



本规格书提供了 MF52A 系列 NTC 热敏电阻的结构尺寸、产品性能、试验条件、使用要求等参数, 敬请贵司确认。
对本规格书产生疑问时, 请速与我们联系, 若无疑义请确认回传, 若无回传, 我司将视为默认。
贵公司改变产品用途、使用方法时, 请与我们取得联系!

客户名称:		
客 户 确 认	确认:	时间:
	审核:	时间:

1.电气性能

	项目	符号	测试条件	单位	性能要求
1.1	25℃的零功率电阻值	$R_{25^{\circ}\text{C}}$	$T=25\pm0.01^{\circ}\text{C}$ 测试功率 $\leq 0.1\text{mw}$	K Ω	$47\text{K}\Omega \pm 1\%$
1.2	B 值	$B_{25/50}$	$B=[(T_a \times T_b)/(T_b - T_a)] \times \ln(R_a/R_b)$ $T_a=25^{\circ}\text{C} \pm 0.01^{\circ}\text{C}$ $T_b=50^{\circ}\text{C} \pm 0.01^{\circ}\text{C}$	K	$3950 \pm 1\%$
1.3	耗散系数	δ	静止空气中	$\text{mW}/^{\circ}\text{C}$	≥ 2
1.4	时间常数	τ	静止空气中	sec	≤ 7
1.5	绝缘电阻	/	100V/DC 1min	M Ω	≥ 100
1.6	工作温度范围	/	/	$^{\circ}\text{C}$	$-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$
1.7	最大额定功率	P_{max}	/	mW	50
1.8	阻温特性	/	/	/	见附表 1
1.9	阻值误差	/	/	/	见附表 2

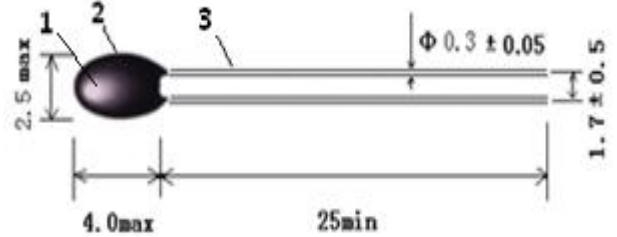
2.可靠性

项目	测试条件及方法	技术要求
2.1 引出端强度	固定电阻端, 拉力: $5 \pm 1\text{N}$, 时间: 10 ± 1 秒	无可见性损伤 $R_{25} \Delta R/R \leq \pm 2\%$
2.2 可焊性	温度 $245 \pm 5^{\circ}\text{C}$ 时间 2-3 秒	着锡面积 $\geq 95\%$
2.3 耐焊接热	锡锅温度: $260 \pm 5^{\circ}\text{C}$, 浸入深度距电阻体 6mm, 时间 5 ± 1 秒	$R_{25} \Delta R/R \leq \pm 2\%$
2.4 稳态湿热	温度: $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$, 湿度: $93 \pm 2\%$, 时间: 500 小时	$R_{25} \Delta R/R \leq \pm 2\%$
2.5 温度快速变化	$-55^{\circ}\text{C} 30\text{min} \rightarrow 25^{\circ}\text{C} 5\text{min} \rightarrow 125^{\circ}\text{C} 30\text{min} \rightarrow 25^{\circ}\text{C} 5\text{min}$, 反复 5 次	$R_{25} \Delta R/R \leq \pm 2\%$
2.6 高温储存	温度: $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 时间: 1000 小时	$R_{25} \Delta R/R \leq \pm 2\%$
2.7 低温储存	温度: -55°C 时间: 1000 小时	$R_{25} \Delta R/R \leq \pm 2\%$

3、使用注意事项

- 3.1 本产品的用途: 温度测量与控制;
- 3.2 避免过大的电流引起元件自身发热而产生测量误差;
- 3.3 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°C , 焊接时间 $< 3\text{ses}$;
- 3.4 储存温度: $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$; 储存湿度: $\leq 75\% \text{ RH}$;
- 3.5 避免存放在具有腐蚀性气体及光照的环境下;
- 3.6 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;
- 3.7 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 $110^{\circ}\text{C}/10\text{-}12\text{min}$ 进行热缩;

4、外形尺寸: (单位: mm)



序号	名称	材料规格	数量	备注
1	元件	NTC 热敏电阻	1	
2	改性树脂	包封类树脂	1	黑色
3	导线	镀锡铜包钢线	2	银色

5、产品型号说明

MF52 A1 473 F 3950

① ② ③ ④ ⑤

- ① MF52: 精密性 NTC 热敏电阻
- ② A1: 引线为镀锡铜包钢线 小头
- ③ 473: 25°C 的零功率电阻值 $47\text{K}\Omega$
- ④ F: 阻值精度代码 F- $\pm 1\%$ G- $\pm 2\%$ H- $\pm 3\%$ J- $\pm 5\%$
- ⑤ 3950: $B_{25/50}$ 值 3950K
- ⑥ A1: 小头

附表 1

阻 温 特 性 表

R25=47K Ω 精度: $\pm 1\%$ B25/50=3950K 精度: $\pm 1\%$ (P182-6B)

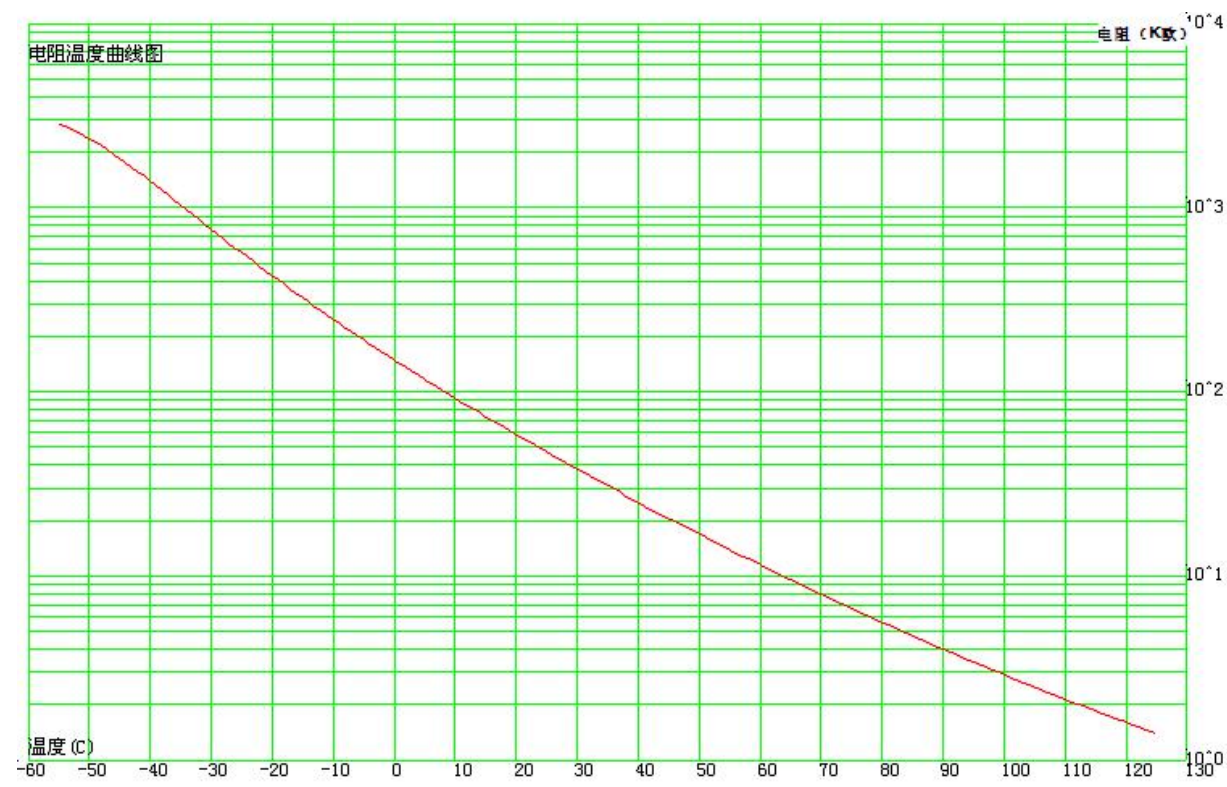
温度(℃)	电阻(K Ω)			电阻精度(%)		温度精度(℃)	
	最小值	中心值	最大值	ΔR	$-\Delta R$	ΔT	$-\Delta T$
-55	2707.230	2849.150	2998.220	5.231	-4.981	0.746	-0.710
-54	2629.610	2766.660	2910.550	5.201	-4.953	0.741	-0.705
-53	2543.700	2675.360	2813.570	5.165	-4.921	0.736	-0.701
-52	2451.530	2577.460	2709.600	5.126	-4.886	0.731	-0.696
-51	2354.950	2474.920	2600.740	5.083	-4.847	0.726	-0.692
-50	2255.580	2369.460	2488.840	5.038	-4.805	0.721	-0.688
-49	2154.850	2262.590	2375.490	4.989	-4.762	0.716	-0.683
-48	2053.930	2155.590	2262.050	4.938	-4.715	0.711	-0.679
-47	1953.840	2049.510	2149.640	4.885	-4.667	0.706	-0.675
-46	1855.400	1945.230	2039.200	4.831	-4.617	0.701	-0.670
-45	1759.250	1843.440	1931.460	4.774	-4.566	0.697	-0.666
-44	1665.920	1744.680	1826.980	4.717	-4.514	0.692	-0.662
-43	1575.800	1649.370	1726.200	4.658	-4.460	0.687	-0.658
-42	1489.150	1557.780	1629.420	4.598	-4.405	0.682	-0.653
-41	1406.160	1470.120	1536.840	4.537	-4.350	0.677	-0.649
-40	1326.950	1386.500	1448.560	4.476	-4.294	0.672	-0.644
-39	1251.560	1306.950	1364.650	4.415	-4.237	0.667	-0.640
-38	1179.970	1231.460	1285.070	4.352	-4.180	0.662	-0.636
-37	1112.150	1159.990	1209.760	4.290	-4.123	0.657	-0.631
-36	1048.010	1092.430	1138.620	4.227	-4.066	0.652	-0.627
-35	987.453	1028.680	1071.530	4.165	-4.008	0.646	-0.622
-34	930.341	968.607	1008.340	4.102	-3.950	0.641	-0.617
-33	876.544	912.048	948.895	4.040	-3.892	0.636	-0.613
-32	825.916	858.853	893.014	3.977	-3.835	0.631	-0.608
-31	778.307	808.860	840.529	3.915	-3.777	0.625	-0.603
-30	733.565	761.906	791.263	3.853	-3.719	0.620	-0.598
-29	691.536	717.826	745.040	3.791	-3.662	0.614	-0.594
-28	652.072	676.460	701.689	3.729	-3.605	0.609	-0.589
-27	615.025	637.651	661.042	3.668	-3.548	0.603	-0.584
-26	580.254	601.247	622.936	3.607	-3.491	0.598	-0.579
-25	547.621	567.102	587.216	3.546	-3.435	0.592	-0.574
-24	516.996	535.076	553.732	3.486	-3.378	0.586	-0.568
-23	488.254	505.036	522.344	3.426	-3.323	0.581	-0.563
-22	461.275	476.857	492.915	3.367	-3.267	0.575	-0.558
-21	435.949	450.418	465.321	3.308	-3.212	0.569	-0.552
-20	412.169	425.608	439.440	3.250	-3.157	0.563	-0.547
-19	389.835	402.319	415.161	3.192	-3.102	0.557	-0.542
-18	368.855	380.454	392.379	3.134	-3.048	0.551	-0.536
-17	349.139	359.918	370.993	3.077	-2.994	0.545	-0.530

-16	330.605	340.625	350.913	3.020	-2.941	0.539	-0.525
-15	313.177	322.492	332.051	2.964	-2.888	0.533	-0.519
-14	296.783	305.445	314.327	2.908	-2.835	0.526	-0.513
-13	281.355	289.411	297.666	2.852	-2.783	0.520	-0.507
-12	266.831	274.324	281.998	2.797	-2.731	0.513	-0.501
-11	253.153	260.123	267.258	2.742	-2.679	0.507	-0.495
-10	240.265	246.750	253.384	2.688	-2.628	0.500	-0.489
-9	228.117	234.151	240.321	2.634	-2.577	0.494	-0.483
-8	216.661	222.277	228.015	2.581	-2.526	0.487	-0.477
-7	205.854	211.080	216.418	2.528	-2.475	0.480	-0.470
-6	195.654	200.519	205.484	2.475	-2.425	0.474	-0.464
-5	186.024	190.552	195.170	2.423	-2.376	0.467	-0.458
-4	176.927	181.142	185.438	2.371	-2.326	0.460	-0.451
-3	168.331	172.254	176.251	2.320	-2.277	0.453	-0.444
-2	160.204	163.856	167.574	2.269	-2.228	0.446	-0.438
-1	152.517	155.916	159.375	2.218	-2.180	0.439	-0.431
0	145.270	148.435	151.653	2.168	-2.131	0.431	-0.424
1	138.360	141.305	144.298	2.117	-2.083	0.424	-0.417
2	131.842	134.582	137.365	2.068	-2.036	0.417	-0.410
3	125.666	128.216	130.804	2.018	-1.988	0.409	-0.403
4	119.814	122.186	124.593	1.969	-1.941	0.402	-0.396
5	114.266	116.473	118.710	1.920	-1.894	0.394	-0.389
6	109.004	111.056	113.136	1.872	-1.847	0.387	-0.382
7	104.013	105.920	107.852	1.824	-1.801	0.379	-0.374
8	99.275	101.048	102.843	1.776	-1.754	0.371	-0.367
9	94.777	96.425	98.091	1.728	-1.708	0.364	-0.360
10	90.618	92.151	93.702	1.682	-1.664	0.355	-0.352
11	86.447	87.868	89.304	1.633	-1.617	0.348	-0.344
12	82.590	83.909	85.241	1.587	-1.572	0.340	-0.337
13	78.923	80.147	81.382	1.540	-1.526	0.332	-0.329
14	75.437	76.572	77.716	1.494	-1.482	0.324	-0.321
15	72.120	73.172	74.232	1.448	-1.437	0.316	-0.313
16	68.964	69.939	70.919	1.402	-1.392	0.307	-0.305
17	65.961	66.862	67.770	1.356	-1.348	0.299	-0.297
18	63.101	63.935	64.774	1.311	-1.304	0.291	-0.289
19	60.378	61.149	61.923	1.266	-1.260	0.282	-0.281
20	57.784	58.496	59.210	1.221	-1.216	0.274	-0.273
21	55.313	55.969	56.628	1.176	-1.172	0.265	-0.264
22	52.958	53.562	54.169	1.132	-1.129	0.257	-0.256
23	50.712	51.269	51.827	1.087	-1.086	0.248	-0.248
24	48.571	49.083	49.596	1.043	-1.042	0.239	-0.239
25	46.530	47.000	47.470	1.000	-1.000	0.231	-0.231
26	44.543	45.013	45.482	1.043	-1.042	0.242	-0.242
27	42.650	43.118	43.586	1.087	-1.085	0.253	-0.253
28	40.844	41.310	41.777	1.130	-1.127	0.265	-0.264

29	39.122	39.585	40.050	1.173	-1.169	0.277	-0.276
30	37.479	37.939	38.401	1.216	-1.211	0.288	-0.287
31	35.912	36.368	36.826	1.259	-1.253	0.300	-0.299
32	34.416	34.868	35.322	1.302	-1.295	0.312	-0.310
33	32.989	33.436	33.885	1.344	-1.336	0.324	-0.322
34	31.626	32.067	32.512	1.386	-1.377	0.336	-0.334
35	30.324	30.761	31.200	1.429	-1.418	0.348	-0.345
36	29.081	29.512	29.946	1.471	-1.459	0.360	-0.357
37	27.894	28.319	28.747	1.512	-1.500	0.372	-0.369
38	26.759	27.178	27.601	1.554	-1.540	0.385	-0.381
39	25.676	26.088	26.504	1.596	-1.581	0.397	-0.393
40	24.640	25.046	25.456	1.637	-1.621	0.409	-0.405
41	23.649	24.049	24.453	1.679	-1.661	0.422	-0.417
42	22.703	23.096	23.493	1.720	-1.700	0.435	-0.430
43	21.797	22.184	22.574	1.761	-1.740	0.447	-0.442
44	20.932	21.311	21.695	1.801	-1.779	0.460	-0.454
45	20.104	20.476	20.854	1.842	-1.819	0.473	-0.467
46	19.312	19.677	20.048	1.883	-1.858	0.486	-0.479
47	18.554	18.912	19.276	1.923	-1.897	0.499	-0.492
48	17.828	18.180	18.537	1.963	-1.935	0.512	-0.504
49	17.134	17.479	17.830	2.003	-1.974	0.525	-0.517
50	16.524	16.863	17.207	2.040	-2.009	0.539	-0.531
51	15.834	16.165	16.502	2.083	-2.050	0.551	-0.543
52	15.224	15.549	15.879	2.123	-2.089	0.565	-0.556
53	14.641	14.959	15.283	2.162	-2.126	0.578	-0.569
54	14.082	14.394	14.711	2.202	-2.164	0.592	-0.582
55	13.547	13.852	14.163	2.241	-2.202	0.605	-0.595
56	13.034	13.333	13.637	2.280	-2.239	0.619	-0.608
57	12.543	12.835	13.133	2.319	-2.276	0.633	-0.621
58	12.072	12.358	12.649	2.358	-2.313	0.647	-0.634
59	11.621	11.900	12.186	2.396	-2.350	0.660	-0.648
60	11.188	11.462	11.741	2.435	-2.387	0.674	-0.661
61	10.773	11.041	11.314	2.473	-2.423	0.689	-0.675
62	10.375	10.637	10.904	2.511	-2.460	0.703	-0.688
63	9.994	10.250	10.511	2.549	-2.496	0.717	-0.702
64	9.628	9.878	10.134	2.587	-2.532	0.731	-0.715
65	9.277	9.521	9.771	2.625	-2.568	0.746	-0.729
66	8.940	9.179	9.424	2.663	-2.603	0.760	-0.743
67	8.617	8.850	9.090	2.700	-2.639	0.775	-0.757
68	8.307	8.535	8.769	2.737	-2.674	0.789	-0.771
69	8.009	8.232	8.461	2.774	-2.709	0.804	-0.785
70	7.723	7.941	8.164	2.811	-2.744	0.819	-0.799
71	7.449	7.662	7.880	2.848	-2.779	0.833	-0.813
72	7.185	7.393	7.607	2.885	-2.814	0.848	-0.827
73	6.932	7.135	7.344	2.921	-2.848	0.863	-0.842

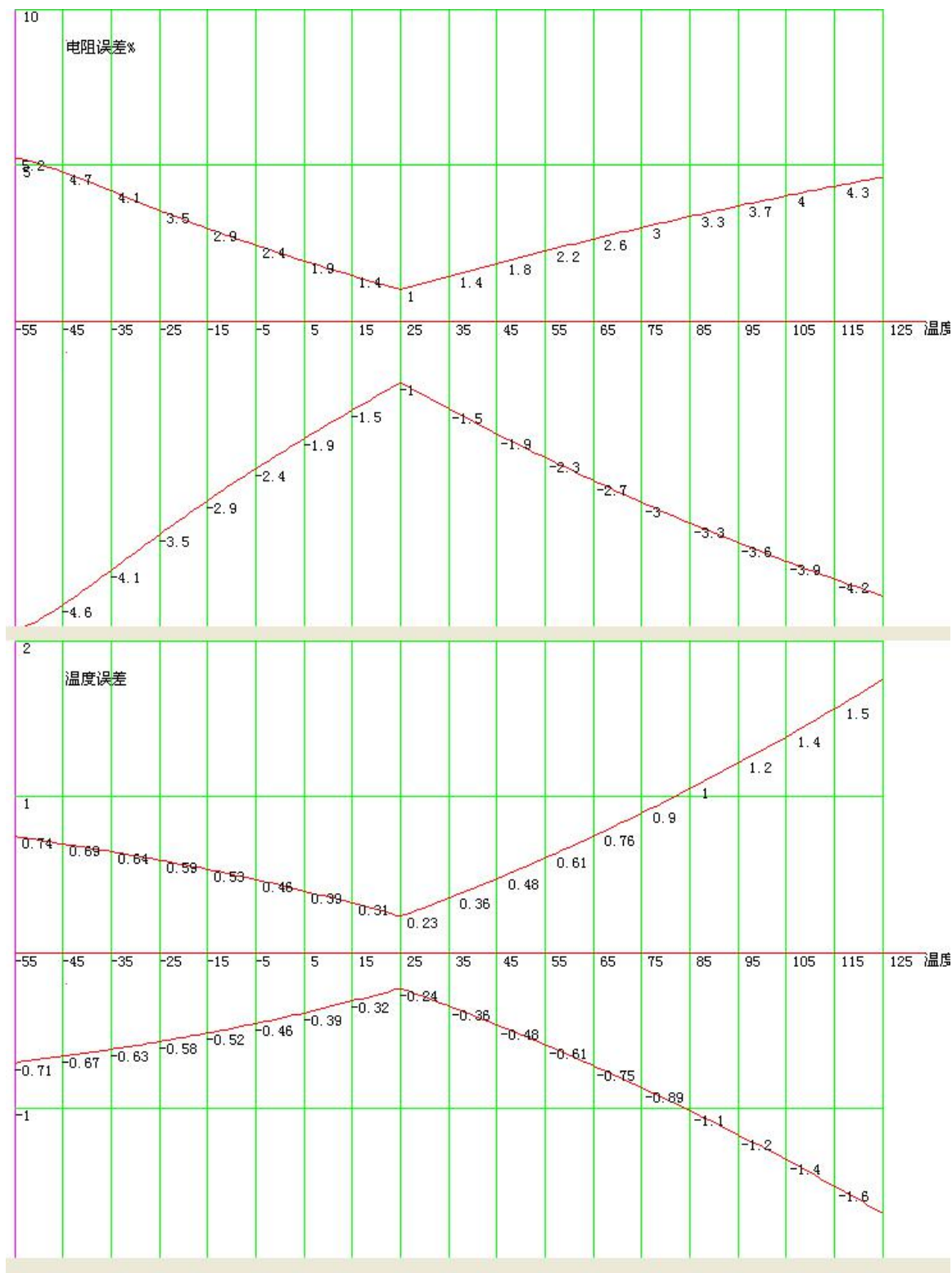
74	6.689	6.888	7.091	2.958	-2.882	0.878	-0.856
75	6.456	6.650	6.849	2.994	-2.917	0.894	-0.870
76	6.231	6.421	6.615	3.030	-2.951	0.909	-0.885
77	6.016	6.201	6.391	3.066	-2.984	0.924	-0.900
78	5.808	5.989	6.175	3.102	-3.018	0.939	-0.914
79	5.609	5.786	5.967	3.137	-3.052	0.955	-0.929
80	5.418	5.590	5.768	3.173	-3.085	0.971	-0.944
81	5.234	5.402	5.575	3.208	-3.118	0.986	-0.958
82	5.057	5.221	5.391	3.243	-3.151	1.002	-0.973
83	4.886	5.047	5.213	3.278	-3.184	1.018	-0.988
84	4.723	4.880	5.041	3.313	-3.217	1.033	-1.003
85	4.565	4.718	4.876	3.348	-3.249	1.049	-1.018
86	4.413	4.563	4.718	3.383	-3.281	1.065	-1.034
87	4.267	4.414	4.565	3.417	-3.314	1.082	-1.049
88	4.127	4.270	4.417	3.451	-3.346	1.098	-1.064
89	3.992	4.131	4.275	3.485	-3.378	1.114	-1.080
90	3.862	3.998	4.139	3.519	-3.409	1.130	-1.095
91	3.736	3.870	4.007	3.553	-3.441	1.147	-1.111
92	3.616	3.746	3.880	3.587	-3.472	1.163	-1.126
93	3.499	3.627	3.758	3.620	-3.503	1.180	-1.142
94	3.388	3.512	3.640	3.654	-3.534	1.196	-1.157
95	3.280	3.401	3.526	3.687	-3.565	1.213	-1.173
96	3.176	3.294	3.417	3.720	-3.596	1.230	-1.189
97	3.076	3.191	3.311	3.753	-3.627	1.247	-1.205
98	2.979	3.092	3.209	3.786	-3.657	1.264	-1.221
99	2.886	2.996	3.111	3.818	-3.687	1.281	-1.237
100	2.796	2.904	3.016	3.851	-3.718	1.298	-1.253
101	2.710	2.815	2.924	3.883	-3.747	1.315	-1.269
102	2.626	2.729	2.836	3.915	-3.777	1.333	-1.286
103	2.546	2.646	2.751	3.947	-3.807	1.350	-1.302
104	2.468	2.566	2.669	3.979	-3.836	1.367	-1.318
105	2.393	2.489	2.589	4.011	-3.866	1.385	-1.335
106	2.321	2.415	2.512	4.042	-3.895	1.402	-1.351
107	2.251	2.343	2.438	4.074	-3.924	1.420	-1.368
108	2.183	2.273	2.367	4.105	-3.953	1.438	-1.385
109	2.118	2.206	2.298	4.136	-3.982	1.456	-1.401
110	2.056	2.141	2.231	4.167	-4.010	1.474	-1.418
111	1.995	2.079	2.166	4.198	-4.039	1.492	-1.435
112	1.936	2.018	2.104	4.229	-4.067	1.510	-1.452
113	1.880	1.960	2.043	4.260	-4.095	1.528	-1.469
114	1.825	1.904	1.985	4.290	-4.123	1.546	-1.486
115	1.772	1.849	1.929	4.321	-4.151	1.564	-1.503
116	1.721	1.796	1.874	4.351	-4.179	1.583	-1.520
117	1.672	1.745	1.822	4.381	-4.207	1.601	-1.538
118	1.624	1.696	1.771	4.411	-4.234	1.620	-1.555

119	1.578	1.648	1.721	4.441	-4.261	1.638	-1.572
120	1.533	1.602	1.674	4.470	-4.288	1.657	-1.590
121	1.490	1.557	1.627	4.500	-4.316	1.676	-1.607
122	1.448	1.514	1.583	4.529	-4.342	1.695	-1.625
123	1.408	1.472	1.539	4.558	-4.369	1.714	-1.643
124	1.369	1.432	1.497	4.588	-4.396	1.733	-1.660
125	1.331	1.393	1.457	4.617	-4.422	1.752	-1.678



附表 2

阻值误差曲线图



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