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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

MF55 薄膜 NTC 热敏电阻器

产品规格:

PART NUMBER

MF55 104F3950

日期:

DATE

2019 年 05 月 09 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: 吴迎丽

业务员审核: _____

技术部审核: 程鹏

品质部审核: 李竹媛

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南京时恒电子科技有限公司

MF55 薄膜 NTC 热敏电阻器电阻器

版本 2.0

型号: MF55 104F3950

本规格书提供了南京时恒电子科技有限公司生产的 MF72 系列 NTC 热敏电阻芯片的结构尺寸、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, 请速与我们取得联系 (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:

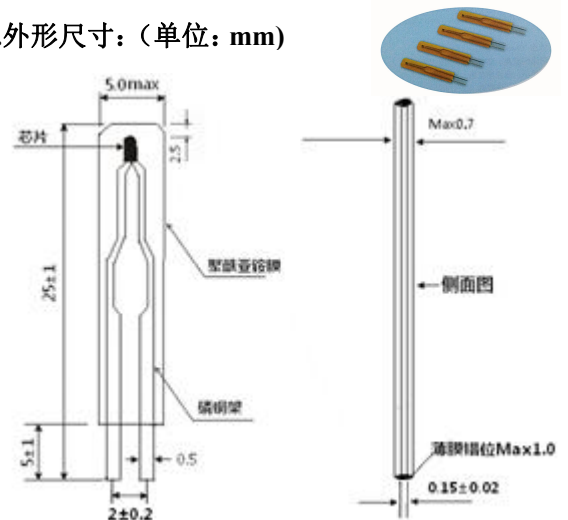
1. 电气性能

项目	符号	测试条件	单位	性能要求
1.1	R_{25}	$T=25\pm 0.01^{\circ}\text{C}$ 测试功率 $\leq 0.1\text{mw}$	$\text{K}\Omega$	$100\text{K}\Omega \pm 1\%$
1.2	$B_{25/50}$	$B = [(T_a \times T_b) / (T_b - T_a)] \times \ln(R_a / R_b)$ $T_a = 25^{\circ}\text{C} \pm 0.01^{\circ}\text{C}$ $T_b = 50^{\circ}\text{C} \pm 0.01^{\circ}\text{C}$	K	$3950 \pm 1\%$
1.3	δ	静止空气中	$\text{mW}/^{\circ}\text{C}$	≥ 0.8
1.4	τ	静止空气中	sec	≤ 5
1.5	/	/	$^{\circ}\text{C}$	$-40 \sim 125$
1.6	P_{max}	/	mW	50
1.7	/	/	/	见附表 1
1.8	/	/	/	见附表 2

2. 可靠性

项目	测试条件及方法	技术要求	
2.1 引线拉力试验	固定住热敏电阻的探头, 用 1 牛顿的力量逐渐地拉引线, 维持 (10 ± 1) s 秒左右	无外观损伤	
2.2 可焊性试验	焊接温度 $(245 \pm 10)^{\circ}\text{C}$, 浸入时间: (3 ± 1) s	着锡面积 $\geq 95\%$	
2.3 耐焊接热试验	焊接温度 $(260 \pm 5)^{\circ}\text{C}$, 浸入时间: (5 ± 1) s	$R_{25} \Delta R/R \leq \pm 2\%$	
2.4 高温存储试验	$125 \pm 5^{\circ}\text{C}$, 1000 ± 24 小时	$R_{25} \Delta R/R \leq \pm 3\%$	
2.5 低温存储试验	$-40 \pm 5^{\circ}\text{C}$, 1000 ± 24 小时	$R_{25} \Delta R/R \leq \pm 3\%$	
2.6 稳态湿热试验	$40 \pm 2^{\circ}\text{C}$, 90-95%RH, 240 小时	$R_{25} \Delta R/R \leq \pm 3\%$	
2.7 温度快速变化试验	温度急变按下表条件循环五个周期		
	步骤	温度 ($^{\circ}\text{C}$)	周期 (分钟)
	1	-40 ± 5	30 ± 3
	2	室温	2 ± 1
	3	125 ± 5	30 ± 3
4	室温	2 ± 1	
		$R_{25} \Delta R/R \leq \pm 3\%$	

4. 外形尺寸: (单位: mm)



5. 产品打印标志说明

104 / 3950

① ②

① 104: 25°C 的零功率电阻值 $100\text{K}\Omega$

② 3950: $B_{25/50}$ 值 3950K

3. 使用注意事项

- 本产品的用途: 温度测量与控制;
- 避免过大的电流引起元件自身发热而产生测量误差;
- 烙铁焊接时, 焊接处距薄膜距离至少 2mm, 焊接温度应低于 360°C , 焊接时间 $< 3\text{ses}$;
- 储存温度: $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$; 储存湿度: $\leq 75\% \text{RH}$;
- 避免存放在具有腐蚀性气体及光照的环境下;
- 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;
- 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 $110^{\circ}\text{C} / 10-12\text{min}$ 进行热缩;

6. 认证

6.1 质量管理体系认证 ISO9001:2015

IATF16949:2016

6.2 环境管理体系认证 ISO14001:2015

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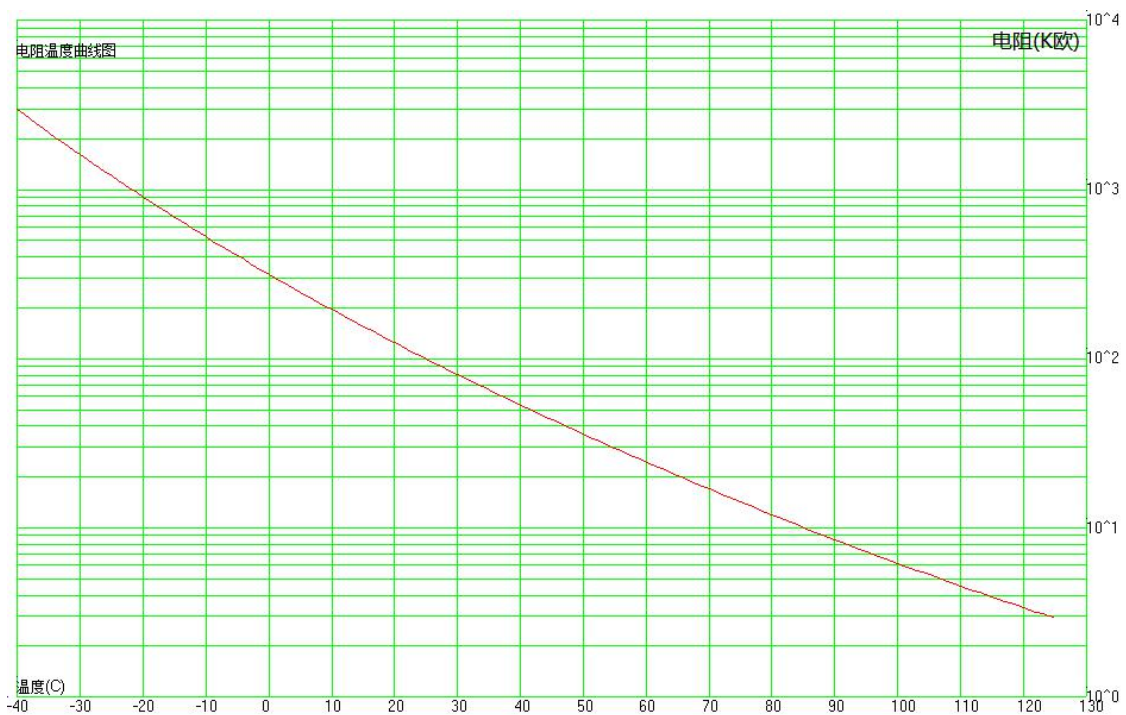
南京时恒电子科技有限公司

R25=100K Ω 精度: $\pm 1\%$ B25/50=3950K 精度: $\pm 1\%$ (P182-6B2)							
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	$-\Delta T$
-40	2843.200	2971.000	3104.220	4.484	-4.301	0.672	-0.644
-39	2668.510	2786.660	2909.750	4.417	-4.239	0.667	-0.640
-38	2506.120	2615.420	2729.220	4.351	-4.179	0.662	-0.636
-37	2354.980	2456.150	2561.410	4.285	-4.118	0.657	-0.631
-36	2214.170	2307.860	2405.260	4.220	-4.059	0.652	-0.627
-35	2082.850	2169.640	2259.810	4.156	-3.999	0.647	-0.622
-34	1960.260	2040.690	2124.200	4.092	-3.941	0.642	-0.618
-33	1845.730	1920.290	1997.660	4.029	-3.882	0.636	-0.613
-32	1738.650	1807.800	1879.500	3.966	-3.824	0.631	-0.609
-31	1638.470	1702.610	1769.080	3.904	-3.766	0.626	-0.604
-30	1544.690	1604.200	1665.840	3.842	-3.709	0.620	-0.599
-29	1456.840	1512.070	1569.240	3.780	-3.652	0.615	-0.594
-28	1374.510	1425.780	1478.820	3.719	-3.596	0.610	-0.589
-27	1297.310	1344.920	1394.130	3.659	-3.539	0.604	-0.584
-26	1224.890	1269.100	1314.780	3.599	-3.483	0.598	-0.579
-25	1156.930	1198.000	1240.400	3.539	-3.428	0.593	-0.574
-24	1093.110	1131.270	1170.640	3.480	-3.372	0.587	-0.569
-23	1033.180	1068.630	1105.190	3.421	-3.317	0.581	-0.564
-22	976.867	1009.810	1043.770	3.362	-3.262	0.575	-0.558
-21	923.934	954.561	986.105	3.304	-3.208	0.569	-0.553
-20	874.161	902.634	931.940	3.246	-3.154	0.563	-0.547
-19	827.346	853.818	881.050	3.189	-3.100	0.557	-0.542
-18	783.296	807.913	833.220	3.132	-3.046	0.551	-0.536
-17	741.836	764.730	788.251	3.075	-2.993	0.545	-0.530
-16	702.800	724.094	745.958	3.019	-2.940	0.539	-0.525
-15	666.035	685.842	706.168	2.963	-2.887	0.533	-0.519
-14	631.398	649.824	668.722	2.908	-2.835	0.526	-0.513
-13	598.755	615.898	633.469	2.852	-2.783	0.520	-0.507
-12	567.981	583.932	600.271	2.798	-2.731	0.513	-0.501
-11	538.961	553.803	568.998	2.743	-2.680	0.507	-0.495
-10	511.585	525.397	539.528	2.689	-2.628	0.500	-0.489
-9	485.753	498.607	511.749	2.635	-2.577	0.494	-0.483
-8	461.370	473.332	485.555	2.582	-2.527	0.487	-0.477
-7	438.347	449.479	460.848	2.529	-2.476	0.480	-0.470
-6	416.601	426.962	437.536	2.476	-2.426	0.473	-0.464
-5	396.055	405.698	415.534	2.424	-2.376	0.467	-0.457
-4	376.637	385.611	394.759	2.372	-2.327	0.460	-0.451
-3	358.279	366.631	375.139	2.320	-2.277	0.453	-0.444
-2	340.918	348.689	356.603	2.269	-2.228	0.446	-0.438
-1	324.493	331.725	339.084	2.218	-2.180	0.439	-0.431
0	308.951	315.680	322.523	2.167	-2.131	0.431	-0.424

1	294.238	300.498	306.861	2.117	-2.083	0.424	-0.417
2	280.306	286.129	292.045	2.067	-2.035	0.417	-0.410
3	267.109	272.526	278.024	2.017	-1.987	0.410	-0.403
4	254.605	259.642	264.753	1.968	-1.940	0.402	-0.396
5	242.753	247.437	252.186	1.919	-1.892	0.395	-0.389
6	231.517	235.871	240.282	1.870	-1.845	0.387	-0.382
7	220.860	224.906	229.004	1.821	-1.799	0.380	-0.375
8	210.750	214.509	218.314	1.773	-1.752	0.372	-0.368
9	201.155	204.647	208.179	1.725	-1.706	0.364	-0.360
10	192.047	195.290	198.567	1.678	-1.660	0.357	-0.353
11	183.398	186.408	189.448	1.630	-1.614	0.349	-0.345
12	175.183	177.976	180.795	1.583	-1.569	0.341	-0.338
13	167.377	169.967	172.580	1.537	-1.523	0.333	-0.330
14	159.959	162.359	164.780	1.490	-1.478	0.325	-0.323
15	152.906	155.130	157.371	1.444	-1.433	0.317	-0.315
16	146.198	148.258	150.331	1.398	-1.389	0.309	-0.307
17	139.818	141.724	143.641	1.352	-1.344	0.302	-0.300
18	133.747	135.509	137.281	1.307	-1.300	0.294	-0.292
19	127.969	129.597	131.233	1.262	-1.256	0.286	-0.284
20	122.467	123.971	125.480	1.217	-1.212	0.278	-0.277
21	117.228	118.615	120.006	1.172	-1.168	0.271	-0.270
22	112.238	113.515	114.796	1.128	-1.125	0.264	-0.263
23	107.483	108.659	109.836	1.083	-1.082	0.259	-0.258
24	102.951	104.032	105.114	1.039	-1.039	0.262	-0.261
25	99.000	100.000	101.000	1.000	-1.000	0.253	-0.253
26	94.422	95.420	96.420	1.047	-1.046	0.224	-0.223
27	90.418	91.414	92.411	1.090	-1.088	0.244	-0.244
28	86.602	87.593	88.586	1.133	-1.131	0.259	-0.258
29	82.963	83.948	84.936	1.176	-1.173	0.272	-0.271
30	79.493	80.471	81.452	1.219	-1.214	0.285	-0.284
31	76.183	77.152	78.126	1.262	-1.256	0.297	-0.296
32	73.025	73.985	74.950	1.304	-1.297	0.310	-0.308
33	70.010	70.961	71.916	1.347	-1.339	0.322	-0.320
34	67.133	68.072	69.018	1.389	-1.380	0.334	-0.332
35	64.386	65.314	66.248	1.431	-1.420	0.347	-0.344
36	61.762	62.678	63.601	1.472	-1.461	0.359	-0.356
37	59.256	60.159	61.070	1.514	-1.501	0.372	-0.368
38	56.861	57.752	58.651	1.556	-1.542	0.384	-0.381
39	54.573	55.450	56.336	1.597	-1.582	0.397	-0.393
40	52.386	53.250	54.122	1.638	-1.621	0.409	-0.405
41	50.295	51.145	52.004	1.679	-1.661	0.422	-0.417
42	48.296	49.132	49.977	1.720	-1.701	0.434	-0.430
43	46.384	47.206	48.037	1.761	-1.740	0.447	-0.442
44	44.555	45.362	46.180	1.801	-1.779	0.460	-0.454
45	42.805	43.598	44.401	1.841	-1.818	0.473	-0.467
46	41.131	41.909	42.698	1.882	-1.857	0.486	-0.480
47	39.528	40.292	41.067	1.922	-1.895	0.499	-0.492
48	37.994	38.744	39.504	1.962	-1.934	0.512	-0.505

49	36.525	37.260	38.006	2.002	-1.972	0.525	-0.518
50	35.119	35.840	36.571	2.041	-2.010	0.539	-0.530
51	33.772	34.478	35.196	2.081	-2.048	0.552	-0.543
52	32.481	33.174	33.877	2.120	-2.086	0.565	-0.556
53	31.245	31.923	32.613	2.159	-2.123	0.579	-0.569
54	30.060	30.725	31.400	2.198	-2.161	0.592	-0.582
55	28.925	29.575	30.237	2.237	-2.198	0.606	-0.595
56	27.837	28.473	29.122	2.276	-2.235	0.620	-0.609
57	26.793	27.417	28.051	2.315	-2.272	0.634	-0.622
58	25.793	26.403	27.024	2.353	-2.309	0.647	-0.635
59	24.834	25.430	26.039	2.392	-2.346	0.661	-0.649
60	23.914	24.497	25.093	2.430	-2.382	0.675	-0.662
61	23.031	23.602	24.185	2.468	-2.419	0.689	-0.676
62	22.184	22.742	23.313	2.506	-2.455	0.704	-0.689
63	21.371	21.917	22.475	2.544	-2.491	0.718	-0.703
64	20.592	21.126	21.671	2.582	-2.527	0.732	-0.716
65	19.843	20.365	20.899	2.620	-2.562	0.746	-0.730
66	19.125	19.635	20.157	2.657	-2.598	0.761	-0.744
67	18.435	18.934	19.444	2.694	-2.633	0.775	-0.758
68	17.772	18.260	18.759	2.732	-2.669	0.790	-0.772
69	17.136	17.613	18.100	2.769	-2.704	0.805	-0.786
70	16.525	16.991	17.468	2.806	-2.739	0.819	-0.800
71	15.938	16.393	16.859	2.842	-2.774	0.834	-0.814
72	15.375	15.819	16.275	2.879	-2.808	0.849	-0.828
73	14.833	15.267	15.712	2.916	-2.843	0.864	-0.843
74	14.312	14.736	15.171	2.952	-2.877	0.879	-0.857
75	13.812	14.226	14.651	2.988	-2.911	0.894	-0.871
76	13.331	13.735	14.151	3.025	-2.945	0.910	-0.886
77	12.868	13.264	13.670	3.061	-2.979	0.925	-0.900
78	12.424	12.810	13.207	3.096	-3.013	0.940	-0.915
79	11.996	12.373	12.761	3.132	-3.047	0.956	-0.930
80	11.585	11.953	12.332	3.168	-3.080	0.971	-0.944
81	11.190	11.549	11.919	3.203	-3.114	0.987	-0.959
82	10.809	11.160	11.522	3.239	-3.147	1.002	-0.974
83	10.443	10.786	11.139	3.274	-3.180	1.018	-0.989
84	10.091	10.426	10.771	3.309	-3.213	1.034	-1.004
85	9.708	10.035	10.371	3.348	-3.250	1.049	-1.018
86	9.426	9.745	10.075	3.379	-3.278	1.066	-1.034
87	9.112	9.424	9.746	3.413	-3.310	1.082	-1.049
88	8.810	9.114	9.429	3.448	-3.343	1.098	-1.065
89	8.519	8.816	9.123	3.482	-3.375	1.114	-1.080
90	8.238	8.529	8.829	3.517	-3.407	1.131	-1.095
91	7.969	8.252	8.546	3.551	-3.439	1.147	-1.111
92	7.709	7.986	8.272	3.585	-3.470	1.163	-1.126
93	7.458	7.729	8.009	3.619	-3.502	1.180	-1.142
94	7.217	7.481	7.755	3.652	-3.533	1.197	-1.158
95	6.985	7.243	7.510	3.686	-3.565	1.213	-1.173
96	6.761	7.013	7.274	3.719	-3.596	1.230	-1.189

97	6.545	6.791	7.046	3.753	-3.627	1.247	-1.205
98	6.337	6.577	6.827	3.786	-3.657	1.264	-1.221
99	6.136	6.371	6.615	3.819	-3.688	1.281	-1.237
100	5.943	6.173	6.410	3.852	-3.719	1.298	-1.253
101	5.756	5.981	6.213	3.885	-3.749	1.315	-1.269
102	5.577	5.796	6.023	3.917	-3.779	1.332	-1.285
103	5.403	5.617	5.839	3.950	-3.809	1.350	-1.302
104	5.236	5.445	5.662	3.982	-3.839	1.367	-1.318
105	5.075	5.279	5.491	4.014	-3.869	1.384	-1.334
106	4.919	5.119	5.326	4.046	-3.899	1.402	-1.351
107	4.769	4.964	5.166	4.078	-3.928	1.420	-1.367
108	4.624	4.814	5.012	4.110	-3.958	1.437	-1.384
109	4.484	4.670	4.864	4.142	-3.987	1.455	-1.401
110	4.349	4.531	4.720	4.173	-4.016	1.473	-1.417
111	4.218	4.396	4.581	4.205	-4.045	1.491	-1.434
112	4.092	4.266	4.447	4.236	-4.074	1.509	-1.451
113	3.971	4.141	4.318	4.267	-4.102	1.527	-1.468
114	3.853	4.019	4.192	4.298	-4.131	1.545	-1.485
115	3.740	3.902	4.071	4.329	-4.159	1.564	-1.502
116	3.630	3.789	3.954	4.360	-4.187	1.582	-1.519
117	3.525	3.680	3.841	4.390	-4.215	1.600	-1.536
118	3.422	3.574	3.732	4.421	-4.243	1.619	-1.554
119	3.323	3.472	3.626	4.451	-4.271	1.637	-1.571
120	3.228	3.373	3.524	4.481	-4.299	1.656	-1.589
121	3.135	3.277	3.425	4.511	-4.326	1.675	-1.606
122	3.046	3.185	3.330	4.541	-4.354	1.694	-1.624
123	2.960	3.095	3.237	4.571	-4.381	1.712	-1.641
124	2.876	3.009	3.147	4.601	-4.408	1.731	-1.659
125	2.844	2.976	3.113	4.612	-4.419	1.752	-1.679



附表 2

南京时恒阻值误差曲线图

