

■ NTC热 度

NTC THERMISTOR TEMPERATURE SENSORS



● 特性 FEATURES

- * 高精度、高稳定性
High precision and high stability
- * 响应快速
Quick temperature response
- * 优良的抗热冲击性
Resistant to heat shock
- * 耐湿性能优良
Moisture resistant
- * 高科技批量化生产保证了产品的高品质和高稳定性
Excellent quality and high stability

● 用途 APPLICATIONS

- * 在各种 、 、 热、 、 、 、 、 、 、 度 、 用
Temperature test in all kinds of air-condition,refrigerator,water boiler,microwave oven.

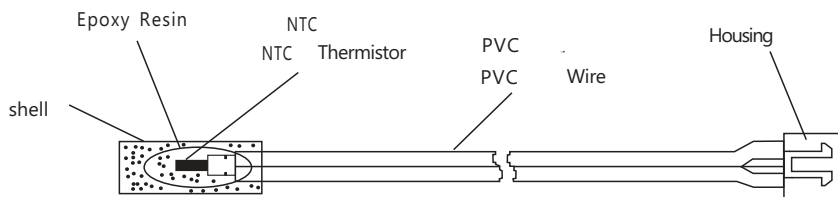
● 型号命名 PART NUMBERING

FH - CWF XX XXX X X
① ② ③ ④ ⑤ ⑥

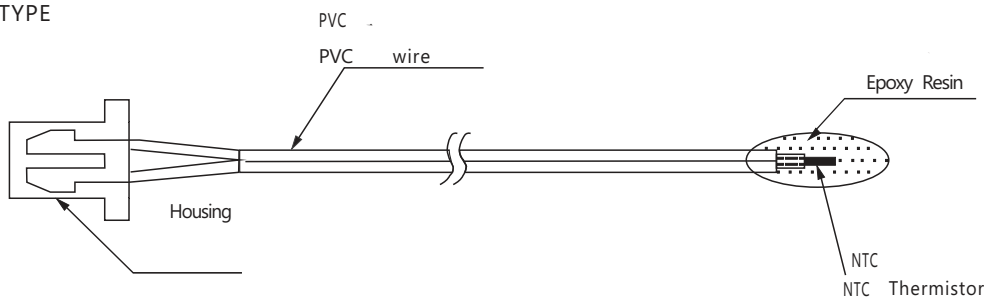
- ① 号 Guang Dong Fenghua Advanced Technology (Holding) Co.,LTD.code
- ② NTC 热 度 号 NTC temperature sensors code
- ③ 12 2012、13 2013、----- Date code (“12” represents the 2012, “13” represents the 2013
- ④ 的 号 定 sequence number
- ⑤ 特 T Specific Code(T represents a set of double wall pipe)
- ⑥ 型号的 A、B、C、D----- Version number

● APPEARACE

- * 型 Pour type

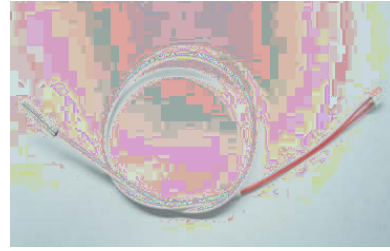


- * 型 EPOXY TYPE



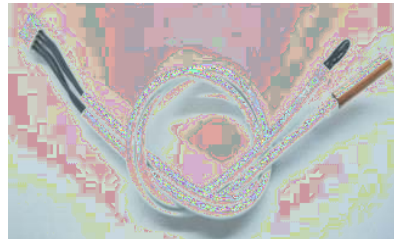
用 各种 的
NOTE We can absolutely design NTC Sensors as your requirement.

■ 产品 Product photos



● 应用

热, Application: water heater inlet pipe, outlet pipe, water tank, coil temperature sensor.



● 应用

定、度用 Application: constant frequency air-conditioning indoor and outdoor ring temperature, disk temperature, compressor exhaust temperature and variable frequency air-conditioning sensors

用、各种的

NOTE We can absolutely design NTC Sensors as your requirement.

● 性能 PERFORMANCE PARAMETER

 * $R_{25} \sim 10^3 \sim 10^6$

 Rated zero-power resistance $R_{25} \sim 10^3 \sim 10^6$

 * 精度 $\pm 1\%、\pm 2\%、\pm 3\%、\pm 5\%$

 Resistance tolerance $\pm 1\%、\pm 2\%、\pm 3\%、\pm 5\%$

 * B 25/50 or 25/85 $\sim 3200 \sim 4200K$

 * B Constant 25/50 or 25/85 $\sim 3200 \sim 4200K$

 B 精度 $\pm 1\%、\pm 2\%、\pm 3\%、\pm 5\%$

 * Tolerance of B-constant $\pm 1\%、\pm 2\%、\pm 3\%、\pm 5\%$

 用度 $\sim 40 \sim 105$

 * Operating temperature $40 \sim 105$

 耗散功率 \sim C型 2.0 4.0mw/ | E型 3.0 4.5mw/

* Dissipation factor (in still air) type C 2.0 4.0mw/ | type E 3.0 4.5mw/

 热时间常数 \sim C型 $\sim 30s$ E型 $\sim 20s$

 * Thermal time constant (in still air) type C $\sim 30s$ type E $\sim 20s$

温度特性 R-T特性

型号 type	Resistance (k Ω)		103F		103F		503F
度 Temperature ($^{\circ}C$)	502F 3274F	502F 3470F	103F 3572F	103F 3450F	103F 3950F	103F 4100F	503F 4055F
40	88.85	93.92	249.6	223.3	354.1	352.7	1566
30	52.85	63.73	140.0	126.1	182.7	185.6	840.3
20	32.43	37.40	80.36	74.10	97.10	101.6	469.0
10	20.48	22.72	47.73	45.11	55.35	57.63	271.1
0.0	13.29	14.23	29.37	28.35	32.67	33.75	161.7
10	8.839	9.181	18.68	18.34	19.91	20.35	99.22
20	6.013	6.085	12.24	12.17	12.50	12.60	62.46
30	4.179	4.132	8.221	8.273	8.049	7.991	40.31
40	2.962	2.869	5.648	5.756	5.314	5.194	26.66
50	2.138	2.032	3.958	4.085	3.589	3.451	18.02
60	1.568	1.467	2.823	2.953	2.478	2.340	12.42
70	1.169	1.071	2.047	2.171	1.745	1.616	8.498
80	0.8838	0.7959	1.506	1.621	1.252	1.135	6.051
90	0.6774	0.5975	1.124	1.228	0.9117	0.8106	4.390
100	0.5267	0.4533	0.8502	0.9431	0.6739	0.5880	3.226
R25	5.00	5.00	10.00	10.00	10.00	10.00	50.00
B25/50	3274	3470	3572	3450	3950	4100	4055
B25/85							

R T characteristics

型号 type	153F 3950F	233F 3950F	233F 4200F	103F 3700F	103F 3435F	152F 3850F	442F 3950F
40	531.1	814.3	885.0	224.3	198.31	45.86	156.9
30	274.1	420.3	458.4	130.5	115.49	24.70	80.97
20	148.5	227.8	247.3	77.9	69.530	13.83	43.88
10	84.16	129.0	138.3	47.64	43.158	8.024	24.86
0.0	49.45	75.03	79.97	29.77	27.550	4.803	14.61
10	30.02	46.04	47.62	18.98	18.042	2.958	8.869
20	18.78	28.79	29.13	12.33	12.105	1.870	5.546
30	12.07	18.51	18.28	8.160	8.3051	1.213	3.565
40	7.966	12.21	11.76	5.530	5.8161	0.8085	2.353
50	5.382	8.253	7.734	3.829	4.1509	0.5524	1.590
60	3.716	5.698	5.194	2.704	3.0148	0.3859	1.098
70	2.616	4.012	3.555	1.944	2.2255	0.2751	0.7728
80	1.876	2.876	2.476	1.421	1.6677	0.1998	0.5541
90	1.367	2.096	1.754	1.055	1.271	0.1475	0.4039
100	1.013	1.553	1.262	0.7943	0.9832	0.1107	0.2992
R25	15.00	23.00	23.00	10.00	10.00	1.500	4.431
B25/50	3950	3950	4200	3700		3850	3950
B25/85					3435		

用性能
 NOTE We can absolutely design NTC sensors as your requirement.

THE MAIN CHARACTERISTICS

 1. 定 R_{25}

在25 量的热 的

 1.Rated zero-power resistance (R_{25})

The zero-power resistance at 25 (298.15K).

2.B

定 度 的 度 的

$$B = \ln(R_{T1}/R_{T2}) / (1/T1 - 1/T2)$$

 R_{T1} 度T1 的

 R_{T2} 度T2 的

2.B value

B value is expressed by the following equation:

$$B = \ln(R_{T1}/R_{T2}) / (1/T1 - 1/T2)$$

R_{T1} Resistance at T1(K).

R_{T2} Resistance at T2(K).

3

在一定的温度下，热敏电阻的阻值变化了初始阻值的63.2%

的热敏电阻的热容量C，其热时间常数τ = C / (hA)

3.Thermal time constant

The time necessary for a thermistor to vary its temperature by 63.2% of the total difference its initial temperature and its final temperature when it is subjected to a temperature step under zero-power conditions.

4

在一定的功率下，热敏电阻的阻值变化与功率成正比

$$\Delta R/R = P / T$$

在一定的功率下，热敏电阻的阻值变化与功率成正比

4.Dissipation factor

The quotient of the change in power dissipation in a thermistor and the Resultant temperature change of the element.

5. 温度系数

在一定的温度下，热敏电阻的阻值随温度的变化率

$$\alpha_T = 1/R_T \cdot dR_T/dT = -B/T^2$$

在一定的温度T下，热敏电阻的阻值随温度的变化率

$$R_T \text{ 是温度T的函数}$$

$$T \text{ 是温度(K)}$$

$$B \text{ 是常数(K)}$$

5.Temperature coefficient at zero-power of the resistance α_T

At a specific temperature T , α_T is a ratio of the zero-power resistance change with temperature and the zero-power resistance.

$$\alpha_T = 1/R_T \cdot dR_T/dT = -B/T^2$$

• 性 RELIABILITY CHARACTERISTICS

Testing Item	性能 Requirement	Testing Method and Condition.
度 Heat Cycle Test	$R/R_{25} < 3\%$ $B/B < 3\%$ 耐 性 化	30 30 10 100 30 10: 30 , 30min 25 , 10min 100 , 30min. [in coolant] [in water] 10cycles.
高 Heat Resistance Test		100± 2 1000hrs 1000 hours at 100± 2 in air
冷 Cold Resistance Test		30± 2 1000hrs 1000hours at -30 ±2 in air.
耐 Humidity Test		55± 2 90% 95%RH 1000hrs Placed 1000hours at 55± 2 90% 95%RH.
度 Lead Wire Crimping Strength	$R/R_{25} < 3\%$ $B/B < 3\%$ Dielectric withstanding voltage and insulation resistance not change. There shall be no evidence of damage during the test.	3kg的 1 1 min load with 3kg.
、 Drop Test		1m高 10 From height 1m drop on concrete floor 10 times.
、 Vibration Test		Frequency 10 55HZ Amplitude Modulation 1.52mm 1 one time 1 1 min. 和 Direction and time X、Y、Z各2 X、Y and Z direction for 2hrs.
、 Bump Test		速度adder speed 250m/s ² 冲 pulse duration 6ms times 500
、 Bending Test		10 180 180 for 10 times bending the part between wire and epoxy.

● 502F 3470FA/ 型的 度

度Temp ()	Rmin (k)	R(t) (k)	Rmax (k)	度Temp ()	Rmin (k)	R(t) (k)	Rmax (k)
-10.00	22.353	22.715	23.078	30.00	4.086	4.132	4.179
-9.00	21.302	21.643	21.984	31.00	3.934	3.980	4.025
-8.00	20.307	20.629	20.950	32.00	3.789	3.834	3.879
-7.00	19.366	19.669	19.971	33.00	3.651	3.695	3.738
-6.00	18.475	18.760	19.045	34.00	3.518	3.561	3.604
-5.00	17.632	17.900	18.169	35.00	3.391	3.433	3.475
-4.00	16.832	17.086	17.339	36.00	3.269	3.310	3.352
-3.00	16.075	16.313	16.552	37.00	3.152	3.193	3.234
-2.00	15.356	15.582	15.807	38.00	3.040	3.080	3.120
-1.00	14.675	14.888	15.100	39.00	2.933	2.972	3.012
0.00	14.029	14.229	14.430	40.00	2.830	2.869	2.907
1.00	13.410	13.600	13.789	41.00	2.731	2.769	2.807
2.00	12.824	13.002	13.181	42.00	2.636	2.673	2.710
3.00	12.266	12.435	12.604	43.00	2.545	2.581	2.617
4.00	11.737	11.896	12.056	44.00	2.457	2.493	2.528
5.00	11.234	11.385	11.535	45.00	2.373	2.408	2.443
6.00	10.756	10.899	11.041	46.00	2.292	2.327	2.361
7.00	10.302	10.436	10.571	47.00	2.215	2.248	2.282
8.00	9.870	9.997	10.124	48.00	2.141	2.173	2.206
9.00	9.459	9.579	9.699	49.00	2.069	2.101	2.134
10.00	9.067	9.181	9.295	50.00	2.001	2.032	2.064
11.00	8.692	8.800	8.907	51.00	1.934	1.965	1.996
12.00	8.335	8.436	8.538	52.00	1.870	1.901	1.931
13.00	7.995	8.091	8.187	53.00	1.809	1.839	1.869
14.00	7.671	7.761	7.852	54.00	1.750	1.779	1.808
15.00	7.362	7.448	7.534	55.00	1.694	1.722	1.751
16.00	7.067	7.149	7.230	56.00	1.639	1.667	1.695
17.00	6.787	6.864	6.941	57.00	1.587	1.614	1.641
18.00	6.519	6.592	6.665	58.00	1.536	1.563	1.590
19.00	6.263	6.332	6.402	59.00	1.488	1.514	1.540
20.00	6.020	6.085	6.150	60.00	1.441	1.467	1.492
21.00	5.785	5.848	5.910	61.00	1.395	1.420	1.445
22.00	5.562	5.621	5.680	62.00	1.350	1.375	1.400
23.00	5.349	5.404	5.460	63.00	1.308	1.332	1.356
24.00	5.145	5.138	5.250	64.00	1.267	1.290	1.314
25.00	4.950	5.000	5.050	65.00	1.227	1.250	1.273
26.00	4.761	4.811	4.860	66.00	1.189	1.212	1.234
27.00	4.581	4.629	4.678	67.00	1.152	1.174	1.197
28.00	4.409	4.456	4.504	68.00	1.117	1.139	1.160
29.00	4.244	4.291	4.338	69.00	1.083	1.104	1.125
30.00	4.086	4.132	4.179	70.00	1.050	1.071	1.092

B(25/50) 3470K±1% R25 Ω=5K± 1%



• 定 ATTENTIONS OF ORDER

* 产品

Please comment the next if you want to make some order:

1 用途APPLICATION

度 定 度 度

Such as temperature survey,control,compensating and so on.

2 用 SERVICE ENVIROMENT

湿

Such as atmosphere,water,moisture and so on.

3 用 度 THE WORKING RANGE OF TEMPERATURE

() ()

4 品名 ITEM NAME FORM AND SIZE

5 THE RESISTANCE VALUE

K % at ()

6 B THE VALUE OF B

B(/)=()K %

7 热 THERMAL TIME CONSTANT

() ()

()S ()S ()enviroment

8 DISSIPATON FACTOR

mW/

9 特定的技 OTHER SPECIAL TECHNICAL CONDITIONS

的 用 了 产品 的

Attentions: If the service request you want is out of the list parameter, please contact with us, and we will design and manufacture as your requirement.