承　认　书

APPROVAL　SHEET

客户名称(Customer)：_____

产品名称(Product Name)：负温度系数热敏电阻器

产品规格(Model/Type)：FH-CWF-19240B

客户物料号(Customer NO.)：_____

版本号（Version）：V1.0

日　期（Date）：2026.04.23

制　造 MANUFACTURER			客　户 CUSTOMER		
拟制 DESIGN	审核 CHECK	确认 APPROVAL	检验 INSPECTOR	审核 CHECK	批准 APPROVAL
李佳康					

修订履历

Modify resume

日期 Date4	版本号 Version number	描述 Describe	作者 Writer
2026-04-23	V1.0	新版送样/NEW SPEC	李佳康

序号 No	目　　录 TABLE OF CONTENTS

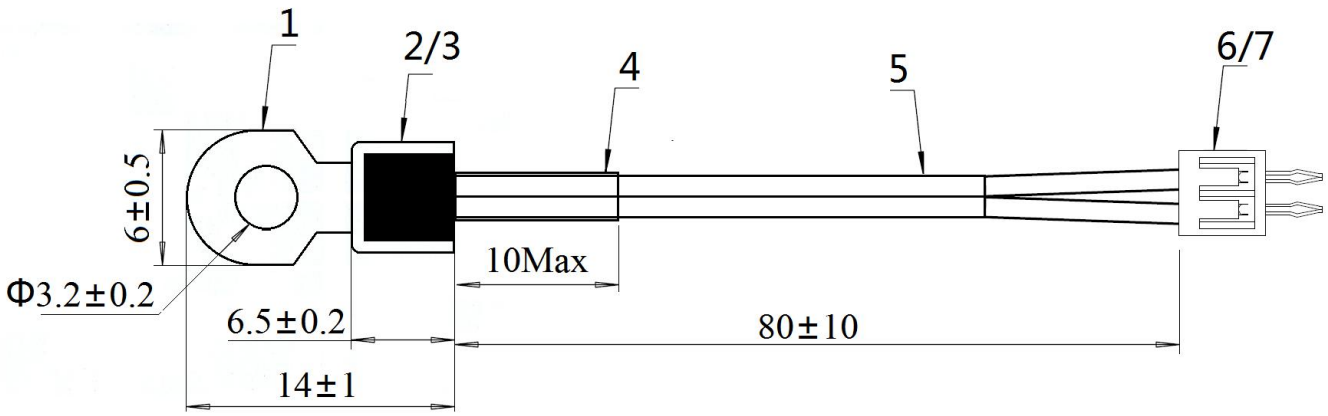
1.0 概述 Summary

NTC 热敏电阻是一种负温度系数电阻器，其阻值随环境温度的升高而降低，这种热敏电阻是由 2 种或 4 种铁、镍、钴、锰或铜的金属氧化物经过成型并在高温下烧结而制得。

NTC Thermistor is a Negative Temperature Coefficient Resistor whose resistance changes with ambient temperature changes. Thermistor comprises 2 or 4 kinds of metal oxides of iron, nickel, cobalt,manganese and copper, being shaped and sintered at high temperature.

2.0 结构及尺寸 Structure And Dimensions

(1).外形图 Outline Fig



序号	材料名	规格	备注
1	外壳	线耳φ6*14*3.2	
2	热敏电阻	R25=10KΩ±5% B(25/50)=4050K±5%　(52A)	
3	树脂	环氧树脂	黑色
4	套管	热缩套管	黑色
5	导线	UL4413　150℃ AWG26#	黑色
6	端子	SCN	
7	胶座	SCN-2Y	白色

3.0 订货方式 How to Order

FH - CWF - ×× ××× × ×

① ② ③ ④ ⑤ ⑥

① 风华公司标示记号
② NTC 热敏电阻温度传感器标示符号
③ 年份代码（11 代表 2011 年、12 代表 2012、……）
④ 当年的顺序号（由工程部编定）
⑤ 特殊代码（T 代表套有双壁管）
⑥ 型号的版本代码（A、B、C、D、……）

4.0 电气性能 Performance Specification

项目 Item	性能要求 Specification request
1.标称零功率电阻值(25℃) Rated Zero Power Resistance	10KΩ ±5%
2.B 值（25/50） B Value（25/50）	4050K±5%
3.耗散系数 Thermal Dissipation Constant	3.2 mW / ℃
4.热时间常数 Thermal Time Constant	12S
5.工作温度 Operation Range	-40—+125℃
6.耐压测试 Withstand voltage test	1800VAC 3mA 3S
7.绝缘电阻 Insulation resistance	500VDC ≥100 MΩ 3S

5.0 可靠性 Reliability data

项目 Item	试验条件 Test conditions	性能要求 Specification request
1．引线端子的抗拉强度 Tensile Strength of Lead Wire Terminal	固定热敏电阻本体，并沿轴向向每个端子逐渐施加5N负载，将该负载保持10±1秒。 The load is gradually applied to each terminal of Thermistor until the force of the following table in the axial direction with fixing Thermistor body itself and this load is kept for 10±1 sec.	无可见损伤 电阻变化率：±2% No break out and damage Resistance change：within ±2%
2．引线端子的弯曲强度 Bending Strength of Lead Wire Terminal	将热敏电阻垂直于引线固定，在引线上沿轴向悬挂下列负载。 将引线慢慢弯曲到90°并复原。 然后再慢慢朝相反方向弯曲，并恢复到原始状态。 Thermistor is held so that it is perpendicular to the lead wire with the following lead hanging in the axial direction of the lead wire. The lead wire is slowly bent to 90° and returned. Then it is slowly bent in the opposite direction and returned to original state.	引线不折断 电阻变化率：±2% Lead wire does not come off Resistance change：within ±2%
3．振动 vibration	频率：10~55 Hz 振幅：0.75 mm 方向和时间：X、Y 及 Z 轴各 2 小时 Frequency:10~55 Hz Amplitude modulation:0.75 mm Direction and time:X、Y and Z direction for 2 hrs each	无机械损伤 电阻变化率：±2% No substantial damage Resistance change：within ±2%

项目 Item	试验条件 Test conditions	性能要求 Specification request
4．可 焊 性 Solder ability	焊 锡 槽 温　　度：245±5℃ Temperature: 245±5℃ 时　　间：3±0.5 s Time: 3±0.5 s	涂布面积：≥95% Covered termination：≥95%
5．耐焊接热 Solder ability	把引端浸入 260±5℃的焊锡 6mm 深，持续 5±1 秒时间，静置 24 小时后测试 the lead wires shall be dipped in a molten solder of 260±5℃ for ≤5 seconds up to the point ≥6mm.after the specimen shall be left at room ambient temperature for 24 hours,the resistance shall be measured	电阻变化率：±2% Resistance change:within±2%
6．高温放置 （高温保存） Dry heat (high temperature storage)	在 125±2℃中放置 1000^{+48}_{0} 小时，静置 2 小时后测试 Specimen shall be subjected to an ambient of 125 ± 2 ℃ for 1000^{+48}_{0}hours.and after the specimen shall be left at room ambient for 1 to 2 hours,the resistance shall be measured	电阻变化率：±2% Resistance change:within±2%
7．低温放置 （低温保存） Cold (low temperature storage)	在－40±3℃中放置 1000^{+48}_{0} 小时，静置 2 小时后测试 Specimen shall be subjected to an ambient of -20±3℃ For 1000^{+48}_{0} hours.and after the specimen shall be left at room ambient for 1 to 2 hours,the resistance shall be measured	电阻变化率：±2% Resistance change:within±2%
8．稳态湿热 humidity test	40±2℃ 90~95%RH,1000 hrs	电阻变化率：±2% Resistance change:within±2%
9．温度快速变化 Temp Cycle test	-40℃/30´ —→ 25℃/5´ —→ +125℃/30´ —→ 25℃/5´ 循环 5 个周期 5 cycles	电阻变化率：±2% Resistance change:within±2%

6.0 环保情况说明 Environmental Protection Statement

我司提供的所有热敏电阻物料均符合最新欧盟 ROHS 指令及 Reach 法规要求，请贵司放心使用。
We provide all materials conform to the requirements of the latest eu ROHS directive and the Reach regulation, please rest assured to use.

7.0 贮存方法 Storage Methods

元器件必须储存在清洁、通风、无腐蚀性气体的仓库内；除另有规定外，仓库的温度和相对湿度必须满足如下要求：a.温度：5~30℃；b 相对湿度： 20%~75%；储存期限:1 年。
Components must be stored in a clean, ventilated, non-corrosive gases warehouse; Unless otherwise specified, the warehouse temperature and relative humidity must meet the following requirements: a.Temperature: 5 ~ 30 ℃;b. Relative humidity: 20% ~ 75%; Period of Storage : 1 year。

8.0 使用注意事项 Precautions For Use

1、工作环境温度应该在技术条件规定的范围以内。
Working environment temperature should be within the prescribed scope of technical conditions.
2、不应该靠近发热或可燃元器件安装，最好有大于 3 毫米的间隔，以免损坏元器件。
Near a fever or flammable components should not be installed, it is better to have more than 3 mm intervals, so as not to damage the components.
3、接触引脚时请先佩戴手套。
Please wear gloves when the contact pin.

9.0 阻温曲线 R-T TABLE

R25=10KΩ±5%　B(25/50)=4050K±5%			
Temp(℃)	Rmin(KΩQ)	Rnor(KΩ)	Rmax(KΩ)
-40	274.558	344.985	432.394
-39	258.219	323.410	404.045
-38	242.945	303.305	377.713
-37	228.661	284.562	353.244
-36	215.296	267.082	330.496
-35	202.786	250.772	309.337
-34	191.073	235.548	289.649
-33	180.100	221.331	271.321
-32	169.817	208.050	254.252
-31	160.178	195.637	238.349
-30	151.137	184.031	223.525
-29	142.655	173.176	209.701
-28	134.694	163.019	196.806
-27	127.220	153.511	184.771

-26	120.200	144.607	173.536
-25	113.604	136.266	163.041
-24	107.404	128.450	153.235
-23	101.575	121.122	144.070
-22	96.092	114.250	135.499
-21	90.933	107.802	127.482
-20	86.077	101.751	119.979
-19	81.408	95.950	112.807
-18	77.020	90.514	106.106
-17	72.895	85.418	99.843
-16	69.015	80.639	93.986
-15	65.364	76.155	88.506
-14	61.928	71.947	83.378
-13	58.692	67.995	78.576
-12	55.644	64.283	74.079
-11	52.772	60.795	69.864
-10	50.064	57.517	65.913
-9	47.511	54.433	62.208
-8	45.103	51.533	58.732
-7	42.830	48.803	55.470
-6	40.685	46.233	52.407
-5	38.659	43.813	49.530
-4	36.745	41.533	46.828
-3	34.936	39.384	44.287
-2	33.227	37.358	41.898
-1	31.611	35.448	39.651
0	30.082	33.645	37.537
1	28.626	31.934	35.535
2	27.250	30.319	33.651
3	25.947	28.796	31.878
4	24.715	27.358	30.209
5	23.548	26.001	28.637
6	22.443	24.718	27.155
7	21.397	23.506	25.759
8	20.405	22.361	24.443
9	19.465	21.278	23.201
10	18.573	20.253	22.030
11	17.728	19.284	20.924
12	16.926	18.366	19.880
13	16.164	17.498	18.894
14	15.441	16.675	17.962
15	14.755	15.896	17.082

16	14.103	15.157	16.249
17	13.483	14.457	15.462
18	12.894	13.793	14.717
19	12.334	13.163	14.012
20	11.801	12.565	13.345
21	11.295	11.998	12.713
22	10.812	11.459	12.114
23	10.353	10.948	11.547
24	9.916	10.462	11.010
25	9.500	10.000	10.500
26	9.063	9.561	10.062
27	8.648	9.144	9.644
28	8.254	8.747	9.246
29	7.880	8.369	8.866
30	7.526	8.010	8.504
31	7.189	7.668	8.159
32	6.868	7.343	7.830
33	6.564	7.032	7.515
34	6.275	6.737	7.215
35	6.000	6.456	6.928
36	5.739	6.187	6.655
37	5.490	5.932	6.393
38	5.253	5.688	6.143
39	5.028	5.455	5.904
40	4.813	5.233	5.676
41	4.609	5.022	5.457
42	4.414	4.819	5.249
43	4.229	4.627	5.049
44	4.052	4.442	4.857
45	3.884	4.266	4.674
46	3.723	4.098	4.499
47	3.570	3.937	4.331
48	3.424	3.784	4.171
49	3.285	3.637	4.017
50	3.151	3.496	3.869
51	3.025	3.363	3.729
52	2.905	3.235	3.594
53	2.789	3.113	3.465
54	2.679	2.996	3.341
55	2.574	2.884	3.222
56	2.474	2.777	3.108
57	2.378	2.674	2.999

58	2.286	2.576	2.894
59	2.199	2.481	2.793
60	2.115	2.391	2.697
61	2.034	2.305	2.604
62	1.958	2.222	2.515
63	1.884	2.142	2.429
64	1.814	2.066	2.347
65	1.746	1.992	2.268
66	1.682	1.922	2.192
67	1.620	1.855	2.119
68	1.560	1.790	2.048
69	1.504	1.728	1.981
70	1.449	1.668	1.916
71	1.397	1.611	1.853
72	1.347	1.556	1.793
73	1.299	1.503	1.735
74	1.253	1.452	1.679
75	1.208	1.403	1.626
76	1.166	1.356	1.574
77	1.125	1.311	1.524
78	1.086	1.268	1.476
79	1.049	1.226	1.430
80	1.012	1.186	1.385
81	0.978	1.147	1.342
82	0.945	1.110	1.301
83	0.913	1.074	1.261
84	0.882	1.040	1.223
85	0.853	1.007	1.186
86	0.824	0.975	1.150
87	0.797	0.944	1.115
88	0.771	0.914	1.082
89	0.745	0.886	1.050
90	0.721	0.858	1.019
91	0.698	0.832	0.989
92	0.675	0.806	0.960
93	0.654	0.781	0.932
94	0.633	0.758	0.905
95	0.613	0.735	0.879
96	0.593	0.713	0.854
97	0.574	0.691	0.829
98	0.556	0.670	0.806
99	0.539	0.651	0.783

100	0.522	0.631	0.761
101	0.506	0.613	0.740
102	0.491	0.595	0.719
103	0.476	0.577	0.699
104	0.461	0.561	0.680
105	0.447	0.544	0.661
106	0.434	0.529	0.643
107	0.421	0.514	0.626
108	0.408	0.499	0.609
109	0.396	0.485	0.592
110	0.384	0.471	0.576
111	0.373	0.458	0.561
112	0.362	0.445	0.546
113	0.351	0.433	0.532
114	0.341	0.421	0.518
115	0.331	0.409	0.504
116	0.322	0.398	0.491
117	0.312	0.387	0.478
118	0.304	0.376	0.466
119	0.295	0.366	0.454
120	0.287	0.356	0.442
121	0.279	0.347	0.431
122	0.271	0.338	0.420
123	0.263	0.329	0.409
124	0.256	0.320	0.399
125	0.249	0.311	0.389