南京时恒电子科技有限公司

规格承认书

APPROVAL SHEET

客户名称：

CUSTOMER _____

产品名称：

PART NAME 片式 NTC 热敏电阻规格书

产品规格：

PART NUMBER **CMFB 103F3435**

日期：

DATE 2020 年 08 月 21 日

确 认

CONFIRM

客户	供货商/制造商
品保部：_____	规格书制作：鞠晓丽
制造部：_____	业务员审核：_____
工程部：_____	技术部审核：程明鹏
	品质部审核：李小媛

南京时恒电子科技有限公司

地址：南京市江宁区湖熟镇金阳路 18 号 邮编：211121

TEL：025-52121868 FAX：025-52122373

Http:// www.shiheng.com.cn E-MAILsales@shiheng.com.cn

1. 外形尺寸 Shape and Dimensions

- 尺寸：见图 1 和表 1　　Dimensions: See Fig.1 and Table 1.
- PCB 焊盘：见图 2 和表 1　　Recommended PCB pattern for reflow soldering: See Fig.2 and Table 1.

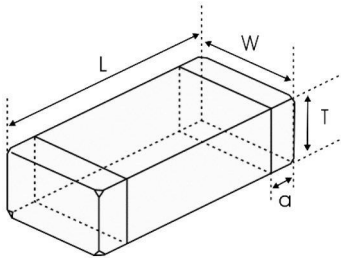


图 1 Fig.1

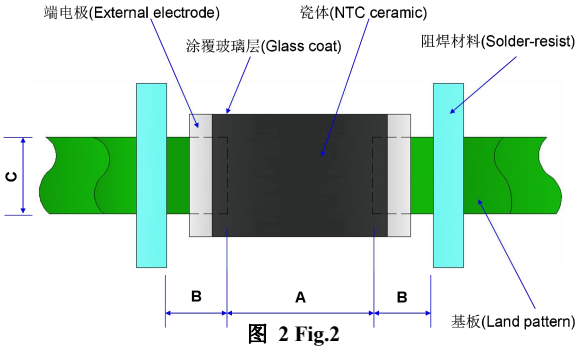


图 2 Fig.2

表 1（Table 1）　　单位 unit: inch[mm]

类别 Type	L	W	T	a	A	B	C
0805 [2012]	0.079±0.008 [2.0±0.2]	0.049±0.008 [1.25±0.2]	0.033±0.008 [0.85±0.2]	0.020±0.012 [0.5±0.3]	[1.0-1.1]	[0.6-0.7]	[10.-1.2]

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

CMF　B　103　F　3435
①　②　③　④　⑤

①类别 Type	
CMF	片式NTC 热敏电阻器 Chip NTC Thermistor

② 外形尺寸(mm) External Dimensions (L×W)	
A	1.6×0.8
B	2.0×1.2

③25℃的零功率电阻 Nominal Zero-Power Resistance	
222	2.2kΩ
103	10kΩ
104	100kΩ

④电阻值公差 Tolerance of Resistance	
F	±1%
G	±2%
H	±3%
J	±5%

⑤B 值常数 B Constant	
3435	3435K
3950	3950K
4250	4250K

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 （℃）
CMFB 103F3435	10	3380	3435	0.44	1.0	<5	100	-40～+125

检验和测试程序

测试条件

如无特别规定，检验和测试的标准大气环境条件如下：

a. 环境温度：20±15℃；

b. 相对湿度：65±20%；

c. 气压：86 kPa~106 kPa

如果对测试结果有异议，则在下述条件下测试：

a. 环境温度：20±2℃；

b. 相对湿度：65±5%RH；

c. 气压：86kPa ~ 106kPa

4 Test and Measurement Procedures

Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

a. Ambient Temperature: 20±15℃

b. Relative Humidity: 65±20%

c. Air Pressure: 86kPa to 106kPa

If any doubt on the results, measurements/tests should be made within the following limits:

a. Ambient Temperature: 20±2℃

b. Relative Humidity: 65±5%

c. Air Pressure: 86kPa to 106kPa

检查设备

外观检查：20 倍放大镜；

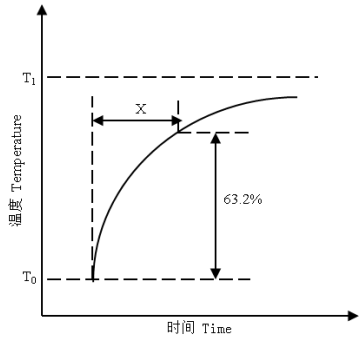
阻值检查：热敏电阻测试仪

Inspection Equipment

Visual Examination: 20×magnifier

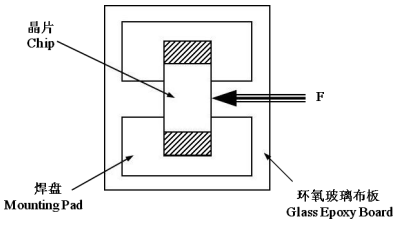
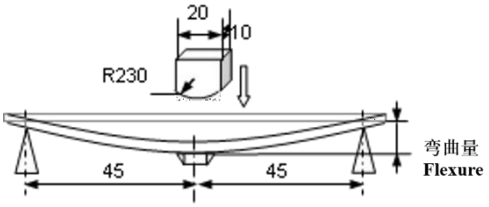
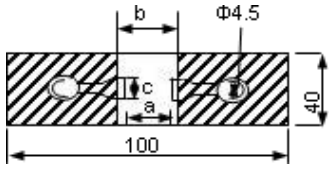
Resistance value test: Thermistor resistance tester

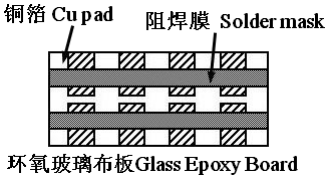
1 电性测试 Electrical Test

序号 No.	项目 Items	测试方法及备注 Test Methods and Remarks
1	25℃零功率电阻值 Nominal Zero-Power Resistance at 25℃ (R25)	环境温度 Ambient temperature：25±0.2℃ 测试功率 Measuring electric power：≤0.1mW
2	B 值常数 Nominal B Constant	分别在环境温度 25±0.2℃， 50±0.2℃或 85±0.2℃下测量电阻值。 Measure the resistance at the ambient temperature of 25±0.2℃, 50±0.2℃ or 85±0.2℃. $B(25\text{-}50℃)=\frac{\ln R25-\ln R50}{T_{25}^{-1}-T_{50}^{-1}}$　　$B(25\text{-}85℃)=\frac{\ln R25-\ln R85}{1/T_{25}-1/T_{85}}$ T：绝对温度（K）Absolute temperature (K)
3	热时间常数 Thermal Time Constant	在零功率条件下，当热敏电阻的环境温度发生急剧变化时，热敏电阻元件产生最初温度 T0 与最终温度 T1 两者温度差的 63.2%的温度变化所需要的时间，通常以秒(S)表示。 The total time for the temperature of the thermistor to change by 63.2% of the difference from ambient temperature T_0 (℃) to T_1 (℃) by the drastic change of the power applied to thermistor from Non-zero Power to Zero-Power state, normally expressed in second(S). 

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°C by self-heating.

5 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	①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； 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. ②0201、 0402 和 0603 系列施加 5N 的作用力，0805 系列产品施加 10N 的作用力； 5N force for 0201, 0402and 0603 series, 10N force for 0805 series. ③ 保持时间 Duration：10±1s	端电极无脱落且瓷体无损伤。 No removal or split of the termination or other defects shall occur. 
抗弯强度 Resistance to Flexure	IEC 60068-2-21	① 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； 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; ② 弯曲变形量 Flexure 0201: 1mm 0402, 0603, 0805: 2mm ③ 施压速度 Pressurizing Speed：＜0.5mm/s； ④ 保持时间 Duration：10s 	① 无外观损伤。 No visible damage. ② 试验前后 R25 的变化率：±5%以内； R25 variation: within ±5% 单位 unit：mm 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 

<table>
<tr>
<td>振动
Vibration</td>
<td>IEC 60068-2-80</td>
<td>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.
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.
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 3mutually perpendicular directions (total of 6 hours).</td>
<td>无外观损伤。
No visible damage.
 
</td>
</tr>
<tr>
<td>坠落
Dropping</td>
<td>IEC 60068-2-32</td>
<td>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.</td>
<td>无外观损伤。
No visible damage.</td>
</tr>
<tr>
<td>可焊性
Solderability</td>
<td>IEC 60068-2-58</td>
<td>① 焊接温度 Solder temperature: 245±5℃.
② 浸渍时间 Duration: 3±0.3s.
③ 焊锡成分 Solder: Sn/3.0Ag/0.5Cu.
④ 助焊剂 Flux: （重量比）25%松香和 75%酒精
25% Resin and 75% ethanol in weight.</td>
<td>① 无外观损伤；
No visible damage.
② 元件端电极的焊锡覆盖率不小于 95%。
Wetting shall exceed 95% coverage.</td>
</tr>
<tr>
<td>耐焊性
Resistance to Soldering Heat</td>
<td>IEC 60068-2-58</td>
<td>① 焊接温度 Solder temperature: 260±5℃.
② 浸渍时间 Duration: 10±1s.
③ 焊锡成分 Solder: Sn/3.0Ag/0.5Cu.
④ 助焊剂 Flux: （重量比）25%松香和 75%酒精
25% Resin and 75% ethanol in weight.
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.</td>
<td>① 无外观损伤；
No visible damage.
② 试验前后 R25 的变化率：±3%以内；
R25 variation: within ±3%
③ 试验前后 B 值的变化率：±2%以内。
B constant variation: within ±2%</td>
</tr>
<tr>
<td>温度周期
Temperature cycling</td>
<td>IEC 60068-2-14</td>
<td>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.
<table>
<tr><th>步骤 Step</th><th>温度 Temperature</th><th>时间 Time</th></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>
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.</td>
<td>① 无外观损伤；
No visible damage.
② 试验前后 R25 的变化率：±3%以内；
R25 variation: within ±3%
③ 试验前后 B 值的变化率：±2%以内。
B constant variation: within ±2%</td>
</tr>
<tr>
<td>高温存放
Resistance to dry heat</td>
<td>IEC 60068-2-2</td>
<td>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.
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.</td>
<td>① 无外观损伤；
No visible damage.
② 试验前后 R25 的变化率：±5%以内；
R25 variation: within ±5%
③ 试验前后 B 值的变化率：±2%以内。
B constant variation: within ±2%</td>
</tr>
</table>

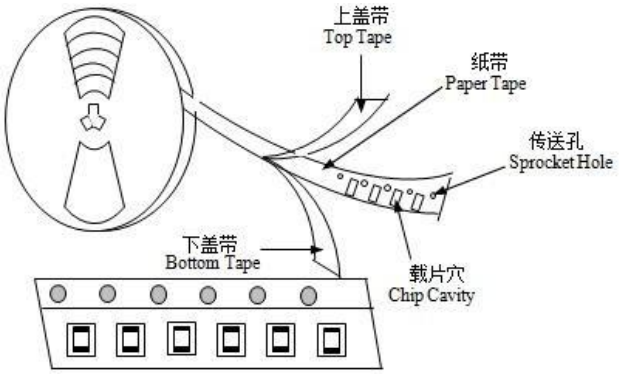
低温存放 Resistance to cold	IEC 60068-2-1	① 在-40±3℃空气中，无负载放置 1000±24 小时。 -40±3℃ in air, for 1000±24 hours without loading. ② 试验后标准条件下放置 1~2 小时后测量。 The chip shall be stabilized at normal condition for 1~2 hours before measuring.	① 无外观损伤； No visible damage. ② 试验前后 R25 的变化率：±5%以内； R25 variation: within ±5% ③ 试验前后 B 值的变化率：±2%以内。 B constant variation: within ±2%
湿热存放 Resistance to damp heat	IEC 60068-2-78	① 在 40±2℃，相对湿度 90~95%空气中，无负载放置 1000±24 小时。 40±2℃, 90~95%RH in air, for 1000±24 hours without loading. 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.	① 无外观损伤； No visible damage. ② 试验前后 R25 的变化率：±3%以内； R25 variation: within ±3% ③ 试验前后 B 值的变化率：±2%以内。 B constant variation: within ±2%
高温负荷 Resistance to high temperature load	IEC 60539-1 5.25.4	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 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.	① 无外观损伤； No visible damage. ② 试验前后 R25 的变化率：±5%以内； R25 variation: within ±5% ③ 试验前后 B 值的变化率：±2%以内。 B constant variation: within ±2%

6 编带和储存 Taping & Storage

编带 Taping

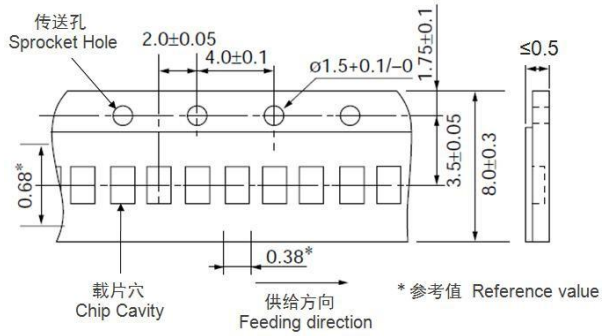
类型 Type	0201	0402	0603	0805
编带厚度 Tape thickness(mm)	0.5±0.15	0.5±0.15	0.8±0.15	0.85±0.2
编带材质 Tape material	纸 带 Paper Tape			
每盘数量 Quantity per Reel	15K	10K	4K	4K

(1) 编带图 Taping Drawings

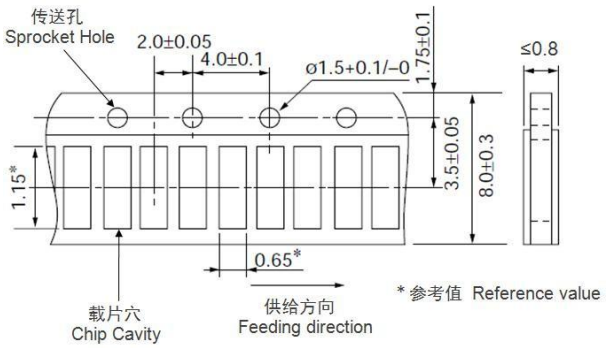


(2) 纸带尺寸 Paper Tape Dimensions (单位 Unit：mm)

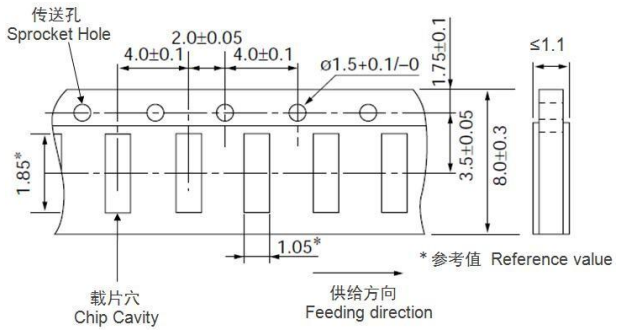
0201 系列 0201 series



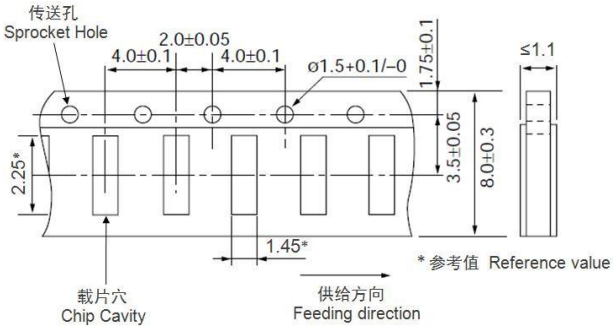
0402 系列 0402 series



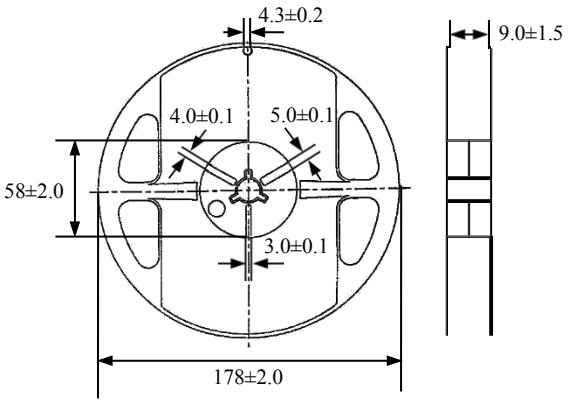
0603 系列 0603 series

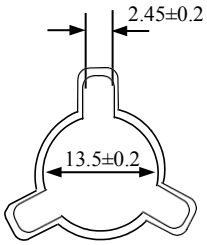


0805 系列 0805 series



(3) 卷盘尺寸 Reel Dimensions(单位 Unit：mm)





7 储存

- **储存条件**

a. 储存温度：-10℃～40℃

b. 相对湿度：≤75%RH

c. 避免接触粉尘、腐蚀性气氛和阳光

- **储存期限：6 个月**

8 注意事项

- 系列热敏电阻不可在以下条件下工作或储存：

(1) 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)。

(2) 挥发性或易燃性气体

(3) 多尘条件

(4) 高压或低压条件

(5) 潮湿场所

(6) 存在盐水、油、化学液体或有机溶剂的场所

(7) 强烈振动

(8) 存在类似有害条件的其他场所

- 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。

- 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。

7 Storage

- **Storage Conditions**

a. Storage Temperature: -10℃～40℃

b. Relative Humidity: ≦75%RH

c. Keep away from corrosive atmosphere and sunlight.

- **Period of Storage**: **6 Months**

8 Notes & Warnings

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

(1) Corrosive or deoxidized atmospheres

(such as chlorine, sulfurated hydrogen, ammonia, sulfuric acid, nitric oxide and so on)

(2) Volatile or inflammable atmospheres

(3) Dusty condition

(4) Excessive high or low pressure condition

(5) Humid site

(6) Places with brine, oil, chemical liquid or organic solvent

(7) Intense vibration

(8) Places with analogously deleterious conditions

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

- The series thermistors shall not be operated beyond the specified “Operating Temperature Range” in the catalog.

9 建议焊接条件

- **回流焊**

温升 1~2℃/sec.

预热：150~190℃/90±30 sec.

大于 240℃时间：20~40sec

峰值温度：最高 260℃/10 sec.

焊锡：Sn/3.0Ag/0.5Cu

回流焊：最多 2 次

9 Recommended Soldering Technologies

- **Re-flowing Profile**

1~2℃/sec. Ramp

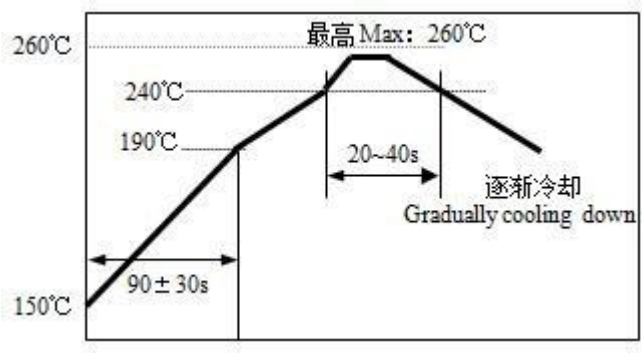
Pre-heating: 150~190℃/90±30 sec.

Time above 240℃: 20~40 sec.

Peak temperature: 260℃Max./10 sec.

Solder paste: Sn/3.0Ag/0.5Cu

Max.2 times for re-flowing.



- **手工焊**

烙铁功率：最大 30W

预热：150℃/60 sec.

烙铁头温度：最高 350℃

焊接时间：最多 3sec.

焊锡：Sn/3.0Ag/0.5Cu

手工焊：最多 1 次

[注：不要使烙铁头接触到端头]

- **Iron Soldering Profile**

Iron soldering power: Max.30W

Pre-heating: 150℃/60 sec.

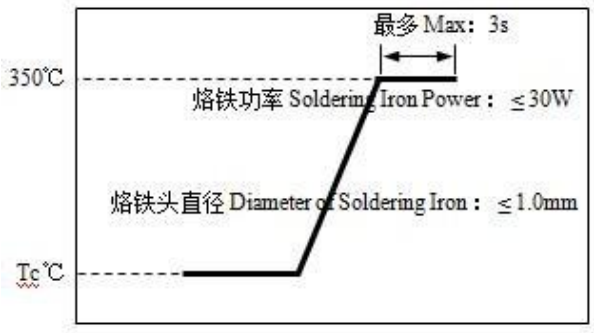
Soldering Tip temperature: 350℃Max.

Soldering time: 3 sec Max.

Solder paste: Sn/3.0Ag/0.5Cu

Max.1 times for iron soldering

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



10 R-T 表 R-T table

温度 Temp. (℃)	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.(℃)
-40	189.674	197.390	205.400	4.06%	0.69
-39	179.349	186.540	194.000	4.00%	0.69
-38	169.647	176.350	183.299	3.94%	0.68
-37	160.550	166.800	173.276	3.88%	0.68
-36	151.990	157.820	163.857	3.83%	0.67
-35	143.951	149.390	155.019	3.77%	0.67
-34	136.431	141.510	146.763	3.71%	0.66
-33	129.347	134.090	138.993	3.66%	0.66
-32	122.680	127.110	131.687	3.60%	0.65
-31	116.391	120.530	124.804	3.55%	0.65
-30	110.472	114.340	118.332	3.49%	0.64
-29	104.913	108.530	112.260	3.44%	0.64
-28	99.658	103.040	106.526	3.38%	0.63
-27	94.706	97.870	101.129	3.33%	0.63
-26	90.029	92.989	96.037	3.28%	0.62
-25	85.611	88.381	91.231	3.23%	0.62
-24	81.443	84.036	86.702	3.17%	0.61
-23	77.504	79.931	82.426	3.12%	0.60
-22	73.779	76.052	78.387	3.07%	0.60
-21	70.256	72.384	74.569	3.02%	0.59
-20	66.922	68.915	70.961	2.97%	0.59
-19	63.767	65.634	67.549	2.92%	0.58
-18	60.779	62.529	64.323	2.87%	0.58
-17	57.949	59.589	61.269	2.82%	0.57
-16	55.268	56.804	58.377	2.77%	0.56
-15	52.726	54.166	55.640	2.72%	0.56
-14	50.315	51.665	53.046	2.67%	0.55
-13	48.029	49.294	50.588	2.62%	0.55
-12	45.860	47.046	48.258	2.58%	0.54
-11	43.801	44.913	46.049	2.53%	0.53
-10	41.846	42.889	43.953	2.48%	0.53
-9	39.989	40.967	41.964	2.43%	0.52
-8	38.225	39.142	40.077	2.39%	0.51
-7	36.549	37.408	38.284	2.34%	0.51
-6	34.955	35.761	36.582	2.30%	0.50
-5	33.440	34.196	34.965	2.25%	0.49
-4	31.998	32.707	33.428	2.20%	0.49
-3	30.627	31.291	31.966	2.16%	0.48
-2	29.322	29.945	30.578	2.11%	0.47
-1	28.080	28.664	29.257	2.07%	0.47

0	26.898	27.445	28.001	2.02%	0.46
1	25.770	26.283	26.804	1.98%	0.45
2	24.696	25.177	25.665	1.94%	0.45
3	23.673	24.124	24.581	1.89%	0.44
4	22.699	23.121	23.549	1.85%	0.43
5	21.769	22.165	22.566	1.81%	0.42
6	20.882	21.253	21.628	1.76%	0.42
7	20.037	20.384	20.735	1.72%	0.41
8	19.230	19.555	19.883	1.68%	0.40
9	18.460	18.764	19.071	1.64%	0.39
10	17.725	18.010	18.297	1.60%	0.39
11	17.024	17.290	17.559	1.55%	0.38
12	16.353	16.602	16.853	1.51%	0.37
13	15.713	15.946	16.181	1.47%	0.36
14	15.101	15.319	15.538	1.43%	0.36
15	14.517	14.720	14.925	1.39%	0.35
16	13.958	14.148	14.339	1.35%	0.34
17	13.424	13.601	13.779	1.31%	0.33
18	12.913	13.078	13.244	1.27%	0.32
19	12.424	12.578	12.733	1.23%	0.32
20	11.955	12.099	12.243	1.19%	0.31
21	11.508	11.642	11.776	1.15%	0.30
22	11.079	11.204	11.329	1.11%	0.29
23	10.669	10.785	10.901	1.08%	0.28
24	10.276	10.384	10.492	1.04%	0.27
25	9.900	10.000	10.100	1.00%	0.27
26	9.532	9.632	9.732	1.04%	0.28
27	9.180	9.280	9.380	1.08%	0.29
28	8.843	8.943	9.042	1.11%	0.30
29	8.520	8.619	8.718	1.15%	0.31
30	8.211	8.309	8.408	1.19%	0.33
31	7.914	8.012	8.110	1.22%	0.34
32	7.630	7.727	7.824	1.26%	0.35
33	7.357	7.453	7.550	1.30%	0.36
34	7.096	7.191	7.287	1.33%	0.37
35	6.845	6.939	7.034	1.37%	0.39
36	6.604	6.698	6.792	1.41%	0.40
37	6.373	6.466	6.559	1.44%	0.41
38	6.152	6.243	6.335	1.48%	0.43
39	5.939	6.029	6.120	1.51%	0.44
40	5.735	5.824	5.914	1.55%	0.45
41	5.538	5.627	5.716	1.58%	0.46
42	5.350	5.437	5.525	1.62%	0.48

43	5.169	5.255	5.342	1.65%	0.49
44	4.995	5.080	5.165	1.69%	0.50
45	4.828	4.911	4.996	1.72%	0.52
46	4.667	4.749	4.832	1.75%	0.53
47	4.512	4.593	4.675	1.79%	0.54
48	4.363	4.443	4.524	1.82%	0.56
49	4.220	4.299	4.379	1.86%	0.57
50	4.083	4.160	4.239	1.89%	0.58
51	3.950	4.027	4.104	1.92%	0.60
52	3.823	3.898	3.974	1.96%	0.61
53	3.700	3.774	3.849	1.99%	0.63
54	3.582	3.654	3.728	2.02%	0.64
55	3.468	3.539	3.612	2.05%	0.65
56	3.358	3.429	3.500	2.09%	0.67
57	3.252	3.322	3.392	2.12%	0.68
58	3.151	3.219	3.288	2.15%	0.70
59	3.052	3.119	3.188	2.18%	0.71
60	2.958	3.024	3.091	2.22%	0.72
61	2.867	2.931	2.997	2.25%	0.74
62	2.779	2.842	2.907	2.28%	0.75
63	2.694	2.756	2.820	2.31%	0.77
64	2.612	2.673	2.736	2.34%	0.78
65	2.533	2.593	2.655	2.37%	0.80
66	2.457	2.516	2.576	2.40%	0.81
67	2.383	2.441	2.501	2.43%	0.83
68	2.312	2.369	2.428	2.46%	0.84
69	2.244	2.300	2.357	2.50%	0.86
70	2.177	2.233	2.289	2.53%	0.87
71	2.113	2.168	2.223	2.56%	0.89
72	2.052	2.105	2.159	2.59%	0.90
73	1.992	2.044	2.098	2.62%	0.92
74	1.934	1.986	2.038	2.65%	0.93
75	1.879	1.929	1.981	2.68%	0.95
76	1.825	1.874	1.925	2.71%	0.96
77	1.773	1.821	1.871	2.73%	0.98
78	1.722	1.770	1.819	2.76%	1.00
79	1.673	1.720	1.768	2.79%	1.01
80	1.626	1.673	1.720	2.82%	1.03
81	1.581	1.626	1.672	2.85%	1.04
82	1.537	1.581	1.627	2.88%	1.06
83	1.494	1.538	1.582	2.91%	1.08
84	1.453	1.496	1.540	2.94%	1.09
85	1.413	1.455	1.498	2.97%	1.11

86	1.374	1.416	1.458	2.99%	1.13
87	1.337	1.377	1.419	3.02%	1.14
88	1.300	1.340	1.381	3.05%	1.16
89	1.265	1.304	1.345	3.08%	1.17
90	1.231	1.270	1.309	3.11%	1.19
91	1.198	1.236	1.275	3.13%	1.21
92	1.167	1.204	1.242	3.16%	1.23
93	1.136	1.172	1.209	3.19%	1.24
94	1.106	1.141	1.178	3.22%	1.26
95	1.076	1.112	1.148	3.24%	1.28
96	1.048	1.083	1.118	3.27%	1.29
97	1.021	1.055	1.090	3.30%	1.31
98	0.995	1.028	1.062	3.32%	1.33
99	0.969	1.002	1.035	3.35%	1.35
100	0.944	0.976	1.009	3.38%	1.36
101	0.920	0.951	0.984	3.40%	1.38
102	0.897	0.927	0.959	3.43%	1.40
103	0.874	0.904	0.935	3.46%	1.42
104	0.852	0.882	0.912	3.48%	1.43
105	0.830	0.860	0.890	3.51%	1.45
106	0.810	0.838	0.868	3.53%	1.47
107	0.790	0.818	0.847	3.56%	1.49
108	0.770	0.798	0.826	3.59%	1.50
109	0.751	0.778	0.806	3.61%	1.52
110	0.733	0.759	0.787	3.64%	1.54
111	0.715	0.741	0.768	3.66%	1.56
112	0.697	0.723	0.750	3.69%	1.58
113	0.680	0.706	0.732	3.71%	1.60
114	0.664	0.689	0.715	3.74%	1.61
115	0.648	0.673	0.698	3.76%	1.63
116	0.633	0.657	0.682	3.79%	1.65
117	0.618	0.641	0.666	3.81%	1.67
118	0.603	0.626	0.650	3.84%	1.69
119	0.589	0.612	0.635	3.86%	1.71
120	0.575	0.598	0.621	3.89%	1.73
121	0.562	0.584	0.607	3.91%	1.75
122	0.549	0.570	0.593	3.93%	1.77
123	0.536	0.557	0.579	3.96%	1.79
124	0.524	0.545	0.566	3.98%	1.80
125	0.512	0.532	0.554	4.01%	1.82