



承认书

APPROVAL SHEET

客户名称:
CUSTOMER _____

产品名称: **功率型厚膜片式固定电阻器**
PARTNAME **HIGH POWER THICK FILM CHIP FIXED RESISTOR**

产品规格:
SPECIFICATION _____

版本号: **RP-2.0**
VERSION _____

日期:
DATE _____

制造			客户		
APPROVAL			APPROVAL		
拟制	审核	确认	检验	审核	批准



序号 No	目 录 TABLE OF CONTENTS
1.0	概述 Summary
2.0	结构及尺寸 Structure And Dimensions
3.0	型号规格表示办法 How To Order
4.0	电气性能 Performance Specification
5.0	可靠性 Reliability Data
6.0	包装 Package
7.0	环保情况说明 Environmental Protection Statement
8.0	推荐使用的焊接曲线 Recommended soldering profile
9.0	贮存方法 Storage Methods
10.0	使用注意事项 Precautions For Use



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

1.0 概述 Summary

功率型片式电阻器主要生产的型号包括 0603、0805、1206、1210、2010、2512。其特点是：

The dimension type for High Power chip resistor including 0603、0805、1206、1210、2010、2512, and the features are as below:

■ 特长 Features

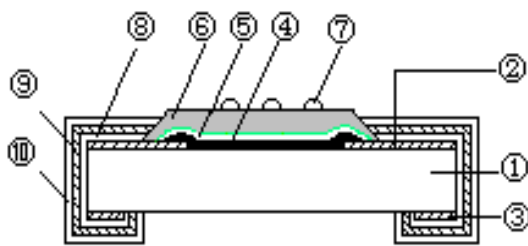
- 最高功率可达 2 W ·High power up 2W
- 最低 TCR: $\pm 75 \text{ PPM}/^\circ\text{C}$ ·Lowest TCR is $\pm 75 \text{ PPM}/^\circ\text{C}$
- 体积小, 重量轻 ·Miniature and light weight
- 适应再流焊与波峰焊 ·Suit for re-flow and wave flow solder.
- 装配成本低, 并与自动装贴设备匹配 ·Low assembly cost, suit for automatic SMT equipment.
- 适于作电流探测用电阻器如电源电路、发动机用电路等 ·Current detecting resistors for power supply, motor circuits, etc.
- 机械强度高、高频特性优越 ·Superior mechanical and frequency characteristics
- 符合 ROHS 指令要求 ·Compliant with ROHS Directive
- 符合无卤素要求 Compliant with halogen free requirement

■ 应用领域 Applications

开关电源、音频设备的过电流保护、电压调节器、电源转换器、充电器、汽车引擎控制器、便携式设备等
Switching Power Supply、Over Current Protection in Audio Application、Voltage Regulation Module(VRM)、DC-DC Converter、Charger、Automotive Engine Control、Portable Devices etc.

2.0 结构及尺寸 Structure And Dimensions

2.1 结构 Structure



结构层

Structure

①陶瓷基片

Substrate

②面电极

Face Electrode

③背电极

Reverse Electrode

④电阻体

Resistive Element

⑤一次保护层

1st Protective Coating

⑥二次保护层

2nd Protective Coating

⑦标记

Marking

⑧端电极

Inner Termination

⑨中间电极

Middle Termination

⑩外部电极

Outer Termination

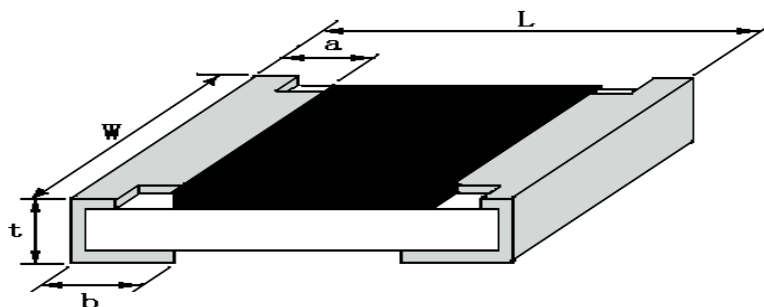


功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

2.2 尺寸 Dimensions



型号 Type	L (mm)	W (mm)	t (mm)	a (mm)	b (mm)
0603	1.60±0.15	0.80±0.15	0.40±0.10	0.30±0.20	0.30±0.20
0805	2.00±0.20	1.25±0.15	0.50±0.10	0.30±0.20	0.40±0.20
1206	3.20±0.20	1.60±0.15	0.55±0.10	0.50±0.20	0.50±0.20
1210	3.20±0.20	2.50±0.20	0.55±0.10	0.50±0.20	0.50±0.20
2010	5.00±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.60±0.20
2512	6.40±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.60±0.20

2.3 产品外观 Appearance

2.3.1 电阻器表面二次保护层保护膜覆盖完好且难以脱落，表面平整。

The surface of resistor is covered with Protecting Coating which hard to fade, and the surface of coating should avoid unevenness.

2.3.2 电阻器端电极覆盖均匀、镀层较难脱落、而且平整、无开裂、针孔、变色。

The terminal part is covered equable, the plating is hard to fade, and should avoid unevenness, flaw, pinhole and discoloration.

2.3.3 电阻器芯片无裂痕、标记可辨。

With a clear mark, the resistor body is crack-free.

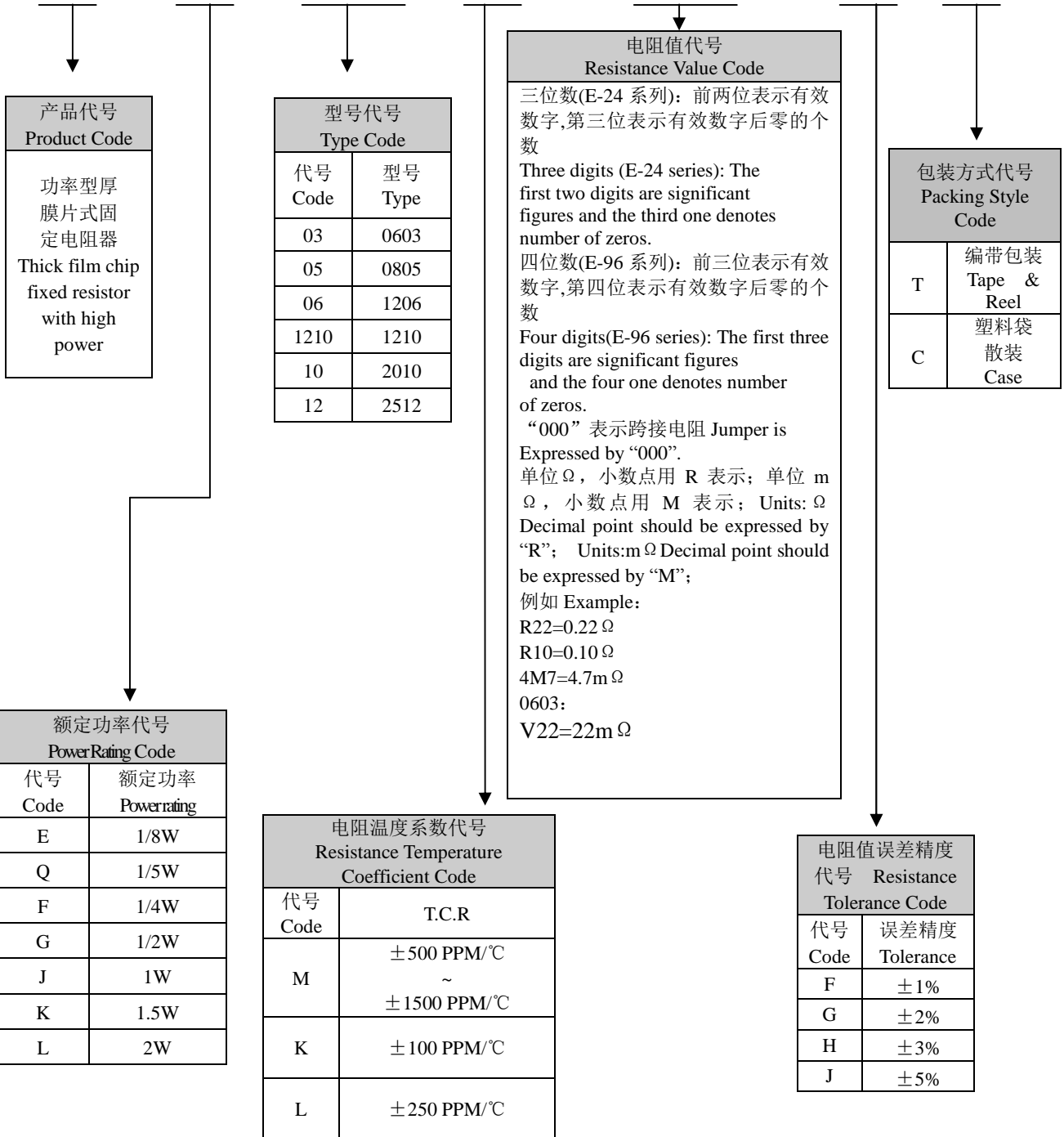


功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

3.0 型号规格表示办法 How To Order





功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

3.1 标记表示方法 The Explanation For The Resistance Value Marking

IEC E-24、E-96 系列电阻值对照表

IEC E-24、E-96 Series Resistance Cross-reference List

E-24 系列 (E-24 series)

($\times 10^n \Omega$)

(单位 unit: 1 Ω 、10 Ω 、100 Ω 、1K Ω 、10K Ω 、100K Ω 、1M Ω 、10M Ω)

表 1 Table One

1.0	1.5	2.2	3.3	4.7	6.8
1.1	1.6	2.4	3.6	5.1	7.5
1.2	1.8	2.7	3.9	5.6	8.2
1.3	2.0	3.0	4.3	6.2	9.1

E-96 系列 (E-96 series)

($\times 10^n \Omega$)

(单位: 1 Ω 、10 Ω 、100 Ω 、1K Ω 、10K Ω 、100K Ω 、1M Ω 、10M Ω)

表 2 Table Two

1.00	1.33	1.78	2.37	3.16	4.22	5.62	7.50
1.02	1.37	1.82	2.43	3.24	4.32	5.76	7.68
1.05	1.40	1.87	2.49	3.32	4.42	5.90	7.87
1.07	1.43	1.91	2.55	3.40	4.53	6.04	8.06
1.10	1.47	1.96	2.61	3.48	4.64	6.19	8.25
1.13	1.50	2.00	2.67	3.57	4.75	6.34	8.45
1.15	1.54	2.05	2.74	3.65	4.87	6.49	8.66
1.18	1.58	2.10	2.80	3.74	4.99	6.65	8.87
1.21	1.62	2.15	2.87	3.83	5.11	6.81	9.09
1.24	1.65	2.21	2.94	3.92	5.23	6.98	9.31
1.27	1.69	2.26	3.01	4.02	5.36	7.15	9.53
1.30	1.74	2.32	3.09	4.12	5.49	7.32	9.76



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor	版本号 Version of: RP-2.0
RP□□□□	
<p>■E-24 系列 E-24 Series:</p> <p>▲ 当 $0.1\Omega \leq R < 1\Omega$ 时,采用三位数字表示,小数点用“R”表示(第一位),其中后两位为 E-24 系列电阻值有效数。 For resistance in the range of $0.1\Omega \leq R < 1\Omega$, expressed with three digits, “R” represents decimal point (the first digit), the last two digits represent significant figures in E-24 Series.</p> <p>例 For example: 阻值为 0.47Ω→标记代号为 R47 Resistance as 0.47Ω→Marking would be R47 阻值为 0.1Ω→标记代号为 R10 Resistance as 0.1Ω→Marking would be R10</p> <p>▲ 当 $0.01\Omega \leq R < 0.1\Omega$ 时,对于 0805、1206、1210、2010、2512 型号,标记与电阻值代号相同;用四位数表示,小数点用“R”表示(第一位),第二位为“0”,后两位为 E-24 系列电阻值有效数;对于 0603 型号,标记用三位数表示,第一位为“V”,后两位为 E-24 系列电阻值有效数。 For resistance in the range of $0.01\Omega \leq R < 0.1\Omega$, and the dimension type of 0805、1206、1210、2010、2512,the marking and resistance code are the same; Expressed the resistance value with four digits, “R” represents decimal point (the first digit), the second digit is “0”, the last two digits represent significant figures in E-24 Series; for the dimension of 0603, expressed the resistance value with three digits, the first digit is “V”, the last two digits represent significant figures in E-24 Series.</p> <p>例 For example: 0805 以上型号产品阻值为 0.047Ω→标记代号为 R047 For the dimension type of 0805、1206、1210、2010、2512, resistance as 0.047Ω→Marking would be R047. 0603 型号产品阻值为 0.047Ω→标记代号为 V47 For the dimension type of 0603, resistance as 0.047Ω→Marking would be V47.</p> <p>■E-96 系列 E-96 Series: 当 $0.1\Omega \leq R < 1\Omega$ 时,采用四位数字表示,小数点用“R”表示,其中后三位为 E-96 系列电阻值有效数。 For resistance in the range of $0.1\Omega \leq R < 1\Omega$, expressed the resistance value with four digits, “R” represents decimal point (the first digit), the last three digits represent significant figures in E-96 Series.</p> <p>例 For example: 阻值为 0.499Ω→标记代号为 R499 Resistance as 0.499Ω→Marking would be R499. 阻值为 0.102Ω→标记代号为 R102 Resistance as 0.102Ω→Marking would be R102.</p> <p>■非 IEC 标准系列的电阻值标记表示方法:一般以最接近 IEC E-24 系列标称阻值的标记表示方法。 For the resistance which doesn't belong to IEC serial, use the resistance of IEC serial which is most close to the required resistance of non-IEC serial for replacement.</p> <p>■客户对标记有特殊要求时,则按照协商的结果印刷标记 To get agreement by both party if there special requirement for the marking.</p>	



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor						版本号 Version of:															
RP□□□□						RP-2.0															
4.0 电气性能 Performance Specification																					
项 目 Item		规 格 Specification																			
型 号 Type		060 3	0805	1206	1210	2010	2512														
额定功率系列 Power Series		1/8 W 1/5 W	1/4W	1/2W	1/2W	1W	1.5W 2W														
<p>注：当使用环境温度超过 70℃，其额定负荷（额定功率）按曲线下降。 Note: For resistors operated in ambient over 70℃, rated load (rated power) shall be derated in accordance with the figure</p>																					
额定功率 Rated Power		<p>负荷下降曲线 Power Derating Curv</p> <p>使用温度范围： Operating Temperature Range: -55℃~155℃</p>																			
额定电压及使用 最大工作电压 Rated Voltage & Max. Voltage Used		<p>每一阻值额定电压根据下列公式计算出，当计算出的额定电压超过表中元件极限电压，所使用的额定电压应为表中元件极限电压。 The rated voltage at each resistance should be calculated. From the equation below, and when the rated voltage exceeds the maximum voltage used shown in the table, the rated voltage used should be the maximum voltage.</p> <table border="1"> <thead> <tr> <th>型号 Type</th> <th>元件极限电压 Limiting Element Voltage(V)</th> </tr> </thead> <tbody> <tr> <td>0603</td> <td>50V</td> </tr> <tr> <td>0805</td> <td>150V</td> </tr> <tr> <td>1206</td> <td>200V</td> </tr> <tr> <td>1210</td> <td>200V</td> </tr> <tr> <td>2010</td> <td>200V</td> </tr> <tr> <td>2512</td> <td>200V</td> </tr> </tbody> </table> <p> $E = \sqrt{P \times R}$ E: 额定电压 Rated Voltage (V) R: 标称阻值 Normal Resistance (Ω) P: 额定功耗 Rated Power (W) </p>						型号 Type	元件极限电压 Limiting Element Voltage(V)	0603	50V	0805	150V	1206	200V	1210	200V	2010	200V	2512	200V
型号 Type	元件极限电压 Limiting Element Voltage(V)																				
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功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor		版本号 Version of: RP-2.0				
RP□□□□						
续上页 Continue						
项 目 Item	标 准 Specification					
最大过负载电压 Max. Overload Voltage	最大过负荷电压为：2.5 倍额定电压(2.5×E) 当计算出的电压值超过下表中最大过负荷电压时,按下表： The Max. Overload Voltage should be 2.5×E, When the Voltage exceeds the maximum overload voltage in the table below. the value shown in the table should be the maximum one.					
	0603	0805	1206	1210	2010	2512
	100V	300V	400V	400V	400V	400V
电阻公差 Tolerance for Resistor	0603 0805 1206 1210 2010 2512	±1%、±2%、±3%、±5%				
阻值范围 Resistance Range	0603	$0.020\Omega \leq R \leq 22M\Omega$				
	0805 1206 1210 2010	$0.01\Omega \leq R \leq 22M\Omega$				
	2512	$0.0047\Omega \leq R \leq 1M\Omega$				
使用温度范围 Temperature Range of Use	-55℃ ~ +155℃					
额定温度 Rated Temperature	+70℃					



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor			版本号 Version of: RP-2.0			
RP□□□□						
型号 type	70℃ 额定功率 Rating Power at 70℃ (W)	阻值范围 Resistance Range	电阻温度系数	电阻温度 系数代码 T.C.R Code		
			标称阻值允许偏差			
			±1%、±2%、±3%、±5%			
0603	1/8W 1/5W	$0.020\Omega \leq R < 0.033\Omega$	±1500	M		
		$0.033\Omega \leq R < 0.068\Omega$	±1000			
		$0.068\Omega \leq R < 0.1\Omega$	±800			
		$0.1\Omega \leq R < 1\Omega$	±500			
				$1\Omega \leq R < 10\Omega$	±250	L
				$10\Omega \leq R \leq 1M\Omega$	±100	K
				$1M\Omega < R \leq 10M\Omega$	±250	L
				$10M\Omega < R \leq 22M\Omega$	±500	M
0805 1206 1210 2010	0805: 1/4W 1206: 1/2W 1210: 1/2W 2010: 1W	$0.01\Omega \leq R < 0.02\Omega$	±1500	M		
		$0.02\Omega \leq R < 0.05\Omega$	±1000			
		$0.05\Omega \leq R < 0.1\Omega$	±800			
		$0.1\Omega \leq R < 1\Omega$	±500			
				$1\Omega \leq R < 10\Omega$	±250	L
				$10\Omega \leq R \leq 1M\Omega$	±100	K
				$1M\Omega < R \leq 10M\Omega$	±250	L
				$10M\Omega < R \leq 22M\Omega$	±500	M
2512	1.5W	$0.0047\Omega \leq R < 0.02\Omega$	±1500	M		
		$0.02\Omega \leq R < 0.05\Omega$	±1000			
		$0.05\Omega \leq R < 0.1\Omega$	±800			
		$0.1\Omega \leq R < 1\Omega$	±500			
				$1\Omega \leq R < 10\Omega$	±250	L
			$10\Omega \leq R < 1M\Omega$	±100	K	
	2W	$0.01\Omega \leq R < 0.02\Omega$	±1500	M		
		$0.02\Omega \leq R < 0.1\Omega$	±800			
		$0.1\Omega \leq R < 1\Omega$	±500			
				$1\Omega \leq R < 10\Omega$	±250	L
			$10\Omega \leq R \leq 1M\Omega$	±100	K	



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor		版本号 Version of: RP-2.0
RP□□□□		
5.0 可靠性 Reliability Data		
项目 Item	标准 Specification	试验方法 Test Method (IEC60115-1)
可焊性 Solder-ability	可焊面积≥95%. 95% cover min	IEC60115-1 4.17 240°C ± 5°C 浸锡, 保持 3s ± 0.3s。 Lead-free solder bath at 240°C ± 5°C for 3s ± 0.3s.
耐焊接热 Resistance to Soldering Heat	无可见损伤 No mechanical damage. $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$	IEC60115-1 4.18 270°C ± 5°C 浸锡, 保持 10s ± 1s。 Lead-free solder bath at 270°C ± 5°C, for 10s ± 1s.
基板弯曲试验 Substrate Bending Test	无可见损伤 No mechanical damage. $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$	IEC60115-1 4.33 弯曲距离 Bending Distance: 0603、0805: 5mm 1206、1210: 4mm 2010、2512: 2mm 保持时间 Duration: 60s ± 5s
剪切力试验 Shear Test	无可见损伤 No mechanical damage.	IEC60115-1 4.32 施加力 Applying force: 0603: 5N 0805: 9N 1206、1210: 25N 2010、2512: 45N 保持时间 Duration: 10s ± 1s
电阻温度系数 TCR	在规定值内 within specified T.C.R	IEC 60115-1 4.8 20°C / -55°C / 20°C / 125°C / 20°C
温度快速变化 Rapid Temperature cycle	无可见损伤 No mechanical damage. ±1%: $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ ±2%、±3%、±5%: $\Delta R \leq \pm (2.0\%R + 0.05\Omega)$	IEC 60115-1 4.19 -55°C (30 分钟) ~ 常温 (5 分钟) ~ 155°C (30 分钟), 300 个循环。 -55°C(30min) ~ normal temperature(5min) ~ 155°C(30min), 300 cycles
短时过负载 Short Time Overload	无可见损伤 No mechanical damage $\Delta R \leq \pm (2.0\%R + 0.05\Omega)$	IEC 60115-1 4.13 2.5 倍额定电压或最大过负荷电压 (取最少者) 保持 5 秒; 2512 型号在 2W 功率下持续通电 2 秒 2.5×Rated voltage or Max. overload voltage whichever is lower, for 5s; 2s for 2512 type 2W power series
耐溶剂性 Component Solvent Resistance	无可见损伤 No mechanical damage. $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$	IEC60115-14.29 异丙醇 (IPA), 23°C ± 5°C, 浸泡 10 小时 Dipping in solvent solution of Isopropyl alcohol, 23°C ± 5°C, for 10h



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor		版本号 Version of: RP-2.0
RP□□□□		
项目 Item	标准 Specification	试验方法 Test Method (IEC60115-1)
稳态湿热 Damp heat steady state	无可见损伤 No mechanical damage. $\Delta R \leq \pm (3.0\%R + 0.05\Omega)$	IEC 60115-1 4.24 40°C ± 2°C, 93% ± 3%RH, 1000 小时, 通 额定电压或元件极限电压(取较小值), 通 电 1.5 小时 / 断 0.5 小时。 40°C ± 2°C, 93% ± 3%RH, 1000H, rated voltage or limiting element voltage whichever is lower for 1.5h ON / 0.5h OFF
70°C 耐久性 Endurance at 70°C	无可见损伤 No mechanical damage. ±1%: $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ ±2%、±3%、±5%: $\Delta R \leq \pm (2.0\%R + 0.05\Omega)$	IEC 60115-1 4.25.1 70°C ± 2°C, 1000 小时, 额定电压或元件极 限电压(取较小者)通电 1.5 小时 / 断 0.5 小时。 70°C ± 2°C, 1000h, rated voltage or limiting element voltage whichever is lower for 1.5h ON / 0.5h OFF
上限类别温 度耐久性 Endurance at Upper Category Temperature	无可见损伤 No mechanical damage. ±1%: $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ ±2%、±3%、±5%: $\Delta R \leq \pm (2.0\%R + 0.05\Omega)$	IEC 60115-1 4.25.3 155°C ± 2°C, 1000 小时 155°C ± 2°C, 1000h
低温负载 Operation at low Temperature	无可见损伤 No mechanical damage. ±1%: $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ ±2%、±3%、±5%: $\Delta R \leq \pm (2.0\%R + 0.05\Omega)$	IEC 60115-1 4.36 -55°C ± 5°C, 无负载 1 小时, 额定电压或 元件极限电压(取较小值) 45 分钟, 无负 载 5 分钟 -55°C ± 5°C, 1h without load, rated voltage or limiting element voltage whichever is lower for 45min, 15min without load
绝缘电阻 Insulation Resistance	1000MΩ Min	IEC60115-1-4.6 在电极与基板之间施加 100V ± 15V 直流 电压, 保持 1 分钟, 然后测量绝缘电阻值 Apply DC 100V ± 15V between substrate and termination for 1 minute, then check insulation resistance.
耐电压 Voltage proof	无击穿或飞狐 No breakdown or flashover	IEC60115-1 4.7 在电极与基板之间以 100V/s 的速率施加有 效值为最大过负荷电压的交流电压, 保持 60s ± 5s Apply max overload voltage of AC RMS at a rate of approximately 100v/s between substrate and terminations for 60s ± 5s
耐溶剂性 Resistance to Solvent	無可見損傷 No mechanical damage. $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$	IEC 60115-1 4.29 異丙醇 (IPA), 23°C ± 5°C, 浸 10 小時 Iso-propyl alcohol (IPA), 23°C ± 5°C, 10h



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

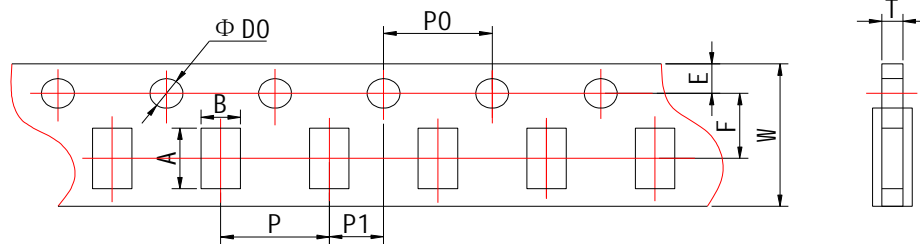
6.0 包装 Package

载带尺寸 Carrier Tape Dimension

■纸带编带 Paper Taping

适用于 0603、0805、1206、1210

For 0603、0805、1206、1210 type



单位 Unit: mm

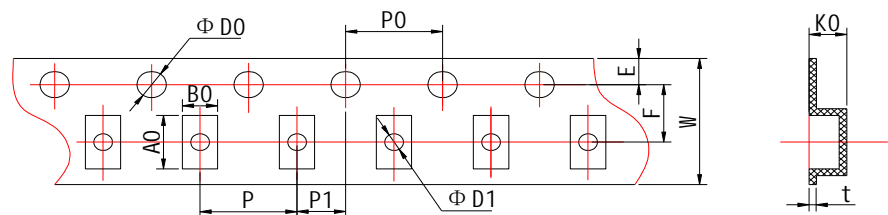
型号 Type	A	B	W	F	E
0603	1.85±0.10	1.10±0.10	8.00±0.20	3.50±0.05	1.75±0.10
0805	2.35±0.10	1.65±0.10	8.00±0.20	3.50±0.05	1.75±0.10
1206	3.50±0.20	1.90±0.20	8.00±0.20	3.50±0.05	1.75±0.10
1210	3.50±0.20	2.80±0.20	8.00±0.20	3.50±0.05	1.75±0.10

型号 Type	P	P0	P1	ΦD0	T
0603	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	0.60±0.10
0805	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	0.75±0.10
1206	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	0.75±0.10
1210	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	0.75±0.10

■塑料带编带 Embossed Taping

适用于 2010、2512

For 2010、2512 type



单位 Unit: mm

型号 Type	A0	B0	W	F	E	T
2010	5.50±0.15	2.82±0.15	12.00±0.10	5.50±0.10	1.75±0.10	0.25±0.05
2512	6.78±0.15	3.45±0.15	12.00±0.10	5.50±0.10	1.75±0.10	0.25±0.05

型号 Type	P	P0	P1	ΦD0	ΦD1	K0
2010	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10/-0	1.50±0.10	0.84±0.10
2512	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10/-0	1.50±0.10	0.81±0.10



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

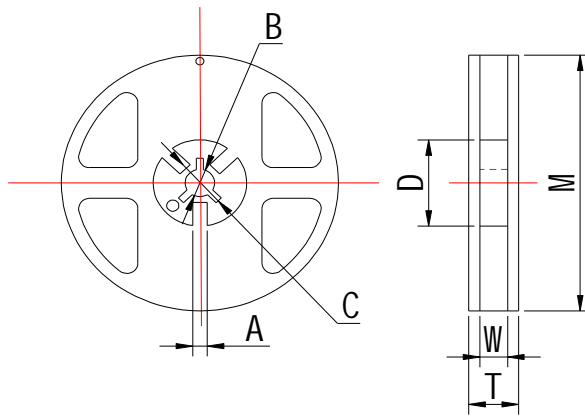
版本号 Version of: RP-2.0

RP□□□□

卷盘尺寸 Reel Dimension

单位 Unit: mm

型号 Type	M	W	T	A	B	C	D
0603 0805 1206 1210	178±2.0	9.5±1.0	12.5±1.5	2.0±0.5	13.0±0.5	21.0±0.5	58.0±2.0
2010 2512	178±2.0	13.0±0.5	15.5±1.5	2.0±0.5	13.0±0.5	21.0±0.5	57.0±2.0



6.1. 编带包装标准 Taping Specification

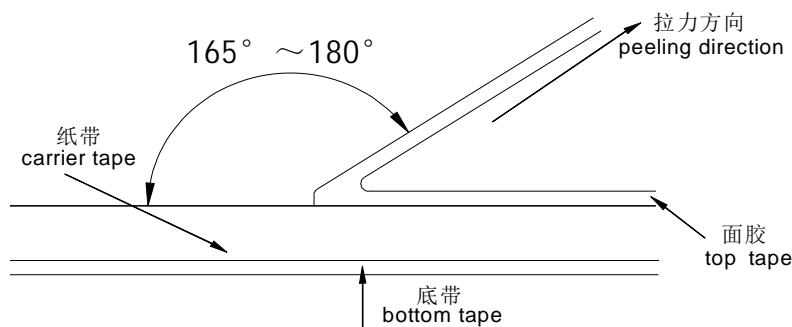
(A) 能力 Ability

■ 面带拉力 top tape peel strength

面带拉力强度为 11~70g(0.1N~0.7N),速度: 300mm/min 经下列试验后不允许有破裂断带现象。

Peel strength is 11~70g(0.1N~0.7N) with speed of 300mm/min, and should not have flash and tear after peeling.

测试方法 Test Method:



■ 芯片松动自如,无粘面、底胶现象.

Resistor is free, no sticking to top tape and bottom tape.

■ 芯片易从纸带中取出,且芯片孔无机械损伤.

Resistor is easy to take out from carrier tape and chip hole have no mechanical damage.



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor	版本号 Version of: RP-2.0
RP□□□□	

(B) 编带包装数量 Quantity in Taping		Unit: PCS / reel
型号规格 Type	数量 Quantity	
0603、0805 1206、1210	5000	
2010、2512	4000	

(C) 载带说明 Carrier Tape Statement

无组件 有组件 无组件 牵引带（仅面胶）
no components have components no components lead Tape（only top tape）
终端部 前端部 牵引带

纸带输送方向
Direction of Feeding

长度 Length		Unit: mm
终端部 Terminal	前端部 Front	牵引带 Lead Tape
110~140	200-250	300-350

6.2 外包装 Outer Packaging

第一次包装：数量：1 卷~10 卷 第二次包装：数量：最多 8 盒
the first package : 1~10 reels the second package: 8 case Max

标识
Marking

标识
Marking

- 当包装数量不能达到最大时，余空隙部位采用辅助材料填满。
When quantity shall not reach the max , the remaining empty space shall be buried with buffer material.
- 当数量为最小时，用别的方法包装，保运输过程中无问题是至关重要的。
When the quantity is a few, alternative packing methods may be used. It is very important to ensure the safety of the products during transportation.



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

6.3 标签 Label

■卷盘标签 label on the reel

- | | | |
|----------------------------|------------------------|---------------------|
| 1. 客户物料号 customer part No. | 2. 客户订单号 customer P/O) | 3. 型号规格 Part No |
| 4. 数量 quantity | 5. 标称阻值 resistance | 6. 额定功率 rated power |
| 7. 电阻值误差 tolerance | 8. 出厂日期 delivery date | 9. QC 印章 QC marking |
| 10. ROHS marking | | |

■内箱标签 label on inner packaging box

- | | | |
|---------------------------|------------------------|---------------------|
| 1. 客户物料 customer part No. | 2. 客户订单号 customer P/O) | 3. 型号规格 Part No |
| 4. 数量 quantity | 5. 标称阻值 resistance | 6. 额定功率 rated power |
| 7. 电阻值误差 tolerance | 8. 出厂日期 delivery date | 9. QC 印章 QC marking |
| 10. ROHS marking | | |

■外箱标签 label on outer packaging box

- | | | |
|-----------------------------|-------------------------|--------------------------------|
| 1. 客户名称 customer name | 2. 合同编号 contract No. | 3. 产品名称 product name |
| 4. 风华型号规格 part No. | 5. 数量 quantity | 6. 箱号 case No. |
| 7. 制造者名称 maker name | 8. QC 印章 QC marking | 9. 客户订单号: customer P/O |
| 10. 客户物料号: customer part No | 11. 出货日期: delivery date | 12. 装箱清单号: Packing list number |
| 13. 毛重: gross weight | 14. 净重: net weight | |



备注 Remark:

①()部分可按客户要求而定。

The content with bracket could be designed according to customers' requirement.

②一般情况下，环保产品采用“RoHS”标示。

Usually, the environmental product will be used “RoHS” label.

卷盘标签上的环保标志 Environmental Logo on Reel Label	外箱上的环保标志 Environmental Logo on Outer Box
	



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

7.0 环保情况说明 Environmental Protection Statement

※ 产品符合 ROHS 指令 Compliant with ROHS Directive.

1) 表面处理层（即外部电极）无铅 (Pb≤100ppm)

The termination of the chip resistor is lead-free(Pb≤100ppm).

2) 本体中的铅属于 ROHS 指令豁免的“玻璃中的铅”

The Pb in the resistor body is belong to the ROHS exemption of “Pb in glass material”

※ 根据中国《电子信息产品污染控制管理办法》的规定，片式电阻器的有害物质情况如下：

According to the requirement of Administration on the Control of Pollution caused by Electronic Information Products, below are the hazardous substance information for the chip resistor:

部件名称 part name	有毒有害物质或元素 hazardous substance					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr ⁶⁺)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
片式电阻器 chip resistor	×	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006标准规定的限量要求以下。

○：Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the threshold requirement in ST/J11363-2006.

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

×：Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the threshold requirement in ST/J11363-2006.

※ 产品的环保使用期限标志如下：

The Environment Friendly Use Period logo as below:



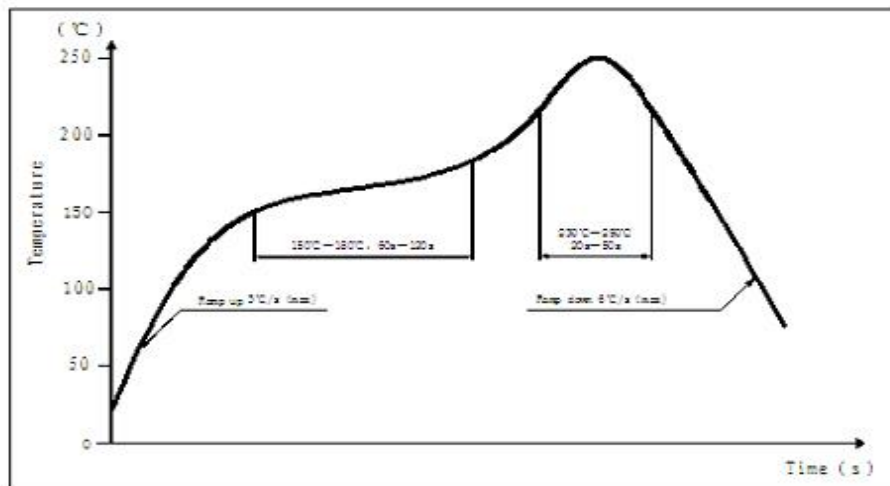
备注：此环保使用期限只适用于产品是在本产品承认书中所规定的条件下工作。

Remarks: The above “Environment Friendly Use Period” only applicable under the condition specified in this approval sheet.

8.0 表面处理无铅片阻推荐使用的焊接曲线 Recommended Soldering Profile

■ 推荐的回流焊曲线 Recommended re-flow profile

回流3次 Re-flow 3 times



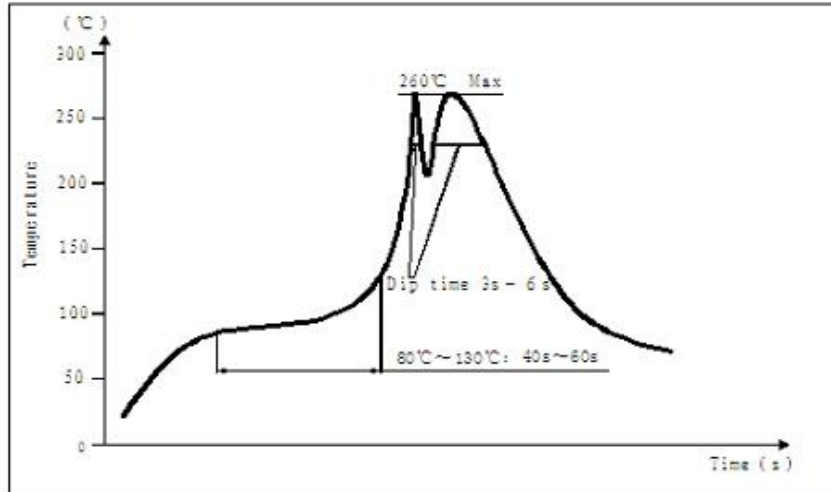


功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

推荐的波峰焊曲线 Recommended wave solder profile



■ 推荐的 焊膏 / 焊锡 类型 Recommended solder alloy: 96.5Sn-3.0Ag-0.5Cu

9.0 注意事项 Precautions

■ 本产品以下特殊环境下应用，性能可能会受到影响：

Application of the products in a special environment can deteriorate product performance:

1、在不同类型的液体，包括水，油，化学品，有机溶剂的使用。

Use in various types of liquid, including water, oils, chemicals, and organic solvents.

2、在户外直接暴露在阳光的地方，或在灰尘多的地方使用产品。

Use outdoors where the products are exposed to direct sunlight, or in dusty places.

3、在产品暴露的地方，有海风或腐蚀性气体，包括氯气，硫化氢，氨气，二氧化硫，二氧化氮。

Use in places where the products are exposed to sea winds or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂.

4、在产品暴露于静电或电磁波的地方使用。

Use in places where the products are exposed to static electricity or electromagnetic waves.

5、在产生热量的部件、塑料线，或其他易燃物品附近使用。

Use in proximity to heat-producing components, plastic cords, or other flammable items.

6、在用树脂或其他涂层材料密封产品的情况下使用。

Use involving sealing or coating the products with resin or other coating materials.

7、焊接后使用不洁焊料或使用水或水溶性清洗剂清洗产品。

Use involving unclean solder or use of water or water-soluble cleaning agents for cleaning after soldering.



功率型厚膜片式电阻器 High Power Thick Film Chip Fixed Resistor

版本号 Version of: RP-2.0

RP□□□□

n 产品使用注意事项 Precautions on use of products

- 1、避免采用超过正常额定功率的功率，超过额定功率的稳态负载条件下可能会对产品性能和可靠性产生负面影响。
Avoid applying power exceeding normal rated power, exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- 2、用镊子拿起产品时要小心。有可能会将保护或电阻体夹碎。
Be careful when pick up the products with tweezers. There may be a care that the overcoat and / or the body can be chipped.
- 3、手动安装产品时，烙铁头勿触碰产品。
Soldering tip shall not touch the product when install product manually.

n 贮存条件:温度 5℃~30℃,相对湿度 30%~70%.

Storage conditions: T: 5℃~30℃,RH: 30%~70%.

建议在符合以上贮存条件下 6 个月内使用。

The products are suggested to be used within six months when received, and the storage condition mentioned above should be followed.

n 请您盖章确认后，将复印件返回我司，如三个月后未返回我司将视做默认接受。

Be sure to return a copy to our company after stamping your company acceptance, if no copy returned after three months, we would judge that you shall receive and accept this approval sheet.

n 如承认书有任何变更，之前的版本自动作废。

If there is any amendment, a former version shall become invalid.