MF52 珠状测温型 NTC 热敏电阻器

型号：MF52B 103F3435

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	$R_{25℃}$	Ta=25±0.05℃ 测试功率≤0.1mw	KΩ	10KΩ±1%
1.2	B 值	$B_{25/85}$	$B=[(T_a\times T_b)/(T_b-T_a)]\times\ln(R_a/R_b)$ T_b=85℃±0.05℃	K	3435±1%
1.3	耗散系数	δ	静止空气中	mW/℃	≥2
1.4	时间常数	τ	静止空气中	sec	≤7
1.5	绝缘电阻	/	100V/DC 1min	MΩ	≥100
1.6	工作温度范围	/	/	℃	-55℃ ～ 125℃
1.7	最大额定功率	Pmax	/	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±1 N，时间：10±1 秒	无可见性损伤 R_{25} ΔR/R≤±2%
2.2 可焊性	温度 245±5℃ 时间 2-3 秒	着锡面积≥95%
2.3 耐焊接热	锡锅温度：260±5℃，浸入深度距电阻体 6mm，时间 5±1 秒	R_{25} ΔR/R≤±2%
2.4 稳态湿热	温度：40℃±2℃，湿度：93±2%，时间：500 小时	R_{25} ΔR/R≤±2%
2.5 温度快速变化	-55℃30min→25℃5min→125℃30min→25℃5min，反复 5 次	R_{25} ΔR/R≤±2%
2.6 高温储存	温度: 125℃±5℃ 时间:1000 小时	R_{25} ΔR/R≤±2%
2.7 低温储存	温度: -55℃ 时间:1000 小时	R_{25} ΔR/R≤±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 避免流过热敏电阻芯片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，焊接处距涂装层距离至少 2mm，焊接温度应低于 300℃，焊接时间＜3ses；

3.4 储存温度：-10℃ ～ 40℃；储存湿度：≤75% 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。

5.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	Φ0.3 红色漆包线	2	红色

6.产品型号说明

MF52 B 103 F 3435

① ② ③ ④ ⑤

① MF52：珠状精密性 NTC 热敏电阻

② B ： 引线为漆包线

③ 103： 25℃的零功率电阻值 10KΩ

④ F：阻值精度代码 F-±1% G-±2% H-±3% J-±5%

⑤ 3435：$B_{25/85}$ 值 3435K

附表 1

阻 温 特 性 表

R25=10KΩ 精度:±1% B25/50=3380K B25/85=3435K 精度:±1%(P174-9A)

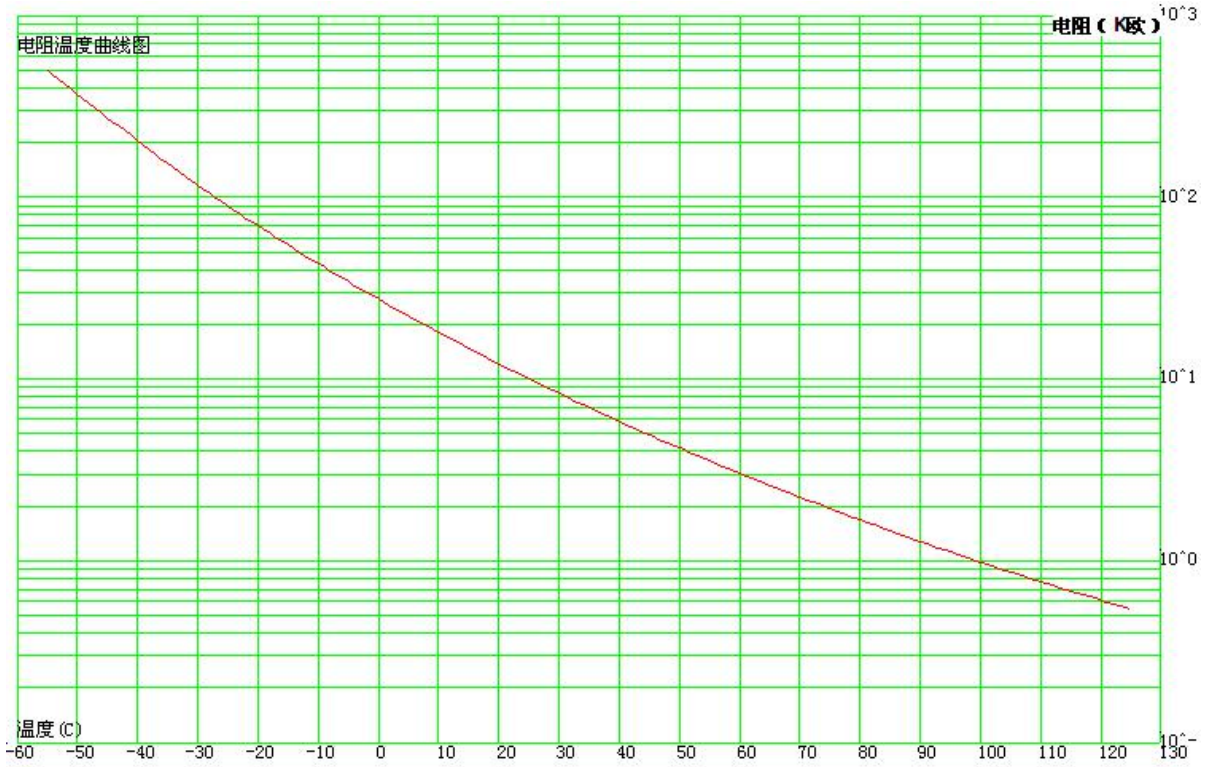
温度(℃)	电阻(KΩ)			电阻精度(%)		温度精度(℃)	
	最小值	中心值	最大值	△R	-△R	△T	-△T
-55	476.131	500.130	525.285	5.029	-4.798	0.752	-0.717
-54	449.575	471.961	495.412	4.968	-4.743	0.748	-0.714
-53	424.099	444.955	466.789	4.907	-4.687	0.744	-0.711
-52	399.782	419.191	439.499	4.844	-4.630	0.740	-0.707
-51	376.664	394.713	413.586	4.781	-4.572	0.736	-0.704
-50	354.759	371.534	389.063	4.718	-4.514	0.732	-0.701
-49	334.061	349.645	365.919	4.654	-4.456	0.728	-0.697
-48	314.547	329.020	344.125	4.590	-4.398	0.724	-0.694
-47	296.181	309.621	323.639	4.527	-4.340	0.720	-0.690
-46	278.922	291.402	304.410	4.463	-4.282	0.716	-0.686
-45	262.720	274.309	286.381	4.400	-4.224	0.711	-0.683
-44	247.524	258.287	269.492	4.337	-4.167	0.707	-0.679
-43	233.280	243.278	253.680	4.275	-4.109	0.703	-0.675
-42	219.934	229.223	238.882	4.213	-4.052	0.698	-0.672
-41	207.432	216.066	225.037	4.151	-3.996	0.694	-0.668
-40	195.722	203.750	212.085	4.090	-3.939	0.689	-0.664
-39	184.755	192.220	199.967	4.030	-3.883	0.685	-0.660
-38	174.482	181.427	188.630	3.970	-3.828	0.680	-0.656
-37	164.856	171.320	178.020	3.910	-3.772	0.675	-0.652
-36	155.836	161.854	168.087	3.851	-3.718	0.671	-0.647
-35	147.379	152.984	158.787	3.792	-3.663	0.666	-0.643
-34	139.447	144.670	150.073	3.734	-3.610	0.661	-0.639
-33	132.005	136.874	141.907	3.677	-3.556	0.656	-0.635
-32	125.020	129.559	134.250	3.620	-3.503	0.651	-0.630
-31	118.460	122.694	127.067	3.564	-3.451	0.646	-0.626
-30	112.296	116.247	120.325	3.508	-3.399	0.641	-0.621
-29	106.501	110.189	113.994	3.452	-3.347	0.636	-0.616
-28	101.050	104.494	108.045	3.398	-3.296	0.631	-0.612
-27	95.920	99.137	102.452	3.343	-3.245	0.625	-0.607
-26	91.090	94.096	97.192	3.289	-3.194	0.620	-0.602
-25	86.540	89.350	92.241	3.236	-3.144	0.614	-0.597
-24	82.251	84.877	87.579	3.183	-3.094	0.609	-0.592
-23	78.206	80.662	83.187	3.130	-3.045	0.603	-0.587
-22	74.389	76.687	79.047	3.078	-2.996	0.598	-0.582
-21	70.785	72.935	75.143	3.026	-2.947	0.592	-0.577
-20	67.382	69.394	71.459	2.975	-2.899	0.586	-0.571
-19	64.166	66.049	67.981	2.924	-2.851	0.581	-0.566
-18	61.125	62.888	64.696	2.874	-2.803	0.575	-0.561
-17	58.249	59.900	61.591	2.824	-2.756	0.569	-0.555
-16	55.527	57.073	58.657	2.774	-2.709	0.563	-0.550

-15	52.950	54.398	55.881	2.725	-2.662	0.557	-0.544
-14	50.509	51.866	53.254	2.676	-2.616	0.551	-0.538
-13	48.196	49.468	50.768	2.627	-2.570	0.544	-0.533
-12	46.004	47.196	48.413	2.579	-2.524	0.538	-0.527
-11	43.925	45.042	46.182	2.531	-2.478	0.532	-0.521
-10	41.953	43.000	44.068	2.483	-2.433	0.526	-0.515
-9	40.081	41.062	42.063	2.436	-2.388	0.519	-0.509
-8	38.304	39.224	40.161	2.389	-2.343	0.513	-0.503
-7	36.617	37.479	38.357	2.343	-2.299	0.506	-0.497
-6	35.014	35.822	36.644	2.296	-2.255	0.500	-0.490
-5	33.490	34.247	35.018	2.251	-2.211	0.493	-0.484
-4	32.041	32.751	33.474	2.205	-2.167	0.486	-0.478
-3	30.664	31.329	32.006	2.160	-2.124	0.479	-0.471
-2	29.354	29.977	30.611	2.114	-2.080	0.473	-0.465
-1	28.107	28.691	29.285	2.070	-2.038	0.466	-0.458
0	26.963	27.513	28.070	2.027	-1.996	0.458	-0.451
1	25.790	26.303	26.825	1.981	-1.952	0.452	-0.445
2	24.714	25.195	25.683	1.937	-1.910	0.445	-0.438
3	23.688	24.139	24.597	1.894	-1.868	0.437	-0.432
4	22.711	23.134	23.562	1.850	-1.826	0.430	-0.425
5	21.780	22.176	22.577	1.807	-1.785	0.423	-0.418
6	20.892	21.263	21.638	1.764	-1.744	0.416	-0.411
7	20.045	20.392	20.744	1.722	-1.702	0.408	-0.404
8	19.237	19.562	19.891	1.680	-1.662	0.401	-0.397
9	18.466	18.771	19.078	1.638	-1.621	0.393	-0.389
10	17.731	18.016	18.303	1.596	-1.581	0.386	-0.382
11	17.028	17.295	17.564	1.554	-1.540	0.378	-0.375
12	16.358	16.607	16.858	1.513	-1.500	0.370	-0.367
13	15.717	15.950	16.185	1.472	-1.461	0.363	-0.360
14	15.105	15.323	15.542	1.431	-1.421	0.355	-0.352
15	14.520	14.724	14.929	1.391	-1.382	0.347	-0.345
16	13.961	14.151	14.343	1.351	-1.343	0.339	-0.337
17	13.427	13.604	13.783	1.311	-1.304	0.331	-0.329
18	12.916	13.081	13.248	1.271	-1.265	0.323	-0.322
19	12.427	12.581	12.736	1.232	-1.227	0.315	-0.314
20	11.959	12.103	12.248	1.193	-1.188	0.307	-0.306
21	11.512	11.646	11.780	1.154	-1.150	0.298	-0.297
22	11.084	11.208	11.333	1.115	-1.112	0.290	-0.289
23	10.673	10.789	10.906	1.076	-1.075	0.281	-0.280
24	10.281	10.389	10.496	1.038	-1.037	0.271	-0.270
25	9.900	10.000	10.100	1.000	-1.000	0.262	-0.262
26	9.537	9.637	9.737	1.037	-1.036	0.281	-0.281
27	9.185	9.285	9.385	1.074	-1.073	0.291	-0.291
28	8.848	8.948	9.047	1.112	-1.109	0.303	-0.302
29	8.526	8.624	8.724	1.149	-1.146	0.315	-0.314

30	8.216	8.315	8.413	1.186	-1.182	0.326	-0.325
31	7.920	8.018	8.116	1.223	-1.218	0.338	-0.337
32	7.636	7.733	7.830	1.259	-1.254	0.351	-0.349
33	7.363	7.459	7.556	1.296	-1.289	0.363	-0.361
34	7.102	7.197	7.293	1.332	-1.324	0.375	-0.373
35	6.851	6.946	7.041	1.368	-1.360	0.388	-0.385
36	6.611	6.704	6.798	1.404	-1.394	0.400	-0.398
37	6.380	6.473	6.566	1.440	-1.429	0.413	-0.410
38	6.159	6.250	6.342	1.475	-1.464	0.426	-0.422
39	5.946	6.036	6.128	1.511	-1.498	0.438	-0.435
40	5.742	5.831	5.921	1.546	-1.532	0.451	-0.447
41	5.546	5.634	5.723	1.581	-1.566	0.464	-0.460
42	5.357	5.444	5.532	1.615	-1.600	0.477	-0.472
43	5.176	5.262	5.349	1.650	-1.633	0.490	-0.485
44	5.002	5.087	5.173	1.684	-1.666	0.503	-0.498
45	4.835	4.918	5.003	1.719	-1.699	0.517	-0.511
46	4.674	4.756	4.840	1.753	-1.732	0.530	-0.524
47	4.519	4.601	4.683	1.787	-1.765	0.543	-0.537
48	4.371	4.451	4.532	1.820	-1.798	0.557	-0.550
49	4.228	4.306	4.386	1.854	-1.830	0.570	-0.563
50	4.090	4.168	4.246	1.887	-1.862	0.584	-0.576
51	3.957	4.034	4.111	1.921	-1.894	0.598	-0.589
52	3.830	3.905	3.981	1.954	-1.926	0.611	-0.603
53	3.707	3.781	3.856	1.986	-1.958	0.625	-0.616
54	3.589	3.662	3.736	2.019	-1.989	0.639	-0.630
55	3.475	3.546	3.619	2.052	-2.020	0.653	-0.643
56	3.365	3.436	3.507	2.084	-2.051	0.667	-0.657
57	3.259	3.329	3.399	2.116	-2.082	0.682	-0.671
58	3.157	3.226	3.295	2.149	-2.113	0.696	-0.684
59	3.059	3.126	3.194	2.181	-2.144	0.710	-0.698
60	2.965	3.030	3.098	2.212	-2.174	0.724	-0.712
61	2.873	2.938	3.004	2.244	-2.205	0.739	-0.726
62	2.785	2.849	2.914	2.276	-2.235	0.754	-0.740
63	2.700	2.763	2.827	2.307	-2.265	0.768	-0.754
64	2.618	2.680	2.743	2.338	-2.294	0.783	-0.768
65	2.539	2.600	2.661	2.369	-2.324	0.798	-0.782
66	2.463	2.522	2.583	2.400	-2.354	0.812	-0.797
67	2.389	2.448	2.507	2.431	-2.383	0.827	-0.811
68	2.318	2.376	2.434	2.461	-2.412	0.842	-0.825
69	2.250	2.306	2.363	2.492	-2.441	0.857	-0.840
70	2.183	2.239	2.295	2.522	-2.470	0.873	-0.855
71	2.119	2.174	2.229	2.553	-2.499	0.888	-0.869
72	2.058	2.111	2.165	2.583	-2.527	0.903	-0.884
73	1.998	2.050	2.104	2.612	-2.556	0.919	-0.899
74	1.940	1.992	2.044	2.642	-2.584	0.934	-0.913

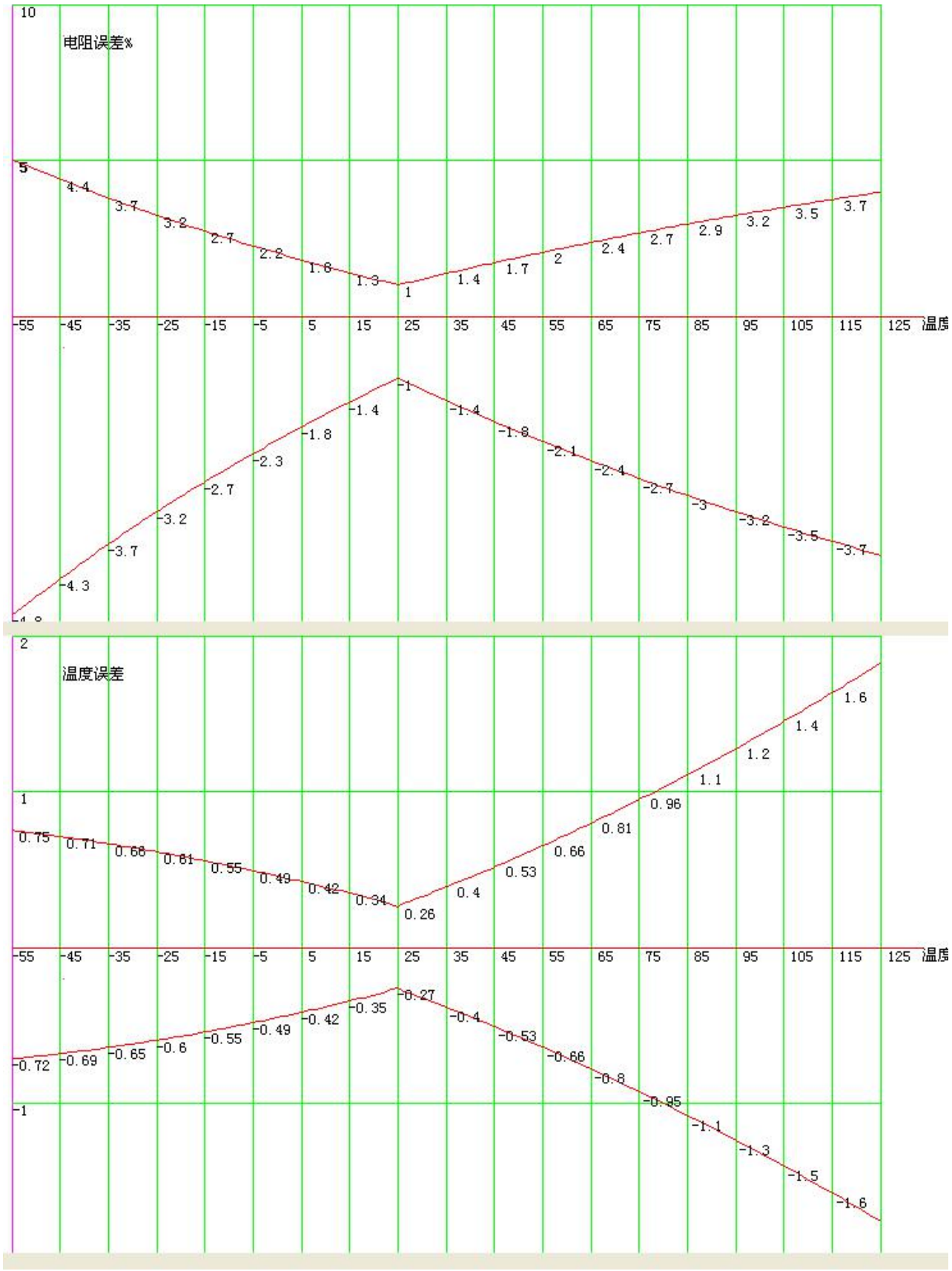
75	1.884	1.935	1.987	2.672	-2.612	0.950	-0.928
76	1.830	1.880	1.931	2.701	-2.640	0.965	-0.943
77	1.778	1.827	1.877	2.731	-2.668	0.981	-0.958
78	1.728	1.776	1.825	2.760	-2.696	0.997	-0.973
79	1.679	1.726	1.774	2.789	-2.723	1.012	-0.989
80	1.632	1.678	1.725	2.818	-2.751	1.028	-1.004
81	1.586	1.632	1.678	2.847	-2.778	1.044	-1.019
82	1.542	1.587	1.632	2.876	-2.805	1.061	-1.034
83	1.500	1.543	1.588	2.904	-2.832	1.077	-1.050
84	1.458	1.501	1.545	2.933	-2.859	1.093	-1.065
85	1.418	1.461	1.504	2.961	-2.886	1.109	-1.081
86	1.380	1.421	1.464	2.989	-2.912	1.126	-1.097
87	1.342	1.383	1.425	3.017	-2.939	1.142	-1.112
88	1.306	1.346	1.387	3.045	-2.965	1.159	-1.128
89	1.271	1.310	1.350	3.073	-2.991	1.175	-1.144
90	1.237	1.275	1.315	3.101	-3.017	1.192	-1.160
91	1.204	1.242	1.281	3.128	-3.043	1.209	-1.176
92	1.172	1.209	1.247	3.155	-3.069	1.226	-1.192
93	1.141	1.178	1.215	3.183	-3.094	1.243	-1.208
94	1.111	1.147	1.184	3.210	-3.120	1.260	-1.224
95	1.082	1.118	1.154	3.237	-3.145	1.277	-1.240
96	1.054	1.089	1.124	3.264	-3.170	1.294	-1.257
97	1.027	1.061	1.096	3.290	-3.195	1.311	-1.273
98	1.001	1.034	1.068	3.317	-3.220	1.328	-1.290
99	0.975	1.008	1.042	3.343	-3.245	1.346	-1.306
100	0.950	0.983	1.016	3.370	-3.270	1.363	-1.323
101	0.926	0.958	0.990	3.396	-3.294	1.381	-1.339
102	0.903	0.934	0.966	3.422	-3.318	1.398	-1.356
103	0.880	0.911	0.942	3.448	-3.343	1.416	-1.373
104	0.859	0.888	0.919	3.474	-3.367	1.434	-1.390
105	0.837	0.867	0.897	3.499	-3.391	1.452	-1.407
106	0.817	0.846	0.875	3.525	-3.415	1.470	-1.424
107	0.797	0.825	0.854	3.550	-3.438	1.488	-1.441
108	0.777	0.805	0.834	3.576	-3.462	1.506	-1.458
109	0.758	0.786	0.814	3.601	-3.485	1.524	-1.475
110	0.740	0.767	0.795	3.626	-3.508	1.543	-1.493
111	0.723	0.749	0.776	3.651	-3.532	1.561	-1.510
112	0.705	0.731	0.758	3.675	-3.555	1.579	-1.528
113	0.689	0.714	0.741	3.700	-3.577	1.598	-1.545
114	0.672	0.698	0.724	3.724	-3.600	1.617	-1.563
115	0.657	0.681	0.707	3.749	-3.623	1.635	-1.580
116	0.641	0.666	0.691	3.773	-3.645	1.654	-1.598
117	0.627	0.651	0.675	3.797	-3.667	1.673	-1.616
118	0.612	0.636	0.660	3.820	-3.689	1.692	-1.634
119	0.598	0.621	0.645	3.844	-3.711	1.711	-1.652

120	0.585	0.607	0.631	3.868	-3.733	1.730	-1.670
121	0.572	0.594	0.617	3.891	-3.755	1.749	-1.688
122	0.559	0.581	0.604	3.914	-3.777	1.768	-1.706
123	0.546	0.568	0.590	3.937	-3.798	1.788	-1.724
124	0.534	0.556	0.578	3.960	-3.819	1.807	-1.743
125	0.523	0.544	0.565	3.983	-3.840	1.827	-1.761



附表 2

阻值误差曲线图


10
电阻误差%
5
4.4
3.7
3.2
2.7
2.2
1.6
1.3
1
1.4
1.7
2
2.4
2.7
2.9
3.2
3.5
3.7
-55 -45 -35 -25 -15 -5 5 15 25 35 45 55 65 75 85 95 105 115 125 温度
-4.3
-3.7
-3.2
-2.7
-2.3
-1.8
-1.4
-1
-1.4
-1.8
-2.1
-2.4
-2.7
-3
-3.2
-3.5
-3.7
2
温度误差
1
0.75
0.71
0.68
0.61
0.55
0.49
0.42
0.34
0.26
0.4
0.53
0.66
0.81
0.96
1.1
1.2
1.4
1.6
-55 -45 -35 -25 -15 -5 5 15 25 35 45 55 65 75 85 95 105 115 125 温度
-0.72
-0.69
-0.65
-0.6
-0.55
-0.49
-0.42
-0.35
-0.27
-0.4
-0.53
-0.66
-0.8
-0.95
-1.1
-1.3
-1.5
-1.6
-1