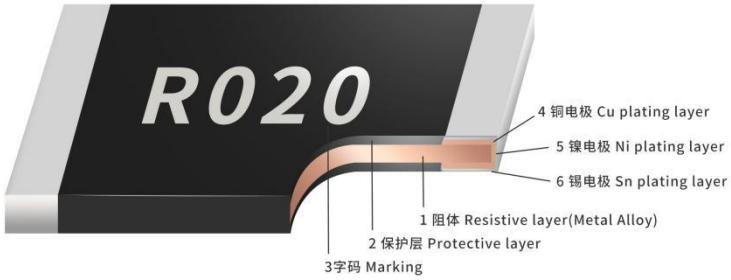
纯合金高功率电流检测电阻，用于电流检测，SMD 贴片安装，高功率，超低阻值(低至 0.0R)

Pure alloy high power current sensing resistor, used for current sensing, SMD surface mount installation, high power, ultra low resistance (as low as 0.0R).

■ 产品图示(product illustration)	■ 产品结构图(product structure diagram)
	

■ 产品特点(Features)	■ 应用领域(Applications)
■ 高功率，功率可达 3W High power rating up to 3watts	■ 汽车电子 Automotive electronics
■ 超低阻值，优异的电阻温度系数 Ultra-low resistance values, Excellent temperature coefficient characteristics	■ 电流传感器、电源供应器 Current sensor、Power supplies
■ 符合 AEC-Q200 条款 The relevant provisions of the AEC-Q200	■ 充电器 Battery chargers
■ 通过：RoHS REACH 认证 Passed: RoHS REACH certification	■ 手机、电脑、消费性电子 Mobile phones、Computers 、Consumer

■ 料号标识:示例 RE2512F3R010（L）= RE 系列 2512 尺寸 3W 1% 10mΩ

RE	2512	F	3	R010	L
产品系列 Type	尺寸 Size 1206 2512 0805	公差 Tolerance F:1% G:2% J:5%	额定功率 Rated Power A=1/2W B= 3/4W 1=1W 2=2W 3=3W	阻值 Resistance Value R50m=0.5mΩ R002=2mΩ R010=10mΩ 1R5m=1.5mΩ	大电极

■ 电阻值范围及电气特性(Resistance Range and Electrical Characteristics)

尺寸 Size	类别 Type	最高额定功率(W) Rated Power	阻值精度 Resistance tolerance	阻值范围(mΩ) Resistance Range
2512	大电极 Large electrode	3W/4W	<0.45mΩ	R000
			F:1% G:2% J:5%	R0005≤R≤R004
	小电极 Small electrode	3W/4W		R001≤R≤R020
		2W/3W		R001≤R≤R220
		2W		R220≤R≤R500

尺寸 Size	类别 Type	最高额定功率 (W) Rated Power	材料 Material	温度系数 TCR (ppm/°C)		工作温度范围 Operating temperature range	绝缘阻抗 Insulation Resistance
2512	大电极 Large electrode	2W/3W	MnCu	0.5mΩ≤R<1mΩ	±350ppm/°C	-55°C~+170°C	＞100MΩ
			MnCu	1mΩ≤R≤4mΩ	±50ppm/°C		
	小电极 Small electrode	2W/3W/4W	MnCu	1mΩ≤R≤1.5mΩ	±350ppm/°C		
			MnCu	2mΩ≤R≤20mΩ	±50ppm/°C		
		2W/3W	MnCu	20mΩ＜R≤150mΩ	±50ppm/°C		
			CuNi	150mΩ＜R≤220mΩ	±50ppm/°C		
		2W	CuNi	220mΩ＜R≤400mΩ	±50ppm/°C		
			Kama	400mΩ＜R≤500mΩ	±50ppm/°C		

■ 字码标示(Marking on the Resistor's Body)

图例 legend

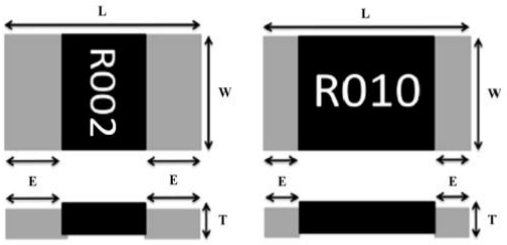


R020=20mΩ

阻值 resistance	代码 code	阻值 resistance	代码 code	阻值 resistance	代码 code	阻值 resistance	代码 code
0.5mΩ	R50m	25mΩ	R025	80mΩ	R080	200mΩ	R200
1mΩ	R001	30mΩ	R030	90mΩ	R090	220mΩ	R220
1.5mΩ	1R5m	35mΩ	R035	100mΩ	R100	250mΩ	R250
2mΩ	R002	40mΩ	R040	120mΩ	R120	270mΩ	R270

3mΩ	R003	50mΩ	R050	130mΩ	R130	300mΩ	R300
5mΩ	R005	57mΩ	R057	140mΩ	R140	330mΩ	R330
10mΩ	R010	60mΩ	R060	150mΩ	R150	360mΩ	R360
15mΩ	R015	68mΩ	R068	160mΩ	R160	400mΩ	R400
20mΩ	R020	75mΩ	R075	180mΩ	R180	500mΩ	R500

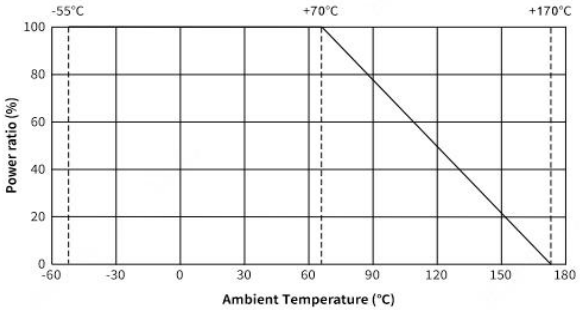
■ 产品尺寸(dimension)



大电极 Large electrode　　小电极 Small electrode

尺寸 Size	类型 Type	长 L(mm)	宽 W(mm)	厚 T(mm)	电极宽 E(mm)
2512	大电极 Large electrode	6.4±0.2	3.2±0.2	0.8±0.2	2.2±0.2
2512	小电极 Small electrode	6.4±0.2	3.2±0.2	0.8±0.2	1.0±0.2

■ 功率衰减曲线(power attenuation curve)



工作温度范围（Operating Temperature Range）：-55°C~+170°C。当电阻在高于 70°C的周围环境中工作时，最大负载功率应该按照以上曲线减少。

When the resistor is operating in an ambient environment above 70 °C, the maximum load power should be reduced according to the above curve.

■ 额定电流(rated current)

额定电流计算方式如下

The rated current is calculated by the following formula:

$$I = \sqrt{P/R}$$

I：额定电流（Rated current）(A)

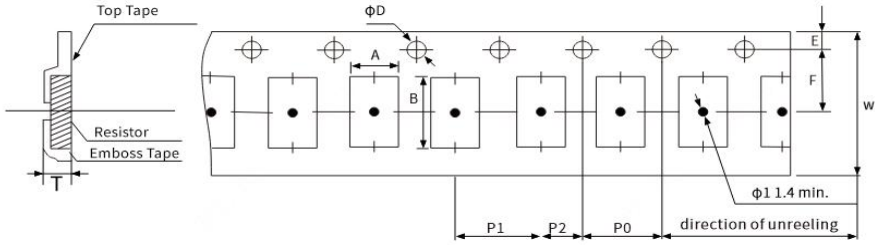
P：额定功率（Rated Power）(W)

R：额定电阻（Resistance）(ohm)

如果计算出的电流超过此型别的最大工作电流，则此型别的最大工作电流为此电阻的额定电流。

In case the value calculated by the formula exceed the maximum working current as above table, the maximum working current shall be regarded as rated current.

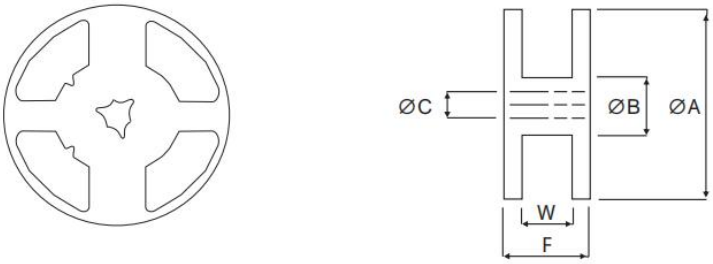
■ 包装尺寸(packing dimension)



Type	Packing	A	B	W	F	E	P0	P1	P2	ΦD0	T
2512	Emboss	3.5±0.15	6.8±0.2	12.0±0.2	5.5±0.05	1.75±0.1	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.10	1.0±0.1
1206	Emboss	2.0±0.15	3.6±0.2	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.05	4.0±0.1	2.0±0.05	1.5±0.10	0.87±0.05
0805	Emboss	1.65±0.05	2.4±0.2	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.05	4.0±0.1	2.0±0.05	1.5±0.10	0.8±0.05

■ 包装规格(Tapping Specification)

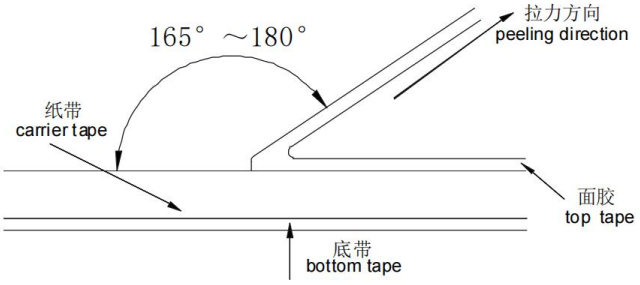
卷盘尺寸 reel dimension



单位：mm

尺寸 Dimensions	ΦA	ΦB	ΦC	FΦ	W	Q´ty/R
1206	178±2.00	60.00±1.00	13.00±1.00	11.40±0.50	9.00±0.30	5000
2512	178±2.00	60.00±1.00	13.00±1.00	15.40±0.5	13.30±0.50	4000
0805	178±2.00	60.00±1.00	13.00±1.00	11.40±0.50	9.00±0.30	5000

■ 上胶带剥离力测试(Peel force of top cover tape)

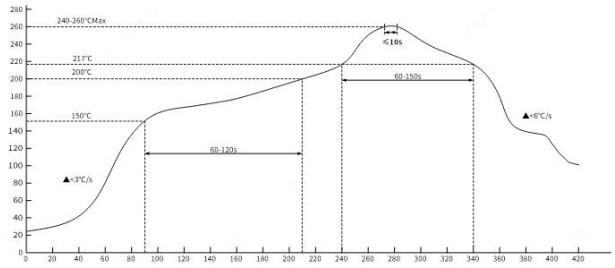
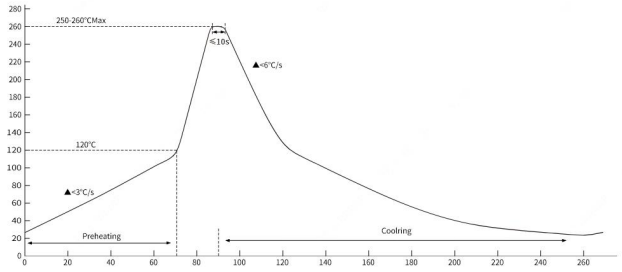


上胶带以 300mm/分钟的速度，沿 165 ～180 度角的方向进行剥离，如下图所示。纸带的剥离范围为 0.1N～0.7N(10g～70g)，载带的剥离力范围为 0.3N～1N(30g～100g)。

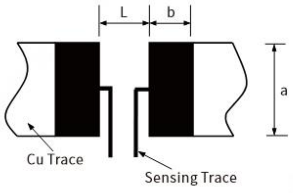
The top cover tape is pulled at a speed of 300 mm/min with the angle between the tape during peel and the direction of unreeling maintained at 165 to 180 degree as following picture. The peel force of paper carrier tape shall be 0.1N to 0.7N(10 to 70 g), the peel force of plastic carrier tape shall be 0.3N to 1N (30 to 100 g).

■ 焊接建议(以下为建议值,请客户使用时依实际应用作调整;建议的焊膏:96.5Sn/3.0Ag/0.5Cu)

Soldering recommendations (the following values are suggested; please adjust according to actual application when using; recommended solder paste: 96.5Sn/3.0Ag/0.5Cu).

回流焊 Reflow-Soldering Profile	波峰焊 Wave-Soldering Profile
	

■ 建议的焊板尺寸(Suggested PCB dimensions)



单位：mm

尺寸 dimension	阻值范围 resistance range	a	b	L
2512	大电极 large electrode	4.0	3.1	1.3
	小电极 small electrode	4.0	2.1	4.1

■ 信赖性试验项目(Performance Reliability Test Methods)

项目 project	测试方法 test	条件 condition	标准 norms
短时间过负荷 Short Time Overload	IEC60115-1 4.13	施加过负荷 5 秒，静置 5 秒后再测量试验前后的阻值变化率 Applied 5.0 times of rated power for 5 second,Measure the variation of resistance. ΔR%= （R2-R1）/R1*100% R1＝试验前阻值(resistance before test) R2＝试验后阻值(resistance after test)	≤±1%
温度系数 Temperature Coefficient	IEC60115-1 4.8	T_{CR}=（R-R_0 ）/（t-t0）R0 ×10^6（ppm） R_0 电阻在室温下的阻值(resistance at room temperature) R 电阻在+125°C或+155°C下的阻值 (resistance at +125°C or +155°C) t_0 室温(room temperature) t 测试温度（test temperature +125°C or +155°C）	请参考特性规格表，Please refer to the Spec.
温度循环 Temperature cycling	JESD22 Method JA-104	-55°C/+125°C，循环 1000 次，试验结束 24±4 小时后测量试验前后阻值变化率. 1000Cycles (-55°C to +125°C) Measurement at 24±4 hours after test conclusion. Measure the variation of resistance at 24±4 hours after test conclusion.	< ±1%
高温储存 High Temperature Exposure	MIL-STD-202 Method 108	125°C下放置 1000H，试验结束 24±4 小时后测量试验前后阻值变化率. 1000 hrs. @T=125°C. Measure the variation of resistance at 24±4 hours after test conclusion.	< ±1%
低温储存 Low Temperature operation	IEC60115-1 4.23.4	-55°C下放置 45 分钟，后测量试验前后阻值变化率. 45 min. @T=-55°C. Measure the variation of resistance after test conclusion.	< ±1%
高温高湿 high temperature and high humidity	MIL-STD-202 METHOD 103	加载 10%额定功率，85°C/85%RH，持续通电 1000H,试验结束 24±4 小时后进行测试 1000 hours 85°C/85%RH. Note: Specified conditions: 10% of operating power. Measurement at 24±4 hours after test conclusion. ΔR%= （R2-R1）/R1*100% R1＝试验前阻值(resistance before test) R2＝试验后阻值(resistance after test)	≤±1%
可焊性 weldability	J-STD-002B test B	沾助焊剂后浸入锡炉，锡炉温度 245±5°C，时间 2~3 秒 Dip the terminal in a flux and then dipinto a soldering bath at 245±5°C for 2~3sec.	电极覆新锡面积需大于 95%(Min 95% coverage)

■ 信赖性试验项目(Performance Reliability Test Methods)

项目 project	测试方法 test	条件 condition	标准 norms
负荷寿命 Operational life	MIL-STD-202 METHOD 108	电阻放入恒温箱中，温度 70±2°C，通电额定电 流 1.5 小时，断电 0.5 小时；重复通断电至试验时间 1000 +48/-0 小时. 测量试验前后阻值变化率。 Put the specimen in a chamber at 70±2 °C temperature , and applied rated currrnt for1.5H and rested for 0.5H repeatedly till total test time is 1000 +48/-0 .. Measure the variation of resistance. ΔR%= （R2-R1）/R1*100% R1＝试验前阻值(resistance before test) R2＝试验后阻值(resistance after test)	≤±1%
振动 Resistance to vibration	MIL-STD-202 METHOD 204	5g's 的力 20 分钟，12 个循环，测试频率从 10-2000 赫兹，测量试验前后阻值变化率。 5g's for 20min.12cycles, 10-2000Hz . Measure the variation of resistance.	≤±1%
抗焊锡热 Resistance to Solder Heat	IEC60115-1 4.18	沾助焊剂后浸入锡炉，锡炉温度 260±5°C，时间 10±1 秒，测量试验前后的阻值变化率。 Dip the terminal in a flux and then dip into a soldering bath at 260 ±5°C for 10±1sec. Measure the variation of resistance.	≤± 1% 外观无损伤
端子弯曲 Terminal bending	AEC-Q200-005	弯曲 2mm，60 秒，测量试验前后阻值变化率。 Min 2mm deflection,60sec.Measure the variation of resistance. Measure the variation of resistance.	≤± 1%
机械冲击 Mechanical Shock	MIL-STD-202 METHOD 213	半正弦，100g's，震动 6ms，速度 12.3 ft/s100Hz， 测量试验前后阻值变化率。 100g's , Normal duration is 6ms , half sine shock pulse,Measure the variation of resistance.	≤±1%
端子强度 Terminal Strength	AEC-Q200-006	应用 17.7N (1.8Kg)，时间 60±1 秒 Applied a 17.7N (1.8Kg) for 60±1seconds.	≤±1%
冷热冲击 Thermal shock	MIL-STD-202 METHOD 107	温度-55/+125°C，周期数是 300，设备安装；最大传输时间是 20 秒，停留 15 分钟，测量试验前后阻值变化率。 Use -55/+125°C, Number of cycles is 300. Devices mounted. Maximum transfer time is 20 seconds.Dwell time is 15 minutes. Air –Air. Measure the variation of resistance.	≤±1%
阻燃性 Flammability	UL-94	V-0 or V-1 可接受的，电器特性测试不要求 V-0 or V-1are acceptable.Electrical test not required.	≤±1%
ESD 试验 ESD test	AEC-Q200-002	加载规定静电电压 2KV，2 次/间隔 1 秒 2KV, 2times/1s	≤±1%