

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 +125°C
- Lead-Free & Halogen Free

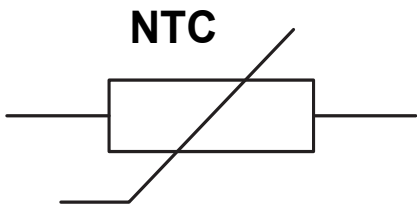
Applications

- 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 B
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°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	10±1%	KΩ
Resistance At 50°C	R ₅₀	T _a =50°C ±0.05°C	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	stationary in the air	2.0 min.	mW/°C
Thermal Time Constant	τ	stationary in the air	15 max.	sec
Operating Temperature Range	/	/	-30 to + 125	°C
Max.Dissipation power	P	T _a =25°C	3.5	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 . $B(25/50^{\circ}\text{C}) = \frac{\ln R_{25} - \ln R_{50}}{1/T_{25} - 1/T_{50}} \quad B(25/85^{\circ}\text{C}) = \frac{\ln R_{25} - \ln R_{85}}{1/T_{25} - 1/T_{85}}$
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:

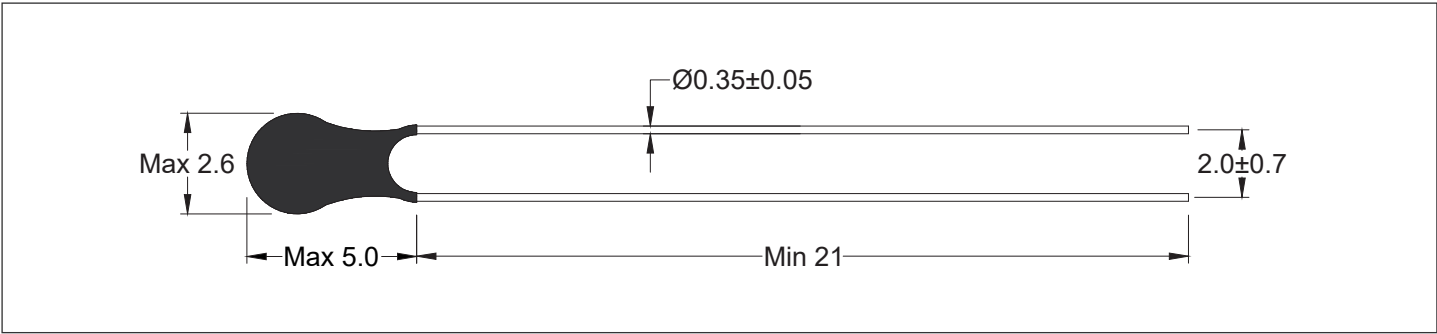
● Reliability Test

Items	Standard	Test Conditions & Methods	Requirements
Solderability	IEC 60068-2-20	The leads are immersed in a tin fluid 6mm from the thermistor. The tin fluid temperature is 245±5°C , and the dip soldering time is 2s to 3s.	The solder is evenly coated on the surface of the lead immersed part, and the tin area is over 95%.
Resistance To Welding Heat	IEC 60068-2-20	Leads are immersed in a tin fluid at a distance of 6mm from the thermistor. The tin fluid temperature is 260±5°C , the dip soldering time is 5s±1s.	No visible damage, R25 ΔR/R ≤ ±3%
Lead Strength	IEC 60068-2-21	Fix resistance, pull is 5±1 N, last 10±1s	No visible damage, R25 ΔR/R ≤ ±3%
Rapid Temperature Change	IEC 60068-2-14	-30°C 30min → 25°C 5min → 125°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:125°C ±5°C , time:1000 hours	No visible damage, R25 ΔR/R ≤ ±3%
Low Temperature Storage	IEC 60068-2-2	Temperature:-30°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	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.(°C)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	Temp.(°C)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)
-40	328.3739	343.6326	359.5644	7	22.6443	23.0650	23.4912
-39	307.2213	321.2809	335.9504	8	21.5750	21.9650	22.3599
-38	287.5741	300.5339	314.0464	9	20.5622	20.9239	21.2897
-37	269.3154	281.2660	293.7175	10	19.6028	19.9380	20.2768
-36	252.3384	263.3624	274.8405	11	18.6937	19.0041	19.3178
-35	236.5449	246.7177	257.3023	12	17.8318	18.1193	18.4096
-34	221.8447	231.2355	240.9996	13	17.0146	17.2807	17.5493
-33	208.1555	216.8273	225.8377	14	16.2394	16.4857	16.7340
-32	195.4013	203.4118	211.7294	15	15.5040	15.7317	15.9612
-31	183.5124	190.9144	198.5951	16	14.8059	15.0164	15.2284
-30	172.4247	179.2666	186.3613	17	14.1432	14.3376	14.5333
-29	162.0793	168.4053	174.9608	18	13.5139	13.6933	13.8738
-28	152.4218	158.2726	164.3317	19	12.9160	13.0816	13.2479
-27	143.4022	148.8151	154.4170	20	12.3479	12.5005	12.6537
-26	134.9746	139.9837	145.1643	21	11.8080	11.9485	12.0895
-25	127.0964	131.7332	136.5254	22	11.2946	11.4239	11.5535
-24	119.7285	124.0216	128.4558	23	10.8064	10.9252	11.0442
-23	112.8348	116.8107	120.9146	24	10.3419	10.4510	10.5602
-22	106.3818	110.0648	113.8640	25	9.9000	10.0000	10.1000
-21	100.3387	103.7512	107.2691	26	9.4710	9.5709	9.6709
-20	94.6771	97.8396	101.0977	27	9.0630	9.1626	9.2623
-19	89.3705	92.3020	95.3201	28	8.6747	8.7738	8.8732
-18	84.3946	87.1124	89.9088	29	8.3052	8.4037	8.5025
-17	79.7268	82.2471	84.8385	30	7.9534	8.0512	8.1494
-16	75.3463	77.6837	80.0856	31	7.6184	7.7154	7.8128
-15	71.2336	73.4018	75.6284	32	7.2993	7.3953	7.4919
-14	67.3708	69.3823	71.4468	33	6.9953	7.0903	7.1859
-13	63.7412	65.6077	67.5220	34	6.7056	6.7995	6.8940
-12	60.3295	62.0616	63.8370	35	6.4294	6.5221	6.6156
-11	57.1212	58.7288	60.3755	36	6.1660	6.2576	6.3498
-10	54.1032	55.5953	57.1228	37	5.9148	6.0051	6.0962
-9	51.2629	52.6480	54.0651	38	5.6752	5.7642	5.8540
-8	48.5889	49.8747	51.1895	39	5.4465	5.5342	5.6227
-7	46.0705	47.2643	48.4842	40	5.2283	5.3146	5.4018
-6	43.6978	44.8062	45.9381	41	5.0199	5.1049	5.1907
-5	41.4615	42.4906	43.5409	42	4.8210	4.9045	4.9890
-4	39.3531	40.3086	41.2831	43	4.6309	4.7130	4.7961
-3	37.3644	38.2516	39.1559	44	4.4494	4.5300	4.6117
-2	35.4880	36.3117	37.1508	45	4.2759	4.3551	4.4354
-1	33.7169	34.4817	35.2603	46	4.1100	4.1878	4.2667
0	32.0447	32.7547	33.4771	47	3.9515	4.0278	4.1053
1	30.4652	31.1243	31.7945	48	3.7999	3.8748	3.9508
2	28.9728	29.5847	30.2064	49	3.6548	3.7283	3.8030
3	27.5623	28.1301	28.7068	50	3.5161	3.5882	3.6614
4	26.2286	26.7556	27.2904	51	3.3833	3.4540	3.5258
5	24.9672	25.4562	25.9521	52	3.2562	3.3255	3.3960
6	23.7738	24.2274	24.6872	53	3.1346	3.2025	3.2715

● R-T Chart

Temp.(°C)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	Temp.(°C)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)
54	3.0181	3.0846	3.1523	96	0.7258	0.7523	0.7798
55	2.9065	2.9717	3.0380	97	0.7041	0.7300	0.7569
56	2.7996	2.8635	2.9285	98	0.6831	0.7085	0.7348
57	2.6972	2.7597	2.8234	99	0.6628	0.6877	0.7134
58	2.5990	2.6603	2.7227	100	0.6433	0.6676	0.6928
59	2.5049	2.5649	2.6260	101	0.6244	0.6482	0.6728
60	2.4147	2.4734	2.5333	102	0.6062	0.6295	0.6536
61	2.3282	2.3856	2.4443	103	0.5885	0.6113	0.6349
62	2.2452	2.3014	2.3589	104	0.5715	0.5938	0.6169
63	2.1656	2.2206	2.2768	105	0.5550	0.5769	0.5995
64	2.0892	2.1431	2.1981	106	0.5391	0.5605	0.5826
65	2.0159	2.0686	2.1224	107	0.5237	0.5447	0.5663
66	1.9455	1.9970	2.0498	108	0.5089	0.5293	0.5506
67	1.8779	1.9283	1.9800	109	0.4945	0.5145	0.5353
68	1.8130	1.8623	1.9129	110	0.4806	0.5002	0.5206
69	1.7507	1.7989	1.8484	111	0.4671	0.4863	0.5063
70	1.6908	1.7380	1.7864	112	0.4541	0.4729	0.4924
71	1.6332	1.6794	1.7267	113	0.4415	0.4599	0.4791
72	1.5779	1.6231	1.6694	114	0.4293	0.4474	0.4661
73	1.5247	1.5689	1.6142	115	0.4175	0.4352	0.4535
74	1.4736	1.5168	1.5612	116	0.4061	0.4234	0.4414
75	1.4245	1.4667	1.5101	117	0.3951	0.4120	0.4296
76	1.3772	1.4185	1.4610	118	0.3844	0.4009	0.4182
77	1.3317	1.3722	1.4137	119	0.3740	0.3902	0.4071
78	1.2880	1.3275	1.3681	120	0.3640	0.3799	0.3964
79	1.2458	1.2845	1.3243	110	0.4806	0.5002	0.5206
80	1.2053	1.2431	1.2820	111	0.4671	0.4863	0.5063
81	1.1663	1.2033	1.2413	112	0.4541	0.4729	0.4924
82	1.1287	1.1649	1.2021	113	0.4415	0.4599	0.4791
83	1.0926	1.1279	1.1644	114	0.4293	0.4474	0.4661
84	1.0577	1.0923	1.1279	115	0.4175	0.4352	0.4535
85	1.0241	1.0580	1.0928	116	0.4061	0.4234	0.4414
86	0.9918	1.0249	1.0590	117	0.3951	0.4120	0.4296
87	0.9606	0.9930	1.0264	118	0.3844	0.4009	0.4182
88	0.9306	0.9623	0.9949	119	0.3740	0.3902	0.4071
89	0.9016	0.9326	0.9646	120	0.3640	0.3799	0.3964
90	0.8737	0.9040	0.9353	121	0.3542	0.3698	0.3860
91	0.8468	0.8764	0.9070	122	0.3448	0.3601	0.3760
92	0.8208	0.8498	0.8797	123	0.3357	0.3506	0.3662
93	0.7958	0.8241	0.8534	124	0.3269	0.3415	0.3568
94	0.7716	0.7994	0.8280	125	0.3183	0.3326	0.3476
95	0.7483	0.7754	0.8035				