



炬鹿科技有限公司  
RIDEE TECH COMPANY LIMITED

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# APPROVAL SHEET

Product Name : Carbon Film MELF Resistor

Part No. : MCR Series

Description : Size 0204 / 0207 / 0309

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For more contact information, please refer to our website: [www.rideetech.com](http://www.rideetech.com)

### Carbon Film MELF Resistors - MCR Series

#### ■ Applications

- Telecommunication
- Industrial Electronics
- Consumer Product



#### ■ Features

- Excellent heat dissipation
- Free direction for mounting due to cylindrical design
- Electrodes strength is higher than flat chip resistors
- Low noise characteristics
- Suitable for reflow, flow and iron soldering
- (Pb) Lead (Pb)-free and RoHS complian

#### ■ Part Number Explanation

MCR	0207	G	U	100K	T	—	S
Product	Size (Inch)	Tolerance	Power Rating	Resistance	Packaging	TCR (PPM/°C)	Functional
Carbon Film MELF Resistors	0204 0207 0309	G= $\pm 2\%$ J= $\pm 5\%$	S= 2W T= 1W U= 0.5W V= 0.25W	100R=100 10K=10000 1M=100000	B=Bulk T=Taped& Reeled	— : No specified	S= Standard P= High Power

### ■ Standard Electrical Specifications

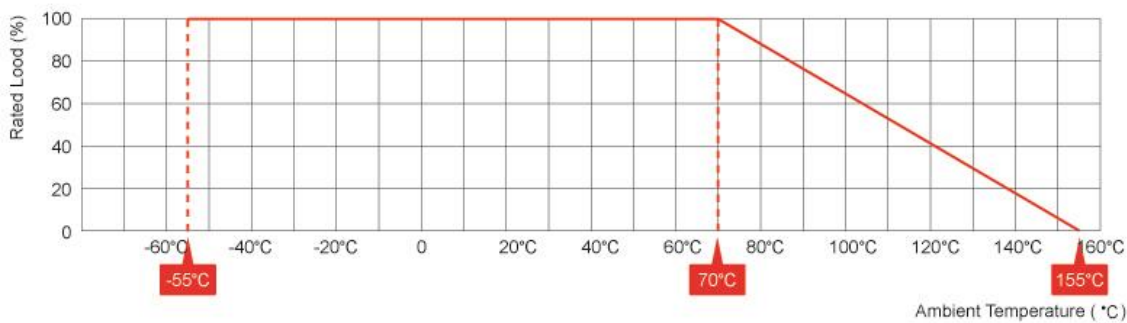
Type	Item	Power Rating at 70°C	Max. Operating Voltage	Max. Overload Voltage	Resistance Range	
					±2%	±5%
0204		0.25W	200V	400V	0.22Ω – 0.99Ω	
					1Ω – 10MΩ	
0207	0.25W	0.25W	250V	500V	0.22Ω – 0.99Ω	
					1Ω – 10MΩ	
	0.5W				0.22Ω – 0.99Ω	
					1Ω – 10MΩ	
0309	0.5W	0.5W	350V	700V	0.22Ω – 0.99Ω	
					1Ω – 10MΩ	

### ■ High Power Rating Electrical Specifications

Type	Item	Power Rating at 70°C	Max. Operating Voltage	Max. Overload Voltage	Resistance Range	
					±2%	±5%
0207		1W	350V	700V	0.22Ω – 0.99Ω	
					1Ω – 10MΩ	
0309	1W	1W	350V	700V	0.22Ω – 0.99Ω	
					1Ω – 10MΩ	
	2W				0.22Ω – 0.99Ω	
					1Ω – 10MΩ	

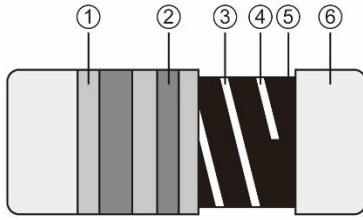
Note : customized resistance is available upon request.

### ■ Derating Curve



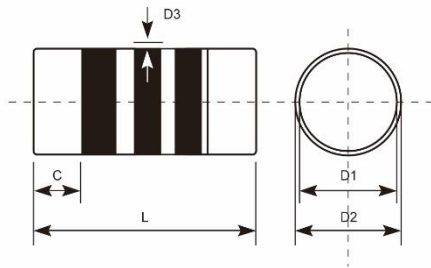
For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with the above curve.

### ■ Construction



Item		Material
①	Insulation Coating	Epoxy Insulation (Color: Tan)
②	Marking	Epoxy Resin
③	Cutting Line	-
④	Ceramic Core	Aluminum Material
⑤	Resistive Film	Carbon Film
⑥	Terminal	Terminal Material : Fe/Cu/Sn

### ■ Dimensions



Size code	Dimension (mm)				
	L	D1	D2 Max	D3 Max	C Min
0204	3.5±0.2	1.12	1.50	0.10	0.5
0207	5.9±0.2	1.72	2.40	0.15	1.00
0309	8.5±0.2	2.55	3.40	0.30	1.50

### ■ Color Band



COLOR	1st BAND	2nd BAND	MULTIPLIER
BLACK	0	0	1Ω
BROWN	1	1	10Ω
RED	2	2	100Ω
ORANGE	3	3	1KΩ
YELLOW	4	4	10KΩ
GREEN	5	5	100KΩ
BLUE	6	6	1MΩ
VIOLET	7	7	10MΩ
GREY	8	8	
WHITE	9	9	
GOLD			0.1Ω
SILVER			0.01Ω

Note: the tolerance 5% with 3 bands for E24 series.



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### ■ Environmental Characteristics

No.	Test Item	Performance Requirements	Test Methods (JIS-C-5201-1)
1	T.C.R	Within specified T.C.R	+25°C/-55°C and +25°C/+125°C
2	Solderability	More than 95% of the total area of the electrode part shall be covered with new solder	Temperature of solder: 245±5°C Dipping time: 3±0.5 sec
3	Resistance to solvent	Epoxy Insulation coating can not be peeled	There are 3 circles, each circle takes 1 min.
4.	Resistance to soldering heat	Based on the Iron cap loose standard , the change of the resistance value shall be within $\pm(1\%+0.05\Omega)$	Temperature: 260°C±5°C Dipping time:10±1 sec
5.	Short time overload	The change of the resistance valueshall be within $\pm(0.5\%+0.05\Omega)$	$V=\sqrt{R \times P \times 2.5}$ , 5 sec. V= Rated Voltage R=Resistance Value P=Power Rating
6.	Overload	Within specified tolerance	$V=\sqrt{R \times P \times 3}$ , 2.5 sec. V= Rated Voltage R=Resistance Value P=Power Rating
7.	Humidity resistance	The change of the resistance value shall be within $\pm(5\%+0.05\Omega)$	Standard: Room temperature + 100°C, 90%~95% RH, Dipping time: 0.5hr High Power: 40±2°C,90~95% R.H.,for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
8.	Load Life test	The change of the resistance value shall be within $\pm(2\%+0.05\Omega)$	Constant temperature chamber of 70°C±2°C,DC 1.5hr ON/0.5hr OFF cycle , applied continuously for 1000 ±48hr.

### ■ Standard Packing Quantity

Size	Tape/Reel Q'ty (pcs)			Bulk Q'ty (pcs)	Weight (g)	
	Reel	Case	Carton	Bag	Reel	Net/Kpcs
0204	3,000	15,000	180,000	5,000	390.5	18
0207	2,000	8,000	96,000	5,000	383.5	155
0309	2,500	2,500	15,000	5,000	2,505	160

### ■ Embossed tapping dimension

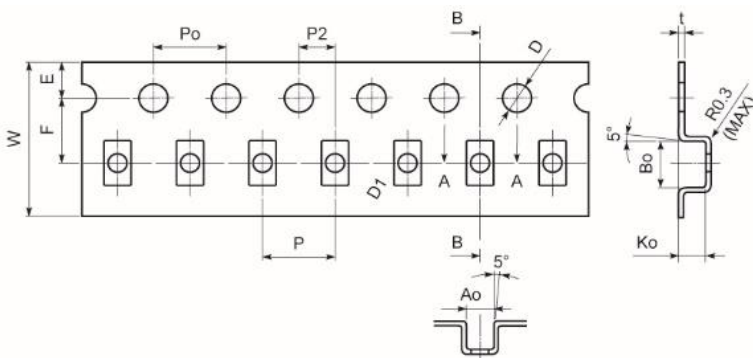
Unit:mm

Type	W	P	E	F	D	D <sub>1</sub>	P <sub>0</sub>	P <sub>2</sub>	A <sub>0</sub>	B <sub>0</sub>	K <sub>0</sub>	t
0204	8±0.1	4±0.1	1.75±0.1	3.5±0.05	1.5±0.1	1.0±0.1	4±0.1	2±0.1	1.6±0.1	3.70±0.1	1.65±0.1	0.22±0.05
0207	12±0.1	4±0.1	1.75±0.1	5.5±0.05	1.5±0.1	1.5±0.1	4±0.1	2±0.1	2.4±0.1	6.05±0.1	2.50±0.1	0.30±0.05
0309	16±0.1	8±0.1	1.75±0.1	7.5±0.10	1.5±0.1	1.5±0.1	4±0.1	2±0.1	3.5±0.1	8.85±0.1	3.50±0.1	0.35±0.05

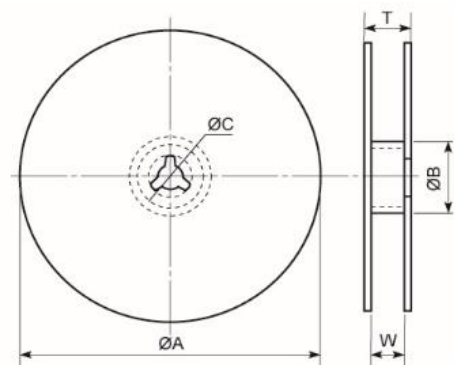
### ■ Tape/Reel dimension

Unit:mm

Type	ØA	ØB	ØC	W	T
0204	178±1	60.0±0.5	13.0±0.2	9.0±0.5	12.0±0.15
0207	178±1	60.0±0.5	13.0±0.5	13.2±0.5	16.0±0.20
0309	330±1	100±1.0	13.0±0.5	17.0±0.5	21.5±0.20



Embossed tapping dimension



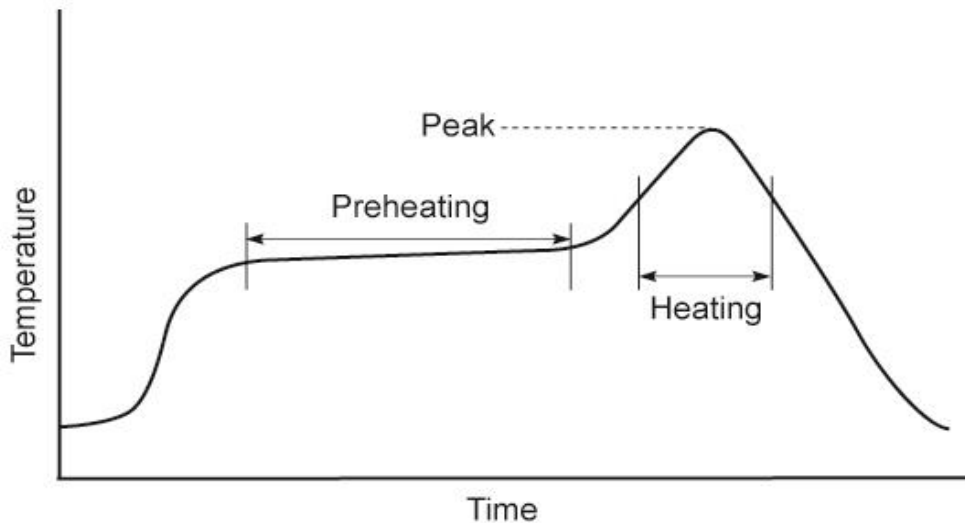
Tape/Reel dimension

### ■ Caution

1. Storage and usage method
2. Humidity gives damage to cap solderability, therefore, please keep environment.  
 Temperature : +5°C~+40°C  
 Humidity : 55%~75%RH  
 Storage limited : 12 months
3. Please follow the instruction to keep the material when it is unpacked.
4. When ambient temperature exceeds a rated ambient applied on the derating curve by derating the load power.
5. Please avoid join many resistors in series or parallel when current.
6. Molding products by using resin might bring out resistance from Molding.
7. This products meet the RoHS Compliant.

### ■ Soldering :

**We recommend the following condition to keep products performance.**



Reflow soldering (lead-free)

Status	Temperature	Time
Preheating	180°C Max	120 sec. Max
Heating	220°C Max	60 sec. Max
Peak	260°C Max	3 sec. Max