编码(Coding)：JK/JXE260808009

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 103J3435
版次 REV.NO:	C0
日期 DATE:	2026-08-08

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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 J ③ 3435 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 J：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 3435：$B_{25/85}$ 值 3435K（$B_{25/85}$:3435K）

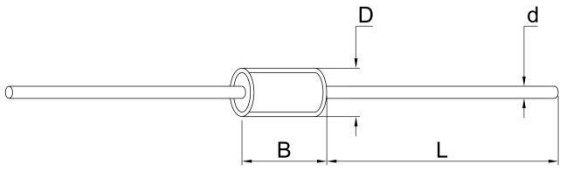
2、电气性能 Electrical characteristics

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±5%
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=85±0.01℃	K	3435K±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 103J3435		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±5% (Zero Power Resistance: R_{25}：10kΩ±5%)；
2) $B_{25/85}$ 数值：3435K±1% (B-value:$B_{25/85}$: 3435K±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

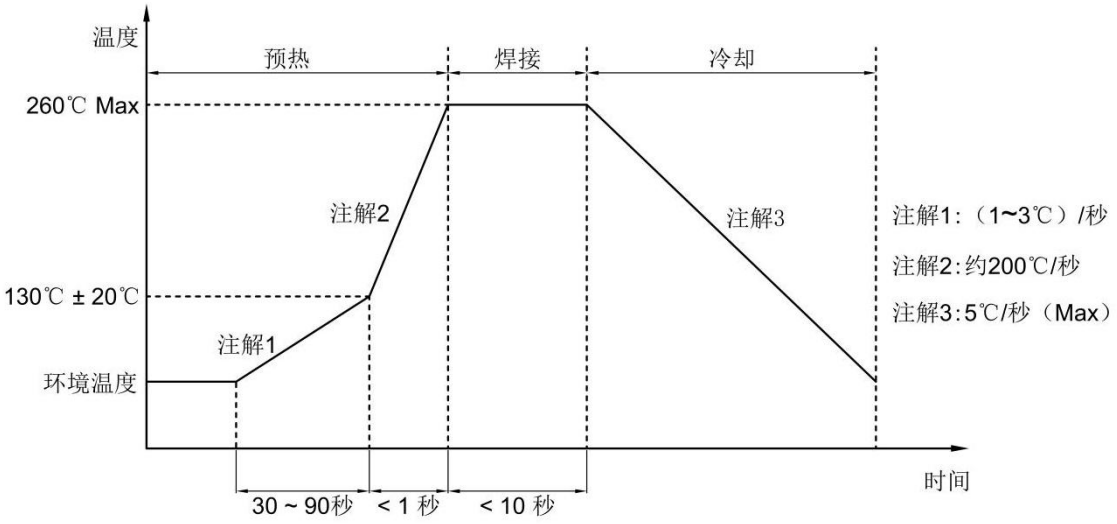
No.	名称 Name	材料规格 Material specifications	数量 Quantity	备注 note
1	核心元件 Core element	热敏电阻芯片 10kΩ	1	
2	包封类 Coating material	玻壳	1	
3	电极 Electrode	镀锡电极	2	
4	引线 Lead	铁镍合金	2	

4、可靠性 Reliability

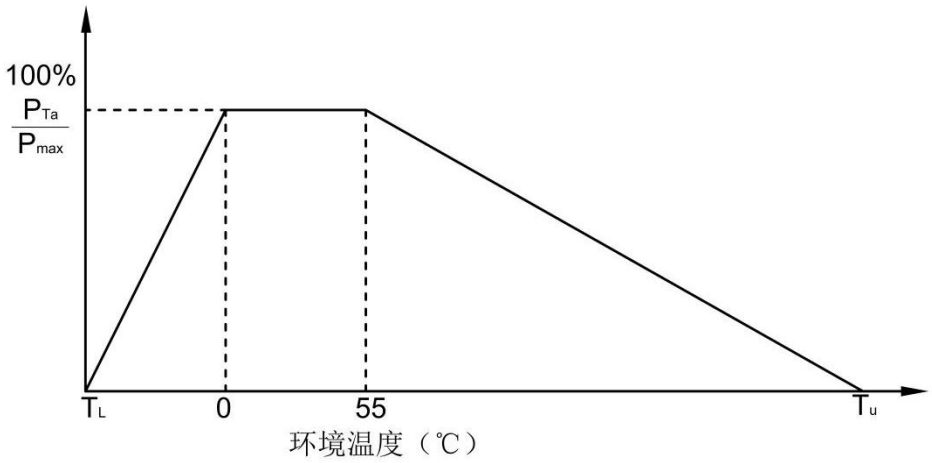
No.	项目 Test Item	试验标准 Test Standard	试验条件及方法 Test Conditions / Methods	性能要求 Acceptance Criteria
4.1	引出端强度 Tensile Strength of Terminals	IEC60068-2-21	固定电阻端，拉力：10N±1 N，时间：10±1 秒 Keep the unit fixed, apply 10 ± 1 N for 10 ± 1 seconds.	无可见性损伤 No Visible damage|Δ R_{25}/R_{25}|≤2%
4.2	可焊性 Solder ability	IEC60068-2-20	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:±5%　　$B_{25/85}$=3435K　　精度:±1%（P447-17）

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	498.182	547.5	596.817	9.007	-9.007	1.317	-1.317
-54	348.09	381.027	413.965	8.644	-8.644	1.378	-1.378
-53	277.347	302.827	328.307	8.414	-8.414	1.42	-1.42
-52	242.252	264.113	285.974	8.277	-8.277	1.444	-1.444
-51	225.164	245.285	265.406	8.202	-8.202	1.451	-1.451
-50	217.819	237.197	256.574	8.169	-8.169	1.448	-1.448
-49	215.782	234.954	254.126	8.159	-8.159	1.438	-1.438
-48	216.375	235.606	254.838	8.162	-8.162	1.424	-1.424
-47	217.85	237.23	256.611	8.169	-8.169	1.409	-1.409
-46	219.035	238.535	258.035	8.174	-8.174	1.394	-1.394
-45	219.177	238.691	258.206	8.175	-8.175	1.38	-1.38
-44	217.85	237.23	256.611	8.169	-8.169	1.368	-1.368
-43	214.891	233.973	253.055	8.155	-8.155	1.357	-1.357
-42	210.337	228.961	247.585	8.133	-8.133	1.349	-1.349
-41	204.365	222.389	240.413	8.104	-8.104	1.342	-1.342
-40	197.229	214.54	231.85	8.068	-8.068	1.337	-1.337
-39	189.225	205.739	222.254	8.026	-8.026	1.334	-1.334
-38	180.644	196.309	211.974	7.979	-7.979	1.331	-1.331
-37	171.754	186.545	201.335	7.928	-7.928	1.33	-1.33
-36	162.783	176.697	190.611	7.874	-7.874	1.33	-1.33
-35	153.915	166.968	180.021	7.817	-7.817	1.33	-1.33
-34	145.289	157.51	169.732	7.759	-7.759	1.331	-1.331
-33	137.004	148.433	159.862	7.699	-7.699	1.333	-1.333
-32	129.125	139.805	150.486	7.639	-7.639	1.335	-1.335
-31	121.688	131.668	141.648	7.579	-7.579	1.337	-1.337
-30	114.707	124.034	133.361	7.519	-7.519	1.339	-1.339
-29	108.182	116.904	125.626	7.46	-7.46	1.341	-1.341
-28	102.099	110.261	118.422	7.401	-7.401	1.343	-1.343
-27	96.437	104.081	111.725	7.344	-7.344	1.345	-1.345
-26	91.172	98.338	105.504	7.287	-7.287	1.347	-1.347
-25	86.274	93	99.725	7.231	-7.231	1.349	-1.349
-24	81.717	88.034	94.352	7.176	-7.176	1.35	-1.35
-23	77.47	83.411	89.352	7.122	-7.122	1.352	-1.352
-22	73.509	79.101	84.693	7.069	-7.069	1.353	-1.353
-21	69.808	75.077	80.345	7.017	-7.017	1.354	-1.354
-20	66.344	71.311	76.279	6.965	-6.965	1.354	-1.354
-19	63.096	67.783	72.47	6.914	-6.914	1.355	-1.355

-18	60.044	64.469	68.895	6.864	-6.864	1.355	-1.355
-17	57.172	61.353	65.534	6.814	-6.814	1.355	-1.355
-16	54.464	58.416	62.369	6.765	-6.765	1.355	-1.355
-15	51.908	55.646	59.384	6.717	-6.717	1.355	-1.355
-14	49.491	53.027	56.564	6.669	-6.669	1.355	-1.355
-13	47.203	50.55	53.897	6.621	-6.621	1.354	-1.354
-12	45.035	48.204	51.373	6.573	-6.573	1.354	-1.354
-11	42.979	45.98	48.98	6.526	-6.526	1.354	-1.354
-10	41.027	43.87	46.712	6.479	-6.479	1.353	-1.353
-9	39.173	41.866	44.559	6.432	-6.432	1.353	-1.353
-8	37.412	39.964	42.516	6.385	-6.385	1.352	-1.352
-7	35.737	38.156	40.575	6.339	-6.339	1.352	-1.352
-6	34.145	36.438	38.731	6.293	-6.293	1.351	-1.351
-5	32.63	34.805	36.979	6.247	-6.247	1.351	-1.351
-4	31.19	33.252	35.315	6.201	-6.201	1.351	-1.351
-3	29.82	31.776	33.733	6.156	-6.156	1.35	-1.35
-2	28.517	30.373	32.229	6.111	-6.111	1.35	-1.35
-1	27.277	29.038	30.8	6.066	-6.066	1.35	-1.35
0	26.097	27.77	29.442	6.021	-6.021	1.35	-1.35
1	24.975	26.563	28.151	5.977	-5.977	1.35	-1.35
2	23.908	25.416	26.924	5.933	-5.933	1.35	-1.35
3	22.893	24.325	25.758	5.889	-5.889	1.349	-1.349
4	21.927	23.288	24.649	5.845	-5.845	1.349	-1.349
5	21.007	22.301	23.595	5.802	-5.802	1.349	-1.349
6	20.133	21.363	22.594	5.759	-5.759	1.349	-1.349
7	19.301	20.471	21.641	5.716	-5.716	1.349	-1.349
8	18.508	19.622	20.735	5.674	-5.674	1.349	-1.349
9	17.754	18.814	19.874	5.632	-5.632	1.349	-1.349
10	17.087	18.1	19.112	5.593	-5.593	1.342	-1.342
11	16.352	17.313	18.274	5.548	-5.548	1.348	-1.348
12	15.701	16.616	17.531	5.507	-5.507	1.348	-1.348
13	15.08	15.952	16.824	5.467	-5.467	1.348	-1.348
14	14.488	15.319	16.15	5.426	-5.426	1.347	-1.347
15	13.923	14.716	15.509	5.386	-5.386	1.347	-1.347
16	13.385	14.141	14.897	5.346	-5.346	1.346	-1.346
17	12.871	13.592	14.313	5.306	-5.306	1.346	-1.346
18	12.38	13.068	13.757	5.267	-5.267	1.345	-1.345
19	11.911	12.568	13.225	5.228	-5.228	1.344	-1.344
20	11.463	12.091	12.718	5.189	-5.189	1.343	-1.343
21	11.035	11.634	12.234	5.151	-5.151	1.342	-1.342
22	10.625	11.198	11.771	5.113	-5.113	1.341	-1.341
23	10.234	10.781	11.328	5.075	-5.075	1.34	-1.34

24	9.859	10.382	10.905	5.037	-5.037	1.338	-1.338
25	9.5	10	10.5	5	-5	1.337	-1.337
26	9.148	9.634	10.119	5.037	-5.037	1.355	-1.355
27	8.812	9.283	9.754	5.074	-5.074	1.374	-1.374
28	8.49	8.947	9.405	5.111	-5.111	1.393	-1.393
29	8.181	8.625	9.069	5.147	-5.147	1.411	-1.411
30	7.886	8.317	8.748	5.184	-5.184	1.43	-1.43
31	7.602	8.021	8.439	5.22	-5.22	1.449	-1.449
32	7.33	7.737	8.143	5.256	-5.256	1.467	-1.467
33	7.069	7.464	7.859	5.292	-5.292	1.486	-1.486
34	6.818	7.202	7.586	5.328	-5.328	1.505	-1.505
35	6.578	6.951	7.324	5.363	-5.363	1.524	-1.524
36	6.347	6.709	7.072	5.399	-5.399	1.543	-1.543
37	6.125	6.477	6.829	5.434	-5.434	1.562	-1.562
38	5.912	6.254	6.597	5.469	-5.469	1.581	-1.581
39	5.708	6.04	6.373	5.504	-5.504	1.6	-1.6
40	5.511	5.834	6.157	5.538	-5.538	1.619	-1.619
41	5.322	5.636	5.951	5.573	-5.573	1.639	-1.639
42	5.141	5.446	5.751	5.607	-5.607	1.658	-1.658
43	4.966	5.263	5.56	5.641	-5.641	1.677	-1.677
44	4.798	5.087	5.376	5.675	-5.675	1.697	-1.697
45	4.637	4.918	5.198	5.709	-5.709	1.717	-1.717
46	4.482	4.755	5.028	5.743	-5.743	1.736	-1.736
47	4.332	4.598	4.864	5.777	-5.777	1.756	-1.756
48	4.189	4.447	4.706	5.81	-5.81	1.776	-1.776
49	4.051	4.302	4.554	5.843	-5.843	1.796	-1.796
50	3.918	4.163	4.407	5.876	-5.876	1.816	-1.816
51	3.79	4.028	4.266	5.909	-5.909	1.837	-1.837
52	3.667	3.899	4.13	5.942	-5.942	1.857	-1.857
53	3.549	3.774	4	5.974	-5.974	1.878	-1.878
54	3.435	3.654	3.874	6.006	-6.006	1.898	-1.898
55	3.325	3.539	3.752	6.038	-6.038	1.919	-1.919
56	3.219	3.427	3.636	6.07	-6.07	1.94	-1.94
57	3.118	3.32	3.523	6.102	-6.102	1.961	-1.961
58	3.02	3.217	3.415	6.134	-6.134	1.982	-1.982
59	2.925	3.118	3.31	6.165	-6.165	2.004	-2.004
60	2.835	3.022	3.209	6.196	-6.196	2.025	-2.025
61	2.747	2.93	3.112	6.227	-6.227	2.047	-2.047
62	2.663	2.841	3.018	6.258	-6.258	2.068	-2.068
63	2.582	2.755	2.928	6.289	-6.289	2.09	-2.09
64	2.503	2.672	2.841	6.319	-6.319	2.112	-2.112
65	2.428	2.592	2.757	6.35	-6.35	2.134	-2.134

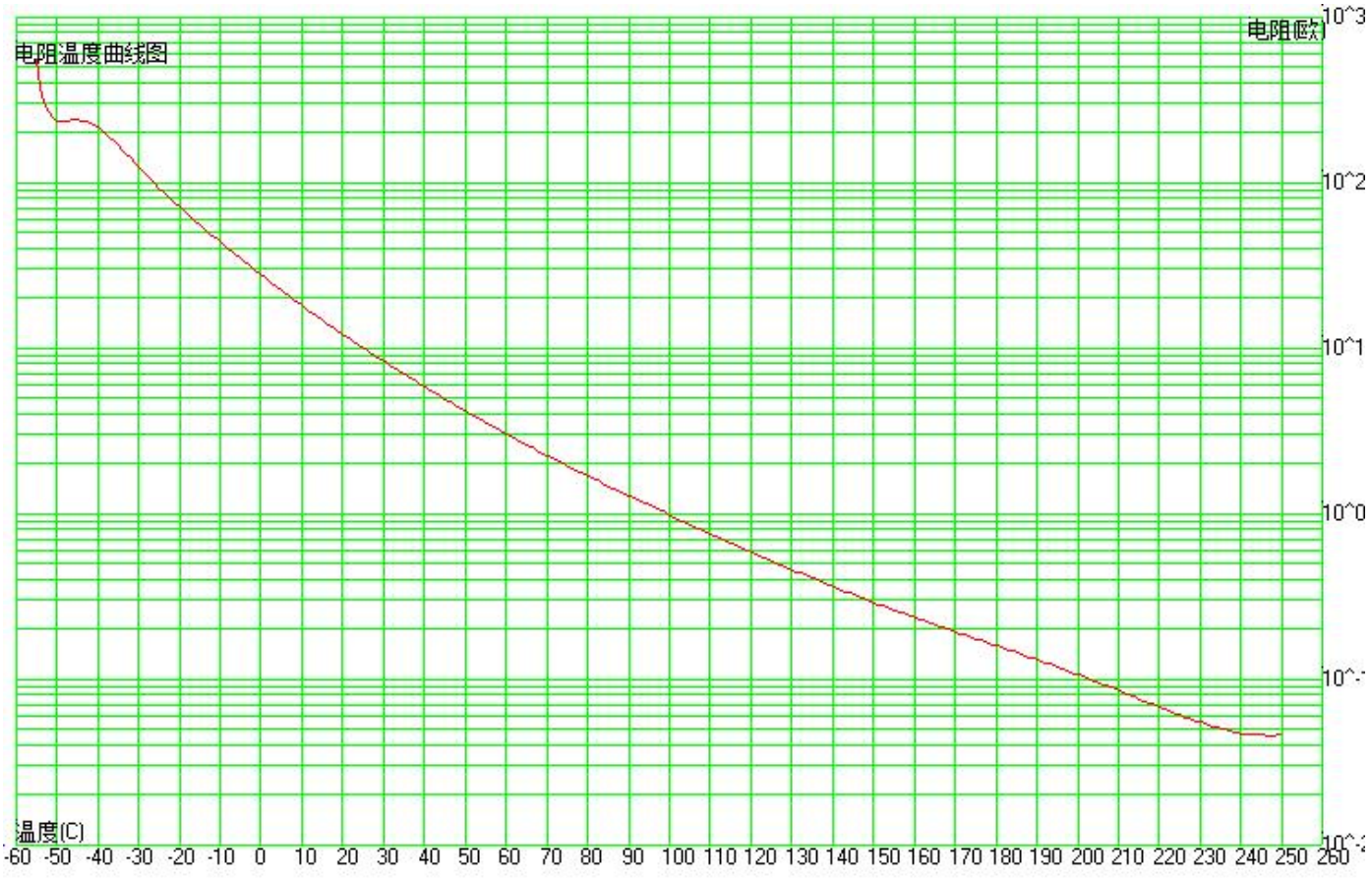
66	2.355	2.515	2.676	6.38	-6.38	2.156	-2.156
67	2.285	2.441	2.598	6.41	-6.41	2.178	-2.178
68	2.217	2.37	2.522	6.44	-6.44	2.2	-2.2
69	2.152	2.3	2.449	6.469	-6.469	2.223	-2.223
70	2.088	2.234	2.379	6.499	-6.499	2.246	-2.246
71	2.028	2.169	2.311	6.528	-6.528	2.268	-2.268
72	1.969	2.107	2.245	6.557	-6.557	2.291	-2.291
73	1.912	2.047	2.182	6.586	-6.586	2.314	-2.314
74	1.857	1.989	2.12	6.615	-6.615	2.337	-2.337
75	1.804	1.932	2.061	6.644	-6.644	2.36	-2.36
76	1.753	1.878	2.004	6.672	-6.672	2.383	-2.383
77	1.703	1.826	1.948	6.701	-6.701	2.406	-2.406
78	1.655	1.775	1.894	6.729	-6.729	2.43	-2.43
79	1.609	1.726	1.842	6.757	-6.757	2.453	-2.453
80	1.564	1.678	1.792	6.785	-6.785	2.476	-2.476
81	1.521	1.632	1.743	6.813	-6.813	2.5	-2.5
82	1.479	1.587	1.696	6.841	-6.841	2.524	-2.524
83	1.438	1.544	1.65	6.868	-6.868	2.547	-2.547
84	1.398	1.502	1.606	6.896	-6.896	2.571	-2.571
85	1.36	1.462	1.563	6.923	-6.923	2.595	-2.595
86	1.323	1.422	1.521	6.951	-6.951	2.619	-2.619
87	1.287	1.384	1.481	6.978	-6.978	2.643	-2.643
88	1.253	1.347	1.441	7.005	-7.005	2.667	-2.667
89	1.219	1.311	1.403	7.032	-7.032	2.691	-2.691
90	1.186	1.276	1.366	7.059	-7.059	2.715	-2.715
91	1.154	1.242	1.33	7.086	-7.086	2.739	-2.739
92	1.123	1.209	1.296	7.113	-7.113	2.763	-2.763
93	1.093	1.178	1.262	7.139	-7.139	2.787	-2.787
94	1.064	1.147	1.229	7.166	-7.166	2.812	-2.812
95	1.036	1.117	1.197	7.193	-7.193	2.836	-2.836
96	1.009	1.087	1.166	7.219	-7.219	2.86	-2.86
97	0.982	1.059	1.136	7.246	-7.246	2.885	-2.885
98	0.956	1.031	1.106	7.272	-7.272	2.909	-2.909
99	0.931	1.005	1.078	7.299	-7.299	2.934	-2.934
100	0.907	0.979	1.05	7.325	-7.325	2.958	-2.958
101	0.883	0.953	1.023	7.351	-7.351	2.983	-2.983
102	0.86	0.929	0.997	7.377	-7.377	3.008	-3.008
103	0.838	0.905	0.972	7.403	-7.403	3.032	-3.032
104	0.816	0.881	0.947	7.43	-7.43	3.057	-3.057
105	0.795	0.859	0.923	7.456	-7.456	3.082	-3.082
106	0.774	0.837	0.899	7.482	-7.482	3.107	-3.107
107	0.754	0.815	0.876	7.508	-7.508	3.132	-3.132

108	0.735	0.794	0.854	7.534	-7.534	3.157	-3.157
109	0.716	0.774	0.833	7.559	-7.559	3.182	-3.182
110	0.697	0.754	0.812	7.585	-7.585	3.207	-3.207
111	0.679	0.735	0.791	7.611	-7.611	3.232	-3.232
112	0.662	0.717	0.771	7.637	-7.637	3.257	-3.257
113	0.645	0.699	0.752	7.662	-7.662	3.282	-3.282
114	0.629	0.681	0.733	7.688	-7.688	3.307	-3.307
115	0.613	0.664	0.715	7.713	-7.713	3.333	-3.333
116	0.597	0.647	0.697	7.739	-7.739	3.358	-3.358
117	0.582	0.631	0.68	7.764	-7.764	3.383	-3.383
118	0.567	0.615	0.663	7.789	-7.789	3.409	-3.409
119	0.553	0.6	0.647	7.815	-7.815	3.435	-3.435
120	0.539	0.585	0.631	7.84	-7.84	3.46	-3.46
121	0.526	0.57	0.615	7.865	-7.865	3.486	-3.486
122	0.512	0.556	0.6	7.89	-7.89	3.512	-3.512
123	0.5	0.543	0.586	7.915	-7.915	3.538	-3.538
124	0.487	0.529	0.571	7.94	-7.94	3.564	-3.564
125	0.475	0.517	0.558	7.964	-7.964	3.59	-3.59
126	0.464	0.504	0.544	7.989	-7.989	3.616	-3.616
127	0.452	0.492	0.531	8.014	-8.014	3.643	-3.643
128	0.441	0.48	0.518	8.038	-8.038	3.669	-3.669
129	0.431	0.468	0.506	8.062	-8.062	3.696	-3.696
130	0.42	0.457	0.494	8.087	-8.087	3.722	-3.722
131	0.41	0.446	0.483	8.111	-8.111	3.749	-3.749
132	0.4	0.436	0.471	8.135	-8.135	3.776	-3.776
133	0.391	0.425	0.46	8.159	-8.159	3.803	-3.803
134	0.381	0.415	0.449	8.182	-8.182	3.83	-3.83
135	0.372	0.406	0.439	8.206	-8.206	3.857	-3.857
136	0.364	0.396	0.429	8.229	-8.229	3.885	-3.885
137	0.355	0.387	0.419	8.253	-8.253	3.912	-3.912
138	0.347	0.378	0.41	8.276	-8.276	3.94	-3.94
139	0.339	0.37	0.4	8.299	-8.299	3.967	-3.967
140	0.331	0.361	0.391	8.322	-8.322	3.995	-3.995
141	0.324	0.353	0.383	8.345	-8.345	4.023	-4.023
142	0.316	0.345	0.374	8.368	-8.368	4.051	-4.051
143	0.309	0.338	0.366	8.39	-8.39	4.08	-4.08
144	0.302	0.33	0.358	8.413	-8.413	4.108	-4.108
145	0.296	0.323	0.35	8.435	-8.435	4.136	-4.136
146	0.289	0.316	0.343	8.457	-8.457	4.165	-4.165
147	0.283	0.309	0.335	8.479	-8.479	4.194	-4.194
148	0.277	0.302	0.328	8.501	-8.501	4.223	-4.223
149	0.271	0.296	0.321	8.522	-8.522	4.252	-4.252

150	0.265	0.29	0.314	8.544	-8.544	4.281	-4.281
151	0.259	0.283	0.308	8.565	-8.565	4.31	-4.31
152	0.254	0.277	0.301	8.586	-8.586	4.34	-4.34
153	0.248	0.272	0.295	8.608	-8.608	4.369	-4.369
154	0.243	0.266	0.289	8.629	-8.629	4.399	-4.399
155	0.238	0.261	0.283	8.649	-8.649	4.429	-4.429
156	0.233	0.255	0.277	8.67	-8.67	4.459	-4.459
157	0.228	0.25	0.272	8.691	-8.691	4.489	-4.489
158	0.224	0.245	0.266	8.711	-8.711	4.519	-4.519
159	0.219	0.24	0.261	8.732	-8.732	4.549	-4.549
160	0.215	0.235	0.256	8.752	-8.752	4.58	-4.58
161	0.21	0.23	0.251	8.772	-8.772	4.61	-4.61
162	0.206	0.226	0.246	8.792	-8.792	4.641	-4.641
163	0.202	0.221	0.241	8.812	-8.812	4.671	-4.671
164	0.198	0.217	0.236	8.832	-8.832	4.702	-4.702
165	0.194	0.213	0.232	8.852	-8.852	4.733	-4.733
166	0.19	0.209	0.227	8.871	-8.871	4.764	-4.764
167	0.186	0.205	0.223	8.891	-8.891	4.795	-4.795
168	0.183	0.201	0.219	8.91	-8.91	4.826	-4.826
169	0.179	0.197	0.214	8.93	-8.93	4.858	-4.858
170	0.176	0.193	0.21	8.949	-8.949	4.889	-4.889
171	0.172	0.189	0.206	8.969	-8.969	4.92	-4.92
172	0.169	0.186	0.202	8.988	-8.988	4.952	-4.952
173	0.166	0.182	0.199	9.007	-9.007	4.983	-4.983
174	0.162	0.179	0.195	9.027	-9.027	5.015	-5.015
175	0.159	0.175	0.191	9.046	-9.046	5.047	-5.047
176	0.156	0.172	0.188	9.065	-9.065	5.078	-5.078
177	0.153	0.169	0.184	9.085	-9.085	5.11	-5.11
178	0.15	0.165	0.18	9.104	-9.104	5.142	-5.142
179	0.147	0.162	0.177	9.123	-9.123	5.173	-5.173
180	0.144	0.159	0.174	9.143	-9.143	5.205	-5.205
181	0.142	0.156	0.17	9.162	-9.162	5.237	-5.237
182	0.139	0.153	0.167	9.182	-9.182	5.269	-5.269
183	0.136	0.15	0.164	9.201	-9.201	5.3	-5.3
184	0.134	0.147	0.161	9.221	-9.221	5.332	-5.332
185	0.131	0.144	0.158	9.24	-9.24	5.364	-5.364
186	0.128	0.141	0.155	9.26	-9.26	5.396	-5.396
187	0.126	0.139	0.152	9.28	-9.28	5.428	-5.428
188	0.123	0.136	0.149	9.3	-9.3	5.459	-5.459
189	0.121	0.133	0.146	9.32	-9.32	5.491	-5.491
190	0.118	0.131	0.143	9.34	-9.34	5.523	-5.523
191	0.116	0.128	0.14	9.36	-9.36	5.554	-5.554

192	0.114	0.125	0.137	9.381	-9.381	5.586	-5.586
193	0.111	0.123	0.134	9.401	-9.401	5.618	-5.618
194	0.109	0.12	0.132	9.422	-9.422	5.649	-5.649
195	0.107	0.118	0.129	9.443	-9.443	5.681	-5.681
196	0.104	0.115	0.126	9.464	-9.464	5.712	-5.712
197	0.102	0.113	0.124	9.485	-9.485	5.744	-5.744
198	0.1	0.111	0.121	9.506	-9.506	5.775	-5.775
199	0.098	0.108	0.119	9.527	-9.527	5.807	-5.807
200	0.096	0.106	0.116	9.548	-9.548	5.838	-5.838
201	0.094	0.104	0.114	9.57	-9.57	5.869	-5.869
202	0.092	0.102	0.111	9.592	-9.592	5.9	-5.9
203	0.09	0.099	0.109	9.613	-9.613	5.932	-5.932
204	0.088	0.097	0.107	9.635	-9.635	5.963	-5.963
205	0.086	0.095	0.104	9.658	-9.658	5.994	-5.994
206	0.084	0.093	0.102	9.68	-9.68	6.025	-6.025
207	0.082	0.091	0.1	9.702	-9.702	6.056	-6.056
208	0.08	0.089	0.098	9.724	-9.724	6.087	-6.087
209	0.078	0.087	0.095	9.747	-9.747	6.118	-6.118
210	0.077	0.085	0.093	9.769	-9.769	6.15	-6.15
211	0.075	0.083	0.091	9.792	-9.792	6.181	-6.181
212	0.073	0.081	0.089	9.815	-9.815	6.212	-6.212
213	0.071	0.079	0.087	9.837	-9.837	6.243	-6.243
214	0.07	0.078	0.085	9.86	-9.86	6.274	-6.274
215	0.068	0.076	0.083	9.883	-9.883	6.306	-6.306
216	0.067	0.074	0.082	9.906	-9.906	6.337	-6.337
217	0.065	0.072	0.08	9.928	-9.928	6.368	-6.368
218	0.064	0.071	0.078	9.951	-9.951	6.4	-6.4
219	0.062	0.069	0.076	9.973	-9.973	6.432	-6.432
220	0.061	0.068	0.075	9.996	-9.996	6.463	-6.463
221	0.06	0.066	0.073	10.01	-10.01	6.495	-6.495
222	0.058	0.065	0.071	10.04	-10.04	6.528	-6.528
223	0.057	0.063	0.07	10.06	-10.06	6.56	-6.56
224	0.056	0.062	0.068	10.08	-10.08	6.592	-6.592
225	0.055	0.061	0.067	10.1	-10.1	6.625	-6.625
226	0.053	0.059	0.066	10.12	-10.12	6.658	-6.658
227	0.052	0.058	0.064	10.14	-10.14	6.692	-6.692
228	0.051	0.057	0.063	10.16	-10.16	6.725	-6.725
229	0.05	0.056	0.062	10.18	-10.18	6.759	-6.759
230	0.049	0.055	0.061	10.2	-10.2	6.794	-6.794
231	0.048	0.054	0.059	10.22	-10.22	6.829	-6.829
232	0.047	0.053	0.058	10.24	-10.24	6.864	-6.864
233	0.047	0.052	0.057	10.25	-10.25	6.9	-6.9

234	0.046	0.051	0.056	10.27	-10.27	6.936	-6.936
235	0.045	0.05	0.056	10.29	-10.29	6.973	-6.973
236	0.044	0.05	0.055	10.3	-10.3	7.01	-7.01
237	0.044	0.049	0.054	10.32	-10.32	7.048	-7.048
238	0.043	0.048	0.053	10.33	-10.33	7.087	-7.087
239	0.043	0.048	0.053	10.34	-10.34	7.127	-7.127
240	0.042	0.047	0.052	10.35	-10.35	7.167	-7.167
241	0.042	0.047	0.052	10.36	-10.36	7.208	-7.208
242	0.041	0.046	0.051	10.37	-10.37	7.25	-7.25
243	0.041	0.046	0.051	10.38	-10.38	7.293	-7.293
244	0.041	0.046	0.051	10.38	-10.38	7.338	-7.338
245	0.041	0.046	0.05	10.39	-10.39	7.383	-7.383
246	0.041	0.045	0.05	10.39	-10.39	7.429	-7.429
247	0.041	0.045	0.05	10.39	-10.39	7.477	-7.477
248	0.041	0.045	0.05	10.39	-10.39	7.526	-7.526
249	0.041	0.046	0.05	10.38	-10.38	7.576	-7.576
250	0.041	0.046	0.051	10.38	-10.38	7.629	-7.629



附表 II Attachment II

