编码(Coding)：JK/JXE251202001

南京时恒电子科技有限公司

Nanjing Shiheng Electronics Co.,Ltd.

产品承认书

APPROVAL SHEET

客户名称 CUSTOMER：	
产品名称 PART NAME：	MF58 玻壳式 NTC 热敏电阻器 MF58 Series Glass shell NTC Thermistor
产品型号 PART NUMBER：	MF58 103F3950
版次 REV.NO:	C0
日期 DATE:	2025-12-02

南京时恒电子科技有限公司
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变更登记表

REVISED RECORD SHEET

版次 REV. NO	变更日期 REV.DATE	变更内容 CHANGE CONTENT	申请人 APPLICANT	批准人 APPROVED
A0	2015/10/11	版本制定。 Version formulation	鞠晓丽	李少媛
B0	2022/4/1	更新规格书版本格式，增加版次管控，细化规格纸。 Update for version form of data sheet, add to management and control for number of edition, refine to PN and draw.	吴迎丽	李少媛
C0	2025/12/01	去掉：产品图纸此一页的变更履历表 Remove: Change history table on this page of the product drawing	刘星月	李少媛

1、产品型号说明 Product model specification

MF58 ① 103 ② F ③ 3950 ④

① MF58：玻壳式 NTC 热敏电阻器系列（Glass shell NTC Thermistor Series）

② 103：25℃的零功率电阻值 10kΩ（Zero Power Resistance at 25℃ is 10kΩ）

③ F：阻值精度代码 F-±1% G-±2% H-±3% J-±5%（Resistance precision code F-±1% G-±2% H-±3% J-±5%）

④ 3950：$B_{25/50}$ 值 3950K（$B_{25/50}$:3950K）

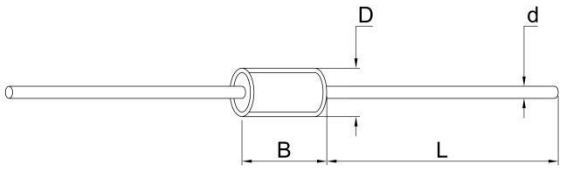
2、电气性能 Electrical characteristics

No.	项目 Item	符号 Symbol	测试条件 Test conditions	单位 Unit	性能要求 Requirements
2.1	25℃的零功率电阻值 Zero Power Resistance at 25℃	R_{25}	Ta=25±0.01℃ (Test Power≤0.1mW)	kΩ	10kΩ±1%
2.2	B 值 B-value	$B_{25/50}$	$B=[(T_a\times T_b)/(T_b-T_a)]\times \ln(R_a/R_b)$ T_a=25±0.01℃ T_b=50±0.01℃	K	3950K±1%
2.3	耗散系数 Thermal dissipation Coefficient	δ	静止空气中 In still air	mW/℃	约 1.8
2.4	时间常数 Thermal time constant	τ	静止空气中 In still air	sec	约 12
2.5	工作温度范围 Operating temperature range	/	/	℃	-55 ~ +250
2.6	最大额定功率 Maximum rated power	Pmax	/	mW	10
2.7	阻温特性 R&T-table	/	/	/	见附表 I See attached table I
2.8	阻值误差&温度误差 Resistance tolerance& Temperature tolerance	/	/	/	见附表 II See attached table II

3、产品图纸 Product drawing

产品图纸 Product drawing		客户确认 Customer confirm	客户名称 Customer:			
			确认 Confirm		日期 DATE	
产品型号 MODEL NO.	MF58 103F3950		审核 Approve:		日期 DATE	

尺寸 Dimensions: （Unit：mm）



型号	D （mm）	d（mm）	B （mm）	L（mm）
MF58	1.8±0.2	0.5±0.05	3.7±0.3	28±1

技术要求 Technical requirements:

1) 零功率阻值：R_{25}：10kΩ±1% (Zero Power Resistance: R_{25}：10kΩ±1%)；
2) $B_{25/50}$ 数值：3950K±1% (B-value:$B_{25/50}$: 3950K±1%)；
3) 引线：ϕ0.5 镀锡铜包钢线（ Φ0.5tinned copper-weld steel wire)
4) 符合 RoHS 环保要求 (Meet environmental protection requirements:RoHS)。

材料规格 Material specifications

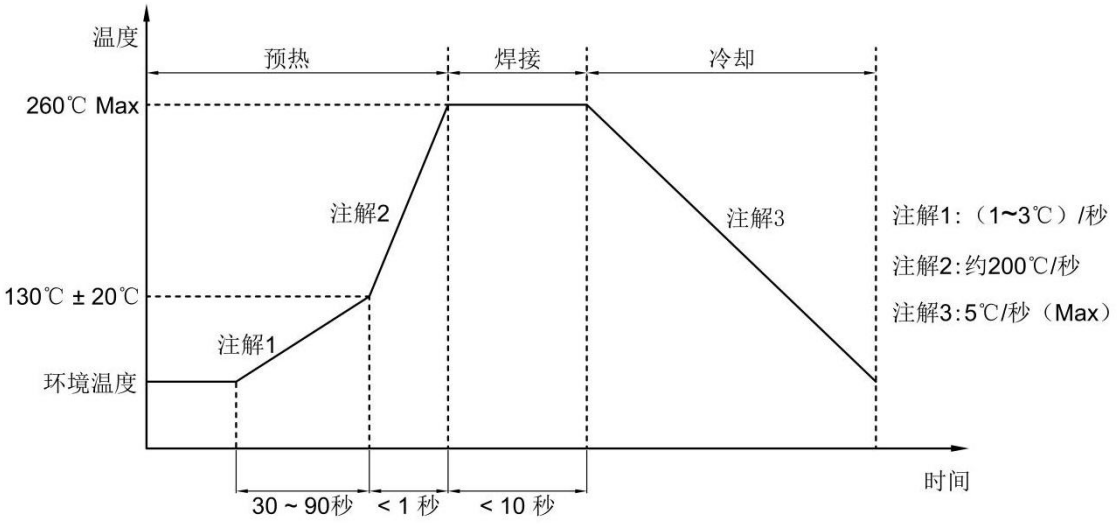
No.	名称 Name	材料规格 Material specifications	数量 Quantity	备注 note
1	核心元件 Core element	热敏电阻芯片 10kΩ	1	
2	包封类 Coating material	玻壳	1	
3	电极 Electrode	镀锡电极	2	
4	引线 Lead	铁镍合金	2	

4、可靠性 Reliability

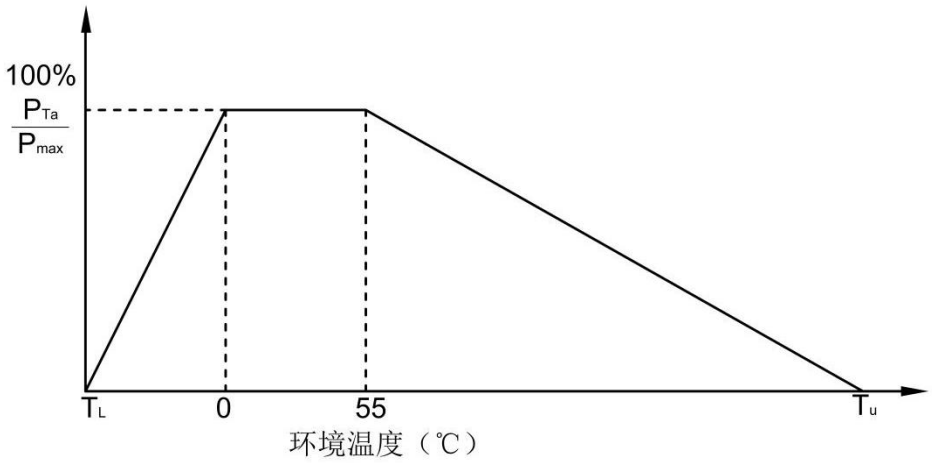
No.	项目 Test Item	试验标准 Test Standard	试验条件及方法 Test Conditions / Methods	性能要求 Acceptance Criteria
4.1	引出端强度 Tensile Strength of Terminals	IEC60068-2-21	固定电阻端，拉力：10N±1 N，时间：10±1 秒 Keep the unit fixed, apply 10 ± 1 N for 10 ± 1 seconds.	无可见性损伤 No Visible damage|Δ R_{25}/R_{25}|≤2%
4.2	可焊性 Solder ability	IEC60068-2-20	温度：245°C±5°C，时间：2-3 秒 Temperature: 245°C ± 5°C for 2 ~ 3 seconds.	着锡面积≥95% Coverage area≥95%
4.3	耐焊接热 Resistance to Soldering Heat	IEC60068-2-20	锡锅温度：260°C±5°C,浸入深度距电阻体 6mm，时间：5±1 秒 Temperature of solder bath: 260°C ± 5°C, insertion depth: 6 mm from resistor body, duration: 5 ± 1 seconds.	无可见性损伤 No Visible damage $\|\Delta R_{25}/R_{25}\|$≤2%
4.4	稳态湿热 Damp heat, Steady State	IEC60068-2-78	温度：40°C±2°C,湿度：93%RH±2%RH,时间：500h Temperature: 40°C ± 2°C, 93% RH ± 2% RH, 500 hrs.	无可见性损伤 No Visible damage $\|\Delta R_{25}/R_{25}\|$≤2%
4.5	温度快速变化 Rapid changes of temperature	IEC60068-2-14	以下条件重复 5 个周期 The conditions shown below shall be repeated 5 cycles.	无可见性损伤 No Visible damage $\|\Delta R_{25}/R_{25}\|$≤2%
			步骤 Step / 温度 Temperature (°C) / 周期 Period (minutes)	
			1 / -55±5 / 30±3	
			2 / Room Temperature (室温) / 5±3	
			3 / 250±5 / 30±3	
			4 / Room Temperature (室温) / 5±3	
4.6	高温储存 High temperature storage	IEC60068-2-2	温度：250°C±2°C，时间：1000h Temperature: 250°C ± 2°C, Duration: 1000 hrs.	无可见性损伤 No Visible damage $\|\Delta R_{25}/R_{25}\|$≤2%
4.7	低温储存 Low temperature storage	IEC60068-2-1	温度：-55°C±2°C，时间：1000h Temperature: –55°C ± 2°C, Duration: 1000 hrs.	无可见性损伤 No Visible damage $\|\Delta R_{25}/R_{25}\|$≤2%

▲注： 1）稳态湿热及温度快速变化试验结束后，样品需在常温环境下静置 2 小时后再做性能测试；
▲Note：1）After the test of steady-state humid heat and rapid temperature change, the sample should be kept for 2 hours at room temperature before performance test；
2）高温存储结束后，需随测试环境自然恢复至常温，再取出做性能测试。
2）After the test of high-temperature storage is complete, and then take it out for performance test when the test environment naturally regain to normal temperature.

5、推荐波峰焊曲线 Recommended wave soldering profile



6、降功耗曲线 Power derating curve



例如： 环境温度（T_a）=85℃

最高工作温度（T_U）=250℃

P_{Ta}=（T_U-T_a)/(T_U-55)*P_{max}=84.6%P_{max}

环境温度（T_a）= -10℃

最低工作温度（T_L）= -55℃

P_{Ta}=（T_L-T_a)/(T_L-0)*P_{max}=81.8%P_{max}

7、产品包装 Product packaging

7.1 包装方式 Packing Type

☑ 散装方式 Bulk Type ☐编编带方式 Reel Type

7.2 包装规格 Packing specification

No.	包装规格 Packing specification	包装材料、尺寸 Packing material, size	产品数量 Quantity

1	包装袋 Packing bag	热封口袋(Heat sealing bag) W×H＝110mm×130mm	500
2	内包装盒 Inner box	纸箱(Carton) L×W×H=282mm×193mm×72mm	

8、存储&运输要求 Storage & Transportation requirements

8.1 存储环境要求；Storage environment requirements；

8.1.1 储存温度：-10℃～ +40℃；储存湿度：≤75% RH；

Storage temperature: -10℃～ +40℃; storage humidity: ≤75% RH；

8.1.2 避免存放在具有腐蚀性物质及气体的环境中、光照及辐射源的环境下；

Avoid storage in the environment of corrosive substances and gas, light and radiation source；

8.1.3 包装打开后需重新密封保存，贮存期 1 年，超过贮存期，可按本标准规定的项目重新检验，如符合要求仍可使用；

After the package is opened, it should be re-sealed and stored for one year. If the storage period exceeds, it can be retested according to the items specified in this sheet. If it meets the requirements, it can still be used；

8.2 运输要求；Transportation requirements；

8.2.1 存储或运输过程中，产品叠放高度不超过 4 箱产品；

During storage or transportation, the height of stacked products should not exceed the height of 4 boxes；

8.2.2 避免产品在运输过程中强烈碰撞和跌落；

Avoid strong collision and fall during transportation；

8.2.3 产品运输方式不限，但需要避免雨水、雪、冰雹、海水的直接或间接淋袭。

The transportation method is not limited, but the direct or indirect attack of rain, snow, hail and sea water should be avoided.

9、安装&使用注意事项 Installation & Use precautions

9.1 本产品的用途：温度测量与控制；

Usage of this product: Temperature measurement and control；

9.2 本产品适用于常规家用、工业产品上，如果用于特殊设备/装置如：航空航天、深海探测、医疗、军用、新能源电源、铁道交通、消防、交通信号等设备上，请联系我司人员对相应的要求进行确认；

This product is used for conventional household and industrial products. If used in special equipment/device such as: aerospace, deep sea exploration, medical, military, new energy power supply, railway traffic, fire control, traffic signals and other equipment, please contact our staff to confirm the corresponding requirements；

9.3 产品使用的最大工作温度，最大功率等，依照规格书要求作业，不可超出规格书范围；

The maximum working temperature, maximum power, etc. of the product shall be operated in accordance with the requirements of the specification, and shall not exceed the scope of the specification；

9.4 设计使用时，避免过大的电流引起元件自身发热而产生测量误差；

When designing and using, avoid measuring error caused by excessive current；

9.5 产品外观发现变形、破损时，不建议使用，可能会影响产品电气性能；

If the product is deformed or damaged, do not use it. Otherwise, the electrical performance may be affected；

9.6 烙铁焊接时，焊接处距玻壳距离至少 2mm，焊接温度应低于 360℃，焊接时间＜3ses；

When soldering by soldering iron, the distance between the welding place and the glass shell should be at least 2mm, the welding temperature should be lower than 360℃, and the welding time should be less than 3sec；

9.7 如在加工过程中需使用热缩管，热缩管热缩时不可使用电吹风进行吹制，建议热缩工艺，将套好热缩管后的产品放入恒温烘箱中，按 110℃/10～12min 进行热缩；

If the heat shrinkable tube is used in the manufacturing process, do not use a hair dryer to shrink the tube.

This is a recommended heat shrinkable process that puts the product covered shrinkable tube into a constant temperature oven, and shrink them at 110℃/10 ~ 12min;

9.8 一般不建议做注塑加工，因为注塑工艺的高温和高压会直接影响产品性能，本产品如果采用注塑工艺加工，需与我司确认具体的注塑工艺参数;

Generally, injection molding is not recommended, because the high temperature and high pressure of injection molding process will directly affect the product performance. If the product is processed by injection molding process, it is necessary to confirm the specific injection molding process parameters with our company;

9.9 产品核心芯片为陶瓷半导体，在使用过程中避免挤压或对玻壳物理撞击，以免造成产品损伤;

The core chip of the product is a ceramic semiconductor. Avoid extrusion or physical impact on the glass shell in the process of use, so as not to cause product damage;

9.10 若引线弯曲时，弯曲点应距玻壳端 2mm 以上，以免造成玻壳损伤;

In case of lead bending,the dot of bending should be above 2mm from glass shell to avoid of damaging for glass shell.

10、产品认证 Product certification

No.	项目 Projects	产品认证 Product certification
10.1	质量管理体系认证 Quality Management System Certification	ISO9001:2015
		IATF16949：2016
10.2	环境管理体系认证 Environmental Management System Certification	ISO14001:2015
10.3	知识产权管理体系认证 Intellectual Property Management System Certification	GB/T29490-2013
10.4	环保检测报告 Environmental test report	RoHS 2.0
10.5	UL/cUL 认证（E240991） UL/cUL certificate（E240991）	
10.6	CQC 认证（CQC09001033986） CQC certificate（CQC09001033986）	
10.7	TUV 认证（R50245892） TUV certificate（R50245892）	

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R_{25}=10kΩ 精度:±1%　　$B_{25/50}$=3950K 精度:±1%（P390-7A）

温度(°C)	电阻(KΩ)			电阻精度(%)		温度精度(°C)	
	最小值	中心值	最大值	△R	-△R	△T	-△T
-55	755.052	798	840.947	5.381	-5.381	0.719	-0.719
-54	597.173	629.56	661.948	5.144	-5.144	0.721	-0.721
-53	507.722	534.333	560.944	4.98	-4.98	0.72	-0.72
-52	454.469	477.726	500.982	4.868	-4.868	0.719	-0.719
-51	421.537	442.754	463.971	4.792	-4.792	0.715	-0.715
-50	400.325	420.244	440.163	4.739	-4.739	0.711	-0.711
-49	385.811	404.849	423.886	4.702	-4.702	0.706	-0.706
-48	374.889	393.268	411.647	4.673	-4.673	0.701	-0.701
-47	365.588	383.408	401.229	4.647	-4.647	0.696	-0.696
-46	356.663	373.951	391.239	4.622	-4.622	0.69	-0.69
-45	347.369	364.104	380.84	4.596	-4.596	0.684	-0.684
-44	337.311	353.452	369.592	4.566	-4.566	0.679	-0.679
-43	326.347	341.843	357.34	4.533	-4.533	0.673	-0.673
-42	314.501	329.306	344.111	4.495	-4.495	0.668	-0.668
-41	301.908	315.983	330.058	4.454	-4.454	0.662	-0.662
-40	288.76	302.08	315.399	4.409	-4.409	0.657	-0.657
-39	275.273	287.825	300.377	4.36	-4.36	0.652	-0.652
-38	261.66	273.444	285.229	4.309	-4.309	0.647	-0.647
-37	248.114	259.143	270.172	4.255	-4.255	0.642	-0.642
-36	234.801	245.095	255.39	4.2	-4.2	0.637	-0.637
-35	221.852	231.44	241.028	4.142	-4.142	0.631	-0.631
-34	209.368	218.284	227.199	4.084	-4.084	0.626	-0.626
-33	197.421	205.7	213.979	4.024	-4.024	0.621	-0.621
-32	186.053	193.734	201.415	3.964	-3.964	0.616	-0.616
-31	175.289	182.412	189.534	3.904	-3.904	0.611	-0.611
-30	165.135	171.737	178.338	3.844	-3.844	0.606	-0.606
-29	155.582	161.701	167.82	3.783	-3.783	0.601	-0.601
-28	146.615	152.286	157.957	3.723	-3.723	0.595	-0.595
-27	138.21	143.467	148.724	3.664	-3.664	0.59	-0.59
-26	130.338	135.212	140.086	3.604	-3.604	0.585	-0.585
-25	122.969	127.49	132.01	3.546	-3.546	0.579	-0.579
-24	116.071	120.265	124.46	3.487	-3.487	0.574	-0.574
-23	109.613	113.506	117.399	3.429	-3.429	0.568	-0.568
-22	103.565	107.179	110.794	3.372	-3.372	0.562	-0.562
-21	97.896	101.253	104.61	3.315	-3.315	0.557	-0.557
-20	92.58	95.699	98.818	3.259	-3.259	0.551	-0.551
-19	87.591	90.489	93.388	3.203	-3.203	0.545	-0.545

-18	82.904	85.598	88.292	3.147	-3.147	0.539	-0.539
-17	78.498	81.003	83.508	3.092	-3.092	0.533	-0.533
-16	74.352	76.682	79.011	3.037	-3.037	0.527	-0.527
-15	70.449	72.615	74.781	2.982	-2.982	0.521	-0.521
-14	66.771	68.785	70.8	2.928	-2.928	0.514	-0.514
-13	63.302	65.176	67.049	2.874	-2.874	0.508	-0.508
-12	60.03	61.772	63.515	2.821	-2.821	0.502	-0.502
-11	56.94	58.561	60.182	2.767	-2.767	0.495	-0.495
-10	54.022	55.53	57.037	2.714	-2.714	0.489	-0.489
-9	51.265	52.667	54.068	2.661	-2.661	0.482	-0.482
-8	48.658	49.962	51.265	2.608	-2.608	0.475	-0.475
-7	46.194	47.406	48.618	2.556	-2.556	0.469	-0.469
-6	43.863	44.99	46.116	2.504	-2.504	0.462	-0.462
-5	41.658	42.705	43.752	2.451	-2.451	0.455	-0.455
-4	39.572	40.545	41.518	2.399	-2.399	0.448	-0.448
-3	37.597	38.501	39.406	2.348	-2.348	0.441	-0.441
-2	35.729	36.568	37.408	2.296	-2.296	0.434	-0.434
-1	33.96	34.74	35.52	2.245	-2.245	0.427	-0.427
0	32.285	33.01	33.734	2.194	-2.194	0.42	-0.42
1	30.7	31.372	32.045	2.143	-2.143	0.413	-0.413
2	29.199	29.823	30.447	2.092	-2.092	0.406	-0.406
3	27.777	28.357	28.936	2.042	-2.042	0.399	-0.399
4	26.431	26.969	27.506	1.992	-1.992	0.391	-0.391
5	25.157	25.655	26.153	1.942	-1.942	0.384	-0.384
6	23.949	24.411	24.873	1.892	-1.892	0.377	-0.377
7	22.805	23.234	23.662	1.843	-1.843	0.369	-0.369
8	21.722	22.118	22.515	1.793	-1.793	0.362	-0.362
9	20.695	21.062	21.43	1.744	-1.744	0.354	-0.354
10	19.669	20.008	20.346	1.693	-1.693	0.347	-0.347
11	18.8	19.115	19.43	1.647	-1.647	0.339	-0.339
12	17.926	18.217	18.508	1.599	-1.599	0.331	-0.331
13	17.097	17.366	17.636	1.551	-1.551	0.323	-0.323
14	16.311	16.56	16.809	1.504	-1.504	0.315	-0.315
15	15.565	15.795	16.025	1.457	-1.457	0.308	-0.308
16	14.858	15.07	15.283	1.41	-1.41	0.3	-0.3
17	14.186	14.383	14.579	1.363	-1.363	0.292	-0.292
18	13.549	13.73	13.911	1.317	-1.317	0.283	-0.283
19	12.945	13.111	13.278	1.27	-1.27	0.275	-0.275
20	12.37	12.524	12.677	1.225	-1.225	0.267	-0.267
21	11.824	11.966	12.107	1.179	-1.179	0.259	-0.259
22	11.306	11.436	11.565	1.134	-1.134	0.25	-0.25
23	10.813	10.932	11.052	1.089	-1.089	0.242	-0.242

24	10.345	10.454	10.563	1.044	-1.044	0.234	-0.234
25	9.9	10	10.1	1	-1	0.225	-0.225
26	9.467	9.567	9.667	1.044	-1.044	0.237	-0.237
27	9.057	9.156	9.256	1.088	-1.088	0.248	-0.248
28	8.666	8.765	8.864	1.131	-1.131	0.26	-0.26
29	8.294	8.393	8.492	1.175	-1.175	0.272	-0.272
30	7.941	8.039	8.137	1.218	-1.218	0.283	-0.283
31	7.604	7.702	7.799	1.261	-1.261	0.295	-0.295
32	7.284	7.38	7.477	1.303	-1.303	0.307	-0.307
33	6.979	7.074	7.17	1.346	-1.346	0.319	-0.319
34	6.689	6.783	6.877	1.388	-1.388	0.331	-0.331
35	6.412	6.505	6.598	1.429	-1.429	0.343	-0.343
36	6.148	6.24	6.332	1.471	-1.471	0.355	-0.355
37	5.896	5.987	6.078	1.512	-1.512	0.368	-0.368
38	5.657	5.746	5.835	1.554	-1.554	0.38	-0.38
39	5.428	5.516	5.604	1.594	-1.594	0.392	-0.392
40	5.21	5.296	5.383	1.635	-1.635	0.405	-0.405
41	5.001	5.087	5.172	1.675	-1.675	0.418	-0.418
42	4.803	4.887	4.97	1.716	-1.716	0.43	-0.43
43	4.613	4.695	4.778	1.755	-1.755	0.443	-0.443
44	4.432	4.513	4.594	1.795	-1.795	0.456	-0.456
45	4.258	4.338	4.418	1.835	-1.835	0.469	-0.469
46	4.093	4.171	4.249	1.874	-1.874	0.481	-0.481
47	3.935	4.012	4.088	1.913	-1.913	0.494	-0.494
48	3.784	3.859	3.934	1.952	-1.952	0.507	-0.507
49	3.639	3.713	3.787	1.99	-1.99	0.521	-0.521
50	3.501	3.574	3.646	2.028	-2.028	0.534	-0.534
51	3.369	3.44	3.511	2.067	-2.067	0.547	-0.547
52	3.242	3.312	3.382	2.104	-2.104	0.56	-0.56
53	3.121	3.19	3.258	2.142	-2.142	0.574	-0.574
54	3.005	3.072	3.139	2.18	-2.18	0.587	-0.587
55	2.894	2.96	3.026	2.217	-2.217	0.601	-0.601
56	2.788	2.852	2.917	2.254	-2.254	0.615	-0.615
57	2.686	2.749	2.812	2.291	-2.291	0.628	-0.628
58	2.589	2.65	2.712	2.327	-2.327	0.642	-0.642
59	2.495	2.556	2.616	2.364	-2.364	0.656	-0.656
60	2.406	2.465	2.524	2.4	-2.4	0.67	-0.67
61	2.32	2.378	2.435	2.436	-2.436	0.684	-0.684
62	2.237	2.294	2.351	2.472	-2.472	0.698	-0.698
63	2.158	2.214	2.269	2.507	-2.507	0.712	-0.712
64	2.082	2.137	2.191	2.543	-2.543	0.726	-0.726
65	2.01	2.063	2.116	2.578	-2.578	0.741	-0.741

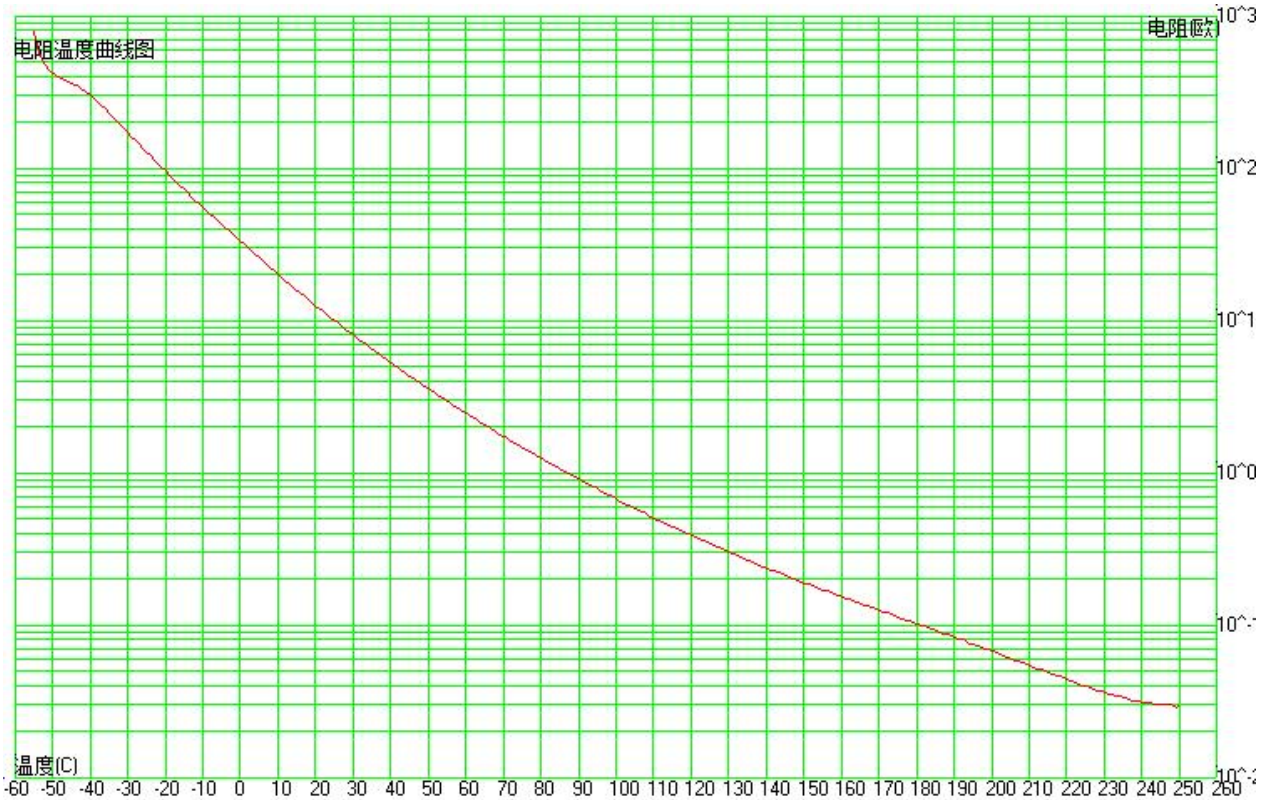
66	1.94	1.992	2.044	2.613	-2.613	0.755	-0.755
67	1.873	1.924	1.975	2.648	-2.648	0.769	-0.769
68	1.808	1.858	1.908	2.682	-2.682	0.784	-0.784
69	1.747	1.795	1.844	2.717	-2.717	0.799	-0.799
70	1.687	1.735	1.783	2.751	-2.751	0.813	-0.813
71	1.63	1.677	1.724	2.785	-2.785	0.828	-0.828
72	1.575	1.621	1.667	2.819	-2.819	0.843	-0.843
73	1.523	1.567	1.612	2.853	-2.853	0.858	-0.858
74	1.472	1.516	1.559	2.886	-2.886	0.873	-0.873
75	1.423	1.466	1.509	2.92	-2.92	0.888	-0.888
76	1.376	1.418	1.46	2.953	-2.953	0.903	-0.903
77	1.331	1.372	1.413	2.986	-2.986	0.918	-0.918
78	1.288	1.328	1.368	3.018	-3.018	0.933	-0.933
79	1.246	1.285	1.325	3.051	-3.051	0.948	-0.948
80	1.206	1.244	1.283	3.084	-3.084	0.964	-0.964
81	1.167	1.205	1.242	3.116	-3.116	0.979	-0.979
82	1.13	1.167	1.203	3.148	-3.148	0.995	-0.995
83	1.094	1.13	1.166	3.18	-3.18	1.01	-1.01
84	1.059	1.095	1.13	3.212	-3.212	1.026	-1.026
85	1.026	1.061	1.095	3.243	-3.243	1.042	-1.042
86	0.994	1.028	1.061	3.275	-3.275	1.057	-1.057
87	0.963	0.996	1.029	3.306	-3.306	1.073	-1.073
88	0.933	0.965	0.998	3.337	-3.337	1.089	-1.089
89	0.904	0.936	0.968	3.368	-3.368	1.105	-1.105
90	0.877	0.908	0.938	3.399	-3.399	1.121	-1.121
91	0.85	0.88	0.91	3.43	-3.43	1.138	-1.138
92	0.824	0.854	0.883	3.46	-3.46	1.154	-1.154
93	0.799	0.828	0.857	3.491	-3.491	1.17	-1.17
94	0.775	0.804	0.832	3.521	-3.521	1.186	-1.186
95	0.752	0.78	0.807	3.551	-3.551	1.203	-1.203
96	0.73	0.757	0.784	3.581	-3.581	1.219	-1.219
97	0.708	0.735	0.761	3.61	-3.61	1.236	-1.236
98	0.687	0.713	0.739	3.64	-3.64	1.253	-1.253
99	0.667	0.692	0.718	3.67	-3.67	1.269	-1.269
100	0.648	0.673	0.697	3.699	-3.699	1.286	-1.286
101	0.629	0.653	0.678	3.728	-3.728	1.303	-1.303
102	0.611	0.635	0.658	3.757	-3.757	1.32	-1.32
103	0.593	0.616	0.64	3.786	-3.786	1.337	-1.337
104	0.576	0.599	0.622	3.814	-3.814	1.354	-1.354
105	0.56	0.582	0.605	3.843	-3.843	1.371	-1.371
106	0.544	0.566	0.588	3.871	-3.871	1.389	-1.389
107	0.529	0.55	0.572	3.9	-3.9	1.406	-1.406

108	0.514	0.535	0.556	3.928	-3.928	1.423	-1.423
109	0.5	0.52	0.541	3.956	-3.956	1.441	-1.441
110	0.486	0.506	0.526	3.983	-3.983	1.458	-1.458
111	0.472	0.492	0.512	4.011	-4.011	1.476	-1.476
112	0.459	0.479	0.498	4.038	-4.038	1.494	-1.494
113	0.447	0.466	0.485	4.066	-4.066	1.511	-1.511
114	0.435	0.453	0.472	4.093	-4.093	1.529	-1.529
115	0.423	0.441	0.46	4.12	-4.12	1.547	-1.547
116	0.412	0.43	0.448	4.147	-4.147	1.565	-1.565
117	0.401	0.418	0.436	4.173	-4.173	1.583	-1.583
118	0.39	0.407	0.425	4.2	-4.2	1.601	-1.601
119	0.38	0.397	0.414	4.226	-4.226	1.62	-1.62
120	0.37	0.387	0.403	4.252	-4.252	1.638	-1.638
121	0.36	0.377	0.393	4.278	-4.278	1.656	-1.656
122	0.351	0.367	0.383	4.304	-4.304	1.675	-1.675
123	0.342	0.358	0.373	4.33	-4.33	1.693	-1.693
124	0.333	0.349	0.364	4.356	-4.356	1.712	-1.712
125	0.325	0.34	0.355	4.381	-4.381	1.73	-1.73
126	0.317	0.331	0.346	4.406	-4.406	1.749	-1.749
127	0.309	0.323	0.338	4.431	-4.431	1.768	-1.768
128	0.301	0.315	0.329	4.456	-4.456	1.787	-1.787
129	0.294	0.308	0.321	4.481	-4.481	1.806	-1.806
130	0.287	0.3	0.314	4.506	-4.506	1.825	-1.825
131	0.28	0.293	0.306	4.53	-4.53	1.844	-1.844
132	0.273	0.286	0.299	4.554	-4.554	1.863	-1.863
133	0.266	0.279	0.292	4.578	-4.578	1.883	-1.883
134	0.26	0.272	0.285	4.602	-4.602	1.902	-1.902
135	0.254	0.266	0.278	4.626	-4.626	1.921	-1.921
136	0.248	0.26	0.272	4.65	-4.65	1.941	-1.941
137	0.242	0.254	0.266	4.673	-4.673	1.96	-1.96
138	0.236	0.248	0.259	4.697	-4.697	1.98	-1.98
139	0.231	0.242	0.254	4.72	-4.72	2	-2
140	0.225	0.237	0.248	4.743	-4.743	2.02	-2.02
141	0.22	0.231	0.242	4.766	-4.766	2.04	-2.04
142	0.215	0.226	0.237	4.789	-4.789	2.059	-2.059
143	0.21	0.221	0.232	4.811	-4.811	2.08	-2.08
144	0.206	0.216	0.227	4.834	-4.834	2.1	-2.1
145	0.201	0.211	0.222	4.856	-4.856	2.12	-2.12
146	0.197	0.207	0.217	4.878	-4.878	2.14	-2.14
147	0.192	0.202	0.212	4.9	-4.9	2.16	-2.16
148	0.188	0.198	0.207	4.922	-4.922	2.181	-2.181
149	0.184	0.193	0.203	4.944	-4.944	2.201	-2.201

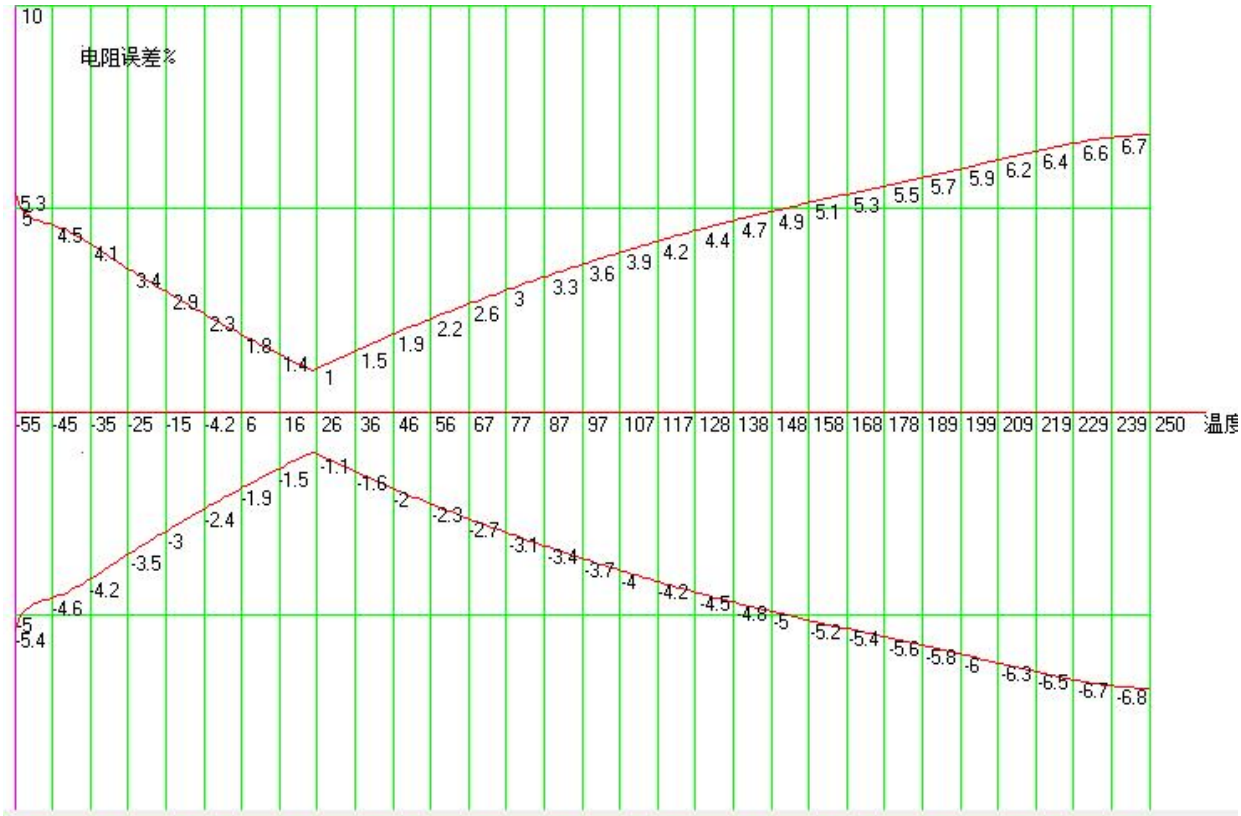
150	0.18	0.189	0.199	4.966	-4.966	2.222	-2.222
151	0.176	0.185	0.195	4.987	-4.987	2.243	-2.243
152	0.172	0.181	0.19	5.009	-5.009	2.263	-2.263
153	0.169	0.177	0.186	5.03	-5.03	2.284	-2.284
154	0.165	0.174	0.183	5.051	-5.051	2.305	-2.305
155	0.161	0.17	0.179	5.072	-5.072	2.326	-2.326
156	0.158	0.167	0.175	5.093	-5.093	2.347	-2.347
157	0.155	0.163	0.171	5.114	-5.114	2.368	-2.368
158	0.151	0.16	0.168	5.135	-5.135	2.389	-2.389
159	0.148	0.156	0.165	5.156	-5.156	2.41	-2.41
160	0.145	0.153	0.161	5.177	-5.177	2.431	-2.431
161	0.142	0.15	0.158	5.197	-5.197	2.453	-2.453
162	0.139	0.147	0.155	5.218	-5.218	2.474	-2.474
163	0.136	0.144	0.152	5.238	-5.238	2.496	-2.496
164	0.134	0.141	0.149	5.259	-5.259	2.517	-2.517
165	0.131	0.138	0.146	5.279	-5.279	2.539	-2.539
166	0.128	0.135	0.143	5.3	-5.3	2.561	-2.561
167	0.126	0.133	0.14	5.32	-5.32	2.582	-2.582
168	0.123	0.13	0.137	5.34	-5.34	2.604	-2.604
169	0.121	0.127	0.134	5.36	-5.36	2.626	-2.626
170	0.118	0.125	0.132	5.38	-5.38	2.648	-2.648
171	0.116	0.122	0.129	5.401	-5.401	2.67	-2.67
172	0.113	0.12	0.127	5.421	-5.421	2.692	-2.692
173	0.111	0.118	0.124	5.441	-5.441	2.714	-2.714
174	0.109	0.115	0.122	5.461	-5.461	2.737	-2.737
175	0.107	0.113	0.119	5.481	-5.481	2.759	-2.759
176	0.105	0.111	0.117	5.501	-5.501	2.781	-2.781
177	0.102	0.108	0.114	5.521	-5.521	2.804	-2.804
178	0.1	0.106	0.112	5.542	-5.542	2.826	-2.826
179	0.098	0.104	0.11	5.562	-5.562	2.848	-2.848
180	0.096	0.102	0.108	5.582	-5.582	2.871	-2.871
181	0.094	0.1	0.106	5.602	-5.602	2.894	-2.894
182	0.092	0.098	0.104	5.623	-5.623	2.916	-2.916
183	0.091	0.096	0.101	5.643	-5.643	2.939	-2.939
184	0.089	0.094	0.099	5.663	-5.663	2.962	-2.962
185	0.087	0.092	0.097	5.684	-5.684	2.985	-2.985
186	0.085	0.09	0.095	5.704	-5.704	3.008	-3.008
187	0.083	0.088	0.094	5.725	-5.725	3.031	-3.031
188	0.082	0.087	0.092	5.745	-5.745	3.054	-3.054
189	0.08	0.085	0.09	5.766	-5.766	3.077	-3.077
190	0.078	0.083	0.088	5.786	-5.786	3.1	-3.1
191	0.077	0.081	0.086	5.807	-5.807	3.123	-3.123

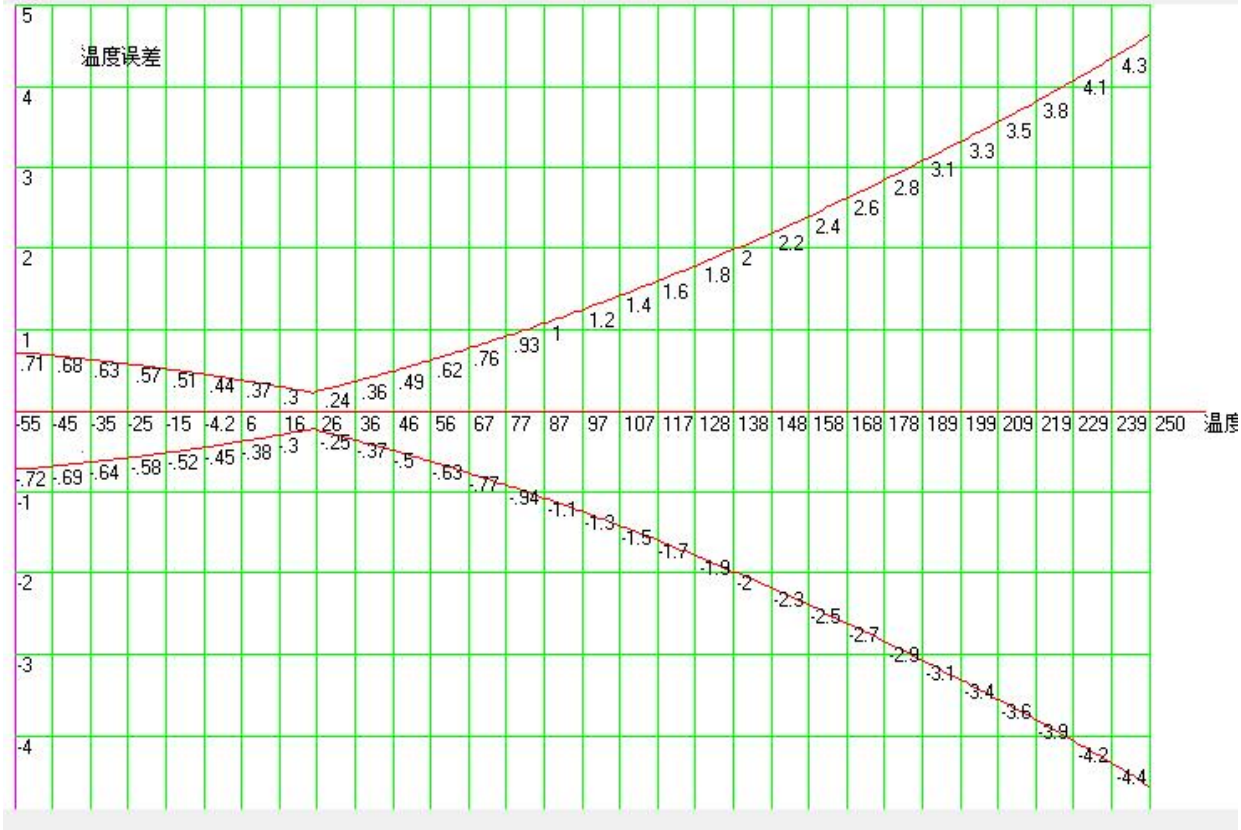
192	0.075	0.08	0.084	5.828	-5.828	3.146	-3.146
193	0.073	0.078	0.083	5.849	-5.849	3.17	-3.17
194	0.072	0.076	0.081	5.87	-5.87	3.193	-3.193
195	0.07	0.075	0.079	5.891	-5.891	3.217	-3.217
196	0.069	0.073	0.078	5.912	-5.912	3.24	-3.24
197	0.067	0.072	0.076	5.933	-5.933	3.264	-3.264
198	0.066	0.07	0.074	5.954	-5.954	3.287	-3.287
199	0.065	0.069	0.073	5.975	-5.975	3.311	-3.311
200	0.063	0.067	0.071	5.997	-5.997	3.335	-3.335
201	0.062	0.066	0.07	6.018	-6.018	3.358	-3.358
202	0.061	0.064	0.068	6.039	-6.039	3.382	-3.382
203	0.059	0.063	0.067	6.061	-6.061	3.406	-3.406
204	0.058	0.062	0.066	6.082	-6.082	3.43	-3.43
205	0.057	0.06	0.064	6.104	-6.104	3.454	-3.454
206	0.055	0.059	0.063	6.125	-6.125	3.478	-3.478
207	0.054	0.058	0.061	6.147	-6.147	3.502	-3.502
208	0.053	0.057	0.06	6.168	-6.168	3.527	-3.527
209	0.052	0.055	0.059	6.19	-6.19	3.551	-3.551
210	0.051	0.054	0.058	6.211	-6.211	3.575	-3.575
211	0.05	0.053	0.056	6.233	-6.233	3.6	-3.6
212	0.049	0.052	0.055	6.254	-6.254	3.624	-3.624
213	0.048	0.051	0.054	6.276	-6.276	3.649	-3.649
214	0.047	0.05	0.053	6.297	-6.297	3.673	-3.673
215	0.046	0.049	0.052	6.318	-6.318	3.698	-3.698
216	0.045	0.048	0.051	6.34	-6.34	3.723	-3.723
217	0.044	0.047	0.05	6.361	-6.361	3.747	-3.747
218	0.043	0.046	0.049	6.382	-6.382	3.772	-3.772
219	0.042	0.045	0.048	6.403	-6.403	3.797	-3.797
220	0.041	0.044	0.047	6.423	-6.423	3.822	-3.822
221	0.04	0.043	0.046	6.444	-6.444	3.848	-3.848
222	0.039	0.042	0.045	6.464	-6.464	3.873	-3.873
223	0.038	0.041	0.044	6.484	-6.484	3.898	-3.898
224	0.038	0.04	0.043	6.504	-6.504	3.924	-3.924
225	0.037	0.04	0.042	6.523	-6.523	3.949	-3.949
226	0.036	0.039	0.041	6.542	-6.542	3.975	-3.975
227	0.036	0.038	0.041	6.561	-6.561	4.001	-4.001
228	0.035	0.037	0.04	6.58	-6.58	4.026	-4.026
229	0.034	0.037	0.039	6.598	-6.598	4.052	-4.052
230	0.034	0.036	0.038	6.615	-6.615	4.078	-4.078
231	0.033	0.035	0.038	6.632	-6.632	4.105	-4.105
232	0.033	0.035	0.037	6.649	-6.649	4.131	-4.131
233	0.032	0.034	0.037	6.665	-6.665	4.157	-4.157

234	0.031	0.034	0.036	6.681	-6.681	4.184	-4.184
235	0.031	0.033	0.036	6.695	-6.695	4.21	-4.21
236	0.031	0.033	0.035	6.71	-6.71	4.237	-4.237
237	0.03	0.032	0.035	6.723	-6.723	4.264	-4.264
238	0.03	0.032	0.034	6.736	-6.736	4.291	-4.291
239	0.029	0.032	0.034	6.748	-6.748	4.319	-4.319
240	0.029	0.031	0.033	6.759	-6.759	4.346	-4.346
241	0.029	0.031	0.033	6.77	-6.77	4.374	-4.374
242	0.028	0.031	0.033	6.779	-6.779	4.401	-4.401
243	0.028	0.03	0.032	6.787	-6.787	4.429	-4.429
244	0.028	0.03	0.032	6.795	-6.795	4.457	-4.457
245	0.028	0.03	0.032	6.801	-6.801	4.486	-4.486
246	0.028	0.03	0.032	6.806	-6.806	4.514	-4.514
247	0.028	0.03	0.032	6.81	-6.81	4.543	-4.543
248	0.027	0.03	0.032	6.812	-6.812	4.572	-4.572
249	0.027	0.029	0.032	6.814	-6.814	4.601	-4.601
250	0.027	0.03	0.032	6.814	-6.814	4.63	-4.63



附表 II Attachment II


电阻误差%
温度


温度误差
温度