

1 外形尺寸 Shape and Dimensions

- 尺寸：见图 1 和表 1

PCB 焊盘：见图 2 和表 1
- Dimensions: See Fig.1 and Table 1.

Recommended PCB pattern for reflow soldering: See Fig.2 and Table 1

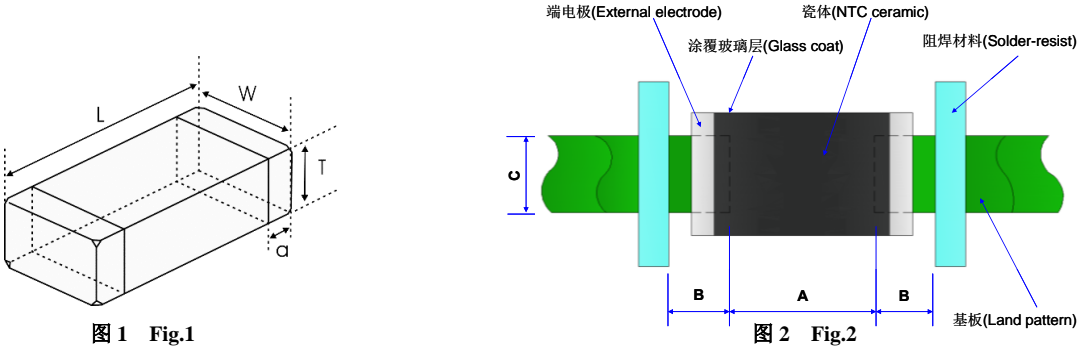


表 1 (Table 1)								单位 unit: inch[mm]	
类别 Type	L	W	T	a	A	B	C		
0603 [1608]	0.063±0.006 [1.6±0.15]	0.031±0.006 [0.8±0.15]	0.031±0.006 [0.8±0.15]	0.012±0.008 [0.3±0.2]	[0.6-0.8]	[0.6-0.7]	[0.6-0.8]		

2 产品标识（料号） Product Identification(Part Number)

① 类别 Type		② 外形尺寸(mm) External Dimensions (L×W×T)	③ 内部代码 Internal Code	④ 25℃的零功率电阻 Nominal Zero-Power Resistance	⑤ 电阻值公差 Tolerance of Resistance	⑥ B 值常数 B Constant	⑦ B 值公差 Tolerance of B Constant	⑧ 包装 Pskcaging	⑨ HSF Products
RL	片式 NTC 热敏电阻器 Chip NTC Thermistor	0201[0603] 0.60×0.30×0.30 0402[1005] 1.00×0.50×0.50 0603[1608] 1.60×0.80×0.80 0805[2012] 2.00×1.25×0.85	N	222 2.2kΩ 503 50kΩ 104 100kΩ	F ±1% H ±3% J ±5%	3450 3450K 3950 3950K 4150 4150K	F ±1% H ±3%	T Tape & Reel 卷带	Hazardous Substance Free Products 无有害物质

3 电气特性 Electrical Characteristics

型号 Part No	电阻值 Resistance (25℃) (kΩ)	B 常数 B Constant (25/50℃) (K)	B 常数 B Constant (25/85℃) (K)	允许工作电流 Permissible Operating Current (25℃) (mA)	耗散系数 Dissipation Factor (mW/℃)	热时间常数 Thermal Time Constant (s)	额定功率 Rated Electric Power(25℃) (mW)	工作温度 Operating ambient temperature (℃)
RL0603N503F4150FTF	50±1%	4150±1%	4209 ref.	0.13	1.0	<5	100	-40~+125

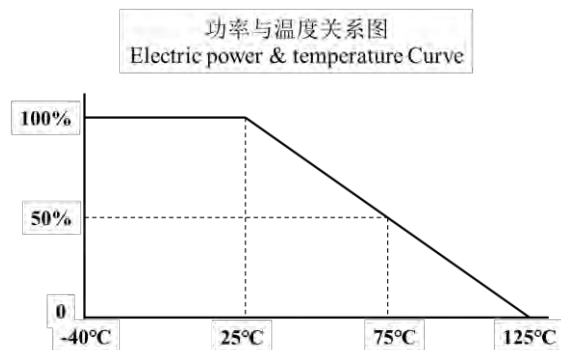
注 Notes: 在 25℃ 静止空气中，以未贴装的独立单元测试。When measured at 25℃ in still air, as a single unit without mounting.



序号 No.	项目 Items	测试方法及备注 Test Methods and Remarks
4	耗散系数 Dissipation Factor	在一定环境温度下，NTC 热敏电阻通过自身发热使其温度升高 1℃时所需要的功率，通常以 mW/℃表示。可由下面公式计算： The required power which makes the NTC thermistor body temperature raise 1℃ through self-heated, normally expressed in milliwatts per degree Celsius (mW/℃). It can be calculated by the following formula: $\delta = \frac{W}{T-T_0}$
5	额定功率 Rated Power	在环境温度 25℃下因自身发热使表面温度升高 100℃所需要的功率。 The necessary electric power makes thermistor's temperature rise 100℃ by self-heating at ambient temperature 25℃.
6	允许工作电流 Permissible operating current	在静止空气中通过自身发热使其升温为 1℃的电流。 The current that keep body temperature of chip NTC on the PC board in still air rising 1℃ by self-heating.

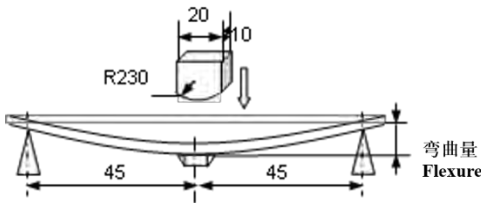
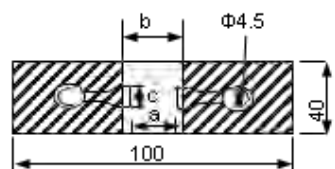
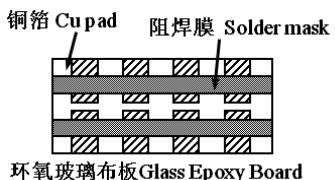
注 Notes: 在 25℃的静止空气中给 NTC 热敏电阻施加 100mW 的额定功率，NTC 热敏电阻会升温 100℃左右。但太快的升温速度可能会导致 NTC 热敏电阻意外失效，因此请不要短时间内给其施加大于 10mW 的功率（10mW 的功率会让 NTC 热敏电阻升温 10℃左右）。建议电流小于允许工作电流值的 1/10 以防止 NTC 热敏电阻自热。功率与工作温度的关系如下图所示：

When Rated Electric Power(100mW) is applied to NTC thermistor at 25℃ in still air, temperature rise of the NTC thermistor is about 100℃. However, too rapid temperature rise may cause unexpected failures to the NTC thermistor, please do not apply more than 10mW of electric power to it in short time (10mW of power will increase the temperature of the NTC thermistor by about 10℃). The current less than 1/10 of the Permissive Operating Current value is recommended in order to prevent self-heating of the NTC thermistor. The relationship between electric power and operating temperature is showed as below:



## 6 信赖性试验 Reliability Test

项目 Items	测试标准 Standard	测试方法及备注 Test Methods and Remarks	要求 Requirements										
端头附着力  Terminal Strength	IEC 60068-2-21	<p>将晶片焊接在测试基板上（如右图所示的环氧玻璃布板），按箭头所示方向施加作用力；</p> <p>Solder the chip to the testing jig (glass epoxy board shown in the right) using eutectic solder. Then apply a force in the direction of the arrow.</p> <table><tr><th>尺寸 Size</th><th>F</th><th>保持时间 Duration</th></tr><tr><td>0201</td><td>2N</td><td rowspan="3">10±1s</td></tr><tr><td>0402, 0603</td><td>5N</td></tr><tr><td>0805</td><td>10N</td></tr></table>	尺寸 Size	F	保持时间 Duration	0201	2N	10±1s	0402, 0603	5N	0805	10N	<p>端电极无脱落且瓷体无损伤。</p> <p>No removal or split of the termination or other defects shall occur.</p> <div><p>晶片 Chip</p><p>焊盘 Mounting Pad</p><p>环氧玻璃布板 Glass Epoxy Board</p><p>F</p></div>
尺寸 Size	F	保持时间 Duration											
0201	2N	10±1s											
0402, 0603	5N												
0805	10N												

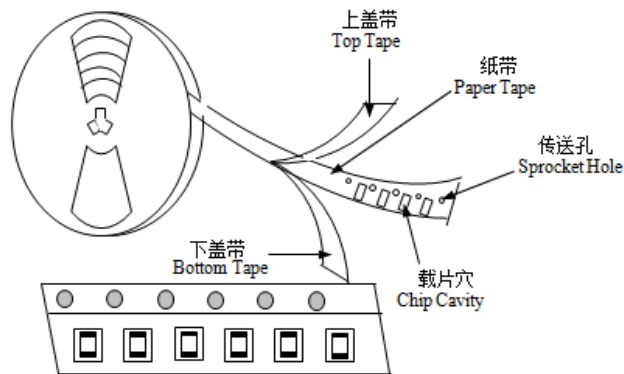
抗弯强度 Resistance to Flexure	IEC 60068-2-21	<p>将晶片焊接在测试基板上（如右图所示的环氧玻璃布板），按下图箭头所示方向施加作用力；</p> <p>Solder the chip to the test jig (glass epoxy board shown in the right) using a eutectic solder. Then apply a force in the direction shown as follow;</p>  <table border="1"> <thead> <tr> <th>尺寸 Size</th><th>弯曲变形量 Flexure</th><th>施压速度 Pressurizing Speed</th><th>保持时间 Duration</th></tr> </thead> <tbody> <tr> <td>0201,</td><td>1mm</td><td rowspan="2">&lt;0.5mm/s</td><td rowspan="2">10±1s</td></tr> <tr> <td>0402, 0603, 0805</td><td>2mm</td></tr> </tbody> </table>	尺寸 Size	弯曲变形量 Flexure	施压速度 Pressurizing Speed	保持时间 Duration	0201,	1mm	<0.5mm/s	10±1s	0402, 0603, 0805	2mm	<p>① 无外观损伤。 No visible damage.</p> <p>② <math> \Delta R25/R25  \leq 2\%</math></p> <p>单位 unit: mm</p> <table border="1"> <thead> <tr> <th>类型 Type</th><th>a</th><th>b</th><th>c</th></tr> </thead> <tbody> <tr> <td>0201</td><td>0.25</td><td>0.3</td><td>0.3</td></tr> <tr> <td>0402</td><td>0.4</td><td>1.5</td><td>0.5</td></tr> <tr> <td>0603</td><td>1.0</td><td>3.0</td><td>1.2</td></tr> <tr> <td>0805</td><td>1.2</td><td>4.0</td><td>1.65</td></tr> </tbody> </table> 	类型 Type	a	b	c	0201	0.25	0.3	0.3	0402	0.4	1.5	0.5	0603	1.0	3.0	1.2	0805	1.2	4.0	1.65
尺寸 Size	弯曲变形量 Flexure	施压速度 Pressurizing Speed	保持时间 Duration																														
0201,	1mm	<0.5mm/s	10±1s																														
0402, 0603, 0805	2mm																																
类型 Type	a	b	c																														
0201	0.25	0.3	0.3																														
0402	0.4	1.5	0.5																														
0603	1.0	3.0	1.2																														
0805	1.2	4.0	1.65																														
振动 Vibration	IEC 60068-2-80	<p>① 将晶片焊接在测试基板上（如右图所示的环氧玻璃布板）； Solder the chip to the testing jig (glass epoxy board shown in the left) using eutectic solder.</p> <p>② 晶片以全振幅为 1.5mm 进行振动，频率范围为 10Hz ~ 55 Hz； The chip shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz.</p> <p>③ 振动频率按 10Hz→55Hz→10Hz 循环，周期为 1 分钟，在空间三个互相垂直的方向上各振动 2 小时（共 6 小时）。 The frequency ranges from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours).</p>	<p>无外观损伤。 No visible damage.</p> 																														
坠落 Dropping	IEC 60068-2-32	<p>从 1m 的高度让晶片自由坠落至水泥地面 10 次。 Drop a chip 10 times on a concrete floor from a height of 1 meter.</p>	<p>无外观损伤。 No visible damage.</p>																														
可焊性 Solderability	IEC 60068-2-58	<p>① 焊接温度 Solder temperature: 245±5℃.</p> <p>② 浸渍时间 Duration: 3±0.3s.</p> <p>③ 焊锡成分 Solder: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu</p> <p>④ 助焊剂 Flux: （重量比）25%松香和 75%酒精 25% Rosin and 75% ethanol in weight.</p>	<p>① 无外观损伤； No visible damage.</p> <p>② 元件端电极的焊锡覆盖率不小于 95%。 Wetting shall exceed 95% coverage.</p>																														
耐焊性 Resistance to Soldering Heat	IEC 60068-2-58	<p>① 焊接温度 Solder temperature: 260±5℃.</p> <p>② 浸渍时间 Duration: 10±1s.</p> <p>③ 焊锡成分 Solder: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu .</p> <p>④ 助焊剂 Flux: （重量比）25%松香和 75%酒精 25% Rosin and 75% ethanol in weight.</p> <p>⑤ 试验后标准条件下放置 1~2 小时后测量。 The chip shall be stabilized at normal condition for 1~2 hours before measuring.</p>	<p>① 无外观损伤； No visible damage.</p> <p>② <math> \Delta R25/R25  \leq 2\%</math></p> <p>③ <math> \Delta B/B  \leq 1\%</math></p>																														

温度周期 Temperature cycling	IEC 60068-2-14	<div>① 无负载于下表所示的环境条件下重复 5 次。 5 cycles of following sequence without loading.</div> <table><tr><td>步骤 Step</td><td>温度 Temperature</td><td>时间 Time</td></tr><tr><td>1</td><td>-40±5℃</td><td>30±3min</td></tr><tr><td>2</td><td>25±2℃</td><td>5±3min</td></tr><tr><td>3</td><td>125±2℃</td><td>30±3min</td></tr><tr><td>4</td><td>25±2℃</td><td>5±3min</td></tr></table> <div>② 试验后标准条件下放置 1~2 小时后测量。 The chip shall be stabilized at normal condition for 1~2 hours before measuring.</div>	步骤 Step	温度 Temperature	时间 Time	1	-40±5℃	30±3min	2	25±2℃	5±3min	3	125±2℃	30±3min	4	25±2℃	5±3min	<div>① 无外观损伤; No visible damage.</div> <div>②   ΔR25/R25   ≤2%</div> <div>③   ΔB/B   ≤1%</div>
步骤 Step	温度 Temperature	时间 Time																
1	-40±5℃	30±3min																
2	25±2℃	5±3min																
3	125±2℃	30±3min																
4	25±2℃	5±3min																
高温存放 Resistance to dry heat	IEC 60068-2-2	<div>① 在 125±5℃空气中, 无负载放置 1000±24 小时。 125±5℃ in air, for 1000±24 hours without loading.</div> <div>② 试验后标准条件下放置 1~2 小时后测量。 The chip shall be stabilized at normal condition for 1~2 hours before measuring.</div>	<div>① 无外观损伤; No visible damage.</div> <div>②   ΔR25/R25   ≤2%</div> <div>③   ΔB/B   ≤1%</div>															
低温存放 Resistance to cold	IEC 60068-2-1	<div>① 在 -40±3℃空气中, 无负载放置 1000±24 小时。 -40±3℃ in air, for 1000±24 hours without loading.</div> <div>② 试验后标准条件下放置 1~2 小时后测量。 The chip shall be stabilized at normal condition for 1~2 hours before measuring.</div>	<div>① 无外观损伤; No visible damage.</div> <div>②   ΔR25/R25   ≤2%</div> <div>③   ΔB/B   ≤1%</div>															
湿热存放 Resistance to damp heat	IEC 60068-2-78	<div>① 在 60±2℃, 相对湿度 90~95%空气中, 无负载放置 1000±24 小时。 60±2℃, 90~95%RH in air, for 1000±24 hours without loading.</div> <div>② 试验后标准条件下放置 1~2 小时后测量。 The chip shall be stabilized at normal condition for 1~2 hours before measuring.</div>	<div>① 无外观损伤; No visible damage.</div> <div>②   ΔR25/R25   ≤2%</div> <div>③   ΔB/B   ≤1%</div>															
高温负荷 Resistance to high temperature load	IEC 60539-1 5.25.4	<div>① 在 85±2℃空气中, 施加允许工作电流 1000±48 小时。 85±2℃ in air with permissive operating current for 1000±48 hours</div> <div>② 试验后标准条件下放置 1~2 小时后测量。 The chip shall be stabilized at normal condition for 1~2 hours before measuring.</div>	<div>① 无外观损伤; No visible damage.</div> <div>②   ΔR25/R25   ≤2%</div> <div>③   ΔB/B   ≤1%</div>															

## 7 编带 Taping

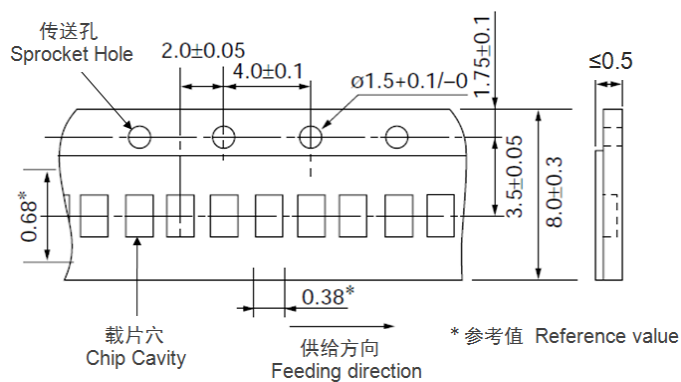
类型 Type	0201	0402	0603	0805
编带厚度 Tape thickness(mm)	0.5±0.15	0.5±0.15	0.8±0.15	0.85±0.2
编带材质 Tape material	纸带 Paper Tape			
每盘数量 Quantity per Reel	15K	10K	4K	4K

## (1) 编带图 Taping Drawings

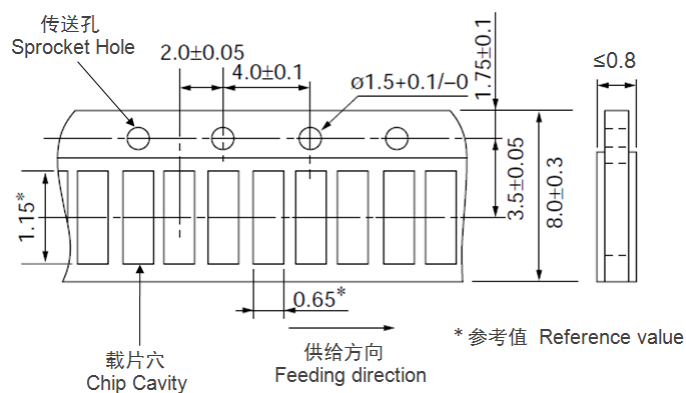


## (2) 纸带尺寸 Paper Tape Dimensions (单位 Unit: mm)

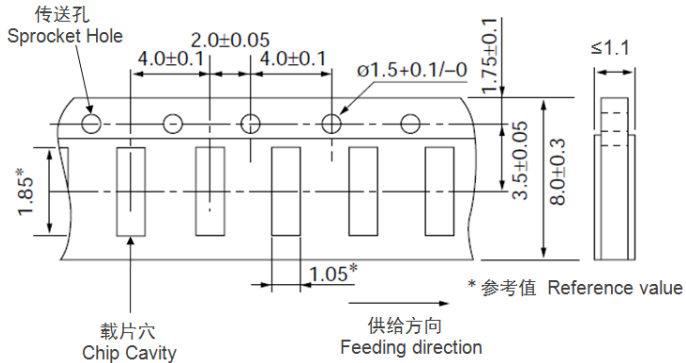
RL0201 系列 RL0201 series



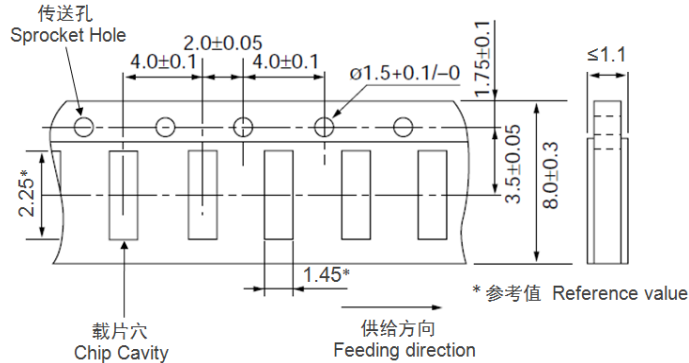
RL0402 系列 RL0402 series



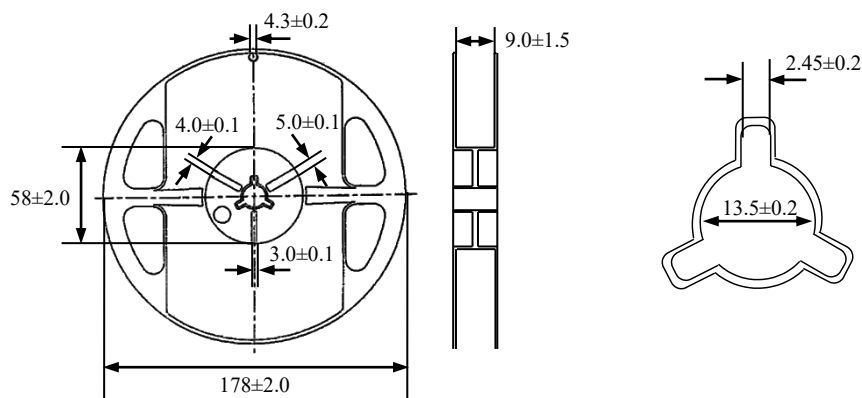
RL0603 系列 RL0603 series



RL0805 系列 RL0805 series



## (3) 卷盘尺寸 Reel Dimensions(单位 Unit: mm)





## 8 储存

### • 储存条件

- 储存温度:  $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$
- 相对湿度:  $\leq 75\% \text{RH}$
- 避免接触粉尘、腐蚀性气氛和阳光

### • 储存期限: 产品交付后 6 个月

## 9 注意事项

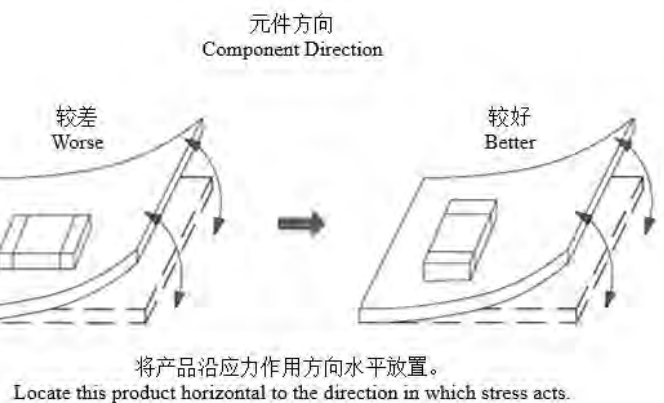
RL 系列热敏电阻不可在以下条件下工作或储存:

- 腐蚀性气体或还原性气体  
(氯气、硫化氢气体、氨气、硫酸气体、一氧化氮等)。
- 挥发性或易燃性气体
- 多尘条件
- 高压或低压条件
- 潮湿场所
- 存在盐水、油、化学液体或有机溶剂的场所
- 强烈振动
- 存在类似有害条件的其他场所

• RL 系列热敏电阻的陶瓷属于易碎材料, 使用时不可施加过大压力或冲击。

• RL 系列热敏电阻不可在超过目录规定的温度范围情况下工作。

• 应选择适当的贴装位置, 使电路板屈曲或弯折时施加在晶片上的应力最小。相关建议如下:



## 8 Storage

### • Storage Conditions

- Storage Temperature:  $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$
- Relative Humidity:  $\leq 75\% \text{RH}$
- Keep away from corrosive atmosphere and sunlight.

### • Period of Storage: 6 Months after delivery

## 9 Notes & Warnings

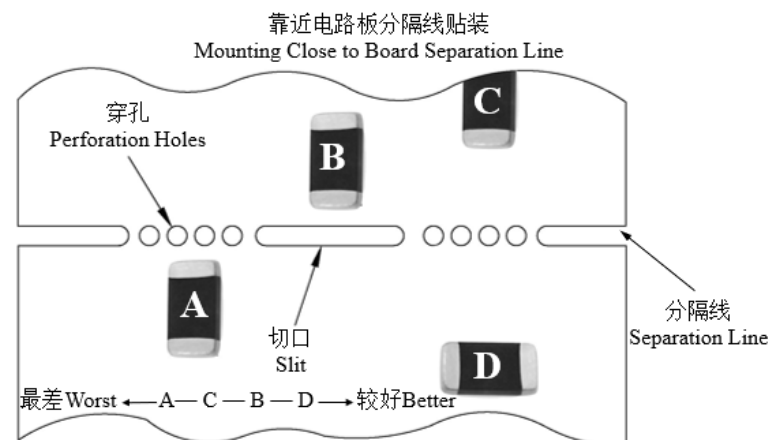
The RL series thermistors shall not be operated and stored under the following environmental condition:

- Corrosive or deoxidized atmospheres  
(such as chlorine, sulfurated hydrogen, ammonia, sulfuric acid, nitric oxide and so on)
- Volatile or inflammable atmospheres
- Dusty condition
- Excessively high or low pressure condition
- Humid site
- Places with brine, oil, chemical liquid or organic solvent
- Intense vibration
- Places with analogously deleterious conditions

• The ceramic body of the RL series thermistors is fragile, no excessive pressure or impact shall be exerted on it.

• The RL series thermistors shall not be operated beyond the specified "Operating Temperature Range" in the catalog.

• Choose a proper mounting position that minimize the stress imposed on the chip during flexing or bending of the board. The recommendations are shown in the figure below:

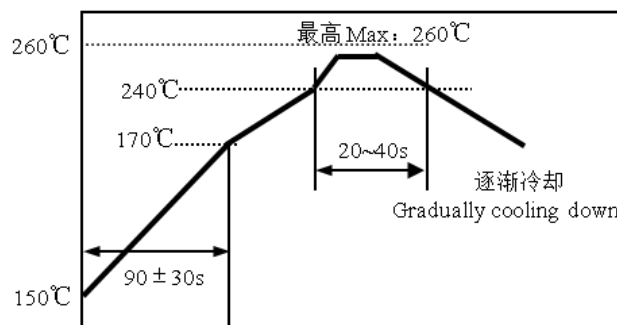


使本产品放在印刷电路板上靠近切口, 而不是靠近穿孔。  
Put this product on the PC Board near the Slit, not near the Perforation Holes.

使本产品远离印刷电路板上的分隔线位置。  
Keep this product on the PC Board away from the Separation Line.

## 10 建议焊接条件

- 回流焊
- 温升 1~2°C/sec.
- 预热: 150~170°C/90±30 sec.  
预热不足可能会导致陶瓷体破裂。曲线上预热温度与最高温度之间的差值应为 100°C。
- 大于 240°C 时间: 20~40sec
- 峰值温度: 最高 260°C/10 sec.
- 焊膏: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu
- 助焊剂: 焊接时应使用松香助焊剂。  
若使用强酸性助焊剂(卤化物含量超过 0.1wt%)或水溶性助焊剂(非树脂型助焊剂, 包括水洗型助焊剂和非水洗型助焊剂), 则可能造成产品特性和可靠性方面的问题。
- 回流焊: 最多 2 次。  
两次焊接峰值温度累积时间必须控制在 30 秒内。
- 冷却: 在空气逐渐冷却。不建议将元件浸泡溶剂或使用其他方法来快速冷却。
- 不符合焊接条件可能会造成金属分解或外部电极上的焊料湿润程度变差。



- 手工焊
- 烙铁功率: 最大 20W
- 预热: 150°C/60sec.
- 烙铁头温度: 最高 280°C
- 焊接时间: 最多 3sec.
- 焊膏: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu
- 手工焊: 最多 1 次

[注: 不要使烙铁头接触到端头]

## 10 Recommended Soldering Technologies

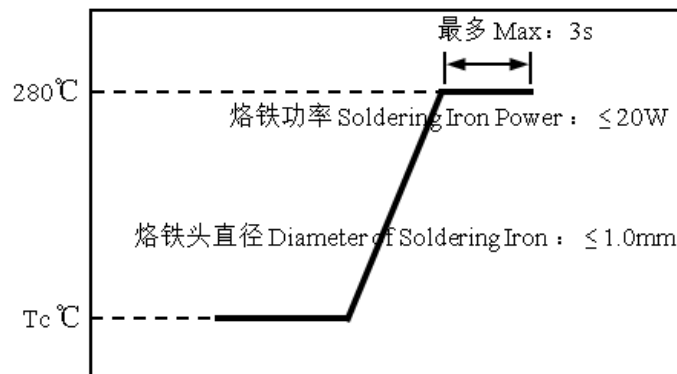
- **Re-flowing Profile**
- 1~2°C/sec. Ramp
- Pre-heating: 150~170°C/90±30 sec.  
Insufficient preheating may cause a crack on the ceramic body. The difference between preheating temperature and the highest temperature in the profile shall be 100°C.
- Time above 240°C: 20~40 sec.
- Peak temperature: 260°C Max./10 sec.
- Solder paste: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu
- Flux: Use rosin type flux in the soldering process.  
If strong acidic flux(with halide content exceeding 0.1wt%) or water-soluble flux(non-rosin type flux including wash-type flux and non-wash-type flux) is used, some problems might be caused in the product characteristics and reliability.
- Max.2 times for re-flowing.  
In case of repeated soldering, the total accumulated soldering time at peak temperature is within 30sec (Including the first time and second time).
- Cooling: Gradual cooling in air. Rapid cooling by dipping in solvent or by other means is not recommended.
- Excessive soldering conditions may cause dissolution of metallization or deterioration of solder-wetting on the external electrode.

## • Iron Soldering Profile

- Iron soldering power: Max.20W
- Pre-heating: 150°C/60sec.
- Soldering Tip temperature: 280°C Max.
- Soldering time: 3 sec Max.
- Solder paste: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu
- Max.1 times for iron soldering

[Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.]



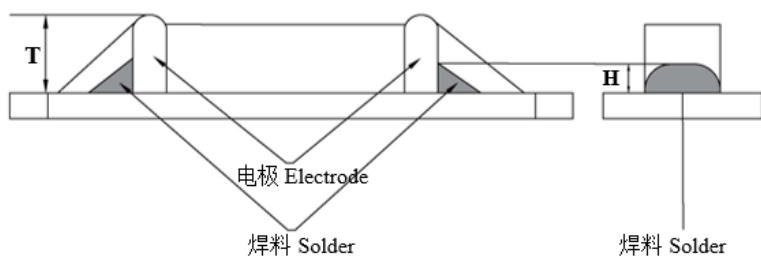


## • 焊膏的印刷条件

- 焊膏用量至关重要。下表列出了焊角的标准高度。

- 过多焊料会造成机械应力，导致断裂、机械损坏和/或电子元件损坏。

参考：最佳焊接用量 Reference: Optimum Solder Amount



## • Printing Conditions of Solder Paste

- The amount of solder is critical . Standard height of fillet is shown in the table below.
- Too much solder may cause mechanical stress , resulting in cracking , mechanical and / or electronic damage.

类型 Type	焊膏厚度 Solder Paste Thickness	H
RL0201	100μm	$1/3T \leq H \leq T$
RL0402	150μm	$1/3T \leq H \leq T$
RL0603, RL0805	200μm	$0.2mm \leq H \leq T$

## • 焊接完成后

- 焊接完成后要清除助焊剂时，请遵循以下几点，以免造成特性退化或导致外部电极质量变化。

- 1) 进行超声清洗时，请防止安装部分与基板发生共振。
- 2) 在使用了非水洗型助焊剂时，请勿清洗产品。

## • After Soldering

- For removing the flux after soldering, observe the following points in order to avoid deterioration of the characteristics or any change of the external electrodes quality.
- 1) Please keep mounted parts and a substrate from an occurrence of resonance in ultrasonic cleaning.
- 2) Please do not clean the products in the case of using a non-wash-type flux

类型 Type	RL0201, RL0402	RL0603, RL0805
溶剂 Solvent	异丙醇 Isopropyl Alcohol	
浸泡清洗 Dipping Cleaning	5 分钟（常温）或者 2 分钟（最高 40°C） Less than 5 min.at room temp. or Less than 2 min. at 40°C max.	
超声波清洗 Ultrasonic Cleaning	5 分钟以下, 20W/L 频率 28kHz 到 40kHz Less than 5 min, 20W/L Frequency of several 28kHz to several 40kHz.	1 分钟以下, 20W/L 频率 10kHz 到 100kHz Less than 1 min, 20W/L Frequency of several 10kHz to several 100kHz.

## • 干燥

清洗之后，请迅速将本产品烘干。

## • Drying

After cleaning, promptly dry this product.

**RL0603N503F4150FTF**

温度 Temp. (°C)	R 最小值 R_Min (Kohm)	R 中心值 R_Cent (Kohm)	R 最大值 R_Max (Kohm)	阻值公差 Res TOL.	温度公差 Temp. TOL.(°C)
-40	1,804.864	1,890.538	1,980.081	4.74%	0.66
-39	1,688.001	1,766.933	1,849.370	4.67%	0.66
-38	1,579.402	1,652.146	1,728.067	4.60%	0.65
-37	1,478.436	1,545.498	1,615.440	4.53%	0.65
-36	1,384.524	1,446.366	1,510.820	4.46%	0.64
-35	1,297.131	1,354.178	1,413.592	4.39%	0.64
-34	1,215.769	1,268.408	1,323.193	4.32%	0.63
-33	1,139.988	1,188.573	1,239.104	4.25%	0.63
-32	1,069.374	1,114.229	1,160.850	4.18%	0.62
-31	1,003.546	1,044.969	1,087.993	4.12%	0.62
-30	942.152	980.415	1,020.131	4.05%	0.61
-29	884.869	920.223	956.894	3.98%	0.61
-28	831.400	864.074	897.941	3.92%	0.60
-27	781.470	811.673	842.959	3.85%	0.59
-26	734.824	762.750	791.659	3.79%	0.59
-25	691.230	717.056	743.773	3.73%	0.58
-24	650.470	674.359	699.056	3.66%	0.58
-23	612.346	634.448	657.281	3.60%	0.57
-22	576.672	597.124	618.239	3.54%	0.56
-21	543.277	562.206	581.736	3.47%	0.56
-20	512.005	529.527	547.594	3.41%	0.55
-19	482.708	498.931	515.647	3.35%	0.55
-18	455.252	470.274	485.742	3.29%	0.54
-17	429.511	443.422	457.738	3.23%	0.53
-16	405.369	418.253	431.505	3.17%	0.53
-15	382.717	394.653	406.920	3.11%	0.52
-14	361.457	372.514	383.872	3.05%	0.51
-13	341.495	351.740	362.256	2.99%	0.51
-12	322.746	332.239	341.976	2.93%	0.50
-11	305.129	313.925	322.943	2.87%	0.49
-10	288.570	296.722	305.074	2.81%	0.49
-9	273.000	280.555	288.290	2.76%	0.48
-8	258.355	265.357	272.521	2.70%	0.47
-7	244.575	251.065	257.700	2.64%	0.47
-6	231.605	237.620	243.766	2.59%	0.46
-5	219.393	224.967	230.660	2.53%	0.45
-4	207.891	213.057	218.330	2.47%	0.45
-3	197.054	201.841	206.724	2.42%	0.44
-2	186.840	191.276	195.798	2.36%	0.43
-1	177.210	181.321	185.508	2.31%	0.43
0	168.128	171.936	175.814	2.26%	0.42
1	159.559	163.088	166.678	2.20%	0.41

温度 Temp. (°C)	R 最小值 R_Min (Kohm)	R 中心值 R_Cent (Kohm)	R 最大值 R_Max (Kohm)	阻值公差 Res TOL.	温度公差 Temp. TOL.(°C)
2	151.473	154.742	158.065	2.15%	0.40
3	143.840	146.867	149.943	2.09%	0.40
4	136.632	139.435	142.281	2.04%	0.39
5	129.823	132.418	135.051	1.99%	0.38
6	123.389	125.791	128.226	1.94%	0.37
7	117.308	119.531	121.783	1.88%	0.37
8	111.559	113.615	115.697	1.83%	0.36
9	106.122	108.023	109.947	1.78%	0.35
10	100.978	102.735	104.512	1.73%	0.34
11	96.110	97.734	99.375	1.68%	0.33
12	91.503	93.002	94.517	1.63%	0.33
13	87.140	88.524	89.922	1.58%	0.32
14	83.008	84.285	85.574	1.53%	0.31
15	79.093	80.271	81.458	1.48%	0.30
16	75.383	76.469	77.562	1.43%	0.29
17	71.866	72.866	73.872	1.38%	0.29
18	68.532	69.452	70.377	1.33%	0.28
19	65.369	66.215	67.065	1.28%	0.27
20	62.369	63.146	63.926	1.24%	0.26
21	59.521	60.235	60.950	1.19%	0.25
22	56.819	57.473	58.128	1.14%	0.24
23	54.252	54.851	55.451	1.09%	0.23
24	51.815	52.363	52.911	1.05%	0.23
25	49.500	50.000	50.500	1.00%	0.22
26	47.257	47.756	48.256	1.05%	0.23
27	45.126	45.624	46.122	1.09%	0.24
28	43.103	43.598	44.094	1.14%	0.25
29	41.180	41.672	42.165	1.18%	0.26
30	39.353	39.841	40.331	1.23%	0.28
31	37.616	38.100	38.585	1.27%	0.29
32	35.965	36.443	36.924	1.32%	0.30
33	34.394	34.867	35.343	1.36%	0.31
34	32.900	33.367	33.837	1.41%	0.32
35	31.479	31.939	32.404	1.45%	0.34
36	30.125	30.580	31.038	1.50%	0.35
37	28.837	29.285	29.736	1.54%	0.36
38	27.611	28.051	28.496	1.59%	0.37
39	26.442	26.876	27.314	1.63%	0.38
40	25.329	25.756	26.186	1.67%	0.40
41	24.269	24.687	25.111	1.72%	0.41
42	23.258	23.669	24.085	1.76%	0.42
43	22.294	22.698	23.107	1.80%	0.44
44	21.375	21.771	22.172	1.84%	0.45
45	20.498	20.887	21.281	1.89%	0.46
46	19.662	20.043	20.430	1.93%	0.47

温度 Temp. (°C)	R 最小值 R_Min (Kohm)	R 中心值 R_Cent (Kohm)	R 最大值 R_Max (Kohm)	阻值公差 Res TOL.	温度公差 Temp. TOL.(°C)
47	18.864	19.238	19.616	1.97%	0.49
48	18.103	18.468	18.840	2.01%	0.50
49	17.375	17.734	18.098	2.05%	0.51
50	16.681	17.032	17.389	2.09%	0.53
51	16.018	16.362	16.711	2.13%	0.54
52	15.384	15.721	16.063	2.18%	0.55
53	14.779	15.108	15.443	2.22%	0.57
54	14.201	14.523	14.850	2.26%	0.58
55	13.648	13.963	14.283	2.30%	0.59
56	13.119	13.427	13.741	2.34%	0.61
57	12.613	12.914	13.221	2.38%	0.62
58	12.130	12.424	12.724	2.42%	0.64
59	11.667	11.955	12.248	2.46%	0.65
60	11.224	11.505	11.792	2.49%	0.66
61	10.800	11.075	11.356	2.53%	0.68
62	10.395	10.663	10.938	2.57%	0.69
63	10.006	10.269	10.537	2.61%	0.71
64	9.634	9.890	10.153	2.65%	0.72
65	9.278	9.528	9.784	2.69%	0.74
66	8.936	9.181	9.431	2.73%	0.75
67	8.609	8.848	9.093	2.76%	0.76
68	8.296	8.529	8.768	2.80%	0.78
69	7.995	8.223	8.456	2.84%	0.79
70	7.707	7.929	8.157	2.88%	0.81
71	7.430	7.648	7.870	2.91%	0.82
72	7.165	7.377	7.595	2.95%	0.84
73	6.911	7.118	7.331	2.99%	0.85
74	6.666	6.869	7.077	3.02%	0.87
75	6.432	6.630	6.833	3.06%	0.88
76	6.207	6.400	6.598	3.10%	0.90
77	5.991	6.180	6.373	3.13%	0.92
78	5.784	5.968	6.157	3.17%	0.93
79	5.585	5.764	5.949	3.21%	0.95
80	5.393	5.569	5.749	3.24%	0.96
81	5.210	5.381	5.557	3.28%	0.98
82	5.033	5.200	5.372	3.31%	0.99
83	4.863	5.026	5.195	3.35%	1.01
84	4.700	4.859	5.024	3.38%	1.03
85	4.543	4.699	4.859	3.42%	1.04
86	4.392	4.544	4.701	3.45%	1.06
87	4.247	4.395	4.549	3.49%	1.07
88	4.107	4.252	4.402	3.52%	1.09
89	3.973	4.114	4.261	3.55%	1.11
90	3.844	3.982	4.125	3.59%	1.12
91	3.719	3.854	3.994	3.62%	1.14

温度 Temp. (°C)	R 最小值 R_Min (Kohm)	R 中心值 R_Cent (Kohm)	R 最大值 R_Max (Kohm)	阻值公差 Res TOL.	温度公差 Temp. TOL.(°C)
92	3.599	3.731	3.868	3.66%	1.16
93	3.484	3.613	3.746	3.69%	1.17
94	3.373	3.499	3.629	3.72%	1.19
95	3.266	3.389	3.516	3.76%	1.21
96	3.163	3.283	3.407	3.79%	1.22
97	3.063	3.181	3.302	3.82%	1.24
98	2.968	3.082	3.201	3.85%	1.26
99	2.875	2.987	3.104	3.89%	1.27
100	2.786	2.896	3.009	3.92%	1.29
101	2.701	2.808	2.919	3.95%	1.31
102	2.618	2.723	2.831	3.98%	1.33
103	2.538	2.641	2.747	4.01%	1.34
104	2.461	2.561	2.665	4.05%	1.36
105	2.387	2.485	2.586	4.08%	1.38
106	2.316	2.411	2.510	4.11%	1.40
107	2.247	2.340	2.437	4.14%	1.41
108	2.180	2.271	2.366	4.17%	1.43
109	2.116	2.205	2.297	4.20%	1.45
110	2.054	2.141	2.231	4.23%	1.47
111	1.994	2.079	2.167	4.26%	1.49
112	1.936	2.019	2.106	4.29%	1.50
113	1.880	1.961	2.046	4.32%	1.52
114	1.826	1.905	1.988	4.35%	1.54
115	1.773	1.851	1.932	4.38%	1.56
116	1.723	1.799	1.879	4.41%	1.58
117	1.674	1.749	1.826	4.44%	1.60
118	1.627	1.700	1.776	4.47%	1.61
119	1.581	1.653	1.727	4.50%	1.63
120	1.537	1.607	1.680	4.53%	1.65
121	1.495	1.563	1.634	4.56%	1.67
122	1.453	1.520	1.590	4.59%	1.69
123	1.414	1.479	1.547	4.62%	1.71
124	1.375	1.439	1.506	4.65%	1.73
125	1.338	1.400	1.466	4.68%	1.75