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

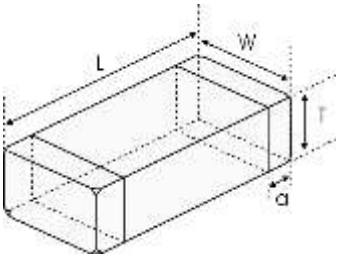


图 1 Fig.1

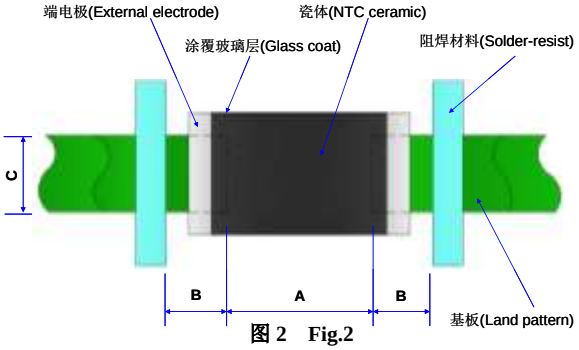


图 2 Fig.2

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]	[1.0-1.2]

2 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 （℃）
KNTC0805/30KF3950	30±1%	3950±1%	3987	0.25	2.0	＜5	100	-40～+125

3 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：25±2℃；

b. 相对湿度：65±5%

c. 气压：86kPa ~ 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

3 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: 25±2℃

b. Relative Humidity: 65±5%

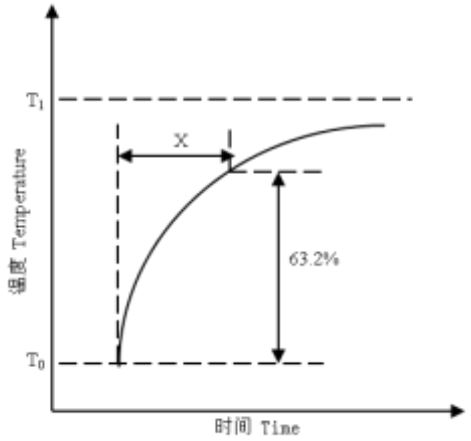
c. Air Pressure: 86kPa to 106kPa

- **Inspection Equipment**

Visual Examination: 20×magnifier

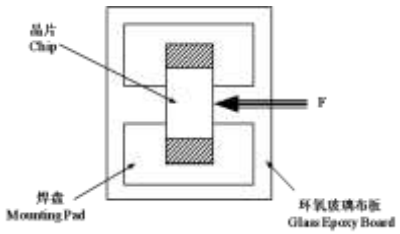
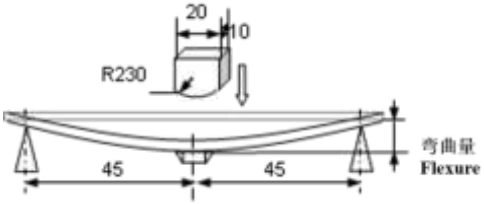
Resistance value test: Thermistor resistance tester

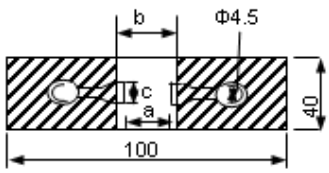
4 电性测试 Electrical Test

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±0.05℃ 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±0.05℃， 50±0.05℃或 85±0.05℃下测量电阻值。 Measure the resistance at the ambient temperature of 25±0.05℃, 50±0.05℃ or 85±0.05℃. B(25-50℃)= $\frac{\ln R_{25}-\ln R_{50}}{1/T_{25}-1/T_{50}}$ B(25-85℃)= $\frac{\ln R_{25}-\ln R_{85}}{1/T_{25}-1/T_{85}}$ 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 ℃ by self-heating.

5 信赖性试验 Reliability Test

<table>
<tr><th>项目
Items</th><th>测试标准
Standard</th><th>测试方法及备注
Test Methods and Remarks</th><th>要求
Requirements</th></tr>
<tr><td>端头附着力
Terminal Strength</td><td>IEC 60068-2-21</td><td>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.
<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></td><td>端电极无脱落且瓷体无损伤。
No removal or split of the termination or other defects shall occur.
 
</td></tr>
<tr><td>抗弯强度
Resistance to Flexure</td><td>IEC 60068-2-21</td><td>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;
 

<table>
<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>
<tr><td>0201,</td><td>1mm</td><td rowspan="2">＜0.5mm/s</td><td rowspan="2">10±1s</td></tr>
<tr><td>0402, 0603, 0805</td><td>2mm</td></tr>
</table></td><td>① 无外观损伤。
No visible damage.
② ｜ΔR25/R25｜≤2%
单位 unit：mm
<table>
<tr><th>类型 Type</th><th>a</th><th>b</th><th>c</th></tr>
<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>
</table> 
</td></tr>
</table>

<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: 96.5Sn/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: 96.5Sn/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 ｜ΔR25/R25｜≤2%
③ ｜ΔB/B｜≤1%</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 ｜ΔR25/R25｜≤2%
③ ｜ΔB/B｜≤1%</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 ｜ΔR25/R25｜≤2%
③ ｜ΔB/B｜≤1%</td>
</tr>
</table>

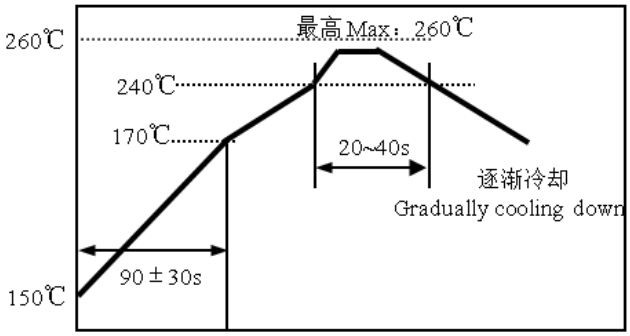
低温存放 Resistance to cold	IEC 60068-2-1	① 在-40±3℃空气中，无负载放置 1000±24 小时。 -40±3℃ in air, for 1000±24 hours without loading. ② 试验后标准条件下放置 1~2 小时后测量。 The chip shall be stabilized at normal condition for 1~2 hours before measuring.	① 无外观损伤； No visible damage. ② ｜ΔR25/R25｜≤2% ③ ｜ΔB/B｜≤1%
湿热存放 Resistance to damp 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 ｜ΔR25/R25｜≤2% ③ ｜ΔB/B｜≤1%
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 ｜ΔR25/R25｜≤2% ③ ｜ΔB/B｜≤1%

6 建议焊接条件

- **回流焊**
  - 温升 1~2℃/sec.
  - 预热：150~170℃/90±30 sec.
  - 大于 240℃时间：20~40sec
  - 峰值温度：最高 260℃/10 sec.
  - 焊锡：96.5Sn/3.0Ag/0.5Cu
  - 回流焊：最多 2 次

6 Recommended Soldering Technologies

- **Re-flowing Profile**
  - 1~2℃/sec. Ramp
  - Pre-heating: 150~170℃/90±30 sec.
  - Time above 240℃: 20~40 sec.
  - Peak temperature: 260℃Max./10 sec.
  - Solder paste: 96.5Sn/3.0Ag/0.5Cu
  - Max.2 times for re-flowing

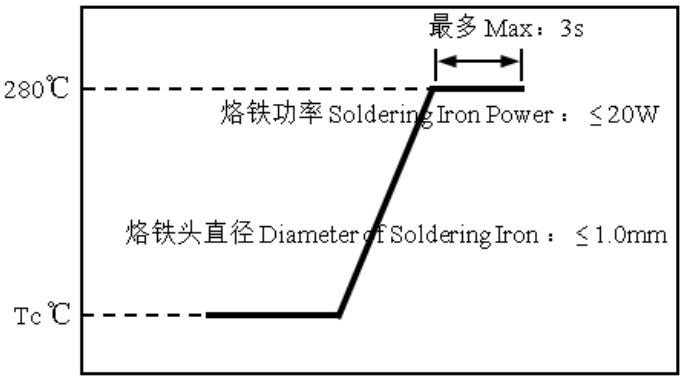


- **手工焊**
  - 烙铁功率：最大 20W
  - 预热：150℃/60sec.
  - 烙铁头温度：最高 280℃
  - 焊接时间：最多 3sec.
  - 焊锡：96.5Sn/3.0Ag/0.5Cu
  - 手工焊：最多 1 次

[注：不要使烙铁头接触到端头]

- **Iron Soldering Profile**
  - Iron soldering power: Max.20W
  - Pre-heating: 150℃/60sec.
  - Soldering Tip temperature: 280℃Max.
  - Soldering time: 3 sec Max.
  - Solder paste: 96.5Sn/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.]



7 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	989.782	1,035.824	1,083.900	4.64%	0.67
-39	925.952	968.373	1,012.635	4.57%	0.66
-38	866.675	905.774	946.543	4.50%	0.66
-37	811.596	847.648	885.213	4.43%	0.65
-36	760.391	793.646	828.272	4.36%	0.65
-35	712.762	743.448	775.378	4.29%	0.64
-34	668.437	696.763	726.216	4.23%	0.64
-33	627.165	653.321	680.500	4.16%	0.63
-32	588.716	612.877	637.965	4.09%	0.63
-31	552.879	575.204	598.371	4.03%	0.62
-30	519.460	540.096	561.495	3.96%	0.61
-29	488.281	507.361	527.133	3.90%	0.61
-28	459.178	476.824	495.099	3.83%	0.60
-27	431.999	448.324	465.220	3.77%	0.60
-26	406.605	421.712	437.337	3.71%	0.59
-25	382.867	396.852	411.306	3.64%	0.59
-24	360.621	373.567	386.938	3.58%	0.58
-23	339.811	351.799	364.172	3.52%	0.58
-22	320.337	331.439	342.893	3.46%	0.57
-21	302.104	312.389	322.993	3.39%	0.56
-20	285.025	294.556	304.376	3.33%	0.56
-19	269.021	277.855	286.950	3.27%	0.55
-18	254.017	262.206	270.632	3.21%	0.55
-17	239.945	247.538	255.345	3.15%	0.54
-16	226.741	233.782	241.018	3.10%	0.53
-15	214.346	220.877	227.584	3.04%	0.53
-14	202.706	208.765	214.983	2.98%	0.52
-13	191.771	197.392	203.158	2.92%	0.51
-12	181.494	186.710	192.056	2.86%	0.51
-11	171.830	176.671	181.629	2.81%	0.50
-10	162.741	167.233	171.833	2.75%	0.49
-9	154.187	158.357	162.624	2.69%	0.49
-8	146.136	150.007	153.965	2.64%	0.48
-7	138.553	142.147	145.819	2.58%	0.47
-6	131.410	134.747	138.154	2.53%	0.47
-5	124.678	127.776	130.937	2.47%	0.46
-4	118.323	121.199	124.132	2.42%	0.45
-3	112.330	115.000	117.721	2.37%	0.45
-2	106.677	109.155	111.680	2.31%	0.44
-1	101.342	103.643	105.985	2.26%	0.43
0	96.306	98.442	100.614	2.21%	0.43
1	91.555	93.538	95.554	2.16%	0.42

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.(℃)
2	87.067	88.907	90.777	2.10%	0.41
3	82.825	84.533	86.267	2.05%	0.40
4	78.814	80.399	82.007	2.00%	0.40
5	75.020	76.491	77.982	1.95%	0.39
6	71.425	72.788	74.171	1.90%	0.38
7	68.022	69.287	70.568	1.85%	0.37
8	64.802	65.975	67.162	1.80%	0.37
9	61.753	62.840	63.939	1.75%	0.36
10	58.866	59.873	60.891	1.70%	0.35
11	56.132	57.065	58.007	1.65%	0.34
12	53.541	54.404	55.276	1.60%	0.33
13	51.084	51.883	52.690	1.55%	0.33
14	48.753	49.493	50.239	1.51%	0.32
15	46.542	47.226	47.915	1.46%	0.31
16	44.443	45.075	45.712	1.41%	0.30
17	42.451	43.034	43.622	1.37%	0.29
18	40.558	41.097	41.639	1.32%	0.29
19	38.762	39.259	39.758	1.27%	0.28
20	37.054	37.512	37.972	1.23%	0.27
21	35.432	35.853	36.277	1.18%	0.26
22	33.889	34.277	34.666	1.13%	0.25
23	32.423	32.779	33.136	1.09%	0.24
24	31.027	31.355	31.682	1.04%	0.24
25	29.700	30.000	30.300	1.00%	0.23
26	28.412	28.711	29.011	1.04%	0.24
27	27.186	27.485	27.784	1.09%	0.25
28	26.020	26.318	26.616	1.13%	0.26
29	24.911	25.206	25.503	1.18%	0.27
30	23.855	24.148	24.442	1.22%	0.29
31	22.849	23.140	23.432	1.26%	0.30
32	21.892	22.180	22.469	1.31%	0.31
33	20.979	21.264	21.551	1.35%	0.32
34	20.110	20.392	20.675	1.39%	0.33
35	19.281	19.560	19.840	1.43%	0.35
36	18.491	18.766	19.043	1.47%	0.36
37	17.738	18.009	18.282	1.52%	0.37
38	17.019	17.286	17.556	1.56%	0.38
39	16.334	16.597	16.862	1.60%	0.40
40	15.679	15.938	16.200	1.64%	0.41
41	15.054	15.309	15.567	1.68%	0.42
42	14.458	14.708	14.962	1.72%	0.43
43	13.888	14.134	14.384	1.76%	0.45
44	13.344	13.586	13.831	1.80%	0.46
45	12.823	13.061	13.302	1.84%	0.47
46	12.327	12.560	12.797	1.88%	0.49

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.(℃)
47	11.852	12.081	12.313	1.92%	0.50
48	11.398	11.623	11.851	1.96%	0.51
49	10.964	11.184	11.408	2.00%	0.53
50	10.548	10.765	10.984	2.04%	0.54
51	10.151	10.363	10.578	2.08%	0.55
52	9.770	9.978	10.189	2.12%	0.57
53	9.406	9.610	9.817	2.16%	0.58
54	9.057	9.257	9.460	2.19%	0.59
55	8.723	8.919	9.118	2.23%	0.61
56	8.403	8.595	8.790	2.27%	0.62
57	8.096	8.284	8.475	2.31%	0.64
58	7.802	7.986	8.173	2.35%	0.65
59	7.521	7.701	7.884	2.38%	0.66
60	7.250	7.427	7.606	2.42%	0.68
61	6.992	7.164	7.340	2.46%	0.69
62	6.744	6.913	7.085	2.49%	0.71
63	6.506	6.671	6.840	2.53%	0.72
64	6.277	6.439	6.604	2.57%	0.74
65	6.058	6.216	6.378	2.60%	0.75
66	5.847	6.002	6.160	2.64%	0.76
67	5.645	5.796	5.951	2.67%	0.78
68	5.450	5.598	5.750	2.71%	0.79
69	5.263	5.408	5.557	2.75%	0.81
70	5.084	5.226	5.371	2.78%	0.82
71	4.912	5.051	5.193	2.82%	0.84
72	4.747	4.883	5.022	2.85%	0.85
73	4.588	4.721	4.858	2.88%	0.87
74	4.436	4.566	4.699	2.92%	0.88
75	4.289	4.416	4.547	2.95%	0.90
76	4.148	4.272	4.400	2.99%	0.92
77	4.012	4.133	4.258	3.02%	0.93
78	3.881	4.000	4.122	3.06%	0.95
79	3.754	3.871	3.990	3.09%	0.96
80	3.633	3.747	3.864	3.12%	0.98
81	3.517	3.628	3.742	3.16%	0.99
82	3.404	3.513	3.625	3.19%	1.01
83	3.296	3.403	3.512	3.22%	1.03
84	3.192	3.296	3.404	3.26%	1.04
85	3.092	3.194	3.299	3.29%	1.06
86	2.995	3.095	3.198	3.32%	1.07
87	2.902	3.000	3.100	3.35%	1.09
88	2.812	2.908	3.006	3.38%	1.11
89	2.725	2.819	2.915	3.42%	1.12
90	2.642	2.733	2.828	3.45%	1.14
91	2.561	2.651	2.743	3.48%	1.16

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.(℃)
92	2.484	2.571	2.661	3.51%	1.17
93	2.409	2.494	2.583	3.54%	1.19
94	2.336	2.420	2.506	3.57%	1.21
95	2.266	2.348	2.433	3.61%	1.22
96	2.199	2.279	2.362	3.64%	1.24
97	2.134	2.213	2.294	3.67%	1.26
98	2.072	2.149	2.228	3.70%	1.27
99	2.011	2.086	2.164	3.73%	1.29
100	1.953	2.026	2.103	3.76%	1.31
101	1.896	1.968	2.043	3.79%	1.33
102	1.842	1.912	1.985	3.82%	1.34
103	1.789	1.858	1.930	3.85%	1.36
104	1.738	1.806	1.876	3.88%	1.38
105	1.689	1.755	1.824	3.91%	1.40
106	1.641	1.706	1.773	3.94%	1.41
107	1.595	1.658	1.724	3.97%	1.43
108	1.551	1.613	1.677	4.00%	1.45
109	1.507	1.568	1.631	4.03%	1.47
110	1.466	1.525	1.587	4.05%	1.49
111	1.425	1.484	1.544	4.08%	1.50
112	1.386	1.443	1.503	4.11%	1.52
113	1.348	1.404	1.462	4.14%	1.54
114	1.312	1.367	1.423	4.17%	1.56
115	1.276	1.330	1.386	4.20%	1.58
116	1.242	1.295	1.349	4.22%	1.60
117	1.209	1.261	1.314	4.25%	1.62
118	1.177	1.228	1.280	4.28%	1.63
119	1.146	1.196	1.247	4.31%	1.65
120	1.116	1.164	1.215	4.34%	1.67
121	1.087	1.134	1.184	4.36%	1.69
122	1.059	1.105	1.154	4.39%	1.71
123	1.031	1.077	1.124	4.42%	1.73
124	1.005	1.049	1.096	4.44%	1.75
125	0.979	1.023	1.068	4.47%	1.77