



## TO - 220 Power Resistor / 功率电阻器

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Notice: Specification Changed or Version Updated will be posted at irregular intervals.  
All Updated and Final Specifications, Please Confirm with TOKEN ELECTRONICS REPRESENTATIVES.



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# TO-220 Power Resistors

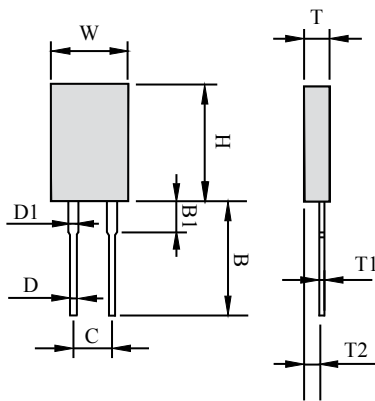
## TO-220 Power Resistors - RMG20 Series

### ► Power Resistor Features

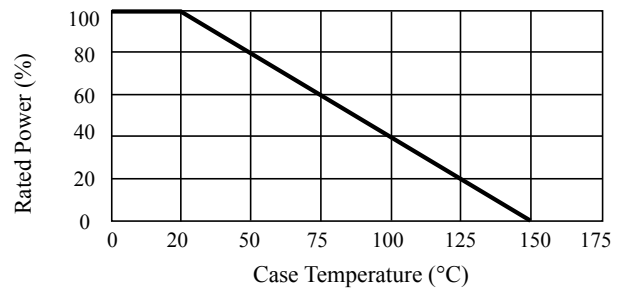
- 20 Watt at 25°C Case Temperature Heat Sink Mounted.
- TO-220 Style Power Package.
- Molded Case for Protection and Easy to Mount.
- Isolated Case.
- Non Inductive.

### ► Applications

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



Derating Curve



### ► Dimensions (Unit: mm)

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

### ► Electrical Characteristics Specifications

Resistance Range	Resistance Tolerance	TCR(PPM/°C)
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

- Note:1.Operating Voltage:350V Max.  
 2.Dielectric Strength: 1800VAC  
 3.Insulation Resistance: 10GΩmin.  
 4.Working Temperature Range:-65°C to +150°C  
 5.Resistance Value < 1Ω is Available





# TO-220 Power Resistors

## ► Environmental Characteristics

Test Item	Specification	Test Method
Temperature Coefficient of Resistance	10Ω and above, ±50ppm/°C 1Ω and 10Ω, (±100ppm)/°C	Referenced to 25°C, ΔR taken at +105°C
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°C, 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°C~150°C,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.

Note:1.Lead Material: Tinned Copper.

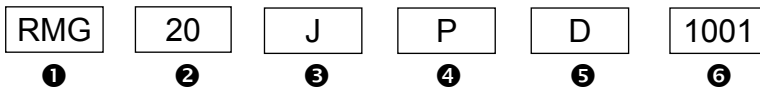
2.Without a Heat Sink, when in Free Air at 25°C, the RMG20 is Rated for 2.25W.

3.The Case Temperature is to be used for the Definition of the Applied Power Limit.

4.The Case Temperature Measurement Must be Made with a Thermocouple Contacting the Center of the Component Mounted on the Designed Heat Sink.

5.Thermal Grease Should be Applied Properly.

## ► How to Order



❶ Product Type: TO-220 Power Resistors

❷ Power Rating

Code	Power Rating
02	20 Watts

❸ Resistance Tolerance

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

❹ Packaging

Code	Packaging
T	Tube
P	Bulk

❺ TCR

Code	TCR
D	±50PPM/°C
E	±100PPM/°C
F	±200PPM/°C
-	No specified

❻ Resistance

Code	Resistance
0R10	0.1Ω
0100	10Ω
4700	470Ω
1001	1000Ω
1002	10000Ω





# TO-220 Power Resistors

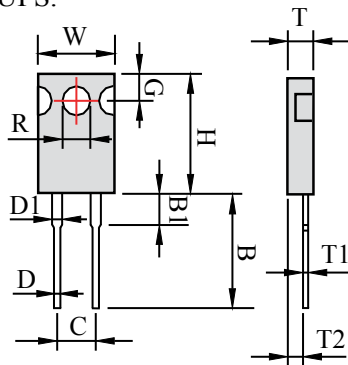
## TO-220 Power Resistors - RMG30 Series / 薄膜功率电阻器

### ► Power Resistor Features

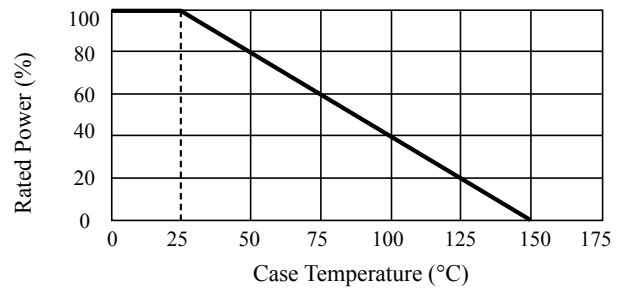
- 30 Watt at 25°C Case Temperature Heat Sink Mounted.
- TO-220 Style Power Package.
- Single Screw Mounting to Heat Sink.
- Molded Case for Protection and Easy to Mount.
- Isolated Case.
- Non Inductive.

### ► Applications

- Gate Resistors in Power Supplies.
- Snubbers.
- Load and Dumping Resistors in CRT Monitors.
- Terminal Resistance in RF Power Amplifiers.
- Voltage Regulation.
- Low Energy Pulse Loading.
- UPS.



Derating Curve



### ► Dimensions (Unit: mm)

Type	W	H	T	T1	T2	B	B1	C	D	D1	G	R
RMG30	10.15	16.00	2.92	0.40	1.52	11.43	2.54	4.82	0.66	1.14	2.92	3.08
	~ 10.67	~ 16.52	~ 3.44	~ 0.60	~ 2.04	~ 13.97	~ 4.06	~ 5.34	~ 0.86	~ 1.40	~ 3.44	~ 3.28

### ► Electrical Characteristics Specifications

Resistance Range	Resistance Tolerance	TCR(PPM/°C)
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

Note:1.Operating Voltage:350V Max.

2.Dielectric Strength: 1800VAC

3.Insulation Resistance: 10GΩmin.

4.Working Temperature Range:-65°C to +150°C

5.Resistance Value < 1Ω is Available





# TO-220 Power Resistors

## ► Environmental Characteristics

Test Item	Specification	Test Method
Temperature Coefficient of Resistance	10Ω and above, ±50ppm/°C 1Ω and 10Ω, (±100ppm)/°C	Referenced to 25°C, ΔR taken at +105°C
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°C, 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°C~150°C,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.

Note:1.Lead Material: Tinned Copper.

2.Maximum Torque: 0.9 Nm.

3.Without Heat Sink, When in Free Air at 25°C, the RMG30 is Rated for 2.25W.

4.The Case Temperature is to be used for the Definition of the Applied Power Limit.

5.The Case Temperature Measurement Must be Made with a Thermocouple Contacting the Center of the Component Mounted on the Designed Heat Sink.

6.Thermal Grease Should be Applied Properly.

## ► How to Order

RMG	30	J	P	D	1001
①	②	③	④	⑤	⑥

① Product Type: TO-220 Power Resistors

② Power Rating

Code	Power Rating
	30 Watts

③ Resistance Tolerance

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

④ Packaging

Code	Packaging
T	Tube
P	Bulk

⑤ TCR

Code	TCR
D	±50PPM/°C
E	±100PPM/°C
F	±200PPM/°C
-	No specified

⑥ Resistance

Code	Resistance
0R10	0.1Ω
0100	10Ω
4700	470Ω
1001	1000Ω
1002	10000Ω





# TO-220 Power Resistors

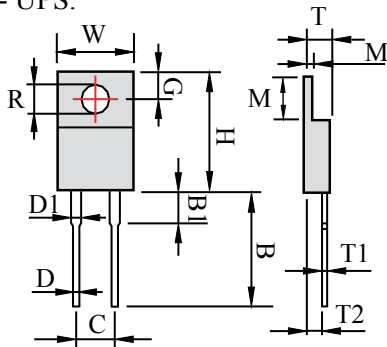
## TO-220 Power Resistors - RMG35 Series / 薄膜功率电阻器

### Power Resistor Features

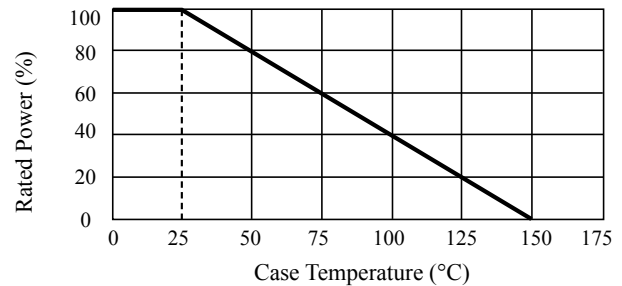
- 35 Watt at 25°C Case Temperature Heat Sink Mounted.
- TO-220 Style Power Package.
- Single Screw Mounting to Heat Sink.
- Low Thermal Resistance to Heat Sink at  $R_{th} < 4.28^{\circ}\text{C}/\text{W}$ .
- Molded Case for Protection and Easy to Mount.
- Isolated Case.
- Non Inductive.

### Applications

- Switching Power Supplies.
- Snubbers Circuits.
- Automated Machine Controller.
- Terminal Resistance in RF Power Amplifiers.
- Voltage Regulation.
- Low Energy Pulse Loading.
- UPS.



Derating Curve



### Dimensions (Unit: mm)

Type	W	H	T	T1	T2	B	B1	C	D	D1	G	R	M	N
RMG35	10.15	16.00	2.92	0.40	1.52	11.43	2.54	4.82	0.66	1.14	2.92	3.08	2.92	3.08
	~	~	~	~	~	~	~	~	~	~	~	~	~	~
	10.67	16.52	3.44	0.60	2.04	13.97	4.06	5.34	0.86	1.40	3.44	3.28	3.44	3.28

### Electrical Characteristics Specifications

Resistance Range	Resistance Tolerance	TCR(PPM/°C)
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

- Note: 1. Operating Voltage: 350V Max.  
 2. Dielectric Strength: 1800VAC  
 3. Insulation Resistance: 10GΩmin.  
 4. Working Temperature Range: -65°C to +150°C  
 5. Resistance Value < 1Ω is Available



# TO-220 Power Resistors

## ► Environmental Characteristics

Test Item	Specification	Test Method
Temperature Coefficient of Resistance	10Ω and above, ±50ppm/°C 1Ω and 10Ω, (±100ppm)/°C	Referenced to 25°C, ΔR taken at +105°C
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°C, 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°C~150°C,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.

Note:1.Lead Material: Tinned Copper.

2.Maximum Torque: 0.9 Nm.

3.Without Heat Sink, When in Free Air at 25°C, the RMG35 is Rated for 2.50W.

4.The Case Temperature is to be used for the Definition of the Applied Power Limit.

5.The Case Temperature Measurement Must be Made with a Thermocouple Contacting the Center of the Component Mounted on the Designed Heat Sink.

6.Thermal Grease Should be Applied Properly.

## ► How to Order

RMG	35	J	P	D	1001
①	②	③	④	⑤	⑥

① Product Type: TO-220 Power Resistors

② Power Rating

Code	Power Rating
	35 Watts

③ Resistance Tolerance

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

④ Packaging

Code	Packaging
T	Tube
P	Bulk

⑤ TCR

Code	TCR
D	±50PPM/°C
E	±100PPM/°C
F	±200PPM/°C
-	No specified

⑥ Resistance

Code	Resistance
0R10	0.1Ω
0100	10Ω
4700	470Ω
1001	1000Ω
1002	10000Ω





# TO-220 Power Resistors

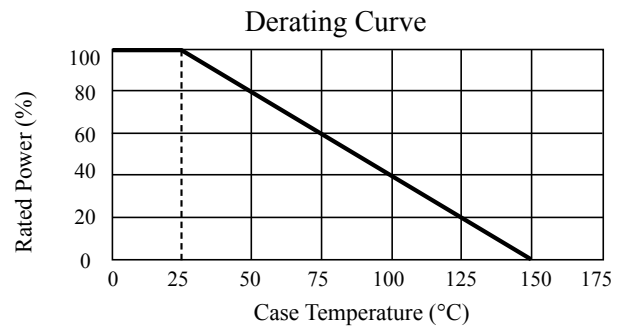
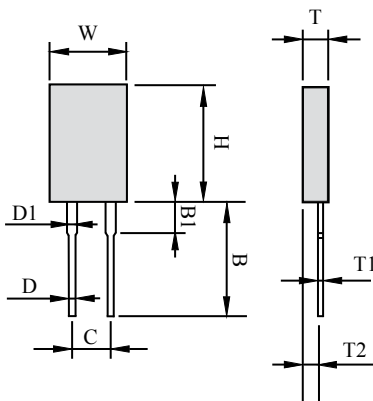
## TO-220 Power Resistors - RMG50 Series / 薄膜功率电阻器

### ► Power Resistor Features

- 50 Watt at 25°C Case Temperature Heat Sink Mounted.
- TO-220 Style Power Package.
- Molded Case for Protection and Easy to Mount.
- Isolated Case.
- Low ohm value.

### ► Applications

- Switching Power Supplies.
- Non-inductive design for high frequency.
- Pulsing applications.
- UPS.
- Voltage Regulation.



### ► Dimensions (Unit: mm)

Type	W	H	T	T1	T2	B	B1	C	D	D1
RMG50	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

### ► Electrical Characteristics Specifications

Resistance Range	Resistance Tolerance	TCR(PPM/°C)
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

- Note: 1. Operating Voltage: 350V Max.  
 2. Dielectric Strength: 1800VAC  
 3. Insulation Resistance: 10GΩmin.  
 4. Working Temperature Range: -65°C to +150°C  
 5. Resistance Value < 1Ω is Available





# TO-220 Power Resistors

## ► Environmental Characteristics

Test Item	Specification	Test Method
Temperature Coefficient of Resistance	10Ω and above, ±50ppm/°C 1Ω and 10Ω, (±100ppm)/°C	Referenced to 25°C, ΔR taken at +105°C
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°C, 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°C~150°C,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.

Note:1.Lead Material: Tinned Copper.

2.Maximum Torque: 0.9 Nm.

3.Without a Heat Sink, When in Free Air at 25°C, the RMG50 is Rated for 3W.

4.The Case Temperature is to be used for the Definition of the Applied Power Limit.

5. The Case Temperature Measurement Must be Made with a Thermocouple Contacting the Center of the Component Mounted on the Designed Heat Sink.

6.Thermal Grease Should be Applied Properly.

## ► How to Order

RMG	50	J	P	D	1001
①	②	③	④	⑤	⑥

① Product Type: TO-220 Power Resistors

② Power Rating

Code	Power Rating
	50 Watts

③ Resistance Tolerance

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

④ Packaging

Code	Packaging
T	Tube
P	Bulk

⑤ TCR

Code	TCR
D	±50PPM/°C
E	±100PPM/°C
F	±200PPM/°C
-	No specified

⑥ Resistance

Code	Resistance
0R10	0.1Ω
0100	10Ω
4700	470Ω
1001	1000Ω
1002	10000Ω





# TO-220 Power Resistors

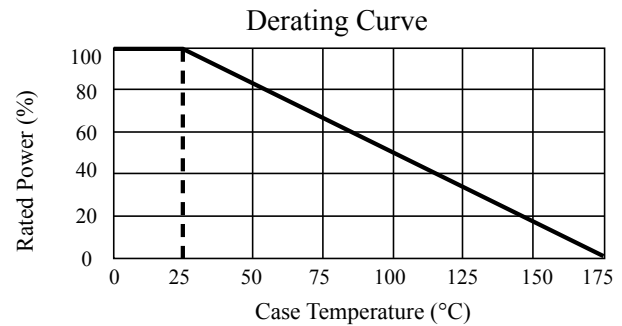
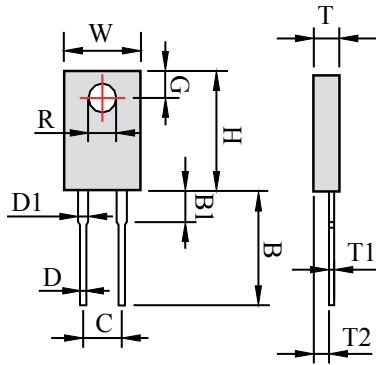
## TO-247 Power Resistors - RMG100 Series / 薄膜功率电阻器

### ► Power Resistor Features

- 100 Watts at 25°C Case Temperature Heat Sink Mounted.
- TO-247 Style Power Package.
- Single M3 Screw Mounting to Heat Sink.
- Molded Case for Protection and Easy to Mount.
- Electrically Isolated Case.
- Non-Inductive Design.

### ► Applications

- Gate Resistors in Power Supplies.
- Snubbers.
- Load and Dumping Resistors in CRT Monitors.
- Terminal Resistance in RF Power Amplifiers.
- Voltage Regulation.
- Low Energy Pulse Loading.
- UPS.



### ► Dimensions (Unit: mm)

Type	W	H	T	T1	T2	B	B1	C	D	D1	G	R
RMG100	15.49	20.44	4.69	0.55	2.15	13.21	2.03	9.90	1.42	3.45	5.07	3.53
	~ 16.01	~ 20.96	~ 5.21	~ 1.07	~ 2.67	~ 15.75	~ 3.55	~ 10.42	~ 1.62	~ 3.81	~ 5.59	~ 3.73

### ► Electrical Characteristics Specifications

Resistance Range	Resistance Tolerance	TCR(PPM/°C)
0.1Ω~1Ω	±5% ±10%	-
>1Ω~3Ω	±1%	±300
>3Ω~10Ω	±1% ±5% ±10%	±100 ±200
>10Ω~10KΩ	±1% ±5% ±10%	±50 ±100 ±200

- Note:1. Operating Voltage: 350V Max.  
 2. Dielectric Strength: 1800V AC.  
 3. Insulation Resistance: 10GΩ min.  
 4. Working Temperature Range: -65°C to +175°C.



# TO-220 Power Resistors

## ► Environmental Characteristics

Test Item	Specification	Test Method
Temperature Coefficient of Resistance	As spec.	Referenced to 25°C, ΔR taken at +105°C
Short Time Overload	ΔR±0.5%	1.5 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds.
Dielectric strength	ΔR±0.15%	MIL-STD-202F Method 301(1800V AC, 60s)
Load Life	ΔR±1.0%	MIL-PRF-39009D, 4.8.13 Rated power, 2,000 hours.
Moisture resistance	ΔR±0.5%	-10°C~+65°C, RH>90%, cycle 240 hours.
Thermal Shock	ΔR±0.5%	MIL-STD-202, Method 107G. -65°C~150°C,100 cycle
Terminal Strength	ΔR±0.2%	MIL-STD-202F, Method 211, Cond. A (Pull Test) 2.4N
Vibration, High Frequency	ΔR±0.42%	MIL-STD-202F, Method 204, Cond.D
Solderability	90% min coverage	MIL-STD-202F Method 208H 245°C±5°C, 3±0.5 (sec)

Note:1.Lead Material: Tinned Copper.

2.When in Free Air at 25°C, the RMG100 is Rated for 3.5W.

3.The Case Temperature is to be used for the Definition of the Applied Power Limit.

4.The Case Temperature Measurement Must be Made with a Thermocouple Contacting the Center of the Component Mounted on the Designed Heat Sink.

5.Thermal Grease Should be Applied Properly.

## ► How to Order

RMG	100	J	P	D	1001
①	②	③	④	⑤	⑥

① Product Type: TO-247 Power Resistors

② Power Rating

Code	Power Rating
	100 Watts

③ Resistance Tolerance

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

④ Packaging

Code	Packaging
T	Tube
P	Bulk

⑤ TCR

Code	TCR
D	±50PPM/°C
E	±100PPM/°C
F	±200PPM/°C
G	±300PPM/°C
-	No specified

⑥ Resistance

Code	Resistance
0R10	0.1Ω
0100	10Ω
4700	470Ω
1001	1000Ω
1002	10000Ω

