

陶瓷片阻工程规格

1. 片阻介绍

1.1、贴片电阻(SMD Resistor)又名片式固定电阻器(Chip Fixed Resistor)，是金属玻璃釉电阻器的一种。是将金属粉和玻璃釉粉混合，采用丝网印刷法印在基板上制成的电阻器。电阻是一个耗能原件，将电能转化为热能。

1.2、贴片电阻特点：

耐潮湿和高温，温度系数小。体积小，重量轻，可大大节约电路空间成本，使设计更精细化。

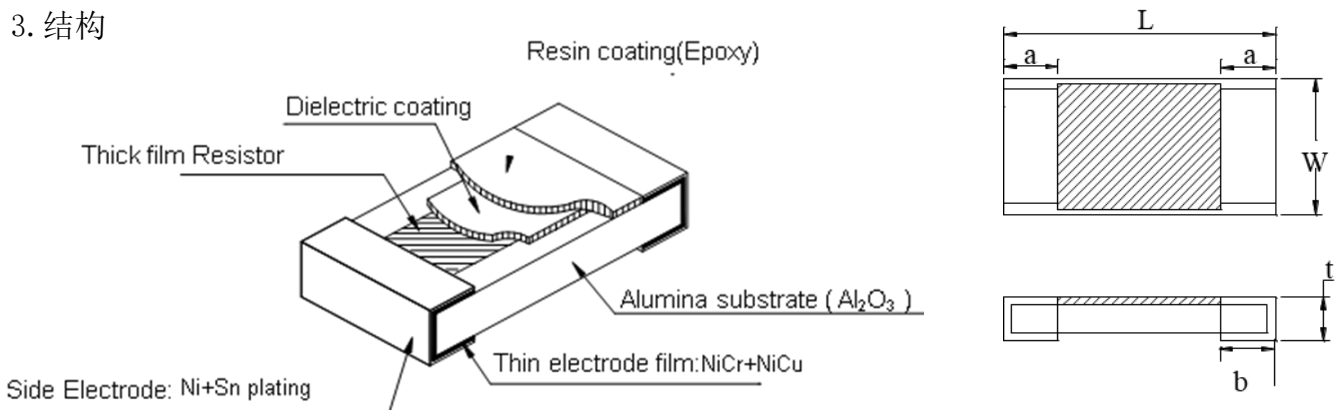
1.3、贴片电阻的基本功能是限流、降压。

2. 品名构成

FA1A	1002	J	S	01005
1	2	3	4	5
Series Name	Resistance	Resistance Tolerance	TCR	Size
General Thick Film	E24 Series	B=0.1%	P=±25ppm/°C	03015
	E96 Series	D=0.5%	Q=±50ppm/°C	01005
		F=1.0%	R=±100ppm/°C	0201
		J=5.0%	S=±200ppm/°C	0402
			T=±600ppm/°C	0603
				0805
				1206
				1210
			2010	
			2512	

备注：0603及以上产品上marking阻值标识按照3码&4码区分。出货标签上阻值均以4码表示

3. 结构



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4. 规格尺寸

产品别	L mm	W mm	t mm	a mm	b mm
03015	0.30±0.015	0.15±0.015	0.13±0.02	0.08±0.03	0.08±0.03
01005	0.40±0.02	0.20±0.02	0.13±0.02	0.10±0.03	0.10±0.03
0201	0.60±0.03	0.30±0.03	0.23±0.03	0.10±0.05	0.15±0.05
0402	1.00±0.05	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10
0603	1.60±0.15	0.80±0.15	0.45±0.15	0.30±0.20	0.30±0.20
0805	2.00±0.10	1.25±0.10	0.50±0.15	0.40±0.20	0.40±0.20
1206	3.10±0.10	1.55±0.10	0.60±0.15	0.50±0.20	0.40±0.20
1210	3.10±0.15	2.55±0.15	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±0.25	0.60±0.25
2512	6.30±0.20	3.20±0.20	0.55±0.10	0.60±0.25	0.60±0.25

5. 额定值

Table1:

产品别	额定 功率	最大 操作电压	最高 过负载电压	阻值范围
03015	1/50W	10V	20V	0Ω 1Ω~10MΩ
01005	1/32W	15V	30V	
0201	1/20W	25V	50V	
0402	1/16W	50V	100V	
0603	1/10W	50V	100V	
0805	1/8W	150V	300V	
1206	1/4W	200V	400V	
1210	1/2W	200V	400V	
2010	3/4W	200V	400V	
2512	1W	200V	400V	

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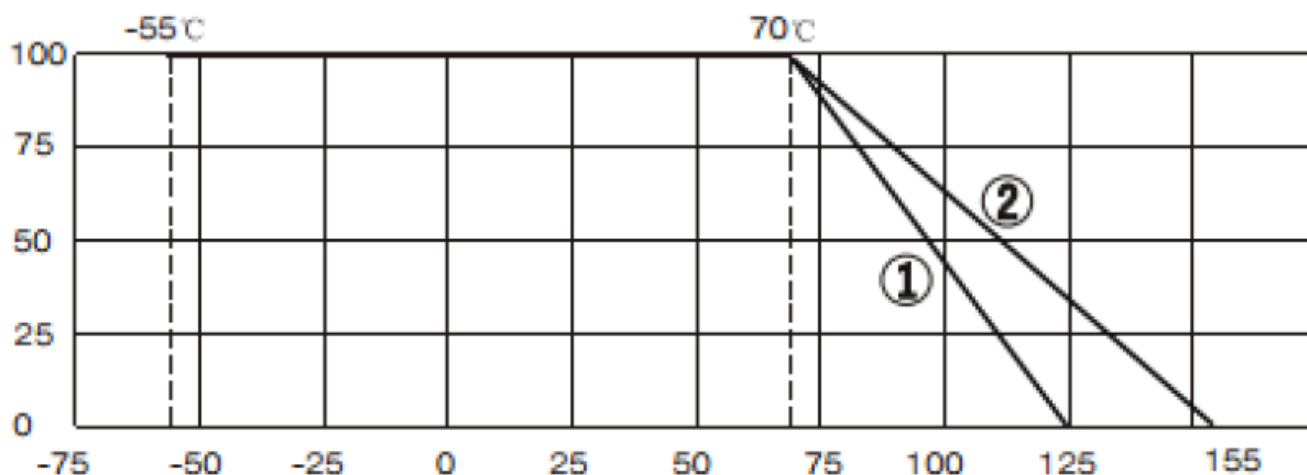
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备注：①以上表格中最大操作电压：按照公式 $E = \sqrt{P \times R}$ 计算出最大操作电压；当计算的电压小于表中最大操作电压时，以计算的电压为准；当计算的电压大于表中最大操作电压时，以表中最大操作电压为准。

Table2: Jumper:

产品别	Rated Current	Max Overload Current	Resistance Range
03015	0.4A	1A	50mΩ MAX
01005	0.5A	1A	50mΩ MAX
0201	1A	2.5A	50mΩ MAX
0402	1A	2.5A	50mΩ MAX
0603	1A	5A	50mΩ MAX
0805	2A	5A	50mΩ MAX
1206	2A	5A	50mΩ MAX
1210	2A	5A	50mΩ MAX
2010	2A	5A	50mΩ MAX
2512	2A	5A	50mΩ MAX

6. 额降曲线



备注：

使用温度范围：曲线①-55°C~125°C， 曲线② -55°C~155°C

曲线①适用于 03015、01005、0201，曲线②适用于 0402、0603、0805、1206、1210、2010、2512

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7. TCR

产品别	阻值范围	电阻温度系数 TCR :ppm/°C			
		阻值精度			
		0.1%	0.5%	1.0%	5.0%
03015~0402	1 Ω ~10 Ω	/	-200~+600		
	10 Ω ~1M Ω	±200			
	1M Ω ~10M Ω	/	±200		
0603~2512	1 Ω ~10 Ω	/	±200		
	10 Ω ~1M Ω	±100			
	1M Ω ~10M Ω	/	±100		

8. 特性

实验项目	测试方法	测试标准
Bending	IEC 60115-1 4.33 弯曲距离 3mm 保持时间 60s ± 5s	$\Delta R \leq \pm (1.0\%R + 0.05 \Omega)$
短时过载	IEC 60115-1 4.13 2.5 倍额定电压或 2 倍最大操作电压 (取较小值), 保持 5s	$\Delta R \leq \pm (1.0\%R + 0.05 \Omega)$
电阻温度系数	IEC 60115-1 4.8 25°C (T1、R1)、125°C (T2、R2) 条件下分别测量阻值, 计算 $TCR = (R2 - R1) / (R1 (T2 - T1)) * 10^6$	在规定值内
耐溶	IEC 60115-1 4.29 异丙醇(IPA), 23°C ± 5°C, 浸 90S	无可见损伤

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耐电压	IEC 60115-1 4.7 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	无击穿或飞弧
绝缘	IEC 60115-1 4.6 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。	1000MΩ Min
可焊性	IEC 60115-1 4.17 245°C±5°C 锡槽, 保持 2s±0.5s.	可焊面积≥95%
抗焊锡热	IEC 60115-1 4.18 270°C±5°C 锡槽, 保持 10s±1s	无可见损伤 $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$
电极拉力	IEC 60115-1 4.32 施加力: 03015~0603:: 5N, 0805: 9N 1206、1210:25N, 2010、2512:45N	外观无可见损伤
长期高温	IEC 60115-1 4.25.3 03015~0201:125°C±2°C, 1000H 0402~2512:155°C±2°C, 1000H 静置 1H 后测试阻值	0315~0201: $\Delta R \leq \pm (5.0\%R + 0.05\Omega)$ 0402~2512: $\Delta R \leq \pm (3.0\%R + 0.05\Omega)$
长期低温	IEC 60115-1 4.36.2 -55°C±2°C, 1000H, 静置 1H 后测试阻值	0315~0201: $\Delta R \leq \pm (5.0\%R + 0.05\Omega)$ 0402~2512: $\Delta R \leq \pm (3.0\%R + 0.05\Omega)$
冷热冲击	IEC 60115-1 4.40.5 03015~0201:-55°C (30 分钟)-常温 (5 分钟)-125°C (30 分钟), 5 个循环 0402~2512: -55°C (30 分钟)-常温 (5 分钟)-155°C (30 分钟), 5 个循环	$\Delta R \leq \pm (3.0\%R + 0.05\Omega)$
长期耐久	IEC 60115-1 4.25.1 70°C±2°C, 1000 小时, 额定电压或元件极限电压 (取较小值), 通 1.5 小时/断 0.5 小时	0315~0201: $\Delta R \leq \pm (5.0\%R + 0.05\Omega)$ 0402~2512: $\Delta R \leq \pm (3.0\%R + 0.05\Omega)$

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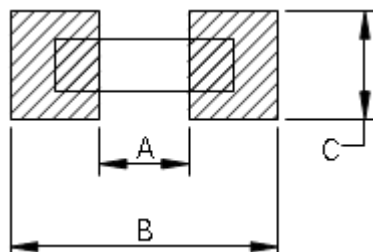
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长期耐湿	IEC 60115-1 4.24 40°C ± 2°C, 95% ± 3%RH, 1000 小时, 额定电压或元件极限电压(取较小值), 通 1.5 小时/断 0.5 小时.	0315~0201: $\Delta R \leq \pm (5.0\%R + 0.05 \Omega)$ 0402~2512: $\Delta R \leq \pm (3.0\%R + 0.05 \Omega)$
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9. 焊板尺寸

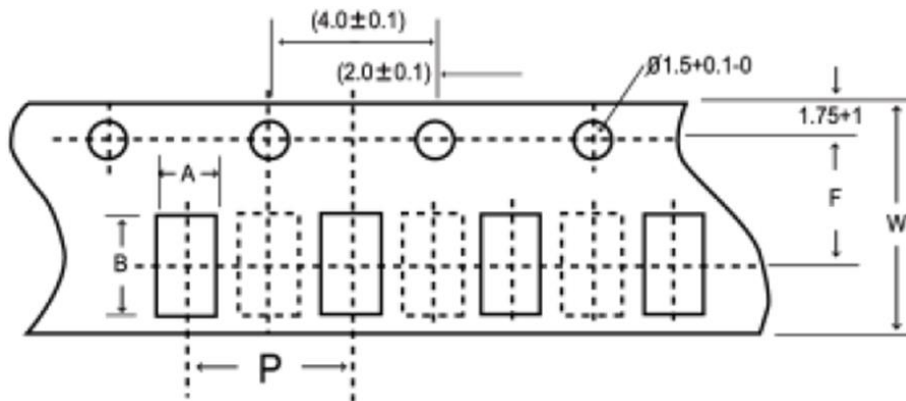
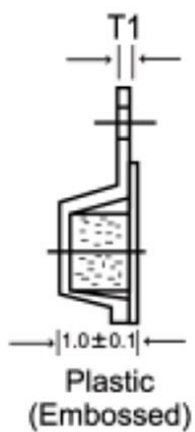


产品别	Pattern 尺寸 mm		
	A	B	C
03015	0.10~0.15	0.40~0.70	0.15~0.30
01005	0.15~0.20	0.50~0.80	0.20~0.40
0201	0.30	1.00	0.30~0.70
0402	0.50	1.50	0.40~0.80
0603	0.82	2.86	1.19
0805	0.97	3.51	1.40
1206	1.90	4.50	1.75
1210	1.90	4.50	3.00
2010	2.65	7.75	3.00
2512	3.40	10.0	3.70

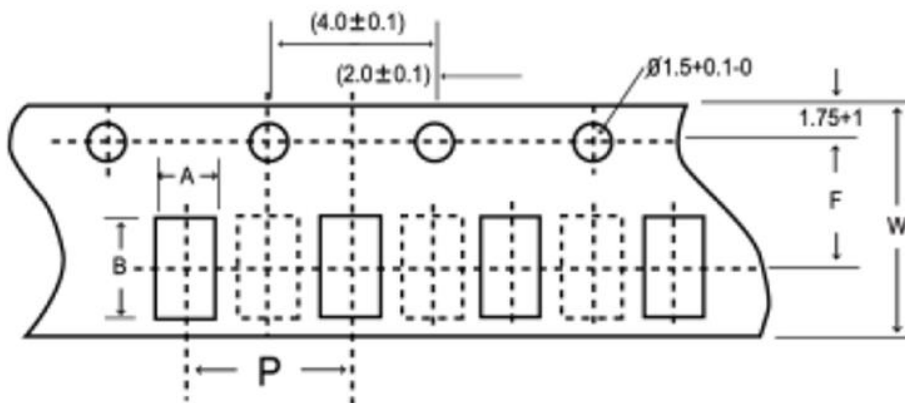
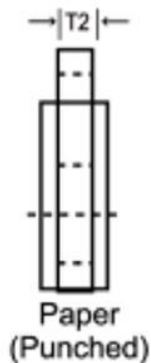
10. 包装

塑胶台纸: 适用产品别 03015、2010、2512

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纸质台纸：适用产品别 01005、0201、0402、0603、0805、1206、1210



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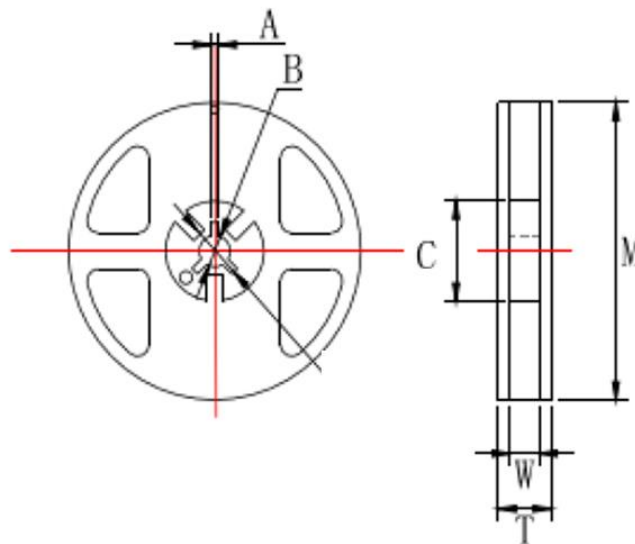
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系列	A mm	B mm	W mm	F mm	E mm	D0 mm	T mm	包装数量
2512	3.40±0.10	6.73±0.10	12.0±0.20	5.50±0.05	1.75±0.10	1.50±0.10	1.1±0.10	4000 pcs/Reel
2010	2.77±0.10	5.45±0.10	12.0±0.20	5.50±0.05	1.75±0.10	1.50±0.10	1.1±0.10	4000 pcs/Reel
1210	2.85±0.10	3.50±0.10	8.00±0.1	3.50±0.05	1.75±0.10	1.55±0.05	0.75±0.05	5000 pcs/Reel
1206	1.89±0.05	3.37±0.05	8.00±0.1	3.50±0.05	1.75±0.10	1.55±0.05	0.75±0.05	5000 pcs/Reel
0805	1.64±0.05	2.37±0.05	8.00±0.1	3.50±0.05	1.75±0.10	1.55±0.05	0.75±0.05	5000 pcs/Reel
0603	1.09±0.05	1.86±0.05	8.00±0.1	3.50±0.05	1.75±0.10	1.55±0.05	0.60±0.03	5000 pcs/Reel
0402	0.67±0.03	1.17±0.03	8.00±0.1	3.50±0.05	1.75±0.10	1.55±0.05	0.42±0.05	10000 pcs/Reel
0201	0.4±0.05	0.7±0.05	8.00±0.2	3.50±0.05	1.75±0.10	1.55±0.05	0.42±0.03	10000 pcs/Reel
01005	0.25±0.05	0.45±0.05	8.00±0.2	3.50±0.05	1.75±0.10	1.55±0.05	0.31±0.03	20000 pcs/Reel
03015	0.18±0.03	0.33±0.03	4.00±0.05	1.88±0.03	0.90±0.03	0.80±0.04	0.20±0.03	20000 pcs/Reel

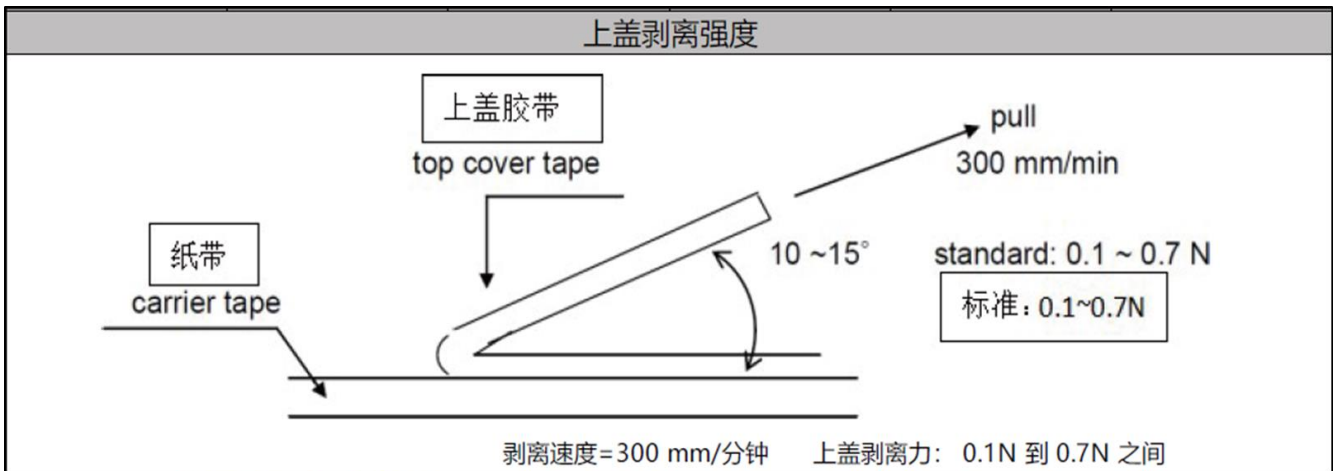
● Reel 尺寸



系列	A mm	B mm	C mm	M mm	W mm
01005~1210	2.2±0.05	13.3 +0.2/-0.3	60.00±1.0	178±2	9.5±1.0
2010/2512	2.2±0.30	13.2 +0.3/-0.2	59.80±0.50	179±1	13.30±0.50

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● 拉力测试规范



11. Marking 标识

1、E-24 系列-5%公差:

采用三位数表示，前二位表示电阻值有效数字，第三位表示乘以 10 的次方数

例如：000 = Jumper

100 = 10Ω



103 = 10kΩ



2、E-96 系列-1%公差:

2.1. 0805 及以上尺寸：采用四位数字表示，前三位表示电阻值有效数字，第四位表示乘以 10 的次方数，R 表示“.”

例如：4R70 = 4.7Ω

4422 = 44.2kΩ



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2.2. 0603 尺寸：采用三位数字表示，前 2 位表示电阻有效阻值代码，第三位表示 10 的次方。

例如：29B=196*10¹=1.96KΩ

10X=124*10⁻¹=12.4Ω



阻值代码：

Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10 ⁰	10 ¹	10 ²	10 ³	10 ⁴	10 ⁵	10 ⁶	10 ⁷	10 ⁻¹	10 ⁻²	10 ⁻³

Value 阻值	Code 代码	Value 阻值	Code 代码	Value 阻值	Code 代码	Value 阻值	Code 代码	Value 阻值	Code 代码	Value 阻值	Code 代码
100	01	147	17	215	33	316	49	464	65	681	81
102	02	150	18	221	34	324	50	475	66	698	82
105	03	154	19	226	35	332	51	487	67	715	83
107	04	158	20	232	36	340	52	499	68	732	84
110	05	162	21	237	37	348	53	511	69	750	85
113	06	165	22	243	38	357	54	523	70	768	86
115	07	169	23	249	39	365	55	536	71	787	87
118	08	174	24	255	40	374	56	549	72	806	88
121	09	178	25	261	41	383	57	562	73	825	89
124	10	182	26	267	42	392	58	576	74	845	90
127	11	187	27	274	43	402	59	590	75	866	91
130	12	191	28	280	44	412	60	604	76	887	92
133	13	196	29	287	45	422	61	619	77	909	93
137	14	200	30	294	46	432	62	634	78	931	94
140	15	205	31	301	47	442	63	649	79	953	95
143	16	210	32	309	48	453	64	665	80	976	96

2.3. 0603±1%公差，在标准 E-24 系列，但不属于 E-96 系列的阻值，表示和 5%的公差相同，但是在字码下面多加一条线。

例如：122=1200=1.2KΩ

680=68Ω



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TITLE : The Engineering Specification for Thick Film Chip Resistor					

12. 注意事项

1. 储存注意事项

1.1 储存时应注意温度和湿度（温度 5~35℃，相对湿度 45~75% RH）。湿度尽可能保持在低范围内。

1.2 不能阳光直射。

1.3 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）。

1.4 保存期限：2 年

2. 操作使用注意事项

2.1 避免采用超过正常额定功率，超过额定功率的稳能负载条件下可能会对产品性能和可靠性造成负面影响。

2.2 用镊子拿起产品时要小心，有可能会将保护层或电阻体夹碎。

2.3 手动安装产品时，烙铁头勿触碰产品。

UNLESS OTHERWISE SPECIFIED TOLERANCES ON : X = ± X.X = ± X.XX = ± ANGLES ± HOLE DIA. ±	DRAWN BY :		信维通信（江苏）有限公司	
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TITLE : The Engineering Specification for Thick Film Chip Resistor	DOCUMENT NO.	SR-NH	PAGE REV. A3	