Cheemi Technology Co., Ltd

Specification

Product Name： NTC temperature sensor

Part Number： CM-CWF2K502G3988F10064D28#L45

Date： 2023/08/26

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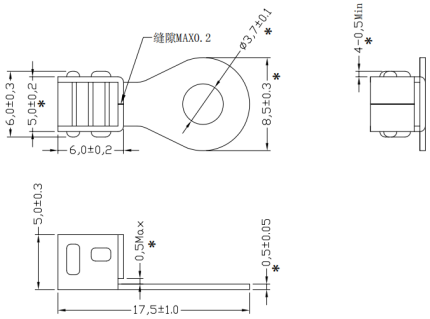
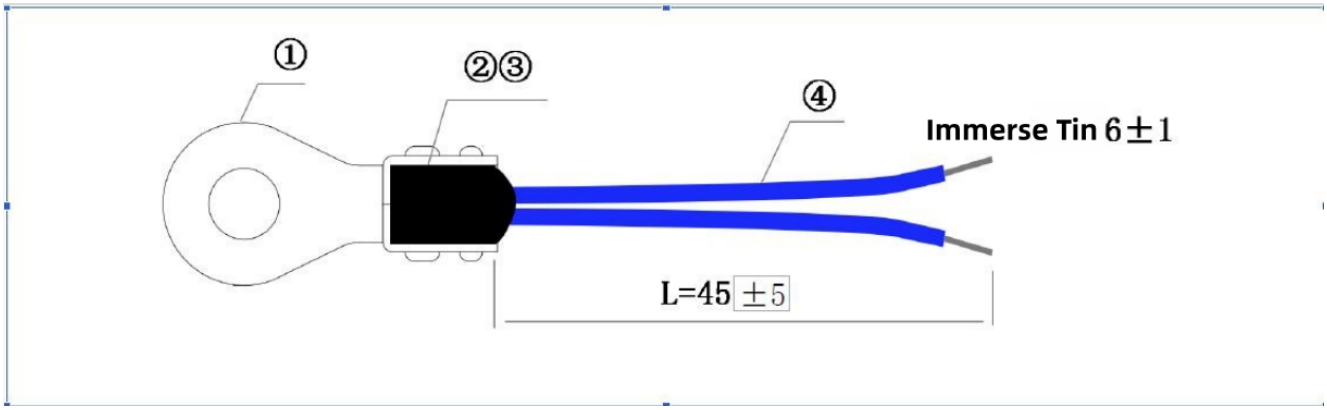
★ The UL standard number of this product： E523747

1、 Boundary dimension： （Unit：mm）





2、材料 Materials

NO.	名称 Name	规格/型号 Specification/Model	数量Quantity（pcs）	备注Remark
1	感温外壳Temperature sensitive housing	φ3.7*8.5*17.5铜镀镍开窗OT端子Copper nickel plated window OT terminal	1	
2	热敏电阻Thermistor	MF51 R_{25}=10KΩ±2% $B_{25/100}$=3988K±1%	1	Single-ended
3	包封料Encapsulating material	黑色高温树脂Black high temperature resin 200℃	/	Black
4	引线PIN	10064 28# （0.08×19）镀银铜线Silver-coated copper wire	2	Blue
5			/	

3、电气性能 Behaviour of electricity

NO.	Item	Symbol	测试条件Test condition	最小值Min	中心值Mid	最大值Max	单位Unit
3-1.	25℃的电阻值 Resistance value	R25	Ta=25±0.05℃PT ≦0.1mw	9.8	10	10.2	KΩ
3-2.	B 值Number	B25/100	$B=LN\frac{R_{T1}}{R_{T2}}/(\frac{1}{T1}-\frac{1}{T2})$	3948.12	3988	4027.88	K
3-3.	耗散系数Dissipation factor	σ	Ta=25±0.5℃	2.2	/	/	mW/℃
3-4.	热时间常数 Thermal time constant	τ	25℃→85℃ T1=25+(85-25)*63.2% =62 .9℃	/	/	20	Sec
3-5.	绝缘电阻Insulation resistance	/	100V / DC 60S	100	/	/	MΩ
3-6.	耐压测试High-voltage insulation test	/	/ /		/	/	mA
3-7.	使用温度范围Using temperature range	/	/	-55	/	155	℃

4、机械性能Mechanical property

NO.	Item	技术要求technical requirements	测试条件及方法Test conditions and methods
4-1.	拉力测试strain relief test	不开裂,不变形、无损伤No cracking, no deformation, no damage	加载5N（约0.5KGF）持续10S。Load 5N (about 0.5KGF) for 10S.
4-2.	落地测试 Landing test	无可见性损伤No visible damage	在1米的高度，让产品做自由落体运动，下落到10mm厚的橡木板上，10次。At a height of 1 meter, let the product do a free fall movement, fall on the 10mm thick oak plate, 10 times.

5、可靠性试验Reliability test

NO	Item	技术要求technical requirements	测试条件及方法Test conditions and methods
5-1.	高温试验High-temperature test	⊿R/R_{25}≤±5%；无外观异常 No appearance anomaly	155±5℃，1000±24h （参照Refer IEC60068-2-2/GB2423.2试验Test）
5-2.	低温试验Low temperature Test	⊿R/R_{25}≤±3%；无外观异常 No appearance anomaly	-40±5℃，1000±24h （参照Refer IEC60068-2-1/GB2423.1试验Test）
5-3.	耐潮湿试验 Moisture resistance test	⊿R/R_{25}≤±3%；无外观异常 No appearance anomaly	40±2℃,90%-95%RH环境下放置Ambient placement1000±24h （参照Refer IEC60068-2-3/GB2423.3试验Test）
5-4.	温度冷热循环试验Temperature cycle test	⊿R/R_{25}≤±3%；无外观异常 No appearance anomaly	－40℃×30min→25℃×5min→155℃×30min→25 ℃×5min，反复over and over again 5 次Times. （参照Refer IEC60068-2-14/GB2423.22试验Test）

6、产品使用条件Product conditions of use

6.1 The maximum working temperature, maximum power, etc. of the product shall be operated in accordance with the requirements of the specification, and shall not exceed the scope of the specification;
6.2. The product must be handled gently when moving and installing, and cannot be pulled forcefully
6.3. Do not use the shell when deformation, oxidation and other phenomena occur, so as not to affect the temperature sensing accuracy
6.4. When the appearance of the product is deformed or damaged, it shall not be used to avoid affecting the electrical performance
6.5. Within the operating temperature range, too drastic temperature changes should be avoided as far as possible
6.6. Do not apply excessive vibration pressure
6.7. Do not use corrosive gases (CO2,NH3,Sox,Nox) beyond the specified conditions. Do not use in electrolysis, salt, acid, alkaline and organic solution Dosage exceeds specified condition
6.8. Avoid exposure to water, moisture and other atmospheric gases or liquids
6.9. The current of the temperature sensor through the negative temperature coefficient will cause the component to heat itself and produce measurement errors, so this factor should be taken into account before use Inside.
6.10. The product is heated through the bottom of the temperature sensing terminal, and the bottom should be fully heated when used to achieve good results.
6.11. At the limit temperature, the product can withstand the impact of too high or too low temperature in the short term, but the product can not be placed at the limit temperature for a long time to avoid shortening the service life of the product.

7、产品储存条件Product storage conditions

7.1.储存温度storage temperature：-10℃～+40℃
7.2.相对湿度relative humidity：≤70%RH
7.3.远离腐蚀和阳光照射Keep away from corrosion and sunlight
7.4.储存时间：1年，Storage time: 1 year。

8、质量保证quality guarantee

自出货之日起，产品保质期为12个月。但因顾客故意损坏或人为过失造成的质量问题不在保质范围之内。The shelf life of the product is 12 months from the date of shipment. However, quality problems caused by customer intentional damage or human error are not within the scope of warranty.

9、R-T表 阻温表

TEMPERATURE VS RESISTANCE TABLE

Resistance **5k Ohms at 25deg. C**

Resistance Tolerance **+ / - 2%**

B Value **3988K at 25/100 deg. C**

B Value Tolerance **+ / - 1%**

Temp. (deg. C)	Rmax (k Ohms)	Rnor (k Ohms)	Rmin (k Ohms)
-40	176.9910	167.5328	158.5165
-39	165.4500	156.7131	148.3781
-38	154.7392	146.6651	138.9566
-37	144.7937	137.3288	130.1966
-36	135.5539	128.6493	122.0476
-35	126.9652	120.5762	114.4629
-34	118.9776	113.0633	107.4000
-33	111.5454	106.0682	100.8197
-32	104.6263	99.5520	94.6859
-31	98.1818	93.4789	88.9656
-30	92.1763	87.8159	83.6283
-29	86.5773	82.5329	78.6460
-28	81.3546	77.6020	73.9929
-27	76.4808	72.9976	69.6452
-26	71.9303	68.6961	65.5811
-25	67.6797	64.6756	61.7802
-24	63.7075	60.9162	58.2239
-23	59.9937	57.3992	54.8950
-22	56.5199	54.1076	51.7776
-21	53.2693	51.0256	48.8569
-20	50.2260	48.1386	46.1195
-19	47.3758	45.4331	43.5526
-18	44.7051	42.8965	41.1447
-17	42.2016	40.5174	38.8849
-16	39.8538	38.2850	36.7633
-15	37.6512	36.1895	34.7706
-14	35.5839	34.2216	32.8983
-13	33.6428	32.3728	31.1382
-12	31.8195	30.6352	29.4832
-11	30.1061	29.0015	27.9262
-10	28.4954	27.4648	26.4609
-9	26.9807	26.0189	25.0814
-8	25.5556	24.6579	23.7822
-7	24.2143	23.3762	22.5581
-6	22.9516	22.1689	21.4044

-5	21.7622	21.0312	20.3166
-4	20.6415	19.9586	19.2905
-3	19.5852	18.9471	18.3224
-2	18.5892	17.9929	17.4087
-1	17.6498	17.0923	16.5458
0	16.7634	16.2422	15.7309
1	15.9266	15.4393	14.9609
2	15.1366	14.6808	14.2330
3	14.3903	13.9640	13.5449
4	13.6851	13.2863	12.8940
5	13.0186	12.6455	12.2781
6	12.3884	12.0393	11.6953
7	11.7924	11.4656	11.1434
8	11.2284	10.9226	10.6208
9	10.6946	10.4083	10.1257
10	10.1893	9.9213	9.6564
11	9.7107	9.4598	9.2116
12	9.2573	9.0223	8.7899
13	8.8276	8.6076	8.3898
14	8.4203	8.2143	8.0101
15	8.0341	7.8412	7.6498
16	7.6677	7.4871	7.3078
17	7.3201	7.1509	6.9829
18	6.9902	6.8318	6.6743
19	6.6770	6.5286	6.3810
20	6.3796	6.2406	6.1023
21	6.0970	5.9669	5.8372
22	5.8285	5.7067	5.5852
23	5.5733	5.4593	5.3454
24	5.3307	5.2239	5.1172
25	5.1000	5.0000	4.9000
26	4.8848	4.7869	4.6891
27	4.6798	4.5840	4.4885
28	4.4845	4.3909	4.2975
29	4.2985	4.2069	4.1156
30	4.1211	4.0316	3.9425
31	3.9520	3.8646	3.7775
32	3.7908	3.7054	3.6204
33	3.6370	3.5536	3.4706
34	3.4903	3.4088	3.3278
35	3.3503	3.2707	3.1917
36	3.2166	3.1389	3.0618
37	3.0890	3.0131	2.9379

38	2.9671	2.8930	2.8197
39	2.8506	2.7784	2.7068
40	2.7394	2.6689	2.5991
41	2.6330	2.5642	2.4962
42	2.5314	2.4643	2.3979
43	2.4342	2.3687	2.3040
44	2.3412	2.2773	2.2143
45	2.2523	2.1900	2.1285
46	2.1672	2.1064	2.0465
47	2.0858	2.0265	1.9681
48	2.0078	1.9500	1.8931
49	1.9332	1.8768	1.8213
50	1.8617	1.8067	1.7526
51	1.7932	1.7396	1.6869
52	1.7276	1.6753	1.6240
53	1.6647	1.6137	1.5637
54	1.6045	1.5547	1.5059
55	1.5467	1.4982	1.4506
56	1.4913	1.4440	1.3976
57	1.4381	1.3920	1.3469
58	1.3872	1.3422	1.2982
59	1.3382	1.2944	1.2515
60	1.2913	1.2485	1.2067
61	1.2462	1.2045	1.1637
62	1.2030	1.1623	1.1225
63	1.1614	1.1217	1.0830
64	1.1215	1.0828	1.0450
65	1.0832	1.0454	1.0086
66	1.0463	1.0095	0.9736
67	1.0109	0.9750	0.9400
68	0.9769	0.9419	0.9077
69	0.9442	0.9100	0.8767
70	0.9127	0.8794	0.8469
71	0.8824	0.8499	0.8183
72	0.8533	0.8216	0.7908
73	0.8253	0.7944	0.7643
74	0.7984	0.7682	0.7388
75	0.7724	0.7430	0.7144
76	0.7474	0.7187	0.6908
77	0.7234	0.6954	0.6681
78	0.7002	0.6729	0.6463
79	0.6779	0.6512	0.6253
80	0.6565	0.6304	0.6051

81	0.6358	0.6103	0.5857
82	0.6158	0.5910	0.5669
83	0.5966	0.5723	0.5489
84	0.5781	0.5544	0.5315
85	0.5602	0.5371	0.5147
86	0.5430	0.5204	0.4986
87	0.5263	0.5043	0.4830
88	0.5103	0.4888	0.4680
89	0.4948	0.4738	0.4535
90	0.4799	0.4594	0.4396
91	0.4655	0.4455	0.4261
92	0.4516	0.4320	0.4131
93	0.4382	0.4191	0.4006
94	0.4252	0.4065	0.3885
95	0.4127	0.3944	0.3769
96	0.4006	0.3828	0.3656
97	0.3889	0.3715	0.3547
98	0.3776	0.3606	0.3442
99	0.3667	0.3501	0.3341
100	0.3562	0.3399	0.3243
101	0.3460	0.3301	0.3148
102	0.3362	0.3206	0.3057
103	0.3266	0.3115	0.2969
104	0.3174	0.3026	0.2883
105	0.3085	0.2940	0.2801
106	0.2999	0.2857	0.2721
107	0.2916	0.2777	0.2644
108	0.2835	0.2699	0.2569
109	0.2757	0.2624	0.2497
110	0.2681	0.2552	0.2427
111	0.2608	0.2481	0.2360
112	0.2537	0.2413	0.2295
113	0.2469	0.2348	0.2231
114	0.2403	0.2284	0.2170
115	0.2338	0.2222	0.2111
116	0.2276	0.2162	0.2054
117	0.2216	0.2104	0.1998
118	0.2157	0.2048	0.1944
119	0.2100	0.1994	0.1892
120	0.2046	0.1941	0.1842
121	0.1992	0.1890	0.1793
122	0.1941	0.1841	0.1745
123	0.1891	0.1793	0.1700

124	0.1842	0.1746	0.1655
125	0.1795	0.1701	0.1612
126	0.1749	0.1658	0.1570
127	0.1705	0.1615	0.1530
128	0.1662	0.1574	0.1490
129	0.1621	0.1534	0.1452
130	0.1580	0.1496	0.1415
131	0.1541	0.1458	0.1379
132	0.1503	0.1422	0.1345
133	0.1466	0.1386	0.1311
134	0.1430	0.1352	0.1278
135	0.1395	0.1319	0.1246
136	0.1361	0.1287	0.1215
137	0.1328	0.1255	0.1186
138	0.1296	0.1225	0.1156
139	0.1265	0.1195	0.1128
140	0.1235	0.1166	0.1101
141	0.1206	0.1138	0.1074
142	0.1177	0.1111	0.1048
143	0.1150	0.1085	0.1023
144	0.1123	0.1059	0.0999
145	0.1097	0.1034	0.0975
146	0.1071	0.1010	0.0952
147	0.1046	0.0986	0.0929
148	0.1022	0.0964	0.0908
149	0.0999	0.0941	0.0886
150	0.0976	0.0920	0.0866
151	0.0954	0.0899	0.0846
152	0.0933	0.0878	0.0826
153	0.0912	0.0858	0.0807
154	0.0891	0.0839	0.0789
155	0.0871	0.0820	0.0771
156	0.0852	0.0802	0.0754
157	0.0833	0.0784	0.0737
158	0.0815	0.0766	0.0720
159	0.0797	0.0749	0.0704
160	0.0780	0.0733	0.0689
161	0.0763	0.0717	0.0673
162	0.0746	0.0701	0.0658
163	0.0730	0.0686	0.0644
164	0.0715	0.0671	0.0630
165	0.0700	0.0657	0.0616
166	0.0685	0.0643	0.0603

167	0.0670	0.0629	0.0590
168	0.0656	0.0616	0.0577
169	0.0643	0.0603	0.0565
170	0.0629	0.0590	0.0553
171	0.0616	0.0578	0.0541
172	0.0603	0.0566	0.0530
173	0.0591	0.0554	0.0519
174	0.0579	0.0542	0.0508
175	0.0567	0.0531	0.0498
176	0.0556	0.0520	0.0487
177	0.0544	0.0510	0.0477
178	0.0534	0.0500	0.0468
179	0.0523	0.0489	0.0458
180	0.0512	0.0480	0.0449
181	0.0502	0.0470	0.0440
182	0.0492	0.0461	0.0431
183	0.0483	0.0452	0.0422
184	0.0473	0.0443	0.0414
185	0.0464	0.0434	0.0406
186	0.0455	0.0425	0.0398
187	0.0446	0.0417	0.0390
188	0.0438	0.0409	0.0382
189	0.0429	0.0401	0.0375
190	0.0421	0.0393	0.0367
191	0.0413	0.0386	0.0360
192	0.0405	0.0379	0.0353
193	0.0398	0.0371	0.0347
194	0.0390	0.0364	0.0340
195	0.0383	0.0358	0.0334
196	0.0376	0.0351	0.0327
197	0.0369	0.0344	0.0321
198	0.0362	0.0338	0.0315
199	0.0356	0.0332	0.0309
200	0.0349	0.0326	0.0303
201	0.0343	0.0320	0.0298
202	0.0337	0.0314	0.0292
203	0.0331	0.0308	0.0287
204	0.0325	0.0303	0.0282
205	0.0319	0.0297	0.0277
206	0.0313	0.0292	0.0272
207	0.0308	0.0287	0.0267
208	0.0302	0.0282	0.0262
209	0.0297	0.0277	0.0257