



南京时恒电子科技有限公司

Nanjing Shiheng Electronics Co.,Ltd.

规格承认书

APPROVAL SHEET

客户名称 CUSTOMER :

产品名称 PART NAME :

产品规格 PART NUMBER :

产品编号 PRODUCTCODE:

版次 REV.NO:

日期 DATE:

MF52 测温型 NTC 热敏电阻器

MF52 Series Temp Measurement NTC Thermistor

MF52A 502J3470(A1)

B0

2025-08-25

确认

CONFIRM

客户 CLIENT		供货商/制造商 MANUFACTOR	
品保部 Quality Dep.		规格书制作 Design	刘星月
制造部 Production Dep.		业务部审核 Checked by sales	
工程部 Engineering Dep.		技术部审核 Checked by R&D	程鹏
		品质部审核 Checked by QA	李少媛

南京时恒电子科技有限公司

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变 更 记 录 表

REVISED RECORD SHEET

[illegible]

1、产品型号说明 Product model specification

MF52 A 502 J 3470 (A1)
 ① ② ③ ④ ⑤ ⑥

- ① MF52: 测温型 NTC 热敏电阻器系列 (Series Temp Measurement NTC Thermistor)
 ② A: 指引线为镀锡线 (Refers to tinned lead)
 ③ 502: 25℃ 的零功率电阻值 5KΩ (Zero Power Resistance at 25℃ is 5KΩ)
 ④ 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%)
 ⑤ 3470: B25/50 值 3470K (B25/50:3470K)
 ⑥ (A1): 线材规格: 引线外径 Φ0.3mm (Wire dimension: The outer diameter of lead wire is Φ0.3mm)

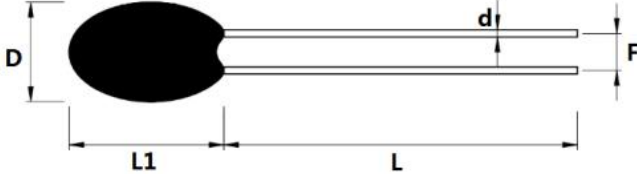
2、电气性能 Electrical Characteristics

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℃	$R_{25^{\circ}\text{C}}$	$T_a=25\pm0.01^{\circ}\text{C}$ Test Power $\leq 0.1\text{mW}$	KΩ	$5\text{K}\Omega\pm 5\%$
2.2	B 值 B-value	$B_{25/50}$	$B=[(T_a\times T_b)/(T_b-T_a)]\times \ln(R_a/R_b)$ $T_a=25\pm0.01^{\circ}\text{C}$ $T_b=50^{\circ}\text{C}\pm 0.01^{\circ}\text{C}$	K	$3470\pm 1\%$
2.3	耗散系数 Thermal dissipation Coefficient	δ	静止空气中 In still air	mW/℃	约 2
2.4	时间常数 Thermal time constant	τ	静止空气中 In still air	sec	约 7
2.5	绝缘电阻 Insulation resistance	/	100V/DC 1min	MΩ	≥ 100
2.6	工作温度范围 Operating temperature range	/	/	℃	$-55^{\circ}\text{C}\sim 125^{\circ}\text{C}$
2.7	最大额定功率 Maximum rated power	Pmax	/	mW	100
2.8	阻温特性 R&T-table	/	/	/	见附表 I See attached table I
2.9	阻值误差&B 值误差 Resistance tolerance& B-value 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.	MF52A 502J3470(A1)		审核 Approve:		日期 DATE	

尺寸 Dimensions: (Unit: mm)



DMax	L1Max	LMin	d±0.05	F±0.5
2.5	4.0	25	0.3	1.7

技术要求 Technical requirements:

- 1) 零功率阻值: R25: $5K\Omega \pm 5\%$ (Zero Power Resistance: R25: $5K\Omega \pm 5\%$);
- 2) B25/50 数值: $3470K \pm 1\%$ (B-value: B25/50: $3470K \pm 1\%$);
- 3) 线材: $\Phi 0.3$ 镀锡铜包钢线 ($\Phi 0.3$ tinned copper-weld steel wire);
- 4) 封装: 黑色环氧树脂包封 (Black function improvement Epoxy resin);
- 5) 符合 RoHS 环保要求 (Meet environmental protection requirements: RoHS)。

更新履历 Revised record sheet				
版本 REV. NO	更新时间 REV. DATE	更新内容 Change content	申请人 Applicant	批准人 Approved
B0		版本发行	王月婷	李少媛

4、可靠性 Reliability

No.	项目 Item	试验标准	试验条件及方法 Test conditions and methods	性能要求 Requirements
4.1	引出端强度 Terminal strength	IEC60068-2-21	固定电阻端, 拉力: 5 ± 1 N, 时间: 10 ± 1 秒 Fixed resistor end, Pull strength: 5 ± 1 N, time: 10 ± 1 sec	无可见性损伤 No obvious damage $ \Delta R_{25}/R_{25} \leq 2\%$
4.2	可焊性 Solderability	IEC60068-2-20	温度 $245 \pm 5^\circ\text{C}$ 时间 2-3 秒 temperature : $245 \pm 5^\circ\text{C}$ for 2-3sec	着锡面积 $\geq 95\%$ Coverage area $\geq 95\%$.
4.3	耐焊接热 Withstand weiling temp	IEC60068-2-20	锡锅温度: $260 \pm 5^\circ\text{C}$, 浸入深度距电阻体 6mm, 时间 5 ± 1 秒 Temperature of tin pot: $260 \pm 5^\circ\text{C}$, insert depth from body of resistance 6mm, time 5 ± 1 seconds	$ \Delta R_{25}/R_{25} \leq 2\%$
4.3	稳态湿热 Steady humidity and heat	IEC60068-2-78	温度: $40^\circ\text{C} \pm 2^\circ\text{C}$, 湿度: $93 \pm 2\%$, 时间: 500 小时 Temp: $40^\circ\text{C} \pm 2^\circ\text{C}$, humidity: $93 \pm 2\%$, Time : 500hrs	$ \Delta R_{25}/R_{25} \leq 2\%$
4.4	温度快速变化 Rapid changes in temperature	IEC60068-2-14	-55°C 30min $\rightarrow$ 25°C 5min $\rightarrow$ 125°C 30min $\rightarrow$ 25°C 5min, 5cycles	$ \Delta R_{25}/R_{25} \leq 2\%$
4.5	高温储存 High temperature storage	IEC60068-2-2	温度: $125^\circ\text{C} \pm 5^\circ\text{C}$ 时间: 1000 小时 Temp : $125^\circ\text{C} \pm 5^\circ\text{C}$, Time : 1000hrs	$ \Delta R_{25}/R_{25} \leq 2\%$
4.6	低温储存 Low temperature storage	IEC60068-2-1	温度: -55°C 时间: 1000 小时 Temp : -55°C , Time : 1000hrs	$ \Delta R_{25}/R_{25} \leq 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) 高温存储及低温存储结束后, 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 - and low-temperature storage is complete, and then take it out for performance test when the test environment naturally regain to normal temperature.

5、产品包装 Product packaging

5.1 包装方式 Packing Type

■ 散装方式 Bulk Type □ 编带方式 Reel Type

5.2 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	自封口袋(self sealing bag) $W \times H = 11\text{mm} \times 12\text{mm}$	500PCS

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

6.1 本产品的用途: 温度测量与控制; application: test and control for temperature

6.2 避免过大的电流引起元件自身发热而产生测量误差; To avoid of testing tolerance caused by huge current upon the self-heat of component.

6.3 烙铁焊接时，焊接处距包封头部距离至少 2mm，焊接温度应低于 360℃，焊接时间 $<3\text{ses}$ ；

When welded by soldering iron, weld spot should be 2mm at least from head, weld temperature should be under 360°C, time<3ses

6.4 儲存溫度: $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$; 儲存濕度: $\leq 75\% \text{ RH}$; storage temp: $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$; storage humidity: $\leq 75\% \text{ RH}$

6.5 避免存放在具有腐蚀性气体及光照的环境下; To avoid of leaving with such environment as corrosive gases and illumination

6.6 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；

The packing need to be resealed since opened, storage period 1 year. once valid, it should be retest according to regulated of criterion and can be still used if meet the requirement.

6.7 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；

In case of using heat-shrink tube, hair drier is prohibited. we suggest that put the product with heat shrink into constant-temperature box and heat shrink under 110℃/10-12min

7、产品认证 Product certification

No.	项目 Projects	产品认证 Product certification
8.1	质量管理体系认证 Quality Management System Certification	ISO9001:2015
		IATF16949: 2016
8.2	环境管理体系认证 Environmental Management System Certification	ISO14001:2015
8.3	环保检测报告 Environmental test report	RoHS 2.0
8.4	CQC 认证 (CQC07001019009) CQC certificate (CQC07001019009)	
8.5	江苏省高新技术产品认证 High-tech product certificate in Jiangsu Province	
8.6	UL 认证 (E240991) UL certificate (E240991)	
8.7	TUV 认证 (R50245892) TUV certificate (R50245892)	

附表 I (Attachment I)

南京时恒电子科技有限公司

R25=5K Ω 精度: $\pm 5\%$ B25/50=3470K 精度: $\pm 1\%$ (P219-2)

温度($^{\circ}\text{C}$)	电阻(K Ω)			电阻精度(%)		温度精度($^{\circ}\text{C}$)	
	最小值	中心值	最大值	ΔR	$-\Delta R$	ΔT	$-\Delta T$
-55	264.626	291.02	317.413	9.069	-9.069	1.306	-1.306
-54	250.022	274.784	299.547	9.011	-9.011	1.306	-1.306
-53	235.549	258.707	281.864	8.951	-8.951	1.306	-1.306
-52	221.448	243.052	264.656	8.888	-8.888	1.307	-1.307
-51	207.882	228.003	248.123	8.824	-8.824	1.308	-1.308
-50	194.956	213.673	232.389	8.759	-8.759	1.309	-1.309
-49	182.73	200.128	217.527	8.693	-8.693	1.31	-1.31
-48	171.229	187.397	203.565	8.627	-8.627	1.312	-1.312
-47	160.455	175.479	190.504	8.562	-8.562	1.314	-1.314
-46	150.392	164.356	178.321	8.496	-8.496	1.315	-1.315
-45	141.014	153.998	166.981	8.431	-8.431	1.317	-1.317
-44	132.286	144.364	156.442	8.366	-8.366	1.319	-1.319
-43	124.17	135.413	146.655	8.302	-8.302	1.321	-1.321
-42	116.627	127.098	137.569	8.238	-8.238	1.322	-1.322
-41	109.615	119.375	129.135	8.175	-8.175	1.324	-1.324
-40	103.096	112.2	121.303	8.113	-8.113	1.325	-1.325
-39	97.032	105.53	114.027	8.052	-8.052	1.327	-1.327
-38	91.388	99.326	107.263	7.991	-7.991	1.328	-1.328
-37	86.13	93.55	100.97	7.931	-7.931	1.329	-1.329
-36	81.229	88.17	95.111	7.872	-7.872	1.33	-1.33
-35	76.655	83.152	89.649	7.813	-7.813	1.332	-1.332
-34	72.383	78.468	84.554	7.755	-7.755	1.333	-1.333
-33	68.389	74.093	79.796	7.698	-7.698	1.333	-1.333
-32	64.651	70	75.349	7.641	-7.641	1.334	-1.334

-31	61.151	66.17	71.189	7.584	-7.584	1.335	-1.335
-30	57.869	62.581	67.293	7.528	-7.528	1.336	-1.336
-29	54.791	59.216	63.642	7.473	-7.473	1.337	-1.337
-28	51.9	56.058	60.217	7.418	-7.418	1.337	-1.337
-27	49.183	53.093	57.003	7.364	-7.364	1.338	-1.338
-26	46.628	50.306	53.983	7.31	-7.31	1.338	-1.338
-25	44.224	47.685	51.145	7.256	-7.256	1.339	-1.339
-24	41.961	45.218	48.475	7.203	-7.203	1.339	-1.339
-23	39.828	42.896	45.963	7.15	-7.15	1.339	-1.339
-22	37.818	40.708	43.597	7.098	-7.098	1.34	-1.34
-21	35.923	38.646	41.369	7.046	-7.046	1.34	-1.34
-20	34.134	36.701	39.268	6.994	-6.994	1.34	-1.34
-19	32.446	34.867	37.288	6.943	-6.943	1.34	-1.34
-18	30.852	33.136	35.419	6.892	-6.892	1.341	-1.341
-17	29.346	31.501	33.657	6.841	-6.841	1.341	-1.341
-16	27.923	29.958	31.992	6.791	-6.791	1.341	-1.341
-15	26.578	28.5	30.421	6.741	-6.741	1.341	-1.341
-14	25.307	27.122	28.936	6.691	-6.691	1.341	-1.341
-13	24.104	25.819	27.534	6.642	-6.642	1.341	-1.341
-12	22.966	24.587	26.208	6.593	-6.593	1.341	-1.341
-11	21.889	23.422	24.955	6.544	-6.544	1.341	-1.341
-10	20.869	22.32	23.77	6.496	-6.496	1.341	-1.341
-9	19.904	21.276	22.648	6.448	-6.448	1.341	-1.341
-8	18.99	20.289	21.587	6.401	-6.401	1.341	-1.341
-7	18.124	19.353	20.583	6.353	-6.353	1.341	-1.341
-6	17.303	18.467	19.632	6.307	-6.307	1.34	-1.34
-5	16.524	17.628	18.732	6.26	-6.26	1.34	-1.34
-4	15.787	16.833	17.879	6.214	-6.214	1.34	-1.34
-3	15.087	16.078	17.07	6.168	-6.168	1.339	-1.339



-2	14.423	15.363	16.304	6.122	-6.122	1.339	-1.339
-1	13.792	14.685	15.577	6.077	-6.077	1.338	-1.338
0	13.217	14.066	14.914	6.034	-6.034	1.336	-1.336
1	12.626	13.43	14.234	5.988	-5.988	1.337	-1.337
2	12.086	12.849	13.613	5.944	-5.944	1.336	-1.336
3	11.573	12.298	13.024	5.9	-5.9	1.335	-1.335
4	11.085	11.774	12.464	5.856	-5.856	1.334	-1.334
5	10.621	11.277	11.932	5.813	-5.813	1.333	-1.333
6	10.18	10.803	11.426	5.77	-5.77	1.332	-1.332
7	9.76	10.353	10.946	5.727	-5.727	1.331	-1.331
8	9.36	9.924	10.488	5.685	-5.685	1.329	-1.329
9	8.979	9.516	10.053	5.643	-5.643	1.327	-1.327
10	8.616	9.128	9.639	5.602	-5.602	1.325	-1.325
11	8.27	8.757	9.244	5.56	-5.56	1.323	-1.323
12	7.941	8.405	8.868	5.519	-5.519	1.321	-1.321
13	7.626	8.068	8.51	5.478	-5.478	1.318	-1.318
14	7.326	7.747	8.169	5.438	-5.438	1.315	-1.315
15	7.039	7.441	7.843	5.397	-5.397	1.311	-1.311
16	6.766	7.149	7.532	5.357	-5.357	1.307	-1.307
17	6.504	6.87	7.235	5.317	-5.317	1.302	-1.302
18	6.255	6.603	6.952	5.278	-5.278	1.296	-1.296
19	6.016	6.348	6.681	5.238	-5.238	1.289	-1.289
20	5.787	6.105	6.422	5.199	-5.199	1.279	-1.279
21	5.569	5.872	6.175	5.16	-5.16	1.266	-1.266
22	5.36	5.649	5.938	5.122	-5.122	1.245	-1.245
23	5.159	5.436	5.712	5.083	-5.083	1.207	-1.207
24	4.968	5.232	5.496	5.045	-5.045	1.108	-1.108
25	4.75	5	5.25	5	-5	1.105	-1.105
26	4.605	4.849	5.093	5.03	-5.03	1.646	-1.646





27	4.432	4.669	4.906	5.068	-5.068	1.492	-1.492
28	4.267	4.497	4.726	5.105	-5.105	1.46	-1.46
29	4.109	4.332	4.555	5.143	-5.143	1.454	-1.454
30	3.957	4.173	4.39	5.18	-5.18	1.458	-1.458
31	3.811	4.021	4.231	5.217	-5.217	1.466	-1.466
32	3.672	3.875	4.079	5.254	-5.254	1.478	-1.478
33	3.538	3.735	3.933	5.291	-5.291	1.491	-1.491
34	3.409	3.601	3.793	5.328	-5.328	1.505	-1.505
35	3.285	3.472	3.658	5.364	-5.364	1.52	-1.52
36	3.167	3.348	3.528	5.401	-5.401	1.536	-1.536
37	3.053	3.228	3.404	5.437	-5.437	1.551	-1.551
38	2.943	3.114	3.284	5.473	-5.473	1.568	-1.568
39	2.838	3.003	3.169	5.509	-5.509	1.584	-1.584
40	2.737	2.897	3.058	5.545	-5.545	1.601	-1.601
41	2.639	2.795	2.951	5.581	-5.581	1.618	-1.618
42	2.546	2.697	2.849	5.617	-5.617	1.635	-1.635
43	2.456	2.603	2.75	5.652	-5.652	1.653	-1.653
44	2.369	2.512	2.655	5.688	-5.688	1.67	-1.67
45	2.286	2.425	2.564	5.723	-5.723	1.688	-1.688
46	2.206	2.341	2.476	5.758	-5.758	1.706	-1.706
47	2.129	2.26	2.391	5.794	-5.794	1.723	-1.723
48	2.055	2.182	2.309	5.829	-5.829	1.741	-1.741
49	1.983	2.107	2.23	5.864	-5.864	1.759	-1.759
50	1.914	2.035	2.155	5.899	-5.899	1.778	-1.778
51	1.848	1.965	2.082	5.933	-5.933	1.796	-1.796
52	1.785	1.898	2.011	5.968	-5.968	1.814	-1.814
53	1.723	1.833	1.943	6.003	-6.003	1.833	-1.833
54	1.664	1.771	1.878	6.037	-6.037	1.851	-1.851
55	1.607	1.711	1.815	6.072	-6.072	1.87	-1.87





56	1.553	1.654	1.755	6.106	-6.106	1.889	-1.889
57	1.5	1.598	1.696	6.14	-6.14	1.908	-1.908
58	1.449	1.545	1.64	6.174	-6.174	1.927	-1.927
59	1.4	1.493	1.586	6.208	-6.208	1.946	-1.946
60	1.353	1.443	1.533	6.242	-6.242	1.965	-1.965
61	1.308	1.395	1.483	6.276	-6.276	1.984	-1.984
62	1.264	1.349	1.434	6.309	-6.309	2.004	-2.004
63	1.222	1.305	1.388	6.343	-6.343	2.023	-2.023
64	1.181	1.262	1.342	6.376	-6.376	2.043	-2.043
65	1.142	1.221	1.299	6.41	-6.41	2.063	-2.063
66	1.105	1.181	1.257	6.443	-6.443	2.082	-2.082
67	1.069	1.143	1.217	6.476	-6.476	2.102	-2.102
68	1.034	1.106	1.178	6.509	-6.509	2.122	-2.122
69	1	1.07	1.14	6.541	-6.541	2.143	-2.143
70	0.968	1.036	1.104	6.574	-6.574	2.163	-2.163
71	0.936	1.003	1.069	6.607	-6.607	2.183	-2.183
72	0.906	0.971	1.035	6.639	-6.639	2.204	-2.204
73	0.877	0.94	1.003	6.671	-6.671	2.225	-2.225
74	0.849	0.91	0.971	6.703	-6.703	2.245	-2.245
75	0.822	0.882	0.941	6.735	-6.735	2.266	-2.266
76	0.796	0.854	0.912	6.767	-6.767	2.288	-2.288
77	0.771	0.828	0.884	6.798	-6.798	2.309	-2.309
78	0.747	0.802	0.857	6.83	-6.83	2.33	-2.33
79	0.724	0.777	0.831	6.861	-6.861	2.352	-2.352
80	0.702	0.753	0.805	6.892	-6.892	2.373	-2.373
81	0.68	0.731	0.781	6.923	-6.923	2.395	-2.395
82	0.659	0.708	0.758	6.954	-6.954	2.417	-2.417
83	0.639	0.687	0.735	6.985	-6.985	2.439	-2.439
84	0.62	0.666	0.713	7.015	-7.015	2.461	-2.461

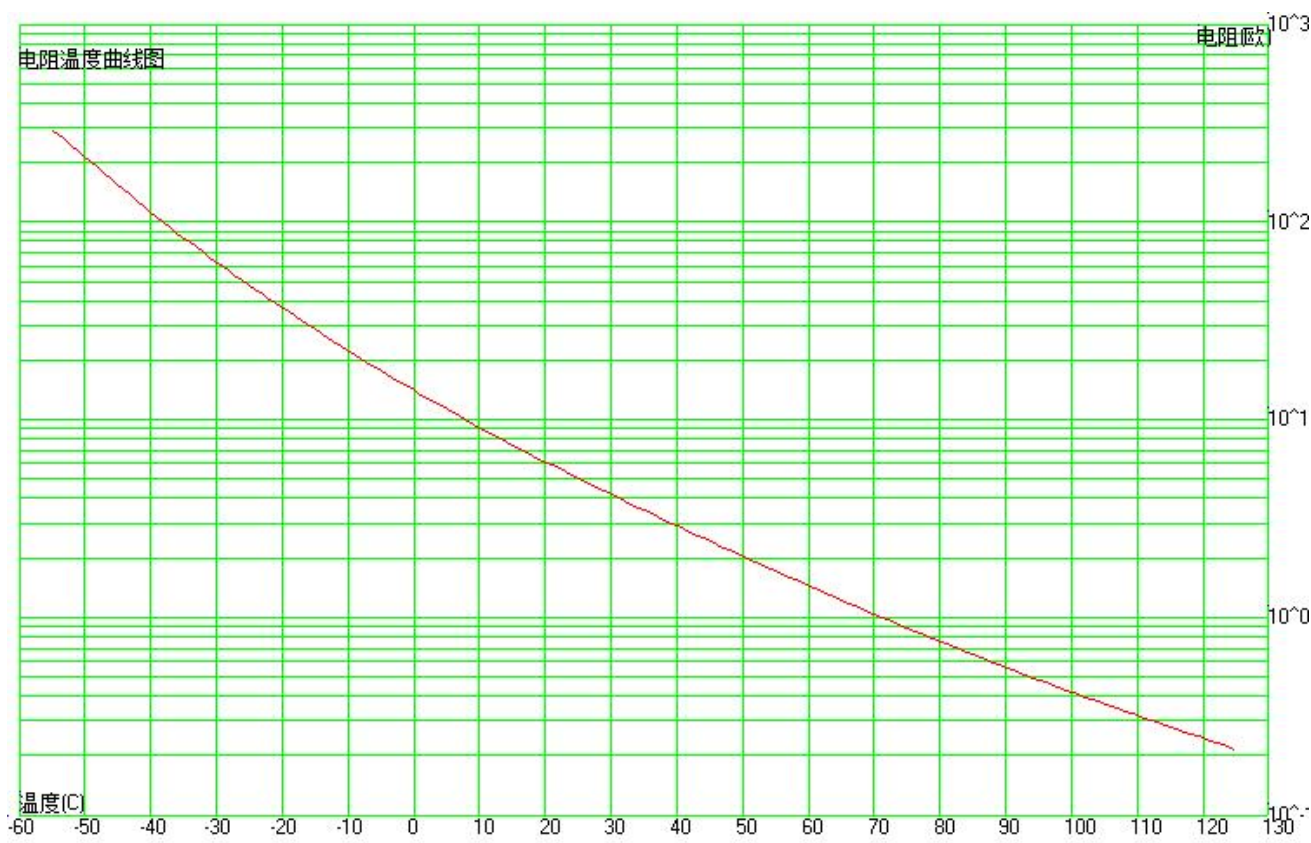




85	0.601	0.647	0.692	7.046	-7.046	2.483	-2.483
86	0.583	0.627	0.672	7.076	-7.076	2.505	-2.505
87	0.565	0.609	0.652	7.106	-7.106	2.528	-2.528
88	0.549	0.591	0.633	7.135	-7.135	2.551	-2.551
89	0.533	0.574	0.615	7.165	-7.165	2.573	-2.573
90	0.517	0.557	0.597	7.195	-7.195	2.596	-2.596
91	0.502	0.541	0.58	7.224	-7.224	2.619	-2.619
92	0.487	0.525	0.564	7.253	-7.253	2.642	-2.642
93	0.473	0.51	0.548	7.282	-7.282	2.666	-2.666
94	0.46	0.496	0.532	7.311	-7.311	2.689	-2.689
95	0.446	0.482	0.517	7.34	-7.34	2.713	-2.713
96	0.434	0.468	0.503	7.368	-7.368	2.736	-2.736
97	0.422	0.455	0.489	7.396	-7.396	2.76	-2.76
98	0.41	0.443	0.475	7.425	-7.425	2.784	-2.784
99	0.398	0.43	0.462	7.453	-7.453	2.808	-2.808
100	0.387	0.419	0.45	7.481	-7.481	2.832	-2.832
101	0.376	0.407	0.438	7.508	-7.508	2.856	-2.856
102	0.366	0.396	0.426	7.536	-7.536	2.88	-2.88
103	0.356	0.385	0.414	7.564	-7.564	2.905	-2.905
104	0.346	0.375	0.403	7.591	-7.591	2.929	-2.929
105	0.337	0.365	0.393	7.618	-7.618	2.954	-2.954
106	0.328	0.355	0.382	7.645	-7.645	2.978	-2.978
107	0.319	0.346	0.372	7.672	-7.672	3.003	-3.003
108	0.31	0.336	0.362	7.699	-7.699	3.028	-3.028
109	0.302	0.327	0.353	7.726	-7.726	3.053	-3.053
110	0.294	0.319	0.344	7.753	-7.753	3.078	-3.078
111	0.286	0.31	0.335	7.779	-7.779	3.103	-3.103
112	0.279	0.302	0.326	7.806	-7.806	3.128	-3.128
113	0.271	0.294	0.317	7.832	-7.832	3.153	-3.153



114	0.264	0.287	0.309	7.859	-7.859	3.179	-3.179
115	0.257	0.279	0.301	7.885	-7.885	3.204	-3.204
116	0.25	0.272	0.294	7.912	-7.912	3.229	-3.229
117	0.244	0.265	0.286	7.938	-7.938	3.255	-3.255
118	0.237	0.258	0.279	7.964	-7.964	3.28	-3.28
119	0.231	0.251	0.271	7.991	-7.991	3.306	-3.306
120	0.225	0.245	0.264	8.017	-8.017	3.331	-3.331
121	0.219	0.238	0.258	8.043	-8.043	3.356	-3.356
122	0.213	0.232	0.251	8.07	-8.07	3.382	-3.382
123	0.208	0.226	0.245	8.096	-8.096	3.407	-3.407
124	0.202	0.22	0.238	8.123	-8.123	3.433	-3.433
125	0.197	0.215	0.232	8.149	-8.149	3.458	-3.458



附表 II (Attachment II)

