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DIRECT

Electronics Tech.

(RMG20)
TO-220 Heat Sink Resistors

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Product Introduction

Direct power resistor TO-220 package deliver thermal efficiency.

Features :

- Molded Case for Protection and Easy to Mount.
- 20 Watt at 25℃ Case Temperature Heat Sink Mounted.
- Isolated Case, Non Inductive, TO-220 Style Power Package.

Applications :

- VHF Amplifiers, Snubber Circuits,
- Voltage Regulation,
- Load Resistor for Pulse Generators,
- High Speed Switching Power Supplies.

Providing design engineers with superior heat dissipation in a standard industry-recognized package, Direct Electronics has introduced a TO220-style power resistor using a highly reliable, economical copper power film.

The RMG20 Series, designed by Direct, are rugged resistors feature non-inductive performance and low thermal resistance, making them ideal for a variety of industrial applications such as power supplies, industrial controls and automotive, where cost effective performance and reliability are paramount.

The non-noble copper ink construction of the RMG20 Series resistor makes it an efficient alternative to other thick film leaded power resistors while maintaining the excellent thermal conductivity and heat dissipation necessary for demanding power applications.

With low resistance values at higher power ratings, Direct's proprietary resistor element ensures design engineers the highest quality non-inductive performance in an efficient package.

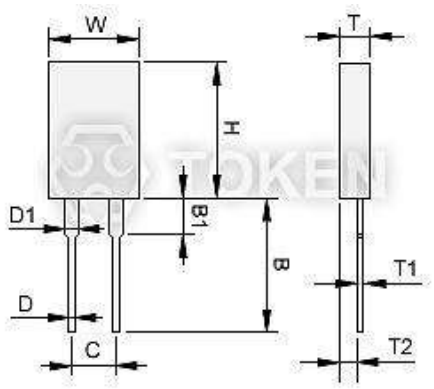
Operating temperatures range from -65℃ to +150℃.

Constructed with proprietary power-film copper conductors and alloy resistors on an alumina ceramic substrate, the RMG20 Series resistor features low thermal impedance for high power dissipation. Contact us with your specific needs. Please link to Direct official website "Power Resistors" for more information.

Dimensions

Dimensions (Unit: mm) (RMG20) TO220

Type	W	H	T	T1	T2	B	B1	C	D	D1
RMG20	10.15 ~ 10.67	16.00 ~ 16.52	2.92 ~ 3.44	0.40 ~ 0.60	1.52 ~ 2.04	11.43 ~ 13.97	2.54 ~ 4.06	4.82 ~ 5.34	0.66 ~ 0.86	1.14 ~ 1.40



TO220 Power Resistors (RMG20)
Dimensions (Unit: mm)

Specifications

Electrical Characteristics Specifications (RMG20) TO220

Resistance Range	Resistance Tolerance	TCR(PPM/℃)
0.05Ω~1Ω	±5.00% ±10.0%	-
2Ω~5Ω	±1.00% ±5.00% ±10.0%	±200
5Ω~10Ω	±1.00% ±5.00% ±10.0%	±100 ±200
11Ω~10KΩ	±0.50% ±1.00% ±5.00% ±10.0%	±50 ±100 ±200

- Operating Voltage:350V Max. Dielectric Strength: 1800VAC. Insulation Resistance: 10GΩmin.
- Working Temperature Range:-65℃ to +150℃. Resistance Value < 1Ω is Available

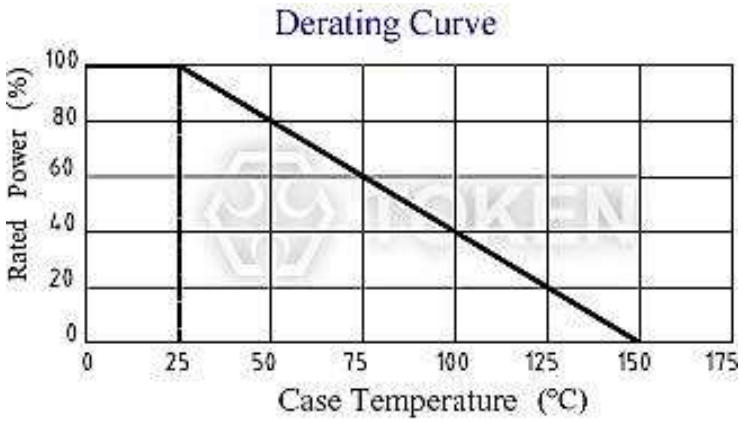
Characteristics

Environmental Characteristics (RMG20) TO220

Test Item	Specification	Test Method
Temperature Coefficient of Resistance	10Ω and above, ±50ppm/℃ 1Ω and 10Ω, (±100ppm)/℃	Referenced to 25℃, ΔR taken at +105℃
Short Time Overload	Δ R±0.3%	2 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds.
Load Life	Δ R±1.0%	MIL-R-39009, 2,000 hours at rated power.
Humidity (Steady State)	Δ R±0.5%	MIL-STD-202F, Method 103B 40℃, 90~95%RH, RCWV 1.5hours ON, 0.5hours OFF. Total 1000~1048 hours.
Thermal Shock	Δ R±0.3%	MIL-STD-202, Method 107G. -65℃~150℃,100 cycle
Terminal Strength	Δ R±0.2%	MIL-STD-202, Method 211, Cond.A(Pull Test) 2.4N.
Vibration, High Frequency	Δ R±0.2%	MIL-STD-202, Method 204, Cond.D.

- **Lead Material: Tinned Copper. Without a Heat Sink, when in Free Air at 25℃, the RMG20 is Rated for 2.25W.**
- **The Case Temperature Measurement Must be Made with a Thermocouple Contacting the Center of the Component Mounted on the Designed Heat Sink.**
- **Thermal Grease Should be Applied Properly.**

Derating Curve



(RMG20) Power Derating Curve

Order Codes

Order Codes (RMG20) TO220

RMG	20	J	P	D	10R
Part Number	Power Rating (W)	Resistance Tolerance (%)	Package	TCR (PPM/℃)	Resistance (Ω)

Resistance Tolerance (%)	
D	±0.5%
F	±1%
G	±2%
J	±5%
K	±10%

Package	
T	Tube
P	Bulk

TCR (PPM/℃)	
D	±50PPM/℃
E	±100PPM/℃
F	±200PPM/℃
-	No specified

Resistance (Ω)	
0R1	0.1Ω
10R	10Ω
1K	1KΩ
10K	10KΩ

General Information

Compact TO-Style Resistors are Low Cost

Direct Electronics TO-Style power film heat sink mountable resistors, TO-220 and TO-247 Style Packages, are designed for intermediate power applications and combines performance with an economical price.

TO-220 Power Resistors, TO-247 Power Resistors RMG series are ultra-precision and high power resistors encapsulated in the TO-220, TO-247 style power package. Power resistors are manufactured in 20W, 30W, 35W, 50W and 100W. Resistance element is electrically insulated from metal heat sink mounting tab. When properly mounted Direct's RMG** TO220/TO247 packaged power resistors provide up to 50/100 watts of steady state power. These very low inductance resistors are ideal for many industrial applications: power supplies, power controls and inrush/bleeder resistors.

Non-Inductive Design for High Frequency Applications

Direct's TO-Style Series satisfy demanding applications for accurate and stable power resistors housed in the convenient TO-Style case. The resistance element is isolated from the mounting tab by an alumina ceramic layer, providing very low thermal resistance and ensuring high insulation resistance between terminals and tab.

These isolated resistor element are constructed and packaged in a high temperature plastic case with a single screw metal tab for easy mounting to the heat sink. The non-inductive design makes these products especially useful in high frequency and high speed pulse applications.

Pulse-Loading Applications as Snubber or Bleeder Resistors

Direct's TO-Style resistors are designed for use in pulse-loading applications, as bleeder or snubber resistors in switching power supplies, industrial power drives, medical, test equipment, high power equipment such as uninterruptible power supplies (UPS), and other power distribution and power conversion applications.

The Power Film Resistors use an optimized process of Direct's thick film technology on an alumina substrate to achieve tolerances as low as ± 0.5 %, and up to ± 10 %. The Non-Inductive design and resistance values as low as 0.05 ohms are also ideal for current sensing applications.