规格承认书

SPECIFICATION FOR APPROVAL

客户(Customer)：

品名(Product Name)： NTC热敏传感器 NTC thermal sensor

维宏料号(Part Number)：WH282103F3435 30-2-10

发布日期(Issue Date)：2025.2.17

发布版本(Rev. No.)：V1.1

文件编号(Doc. No.)：WH-2-01

客户承认Customer Approved

判定结果 Result		
检验 Inspector	审核 Checked	核准 Approved

维宏感应（山东）科技有限公司

Weihong Induction (Shandong) Technology Co., Ltd

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Address: Hanxin Semiconductor Industrial Park, Keda West Road, Yicheng District, Zaozhuang City, Shandong Province

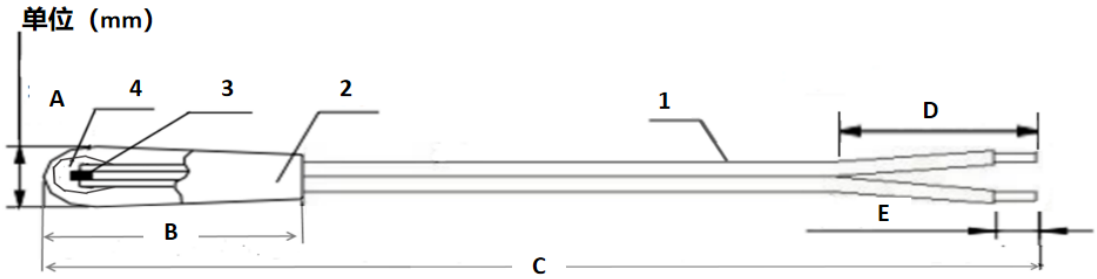
修订记录清单 Revised Record Sheet

版本 REV. NO	发布日期 REV. Date	修改内容 Revised Content
V1.1	2025.2.17	新版本发布(New Released)

1. 外形尺寸 Shape and Dimensions：

		材料清单 Bill of Material							
NO	名称 name	材料规格Material specifications	数量 number	备注 notes	NO	名称name	材料规格Material specifications	数量 number	备注 notes
1	线材 wire rod	UL2651-28#	1	黑色 black	2	环氧树脂 epoxy resin	包封类环氧树脂 Encapsulated epoxy resin	1	黑色 black
3	芯片 chip	R25=10KΩ, B25/85=3435, 1%	1	/	4	硅胶 silica gel	硅胶 silica gel	1	透明 transparent

主要参数	
项目	数值
R25阻值 resistance	10KΩ ±1%
B25/85	3435K ±1%



A	B	C	D	E
Max 3.5	Max 6.0	30±3	10±2	2±0.5

版本	修改内容 REVISION	修改者 Modified By	修改日期 modification date	确认 confirm	维宏料号 Weihong part number	WH282103F3435 30-2-10
V1.1	新版本	刘兆霞	2025.2.17	马国辉	日期date	2025.217

2. 产品型号说明 Product Identification(Part Number):

WH282	103	F	3435	30	2	10
①	②	③	④	⑤	⑥	⑦

①WH282:

- 维宏公司:28#并线产品

Weihong Company: 28# parallel products

②103：标准阻值 Standard resistance value

- 25℃的零功率电阻值10KΩ Zero power resistance value of 10K Ω at 25 ℃

③F：阻值允许偏差代号

Code for allowable deviation of resistance value

- F：±1%， G：±2%， H：±3%， J：±5%， K：±10%

④3435：B值

- B25/85℃ 值：3435K

⑤30：产品长度（mm） Product length (mm)

⑥2：尾部侵锡长度（mm）Tail tin penetration length

⑦10：尾部分叉长度（mm）Tail fork length

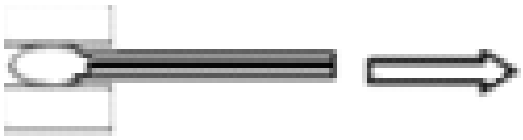
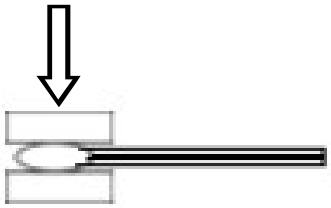
3. 电气特性 Electrical Characteristics：

序号	项目 project	符号 symbol	测试条件 Test conditions	单位 unit	性能要求 Performance Requirement
3.1	25℃的零功率电阻Zero power resistance value at 25 ℃	$R_{25℃}$	Ta=25±0.05℃ 测试功率≤0.1mw Ta=25 ± 0.05 ℃ Test power ≤ 0.1kw	KΩ	10KΩ±1%
3.2	B值	$B_{25/85}$	$B=[(T_a×T_b)/(T_b-T_a)]×\ln(R_a/R_b)$ Tb=85℃±0.05℃	K	3435±1%
3.3	耗散系数 Dissipation coefficient	δ	静止空气中In still air	mW/℃	≥2
3.4	时间常数 time constant	τ	静止空气中In still air	sec	≤7
3.5	绝缘耐压 insulation resistance	/	300V/DC 1min	MΩ	≥300
3.6	工作温度范围 Operating temperature range	/	/	/	-40℃ ~ 125℃
3.7	最大额定功率 Maximum rated power	Pmax	/	mW	10
3.8	阻温特性 Resistance temperature characteristic	/	/	/	见附表5 See Appendix 5

4. 信赖性试验 Reliability Test：

项目 project	测试条件 Test conditions	技术要求 technical requirement
4.1 线材额定温度 Rated temperature of wire	线材额定温度≤105℃ Rated temperature of wire 105 ℃	R_{25} ΔR/R≤±2%
4.2 尾部焊接 soldering resistance	温度：260±5℃，浸入深度距电阻体6mm，时间5±1 秒	R_{25} ΔR/R≤±2%
4.3稳态湿热 Damp heat steady state	温度：40℃±2℃，湿度：93±2%，时间：500 小时	R25 ΔR/R≤±2%
4.4 冷热冲击 Thermal Shock	-40℃ 30min→25℃ 5min→105℃ 30min→25℃ 5min，反复5次	R_{25} ΔR/R≤±2%
4.5高温高湿老化 High temperature and high humidity storage	温度: 85℃±5℃ 湿度：85% 时间:1000小时 Temperature: 85 ℃± 5 ℃ Humidity: 85% Time: 1000 hours	R_{25} ΔR/R≤±5%

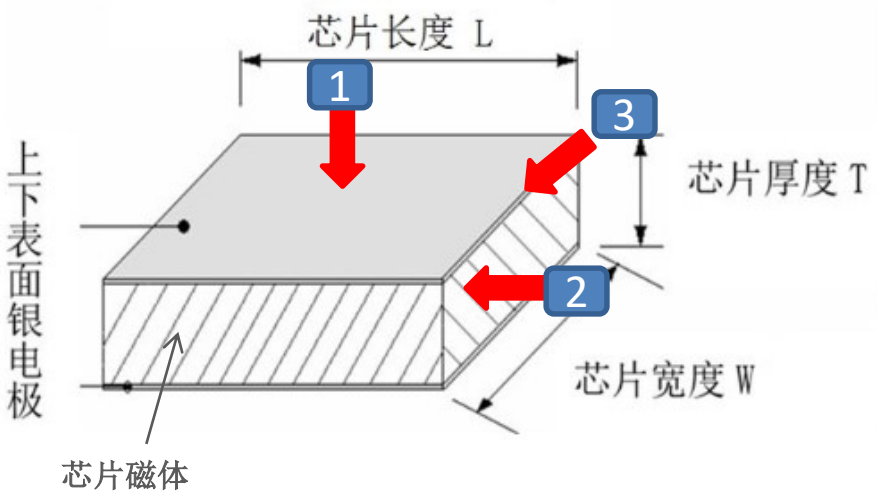
5. 机械性能：Mechanical performance:

项目 project	测试条件 Test conditions	技术要求 technical requirement
5.1自由跌落 free fall	跌落高度： 1.0m Drop height: 1.0m 跌落次数： 3次 Number of drops: 3 times 跌 落 面：木板 Falling surface: wooden board	外观无损伤 $\|\triangle R25/R25\| \leq 1\%$ $\|\triangle B/B\| \leq 1\%$
5.2 水平拉力 Horizontal tensile force	 固定环氧头部：拉力：F=5±1N， 时间：10±1秒 Fixed resistor end: tension: 5 ± 1 N, time: 10 ± 1 seconds	无可见性损伤 No visible damage R_{25} Δ R/R≤±2%
5.3 压力测试 Stress testing	 常规室温接通阻值测试仪/万用表，阻值稳定后施加80N压力持续5秒 Connect the resistance tester/multimeter to the conventional room temperature at the tail line, and apply 50N pressure for 5 seconds after the resistance stabilizes	R_{25} ΔR/R≤±2%

6.高精度NTC热敏电阻芯片特性：

Characteristics of high-precision NTC thermistor chip:

芯片结构chip structure



芯片压力极限测试：Chip Pressure Limit Test

受力方向 Direction of force	极限压力值 Ultimate pressure value	受损部位 Damaged area
1、正面 Frontal	80N	电极表面OK,芯片磁体破损。 The electrode surface is OK, and the chip magnet is damaged.
2、侧面 Sides	40N	芯片电极/磁体均出现破损 Both chip electrodes and magnets are damaged
3、侧面45度 45 degrees on the side	10N	芯片电极/磁体开裂分离 Chip electrode/magnet cracking separation
4、芯片电极与磁体结合力 Bonding force between chip electrode and magnet	2N	芯片电极/磁体交接处分离 Separation of chip electrode/magnet junction

7. 使用注意事项 Notes & Warnings：

7.1 本产品的用途：温度测量与控制；

The purpose of this product: temperature measurement and control;

7.2 避免流过热敏电阻芯片的电流引起元件自身发热而产生测量误差；

To avoid measurement errors caused by the heating of the component itself caused by the current flowing through the thermistor chip;

7.3 焊接时，焊接温度应低于 275℃，焊接时间＜3ses；

When welding, the welding temperature should be lower than 275 ℃ and the welding time should be less than 3 seconds;

7.4 允许任何方法运输，但要避免雨/雪直接或间接的淋袭。

Any method of transportation is allowed, but direct or indirect rain/snow should be avoided.

7.5 生产、运输或使用过程中应避免80N以上的外力挤压或损伤。

During production, transportation, or use, external forces exceeding 80N should be avoided from squeezing or damaging.

7.6 存储：Storage:

最佳存储温度： 25℃±3℃ 湿度：30%~60%

Class I: Storage temperature: 25 ℃± 3 ℃ Humidity: 30%~60%

存储有效期12个月内阻值变化3%以内（仅限整包密封包装），不排除锡脚表面氧化的可能。The resistance change within 12 months of storage validity is within 3% (limited to whole package vacuum packaging), and the possibility of oxidation on the surface of the tin feet cannot be ruled out.

常规存储温度：-10℃~40℃ 湿度：<75%

Class II: Storage temperature: -10 ℃~40 ℃ Humidity:<75%

存储有效期6个月内阻值变化3%以内（仅限整包密封包装），不排除锡脚表面氧化的可能。The resistance change within 6 months of storage is within 3% (limited to whole package vacuum packaging), and the possibility of oxidation on the surface of the tin feet cannot be ruled out.

8. 附表1： 阻温特性表 R-T table

R25=10KΩ， B25/85=3435K，精度:: accuracy ±1%

温度 [℃]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [℃]	
-50	385.1	367.7	351.1	-0.8	+0.8
-49	362.1	346.0	330.5	-0.8	+0.8
-48	340.7	325.7	311.3	-0.8	+0.8
-47	320.7	306.8	293.4	-0.8	+0.8
-46	302.0	289.1	276.7	-0.8	+0.8
-45	284.6	272.6	261.0	-0.8	+0.8
-44	268.4	257.2	246.4	-0.8	+0.8
-43	253.1	242.7	232.7	-0.8	+0.8
-42	238.9	229.2	219.9	-0.8	+0.8
-41	225.6	216.6	207.8	-0.8	+0.8
-40	213.1	204.7	196.6	-0.8	+0.8
-39	201.3	193.4	185.8	-0.7	+0.8
-38	190.1	182.8	175.8	-0.7	+0.7
-37	179.7	172.9	166.3	-0.7	+0.7
-36	170.0	163.6	157.4	-0.7	+0.7
-35	160.8	154.9	149.1	-0.7	+0.7
-34	152.2	146.7	141.3	-0.7	+0.7
-33	144.1	139.0	133.9	-0.7	+0.7
-32	136.6	131.7	127.0	-0.7	+0.7
-31	129.4	124.9	120.5	-0.7	+0.7
-30	122.7	118.5	114.4	-0.7	+0.7
-29	116.3	112.4	108.5	-0.7	+0.7
-28	110.3	106.6	103.0	-0.7	+0.7
-27	104.6	101.2	97.88	-0.7	+0.7
-26	99.26	96.08	92.98	-0.7	+0.7
-25	94.24	91.27	88.37	-0.7	+0.7
-24	89.52	86.73	84.02	-0.7	+0.7
-23	85.06	82.45	79.92	-0.7	+0.7
-22	80.86	78.42	76.05	-0.7	+0.7
-21	76.90	74.61	72.39	-0.7	+0.7
-20	73.16	71.02	68.94	-0.6	+0.6

温度 [℃]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [℃]	
-19	69.53	67.53	65.59	-0.6	+0.6
-18	66.11	64.24	62.42	-0.6	+0.6
-17	62.88	61.14	59.43	-0.6	+0.6
-16	59.83	58.20	56.61	-0.6	+0.6
-15	56.96	55.43	53.94	-0.6	+0.6
-14	54.24	52.81	51.41	-0.6	+0.6
-13	51.67	50.33	49.02	-0.6	+0.6
-12	49.24	47.99	46.76	-0.6	+0.6
-11	46.94	45.77	44.62	-0.6	+0.6
-10	44.77	43.67	42.60	-0.6	+0.6
-9	42.69	41.66	40.66	-0.6	+0.6
-8	40.72	39.76	38.82	-0.6	+0.6
-7	38.86	37.96	37.08	-0.6	+0.6
-6	37.09	36.25	35.42	-0.5	+0.6
-5	35.42	34.63	33.86	-0.5	+0.5
-4	33.84	33.10	32.37	-0.5	+0.5
-3	32.33	31.64	30.96	-0.5	+0.5
-2	30.91	30.26	29.62	-0.5	+0.5
-1	29.55	28.95	28.35	-0.5	+0.5
0	28.27	27.70	27.14	-0.5	+0.5
1	27.04	26.50	25.98	-0.5	+0.5
2	25.87	25.37	24.88	-0.5	+0.5
3	24.76	24.29	23.83	-0.5	+0.5
4	23.70	23.26	22.83	-0.5	+0.5
5	22.70	22.29	21.88	-0.5	+0.5
6	21.74	21.36	20.98	-0.5	+0.5
7	20.83	20.48	20.12	-0.5	+0.5
8	19.97	19.63	19.30	-0.4	+0.5
9	19.15	18.83	18.52	-0.4	+0.4
10	18.36	18.07	17.78	-0.4	+0.4

温度 [℃]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [℃]	
11	17.61	17.34	17.07	-0.4	+0.4
12	16.90	16.64	16.39	-0.4	+0.4
13	16.22	15.98	15.74	-0.4	+0.4
14	15.57	15.35	15.12	-0.4	+0.4
15	14.95	14.74	14.53	-0.4	+0.4
16	14.36	14.17	13.97	-0.4	+0.4
17	13.80	13.62	13.43	-0.4	+0.4
18	13.26	13.09	12.92	-0.4	+0.4
19	12.75	12.59	12.43	-0.4	+0.4
20	12.26	12.11	11.96	-0.4	+0.4
21	11.79	11.65	11.51	-0.3	+0.3
22	11.34	11.21	11.08	-0.3	+0.3
23	10.91	10.79	10.67	-0.3	+0.3
24	10.50	10.38	10.27	-0.3	+0.3
25	10.10	10.00	9.900	-0.3	+0.3
26	9.730	9.630	9.529	-0.3	+0.3
27	9.376	9.275	9.175	-0.3	+0.3
28	9.036	8.936	8.836	-0.3	+0.4
29	8.711	8.612	8.512	-0.4	+0.4
30	8.400	8.301	8.202	-0.4	+0.4
31	8.100	8.002	7.904	-0.4	+0.4
32	7.813	7.715	7.618	-0.4	+0.4
33	7.538	7.441	7.344	-0.4	+0.4
34	7.274	7.177	7.082	-0.4	+0.4
35	7.021	6.925	6.830	-0.4	+0.4
36	6.778	6.683	6.590	-0.4	+0.4
37	6.545	6.452	6.359	-0.5	+0.5
38	6.322	6.229	6.137	-0.5	+0.5
39	6.107	6.016	5.925	-0.5	+0.5
40	5.902	5.811	5.721	-0.5	+0.5

温度 [℃]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [℃]	
41	5.702	5.613	5.524	-0.5	+0.5
42	5.511	5.423	5.335	-0.5	+0.5
43	5.327	5.240	5.154	-0.5	+0.5
44	5.151	5.064	4.979	-0.5	+0.5
45	4.981	4.896	4.812	-0.6	+0.6
46	4.818	4.734	4.651	-0.6	+0.6
47	4.661	4.579	4.497	-0.6	+0.6
48	4.510	4.429	4.349	-0.6	+0.6
49	4.365	4.285	4.206	-0.6	+0.6
50	4.226	4.147	4.069	-0.6	+0.6
51	4.091	4.013	3.936	-0.6	+0.6
52	3.960	3.884	3.808	-0.6	+0.6
53	3.835	3.760	3.685	-0.7	+0.7
54	3.714	3.640	3.567	-0.7	+0.7
55	3.598	3.525	3.453	-0.7	+0.7
56	3.486	3.414	3.344	-0.7	+0.7
57	3.378	3.308	3.238	-0.7	+0.7
58	3.275	3.205	3.137	-0.7	+0.7
59	3.175	3.106	3.039	-0.7	+0.7
60	3.078	3.011	2.945	-0.8	+0.8
61	2.985	2.919	2.854	-0.8	+0.8
62	2.895	2.830	2.766	-0.8	+0.8
63	2.808	2.744	2.681	-0.8	+0.8
64	2.725	2.662	2.600	-0.8	+0.8
65	2.644	2.582	2.521	-0.8	+0.8
66	2.566	2.505	2.446	-0.8	+0.8
67	2.491	2.431	2.372	-0.9	+0.9
68	2.418	2.360	2.302	-0.9	+0.9
69	2.348	2.291	2.234	-0.9	+0.9
70	2.281	2.224	2.168	-0.9	+0.9
71	2.215	2.159	2.105	-0.9	+0.9
72	2.152	2.097	2.043	-0.9	+0.9
73	2.090	2.037	1.984	-0.9	+0.9

温度 [℃]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [℃]	
74	2.031	1.978	1.927	-1.0	+1.0
75	1.974	1.922	1.871	-1.0	+1.0
76	1.919	1.868	1.818	-1.0	+1.0
77	1.865	1.815	1.766	-1.0	+1.0
78	1.814	1.764	1.716	-1.0	+1.0
79	1.764	1.715	1.668	-1.0	+1.0
80	1.716	1.668	1.622	-1.0	+1.0
81	1.668	1.622	1.576	-1.0	+1.1
82	1.623	1.577	1.532	-1.1	+1.1
83	1.579	1.533	1.489	-1.1	+1.1
84	1.536	1.492	1.448	-1.1	+1.1
85	1.495	1.451	1.409	-1.1	+1.1
86	1.455	1.412	1.370	-1.1	+1.1
87	1.416	1.374	1.333	-1.1	+1.2
88	1.378	1.337	1.297	-1.2	+1.2
89	1.342	1.301	1.262	-1.2	+1.2
90	1.307	1.267	1.228	-1.2	+1.2
91	1.273	1.233	1.195	-1.2	+1.2
92	1.240	1.201	1.164	-1.2	+1.2
93	1.207	1.170	1.133	-1.2	+1.2
94	1.176	1.139	1.103	-1.3	+1.3
95	1.146	1.110	1.074	-1.3	+1.3
96	1.117	1.081	1.046	-1.3	+1.3
97	1.089	1.053	1.019	-1.3	+1.3
98	1.061	1.027	0.9934	-1.3	+1.3
99	1.035	1.001	0.9679	-1.3	+1.3
100	1.009	0.9753	0.9433	-1.4	+1.4
101	0.9831	0.9507	0.9192	-1.4	+1.4
102	0.9586	0.9268	0.8959	-1.4	+1.4
103	0.9349	0.9036	0.8733	-1.4	+1.4
104	0.9119	0.8811	0.8514	-1.4	+1.4
105	0.8896	0.8594	0.8301	-1.4	+1.4

温度 [℃]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [℃]	
106	0.8679	0.8382	0.8095	-1.4	+1.5
107	0.8469	0.8177	0.7895	-1.5	+1.5
108	0.8264	0.7978	0.7700	-1.5	+1.5
109	0.8066	0.7785	0.7512	-1.5	+1.5
110	0.7874	0.7597	0.7329	-1.5	+1.5
111	0.7685	0.7413	0.7150	-1.5	+1.5
112	0.7502	0.7235	0.6976	-1.5	+1.6
113	0.7325	0.7062	0.6808	-1.6	+1.6
114	0.7152	0.6894	0.6644	-1.6	+1.6
115	0.6984	0.6730	0.6485	-1.6	+1.6
116	0.6821	0.6572	0.6331	-1.6	+1.6
117	0.6663	0.6418	0.6181	-1.6	+1.6
118	0.6509	0.6268	0.6035	-1.6	+1.7
119	0.6359	0.6122	0.5894	-1.7	+1.7
120	0.6214	0.5981	0.5756	-1.7	+1.7
121	0.6073	0.5844	0.5623	-1.7	+1.7
122	0.5935	0.5710	0.5493	-1.7	+1.7
123	0.5801	0.5580	0.5367	-1.7	+1.8
124	0.5671	0.5454	0.5244	-1.8	+1.8
125	0.5545	0.5331	0.5125	-1.8	+1.8
126	0.5422	0.5212	0.5009	-1.8	+1.8
127	0.5302	0.5095	0.4896	-1.8	+1.8
128	0.5186	0.4982	0.4786	-1.8	+1.8
129	0.5072	0.4872	0.4679	-1.8	+1.8
130	0.4962	0.4765	0.4576	-1.9	+1.8
131	0.4844	0.4650	0.4464	-1.8	+1.8
132	0.4736	0.4546	0.4363	-1.8	+1.9
133	0.4631	0.4444	0.4265	-1.9	+1.9
134	0.4530	0.4346	0.4169	-1.9	+1.9
135	0.4431	0.4250	0.4076	-1.9	+1.9
136	0.4334	0.4156	0.3985	-1.9	+1.9
137	0.4240	0.4065	0.3897	-1.9	+2.0

温度 [℃]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [℃]	
138	0.4149	0.3977	0.3812	-2.0	+2.0
139	0.4060	0.3891	0.3728	-2.0	+2.0
140	0.3973	0.3807	0.3647	-2.0	+2.0
141	0.3886	0.3723	0.3566	-2.0	+2.0
142	0.3802	0.3641	0.3487	-2.0	+2.0
143	0.3720	0.3562	0.3410	-2.0	+2.0
144	0.3640	0.3484	0.3335	-2.0	+2.0
145	0.3562	0.3409	0.3262	-2.0	+2.1
146	0.3486	0.3335	0.3191	-2.1	+2.1
147	0.3412	0.3264	0.3122	-2.1	+2.1
148	0.3340	0.3194	0.3055	-2.1	+2.1
149	0.3270	0.3126	0.2989	-2.1	+2.1
150	0.3201	0.3060	0.2925	-2.1	+2.1