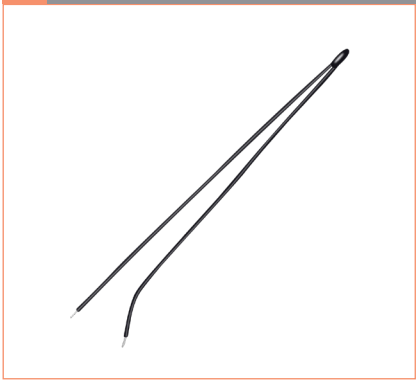
Temperature Measuring NTC Thermistor Datasheet

Features

- MF52 Series Temperature Measuring NTC Thermistor
- Zero Power Resistance at 25℃ :10KΩ, tolerance ±1%
- $B_{25/85}$ constant 3435K, tolerance ±1%
- Excellent solder ability
- Operating temperature：-30℃ to +105℃
- Lead-Free & Halogen Free

HNTC MF52 Series



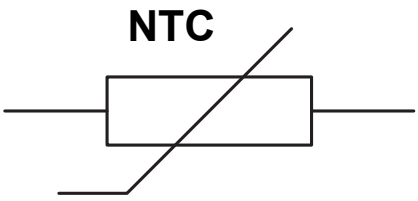
Applications

- Consumer Electronics,Thermal management in smartphones/tablets
- Temperature detection and protection in air conditioners;
- Temperature monitoring in microwaves/ovens
- Temperature monitoring in microwaves/ovens
- Constant temperature control in automated machinery
- Temperature measure and control

Part Number Code

H	NTC	-	103	F	3380	F	A
①	②		③	④	⑤	⑥	⑦

① "HJC" Brand Code
② NTC Thermistor
③ Rated Zero-Power Resistance：10KΩ
④ Resistance Tolerance F: 1% G: 2% H: 3% J:5%
⑤ B Constant
⑥ B Constant Tolerance F: 1% H: 3%
⑦ B Constant calculation method A: 25℃/85℃ B: 25℃/50℃



Electrical Characteristics (Ta=25℃ Unless otherwise specified)

PARAMETER	Symbol	CONDITION	VALUE	UNIT
Rated Zero-Power Resistance	R_{25}	T_a=25℃ ±0.05℃ PT ⩽ 0.1mW	10.0±1%	KΩ
Resistance At 85℃	R_{85}	T_a=85℃ ±0.05℃ PT ⩽ 0.1mW	1.46（Typ）	KΩ
B Constant (Material Constant)	$B_{25/85}$	25℃ /85℃	3435±1%	K
Insulation Resistance	/	T_a=25℃ ,100VDC	100 min.	MΩ
Thermal Dissipation Constant	δ	T_a=25℃ ,stationary in the air	2.0 min.	mW/℃
Response Time-In liquid	τ	25℃→ 85℃ T1=25+(85-25)*63.2%=62.9℃	15 max.	sec
Operating Temperature Range	/	/	-30 to + 105	℃
Max.Dissipation power	P	T_a=25℃	10	mW

Electrical Test

Items	Test Methods and Remarks
Nominal Zero-Power Resistance at 25°C	Ambient temperature：25±0.05°C ;
Nominal B Constant	Measure the resistance at the ambient temperature of 25±0.05°C , 50±0.05°C or 85±0.05°C . $B_{(25/50℃)} = \frac{\ln R_{25}-\ln R_{50}}{1/T_{25}-1/T_{50}}$ $B_{(25/85℃)} = \frac{\ln R_{25}-\ln R_{85}}{1/T_{25}-1/T_{85}}$
Thermal Time Constant	The total time for the temperature of the thermistor to change by 63.2% of the difference from ambient temperature T0 (°C) to T1 (°C) by the drastic change of the power applied to thermistor from Non-zero Power to Zero-Power state, normally expressed in second(S)
Dissipation Factor	The required power which makes the NTC thermistor body temperature raise 1 °C through self-heated, normally expressed in milliwatts per degree Celsius (mW/°C). It can be calculated by the following formula:

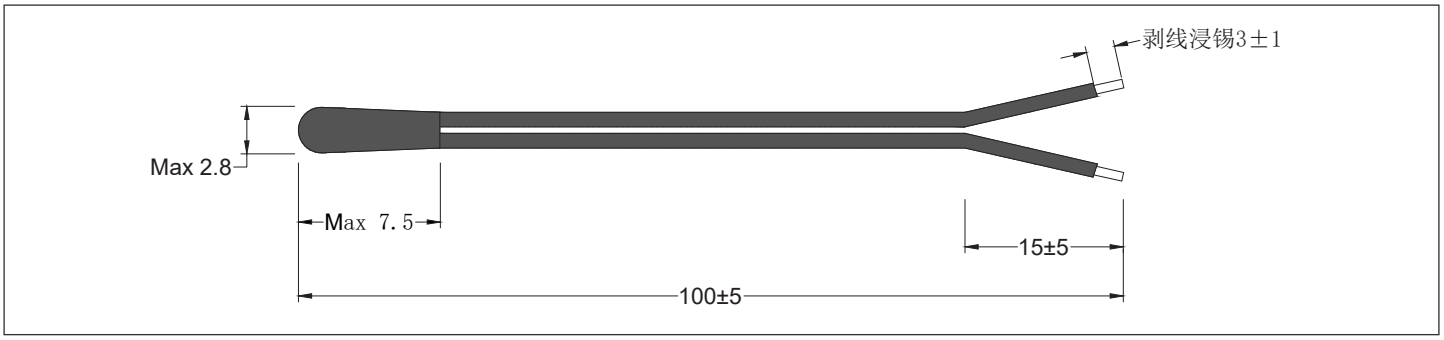
Reliability Test

Items	Standard	Test Conditions & Methods	Requirements
Rapid Temperature Change	IEC 60068-2-14	-30°C 30min → 25°C 5min → 105°C 30min → 25°C 5min, repeat 5 times, recovery time is 4 hours	No visible damage, R25 ΔR/R ⩽ ±3%
High Temperature Storage	IEC 60068-2-2	Temperature:105°C ±3°C , time:1000 hours	No visible damage, R25 ΔR/R ⩽ ±3%
Low Temperature Storage	IEC 60068-2-2	Temperature:-30°C ±3°C , time:1000 hours	No visible damage, R25 ΔR/R ⩽ ±3%
Steady State Damp Heat	IEC 60068-2-78	Temperature:40 °C ±2 °C , humidity:93%±2%, time:500±12 hours	No visible damage, R25 ΔR/R ⩽ ±3%

Environmental Specification

Storage temperature：	-10°C to +40°C
Storage Conditions:	Light-proof, Hermetically Sealed, Moisture-proof; The components should be left in their original packing to avoid soldering problems due to oxidized contacts.
Relative humidity:	< 75 % RH
Storage period	The components should be employed within 12 months after delivery,the components should be resealed after opening the packing.

Physical Dimensions (mm)



Ordering Information

Part Number	DELIVERY MODE	MPQ(PCS)
HNTC-103F3435FA-100P	Bulk	500

Caution

1.Avoiding the measurement error caused by the current passing through the thermistor chip leads the component to heat itself;
2.When the soldering iron is welded, the distance between the soldering point and the coating layer is at least 2mm, the soldering temperature should be lower than 360 ° C, and the soldering time is <3s;

R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)
-40	194.315	202.269	210.528	7	20.049	20.396	20.747
-39	183.655	191.064	198.752	8	19.239	19.564	19.893
-38	173.651	180.555	187.714	9	18.467	18.771	19.079
-37	164.260	170.694	177.363	10	17.730	18.015	18.303
-36	155.440	161.439	167.652	11	17.027	17.294	17.562
-35	147.153	152.747	158.538	12	16.356	16.605	16.856
-34	139.362	144.581	149.980	13	15.715	15.948	16.182
-33	132.036	136.905	141.940	14	15.102	15.320	15.539
-32	125.143	129.688	134.385	15	14.517	14.720	14.925
-31	118.655	122.899	127.281	16	13.958	14.148	14.339
-30	112.546	116.509	120.599	17	13.423	13.600	13.779
-29	106.792	110.493	114.312	18	12.912	13.077	13.243
-28	101.369	104.827	108.393	19	12.423	12.577	12.732
-27	96.256	99.488	102.819	20	11.955	12.099	12.243
-26	91.435	94.456	97.567	21	11.507	11.641	11.776
-25	86.886	89.710	92.617	22	11.079	11.204	11.329
-24	82.592	85.233	87.950	23	10.669	10.785	10.901
-23	78.538	81.008	83.548	24	10.276	10.384	10.492
-22	74.708	77.019	79.394	25	9.900	10.000	10.100
-21	71.090	73.252	75.473	26	9.533	9.632	9.732
-20	67.670	69.693	71.770	27	9.181	9.280	9.380
-19	64.435	66.329	68.272	28	8.844	8.943	9.042
-18	61.375	63.149	64.966	29	8.521	8.620	8.719
-17	58.480	60.140	61.841	30	8.211	8.310	8.408
-16	55.739	57.294	58.886	31	7.915	8.012	8.111
-15	53.144	54.600	56.090	32	7.631	7.728	7.825
-14	50.686	52.049	53.444	33	7.358	7.454	7.551
-13	48.356	49.633	50.939	34	7.097	7.192	7.288
-12	46.147	47.344	48.567	35	6.846	6.940	7.035
-11	44.053	45.174	46.319	36	6.605	6.699	6.793
-10	42.067	43.117	44.190	37	6.374	6.467	6.560
-9	40.182	41.166	42.171	38	6.153	6.244	6.336
-8	38.393	39.315	40.256	39	5.940	6.030	6.122
-7	36.694	37.559	38.440	40	5.736	5.825	5.915
-6	35.081	35.891	36.716	41	5.539	5.628	5.717
-5	33.548	34.307	35.080	42	5.351	5.438	5.526
-4	32.091	32.803	33.527	43	5.170	5.256	5.343
-3	30.707	31.373	32.052	44	4.996	5.080	5.166
-2	29.390	30.015	30.650	45	4.828	4.912	4.996
-1	28.137	28.723	29.317	46	4.667	4.750	4.833
0	26.945	27.494	28.051	47	4.513	4.594	4.676
1	25.810	26.325	26.846	48	4.364	4.444	4.525
2	24.730	25.212	25.701	49	4.221	4.300	4.379
3	23.701	24.153	24.610	50	4.083	4.161	4.239
4	22.721	23.144	23.573	51	3.950	4.027	4.104
5	21.787	22.184	22.585	52	3.823	3.898	3.974
6	20.897	21.268	21.644	53	3.700	3.774	3.849

R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)
54	3.582	3.654	3.728	80	1.626	1.673	1.720
55	3.468	3.539	3.612	81	1.581	1.626	1.673
56	3.358	3.428	3.500	82	1.537	1.581	1.627
57	3.252	3.322	3.392	83	1.494	1.538	1.583
58	3.150	3.219	3.288	84	1.453	1.496	1.540
59	3.052	3.119	3.187	85	1.413	1.455	1.498
60	2.958	3.023	3.090	86	1.375	1.416	1.458
61	2.866	2.931	2.997	87	1.337	1.378	1.419
62	2.778	2.842	2.907	88	1.301	1.341	1.382
63	2.693	2.756	2.820	89	1.266	1.305	1.345
64	2.612	2.673	2.736	90	1.232	1.270	1.310
65	2.533	2.593	2.654	91	1.199	1.237	1.276
66	2.456	2.516	2.576	92	1.167	1.204	1.242
67	2.383	2.441	2.500	93	1.136	1.173	1.210
68	2.312	2.369	2.427	94	1.107	1.142	1.179
69	2.243	2.299	2.357	95	1.078	1.113	1.149
70	2.177	2.232	2.289	96	1.049	1.084	1.119
71	2.113	2.167	2.223	97	1.022	1.056	1.091
72	2.051	2.105	2.159	98	0.996	1.029	1.063
73	1.992	2.044	2.097	99	0.970	1.003	1.036
74	1.934	1.985	2.038	100	0.945	0.977	1.010
75	1.878	1.929	1.980	101	0.921	0.953	0.985
76	1.825	1.874	1.925	102	0.898	0.929	0.961
77	1.773	1.821	1.871	103	0.875	0.906	0.937
78	1.722	1.770	1.819	104	0.853	0.883	0.914
79	1.674	1.720	1.769	105	0.832	0.861	0.891