



南京时恒电子科技有限公司

规格承认书

APPROVAL SHEET

客户名称:

CUSTOMER _____

产品名称:

PART NAME MF52 珠状测温型 NTC 热敏电阻器

产品规格:

PART NUMBER MF52 A 104 H 3950 (A1) (UL:E240991)

日期:

DATE 2017 年 07 月 20 日

确 认

CONFIRM

客户

品保部:

制造部:

工程部:

供货商/制造商

规格书制作: 鞠晓丽

技术部审核:

品质部审核:

生产部审核:

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南京时恒电子科技有限公司

MF52 珠状测温型 NTC 热敏电阻器

型号: MF52A 104H3950 (A1)

本规格书提供了南京时恒电子科技有限公司生产的 MF52A 系列 NTC 热敏电阻的结构尺寸、产品性能、试验条件、使用要求的描述, 敬请贵司确认。
对本规格书产生疑问时, 请速与我们联系 (025-52121868), 若无疑义请确认回传, 若无回传, 我司将视为默认。
贵公司改变使用用途, 作用方法时, 请与我们联系。

客户名称:

客户
确认

确认:
审核:

时间:
时间:

1. 电气性能

项目	符号	测试条件	单位	性能要求
1.1	$R_{25^{\circ}\text{C}}$	$T_a=25\pm 0.05^{\circ}\text{C}$ 测试功率 $\leq 0.1\text{mW}$	K Ω	$100\text{K}\Omega \pm 3\%$
1.2	B 值	$B=[(T_a \times T_b)/(T_b - T_a)] \times \ln(R_a/R_b)$ $T_b=50^{\circ}\text{C} \pm 0.01^{\circ}\text{C}$	K	$3950 \pm 1\%$
1.3	耗散系数	静止空气中	mW/ $^{\circ}\text{C}$	≥ 2
1.4	时间常数	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	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: $5 \pm 1\text{N}$, 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	$R_{25} \Delta R/R \leq \pm 2\%$

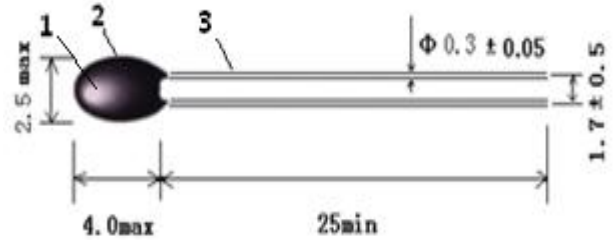
3. 使用注意事项

- 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°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。

4. 认证

- 4.1 质量管理体系认证 ISO9001:2008 (01115Q20270R5M)
ISO/TS16949: 2009 (0192416)
- 4.2 环境管理体系认证 ISO14001:2004 (01113E20060R2M)
- 4.3 环保检测报告 ROHS
- 4.4 产品 CQC 认证 (CQC07001019009)
- 4.5 江苏省高新技术产品认证 (120115G0179N)
- 4.6 UL 1434 认证 (File # E240991)

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	镀锡铜包钢线	2	银色

6. 产品型号说明

MF52 A 104 H 3950 A1

① ② ③ ④ ⑤ ⑥

- ① MF52: 珠状精密性 NTC 热敏电阻
- ② A1: 引线为镀锡铜包钢线
- ③ 104: 25°C 的零功率电阻值 $100\text{K}\Omega$
- ④ H: 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

电话: 025-52121868
传真: 025-52122373
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附表 1

南京时恒阻温特性表

R25=100K Ω 精度:±3% B25/50=3950K B25/85=4035K 精度:±1%(P209-15A)

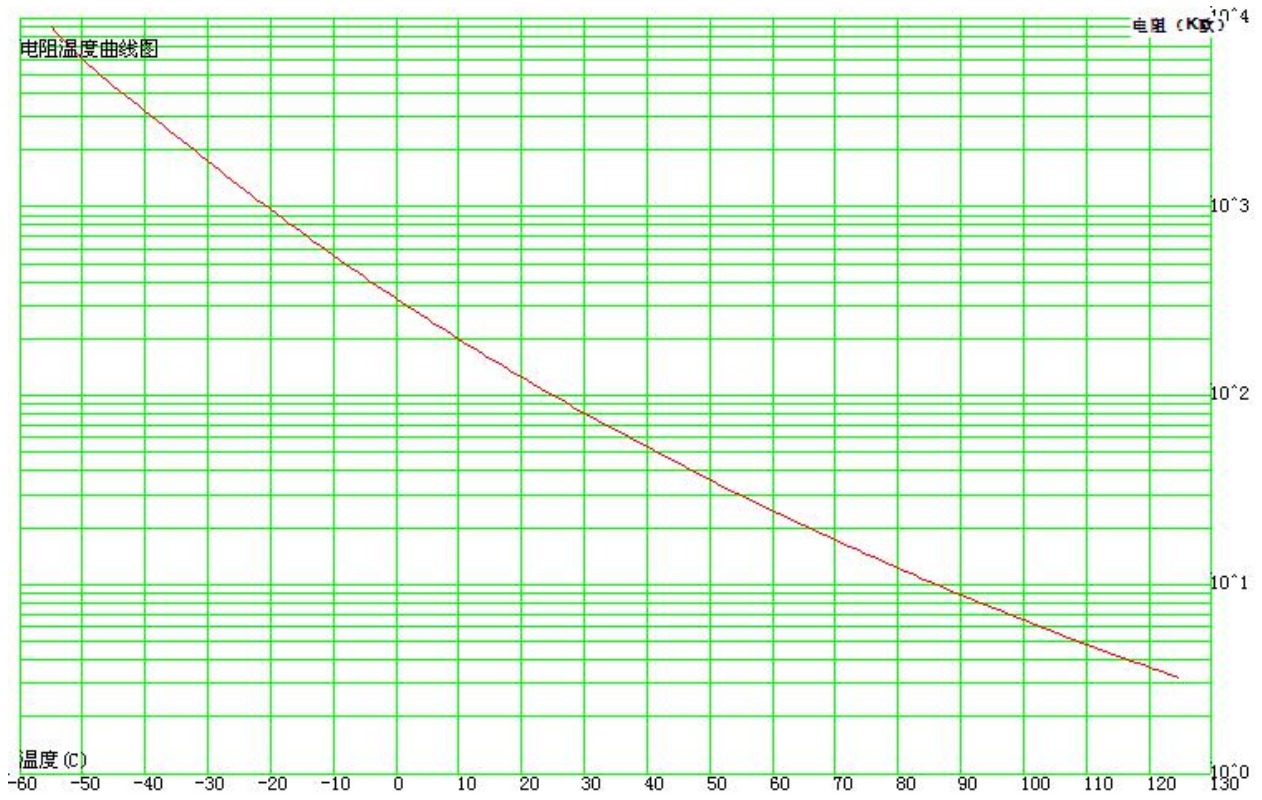
温度(°C)	电阻(K Ω)			电阻精度(%)		温度精度(°C)	
	最小值	中心值	最大值	ΔR	$-\Delta R$	ΔT	$-\Delta T$
-55	8335.770	8989.000	9684.680	7.739	-7.266	1.007	-0.945
-54	7650.320	8242.680	8872.920	7.646	-7.186	1.006	-0.945
-53	7053.080	7592.960	8166.810	7.557	-7.110	1.005	-0.945
-52	6527.250	7021.380	7546.130	7.473	-7.037	1.003	-0.945
-51	6059.890	6513.750	6995.310	7.392	-6.967	1.002	-0.944
-50	5640.960	6059.060	6502.290	7.315	-6.900	1.000	-0.943
-49	5262.580	5648.680	6057.640	7.239	-6.835	0.998	-0.942
-48	4918.550	5275.800	5653.900	7.166	-6.771	0.996	-0.941
-47	4603.920	4935.020	5285.170	7.095	-6.709	0.993	-0.939
-46	4314.720	4621.990	4946.690	7.025	-6.648	0.991	-0.938
-45	4047.750	4333.220	4634.640	6.956	-6.587	0.988	-0.936
-44	3800.410	4065.840	4345.890	6.887	-6.528	0.985	-0.934
-43	3570.550	3817.520	4077.900	6.820	-6.469	0.982	-0.932
-42	3356.400	3586.310	3828.530	6.753	-6.410	0.980	-0.930
-41	3156.470	3370.600	3596.010	6.687	-6.352	0.977	-0.928
-40	2969.500	3169.000	3378.840	6.621	-6.295	0.973	-0.925
-39	2794.440	2980.330	3175.740	6.556	-6.237	0.970	-0.923
-38	2630.330	2803.600	2985.590	6.491	-6.180	0.967	-0.921
-37	2476.390	2637.910	2807.430	6.426	-6.123	0.964	-0.918
-36	2331.880	2482.470	2640.400	6.361	-6.065	0.961	-0.916
-35	2196.180	2336.580	2483.730	6.297	-6.009	0.957	-0.913
-34	2068.700	2199.620	2336.730	6.233	-5.952	0.954	-0.911
-33	1948.920	2071.020	2198.780	6.169	-5.895	0.951	-0.908
-32	1836.360	1950.230	2069.300	6.105	-5.839	0.947	-0.906
-31	1730.570	1836.790	1947.770	6.041	-5.782	0.944	-0.903
-30	1631.150	1730.230	1833.680	5.978	-5.726	0.940	-0.900
-29	1537.710	1630.150	1726.580	5.915	-5.670	0.937	-0.898
-28	1449.900	1536.140	1626.040	5.852	-5.614	0.933	-0.895
-27	1367.360	1447.840	1531.660	5.789	-5.558	0.930	-0.892
-26	1289.790	1364.900	1443.070	5.727	-5.502	0.926	-0.890
-25	1216.890	1287.000	1359.910	5.665	-5.446	0.922	-0.887
-24	1148.380	1213.820	1281.840	5.603	-5.391	0.919	-0.884
-23	1083.990	1145.090	1208.560	5.542	-5.336	0.915	-0.881
-22	1023.470	1080.530	1139.760	5.480	-5.281	0.911	-0.878
-21	966.583	1019.890	1075.160	5.419	-5.226	0.907	-0.875
-20	913.109	962.912	1014.510	5.359	-5.172	0.904	-0.872
-19	862.838	909.379	957.568	5.299	-5.117	0.900	-0.869
-18	815.572	859.074	904.083	5.239	-5.063	0.896	-0.866
-17	771.125	811.797	853.846	5.179	-5.010	0.892	-0.863

-16	729.324	767.359	806.651	5.120	-4.956	0.888	-0.860
-15	690.003	725.581	762.307	5.061	-4.903	0.884	-0.856
-14	653.008	686.296	720.633	5.003	-4.850	0.880	-0.853
-13	618.194	649.348	681.459	4.945	-4.797	0.876	-0.850
-12	585.425	614.590	644.627	4.887	-4.745	0.872	-0.846
-11	554.574	581.883	609.988	4.830	-4.693	0.868	-0.843
-10	525.520	551.100	577.404	4.773	-4.641	0.863	-0.840
-9	498.152	522.117	546.743	4.716	-4.589	0.859	-0.836
-8	472.365	494.824	517.884	4.660	-4.538	0.855	-0.833
-7	448.060	469.113	490.713	4.604	-4.487	0.850	-0.829
-6	425.146	444.886	465.124	4.548	-4.437	0.846	-0.825
-5	403.535	422.050	441.016	4.493	-4.386	0.842	-0.821
-4	383.149	400.518	418.297	4.439	-4.336	0.837	-0.818
-3	363.910	380.209	396.880	4.384	-4.286	0.832	-0.814
-2	345.749	361.048	376.684	4.330	-4.237	0.828	-0.810
-1	328.599	342.963	357.633	4.277	-4.188	0.823	-0.806
0	313.036	326.560	340.361	4.226	-4.141	0.817	-0.801
1	297.093	309.764	322.684	4.171	-4.090	0.814	-0.798
2	282.624	294.529	306.660	4.118	-4.042	0.809	-0.794
3	268.943	280.131	291.523	4.066	-3.994	0.804	-0.790
4	256.002	266.520	277.220	4.014	-3.946	0.799	-0.785
5	243.759	253.647	263.700	3.963	-3.898	0.794	-0.781
6	232.170	241.470	250.916	3.912	-3.851	0.789	-0.777
7	221.198	229.946	238.824	3.861	-3.804	0.784	-0.772
8	210.806	219.036	227.383	3.810	-3.757	0.779	-0.768
9	200.960	208.706	216.554	3.760	-3.711	0.773	-0.763
10	191.629	198.920	206.301	3.710	-3.664	0.768	-0.759
11	182.784	189.647	196.590	3.661	-3.618	0.763	-0.754
12	174.395	180.857	187.390	3.612	-3.573	0.757	-0.749
13	166.437	172.523	178.670	3.563	-3.527	0.752	-0.744
14	158.885	164.618	170.404	3.514	-3.482	0.747	-0.740
15	151.718	157.118	162.565	3.466	-3.437	0.741	-0.735
16	144.912	150.000	155.128	3.418	-3.392	0.735	-0.730
17	138.448	143.243	148.072	3.370	-3.347	0.730	-0.725
18	132.306	136.827	141.374	3.323	-3.303	0.724	-0.720
19	126.470	130.731	135.015	3.276	-3.259	0.718	-0.715
20	120.922	124.940	128.975	3.229	-3.215	0.713	-0.709
21	115.646	119.435	123.237	3.183	-3.172	0.707	-0.704
22	110.629	114.202	117.784	3.136	-3.128	0.701	-0.699
23	105.855	109.225	112.601	3.090	-3.085	0.695	-0.694
24	101.311	104.491	107.673	3.045	-3.042	0.690	-0.690
25	97.000	100.000	103.000	3.000	-3.000	0.685	-0.685
26	92.787	95.699	98.613	3.045	-3.042	0.695	-0.694
27	88.791	91.617	94.448	3.090	-3.084	0.710	-0.709
28	84.987	87.731	90.481	3.134	-3.126	0.725	-0.723

29	81.366	84.028	86.700	3.179	-3.168	0.740	-0.738
30	77.917	80.501	83.096	3.223	-3.210	0.755	-0.752
31	74.632	77.140	79.661	3.267	-3.251	0.770	-0.766
32	71.502	73.936	76.384	3.311	-3.292	0.785	-0.781
33	68.518	70.881	73.259	3.355	-3.333	0.800	-0.795
34	65.674	67.968	70.277	3.398	-3.373	0.816	-0.810
35	62.963	65.188	67.432	3.441	-3.414	0.831	-0.824
36	60.376	62.537	64.716	3.484	-3.454	0.846	-0.839
37	57.909	60.006	62.122	3.527	-3.494	0.862	-0.854
38	55.555	57.590	59.646	3.569	-3.533	0.877	-0.868
39	53.308	55.283	57.280	3.612	-3.573	0.893	-0.883
40	51.163	53.080	55.020	3.654	-3.612	0.909	-0.898
41	49.114	50.976	52.860	3.696	-3.651	0.924	-0.913
42	47.158	48.965	50.796	3.738	-3.690	0.940	-0.928
43	45.289	47.044	48.822	3.779	-3.728	0.956	-0.943
44	43.504	45.207	46.934	3.820	-3.767	0.972	-0.958
45	41.797	43.451	45.129	3.862	-3.805	0.988	-0.974
46	40.166	41.771	43.402	3.903	-3.843	1.005	-0.989
47	38.606	40.165	41.749	3.943	-3.880	1.021	-1.005
48	37.114	38.628	40.167	3.984	-3.918	1.037	-1.020
49	35.687	37.157	38.653	4.024	-3.955	1.054	-1.036
50	34.322	35.750	37.203	4.064	-3.992	1.070	-1.051
51	33.016	34.402	35.814	4.104	-4.029	1.087	-1.067
52	31.765	33.112	34.484	4.144	-4.066	1.104	-1.083
53	30.568	31.876	33.210	4.184	-4.102	1.121	-1.099
54	29.422	30.692	31.988	4.223	-4.138	1.137	-1.115
55	28.324	29.558	30.818	4.263	-4.175	1.154	-1.131
56	27.272	28.471	29.696	4.302	-4.210	1.171	-1.147
57	26.264	27.429	28.620	4.341	-4.246	1.189	-1.163
58	25.298	26.430	27.588	4.379	-4.282	1.206	-1.179
59	24.372	25.472	26.598	4.418	-4.317	1.223	-1.195
60	23.485	24.554	25.648	4.456	-4.352	1.241	-1.212
61	22.634	23.672	24.736	4.494	-4.387	1.258	-1.228
62	21.817	22.827	23.862	4.532	-4.422	1.276	-1.245
63	21.034	22.016	23.022	4.570	-4.456	1.293	-1.261
64	20.283	21.237	22.216	4.608	-4.491	1.311	-1.278
65	19.562	20.489	21.441	4.645	-4.525	1.329	-1.295
66	18.870	19.771	20.697	4.683	-4.559	1.347	-1.311
67	18.205	19.082	19.983	4.720	-4.593	1.365	-1.328
68	17.567	18.420	19.296	4.757	-4.627	1.383	-1.345
69	16.955	17.784	18.636	4.794	-4.660	1.401	-1.362
70	16.366	17.172	18.002	4.830	-4.694	1.420	-1.379
71	15.801	16.585	17.392	4.867	-4.727	1.438	-1.397
72	15.257	16.020	16.806	4.903	-4.760	1.456	-1.414
73	14.735	15.477	16.242	4.939	-4.793	1.475	-1.431

74	14.233	14.955	15.699	4.975	-4.825	1.494	-1.448
75	13.751	14.453	15.177	5.011	-4.858	1.512	-1.466
76	13.287	13.970	14.675	5.047	-4.890	1.531	-1.483
77	12.840	13.505	14.192	5.082	-4.922	1.550	-1.501
78	12.411	13.058	13.726	5.118	-4.954	1.569	-1.519
79	11.998	12.628	13.278	5.153	-4.986	1.588	-1.536
80	11.600	12.213	12.847	5.188	-5.018	1.607	-1.554
81	11.218	11.815	12.432	5.223	-5.049	1.626	-1.572
82	10.850	11.431	12.032	5.258	-5.081	1.646	-1.590
83	10.495	11.061	11.646	5.292	-5.112	1.665	-1.608
84	10.154	10.705	11.275	5.327	-5.143	1.685	-1.626
85	9.825	10.362	10.917	5.361	-5.174	1.704	-1.645
86	9.509	10.031	10.572	5.395	-5.205	1.724	-1.663
87	9.204	9.712	10.240	5.429	-5.235	1.744	-1.681
88	8.910	9.405	9.919	5.463	-5.266	1.763	-1.700
89	8.627	9.110	9.610	5.497	-5.296	1.783	-1.718
90	8.354	8.824	9.312	5.531	-5.326	1.803	-1.737
91	8.091	8.549	9.025	5.564	-5.356	1.823	-1.755
92	7.838	8.284	8.748	5.597	-5.386	1.844	-1.774
93	7.594	8.028	8.480	5.630	-5.415	1.864	-1.793
94	7.358	7.782	8.223	5.663	-5.445	1.884	-1.812
95	7.131	7.544	7.974	5.696	-5.474	1.905	-1.831
96	6.912	7.314	7.733	5.729	-5.503	1.925	-1.850
97	6.700	7.093	7.501	5.761	-5.532	1.946	-1.869
98	6.496	6.879	7.278	5.794	-5.561	1.967	-1.888
99	6.300	6.673	7.061	5.826	-5.590	1.987	-1.907
100	6.110	6.474	6.853	5.858	-5.619	2.008	-1.926
101	5.926	6.281	6.651	5.890	-5.647	2.029	-1.946
102	5.750	6.096	6.457	5.922	-5.675	2.051	-1.965
103	5.579	5.916	6.269	5.953	-5.704	2.072	-1.985
104	5.414	5.743	6.087	5.985	-5.732	2.093	-2.004
105	5.255	5.576	5.912	6.016	-5.759	2.114	-2.024
106	5.102	5.415	5.742	6.047	-5.787	2.136	-2.044
107	4.953	5.259	5.579	6.078	-5.815	2.157	-2.064
108	4.810	5.108	5.421	6.109	-5.842	2.179	-2.084
109	4.672	4.963	5.268	6.140	-5.869	2.201	-2.104
110	4.538	4.822	5.120	6.170	-5.896	2.223	-2.124
111	4.409	4.687	4.977	6.200	-5.923	2.245	-2.144
112	4.284	4.555	4.839	6.231	-5.950	2.267	-2.165
113	4.164	4.428	4.706	6.261	-5.976	2.289	-2.185
114	4.047	4.306	4.577	6.290	-6.003	2.311	-2.205
115	3.935	4.187	4.452	6.320	-6.029	2.333	-2.226
116	3.826	4.073	4.331	6.350	-6.055	2.356	-2.247
117	3.721	3.962	4.215	6.379	-6.081	2.378	-2.267
118	3.619	3.855	4.102	6.408	-6.107	2.401	-2.288

119	3.521	3.751	3.993	6.437	-6.132	2.424	-2.309
120	3.426	3.651	3.888	6.466	-6.158	2.447	-2.330
121	3.335	3.555	3.786	6.494	-6.183	2.470	-2.351
122	3.246	3.461	3.687	6.523	-6.208	2.493	-2.372
123	3.160	3.371	3.591	6.551	-6.233	2.516	-2.394
124	3.078	3.283	3.499	6.579	-6.257	2.539	-2.415
125	2.998	3.199	3.410	6.607	-6.282	2.563	-2.437



南京时恒阻值误差曲线图

