Cheemi Technology Co., Ltd

Specification

Product Name： NTC temperature sensor

Part Number： CM-CWF2K103G3988F10064D28#L45

Date： 2023/08/10

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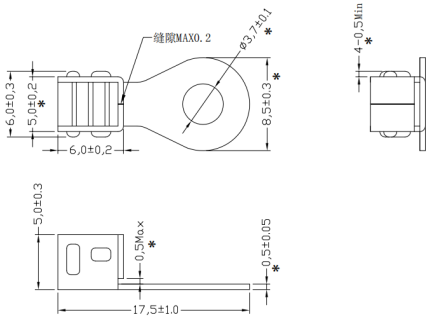
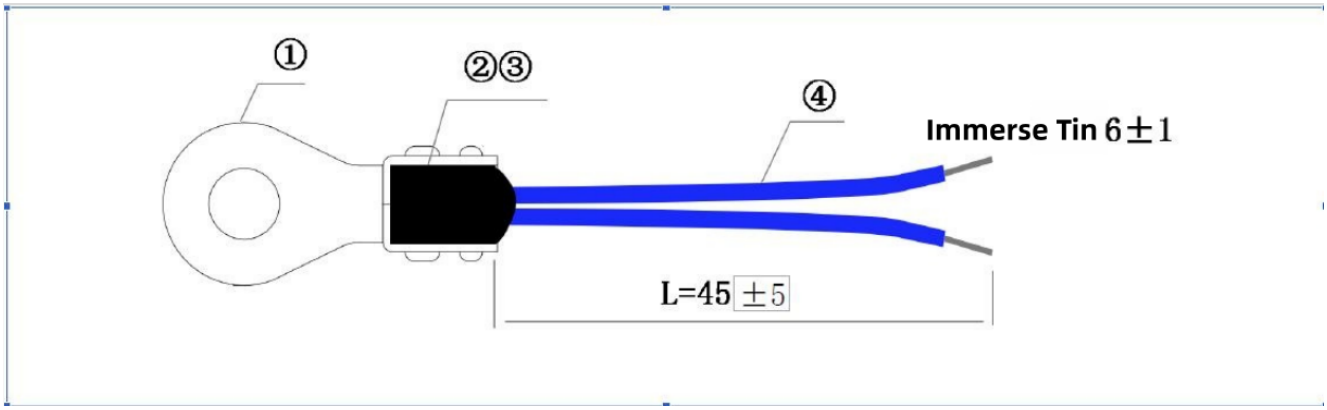
★ The UL standard number of this product： E523747

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-resistance meter

TEMPERATURE VS RESISTANCE TABLE

Resistance 10k Ohms at 25deg. C

Resistance Tolerance + / -2%

B Value 3988K at 25/100deg. C

B Value Tolerance + / - 1%

Temp. (deg. C)	Rmax (k Ohms)	Rnor (k Ohms)	Rmin (k Ohms)
-40	353.9821	335.0656	317.0331
-39	330.8999	313.4261	296.7563
-38	309.4785	293.3301	277.9132
-37	289.5874	274.6576	260.3933
-36	271.1078	257.2986	244.0952
-35	253.9305	241.1525	228.9259
-34	237.9553	226.1266	214.8000
-33	223.0908	212.1365	201.6393
-32	209.2526	199.1040	189.3718
-31	196.3636	186.9577	177.9312
-30	184.3526	175.6318	167.2566
-29	173.1545	165.0658	157.2920
-28	162.7093	155.2041	147.9858
-27	152.9616	145.9953	139.2905
-26	143.8606	137.3922	131.1621
-25	135.3595	129.3513	123.5603
-24	127.4150	121.8324	116.4478
-23	119.9874	114.7985	109.7900
-22	113.0399	108.2153	103.5552
-21	106.5386	102.0513	97.7139
-20	100.4521	96.2772	92.2390
-19	94.7516	90.8662	87.1052
-18	89.4102	85.7931	82.2894
-17	84.4032	81.0348	77.7698
-16	79.7076	76.5701	73.5266
-15	75.3024	72.3790	69.5413
-14	71.1678	68.4432	65.7965
-13	67.2856	64.7456	62.2765
-12	63.6390	61.2704	58.9663
-11	60.2122	58.0029	55.8524
-10	56.9908	54.9297	52.9218
-9	53.9613	52.0378	50.1628
-8	51.1112	49.3158	47.5644
-7	48.4287	46.7525	45.1162
-6	45.9031	44.3378	42.8088

-5	43.5244	42.0623	40.6331
-4	41.2830	39.9172	38.5811
-3	39.1705	37.8942	36.6449
-2	37.1785	35.9857	34.8173
-1	35.2996	34.1847	33.0917
0	33.5267	32.4843	31.4618
1	31.8532	30.8786	29.9217
2	30.2731	29.3616	28.4661
3	28.7806	27.9279	27.0897
4	27.3703	26.5726	25.7879
5	26.0373	25.2910	24.5562
6	24.7769	24.0785	23.3905
7	23.5847	22.9312	22.2868
8	22.4568	21.8451	21.2416
9	21.3893	20.8167	20.2513
10	20.3786	19.8425	19.3129
11	19.4214	18.9195	18.4233
12	18.5145	18.0447	17.5797
13	17.6552	17.2152	16.7795
14	16.8406	16.4286	16.0203
15	16.0681	15.6823	15.2997
16	15.3354	14.9741	14.6155
17	14.6402	14.3019	13.9658
18	13.9804	13.6636	13.3485
19	13.3540	13.0573	12.7620
20	12.7591	12.4812	12.2045
21	12.1940	11.9338	11.6745
22	11.6571	11.4134	11.1703
23	11.1467	10.9185	10.6908
24	10.6615	10.4478	10.2344
25	10.2000	10.0000	9.8000
26	9.7695	9.5738	9.3782
27	9.3596	9.1681	8.9769
28	8.9690	8.7818	8.5950
29	8.5969	8.4138	8.2313
30	8.2422	8.0632	7.8850
31	7.9041	7.7292	7.5551
32	7.5816	7.4107	7.2408
33	7.2740	7.1071	6.9412
34	6.9806	6.8175	6.6556
35	6.7005	6.5413	6.3833
36	6.4332	6.2777	6.1236
37	6.1779	6.0262	5.8758

38	5.9341	5.7860	5.6394
39	5.7013	5.5567	5.4137
40	5.4787	5.3377	5.1982
41	5.2661	5.1285	4.9924
42	5.0628	4.9285	4.7959
43	4.8684	4.7374	4.6081
44	4.6825	4.5547	4.4286
45	4.5046	4.3800	4.2571
46	4.3344	4.2129	4.0931
47	4.1716	4.0530	3.9362
48	4.0156	3.9000	3.7862
49	3.8664	3.7536	3.6426
50	3.7234	3.6134	3.5053
51	3.5864	3.4792	3.3738
52	3.4552	3.3506	3.2479
53	3.3295	3.2275	3.1274
54	3.2089	3.1095	3.0119
55	3.0934	2.9964	2.9013
56	2.9826	2.8880	2.7953
57	2.8763	2.7840	2.6937
58	2.7743	2.6844	2.5963
59	2.6765	2.5888	2.5029
60	2.5826	2.4971	2.4134
61	2.4924	2.4090	2.3275
62	2.4059	2.3246	2.2451
63	2.3228	2.2435	2.1660
64	2.2430	2.1656	2.0901
65	2.1663	2.0908	2.0172
66	2.0926	2.0190	1.9472
67	2.0218	1.9500	1.8800
68	1.9537	1.8837	1.8155
69	1.8883	1.8200	1.7535
70	1.8254	1.7588	1.6939
71	1.7649	1.6999	1.6366
72	1.7066	1.6432	1.5815
73	1.6506	1.5888	1.5286
74	1.5967	1.5364	1.4777
75	1.5448	1.4859	1.4287
76	1.4949	1.4374	1.3816
77	1.4468	1.3907	1.3363
78	1.4005	1.3458	1.2927
79	1.3559	1.3025	1.2507
80	1.3129	1.2608	1.2103

81	1.2715	1.2206	1.1713
82	1.2316	1.1820	1.1339
83	1.1932	1.1447	1.0978
84	1.1561	1.1088	1.0630
85	1.1204	1.0742	1.0295
86	1.0859	1.0408	0.9972
87	1.0527	1.0086	0.9660
88	1.0206	0.9776	0.9360
89	0.9897	0.9477	0.9071
90	0.9598	0.9188	0.8792
91	0.9310	0.8909	0.8523
92	0.9032	0.8641	0.8263
93	0.8763	0.8381	0.8012
94	0.8504	0.8131	0.7771
95	0.8254	0.7889	0.7537
96	0.8012	0.7656	0.7312
97	0.7778	0.7430	0.7095
98	0.7553	0.7212	0.6885
99	0.7335	0.7002	0.6682
100	0.7124	0.6799	0.6486
101	0.6920	0.6602	0.6297
102	0.6723	0.6413	0.6114
103	0.6533	0.6229	0.5937
104	0.6348	0.6052	0.5767
105	0.6170	0.5880	0.5602
106	0.5998	0.5714	0.5442
107	0.5831	0.5554	0.5288
108	0.5670	0.5399	0.5139
109	0.5514	0.5249	0.4994
110	0.5363	0.5103	0.4855
111	0.5216	0.4963	0.4720
112	0.5075	0.4827	0.4589
113	0.4938	0.4695	0.4463
114	0.4805	0.4568	0.4340
115	0.4676	0.4444	0.4222
116	0.4552	0.4325	0.4107
117	0.4431	0.4209	0.3996
118	0.4314	0.4097	0.3888
119	0.4201	0.3988	0.3784
120	0.4091	0.3883	0.3683
121	0.3985	0.3781	0.3586
122	0.3881	0.3682	0.3491
123	0.3781	0.3586	0.3399

124	0.3684	0.3493	0.3310
125	0.3590	0.3403	0.3224
126	0.3499	0.3315	0.3140
127	0.3410	0.3231	0.3059
128	0.3325	0.3149	0.2981
129	0.3241	0.3069	0.2904
130	0.3160	0.2991	0.2831
131	0.3082	0.2916	0.2759
132	0.3006	0.2844	0.2689
133	0.2932	0.2773	0.2622
134	0.2860	0.2704	0.2556
135	0.2790	0.2638	0.2493
136	0.2722	0.2573	0.2431
137	0.2657	0.2510	0.2371
138	0.2593	0.2449	0.2313
139	0.2531	0.2390	0.2256
140	0.2470	0.2332	0.2201
141	0.2412	0.2277	0.2148
142	0.2355	0.2222	0.2096
143	0.2299	0.2169	0.2046
144	0.2245	0.2118	0.1997
145	0.2193	0.2068	0.1950
146	0.2142	0.2020	0.1904
147	0.2093	0.1973	0.1859
148	0.2045	0.1927	0.1815
149	0.1998	0.1882	0.1773
150	0.1952	0.1839	0.1732
151	0.1908	0.1797	0.1692
152	0.1865	0.1756	0.1653
153	0.1823	0.1716	0.1615
154	0.1782	0.1677	0.1578
155	0.1743	0.1640	0.1542
156	0.1704	0.1603	0.1507
157	0.1667	0.1567	0.1473
158	0.1630	0.1533	0.1440
159	0.1594	0.1499	0.1408
160	0.1560	0.1466	0.1377
161	0.1526	0.1434	0.1347
162	0.1493	0.1402	0.1317
163	0.1461	0.1372	0.1288
164	0.1430	0.1342	0.1260
165	0.1399	0.1314	0.1233
166	0.1370	0.1285	0.1206

167	0.1341	0.1258	0.1180
168	0.1312	0.1231	0.1155
169	0.1285	0.1205	0.1130
170	0.1258	0.1180	0.1106
171	0.1232	0.1155	0.1083
172	0.1207	0.1131	0.1060
173	0.1182	0.1108	0.1038
174	0.1158	0.1085	0.1016
175	0.1134	0.1063	0.0995
176	0.1111	0.1041	0.0975
177	0.1089	0.1020	0.0955
178	0.1067	0.0999	0.0935
179	0.1046	0.0979	0.0916
180	0.1025	0.0959	0.0897
181	0.1005	0.0940	0.0879
182	0.0985	0.0921	0.0862
183	0.0966	0.0903	0.0844
184	0.0947	0.0885	0.0827
185	0.0928	0.0868	0.0811
186	0.0910	0.0851	0.0795
187	0.0893	0.0834	0.0779
188	0.0876	0.0818	0.0764
189	0.0859	0.0802	0.0749
190	0.0843	0.0787	0.0735
191	0.0827	0.0772	0.0721
192	0.0811	0.0757	0.0707
193	0.0796	0.0743	0.0693
194	0.0781	0.0729	0.0680
195	0.0766	0.0715	0.0667
196	0.0752	0.0702	0.0654
197	0.0738	0.0689	0.0642
198	0.0725	0.0676	0.0630
199	0.0712	0.0663	0.0618
200	0.0699	0.0651	0.0607
201	0.0686	0.0639	0.0596
202	0.0674	0.0628	0.0585
203	0.0661	0.0616	0.0574
204	0.0650	0.0605	0.0564
205	0.0638	0.0594	0.0553
206	0.0627	0.0584	0.0543
207	0.0616	0.0573	0.0534
208	0.0605	0.0563	0.0524
209	0.0594	0.0553	0.0515

210	0.0584	0.0544	0.0506
211	0.0574	0.0534	0.0497
212	0.0564	0.0525	0.0488
213	0.0554	0.0516	0.0479
214	0.0545	0.0507	0.0471
215	0.0536	0.0498	0.0463
216	0.0527	0.0490	0.0455
217	0.0518	0.0481	0.0447
218	0.0509	0.0473	0.0439
219	0.0501	0.0465	0.0432
220	0.0492	0.0457	0.0425
221	0.0484	0.0450	0.0417
222	0.0476	0.0442	0.0410
223	0.0468	0.0435	0.0404
224	0.0461	0.0428	0.0397
225	0.0453	0.0421	0.0390
226	0.0446	0.0414	0.0384
227	0.0439	0.0407	0.0378
228	0.0432	0.0400	0.0371
229	0.0425	0.0394	0.0365
230	0.0418	0.0388	0.0359
231	0.0411	0.0381	0.0354
232	0.0405	0.0375	0.0348
233	0.0399	0.0369	0.0342
234	0.0392	0.0364	0.0337
235	0.0386	0.0358	0.0332
236	0.0380	0.0352	0.0326
237	0.0374	0.0347	0.0321
238	0.0369	0.0342	0.0316
239	0.0363	0.0336	0.0311
240	0.0358	0.0331	0.0306
241	0.0352	0.0326	0.0302
242	0.0347	0.0321	0.0297
243	0.0342	0.0316	0.0293
244	0.0337	0.0312	0.0288
245	0.0332	0.0307	0.0284
246	0.0327	0.0302	0.0280
247	0.0322	0.0298	0.0275
248	0.0317	0.0293	0.0271
249	0.0313	0.0289	0.0267
250	0.0308	0.0285	0.0263
251	0.0304	0.0281	0.0259
252	0.0299	0.0277	0.0256