance from other conductors.
- An appropriate number of resistors may be screwed together as a stick to provide an assembly which will be capable of withstanding any desired voltage, providing no individual resistor is subject to a greater stress or power dissipation than is recommended in its data sheet, and that appropriate anticorona devices are fitted.
- The axial termination should not be bent closer than twice the diameter of the terminal wire from the body of the resistor. When resistors are required to be potted, the preferred encapsulant is a silicone compound.

### Oil Immersion

For some high voltage applications it is required to immerse the components in oil or gas to reduce the effects of corona and surface tracking. A special lacquer protected version of the resistor is available, suitable for immersion in transformer oil or SF6.

