编码(Coding)：JK/JXF260808007

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：	MF51 玻封测温型 NTC 热敏电阻器 MF51 Series Glass shell NTC Thermistor
产品型号 PART NUMBER：	MF51 104F3950 (B)
版次 REV.NO：	C0
日期 DATE：	2026-08-08

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

MF51	104	F	3950	(B)
①	②	③	④	⑤

① MF51：玻封测温型 NTC 热敏电阻器系列（Glass shell NTC Thermistor Series）

② 104：25℃的零功率电阻值 100kΩ（Zero Power Resistance at 25℃ is 100kΩ）

③ F：阻值精度代码 E-±0.5% F-±1% G-±2% H-±3% J-±5%（Resistance precision code E-±0.5% F-±1% G-±2% H-±3% J-±5%）

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

⑤ B：外形尺寸代码（Dimension Code）

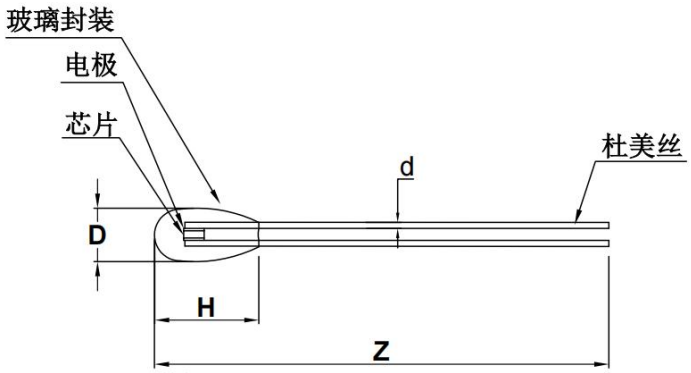
2、电气性能 Electrical Characteristics

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	100kΩ ±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 0.96
2.4	时间常数 Thermal time constant	τ	静止空气中 In still air	sec	约 9
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	35
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.	MF51 104F3950(B)		审核 Approve:		日期 DATE	

尺寸 Dimensions： （Unit：mm）



型号	D （mm）	H （mm）	Z （mm）	d （mm）
MF51-B	1.7±0.25	3.2±0.5	65±5	0.25±0.02

技术要求 Technical requirements：

1) 零功率阻值：R_{25}：100kΩ±1% (Zero Power Resistance: R_{25}：100kΩ±1%)；
2) $B_{25/50}$ 数值：3950K±1% (B-value:$B_{25/50}$: 3950K±1%)；
3) 引线：φ0.25 杜镁丝线（Φ0.25 Magnesite 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 100kΩ	1	
2	包封类 Coating material	玻壳	1	
3	引线 Lead	杜镁丝线	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：5N±1 N，时间：10±1 秒 Keep the unit fixed, apply 5±1 N for 10±1 seconds.	无可见性损伤 No Visible damage $\lvert\Delta R_{25}/R_{25}\rvert \leqslant 2\%$
4.2	可焊性 Solderability	IEC60068-2-20	温度：245℃±5℃，时间：2-3 秒 Temperature: 245℃ ± 5℃ 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℃±5℃，浸入深度距电阻体 6mm，时间：5±1 秒 Temperature of solder bath: 260℃ ± 5℃, insertion depth: 6 mm from resistor body, duration: 5 ± 1 seconds.	无可见性损伤 No Visible damage $\lvert\Delta R_{25}/R_{25}\rvert \leqslant 2\%$
4.4	稳态湿热 Damp heat, Steady State	IEC60068-2-78	温度：40℃±2℃,湿度：93%RH±2%RH,时间：500h Temperature: 40℃ ± 2℃, 93% RH ± 2% RH, 500 hrs.	无可见性损伤 No Visible damage $\lvert\Delta R_{25}/R_{25}\rvert \leqslant 2\%$
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 $\lvert\Delta R_{25}/R_{25}\rvert \leqslant 2\%$
			步骤 Step / 温度 Temperature (℃) / 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℃±2℃，时间：1000h Temperature: 250℃ ± 2℃, Duration: 1000 hrs.	无可见性损伤 No Visible damage $\lvert\Delta R_{25}/R_{25}\rvert \leqslant 2\%$
4.7	低温储存 Low temperature storage	IEC60068-2-1	温度：-55℃±2℃，时间：1000h Temperature: －55℃ ± 2℃, Duration: 1000 hrs.	无可见性损伤 No Visible damage $\lvert\Delta R_{25}/R_{25}\rvert \leqslant 2\%$

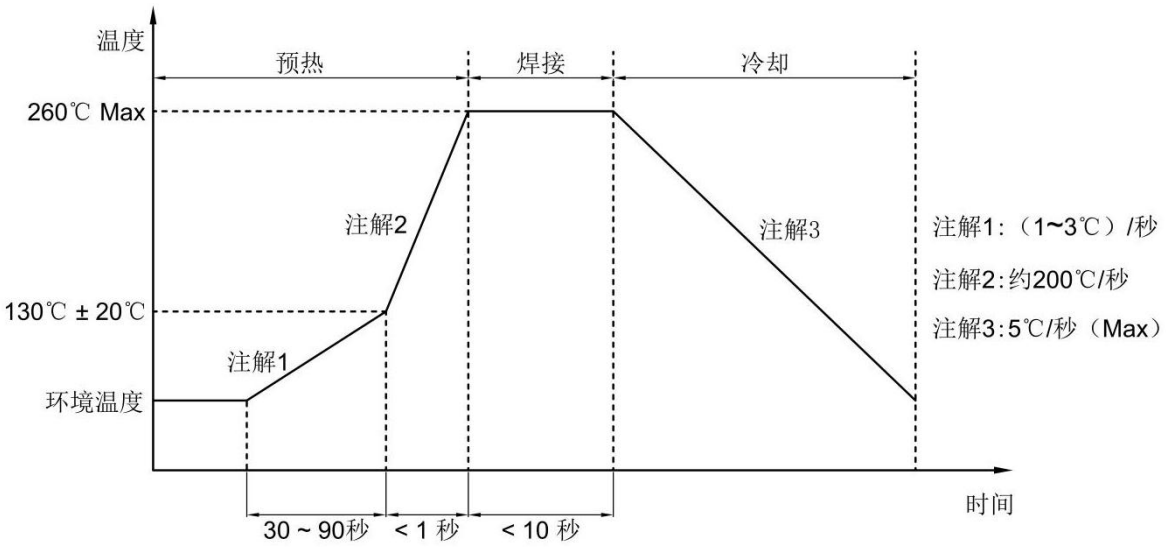
▲注： 1）稳态湿热及温度快速变化试验结束后，样品需在常温环境下静置 2 小时后再做性能测试；

▲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；

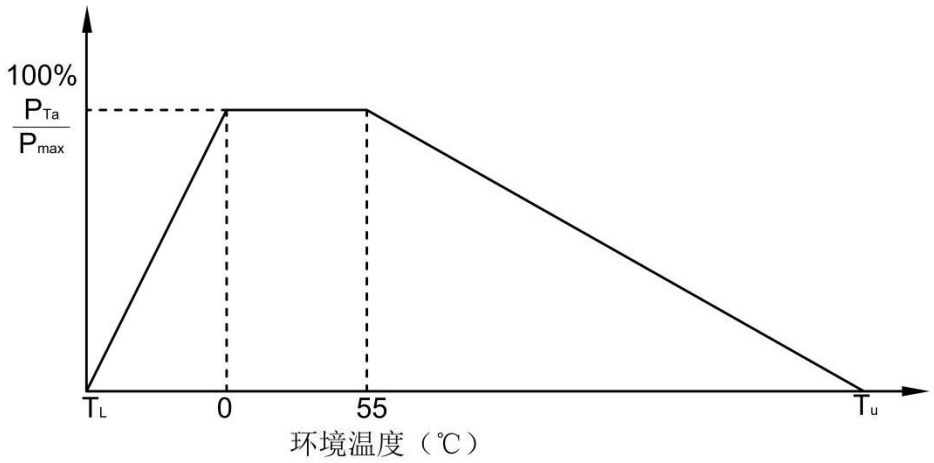
2）高温存储结束后，需随测试环境自然恢复至常温，再取出做性能测试。

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 ☐盒装方式 Boxed Type ☐ 盘装方式 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；

9.11 对于 MF51 型号的测温型 NTC 热敏电阻器，其均为径向引出线结构，不得将其两引线拉成 180° 轴向使用。

For the MF51 Type NTC thermistors, they are all radial lead-out structure, shall not be used to pull its two leads into 180° axial.

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（CQC19001222003） CQC certificate（CQC19001222003）	
10.7	TUV 认证（R50245892） TUV certificate（R50245892）	
10.8	江苏省高新技术产品认证 High-tech product certificate in Jiangsu Province	
10.9	产品通过 AEC-Q200 测试 Passed by AECQ-200	UK220409024

附表 I Attachment I

南京时恒电子科技有限公司

R_{25}=100kΩ 精度:±1%　　$B_{25/50}$=3950K 精度:±1%（P182-6B2）

温度(℃)	电阻(kΩ)			电阻精度(%)		温度精度(℃)	
	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	7097.99	7496.77	7895.55	5.319	-5.319	0.715	-0.715
-53	6630.39	6997.8	7365.21	5.25	-5.25	0.711	-0.711
-52	6196.13	6534.75	6873.36	5.181	-5.181	0.708	-0.708
-51	5792.5	6104.67	6416.84	5.113	-5.113	0.704	-0.704
-50	5417.13	5705	5992.86	5.045	-5.045	0.7	-0.7
-49	5067.89	5333.41	5598.93	4.978	-4.978	0.696	-0.696
-48	4742.87	4987.84	5232.81	4.911	-4.911	0.692	-0.692
-47	4440.32	4666.39	4892.46	4.844	-4.844	0.688	-0.688
-46	4158.62	4367.31	4575.99	4.778	-4.778	0.684	-0.684
-45	3896.3	4089	4281.69	4.712	-4.712	0.68	-0.68
-44	3651.99	3829.96	4007.94	4.646	-4.646	0.676	-0.676
-43	3424.4	3588.83	3753.27	4.581	-4.581	0.671	-0.671
-42	3212.34	3364.31	3516.28	4.517	-4.517	0.667	-0.667
-41	3014.71	3155.21	3295.71	4.452	-4.452	0.662	-0.662
-40	2835.76	2966	3096.23	4.391	-4.391	0.658	-0.658
-39	2658.66	2778.87	2899.08	4.325	-4.325	0.653	-0.653
-38	2498.39	2609.64	2720.88	4.262	-4.262	0.649	-0.649
-37	2348.82	2451.81	2554.8	4.2	-4.2	0.644	-0.644
-36	2209.18	2304.56	2399.93	4.138	-4.138	0.639	-0.639
-35	2078.76	2167.11	2255.46	4.076	-4.076	0.635	-0.635
-34	1956.89	2038.76	2120.63	4.015	-4.015	0.63	-0.63
-33	1842.95	1918.84	1994.74	3.955	-3.955	0.625	-0.625
-32	1736.38	1806.75	1877.12	3.894	-3.894	0.62	-0.62
-31	1636.65	1701.92	1767.19	3.835	-3.835	0.615	-0.615
-30	1543.28	1603.84	1664.39	3.775	-3.775	0.61	-0.61
-29	1455.81	1512.01	1568.21	3.716	-3.716	0.605	-0.605
-28	1373.84	1426.01	1478.18	3.658	-3.658	0.599	-0.599
-27	1296.98	1345.42	1393.85	3.599	-3.599	0.594	-0.594
-26	1224.88	1269.86	1314.84	3.542	-3.542	0.589	-0.589
-25	1157.21	1199	1240.78	3.484	-3.484	0.583	-0.583
-24	1093.68	1132.49	1171.31	3.427	-3.427	0.578	-0.578
-23	1033.99	1070.06	1106.13	3.37	-3.37	0.572	-0.572
-22	977.902	1011.42	1044.94	3.314	-3.314	0.567	-0.567
-21	925.167	956.328	987.488	3.258	-3.258	0.561	-0.561
-20	875.567	904.537	933.506	3.202	-3.202	0.555	-0.555

-19	828.899	855.834	882.77	3.147	-3.147	0.549	-0.549
-18	784.971	810.019	835.067	3.092	-3.092	0.543	-0.543
-17	743.61	766.905	790.2	3.037	-3.037	0.538	-0.538
-16	704.65	726.317	747.984	2.983	-2.983	0.532	-0.532
-15	667.94	688.095	708.249	2.929	-2.929	0.525	-0.525
-14	633.339	652.088	670.837	2.875	-2.875	0.519	-0.519
-13	600.714	618.157	635.601	2.821	-2.821	0.513	-0.513
-12	569.944	586.173	602.402	2.768	-2.768	0.507	-0.507
-11	540.913	556.014	571.114	2.715	-2.715	0.501	-0.501
-10	512.006	526	539.993	2.66	-2.66	0.495	-0.495
-9	487.652	500.727	513.801	2.611	-2.611	0.488	-0.488
-8	463.229	475.395	487.561	2.559	-2.559	0.481	-0.481
-7	440.159	451.48	462.801	2.507	-2.507	0.475	-0.475
-6	418.361	428.896	439.43	2.456	-2.456	0.468	-0.468
-5	397.759	407.562	417.364	2.405	-2.405	0.461	-0.461
-4	378.282	387.403	396.524	2.354	-2.354	0.455	-0.455
-3	359.862	368.349	376.836	2.303	-2.303	0.448	-0.448
-2	342.439	350.334	358.23	2.253	-2.253	0.441	-0.441
-1	325.951	333.297	340.643	2.203	-2.203	0.434	-0.434
0	310.346	317.18	324.013	2.154	-2.154	0.427	-0.427
1	295.571	301.927	308.283	2.105	-2.105	0.42	-0.42
2	281.579	287.49	293.401	2.056	-2.056	0.413	-0.413
3	268.323	273.819	279.316	2.007	-2.007	0.406	-0.406
4	255.761	260.871	265.982	1.958	-1.958	0.398	-0.398
5	243.854	248.604	253.354	1.91	-1.91	0.391	-0.391
6	232.564	236.978	241.393	1.862	-1.862	0.384	-0.384
7	221.855	225.957	230.058	1.815	-1.815	0.376	-0.376
8	211.695	215.505	219.315	1.767	-1.767	0.369	-0.369
9	202.053	205.591	209.129	1.72	-1.72	0.361	-0.361
10	192.789	196.07	199.35	1.673	-1.673	0.354	-0.354
11	184.208	187.255	190.302	1.627	-1.627	0.346	-0.346
12	175.951	178.778	181.604	1.58	-1.58	0.338	-0.338
13	168.106	170.726	173.347	1.534	-1.534	0.33	-0.33
14	160.65	163.078	165.506	1.489	-1.489	0.322	-0.322
15	153.561	155.81	158.059	1.443	-1.443	0.314	-0.314
16	146.819	148.901	150.983	1.398	-1.398	0.306	-0.306
17	140.406	142.331	144.257	1.352	-1.352	0.298	-0.298
18	134.303	136.083	137.863	1.308	-1.308	0.29	-0.29
19	128.495	130.139	131.783	1.263	-1.263	0.281	-0.281
20	122.964	124.482	125.999	1.218	-1.218	0.273	-0.273
21	117.698	119.097	120.496	1.174	-1.174	0.265	-0.265
22	112.681	113.969	115.258	1.13	-1.13	0.256	-0.256

23	107.9	109.086	110.271	1.086	-1.086	0.248	-0.248
24	103.343	104.433	105.523	1.043	-1.043	0.239	-0.239
25	99	100	101	1	-1	0.231	-0.231
26	94.774	95.773	96.773	1.043	-1.043	0.242	-0.242
27	90.748	91.744	92.741	1.086	-1.086	0.253	-0.253
28	86.909	87.902	88.894	1.128	-1.128	0.265	-0.265
29	83.249	84.236	85.223	1.171	-1.171	0.276	-0.276
30	79.759	80.739	81.719	1.213	-1.213	0.288	-0.288
31	76.429	77.402	78.374	1.256	-1.256	0.3	-0.3
32	73.252	74.216	75.179	1.298	-1.298	0.311	-0.311
33	70.22	71.174	72.128	1.34	-1.34	0.323	-0.323
34	67.326	68.269	69.213	1.381	-1.381	0.335	-0.335
35	64.563	65.495	66.427	1.423	-1.423	0.347	-0.347
36	61.924	62.844	63.764	1.464	-1.464	0.359	-0.359
37	59.403	60.311	61.219	1.505	-1.505	0.371	-0.371
38	56.995	57.89	58.786	1.546	-1.546	0.383	-0.383
39	54.694	55.576	56.458	1.587	-1.587	0.396	-0.396
40	52.494	53.363	54.232	1.628	-1.628	0.408	-0.408
41	50.392	51.247	52.102	1.668	-1.668	0.42	-0.42
42	48.382	49.223	50.064	1.708	-1.708	0.433	-0.433
43	46.46	47.287	48.114	1.748	-1.748	0.445	-0.445
44	44.622	45.435	46.247	1.788	-1.788	0.458	-0.458
45	42.863	43.662	44.46	1.828	-1.828	0.47	-0.47
46	41.181	41.965	42.749	1.868	-1.868	0.483	-0.483
47	39.571	40.34	41.11	1.907	-1.907	0.496	-0.496
48	38.03	38.785	39.54	1.947	-1.947	0.509	-0.509
49	36.555	37.296	38.037	1.986	-1.986	0.522	-0.522
50	35.143	35.87	36.596	2.025	-2.025	0.535	-0.535
51	33.791	34.503	35.215	2.064	-2.064	0.548	-0.548
52	32.496	33.194	33.892	2.102	-2.102	0.561	-0.561
53	31.256	31.94	32.624	2.141	-2.141	0.574	-0.574
54	30.068	30.738	31.408	2.179	-2.179	0.587	-0.587
55	28.93	29.586	30.242	2.217	-2.217	0.601	-0.601
56	27.839	28.482	29.124	2.256	-2.256	0.614	-0.614
57	26.794	27.423	28.052	2.293	-2.293	0.628	-0.628
58	25.792	26.408	27.023	2.331	-2.331	0.641	-0.641
59	24.831	25.434	26.037	2.369	-2.369	0.655	-0.655
60	23.91	24.5	25.09	2.406	-2.406	0.669	-0.669
61	23.027	23.604	24.181	2.443	-2.443	0.682	-0.682
62	22.181	22.745	23.309	2.48	-2.48	0.696	-0.696
63	21.368	21.92	22.472	2.517	-2.517	0.71	-0.71
64	20.589	21.129	21.668	2.554	-2.554	0.724	-0.724

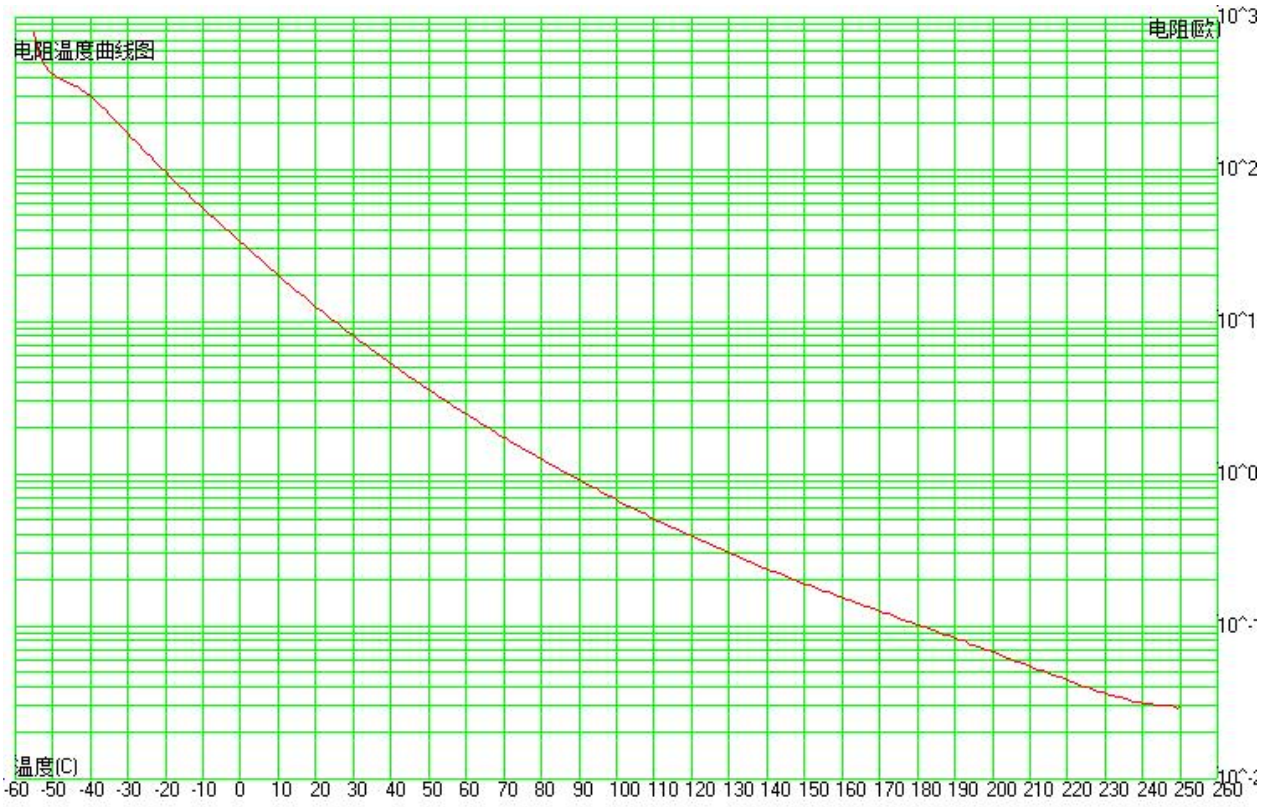
65	19.841	20.369	20.897	2.591	-2.591	0.738	-0.738
66	19.124	19.64	20.156	2.627	-2.627	0.752	-0.752
67	18.435	18.94	19.444	2.664	-2.664	0.767	-0.767
68	17.774	18.267	18.761	2.7	-2.7	0.781	-0.781
69	17.139	17.622	18.104	2.736	-2.736	0.795	-0.795
70	16.53	17.001	17.473	2.772	-2.772	0.81	-0.81
71	15.945	16.406	16.866	2.807	-2.807	0.824	-0.824
72	15.383	15.833	16.284	2.843	-2.843	0.839	-0.839
73	14.843	15.283	15.723	2.878	-2.878	0.854	-0.854
74	14.325	14.755	15.185	2.913	-2.913	0.868	-0.868
75	13.827	14.247	14.667	2.948	-2.948	0.883	-0.883
76	13.348	13.758	14.169	2.983	-2.983	0.898	-0.898
77	12.888	13.289	13.69	3.018	-3.018	0.913	-0.913
78	12.445	12.837	13.229	3.053	-3.053	0.928	-0.928
79	12.02	12.403	12.786	3.087	-3.087	0.943	-0.943
80	11.611	11.985	12.359	3.121	-3.121	0.958	-0.958
81	11.218	11.583	11.949	3.155	-3.155	0.973	-0.973
82	10.84	11.197	11.554	3.189	-3.189	0.989	-0.989
83	10.476	10.825	11.174	3.223	-3.223	1.004	-1.004
84	10.126	10.466	10.807	3.257	-3.257	1.02	-1.02
85	9.78	10.113	10.445	3.291	-3.291	1.035	-1.035
86	9.464	9.79	10.115	3.324	-3.324	1.051	-1.051
87	9.152	9.47	9.788	3.357	-3.357	1.066	-1.066
88	8.852	9.163	9.473	3.39	-3.39	1.082	-1.082
89	8.563	8.866	9.17	3.423	-3.423	1.098	-1.098
90	8.284	8.58	8.877	3.456	-3.456	1.114	-1.114
91	8.016	8.305	8.595	3.488	-3.488	1.13	-1.13
92	7.757	8.04	8.323	3.521	-3.521	1.146	-1.146
93	7.508	7.785	8.061	3.553	-3.553	1.162	-1.162
94	7.268	7.538	7.809	3.585	-3.585	1.178	-1.178
95	7.037	7.301	7.565	3.617	-3.617	1.194	-1.194
96	6.814	7.072	7.33	3.649	-3.649	1.211	-1.211
97	6.599	6.851	7.103	3.681	-3.681	1.227	-1.227
98	6.392	6.638	6.885	3.712	-3.712	1.244	-1.244
99	6.192	6.433	6.674	3.744	-3.744	1.26	-1.26
100	5.999	6.235	6.47	3.775	-3.775	1.277	-1.277
101	5.813	6.043	6.273	3.806	-3.806	1.293	-1.293
102	5.634	5.859	6.084	3.837	-3.837	1.31	-1.31
103	5.461	5.68	5.9	3.868	-3.868	1.327	-1.327
104	5.294	5.508	5.723	3.899	-3.899	1.344	-1.344
105	5.132	5.342	5.552	3.93	-3.93	1.361	-1.361
106	4.977	5.182	5.387	3.96	-3.96	1.378	-1.378

107	4.826	5.027	5.228	3.991	-3.991	1.395	-1.395
108	4.681	4.877	5.074	4.021	-4.021	1.412	-1.412
109	4.541	4.733	4.925	4.051	-4.051	1.429	-1.429
110	4.406	4.593	4.781	4.081	-4.081	1.447	-1.447
111	4.275	4.458	4.641	4.111	-4.111	1.464	-1.464
112	4.148	4.328	4.507	4.141	-4.141	1.482	-1.482
113	4.026	4.202	4.377	4.17	-4.17	1.499	-1.499
114	3.908	4.08	4.251	4.2	-4.2	1.517	-1.517
115	3.794	3.962	4.129	4.229	-4.229	1.535	-1.535
116	3.684	3.848	4.012	4.258	-4.258	1.552	-1.552
117	3.577	3.737	3.898	4.287	-4.287	1.57	-1.57
118	3.474	3.631	3.788	4.316	-4.316	1.588	-1.588
119	3.374	3.528	3.681	4.345	-4.345	1.606	-1.606
120	3.278	3.428	3.578	4.374	-4.374	1.624	-1.624
121	3.184	3.331	3.478	4.402	-4.402	1.642	-1.642
122	3.094	3.238	3.381	4.431	-4.431	1.66	-1.66
123	3.007	3.147	3.287	4.459	-4.459	1.679	-1.679
124	2.922	3.059	3.197	4.488	-4.488	1.697	-1.697
125	2.84	2.975	3.109	4.516	-4.516	1.715	-1.715
126	2.761	2.892	3.024	4.544	-4.544	1.734	-1.734
127	2.684	2.813	2.941	4.572	-4.572	1.752	-1.752
128	2.61	2.736	2.862	4.6	-4.6	1.771	-1.771
129	2.538	2.661	2.784	4.627	-4.627	1.79	-1.79
130	2.468	2.589	2.709	4.655	-4.655	1.808	-1.808
131	2.401	2.519	2.637	4.682	-4.682	1.827	-1.827
132	2.335	2.451	2.566	4.71	-4.71	1.846	-1.846
133	2.272	2.385	2.498	4.737	-4.737	1.865	-1.865
134	2.21	2.321	2.432	4.764	-4.764	1.884	-1.884
135	2.151	2.259	2.367	4.791	-4.791	1.903	-1.903
136	2.093	2.199	2.305	4.818	-4.818	1.922	-1.922
137	2.037	2.141	2.245	4.845	-4.845	1.942	-1.942
138	1.983	2.085	2.186	4.871	-4.871	1.961	-1.961
139	1.931	2.03	2.13	4.898	-4.898	1.98	-1.98
140	1.88	1.977	2.075	4.925	-4.925	2	-2
141	1.83	1.926	2.021	4.951	-4.951	2.02	-2.02
142	1.782	1.876	1.969	4.977	-4.977	2.039	-2.039
143	1.736	1.827	1.919	5.003	-5.003	2.059	-2.059
144	1.691	1.78	1.87	5.029	-5.029	2.079	-2.079
145	1.647	1.735	1.823	5.055	-5.055	2.098	-2.098
146	1.605	1.691	1.777	5.081	-5.081	2.118	-2.118
147	1.564	1.648	1.732	5.107	-5.107	2.138	-2.138
148	1.524	1.606	1.689	5.133	-5.133	2.158	-2.158

149	1.485	1.566	1.647	5.158	-5.158	2.178	-2.178
150	1.447	1.527	1.606	5.183	-5.183	2.199	-2.199
151	1.411	1.488	1.566	5.209	-5.209	2.219	-2.219
152	1.375	1.451	1.527	5.234	-5.234	2.239	-2.239
153	1.341	1.415	1.49	5.259	-5.259	2.26	-2.26
154	1.308	1.381	1.454	5.284	-5.284	2.28	-2.28
155	1.275	1.347	1.418	5.309	-5.309	2.301	-2.301
156	1.244	1.314	1.384	5.334	-5.334	2.321	-2.321
157	1.213	1.282	1.351	5.358	-5.358	2.342	-2.342
158	1.183	1.251	1.318	5.383	-5.383	2.363	-2.363
159	1.155	1.221	1.287	5.407	-5.407	2.384	-2.384
160	1.127	1.191	1.256	5.432	-5.432	2.405	-2.405
161	1.099	1.163	1.226	5.456	-5.456	2.426	-2.426
162	1.073	1.135	1.197	5.48	-5.48	2.447	-2.447
163	1.047	1.108	1.169	5.504	-5.504	2.468	-2.468
164	1.022	1.082	1.142	5.528	-5.528	2.489	-2.489
165	0.998	1.057	1.115	5.552	-5.552	2.51	-2.51
166	0.974	1.032	1.089	5.575	-5.575	2.532	-2.532
167	0.951	1.008	1.064	5.599	-5.599	2.553	-2.553
168	0.929	0.984	1.04	5.623	-5.623	2.575	-2.575
169	0.907	0.962	1.016	5.646	-5.646	2.596	-2.596
170	0.886	0.94	0.993	5.669	-5.669	2.618	-2.618
171	0.866	0.918	0.97	5.692	-5.692	2.639	-2.639
172	0.846	0.897	0.949	5.715	-5.715	2.661	-2.661
173	0.827	0.877	0.927	5.738	-5.738	2.683	-2.683
174	0.808	0.857	0.907	5.761	-5.761	2.705	-2.705
175	0.789	0.838	0.886	5.784	-5.784	2.727	-2.727
176	0.772	0.819	0.867	5.806	-5.806	2.749	-2.749
177	0.754	0.801	0.848	5.829	-5.829	2.771	-2.771
178	0.737	0.783	0.829	5.851	-5.851	2.794	-2.794
179	0.721	0.766	0.811	5.874	-5.874	2.816	-2.816
180	0.705	0.749	0.793	5.896	-5.896	2.838	-2.838
181	0.689	0.733	0.776	5.918	-5.918	2.861	-2.861
182	0.674	0.717	0.76	5.94	-5.94	2.883	-2.883
183	0.66	0.701	0.743	5.962	-5.962	2.906	-2.906
184	0.645	0.686	0.728	5.984	-5.984	2.929	-2.929
185	0.631	0.672	0.712	6.005	-6.005	2.951	-2.951
186	0.618	0.657	0.697	6.027	-6.027	2.974	-2.974
187	0.605	0.643	0.682	6.048	-6.048	2.997	-2.997
188	0.592	0.63	0.668	6.07	-6.07	3.02	-3.02
189	0.579	0.617	0.654	6.091	-6.091	3.043	-3.043
190	0.567	0.604	0.641	6.112	-6.112	3.066	-3.066

191	0.555	0.591	0.628	6.133	-6.133	3.089	-3.089
192	0.543	0.579	0.615	6.154	-6.154	3.113	-3.113
193	0.532	0.567	0.602	6.175	-6.175	3.136	-3.136
194	0.521	0.555	0.59	6.195	-6.195	3.159	-3.159
195	0.51	0.544	0.578	6.216	-6.216	3.183	-3.183
196	0.5	0.533	0.566	6.237	-6.237	3.206	-3.206
197	0.49	0.522	0.555	6.257	-6.257	3.23	-3.23
198	0.48	0.512	0.544	6.277	-6.277	3.254	-3.254
199	0.47	0.501	0.533	6.298	-6.298	3.277	-3.277
200	0.46	0.492	0.523	6.318	-6.318	3.301	-3.301
201	0.451	0.482	0.512	6.338	-6.338	3.325	-3.325
202	0.442	0.472	0.502	6.358	-6.358	3.349	-3.349
203	0.433	0.463	0.492	6.378	-6.378	3.373	-3.373
204	0.425	0.454	0.483	6.398	-6.398	3.397	-3.397
205	0.416	0.445	0.474	6.417	-6.417	3.422	-3.422
206	0.408	0.436	0.464	6.437	-6.437	3.446	-3.446
207	0.4	0.428	0.456	6.456	-6.456	3.47	-3.47
208	0.392	0.42	0.447	6.476	-6.476	3.495	-3.495
209	0.385	0.412	0.438	6.495	-6.495	3.519	-3.519
210	0.377	0.404	0.43	6.515	-6.515	3.544	-3.544
211	0.37	0.396	0.422	6.534	-6.534	3.568	-3.568
212	0.363	0.389	0.414	6.553	-6.553	3.593	-3.593
213	0.356	0.381	0.406	6.572	-6.572	3.618	-3.618
214	0.349	0.374	0.399	6.591	-6.591	3.643	-3.643
215	0.343	0.367	0.391	6.61	-6.61	3.668	-3.668
216	0.336	0.36	0.384	6.629	-6.629	3.693	-3.693
217	0.33	0.353	0.377	6.648	-6.648	3.718	-3.718
218	0.324	0.347	0.37	6.667	-6.667	3.743	-3.743
219	0.318	0.34	0.363	6.685	-6.685	3.768	-3.768
220	0.312	0.334	0.357	6.704	-6.704	3.793	-3.793
221	0.306	0.328	0.35	6.723	-6.723	3.819	-3.819
222	0.3	0.322	0.344	6.741	-6.741	3.844	-3.844
223	0.295	0.316	0.338	6.76	-6.76	3.87	-3.87
224	0.289	0.31	0.331	6.778	-6.778	3.895	-3.895
225	0.284	0.305	0.325	6.797	-6.797	3.921	-3.921
226	0.279	0.299	0.32	6.815	-6.815	3.947	-3.947
227	0.274	0.294	0.314	6.833	-6.833	3.972	-3.972
228	0.269	0.288	0.308	6.852	-6.852	3.998	-3.998
229	0.264	0.283	0.303	6.87	-6.87	4.024	-4.024
230	0.259	0.278	0.297	6.888	-6.888	4.05	-4.05
231	0.254	0.273	0.292	6.906	-6.906	4.076	-4.076
232	0.249	0.268	0.287	6.925	-6.925	4.102	-4.102

233	0.245	0.263	0.281	6.943	-6.943	4.128	-4.128
234	0.24	0.258	0.276	6.961	-6.961	4.155	-4.155
235	0.236	0.254	0.271	6.979	-6.979	4.181	-4.181
236	0.232	0.249	0.267	6.998	-6.998	4.207	-4.207
237	0.227	0.245	0.262	7.016	-7.016	4.234	-4.234
238	0.223	0.24	0.257	7.034	-7.034	4.26	-4.26
239	0.219	0.236	0.253	7.052	-7.052	4.287	-4.287
240	0.215	0.232	0.248	7.071	-7.071	4.313	-4.313
241	0.211	0.227	0.244	7.089	-7.089	4.34	-4.34
242	0.207	0.223	0.239	7.107	-7.107	4.367	-4.367
243	0.204	0.219	0.235	7.126	-7.126	4.394	-4.394
244	0.2	0.215	0.231	7.144	-7.144	4.42	-4.42
245	0.196	0.211	0.226	7.163	-7.163	4.447	-4.447
246	0.192	0.207	0.222	7.181	-7.181	4.474	-4.474
247	0.189	0.204	0.218	7.2	-7.2	4.501	-4.501
248	0.185	0.2	0.214	7.218	-7.218	4.529	-4.529
249	0.182	0.196	0.21	7.237	-7.237	4.556	-4.556
250	0.178	0.193	0.207	7.256	-7.256	4.583	-4.583



附表 II Attachment II

