



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 :

MF52 测温型 NTC 热敏电阻器

产品名称 PART NAME :

MF52 Series Temp Measurement NTC Thermistor

产品规格 PART NUMBER :

MF52A 103H3950(A1)

产品编号 PRODUCTCODE:

版次 REV.NO:

B0

日期 DATE:

2026-1-21

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	张居见
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南京时恒电子科技有限公司

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变更记录表

[illegible]

1、产品型号说明 Product model specification

MF52 A 103 H 3950 (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)
- ③ 103: 25℃ 的零功率电阻值 10KΩ (Zero Power Resistance at 25℃ is 10KΩ)
- ④ H: 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 3950: B25/50 值 3950K (B25/50:3950K)
- 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	$10\text{K}\Omega\pm 3\%$
2.2	B 值 B-value	$B_{25/50}$	$B=[(T_a\times T_b)/(T_b-T_a)]\times\ln(R_a/R_b)$ $T_a=25\pm0.01^{\circ}\text{C}$ $T_b=50^{\circ}\text{C}\pm0.01^{\circ}\text{C}$	K	$3950\pm 1\%$
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

Product drawing

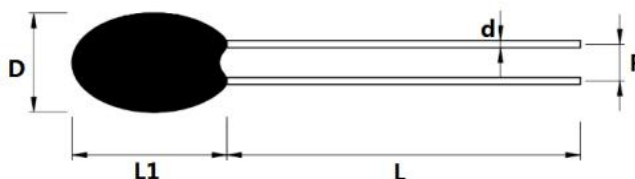
客户名称 Customer:

日期
DATE

MF52A 103H3950(A1)

日期
DATE

(Unit: mm)



DMax	L1Max	LMin	d±0.05	F±0.5
2.5	4	25	0.3	1.7

- 1) 零功率阻值: R25: $10\text{K}\Omega \pm 3\%$ (Zero Power Resistance: R25: $10\text{K}\Omega \pm 3\%$);
- 2) B25/50 数值: $3950\text{K} \pm 1\%$ (B-value: B25/50: $3950\text{K} \pm 1\%$);
- 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)。

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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<3ses；

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

6.4 储存温度：-10℃ ~ 40℃；储存湿度：≤75% RH；storage temp:-10℃ ~ 40℃；storage humidity:≤75% 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 useing 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)

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R25=10K Ω 精度: $\pm 3\%$ B25/50=3950K 精度: $\pm 1\%$ (P477-4B)

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	694.354	749.2	804.045	7.32	-7.32	0.992	-0.992
-54	648.781	699.508	750.235	7.251	-7.251	0.991	-0.991
-53	606.514	653.455	700.396	7.183	-7.183	0.989	-0.989
-52	567.274	610.733	654.191	7.115	-7.115	0.988	-0.988
-51	530.816	571.067	611.319	7.048	-7.048	0.986	-0.986
-50	496.918	534.215	571.512	6.981	-6.981	0.985	-0.985
-49	465.384	499.957	534.53	6.915	-6.915	0.983	-0.983
-48	436.034	468.095	500.156	6.849	-6.849	0.981	-0.981
-47	408.705	438.448	468.191	6.783	-6.783	0.979	-0.979
-46	383.248	410.851	438.454	6.718	-6.718	0.978	-0.978
-45	359.526	385.154	410.781	6.653	-6.653	0.976	-0.976
-44	337.414	361.217	385.02	6.589	-6.589	0.974	-0.974
-43	316.796	338.913	361.029	6.525	-6.525	0.972	-0.972
-42	297.565	318.123	338.681	6.462	-6.462	0.97	-0.97
-41	279.622	298.739	317.857	6.399	-6.399	0.968	-0.968
-40	262.875	280.66	298.444	6.336	-6.336	0.965	-0.965
-39	247.239	263.791	280.343	6.274	-6.274	0.963	-0.963
-38	232.635	248.046	263.458	6.213	-6.213	0.961	-0.961
-37	218.991	233.346	247.701	6.151	-6.151	0.959	-0.959
-36	206.238	219.615	232.993	6.091	-6.091	0.956	-0.956
-35	194.314	206.785	219.256	6.03	-6.03	0.954	-0.954
-34	183.16	194.792	206.423	5.971	-5.971	0.951	-0.951
-33	172.723	183.576	194.428	5.911	-5.911	0.949	-0.949
-32	162.952	173.082	183.212	5.852	-5.852	0.946	-0.946

-31	153.8	163.26	172.72	5.794	-5.794	0.943	-0.943
-30	145.225	154.062	162.9	5.736	-5.736	0.94	-0.94
-29	137.186	145.446	153.705	5.678	-5.678	0.937	-0.937
-28	129.647	137.369	145.091	5.621	-5.621	0.934	-0.934
-27	122.572	129.795	137.018	5.564	-5.564	0.931	-0.931
-26	115.931	122.689	129.448	5.508	-5.508	0.928	-0.928
-25	109.694	116.02	122.345	5.452	-5.452	0.925	-0.925
-24	103.832	109.756	115.679	5.396	-5.396	0.922	-0.922
-23	98.322	103.87	109.419	5.341	-5.341	0.919	-0.919
-22	93.139	98.338	103.537	5.286	-5.286	0.915	-0.915
-21	88.261	93.135	98.008	5.232	-5.232	0.912	-0.912
-20	83.669	88.238	92.808	5.178	-5.178	0.908	-0.908
-19	79.344	83.629	87.915	5.124	-5.124	0.905	-0.905
-18	75.267	79.288	83.309	5.071	-5.071	0.901	-0.901
-17	71.424	75.197	78.971	5.018	-5.018	0.897	-0.897
-16	67.799	71.341	74.884	4.965	-4.965	0.893	-0.893
-15	64.377	67.704	71.03	4.913	-4.913	0.889	-0.889
-14	61.147	64.272	67.396	4.861	-4.861	0.885	-0.885
-13	58.097	61.032	63.967	4.809	-4.809	0.881	-0.881
-12	55.214	57.972	60.731	4.757	-4.757	0.877	-0.877
-11	52.489	55.082	57.674	4.706	-4.706	0.873	-0.873
-10	49.912	52.35	54.787	4.655	-4.655	0.868	-0.868
-9	47.474	49.766	52.058	4.605	-4.605	0.864	-0.864
-8	45.167	47.322	49.478	4.554	-4.554	0.859	-0.859
-7	42.982	45.01	47.038	4.504	-4.504	0.855	-0.855
-6	40.914	42.821	44.729	4.454	-4.454	0.85	-0.85
-5	38.953	40.748	42.544	4.405	-4.405	0.846	-0.846
-4	37.096	38.785	40.475	4.355	-4.355	0.841	-0.841
-3	35.335	36.925	38.515	4.306	-4.306	0.836	-0.836



-2	33.664	35.161	36.658	4.257	-4.257	0.831	-0.831
-1	32.08	33.489	34.899	4.208	-4.208	0.826	-0.826
0	30.715	32.049	33.384	4.164	-4.164	0.819	-0.819
1	29.149	30.399	31.649	4.112	-4.112	0.816	-0.816
2	27.794	28.972	30.149	4.063	-4.063	0.81	-0.81
3	26.508	27.617	28.726	4.016	-4.016	0.805	-0.805
4	25.286	26.33	27.375	3.968	-3.968	0.8	-0.8
5	24.124	25.109	26.093	3.92	-3.92	0.794	-0.794
6	23.021	23.948	24.876	3.873	-3.873	0.788	-0.788
7	21.972	22.846	23.72	3.826	-3.826	0.783	-0.783
8	20.974	21.798	22.622	3.779	-3.779	0.777	-0.777
9	20.026	20.802	21.579	3.732	-3.732	0.771	-0.771
10	19.124	19.856	20.587	3.685	-3.685	0.765	-0.765
11	18.265	18.955	19.645	3.639	-3.639	0.759	-0.759
12	17.449	18.099	18.75	3.593	-3.593	0.753	-0.753
13	16.672	17.285	17.898	3.547	-3.547	0.746	-0.746
14	15.932	16.51	17.088	3.501	-3.501	0.739	-0.739
15	15.228	15.773	16.318	3.455	-3.455	0.732	-0.732
16	14.557	15.071	15.585	3.41	-3.41	0.725	-0.725
17	13.918	14.403	14.888	3.364	-3.364	0.717	-0.717
18	13.31	13.767	14.224	3.319	-3.319	0.709	-0.709
19	12.731	13.162	13.593	3.274	-3.274	0.7	-0.7
20	12.179	12.585	12.992	3.23	-3.23	0.69	-0.69
21	11.653	12.036	12.42	3.185	-3.185	0.678	-0.678
22	11.152	11.513	11.875	3.14	-3.14	0.661	-0.661
23	10.674	11.015	11.356	3.096	-3.096	0.636	-0.636
24	10.218	10.54	10.862	3.052	-3.052	0.577	-0.577
25	9.7	10	10.3	3	-3	0.571	-0.571
26	9.363	9.656	9.949	3.034	-3.034	0.871	-0.871



27	8.961	9.245	9.53	3.078	-3.078	0.79	-0.79
28	8.577	8.853	9.13	3.121	-3.121	0.776	-0.776
29	8.211	8.479	8.748	3.164	-3.164	0.778	-0.778
30	7.862	8.123	8.384	3.207	-3.207	0.784	-0.784
31	7.53	7.783	8.036	3.25	-3.25	0.794	-0.794
32	7.213	7.459	7.705	3.293	-3.293	0.804	-0.804
33	6.911	7.149	7.388	3.335	-3.335	0.816	-0.816
34	6.623	6.854	7.086	3.377	-3.377	0.829	-0.829
35	6.348	6.573	6.797	3.419	-3.419	0.842	-0.842
36	6.086	6.304	6.522	3.461	-3.461	0.855	-0.855
37	5.835	6.047	6.259	3.502	-3.502	0.869	-0.869
38	5.596	5.802	6.008	3.544	-3.544	0.883	-0.883
39	5.368	5.568	5.768	3.585	-3.585	0.897	-0.897
40	5.151	5.345	5.538	3.626	-3.626	0.912	-0.912
41	4.943	5.131	5.319	3.667	-3.667	0.926	-0.926
42	4.745	4.927	5.11	3.707	-3.707	0.941	-0.941
43	4.555	4.733	4.91	3.748	-3.748	0.956	-0.956
44	4.374	4.546	4.719	3.788	-3.788	0.971	-0.971
45	4.201	4.368	4.536	3.828	-3.828	0.986	-0.986
46	4.036	4.198	4.361	3.867	-3.867	1.001	-1.001
47	3.878	4.036	4.194	3.907	-3.907	1.017	-1.017
48	3.727	3.88	4.034	3.946	-3.946	1.033	-1.033
49	3.583	3.732	3.88	3.985	-3.985	1.048	-1.048
50	3.445	3.59	3.734	4.024	-4.024	1.064	-1.064
51	3.313	3.453	3.594	4.063	-4.063	1.08	-1.08
52	3.187	3.323	3.46	4.101	-4.101	1.096	-1.096
53	3.066	3.199	3.331	4.139	-4.139	1.112	-1.112
54	2.951	3.079	3.208	4.177	-4.177	1.128	-1.128
55	2.84	2.965	3.09	4.215	-4.215	1.145	-1.145



56	2.734	2.856	2.977	4.253	-4.253	1.161	-1.161
57	2.633	2.751	2.869	4.29	-4.29	1.178	-1.178
58	2.536	2.651	2.766	4.327	-4.327	1.194	-1.194
59	2.443	2.555	2.666	4.364	-4.364	1.211	-1.211
60	2.354	2.463	2.571	4.401	-4.401	1.228	-1.228
61	2.269	2.375	2.48	4.437	-4.437	1.245	-1.245
62	2.187	2.29	2.392	4.474	-4.474	1.262	-1.262
63	2.109	2.209	2.308	4.51	-4.51	1.279	-1.279
64	2.034	2.131	2.228	4.546	-4.546	1.297	-1.297
65	1.962	2.056	2.151	4.581	-4.581	1.314	-1.314
66	1.893	1.985	2.077	4.617	-4.617	1.331	-1.331
67	1.827	1.916	2.005	4.652	-4.652	1.349	-1.349
68	1.763	1.85	1.937	4.687	-4.687	1.367	-1.367
69	1.703	1.787	1.871	4.722	-4.722	1.384	-1.384
70	1.644	1.726	1.808	4.756	-4.756	1.402	-1.402
71	1.588	1.668	1.748	4.791	-4.791	1.42	-1.42
72	1.534	1.612	1.69	4.825	-4.825	1.438	-1.438
73	1.482	1.558	1.634	4.859	-4.859	1.456	-1.456
74	1.432	1.506	1.58	4.893	-4.893	1.475	-1.475
75	1.385	1.456	1.528	4.927	-4.927	1.493	-1.493
76	1.339	1.408	1.478	4.96	-4.96	1.511	-1.511
77	1.294	1.362	1.43	4.993	-4.993	1.53	-1.53
78	1.252	1.318	1.384	5.026	-5.026	1.548	-1.548
79	1.211	1.276	1.34	5.059	-5.059	1.567	-1.567
80	1.172	1.235	1.298	5.092	-5.092	1.586	-1.586
81	1.134	1.195	1.256	5.124	-5.124	1.605	-1.605
82	1.098	1.157	1.217	5.157	-5.157	1.623	-1.623
83	1.062	1.121	1.179	5.189	-5.189	1.642	-1.642
84	1.029	1.085	1.142	5.221	-5.221	1.662	-1.662

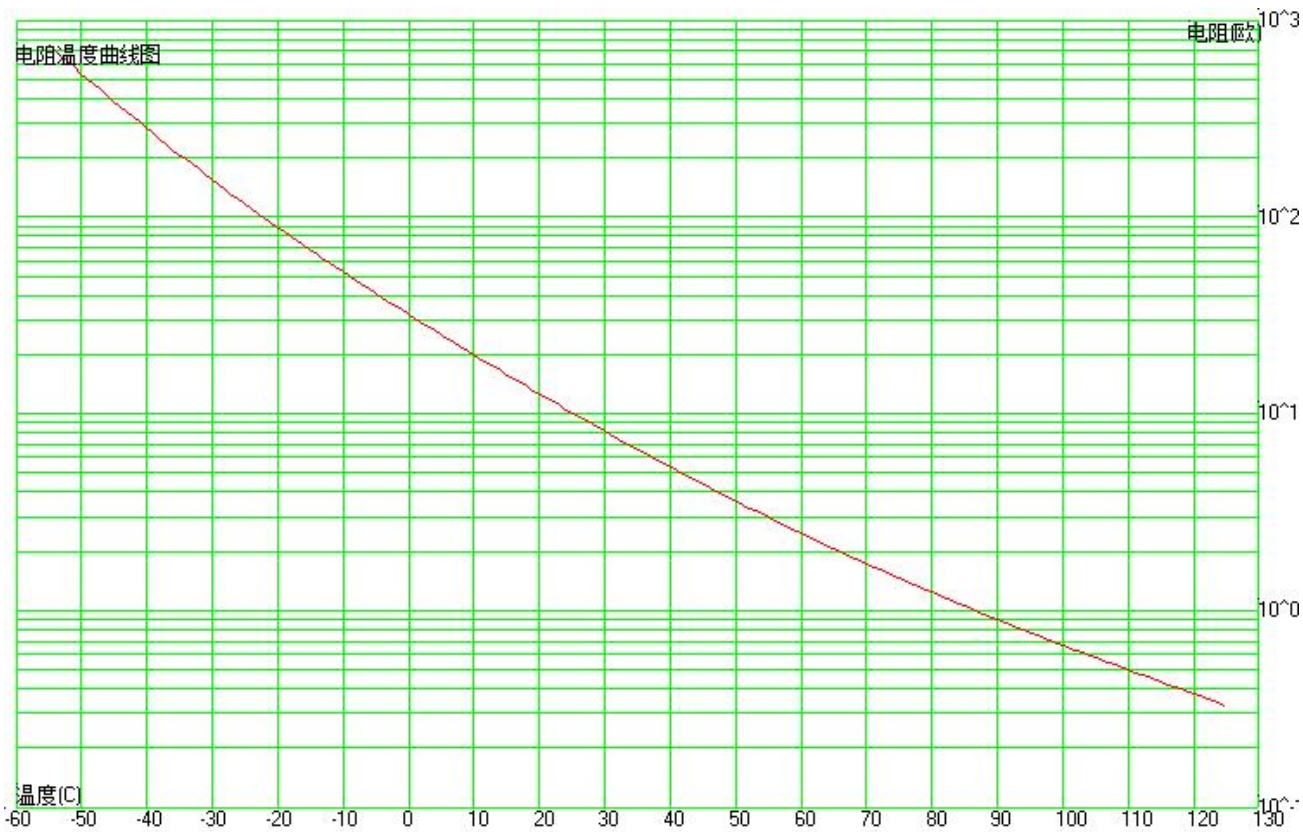




85	0.996	1.052	1.107	5.252	-5.252	1.681	-1.681
86	0.965	1.019	1.073	5.284	-5.284	1.7	-1.7
87	0.935	0.987	1.04	5.315	-5.315	1.719	-1.719
88	0.906	0.957	1.008	5.347	-5.347	1.739	-1.739
89	0.878	0.928	0.978	5.378	-5.378	1.758	-1.758
90	0.851	0.899	0.948	5.409	-5.409	1.778	-1.778
91	0.825	0.872	0.92	5.439	-5.439	1.798	-1.798
92	0.8	0.846	0.892	5.47	-5.47	1.817	-1.817
93	0.775	0.82	0.866	5.501	-5.501	1.837	-1.837
94	0.752	0.796	0.84	5.531	-5.531	1.857	-1.857
95	0.729	0.772	0.815	5.561	-5.561	1.877	-1.877
96	0.708	0.749	0.791	5.591	-5.591	1.897	-1.897
97	0.686	0.727	0.768	5.621	-5.621	1.917	-1.917
98	0.666	0.706	0.746	5.651	-5.651	1.937	-1.937
99	0.646	0.685	0.724	5.68	-5.68	1.958	-1.958
100	0.627	0.666	0.704	5.71	-5.71	1.978	-1.978
101	0.609	0.646	0.683	5.739	-5.739	1.999	-1.999
102	0.591	0.628	0.664	5.769	-5.769	2.019	-2.019
103	0.574	0.61	0.645	5.798	-5.798	2.04	-2.04
104	0.558	0.592	0.627	5.827	-5.827	2.06	-2.06
105	0.542	0.575	0.609	5.856	-5.856	2.081	-2.081
106	0.526	0.559	0.592	5.885	-5.885	2.102	-2.102
107	0.511	0.543	0.575	5.913	-5.913	2.123	-2.123
108	0.496	0.528	0.559	5.942	-5.942	2.144	-2.144
109	0.482	0.513	0.544	5.97	-5.97	2.165	-2.165
110	0.469	0.499	0.529	5.999	-5.999	2.186	-2.186
111	0.455	0.485	0.514	6.027	-6.027	2.207	-2.207
112	0.443	0.471	0.5	6.055	-6.055	2.228	-2.228
113	0.43	0.458	0.486	6.084	-6.084	2.249	-2.249



114	0.418	0.445	0.473	6.112	-6.112	2.271	-2.271
115	0.407	0.433	0.46	6.14	-6.14	2.292	-2.292
116	0.395	0.421	0.447	6.168	-6.168	2.313	-2.313
117	0.384	0.41	0.435	6.195	-6.195	2.335	-2.335
118	0.374	0.398	0.423	6.223	-6.223	2.357	-2.357
119	0.363	0.388	0.412	6.251	-6.251	2.378	-2.378
120	0.353	0.377	0.401	6.279	-6.279	2.4	-2.4
121	0.344	0.367	0.39	6.306	-6.306	2.422	-2.422
122	0.334	0.357	0.379	6.334	-6.334	2.443	-2.443
123	0.325	0.347	0.369	6.361	-6.361	2.465	-2.465
124	0.316	0.338	0.359	6.389	-6.389	2.487	-2.487
125	0.307	0.329	0.35	6.416	-6.416	2.509	-2.509



附表 II (Attachment II)

