



Cheemi Technology Co., Ltd

Specification

Product Name: NTC temperature sensor

Part Number: CM-MF52B1302F3988F-L50

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1. Electrical Properties

	Item	Symbol	Test Condition	Unit	Performance Requirement
1.1	Zero power resistance value of 25°C	R _{25°C}	T _a = 25 ± 0.05°C with a test power of 0.1mw	K Ω	3K Ω ± 1%
1.2	B Value	B _{25/100}	B = [(T _a × T _b) / (T _b - T _a)] × ln (R _a / R _b) T _b = 100°C ± 0.05°C	K	3988 ± 1%
1.3	Thermal Dissipation Constant	δ	In Still air	mW / °C	≥ 2
1.4	Thermal Recovery Time Coefficient	τ	In Still air	se c	≤ 7
1.5	Insulation Resistance	/	100V / DC 1min	M Ω	≥ 100
1.6	Operating Temperature Range	/	/	°C	-40°C ~ 125°C
1.7	Maximum Rated Power	P _{max}	/	m W	50
1.8	Temperature Resistance Characteristics	/	/	/	Refer to the Attached Table

2. Reliability

Item	Test Conditions and Methods	Technical Requirement
2.1 Lead end Strength	Fixed resistor end, tension: 5 ± 1 N, time: 10 ± 1 second	No visibility damage R _{25Δ} R / R ≤ ± 2%
2.2 Weldability	Temperature 245 ± 5°C time for 2-3s	Tin area is 95%
2.3 Welding Heat Resistance	Tin pot temperature: 260 ± 5°C, immersion depth of 6mm from the resistor, time of 5 ± 1 second	R _{25 Δ} R / R ≤ ± 2%
2.4 Steady State Heat and Humidity	Temperature: 40°C ± 2°C, humidity: 93 ± 2%, time: 500 hours	R _{25Δ} R / R ≤ ± 2%
2.5 The Temperature Changes Rapidly	-10°C 30min 25°C 5min 125°C 30min 25°C 5min, repeated 5 times	R _{25Δ} R / R ≤ ± 2%
2.6 High Temperature Storage	temperature: 125°C ± 5°C Time: 1,000 hours	R _{25Δ} R / R ≤ ± 2%
2.7 Low Temperature Storage	Temperature: -10°C Time: 1,000 hours	R _{25Δ} R / R ≤ ± 2%

3. Notes for Use

3.1 Use of this product: temperature measurement and control;

3.2 Avoid the measurement error caused by the current flowing through the thermistor chip to heat up the element itself;

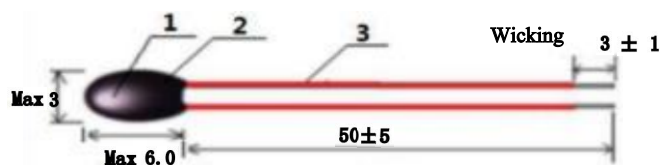
3.3 When welding, the welding distance from the coating layer shall be at least 2mm, the welding temperature shall be lower than 300°C, and the welding time shall be < 3s;

3.4 Storage temperature: -10°C ~ 40°C; storage humidity: 75% RH; ⑤ 3988: B 25 / 100 value 3988K 3.5 Avoid storage in a corrosive gas and light environment;

3.6 The package shall be re-sealed after opening.

4. Product UL Certification Standard Number: E523747

5. Dimensions (unit: mm)



Number	Name	Material Specification	Quantity	Note
1	Element	NTC thermal resistor	1	
2	Encapsulate	epoxy resin	1	black
3	Lead	Φ 0.3 red enameled wire	2	red

6. Product Model Description

CM-MF52 B1 302 F 3988

① ② ③ ④ ⑤

① CM-MF52: Bead precision NTC thermistor

② B 1: The lead wire is an enameled wire

③ 302: 25°C zero power resistance value of 3K Ω

④ F: Resistance accuracy code F- ± 1% G- ± 2% H- ± 3% J- ± 5%

TEMPERATURES RESISTANCE TABLE

Resistance Resistance 3k Ohms at 25deg .C

Tolerance + / -1%

B Value 3988K at 25/100deg .C

B Value Tolerance + / - 1 %

Temp . (deg.C)	Rmin (k Ohm s)	R nor (k Ohms)	Rmax (k Ohm s)
-40	97.903	102.446	107.189
-39	91.611	95.797	100.165
-38	85.766	89.626	93.650
-37	80.334	83.894	87.602
-36	75.282	78.567	81.986
-35	70.583	73.614	76.768
-34	66.208	69.007	71.917
-33	62.133	64.719	67.405
-32	58.337	60.725	63.205
-31	54.798	57.005	59.296
-30	51.496	53.537	55.653
-29	48.375	50.261	52.215
-28	45.465	47.208	49.012
-27	42.751	44.362	46.029
-26	40.217	41.707	43.247
-25	37.851	39.229	40.653
-24	35.640	36.916	38.232
-23	33.574	34.754	35.972
-22	31.642	32.734	33.861
-21	29.834	30.846	31.889
-20	28.329	29.274	30.248
-19	26.742	27.618	28.520
-18	25.253	26.066	26.902
-17	23.857	24.611	25.385
-16	22.547	23.246	23.964
-15	21.317	21.965	22.631
-14	20.162	20.764	21.381
-13	19.077	19.635	20.207
-12	18.057	18.575	19.106
-11	17.098	17.578	18.071
-10	16.195	16.641	17.098
-9	15.346	15.760	16.184
-8	14.546	14.931	15.324

-7	13.794	14.151	14.516
-6	13.084	13.416	13.754
-5	12.415	12.723	13.038
-4	11.785	12.071	12.363
-3	11.190	11.456	11.726
-2	10.629	10.876	11.127
-1	10.100	10.329	10.562
0	9.599	9.812	10.028
1	9.126	9.323	9.524
2	8.679	8.862	9.048
3	8.256	8.426	8.599
4	7.856	8.014	8.174
5	7.479	7.625	7.773
6	7.121	7.257	7.395
7	6.783	6.909	7.036
8	6.463	6.580	6.698
9	6.160	6.268	6.377
10	5.873	5.973	6.074
11	5.600	5.693	5.787
12	5.343	5.429	5.516
13	5.098	5.178	5.258
14	4.866	4.940	5.014
15	4.646	4.714	4.783
16	4.437	4.500	4.564
17	4.239	4.297	4.356
18	4.051	4.105	4.159
19	3.872	3.922	3.972
20	3.702	3.748	3.794
21	3.541	3.583	3.625
22	3.387	3.426	3.465
23	3.241	3.277	3.312
24	3.102	3.135	3.168
25	2.970	3.000	3.030
26	2.842	2.872	2.902
27	2.720	2.749	2.779
28	2.603	2.633	2.663
29	2.493	2.522	2.552
30	2.388	2.417	2.446
31	2.287	2.316	2.346
32	2.192	2.221	2.250
33	2.101	2.129	2.158

34	2.014	2.042	2.071
35	1.931	1.959	1.987
36	1.853	1.880	1.908
37	1.777	1.805	1.832
38	1.706	1.732	1.759
39	1.637	1.663	1.690
40	1.572	1.598	1.624
41	1.509	1.535	1.561
42	1.450	1.475	1.500
43	1.393	1.417	1.442
44	1.338	1.363	1.387
45	1.286	1.310	1.334
46	1.237	1.260	1.284
47	1.189	1.212	1.235
48	1.144	1.166	1.189
49	1.100	1.122	1.145
50	1.058	1.080	1.102
51	1.019	1.040	1.062
52	0.981	1.001	1.023
53	0.944	0.965	0.985
54	0.909	0.929	0.950
55	0.876	0.896	0.916
56	0.844	0.863	0.883
57	0.813	0.832	0.851
58	0.784	0.802	0.821
59	0.756	0.774	0.792
60	0.729	0.746	0.764
61	0.703	0.720	0.738
62	0.678	0.695	0.712
63	0.654	0.671	0.688
64	0.631	0.647	0.664
65	0.609	0.625	0.641
66	0.588	0.604	0.620
67	0.568	0.583	0.599
68	0.548	0.563	0.578
69	0.530	0.544	0.559
70	0.512	0.526	0.540
71	0.494	0.508	0.523
72	0.478	0.491	0.505
73	0.462	0.475	0.489
74	0.446	0.459	0.473

75	0.432	0.444	0.458
76	0.417	0.430	0.443
77	0.404	0.416	0.429
78	0.391	0.403	0.415
79	0.378	0.390	0.402
80	0.366	0.377	0.389
81	0.354	0.365	0.377
82	0.343	0.354	0.365
83	0.332	0.343	0.354
84	0.321	0.332	0.343
85	0.311	0.322	0.332
86	0.302	0.312	0.322
87	0.292	0.302	0.312
88	0.283	0.293	0.303
89	0.275	0.284	0.294
90	0.266	0.275	0.285
91	0.258	0.267	0.276
92	0.250	0.259	0.268
93	0.243	0.251	0.260
94	0.235	0.244	0.252
95	0.228	0.237	0.245
96	0.222	0.230	0.238
97	0.215	0.223	0.231
98	0.209	0.216	0.224
99	0.203	0.210	0.218
100	0.197	0.204	0.212
101	0.191	0.198	0.206
102	0.185	0.193	0.200
103	0.180	0.187	0.194
104	0.175	0.182	0.189
105	0.170	0.177	0.183
106	0.165	0.172	0.178
107	0.160	0.167	0.173
108	0.156	0.162	0.169
109	0.152	0.158	0.164
110	0.147	0.153	0.160
111	0.143	0.149	0.155
112	0.139	0.145	0.151
113	0.136	0.141	0.147
114	0.132	0.137	0.143
115	0.128	0.134	0.139

116	0.125	0.130	0.136
117	0.121	0.127	0.132
118	0.118	0.123	0.128
119	0.115	0.120	0.125
120	0.112	0.117	0.122
121	0.109	0.114	0.119
122	0.106	0.111	0.116
123	0.103	0.108	0.113
124	0.101	0.105	0.110
125	0.098	0.102	0.107
126	0.095	0.100	0.104
127	0.093	0.097	0.102
128	0.091	0.095	0.099
129	0.088	0.092	0.097
130	0.086	0.090	0.094
131	0.084	0.088	0.092
132	0.082	0.086	0.090
133	0.080	0.083	0.087
134	0.078	0.081	0.085
135	0.076	0.079	0.083
136	0.074	0.077	0.081
137	0.072	0.076	0.079
138	0.070	0.074	0.077
139	0.069	0.072	0.075
140	0.067	0.070	0.074
141	0.065	0.068	0.072
142	0.064	0.067	0.070
143	0.062	0.065	0.068
144	0.061	0.064	0.067
145	0.059	0.062	0.065
146	0.058	0.061	0.064
147	0.056	0.059	0.062
148	0.055	0.058	0.061
149	0.054	0.057	0.059
150	0.053	0.055	0.058
151	0.051	0.054	0.057
152	0.050	0.053	0.055
153	0.049	0.052	0.054
154	0.048	0.050	0.053
155	0.047	0.049	0.052