

合金电阻承认书

Approval Specification Metal Current Sensing Chip Resistors-Type

<h1 style="margin: 0;">承认书</h1> <h2 style="margin: 0;">Approval Sheet</h2>
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供货商：常州鹏科电子有限公司

客户：_____

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一、适用范围Scope

- 合金电阻2512\1206\0805系列Metal Alloy Resistance 2512 Series
- 最高功率可达3W High power up to 3W
- 最低TCR为±50ppm/°C Lowest TCR from ±50ppm/°C
- 适应再流焊与波峰焊 Suit for reflow and wave flow solder
- 无卤环氧树脂 Halogen Free Epoxy
- 无铅电镀Lead Free Plate
- 机械强度高，高频特性优越 Superior mechanical and frequency characteristics
- 符合 RoHS 标准 RoHS compliant

二、品名构成Type Designation :

产品代号	类别	产品尺寸	额定功率	阻值	精度
合金片式固定电阻器	DD:2512大电极	25:2512	L:2W	R001=1 mΩ	D=±0.5%
	XD: 2512小电极	12:1206	N:3W	R010=10 mΩ	F=±1%
	RC:1206	08:0805	A:1W	R100=100 mΩ	G=±2%
	RE:0805		B:0.5W	R0015=1.5 mΩ	H=±3%
					J=±5%

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三、结构尺寸Construction and Dimension :

尺寸示意图							
	<table border="1"> <tr><td>XD: 小电极</td></tr> <tr><td>RC: 1206</td></tr> <tr><td>RE: 0805</td></tr> </table>		XD: 小电极	RC: 1206	RE: 0805	<table border="1"> <tr><td>DD: 大电极</td></tr> </table>	
XD: 小电极							
RC: 1206							
RE: 0805							
DD: 大电极							
类别	L	W	T	A			
2512	6.4±0.20	3.2±0.20	0.8±0.20	DD: 2.0±0.20 (R≤4 mΩ)			
				XD: 1.0±0.20 (R>0.5 mΩ)			
1206	3.2±0.20	1.6±0.20	0mΩ ≅ R<10mΩ	0.7±0.20			
			10mΩ <R ≅ 200mΩ	0.45±0.20			
0805	2.0±0.10	1.25±0.10	0.5±0.20	0.35±0.20			
单位: mm							

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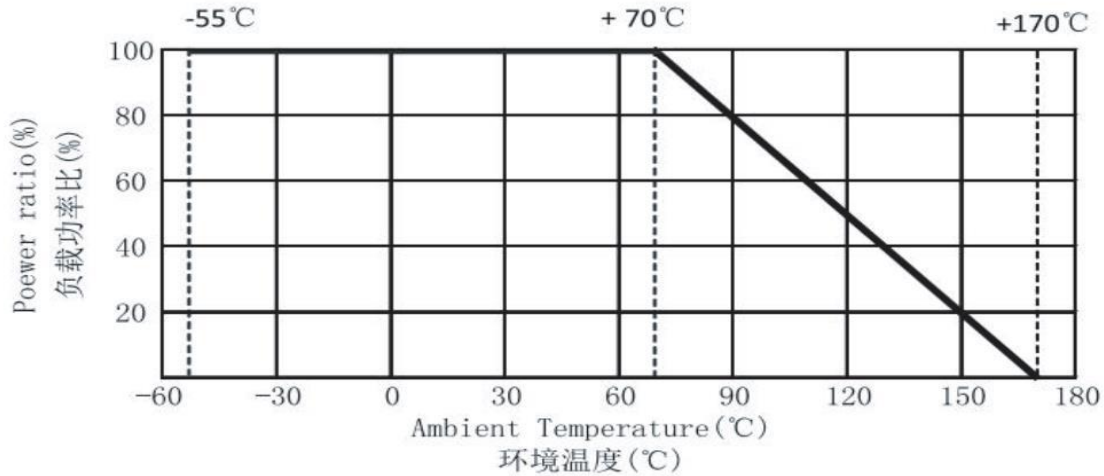
四、电气规格Electrical Specifications :

产品类别		功率 Rated power	阻值范围 Resistance range	温度系数 TCR	工作温度范围 Operating temperature range	阻值精度 Resistance tolerance	绝缘阻抗 Insulation resistance	最大工作电压 Maximum operating voltage (V)
2512	DD/XD	2W/3W	$0\text{m}\Omega \leq R \leq 1\text{m}\Omega$	$\pm 350\text{ppm}/^\circ\text{C}$	$-55^\circ\text{C} \sim +170^\circ\text{C}$	F: 1% G: 2% J: 5%	Over 100M Ω	$(P \cdot R)^{1/2}$
			$1\text{m}\Omega < R \leq 2\text{m}\Omega$	$\pm 100\text{ppm}/^\circ\text{C}$				
			$2\text{m}\Omega < R \leq 500\text{m}\Omega$	$\pm 50 \text{ ppm}/^\circ\text{C}$				
1206	RC	1W	$0\text{m}\Omega \leq R \leq 2\text{m}\Omega$	$\pm 350\text{ppm}/^\circ\text{C}$	$-55^\circ\text{C} \sim +170^\circ\text{C}$	F: 1% G: 2% J: 5%	Over 100M Ω	$(P \cdot R)^{1/2}$
			$2\text{m}\Omega < R \leq 200\text{m}\Omega$	$\pm 50 \text{ ppm}/^\circ\text{C}$				
0805	RE	0.5W	$5\text{m}\Omega \leq R \leq 15\text{m}\Omega$	$\pm 50\text{ppm}/^\circ\text{C}$				

说明Note1: 封装功率降额曲线Package Power Temperature Derating Curve

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图示Figure 1: 功率温度降额曲线Power Temperature Derating Curve

备注 (remark) :

※ 额定电流计算公式 (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)

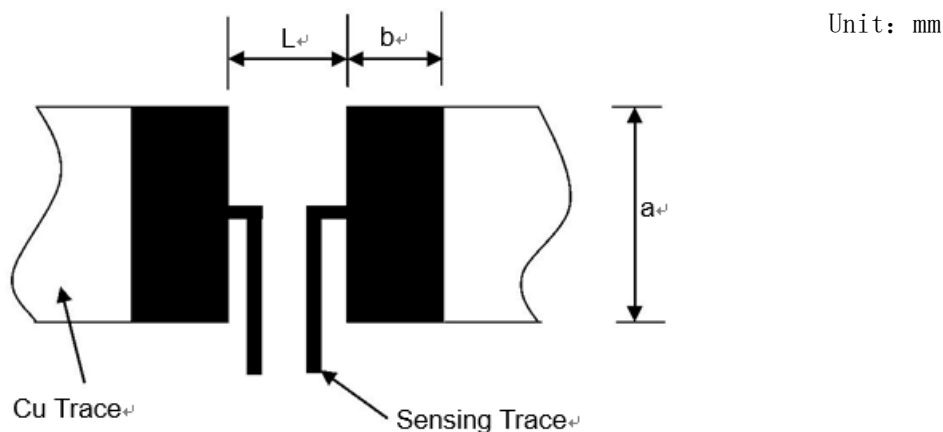
R: 电阻阻值 (Resistance) (ohm)

※ 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

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五、焊盘尺寸Land Pattern Dimensions :



尺寸	类别	a	b	L
0805	RE	1.5	1	1
1206	RC	1.8	1.7	1.6
2512	XD	4	2.1	4.1
	DD	4	3.1	1.3

六、量测点：阻值测试包装标准量测位置：

背面电极	类别	A	B
	2512	5.8±0.1	1.5±0.1
	1206	2.95±0.1	1±0.1
	0805	1.4±0.1	0.58±0.1
单位：mm			

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七、可靠性验证 Reliability Tests

项目 Project	检测方法 Test Method (依据标准 Refer to IEC 60115, 60068; JIS-C 5201-1)	规格和要求 Specifications and Requirements
温度系数 Temperature coefficient (TCR)	25°C (T1、R1)、125°C (T2、R2)条件下分别测量阻值, 计算 $TCR = (R2 - R1) / (R1 (T2 - T1)) * 10^6$ Resistance values were measured at 25°C (T1, R1) and 125°C (T2, R2), and TCR was calculated as $(R2 - R1) / (R1 (T2 - T1)) * 10^6$	参考物理特性 TCR 规格 Refer to TCR specifications for physical features
短时间过载 Short Time Overload	5 倍额定功率, 保持 5s 5 times rated power, maintain 5s	$\Delta R \leq \pm (1\% + 0.05m\Omega)$
绝缘电阻 Insulation resistance	在电极与基片间施加 100V ± 15V 直流电压, 保持 60s, 然后测绝缘电阻 Apply 100V ± 15V DC voltage between electrode and substrate, hold for 60 seconds, then measure insulation resistance	> 100 MΩ
耐电压 Withstand voltage	在电极与基片之间以大约 100V/S 的速率施加有效值为最大过负荷电压的交流电, 保持 60 ± 5s An alternating current with an effective value of the maximum overload voltage is applied between the electrode and the substrate at a rate of approximately 100V/S, maintaining 60 ± 5s	无击穿或飞弧 No breakdown or arc

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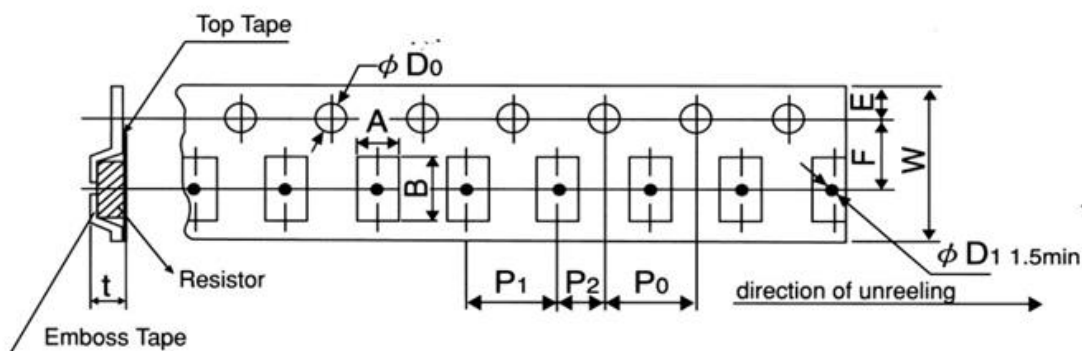
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项目 Project	检测方法 Test Method (依据标准 Refer to IEC 60115, 60068; JIS-C 5201-1)	规格和要求 Specifications and Requirements
焊锡性 solderability	245°C±5°C 锡槽, 保持 2s±0.5s 245°C±5°C tin tank, hold 2s±0.5s	电极上锡面积>95% At least 95% of surface area of electrode shall be covered with new solder
耐热性 Resistance to Soldering Heat	260°C±5°C 锡槽, 保持 10s±1s 260°C±5°C tin tank, hold for 10s±1s	$\Delta R \leq \pm (0.5\%+0.05m\Omega)$, 无可见损伤 $\Delta R \leq \pm (0.5\%+0.05m\Omega)$, no visible damage
弯曲测试 Bending test	弯曲距离 2mm, 保持时间 60s±5s Bending distance 2mm, hold time 60s±5s	$\Delta R \leq \pm (0.5\%+0.05m\Omega)$, 无机械损伤 $\Delta R \leq \pm (0.5\%+0.05m\Omega)$, no mechanical damage
耐溶测试 Solvent resistance	异丙醇 (IPA), 23°C±5°C, 浸 10 小时 Isopropanol (IPA) at 23°C±5°C for 10 hours	外观无明显损伤 No obvious damage to appearance
长期高温 High Temperature Exposure	高温 170°C 放置 1000H 170°C±2°C, 1000H, stand for 1H, test the resistance value	$\Delta R \leq \pm (1.0\%+0.05m\Omega)$
长期低温 Low Temperature Exposure	低温 -55°C 放置 1000H -55°C±2°C, 1000H, stand for 1H, test the resistance value	$\Delta R \leq \pm (0.5\%+0.05m\Omega)$
温度循环 Rapid change of Temperature	-55°C 30 分钟~常温 5 分钟~155°C 30 分钟, 1000 个循环 -55°C 30 minutes ~ normal temperature 5 minutes ~155°C 30 minutes, 1000 cycles	$\Delta R \leq \pm (0.5\%+0.05m\Omega)$
长期耐久 Load Life	70°C±2°C, 1000 小时, 额定功率, 通 1.5 小时/断 0.5 小时 70°C±2°C, 1000 hours, rated power, 1.5 hours on / 0.5 hours off	$\Delta R \leq \pm (1.0\%+0.05m\Omega)$
长期耐湿 Moisture with Load	85°C±2°C, 85%±3%RH, 持续 1000 小时, 额定功率, 通 1.5 小时/断 0.5 小时 85°C±2°C, 85%±3%RH, 1000 hours, rated power, 1.5 hours on / 0.5 hours off	$\Delta R \leq \pm (1.0\%+0.05m\Omega)$

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八、载带尺寸TAPE PACKAGING DIMENSIONS:

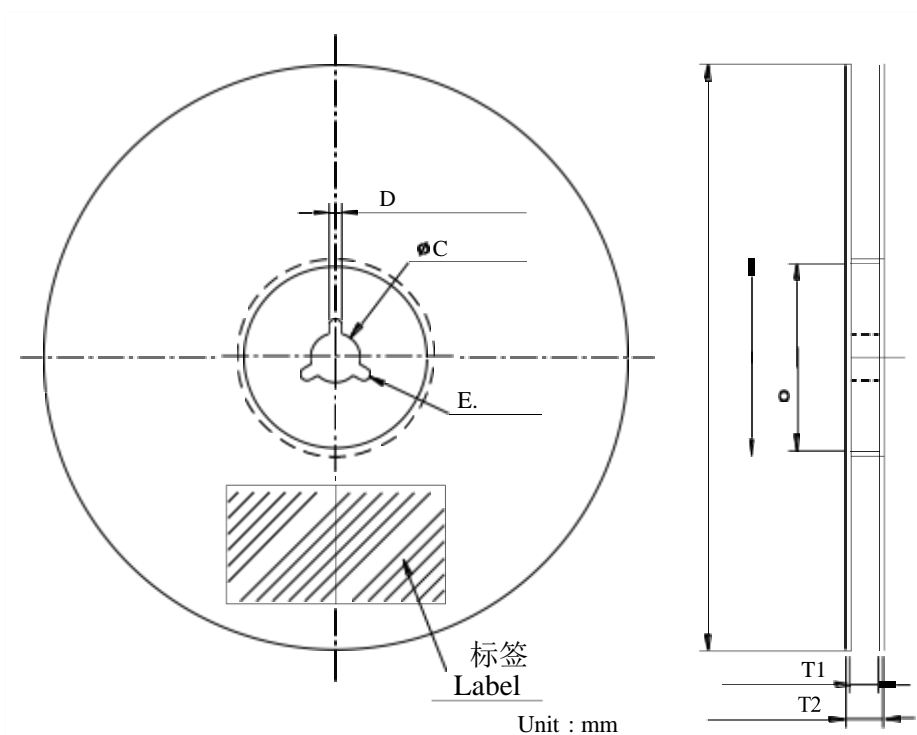


型号	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	t
0805	1.65± 0.05	2.4± 0.05	8.0± 0.1	3.5± 0.05	1.75± 0.1	4.0± 0.1	2.0± 0.05	4.0± 0.1	1.55± 0.05	0.85± 0.1
1206	2.0± 0.15	3.6± 0.02	8.0± 0.2	3.5± 0.05	1.75± 0.1	4.0± 0.1	2.0± 0.05	4.0± 0.05	1.5~1.6	0.84± 0.0.1
2512	3.5± 0.15	6.8± 0.2	12.0 ±0.2	5.5± 0.05	1.75± 0.1	4.0± 0.1	2.0± 0.05	4.0± 0.05	1.5~1.6	1.0± 0.1

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九、卷盘尺寸Reel Dimensions:

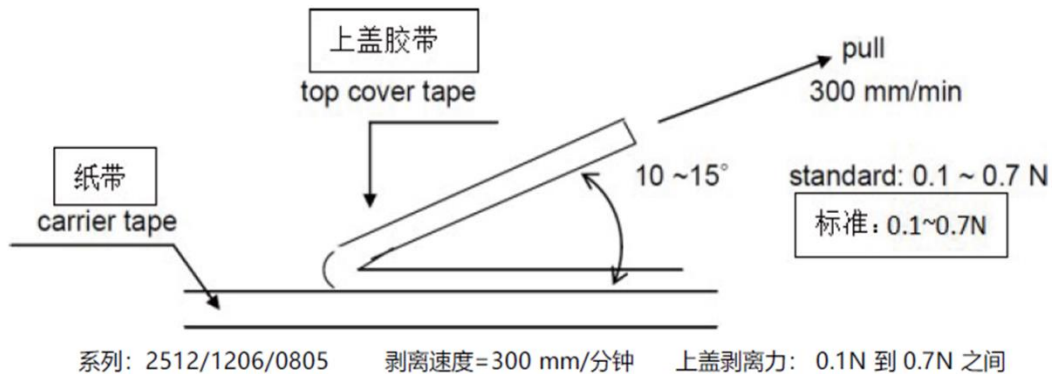


型号 Type	A	B	C	D	E	T1	T2
0805	178±2.0	60±1.0	13±1.0	2.0±0.5	>22	9.0±1	/
1206	178±2.0	60±1.0	13±1.0	2.0±0.5	>22	9.0±0.3	11.4±1.0
2512	178±2.0	60±1.0	13±1.0	2.0±0.5	>22	13.0±0.3	15.4±1.0

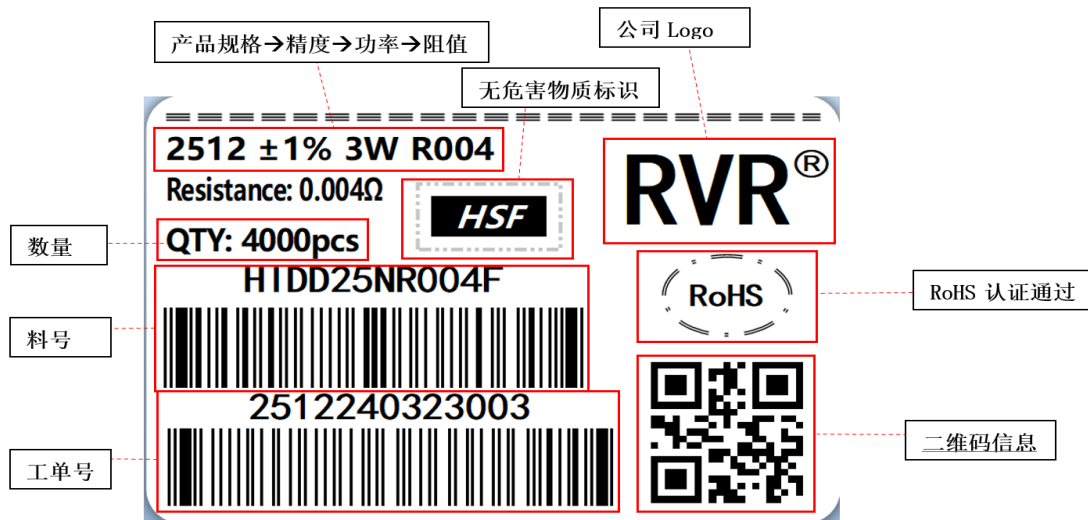
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十、拉力测试Peeling Test :



十一、标签Label :



包装数量: 0805/1206: 5000pcs.Reel 2512: 4000pcs/Reel
 Numbers of Taping: 0805/1206 5000 pieces/reel 2512 4000pcs/Reel

标签标明以下项目

The following items shall be marked on the reel.

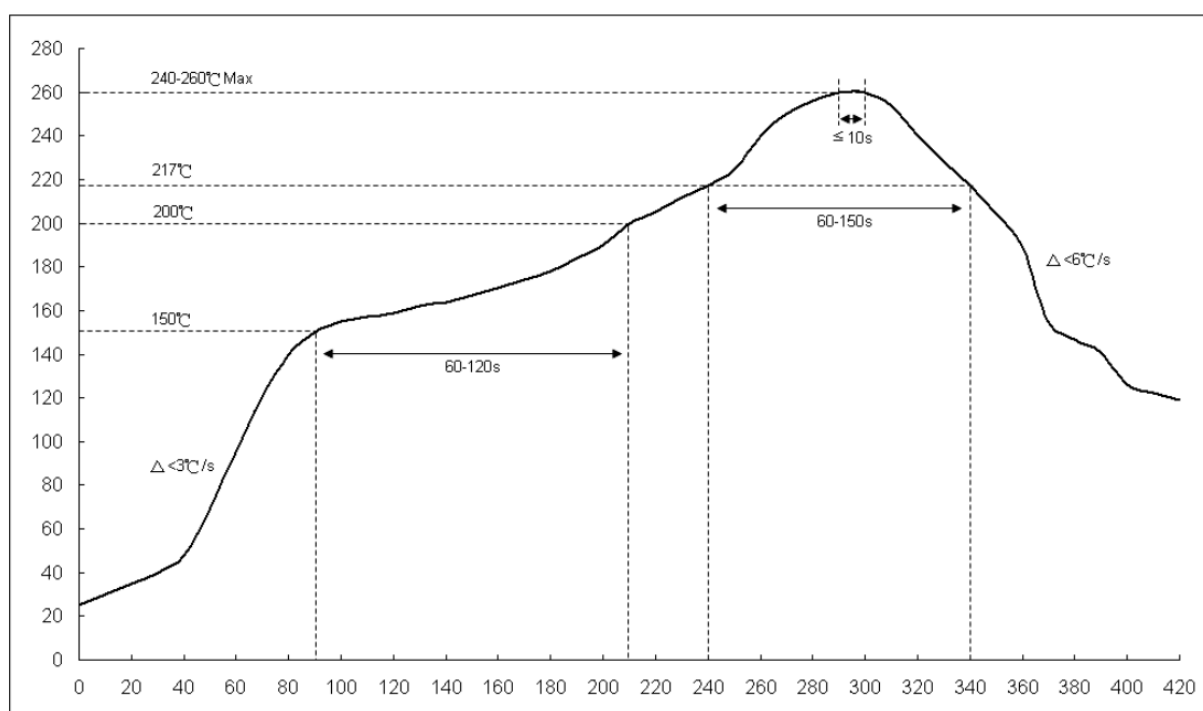
- (1) 型号Size
- (2) 数量Quantity
- (3) 批号LOT. NO.
- (4) 品名Manufacturer' s name

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十二、建议回流焊曲线 (Recommend reflow soldering profile)

- 1、焊料solder : Sn96.5 / Ag3 / Cu0.5)
- 2、高峰时期的温度Peak : 240~260, ≤10 sec
- 3、预热区: Pre - heating Zone : 150 to 200 °C, 90±30 sec
- 4、焊接区: Soldering Zone : 230°C or higher , 30±10 sec



十三、注意事项Care Note :

1. 储存注意事项 Care note for storage

- 储存时应注意温度和湿度 (温度 5~35°C, 相对湿度 45~75% RH). 湿度尽可能保持在范围内; Chip resistor shall be stored in a room where temperature and humidity must be controlled. (temperature 5 to 35°C, humidity 45 to 75% RH) However, a humidity keep it low, as it is possible.
- 不能阳光长时间直接照射产品; Chip resistor shall be stored as direct sunshine doesn't hit on it.
- 不能存储在潮湿, 灰尘及导致焊接性能变差的有害气体环境中(氯化氢气体、亚硫酸气体、硫化氢气体); Chip resistor shall be stored with no moisture, dust,

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a material that will make solder ability inferior, and a harmful gas (Hydrogen chloride, sulfurous acid gas, and Hydrogen sulfide)

- 保存期限：1年；Storage life: 1 year;

2. 操作使用注意事项 Care note for operating and handling

- 使用中避免超过正常额定功率，超过额定功率可能会对产品性能和可靠性造成负面影响；Avoid exceeding the normal rated power in use, which may negatively affect product performance and reliability;
- 用镊子拿起产品时要小心，有可能会将保护层或电阻本体夹破；Be careful when picking up the product with tweezers, as the protective layer or resistance clamp may be damaged;
- 2.3 手动安装产品时，烙铁头勿触碰产品。Do not touch the product with the soldering tip when manually installing the produ