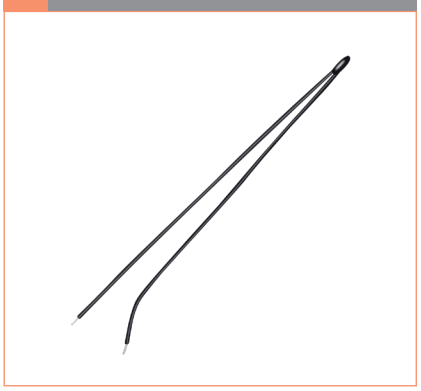
Temperature Measuring NTC Thermistor Datasheet

Features

- MF52 Series Temperature Measuring NTC Thermistor
- Zero Power Resistance at 25°C :10KΩ, tolerance ±1%
- $B_{25/50}$ constant 3950K, tolerance ±1%
- Excellent solder ability
- Operating temperature: -30°C to +105°C
- 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 ① NTC ② - 103 ③ F ④ 3380 ⑤ F ⑥ B ⑦

① "HJC" Brand Code

② NTC Thermistor

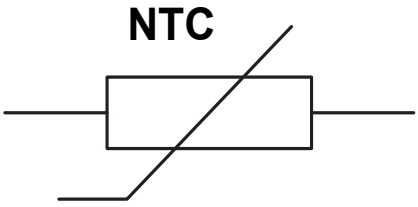
③ Rated Zero-Power Resistance : 10KΩ

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°C/85°C B: 25°C/50°C



Electrical Characteristics (Ta=25°C Unless otherwise specified)

PARAMETER	Symbol	CONDITION	VALUE	UNIT
Rated Zero-Power Resistance	R_{25}	T_a=25°C ±0.05°C PT ⩽ 0.1mW	10±1%	KΩ
Resistance At 50°C	R_{50}	T_a=50°C ±0.05°C PT ⩽ 0.1mW	3.59 (Typ)	KΩ
B Constant (Material Constant)	$B_{25/50}$	25°C /50°C	3950±1%	K
Insulation Resistance	/	T_a=25°C ,100VDC	100 min.	MΩ
Thermal Dissipation Constant	δ	T_a=25°C ,stationary in the air	2.0 min.	mW/°C
Response Time-In liquid	τ	25°C→ 50°C T1=25+(50-25)*63.2%=40.8°C	15 max.	sec
Operating Temperature Range	/	/	-30 to + 105	°C
Max.Dissipation power	P	T_a=25°C	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: $\delta = \frac{W}{T-T_0}$

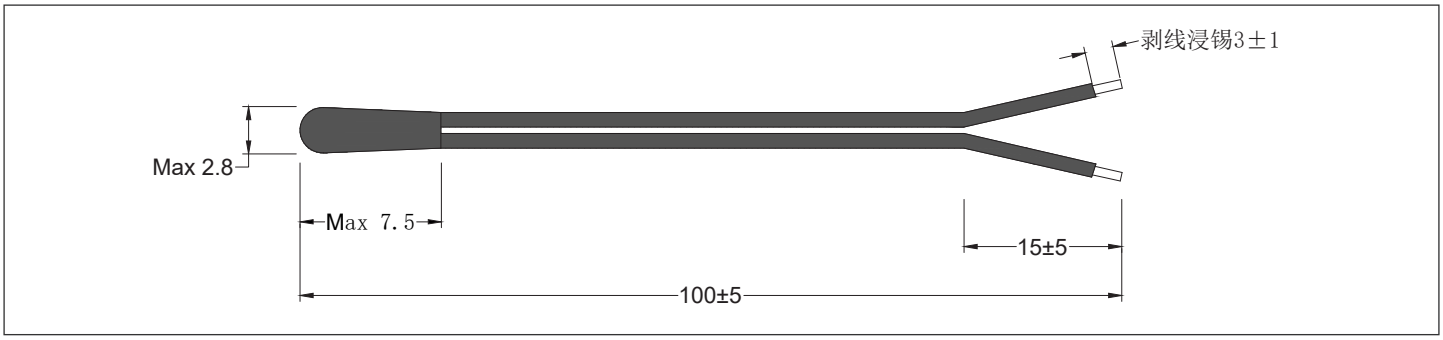
Reliability Test

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



Ordering Information

Part Number	DELIVERY MODE	MPQ(PCS)
HNTC-103F3950FB-100P	Bluk	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	328.374	343.633	359.564	7	22.644	23.065	23.491
-39	307.221	321.281	335.950	8	21.575	21.965	22.360
-38	287.574	300.534	314.046	9	20.562	20.924	21.290
-37	269.315	281.266	293.718	10	19.603	19.938	20.277
-36	252.338	263.362	274.841	11	18.694	19.004	19.318
-35	236.545	246.718	257.302	12	17.832	18.119	18.410
-34	221.845	231.236	241.000	13	17.015	17.281	17.549
-33	208.156	216.827	225.838	14	16.239	16.486	16.734
-32	195.401	203.412	211.729	15	15.504	15.732	15.961
-31	183.512	190.914	198.595	16	14.806	15.016	15.228
-30	172.425	179.267	186.361	17	14.143	14.338	14.533
-29	162.079	168.405	174.961	18	13.514	13.693	13.874
-28	152.422	158.273	164.332	19	12.916	13.082	13.248
-27	143.402	148.815	154.417	20	12.348	12.501	12.654
-26	134.975	139.984	145.164	21	11.808	11.949	12.090
-25	127.096	131.733	136.525	22	11.295	11.424	11.554
-24	119.729	124.022	128.456	23	10.806	10.925	11.044
-23	112.835	116.811	120.915	24	10.342	10.451	10.560
-22	106.382	110.065	113.864	25	9.900	10.000	10.100
-21	100.339	103.751	107.269	26	9.471	9.571	9.671
-20	94.677	97.840	101.098	27	9.063	9.163	9.262
-19	89.371	92.302	95.320	28	8.675	8.774	8.873
-18	84.395	87.112	89.909	29	8.305	8.404	8.503
-17	79.727	82.247	84.839	30	7.953	8.051	8.149
-16	75.346	77.684	80.086	31	7.618	7.715	7.813
-15	71.234	73.402	75.628	32	7.299	7.395	7.492
-14	67.371	69.382	71.447	33	6.995	7.090	7.186
-13	63.741	65.608	67.522	34	6.706	6.800	6.894
-12	60.330	62.062	63.837	35	6.429	6.522	6.616
-11	57.121	58.729	60.376	36	6.166	6.258	6.350
-10	54.103	55.595	57.123	37	5.915	6.005	6.096
-9	51.263	52.648	54.065	38	5.675	5.764	5.854
-8	48.589	49.875	51.190	39	5.447	5.534	5.623
-7	46.071	47.264	48.484	40	5.228	5.315	5.402
-6	43.698	44.806	45.938	41	5.020	5.105	5.191
-5	41.462	42.491	43.541	42	4.821	4.905	4.989
-4	39.353	40.309	41.283	43	4.631	4.713	4.796
-3	37.364	38.252	39.156	44	4.449	4.530	4.612
-2	35.488	36.312	37.151	45	4.276	4.355	4.435
-1	33.717	34.482	35.260	46	4.110	4.188	4.267
0	32.045	32.755	33.477	47	3.952	4.028	4.105
1	30.465	31.124	31.795	48	3.800	3.875	3.951
2	28.973	29.585	30.206	49	3.655	3.728	3.803
3	27.562	28.130	28.707	50	3.516	3.588	3.661
4	26.229	26.756	27.290	51	3.383	3.454	3.526
5	24.967	25.456	25.952	52	3.256	3.326	3.396
6	23.774	24.227	24.687	53	3.135	3.203	3.272

R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)
54	3.018	3.085	3.152	80	1.205	1.243	1.282
55	2.907	2.972	3.038	81	1.166	1.203	1.241
56	2.800	2.864	2.929	82	1.129	1.165	1.202
57	2.697	2.760	2.823	83	1.093	1.128	1.164
58	2.599	2.660	2.723	84	1.058	1.092	1.128
59	2.505	2.565	2.626	85	1.024	1.058	1.093
60	2.415	2.473	2.533	86	0.992	1.025	1.059
61	2.328	2.386	2.444	87	0.961	0.993	1.026
62	2.245	2.301	2.359	88	0.931	0.962	0.995
63	2.166	2.221	2.277	89	0.902	0.933	0.965
64	2.089	2.143	2.198	90	0.874	0.904	0.935
65	2.016	2.069	2.122	91	0.847	0.876	0.907
66	1.946	1.997	2.050	92	0.821	0.850	0.880
67	1.878	1.928	1.980	93	0.796	0.824	0.853
68	1.813	1.862	1.913	94	0.772	0.799	0.828
69	1.751	1.799	1.848	95	0.748	0.775	0.804
70	1.691	1.738	1.786	96	0.726	0.752	0.780
71	1.633	1.679	1.727	97	0.704	0.730	0.757
72	1.578	1.623	1.669	98	0.683	0.709	0.735
73	1.525	1.569	1.614	99	0.663	0.688	0.713
74	1.474	1.517	1.561	100	0.643	0.668	0.693
75	1.425	1.467	1.510	101	0.624	0.648	0.673
76	1.377	1.419	1.461	102	0.606	0.630	0.654
77	1.332	1.372	1.414	103	0.589	0.611	0.635
78	1.288	1.328	1.368	104	0.572	0.594	0.617
79	1.246	1.285	1.324	105	0.555	0.577	0.600