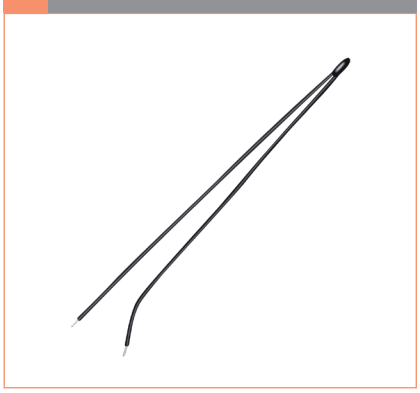
Temperature Measuring NTC Thermistor Datasheet

Features

- MF52 Series Temperature Measuring NTC Thermistor
- Zero Power Resistance at 25°C :100KΩ, 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

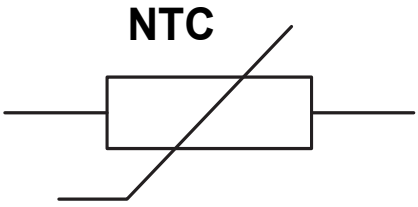
③ Rated Zero-Power Resistance：10KΩ

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	100±1%	KΩ
Resistance At 50°C	R_{50}	T_a=50°C ±0.05°C PT ⩽ 0.1mW	35.88（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:

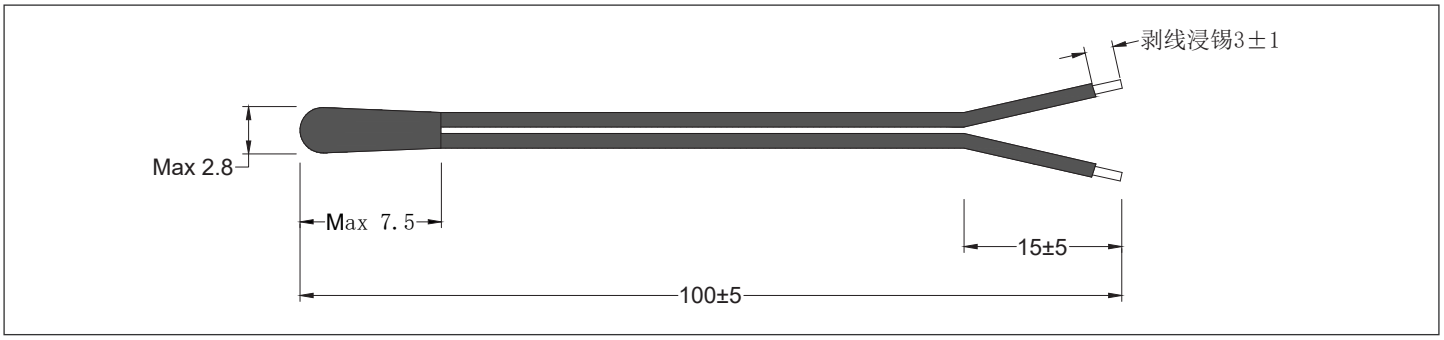
Reliability Test

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-104F3950FB-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	3277.513	3429.745	3588.689	7	226.194	230.394	234.648
-39	3066.063	3206.313	3352.643	8	215.528	219.422	223.365
-38	2869.705	2998.968	3133.739	9	205.426	209.036	212.689
-37	2687.263	2806.445	2930.620	10	195.854	199.201	202.584
-36	2517.662	2627.592	2742.046	11	186.784	189.884	193.017
-35	2359.914	2461.346	2566.882	12	178.184	181.056	183.955
-34	2213.114	2306.740	2404.086	13	170.030	172.688	175.370
-33	2076.434	2162.884	2252.708	14	162.294	164.754	167.235
-32	1949.109	2028.961	2111.873	15	154.954	157.229	159.522
-31	1830.440	1904.222	1980.779	16	147.987	150.090	152.208
-30	1719.785	1787.980	1858.693	17	141.372	143.314	145.269
-29	1616.551	1679.602	1744.937	18	135.089	136.883	138.686
-28	1520.194	1578.506	1638.891	19	129.120	130.775	132.438
-27	1430.213	1484.158	1539.985	20	123.448	124.973	126.505
-26	1346.146	1396.066	1447.693	21	118.056	119.461	120.871
-25	1267.568	1313.775	1361.532	22	112.930	114.222	115.518
-24	1194.086	1236.869	1281.056	23	108.054	109.242	110.432
-23	1125.338	1164.960	1205.856	24	103.415	104.505	105.597
-22	1060.991	1097.694	1135.553	25	99.000	100.000	101.000
-21	1000.736	1034.743	1069.799	26	94.715	95.713	96.713
-20	944.287	975.804	1008.272	27	90.638	91.633	92.631
-19	891.382	920.596	950.673	28	86.758	87.749	88.743
-18	841.775	868.862	896.729	29	83.066	84.051	85.039
-17	795.243	820.360	846.186	30	79.550	80.527	81.509
-16	751.575	774.871	798.809	31	76.201	77.171	78.145
-15	710.579	732.189	754.381	32	73.012	73.972	74.937
-14	672.074	692.124	712.701	33	69.972	70.922	71.878
-13	635.895	654.500	673.581	34	67.075	68.014	68.960
-12	601.888	619.154	636.851	35	64.313	65.241	66.176
-11	569.910	585.935	602.350	36	61.680	62.595	63.518
-10	539.826	554.702	569.930	37	59.168	60.071	60.981
-9	511.515	525.325	539.453	38	56.771	57.661	58.559
-8	484.862	497.682	510.791	39	54.484	55.360	56.246
-7	459.759	471.662	483.825	40	52.300	53.164	54.036
-6	436.107	447.160	458.447	41	50.216	51.065	51.924
-5	413.815	424.078	434.552	42	48.225	49.060	49.905
-4	392.797	402.326	412.046	43	46.323	47.144	47.975
-3	372.972	381.820	390.840	44	44.506	45.313	46.130
-2	354.265	362.482	370.852	45	42.770	43.562	44.365
-1	336.608	344.238	352.005	46	41.110	41.888	42.676
0	319.936	327.020	334.226	47	39.522	40.286	41.061
1	304.188	310.764	317.451	48	38.004	38.754	39.514
2	289.307	295.412	301.616	49	36.552	37.288	38.034
3	275.242	280.908	286.663	50	35.163	35.884	36.616
4	261.942	267.201	272.539	51	33.834	34.541	35.259
5	249.363	254.243	259.193	52	32.561	33.254	33.958
6	237.460	241.988	246.577	53	31.342	32.021	32.712

R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)
54	30.175	30.841	31.518	80	12.005	12.383	12.770
55	29.058	29.710	30.373	81	11.614	11.983	12.362
56	27.987	28.625	29.276	82	11.237	11.598	11.969
57	26.961	27.586	28.223	83	10.874	11.227	11.590
58	25.977	26.590	27.214	84	10.525	10.870	11.225
59	25.034	25.634	26.245	85	10.188	10.525	10.873
60	24.130	24.717	25.316	86	9.864	10.194	10.533
61	23.263	23.838	24.424	87	9.551	9.874	10.206
62	22.432	22.994	23.568	88	9.250	9.565	9.890
63	21.634	22.184	22.745	89	8.959	9.268	9.586
64	20.868	21.406	21.956	90	8.679	8.981	9.292
65	20.133	20.659	21.198	91	8.409	8.704	9.009
66	19.427	19.942	20.469	92	8.149	8.437	8.735
67	18.750	19.254	19.769	93	7.898	8.180	8.471
68	18.099	18.592	19.097	94	7.655	7.931	8.216
69	17.474	17.956	18.450	95	7.422	7.691	7.970
70	16.874	17.345	17.828	96	7.196	7.460	7.732
71	16.297	16.758	17.230	97	6.978	7.236	7.503
72	15.742	16.193	16.655	98	6.768	7.020	7.281
73	15.209	15.650	16.102	99	6.565	6.812	7.067
74	14.696	15.128	15.570	100	6.369	6.610	6.860
75	14.203	14.625	15.058	101	6.179	6.416	6.660
76	13.729	14.142	14.565	102	5.996	6.227	6.467
77	13.273	13.676	14.091	103	5.820	6.046	6.280
78	12.834	13.229	13.634	104	5.649	5.870	6.099
79	12.412	12.798	13.194	105	5.484	5.700	5.925