



# 深圳市晶创和立科技有限公司

## MF52 珠状测温型 NTC 热敏电阻器

型号：MF52B 104F3950

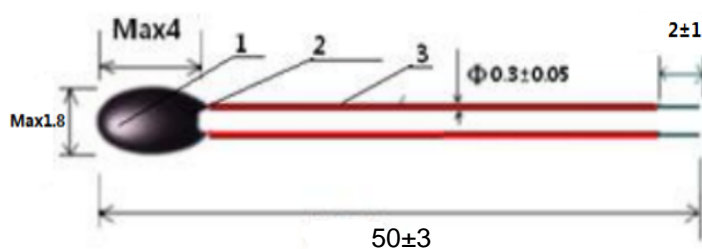
### 1.电气性能

	项目	符号	测试条件	单位	性能要求
1.1	25℃的零功率电阻值	$R_{25^{\circ}\text{C}}$	$T_a=25\pm0.05^{\circ}\text{C}$ 测试功率 $\leq 0.1\text{mw}$	$\text{K}\Omega$	$100\text{K}\Omega \pm 1\%$
1.2	B 值	$B_{25/50}$	$B=[(T_a \times T_b)/(T_b - T_a)] \times \ln(R_a/R_b)$ $T_b=50^{\circ}\text{C} \pm 0.05^{\circ}\text{C}$	K	$3950 \pm 1\%$
1.3	耗散系数	$\delta$	静止空气中	$\text{mW}/^{\circ}\text{C}$	$\geq 2$
1.4	时间常数	$\tau$	静止空气中	sec	$\leq 7$
1.5	绝缘电阻	/	100V/DC 1min	$\text{M}\Omega$	$\geq 100$
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	$P_{\text{max}}$	/	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： $10\pm 1$ 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 $5\pm 1$ 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： $-55^{\circ}\text{C}$ 时间：1000 小时	$R_{25} \Delta R/R \leq \pm 2\%$

### 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	封装类树脂	1	黑色
3	导线	$\phi 0.3$ 红色漆包线	2	红色

### 6.产品型号说明

MF52 B 104 F 3950

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

③ 104：25℃的零功率电阻值 100K $\Omega$

④ F：阻值精度代码 F- $\pm 1\%$  G- $\pm 2\%$  H- $\pm 3\%$  J- $\pm 5\%$

⑤ 3950：B<sub>25/50</sub> 值 3950K

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# 深圳市晶创和立科技有限公司

## 阻温特性表

R25=100K  $\Omega$  精度:  $\pm 1\%$  B25/50=3950K B25/85=4035K 精度:  $\pm 1\%$  (P209-15A)

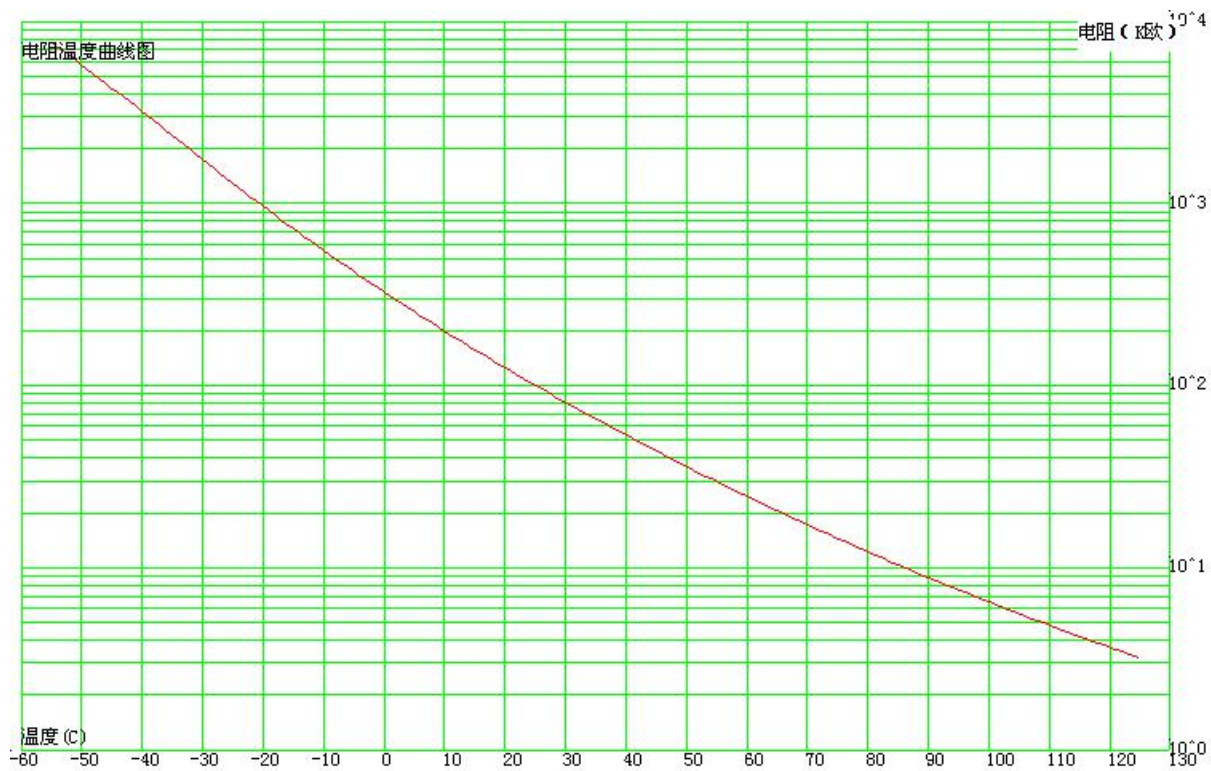
温度( $^{\circ}\text{C}$ )	电阻(K $\Omega$ )			电阻精度(%)		温度精度( $^{\circ}\text{C}$ )	
	最小值	中心值	最大值	$\Delta R$	$-\Delta R$	$\Delta T$	$-\Delta T$
-55	7235.650	7632.540	8050.400	5.474	-5.199	0.739	-0.702
-54	6852.580	7224.490	7615.820	5.416	-5.147	0.734	-0.698
-53	6484.670	6832.800	7198.900	5.357	-5.094	0.730	-0.694
-52	6132.110	6457.670	6799.830	5.298	-5.041	0.726	-0.690
-51	5794.980	6099.150	6418.640	5.238	-4.987	0.721	-0.686
-50	5473.190	5757.150	6055.230	5.177	-4.932	0.717	-0.683
-49	5166.590	5431.480	5709.380	5.116	-4.876	0.712	-0.679
-48	4874.930	5121.850	5380.750	5.054	-4.821	0.707	-0.675
-47	4597.870	4827.910	5068.950	4.992	-4.764	0.703	-0.671
-46	4335.040	4549.230	4773.520	4.930	-4.708	0.698	-0.667
-45	4086.010	4285.330	4493.920	4.867	-4.651	0.693	-0.663
-44	3850.310	4035.700	4229.610	4.804	-4.593	0.689	-0.658
-43	3627.440	3799.820	3979.990	4.741	-4.536	0.684	-0.654
-42	3416.900	3577.120	3744.460	4.678	-4.478	0.679	-0.650
-41	3218.180	3367.030	3522.420	4.614	-4.420	0.674	-0.646
-40	3030.730	3169.000	3313.230	4.551	-4.362	0.669	-0.641
-39	2854.040	2982.440	3116.290	4.488	-4.304	0.664	-0.637
-38	2687.590	2806.790	2930.990	4.424	-4.246	0.659	-0.632
-37	2530.870	2641.510	2756.720	4.361	-4.188	0.654	-0.628
-36	2383.370	2486.060	2592.910	4.298	-4.130	0.649	-0.623
-35	2244.600	2339.890	2438.990	4.234	-4.072	0.643	-0.619
-34	2114.100	2202.510	2294.400	4.171	-4.014	0.638	-0.614
-33	1991.400	2073.430	2158.630	4.109	-3.956	0.633	-0.609
-32	1876.070	1952.170	2031.160	4.046	-3.898	0.627	-0.604
-31	1767.680	1838.280	1911.520	3.983	-3.840	0.622	-0.599
-30	1665.840	1731.330	1799.230	3.921	-3.783	0.616	-0.595
-29	1570.150	1630.910	1693.860	3.859	-3.725	0.611	-0.590
-28	1480.260	1536.630	1594.990	3.797	-3.668	0.605	-0.585
-27	1395.820	1448.120	1502.220	3.735	-3.611	0.600	-0.580
-26	1316.500	1365.010	1415.170	3.674	-3.554	0.594	-0.574
-25	1241.980	1287.000	1333.500	3.613	-3.497	0.588	-0.569
-24	1171.980	1213.740	1256.870	3.552	-3.440	0.582	-0.564
-23	1106.210	1144.970	1184.950	3.492	-3.384	0.576	-0.559
-22	1044.420	1080.380	1117.460	3.432	-3.328	0.571	-0.553
-21	986.360	1019.730	1054.120	3.372	-3.272	0.565	-0.548
-20	931.789	962.759	994.658	3.313	-3.216	0.559	-0.542
-19	880.495	909.240	938.829	3.254	-3.161	0.552	-0.537
-18	832.273	858.955	886.403	3.195	-3.106	0.546	-0.531
-17	786.931	811.700	837.164	3.137	-3.051	0.540	-0.525

-16	744.288	767.283	790.909	3.079	-2.996	0.534	-0.520
-15	704.176	725.525	747.447	3.021	-2.942	0.528	-0.514
-14	666.436	686.259	706.601	2.964	-2.888	0.521	-0.508
-13	630.918	649.325	668.203	2.907	-2.834	0.515	-0.502
-12	597.484	614.578	632.098	2.850	-2.781	0.508	-0.496
-11	566.004	581.879	598.140	2.794	-2.728	0.502	-0.490
-10	536.356	551.100	566.192	2.738	-2.675	0.495	-0.484
-9	508.425	522.118	536.128	2.683	-2.622	0.489	-0.478
-8	482.104	494.823	507.827	2.628	-2.570	0.482	-0.471
-7	457.294	469.108	481.180	2.573	-2.518	0.475	-0.465
-6	433.901	444.875	456.081	2.518	-2.466	0.468	-0.459
-5	411.838	422.032	432.434	2.464	-2.415	0.461	-0.452
-4	391.023	400.491	410.148	2.411	-2.364	0.454	-0.446
-3	371.379	380.173	389.137	2.357	-2.313	0.447	-0.439
-2	352.834	361.003	369.324	2.304	-2.262	0.440	-0.432
-1	335.323	342.909	350.633	2.252	-2.212	0.433	-0.426
0	319.490	326.560	333.752	2.202	-2.164	0.426	-0.418
1	303.150	309.694	316.346	2.148	-2.112	0.419	-0.412
2	288.376	294.452	300.626	2.096	-2.063	0.412	-0.405
3	274.407	280.048	285.777	2.045	-2.014	0.404	-0.398
4	261.195	266.432	271.746	1.994	-1.965	0.397	-0.391
5	248.695	253.556	258.485	1.944	-1.916	0.389	-0.384
6	236.865	241.376	245.947	1.893	-1.868	0.382	-0.377
7	225.666	229.850	234.089	1.844	-1.820	0.374	-0.369
8	215.060	218.941	222.870	1.794	-1.772	0.367	-0.362
9	205.012	208.611	212.252	1.745	-1.725	0.359	-0.355
10	195.581	198.920	202.295	1.697	-1.678	0.351	-0.347
11	186.466	189.558	192.682	1.647	-1.631	0.343	-0.340
12	177.908	180.773	183.665	1.599	-1.584	0.335	-0.332
13	169.791	172.444	175.120	1.551	-1.537	0.327	-0.325
14	162.090	164.545	167.020	1.504	-1.491	0.319	-0.317
15	154.781	157.052	159.340	1.456	-1.445	0.311	-0.309
16	147.842	149.941	152.055	1.409	-1.400	0.303	-0.301
17	141.252	143.192	145.144	1.363	-1.354	0.295	-0.293
18	134.991	136.783	138.584	1.316	-1.309	0.287	-0.285
19	129.043	130.696	132.356	1.270	-1.264	0.279	-0.277
20	123.388	124.912	126.442	1.224	-1.219	0.270	-0.269
21	118.012	119.416	120.824	1.179	-1.175	0.262	-0.261
22	112.899	114.191	115.486	1.134	-1.131	0.253	-0.253
23	108.035	109.222	110.412	1.089	-1.087	0.245	-0.244
24	103.406	104.496	105.588	1.044	-1.043	0.236	-0.236
25	99.000	100.000	101.000	1.000	-1.000	0.228	-0.228
26	94.721	95.720	96.719	1.044	-1.043	0.239	-0.239
27	90.650	91.645	92.643	1.088	-1.086	0.251	-0.250
28	86.774	87.765	88.759	1.131	-1.129	0.262	-0.262

29	83.085	84.070	85.058	1.175	-1.171	0.274	-0.273
30	79.571	80.549	81.530	1.218	-1.213	0.286	-0.285
31	76.223	77.193	78.167	1.261	-1.255	0.298	-0.296
32	73.033	73.994	74.959	1.304	-1.297	0.310	-0.308
33	69.993	70.943	71.899	1.347	-1.339	0.322	-0.320
34	67.094	68.034	68.979	1.389	-1.380	0.334	-0.332
35	64.330	65.258	66.193	1.432	-1.421	0.346	-0.344
36	61.694	62.609	63.532	1.474	-1.462	0.359	-0.356
37	59.178	60.081	60.992	1.515	-1.503	0.371	-0.368
38	56.777	57.667	58.565	1.557	-1.543	0.383	-0.380
39	54.485	55.362	56.247	1.598	-1.583	0.396	-0.392
40	52.297	53.160	54.032	1.640	-1.623	0.408	-0.404
41	50.207	51.057	51.915	1.681	-1.663	0.421	-0.417
42	48.211	49.046	49.891	1.722	-1.702	0.434	-0.429
43	46.304	47.125	47.955	1.762	-1.742	0.447	-0.441
44	44.481	45.287	46.104	1.803	-1.781	0.460	-0.454
45	42.738	43.531	44.333	1.843	-1.819	0.473	-0.467
46	41.072	41.850	42.638	1.883	-1.858	0.486	-0.479
47	39.479	40.242	41.016	1.923	-1.897	0.499	-0.492
48	37.955	38.704	39.464	1.963	-1.935	0.512	-0.505
49	36.497	37.231	37.977	2.002	-1.973	0.525	-0.517
50	35.030	35.750	36.480	2.044	-2.013	0.538	-0.530
51	33.766	34.472	35.189	2.081	-2.048	0.552	-0.543
52	32.487	33.179	33.883	2.120	-2.086	0.565	-0.556
53	31.263	31.941	32.630	2.159	-2.123	0.579	-0.569
54	30.090	30.754	31.430	2.197	-2.160	0.593	-0.583
55	28.967	29.617	30.280	2.236	-2.197	0.606	-0.596
56	27.890	28.528	29.177	2.274	-2.233	0.620	-0.609
57	26.859	27.483	28.119	2.312	-2.270	0.634	-0.622
58	25.870	26.481	27.104	2.350	-2.306	0.648	-0.636
59	24.923	25.521	26.130	2.388	-2.342	0.662	-0.649
60	24.014	24.599	25.196	2.426	-2.378	0.676	-0.663
61	23.142	23.715	24.299	2.463	-2.414	0.690	-0.676
62	22.307	22.867	23.439	2.501	-2.449	0.705	-0.690
63	21.505	22.053	22.612	2.538	-2.485	0.719	-0.704
64	20.735	21.271	21.819	2.575	-2.520	0.733	-0.718
65	19.996	20.521	21.057	2.612	-2.555	0.748	-0.732
66	19.288	19.800	20.325	2.648	-2.590	0.762	-0.745
67	18.607	19.109	19.622	2.685	-2.624	0.777	-0.759
68	17.953	18.444	18.946	2.721	-2.659	0.792	-0.774
69	17.326	17.805	18.296	2.758	-2.693	0.807	-0.788
70	16.723	17.192	17.672	2.794	-2.727	0.821	-0.802
71	16.144	16.602	17.072	2.829	-2.761	0.836	-0.816
72	15.587	16.035	16.495	2.865	-2.795	0.851	-0.831
73	15.052	15.491	15.940	2.901	-2.829	0.866	-0.845

74	14.538	14.967	15.406	2.936	-2.862	0.882	-0.859
75	14.044	14.463	14.893	2.971	-2.895	0.897	-0.874
76	13.569	13.978	14.399	3.006	-2.928	0.912	-0.889
77	13.112	13.512	13.923	3.041	-2.961	0.928	-0.903
78	12.673	13.064	13.466	3.076	-2.994	0.943	-0.918
79	12.250	12.632	13.025	3.111	-3.027	0.959	-0.933
80	11.843	12.217	12.601	3.145	-3.059	0.974	-0.948
81	11.452	11.817	12.193	3.180	-3.091	0.990	-0.963
82	11.075	11.432	11.800	3.214	-3.123	1.006	-0.978
83	10.713	11.062	11.421	3.248	-3.155	1.022	-0.993
84	10.364	10.705	11.057	3.282	-3.187	1.038	-1.008
85	10.028	10.362	10.705	3.315	-3.219	1.054	-1.023
86	9.704	10.030	10.366	3.349	-3.250	1.070	-1.038
87	9.393	9.712	10.040	3.382	-3.281	1.086	-1.054
88	9.093	9.404	9.726	3.416	-3.312	1.102	-1.069
89	8.804	9.108	9.422	3.449	-3.343	1.119	-1.084
90	8.525	8.823	9.130	3.482	-3.374	1.135	-1.100
91	8.257	8.548	8.848	3.514	-3.405	1.152	-1.116
92	7.998	8.283	8.576	3.547	-3.435	1.168	-1.131
93	7.749	8.027	8.314	3.579	-3.465	1.185	-1.147
94	7.508	7.780	8.061	3.612	-3.495	1.201	-1.163
95	7.277	7.543	7.817	3.644	-3.525	1.218	-1.179
96	7.053	7.313	7.582	3.676	-3.555	1.235	-1.195
97	6.838	7.092	7.355	3.708	-3.585	1.252	-1.211
98	6.630	6.878	7.136	3.739	-3.614	1.269	-1.227
99	6.429	6.672	6.924	3.771	-3.644	1.286	-1.243
100	6.236	6.474	6.720	3.802	-3.673	1.304	-1.259
101	6.049	6.282	6.522	3.834	-3.702	1.321	-1.275
102	5.869	6.096	6.332	3.865	-3.731	1.338	-1.292
103	5.695	5.917	6.148	3.896	-3.759	1.356	-1.308
104	5.527	5.745	5.970	3.926	-3.788	1.373	-1.325
105	5.365	5.578	5.799	3.957	-3.816	1.391	-1.341
106	5.209	5.417	5.633	3.988	-3.844	1.408	-1.358
107	5.057	5.261	5.473	4.018	-3.872	1.426	-1.375
108	4.911	5.111	5.318	4.048	-3.900	1.444	-1.391
109	4.770	4.966	5.168	4.078	-3.928	1.462	-1.408
110	4.634	4.825	5.023	4.108	-3.955	1.480	-1.425
111	4.503	4.689	4.884	4.138	-3.983	1.498	-1.442
112	4.376	4.558	4.748	4.167	-4.010	1.516	-1.459
113	4.253	4.432	4.618	4.197	-4.037	1.534	-1.476
114	4.134	4.309	4.491	4.226	-4.064	1.553	-1.493
115	4.019	4.191	4.369	4.255	-4.091	1.571	-1.511
116	3.908	4.076	4.251	4.284	-4.117	1.590	-1.528
117	3.801	3.965	4.136	4.312	-4.144	1.608	-1.545
118	3.697	3.858	4.025	4.341	-4.170	1.627	-1.563

119	3.597	3.754	3.918	4.369	-4.196	1.646	-1.580
120	3.499	3.654	3.815	4.398	-4.222	1.664	-1.598
121	3.406	3.557	3.714	4.426	-4.248	1.683	-1.616
122	3.315	3.463	3.617	4.454	-4.273	1.702	-1.633
123	3.227	3.372	3.523	4.482	-4.299	1.721	-1.651
124	3.142	3.284	3.432	4.509	-4.324	1.740	-1.669
125	3.059	3.199	3.344	4.537	-4.349	1.760	-1.687



附表 2

阻值误差曲线图

