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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 503F3950
版次 REV.NO:	C0
日期 DATE:	2026-06-27

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 503 F 3950
① ② ③ ④

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

② 503：25°C的零功率电阻值 50kΩ（Zero Power Resistance at 25°C is 50kΩ）

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）

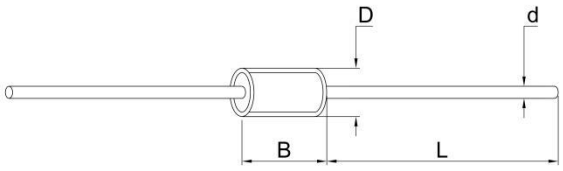
2、电气性能 Electrical characteristics

No.	项目 Item	符号 Symbol	测试条件 Test conditions	单位 Unit	性能要求 Requirements
2.1	25°C的零功率电阻值 Zero Power Resistance at 25°C	R_{25}	Ta=25±0.01°C (Test Power≤0.1mW)	kΩ	50kΩ±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°C T_b=50±0.01°C	K	3950K±1%
2.3	耗散系数 Thermal dissipation Coefficient	δ	静止空气中 In still air	mW/°C	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	/	/	°C	-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 503F3950		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}：50kΩ±1% (Zero Power Resistance: R_{25}：50kΩ±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

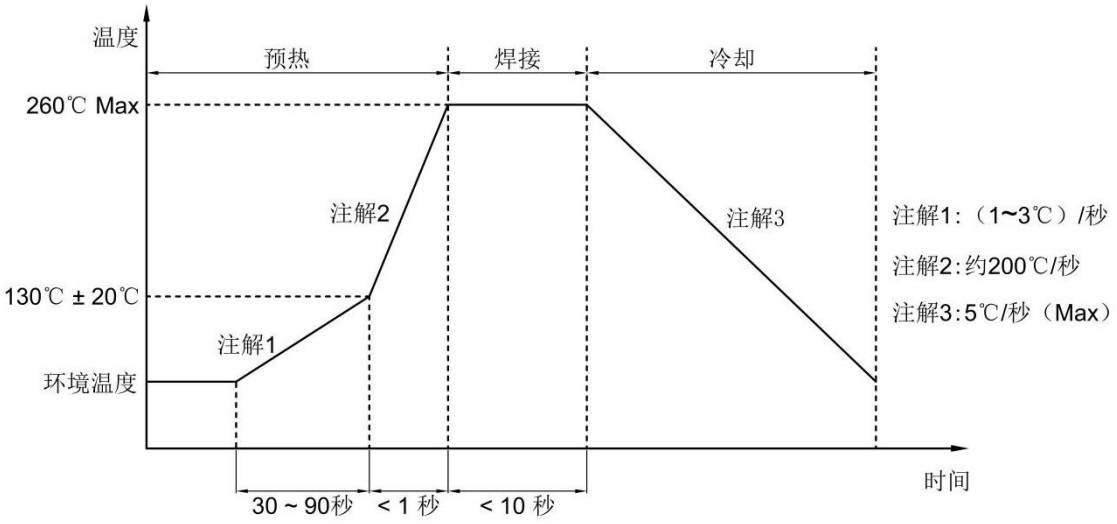
No.	名称 Name	材料规格 Material specifications	数量 Quantity	备注 note
1	核心元件 Core element	热敏电阻芯片 50kΩ	1	
2	包封类 Coating material	玻壳	1	
3	电极 Electrode	镀锡电极	2	
4	引线 Lead	铁镍合金	2	

4、可靠性 Reliability

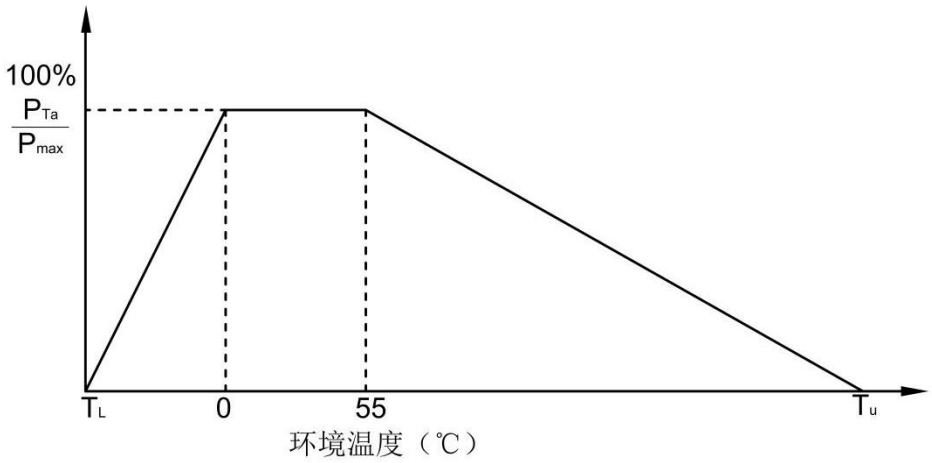
No.	项目 Test Item	试验标准 Test Standard	试验条件及方法 Test Conditions / Methods	性能要求 Acceptance Criteria
4.1	引出端强度 Tensile Strength of Terminals	IEC60068-2-21	固定电阻端，拉力：10N±1 N，时间：10±1 秒 Keep the unit fixed, apply 10 ± 1 N for 10 ± 1 seconds.	无可见性损伤 No Visible damage|Δ R_{25}/R_{25}|≤2%
4.2	可焊性 Solder ability	IEC60068-2-20	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}=50kΩ 精度:±1%　　$B_{25/50}$=3950K 精度:±1%（P214-9）

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	3603.9	3807	4010.09	5.334	-5.334	0.72	-0.72
-54	3273.49	3454.42	3635.35	5.237	-5.237	0.718	-0.718
-53	3003.81	3166.92	3330.04	5.15	-5.15	0.715	-0.715
-52	2778.95	2927.42	3075.9	5.071	-5.071	0.711	-0.711
-51	2587.47	2723.64	2859.81	4.999	-4.999	0.708	-0.708
-50	2421.07	2546.68	2672.29	4.932	-4.932	0.704	-0.704
-49	2273.65	2390.02	2506.38	4.868	-4.868	0.7	-0.7
-48	2140.78	2248.91	2357.03	4.807	-4.807	0.696	-0.696
-47	2019.22	2119.88	2220.55	4.748	-4.748	0.692	-0.692
-46	1906.6	2000.43	2094.26	4.69	-4.69	0.687	-0.687
-45	1801.25	1888.75	1976.26	4.633	-4.633	0.683	-0.683
-44	1701.96	1783.58	1865.19	4.575	-4.575	0.678	-0.678
-43	1607.93	1684.02	1760.11	4.518	-4.518	0.674	-0.674
-42	1518.58	1589.48	1660.38	4.46	-4.46	0.669	-0.669
-41	1433.54	1499.56	1565.57	4.402	-4.402	0.665	-0.665
-40	1352.58	1414	1475.41	4.343	-4.343	0.66	-0.66
-39	1275.52	1332.61	1389.7	4.284	-4.284	0.655	-0.655
-38	1202.27	1255.29	1308.32	4.224	-4.224	0.651	-0.651
-37	1132.72	1181.94	1231.15	4.163	-4.163	0.646	-0.646
-36	1066.82	1112.46	1158.11	4.103	-4.103	0.641	-0.641
-35	1004.47	1046.79	1089.1	4.042	-4.042	0.636	-0.636
-34	945.61	984.819	1024.02	3.981	-3.981	0.632	-0.632
-33	890.122	926.44	962.758	3.92	-3.92	0.627	-0.627
-32	837.904	871.537	905.17	3.859	-3.859	0.622	-0.622
-31	788.836	819.979	851.122	3.798	-3.798	0.617	-0.617
-30	742.786	771.623	800.46	3.737	-3.737	0.612	-0.612
-29	699.616	726.321	753.025	3.676	-3.676	0.607	-0.607
-28	659.182	683.915	708.649	3.616	-3.616	0.602	-0.602
-27	621.335	644.249	667.163	3.556	-3.556	0.597	-0.597
-26	585.928	607.163	628.397	3.497	-3.497	0.592	-0.592
-25	552.814	572.5	592.185	3.438	-3.438	0.586	-0.586
-24	521.848	540.105	558.362	3.38	-3.38	0.581	-0.581
-23	492.891	509.83	526.769	3.322	-3.322	0.576	-0.576
-22	465.807	481.531	497.255	3.265	-3.265	0.57	-0.57
-21	440.468	455.07	469.673	3.208	-3.208	0.565	-0.565
-20	416.751	430.318	443.886	3.152	-3.152	0.559	-0.559
-19	394.541	407.153	419.765	3.097	-3.097	0.553	-0.553

-18	373.73	385.459	397.187	3.042	-3.042	0.548	-0.548
-17	354.217	365.129	376.041	2.988	-2.988	0.542	-0.542
-16	335.906	346.063	356.22	2.934	-2.934	0.536	-0.536
-15	318.712	328.169	337.626	2.881	-2.881	0.53	-0.53
-14	302.552	311.361	320.17	2.829	-2.829	0.524	-0.524
-13	287.352	295.56	303.768	2.777	-2.777	0.518	-0.518
-12	273.043	280.693	288.343	2.725	-2.725	0.511	-0.511
-11	259.561	266.694	273.826	2.674	-2.674	0.505	-0.505
-10	246.849	253.5	260.15	2.623	-2.623	0.499	-0.499
-9	234.852	241.054	247.257	2.573	-2.573	0.492	-0.492
-8	223.521	229.307	235.093	2.523	-2.523	0.486	-0.486
-7	212.811	218.209	223.606	2.473	-2.473	0.479	-0.479
-6	202.681	207.717	212.752	2.424	-2.424	0.472	-0.472
-5	193.093	197.791	202.489	2.375	-2.375	0.466	-0.466
-4	184.011	188.394	192.778	2.326	-2.326	0.459	-0.459
-3	175.404	179.493	183.582	2.278	-2.278	0.452	-0.452
-2	167.242	171.057	174.871	2.23	-2.23	0.445	-0.445
-1	159.498	163.056	166.614	2.182	-2.182	0.438	-0.438
0	152.147	155.466	158.784	2.134	-2.134	0.43	-0.43
1	145.166	148.26	151.354	2.087	-2.087	0.423	-0.423
2	138.533	141.418	144.302	2.039	-2.039	0.416	-0.416
3	132.229	134.918	137.606	1.992	-1.992	0.409	-0.409
4	126.235	128.74	131.245	1.945	-1.945	0.401	-0.401
5	120.535	122.868	125.201	1.899	-1.899	0.394	-0.394
6	115.111	117.284	119.457	1.852	-1.852	0.386	-0.386
7	109.95	111.973	113.996	1.806	-1.806	0.378	-0.378
8	105.038	106.92	108.802	1.76	-1.76	0.371	-0.371
9	100.362	102.112	103.862	1.714	-1.714	0.363	-0.363
10	95.681	97.302	98.922	1.665	-1.665	0.356	-0.356
11	91.668	93.18	94.692	1.622	-1.622	0.347	-0.347
12	87.629	89.033	90.437	1.577	-1.577	0.339	-0.339
13	83.78	85.083	86.387	1.531	-1.531	0.331	-0.331
14	80.114	81.322	82.531	1.486	-1.486	0.323	-0.323
15	76.619	77.74	78.861	1.441	-1.441	0.315	-0.315
16	73.29	74.328	75.366	1.396	-1.396	0.307	-0.307
17	70.116	71.076	72.037	1.351	-1.351	0.299	-0.299
18	67.09	67.979	68.867	1.307	-1.307	0.29	-0.29
19	64.206	65.027	65.848	1.262	-1.262	0.282	-0.282
20	61.455	62.213	62.972	1.218	-1.218	0.274	-0.274
21	58.833	59.532	60.231	1.174	-1.174	0.265	-0.265
22	56.332	56.976	57.62	1.13	-1.13	0.257	-0.257
23	53.946	54.539	55.132	1.086	-1.086	0.248	-0.248

24	51.67	52.215	52.76	1.043	-1.043	0.239	-0.239
25	49.5	50	50.5	1	-1	0.231	-0.231
26	47.387	47.886	48.386	1.043	-1.043	0.242	-0.242
27	45.372	45.871	46.369	1.086	-1.086	0.253	-0.253
28	43.451	43.948	44.444	1.129	-1.129	0.265	-0.265
29	41.62	42.113	42.606	1.171	-1.171	0.276	-0.276
30	39.872	40.362	40.852	1.214	-1.214	0.288	-0.288
31	38.205	38.691	39.177	1.256	-1.256	0.299	-0.299
32	36.615	37.096	37.578	1.298	-1.298	0.311	-0.311
33	35.097	35.574	36.051	1.34	-1.34	0.323	-0.323
34	33.648	34.12	34.592	1.382	-1.382	0.335	-0.335
35	32.266	32.732	33.198	1.423	-1.423	0.347	-0.347
36	30.945	31.405	31.866	1.465	-1.465	0.359	-0.359
37	29.685	30.139	30.593	1.506	-1.506	0.371	-0.371
38	28.481	28.928	29.376	1.547	-1.547	0.383	-0.383
39	27.33	27.771	28.212	1.588	-1.588	0.395	-0.395
40	26.231	26.666	27.1	1.628	-1.628	0.408	-0.408
41	25.181	25.609	26.036	1.669	-1.669	0.42	-0.42
42	24.178	24.598	25.019	1.709	-1.709	0.433	-0.433
43	23.218	23.632	24.045	1.749	-1.749	0.445	-0.445
44	22.301	22.707	23.114	1.789	-1.789	0.458	-0.458
45	21.424	21.823	22.222	1.829	-1.829	0.47	-0.47
46	20.585	20.977	21.369	1.868	-1.868	0.483	-0.483
47	19.782	20.167	20.552	1.907	-1.907	0.496	-0.496
48	19.014	19.392	19.77	1.947	-1.947	0.509	-0.509
49	18.28	18.65	19.02	1.986	-1.986	0.522	-0.522
50	17.576	17.94	18.303	2.025	-2.025	0.535	-0.535
51	16.903	17.259	17.615	2.063	-2.063	0.548	-0.548
52	16.258	16.607	16.956	2.102	-2.102	0.561	-0.561
53	15.641	15.983	16.325	2.14	-2.14	0.574	-0.574
54	15.049	15.385	15.72	2.178	-2.178	0.588	-0.588
55	14.483	14.811	15.139	2.216	-2.216	0.601	-0.601
56	13.94	14.262	14.583	2.254	-2.254	0.615	-0.615
57	13.42	13.735	14.05	2.292	-2.292	0.628	-0.628
58	12.921	13.229	13.538	2.329	-2.329	0.642	-0.642
59	12.443	12.745	13.047	2.366	-2.366	0.655	-0.655
60	11.985	12.28	12.576	2.404	-2.404	0.669	-0.669
61	11.546	11.835	12.124	2.441	-2.441	0.683	-0.683
62	11.124	11.407	11.69	2.477	-2.477	0.697	-0.697
63	10.72	10.997	11.273	2.514	-2.514	0.711	-0.711
64	10.332	10.603	10.873	2.551	-2.551	0.725	-0.725
65	9.96	10.225	10.489	2.587	-2.587	0.739	-0.739

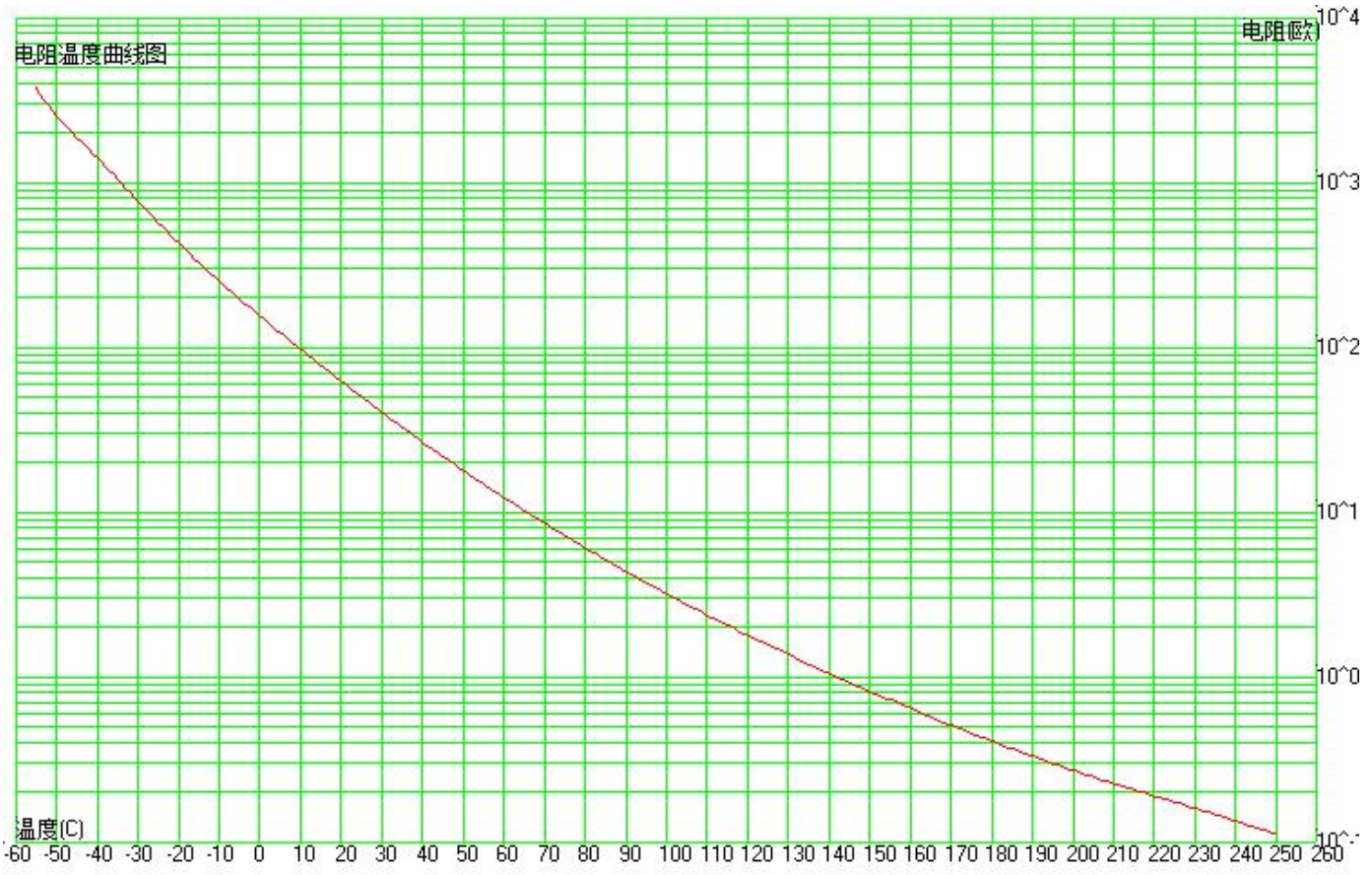
66	9.603	9.862	10.121	2.623	-2.623	0.753	-0.753
67	9.26	9.513	9.766	2.659	-2.659	0.768	-0.768
68	8.931	9.179	9.426	2.695	-2.695	0.782	-0.782
69	8.615	8.857	9.099	2.73	-2.73	0.796	-0.796
70	8.312	8.549	8.785	2.766	-2.766	0.811	-0.811
71	8.021	8.252	8.483	2.801	-2.801	0.825	-0.825
72	7.741	7.967	8.193	2.836	-2.836	0.84	-0.84
73	7.472	7.693	7.914	2.871	-2.871	0.855	-0.855
74	7.214	7.43	7.646	2.906	-2.906	0.869	-0.869
75	6.966	7.177	7.388	2.941	-2.941	0.884	-0.884
76	6.727	6.934	7.14	2.975	-2.975	0.899	-0.899
77	6.498	6.7	6.902	3.01	-3.01	0.914	-0.914
78	6.278	6.475	6.672	3.044	-3.044	0.929	-0.929
79	6.066	6.259	6.451	3.078	-3.078	0.944	-0.944
80	5.862	6.051	6.239	3.112	-3.112	0.96	-0.96
81	5.666	5.851	6.035	3.145	-3.145	0.975	-0.975
82	5.478	5.658	5.838	3.179	-3.179	0.99	-0.99
83	5.297	5.473	5.648	3.212	-3.212	1.006	-1.006
84	5.122	5.294	5.466	3.245	-3.245	1.021	-1.021
85	4.955	5.123	5.29	3.278	-3.278	1.037	-1.037
86	4.793	4.957	5.121	3.311	-3.311	1.052	-1.052
87	4.638	4.798	4.958	3.344	-3.344	1.068	-1.068
88	4.488	4.645	4.802	3.376	-3.376	1.084	-1.084
89	4.344	4.497	4.65	3.409	-3.409	1.1	-1.1
90	4.205	4.355	4.505	3.441	-3.441	1.116	-1.116
91	4.071	4.218	4.364	3.473	-3.473	1.132	-1.132
92	3.943	4.086	4.229	3.504	-3.504	1.148	-1.148
93	3.819	3.959	4.099	3.536	-3.536	1.164	-1.164
94	3.699	3.836	3.973	3.568	-3.568	1.18	-1.18
95	3.584	3.718	3.851	3.599	-3.599	1.197	-1.197
96	3.473	3.604	3.734	3.63	-3.63	1.213	-1.213
97	3.366	3.494	3.622	3.661	-3.661	1.23	-1.23
98	3.262	3.388	3.513	3.692	-3.692	1.246	-1.246
99	3.163	3.285	3.408	3.723	-3.723	1.263	-1.263
100	3.067	3.187	3.306	3.753	-3.753	1.279	-1.279
101	2.974	3.091	3.208	3.784	-3.784	1.296	-1.296
102	2.885	2.999	3.114	3.814	-3.814	1.313	-1.313
103	2.799	2.91	3.022	3.844	-3.844	1.33	-1.33
104	2.715	2.825	2.934	3.874	-3.874	1.347	-1.347
105	2.635	2.742	2.849	3.903	-3.903	1.364	-1.364
106	2.557	2.662	2.767	3.933	-3.933	1.381	-1.381
107	2.482	2.585	2.687	3.963	-3.963	1.398	-1.398

108	2.41	2.51	2.61	3.992	-3.992	1.416	-1.416
109	2.34	2.438	2.536	4.021	-4.021	1.433	-1.433
110	2.272	2.368	2.464	4.05	-4.05	1.45	-1.45
111	2.207	2.301	2.395	4.079	-4.079	1.468	-1.468
112	2.144	2.236	2.328	4.108	-4.108	1.485	-1.485
113	2.083	2.173	2.263	4.136	-4.136	1.503	-1.503
114	2.024	2.112	2.2	4.165	-4.165	1.521	-1.521
115	1.967	2.053	2.139	4.193	-4.193	1.539	-1.539
116	1.912	1.996	2.08	4.221	-4.221	1.556	-1.556
117	1.858	1.941	2.023	4.249	-4.249	1.574	-1.574
118	1.807	1.887	1.968	4.277	-4.277	1.592	-1.592
119	1.756	1.836	1.915	4.305	-4.305	1.61	-1.61
120	1.708	1.785	1.863	4.333	-4.333	1.629	-1.629
121	1.661	1.737	1.813	4.36	-4.36	1.647	-1.647
122	1.616	1.69	1.764	4.388	-4.388	1.665	-1.665
123	1.572	1.644	1.717	4.415	-4.415	1.683	-1.683
124	1.529	1.6	1.671	4.442	-4.442	1.702	-1.702
125	1.488	1.558	1.627	4.469	-4.469	1.72	-1.72
126	1.448	1.516	1.584	4.496	-4.496	1.739	-1.739
127	1.409	1.476	1.543	4.523	-4.523	1.758	-1.758
128	1.372	1.437	1.502	4.55	-4.55	1.776	-1.776
129	1.335	1.399	1.463	4.577	-4.577	1.795	-1.795
130	1.3	1.363	1.425	4.603	-4.603	1.814	-1.814
131	1.265	1.327	1.388	4.63	-4.63	1.833	-1.833
132	1.232	1.292	1.353	4.656	-4.656	1.852	-1.852
133	1.2	1.259	1.318	4.682	-4.682	1.871	-1.871
134	1.169	1.227	1.284	4.708	-4.708	1.89	-1.89
135	1.138	1.195	1.252	4.735	-4.735	1.909	-1.909
136	1.109	1.164	1.22	4.76	-4.76	1.929	-1.929
137	1.08	1.135	1.189	4.786	-4.786	1.948	-1.948
138	1.053	1.106	1.159	4.812	-4.812	1.967	-1.967
139	1.026	1.078	1.13	4.838	-4.838	1.987	-1.987
140	0.999	1.051	1.102	4.863	-4.863	2.006	-2.006
141	0.974	1.024	1.074	4.889	-4.889	2.026	-2.026
142	0.949	0.999	1.048	4.914	-4.914	2.046	-2.046
143	0.925	0.974	1.022	4.94	-4.94	2.065	-2.065
144	0.902	0.949	0.996	4.965	-4.965	2.085	-2.085
145	0.88	0.926	0.972	4.99	-4.99	2.105	-2.105
146	0.858	0.903	0.948	5.015	-5.015	2.125	-2.125
147	0.836	0.881	0.925	5.04	-5.04	2.145	-2.145
148	0.815	0.859	0.903	5.065	-5.065	2.165	-2.165
149	0.795	0.838	0.881	5.09	-5.09	2.186	-2.186

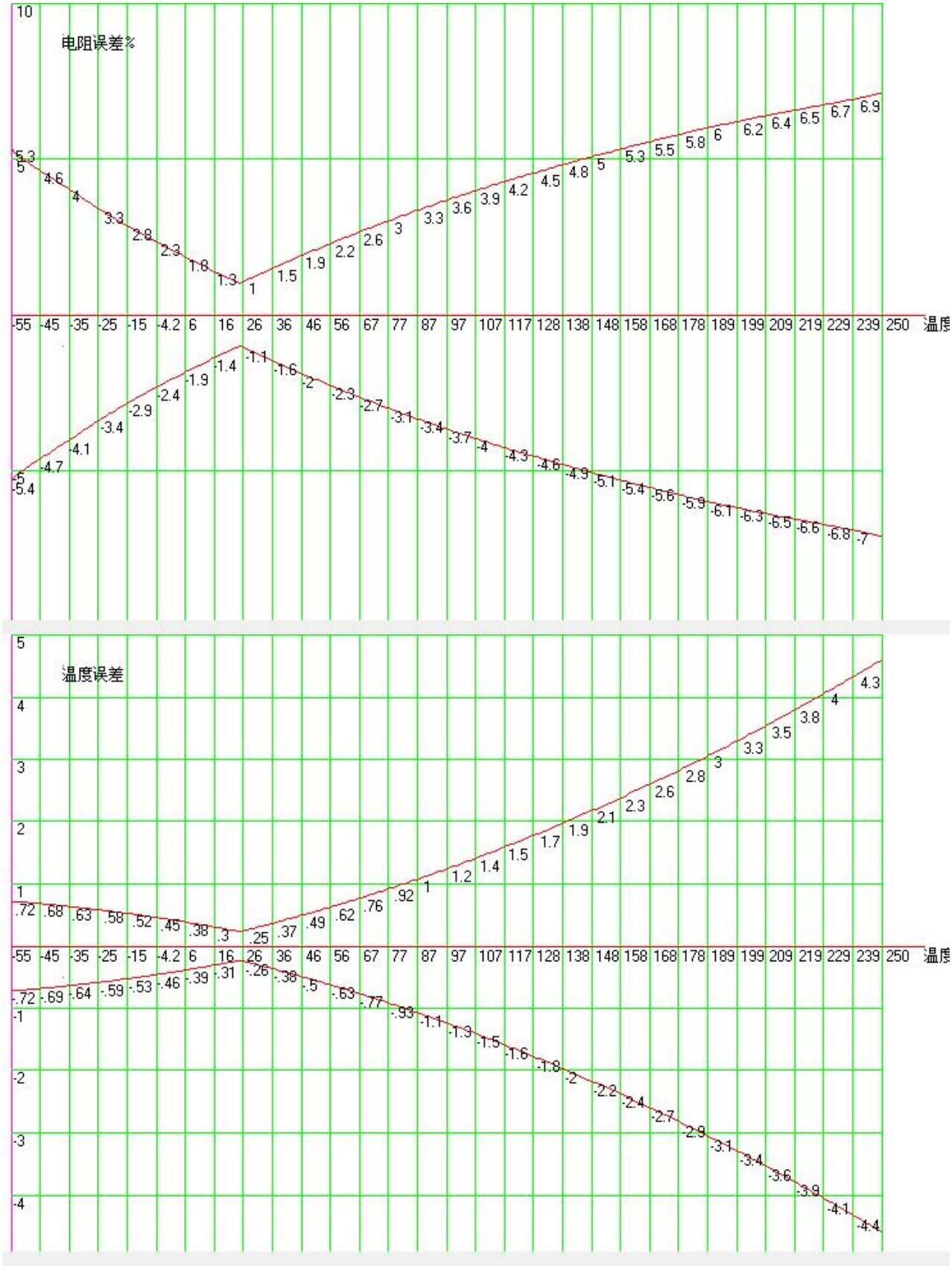
150	0.776	0.818	0.859	5.114	-5.114	2.206	-2.206
151	0.757	0.798	0.839	5.139	-5.139	2.226	-2.226
152	0.738	0.778	0.819	5.164	-5.164	2.246	-2.246
153	0.72	0.76	0.799	5.188	-5.188	2.267	-2.267
154	0.703	0.741	0.78	5.212	-5.212	2.287	-2.287
155	0.686	0.723	0.761	5.237	-5.237	2.308	-2.308
156	0.669	0.706	0.743	5.261	-5.261	2.329	-2.329
157	0.653	0.689	0.726	5.285	-5.285	2.35	-2.35
158	0.637	0.673	0.709	5.309	-5.309	2.37	-2.37
159	0.622	0.657	0.692	5.333	-5.333	2.391	-2.391
160	0.607	0.642	0.676	5.357	-5.357	2.412	-2.412
161	0.593	0.627	0.66	5.381	-5.381	2.433	-2.433
162	0.579	0.612	0.645	5.404	-5.404	2.454	-2.454
163	0.565	0.598	0.63	5.428	-5.428	2.475	-2.475
164	0.552	0.584	0.616	5.451	-5.451	2.497	-2.497
165	0.539	0.57	0.602	5.475	-5.475	2.518	-2.518
166	0.527	0.557	0.588	5.498	-5.498	2.539	-2.539
167	0.514	0.544	0.575	5.521	-5.521	2.561	-2.561
168	0.503	0.532	0.562	5.544	-5.544	2.582	-2.582
169	0.491	0.52	0.549	5.567	-5.567	2.604	-2.604
170	0.48	0.508	0.537	5.59	-5.59	2.626	-2.626
171	0.469	0.497	0.525	5.613	-5.613	2.647	-2.647
172	0.458	0.486	0.513	5.636	-5.636	2.669	-2.669
173	0.448	0.475	0.502	5.658	-5.658	2.691	-2.691
174	0.438	0.464	0.491	5.681	-5.681	2.713	-2.713
175	0.428	0.454	0.48	5.703	-5.703	2.735	-2.735
176	0.419	0.444	0.469	5.725	-5.725	2.757	-2.757
177	0.409	0.434	0.459	5.747	-5.747	2.779	-2.779
178	0.4	0.425	0.449	5.769	-5.769	2.802	-2.802
179	0.392	0.416	0.44	5.791	-5.791	2.824	-2.824
180	0.383	0.407	0.43	5.813	-5.813	2.847	-2.847
181	0.375	0.398	0.421	5.834	-5.834	2.869	-2.869
182	0.367	0.39	0.412	5.856	-5.856	2.892	-2.892
183	0.359	0.381	0.404	5.877	-5.877	2.914	-2.914
184	0.351	0.373	0.395	5.899	-5.899	2.937	-2.937
185	0.344	0.366	0.387	5.92	-5.92	2.96	-2.96
186	0.337	0.358	0.379	5.941	-5.941	2.983	-2.983
187	0.33	0.351	0.371	5.962	-5.962	3.006	-3.006
188	0.323	0.343	0.364	5.982	-5.982	3.029	-3.029
189	0.316	0.336	0.357	6.003	-6.003	3.052	-3.052
190	0.31	0.33	0.349	6.023	-6.023	3.075	-3.075
191	0.303	0.323	0.342	6.044	-6.044	3.098	-3.098

192	0.297	0.316	0.336	6.064	-6.064	3.121	-3.121
193	0.291	0.31	0.329	6.084	-6.084	3.145	-3.145
194	0.285	0.304	0.323	6.104	-6.104	3.168	-3.168
195	0.28	0.298	0.316	6.124	-6.124	3.192	-3.192
196	0.274	0.292	0.31	6.144	-6.144	3.216	-3.216
197	0.269	0.287	0.304	6.163	-6.163	3.239	-3.239
198	0.264	0.281	0.298	6.182	-6.182	3.263	-3.263
199	0.259	0.276	0.293	6.202	-6.202	3.287	-3.287
200	0.254	0.271	0.287	6.221	-6.221	3.311	-3.311
201	0.249	0.265	0.282	6.24	-6.24	3.335	-3.335
202	0.244	0.26	0.277	6.259	-6.259	3.359	-3.359
203	0.24	0.256	0.272	6.277	-6.277	3.383	-3.383
204	0.235	0.251	0.267	6.296	-6.296	3.408	-3.408
205	0.231	0.246	0.262	6.315	-6.315	3.432	-3.432
206	0.226	0.242	0.257	6.333	-6.333	3.456	-3.456
207	0.222	0.237	0.253	6.351	-6.351	3.481	-3.481
208	0.218	0.233	0.248	6.369	-6.369	3.505	-3.505
209	0.214	0.229	0.244	6.387	-6.387	3.53	-3.53
210	0.211	0.225	0.239	6.405	-6.405	3.555	-3.555
211	0.207	0.221	0.235	6.423	-6.423	3.579	-3.579
212	0.203	0.217	0.231	6.441	-6.441	3.604	-3.604
213	0.2	0.213	0.227	6.458	-6.458	3.629	-3.629
214	0.196	0.21	0.223	6.476	-6.476	3.654	-3.654
215	0.193	0.206	0.219	6.493	-6.493	3.679	-3.679
216	0.189	0.202	0.216	6.511	-6.511	3.705	-3.705
217	0.186	0.199	0.212	6.528	-6.528	3.73	-3.73
218	0.183	0.196	0.208	6.545	-6.545	3.755	-3.755
219	0.18	0.192	0.205	6.562	-6.562	3.781	-3.781
220	0.177	0.189	0.202	6.579	-6.579	3.806	-3.806
221	0.174	0.186	0.198	6.596	-6.596	3.831	-3.831
222	0.171	0.183	0.195	6.613	-6.613	3.857	-3.857
223	0.168	0.18	0.192	6.63	-6.63	3.883	-3.883
224	0.165	0.177	0.188	6.647	-6.647	3.908	-3.908
225	0.162	0.174	0.185	6.664	-6.664	3.934	-3.934
226	0.159	0.171	0.182	6.681	-6.681	3.96	-3.96
227	0.157	0.168	0.179	6.698	-6.698	3.986	-3.986
228	0.154	0.165	0.176	6.715	-6.715	4.012	-4.012
229	0.151	0.162	0.173	6.732	-6.732	4.038	-4.038
230	0.149	0.16	0.17	6.749	-6.749	4.064	-4.064
231	0.146	0.157	0.167	6.766	-6.766	4.09	-4.09
232	0.144	0.154	0.165	6.783	-6.783	4.117	-4.117
233	0.141	0.151	0.162	6.8	-6.8	4.143	-4.143

234	0.139	0.149	0.159	6.818	-6.818	4.169	-4.169
235	0.136	0.146	0.156	6.835	-6.835	4.196	-4.196
236	0.134	0.144	0.154	6.853	-6.853	4.222	-4.222
237	0.131	0.141	0.151	6.871	-6.871	4.248	-4.248
238	0.129	0.139	0.148	6.889	-6.889	4.275	-4.275
239	0.127	0.136	0.146	6.907	-6.907	4.302	-4.302
240	0.124	0.134	0.143	6.925	-6.925	4.328	-4.328
241	0.122	0.131	0.14	6.944	-6.944	4.355	-4.355
242	0.12	0.129	0.138	6.963	-6.963	4.382	-4.382
243	0.117	0.126	0.135	6.982	-6.982	4.408	-4.408
244	0.115	0.124	0.133	7.001	-7.001	4.435	-4.435
245	0.113	0.122	0.13	7.021	-7.021	4.462	-4.462
246	0.111	0.119	0.128	7.041	-7.041	4.489	-4.489
247	0.108	0.117	0.125	7.061	-7.061	4.516	-4.516
248	0.106	0.114	0.122	7.082	-7.082	4.542	-4.542
249	0.104	0.112	0.12	7.103	-7.103	4.569	-4.569
250	0.102	0.11	0.117	7.124	-7.124	4.596	-4.596



附表 II Attachment II


电阻误差%
温度误差
温度