



Cheemi Technology Co., Ltd

Specification

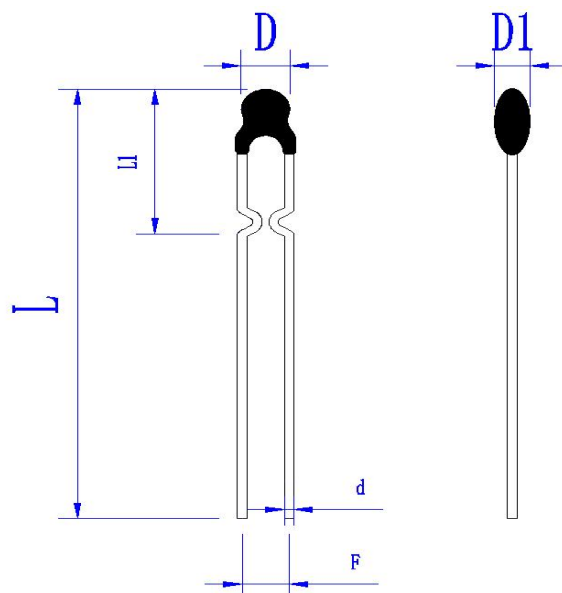
Product Name: NTC temperature sensor

Part Number: CM-MF52A1104F4250 L=40

Date: 2023/08/06

产品UL认证标准号Product UL certification standard number : E523747

1. 外形尺寸 Shape & Dimensions



D max	D1 max	L1	L	$\Phi d \pm 0.05$	$F \pm 0.3$
4	2.0	7.5 ± 1	40 ± 1	0.4	2.5

2. 产品组成 Components

序号 Part	材料名称 Definition	规格 Specification
①	环氧树脂 Epoxy	J-106AB 黑色 J-106A Black
②	引线 Wire	镀锡 CP 线 Tin-plating CP wire
③	芯片 NTC Chip	R25=100k $\Omega \pm 1\%$ B25/50=4250 $\pm 1\%$
④	焊锡 Solder	Sn96%Ag4%

3. 产品描述和料号 Product Description and Identification (Part Number)

3.1 产品描述 Product Description

环氧树脂包封型 NTC 热敏电阻, 25℃的零功率电阻值: 100k $\Omega \pm 1\%$,

B 值常数: 4250K $\pm 1\%$ (25℃/50℃),

标称值测量温度: 25℃。

Epoxy coating type NTC thermistor, Nominal Zero-Power Resistance at 25℃: 100K $\Omega \pm 1\%$,

B Constant value: 4250K $\pm 1\%$ (25℃/50℃) ,

Nominal value measuring temperature: 25℃.

3.2 料号 Identification (Part Number)

MF52 A1 104 F 4250 F

① ② ③ ④ ⑤ ⑥

MF52 ① 类别 Type	珠状精密型NTC热敏电阻 pearl-shape temperature measurement NTC thermistor
A 1 ② 不同外型结构和尺寸代号 Different Configuration and code	A型引线为镀锡铜线或镀锡铜包钢线 Model A is CU OF CP
104 ③ 25℃标称零功率电阻值 Nominal Zero-Power Resistance at 25℃	104为100KΩ 104 is 100KΩ
F ④ 电阻允许偏差代号 Allowable tolerance code	F±1% G±2% H±3% J±5%
4250 ⑤ B值常数 B Constant	B 值常数 B Constant
F ⑥ B值允许偏差代号(根据需要标注, ±1%时省略) The allowable tolerance of B (Label by Requirment)	F±1% G±2% H±3% J±5%

4.电气性能

序号 Part	项目Items	测试条件 Measure methods	单位 Unit	最小 值 Min	正常 值 Nomin al	最大 值 Max
4.1	25℃电阻值(R25) Resistance at 25℃	Ta=25±0.05℃ 测试功率≤0.1mW 流动液体中测试	KΩ	99	100	101
4.2	B 值(B25℃/50℃)B Value	$B = [(T_s \times T_b) / (T_s - T_b)] \times \ln(R_b / R_s)$ $T_b = 50 \text{ } ^\circ\text{C} \pm 0.1^\circ\text{C}$	K	4207	4250	4292
4.3	耗散系数(σ) Dissipation	Ta=25±0.5℃	mW / ℃	/	/	3
4.4	热时间常数(τ)Thermal Time Constant	静止空气中, 电阻变化 63.2%所花的时间。 In static air, the time ittakes for the resistance to change by 63.2%.	sec	/	/	15
4.6	工作温度范围Operating temperature	/	℃	-55	/	125

5.检验和测试程序

• 测试条件

如无特别规定，检验和测试的标准大气环境条件如下：

- 环境温度：20±15℃；
- 相对湿度：65±20%；
- 气压：86 kPa~106 kPa

如果对测试结果有异议，则在下述条件下测试：

- 环境温度：25±2℃；
- 相对湿度：65±20%；
- 气压：86kPa~106kPa

• 检查设备

尺寸检查：精度 0.01mm 卡尺

外观检查：20 倍放大镜；

阻值检查：热敏电阻测试仪

5.Test and Measurement Procedures

• Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

- Ambient Temperature: 20±15℃
- Relative Humidity: 65±20%
 - Air Pressure: 86kPa to 106kPa

If any doubt on the results, measurements/tests should be made within the following limits:

- Ambient Temperature: 25±2℃
- Relative Humidity: 65±5%RH
- Air Pressure: 86kPa to 106kPa

• Inspection Equipment

Dimension Examination: Caliper (Precision 0.01mm)

Visual Examination: 20× magnifier

Resistance value test: Thermistor resistance teste

6.可靠性性能试验Reliability Test

序号 No	项目 Items	测试标准 Standard	测试条件及方法Test Methods	技术要求Criteria
1	可焊性 Solderability	IEC 60068-2-58	将引线浸入245±5℃的锡液中，时间2~3 秒。 Immerse the lead wire in a molten solder of 245±5℃ for 2~3 seconds.	焊锡涂布均匀，上锡率达到95%上。 Tin coating is uniform and coverage≥95%
2	耐焊性 Resistance to Soldering Heat	IEC 60068-2-58	将引线浸入265±5℃的锡液中，时间5±1秒。 Immerse the lead wire in a molten solder of 265±5℃ for 5±1 seconds.	Δ R/R25≤±2% 无可见性损伤 No visible damage
3	引出端强度 Tensile Strength of Terminals	IEC60068-2-21	拉力 Pulling force: 5N, 时间 Duration: 10 秒	

4	冷热冲击 Thermal shock	IEC 60068-2-14	-40℃ 30min→25℃ 5min→ 105℃ 30min→25℃ 5min, 反复5 次 5times, 恢复4小时 Stay at room ambient for 4 hours	Δ R/R25≤±2% 无可见性损伤 No visible damage
5	高温存放 High Temperature Storage	IEC 60068-2-2	125±2℃, 1000±24h	
6	低温存放 Low Temperature Storage	IEC 60068-2-1	-40±2℃, 1000±24h	
7	湿热存放 Damp & Heat Storage	IEC 60068-2-78	40±2℃, 90~95%, 500±12h	
8	振动 Vibration	IEC 60068-2-6	振动频率 Vibrating frequency range: 10~500HZ, 振幅 Amplitude: 0.75mm, 时间 Duration: 2小时	
9	坠落 Dropping	IEC 60068-2-32	在 1 米的高度, 让产品做自由落 体运动, 下落到水 泥地面上, 5 次 Free falling at the height of 1 meter to cement floor, 5 times	

7.焊接条件

焊接时, 焊接处距电阻体根部至6mm, 焊接温度应低于350℃, 焊接时间应尽量短.

When welding, the welding temperature should be less than 350℃ from the root of resistance to 6 mm,, and the welding time should be as short as possible.

8.包装和储存条件 Packaging and Storage

8.1包装 Packaging

包装方式 Packaging way: 袋装 (每袋/500PCS) Bags (per bag/500PCS)

8.2储存 Storage

储存条件 Storage Conditions

- 储存温度 Storage temperature: 20±15℃
- 相对湿度 Relative humidity: ≤75%RH
- 避免接触腐蚀性气氛和阳光 Avoid contact with corrosive atmosphere and sunlight

TEMPERATURE VS RESISTANCE TABLE

Resistance 100k Ohms at 25deg. C

Resistance Tolerance + / - 1 %

B Value 4250K at 25/50deg. C

B Value Tolerance + / - 1%

Temp. (deg. C)	Rmax (k Ohms)	Rnor (k Ohms)	Rmin (k Ohms)
-40	4540.4126	4329.2222	4127.4419
-39	4225.5396	4031.8628	3846.6785
-38	3934.5430	3756.8572	3586.8369
-37	3665.4651	3502.3865	3346.2288
-36	3416.5190	3266.7903	3123.3110
-35	3186.0754	3048.5527	2916.6746
-34	2972.6453	2846.2886	2725.0303
-33	2774.8691	2658.7310	2547.1990
-32	2591.5039	2484.7214	2382.1008
-31	2421.4124	2323.1997	2228.7473
-30	2263.5532	2173.1934	2086.2319
-29	2116.9736	2033.8126	1953.7231
-28	1980.8004	1904.2418	1830.4592
-27	1854.2322	1783.7313	1715.7395
-26	1736.5350	1671.5942	1608.9211
-25	1627.0344	1567.1989	1509.4130
-24	1525.1116	1469.9656	1416.6720
-23	1430.1973	1379.3605	1330.1978
-22	1341.7689	1294.8934	1249.5306
-21	1259.3455	1216.1125	1174.2463
-20	1182.4844	1142.6023	1103.9550
-19	1110.7781	1073.9795	1038.2961
-18	1043.8511	1009.8908	976.9377
-17	981.3576	950.0110	919.5737
-16	922.9787	894.0396	865.9211
-15	868.4196	841.6988	815.7186
-14	817.4092	792.7329	768.7247
-13	769.6963	746.9050	724.7161
-12	725.0494	703.9965	683.4866
-11	683.2543	663.8051	644.8450
-10	644.1127	626.1433	608.6143
-9	607.4415	590.8380	574.6308
-8	573.0709	557.7284	542.7424
-7	540.8441	526.6660	512.8084

-6	510.6153	497.5130	484.6984
-5	482.2499	470.1414	458.2911
-4	455.6227	444.4326	433.4740
-3	430.6179	420.2767	410.1429
-2	407.1275	397.5712	388.2004
-1	385.0519	376.2214	367.5566
0	364.2981	356.1388	348.1275
1	344.7798	337.2415	329.8351
2	326.4170	319.4532	312.6068
3	309.1350	302.7029	296.3751
4	292.8644	286.9245	281.0768
5	277.5408	272.0563	266.6536
6	263.1039	258.0412	253.0506
7	249.4979	244.8257	240.2169
8	236.6705	232.3599	228.1049
9	224.5731	220.5974	216.6704
10	213.1603	209.4948	205.8717
11	202.3899	199.0117	195.6703
12	192.2223	189.1103	186.0301
13	182.6207	179.7554	176.9173
14	173.5508	170.9139	168.3003
15	164.9802	162.5550	160.1495
16	156.8790	154.6500	152.4374
17	149.2191	147.1719	145.1382
18	141.9742	140.0954	138.2276
19	135.1197	133.3969	131.6829
20	128.6325	127.0544	125.4830
21	122.4913	121.0471	119.6079
22	116.6757	115.3556	114.0391
23	111.1669	109.9618	108.7589
24	105.9472	104.8486	103.7510
25	101.0000	100.0000	99.0000
26	96.4004	95.4010	94.4025
27	92.0343	91.0375	90.0425
28	87.8886	86.8963	85.9066
29	83.9513	82.9650	81.9821
30	80.2107	79.2319	78.2572
31	76.6562	75.6861	74.7208
32	73.2775	72.3172	71.3623
33	70.0650	69.1156	68.1721
34	67.0099	66.0721	65.1408

35	64.1037	63.1782	62.2598
36	61.3382	60.4258	59.5209
37	58.7062	57.8073	56.9164
38	56.2005	55.3155	54.4391
39	53.8144	52.9438	52.0821
40	51.5416	50.6857	49.8391
41	49.3763	48.5353	47.7039
42	47.3129	46.4870	45.6709
43	45.3460	44.5353	43.7348
44	43.4707	42.6754	41.8904
45	41.6823	40.9023	40.1329
46	39.9764	39.2118	38.4580
47	38.3488	37.5995	36.8612
48	36.7956	36.0616	35.3387
49	35.3129	34.5941	33.8865
50	33.8972	33.1935	32.5012
51	32.5453	31.8566	31.1793
52	31.2540	30.5800	29.9177
53	30.0202	29.3609	28.7132
54	28.8411	28.1963	27.5632
55	27.7141	27.0836	26.4648
56	26.6366	26.0202	25.4155
57	25.6062	25.0037	24.4129
58	24.6207	24.0319	23.4547
59	23.6779	23.1025	22.5388
60	22.7758	22.2135	21.6630
61	21.9123	21.3631	20.8255
62	21.0857	20.5492	20.0244
63	20.2943	19.7703	19.2579
64	19.5364	19.0246	18.5244
65	18.8104	18.3106	17.8224
66	18.1148	17.6268	17.1503
67	17.4483	16.9718	16.5067
68	16.8094	16.3443	15.8904
69	16.1970	15.7429	15.2999
70	15.6098	15.1664	14.7342
71	15.0466	14.6139	14.1921
72	14.5064	14.0840	13.6725
73	13.9882	13.5758	13.1744
74	13.4908	13.0884	12.6967
75	13.0136	12.6208	12.2386

76	12.5554	12.1720	11.7991
77	12.1155	11.7413	11.3775
78	11.6930	11.3278	10.9729
79	11.2873	10.9308	10.5846
80	10.8975	10.5496	10.2119
81	10.5230	10.1835	9.8539
82	10.1630	9.8317	9.5102
83	9.8171	9.4937	9.1801
84	9.4845	9.1689	8.8629
85	9.1648	8.8567	8.5582
86	8.8572	8.5566	8.2653
87	8.5615	8.2680	7.9838
88	8.2769	7.9905	7.7132
89	8.0031	7.7235	7.4530
90	7.7396	7.4667	7.2027
91	7.4860	7.2196	6.9620
92	7.2419	6.9818	6.7304
93	7.0068	6.7529	6.5076
94	6.7804	6.5326	6.2932
95	6.5624	6.3204	6.0868
96	6.3523	6.1161	5.8881
97	6.1500	5.9194	5.6968
98	5.9550	5.7298	5.5126
99	5.7670	5.5472	5.3352
100	5.5859	5.3712	5.1642
101	5.4112	5.2016	4.9996
102	5.2428	5.0381	4.8409
103	5.0804	4.8805	4.6879
104	4.9238	4.7285	4.5405
105	4.7726	4.5819	4.3984
106	4.6268	4.4405	4.2613
107	4.4861	4.3042	4.1292
108	4.3503	4.1726	4.0017
109	4.2193	4.0456	3.8787
110	4.0927	3.9231	3.7601
111	3.9705	3.8048	3.6456
112	3.8525	3.6906	3.5351
113	3.7386	3.5803	3.4284
114	3.6285	3.4738	3.3255
115	3.5221	3.3710	3.2260
116	3.4193	3.2716	3.1300

117	3. 3200	3. 1757	3. 0373
118	3. 2240	3. 0829	2. 9477
119	3. 1312	2. 9933	2. 8612
120	3. 0415	2. 9067	2. 7776
121	2. 9547	2. 8230	2. 6968
122	2. 8708	2. 7420	2. 6187
123	2. 7897	2. 6637	2. 5432
124	2. 7112	2. 5880	2. 4702
125	2. 6352	2. 5148	2. 3996