

Temperature Measuring NTC Thermistor Datasheet

Features

- MF52 Series Temperature Measuring NTC Thermistor
- Zero Power Resistance at 25°C :5KΩ, tolerance ±1%
- B_{25/50} constant 3470K, tolerance ±1%
- Excellent solder ability
- Operating temperature: -30°C to +125°C
- Lead-Free & Halogen Free

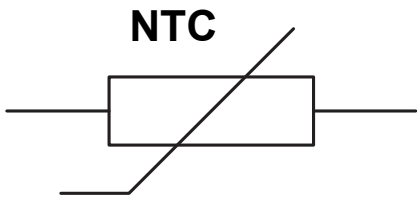
Applications

- 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	5.0±1%	KΩ
Resistance At 50°C	R ₅₀	T _a =50°C ±0.05°C	2.03 (Typ)	KΩ
B Constant (Material Constant)	B _{25/50}	25°C /50°C	3470±1%	K
Insulation Resistance	/	T _a =25°C ,100VDC	100 min.	MΩ
Thermal Dissipation Constant	τ	stationary in the air	2.0 min.	mW/°C
Thermal Time Constant	δ	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:

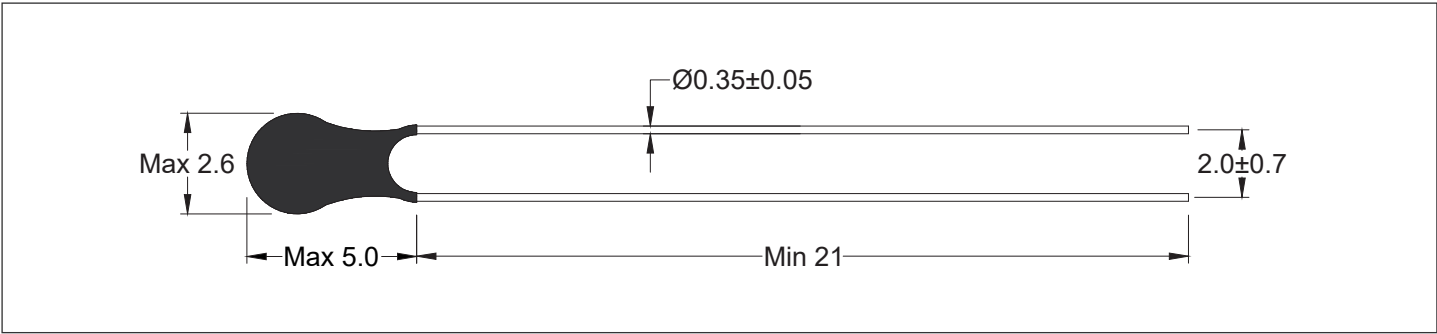
● Reliability Test

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-502F3470FB	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)
-30	59.2452	61.3631	63.5503	17	6.7606	6.8504	6.9407
-29	56.1596	58.1358	60.1755	18	6.4972	6.5809	6.6650
-28	53.2547	55.0991	57.0017	19	6.2455	6.3234	6.4016
-27	50.5186	52.2404	54.0155	20	6.0048	6.0773	6.1501
-26	47.9406	49.5483	51.2048	21	5.7748	5.8422	5.9098
-25	45.5106	47.0121	48.5583	22	5.5547	5.6173	5.6801
-24	43.2191	44.6217	46.0653	23	5.3442	5.4024	5.4606
-23	41.0575	42.3680	43.7159	24	5.1428	5.1967	5.2507
-22	39.0175	40.2422	41.5011	25	4.9500	5.0000	5.0500
-21	37.0917	38.2364	39.4124	26	4.7618	4.8117	4.8617
-20	35.2729	36.3430	37.4418	27	4.5817	4.6316	4.6815
-19	33.5546	34.5551	35.5819	28	4.4094	4.4590	4.5088
-18	31.9306	32.8662	33.8259	29	4.2444	4.2939	4.3434
-17	30.3952	31.2703	32.1673	30	4.0865	4.1356	4.1849
-16	28.9431	29.7616	30.6002	31	3.9353	3.9840	4.0330
-15	27.5691	28.3349	29.1190	32	3.7904	3.8388	3.8874
-14	26.2688	26.9853	27.7185	33	3.6516	3.6996	3.7478
-13	25.0377	25.7081	26.3938	34	3.5185	3.5661	3.6140
-12	23.8716	24.4990	25.1404	35	3.3910	3.4381	3.4855
-11	22.7669	23.3541	23.9540	36	3.2688	3.3154	3.3623
-10	21.7199	22.2695	22.8307	37	3.1516	3.1977	3.2441
-9	20.7273	21.2417	21.7668	38	3.0391	3.0847	3.1306
-8	19.7860	20.2675	20.7587	39	2.9313	2.9763	3.0217
-7	18.8929	19.3437	19.8033	40	2.8278	2.8722	2.9170
-6	18.0454	18.4674	18.8974	41	2.7284	2.7723	2.8166
-5	17.2410	17.6360	18.0383	42	2.6331	2.6763	2.7200
-4	16.4770	16.8469	17.2233	43	2.5415	2.5842	2.6273
-3	15.7514	16.0976	16.4498	44	2.4536	2.4957	2.5382
-2	15.0619	15.3860	15.7155	45	2.3691	2.4106	2.4525
-1	14.4066	14.7100	15.0183	46	2.2880	2.3288	2.3702
0	13.7835	14.0675	14.3559	47	2.2100	2.2503	2.2910
1	13.1910	13.4568	13.7266	48	2.1351	2.1747	2.2148
2	12.6273	12.8761	13.1285	49	2.0631	2.1021	2.1416
3	12.0909	12.3237	12.5598	50	1.9938	2.0322	2.0711
4	11.5804	11.7982	12.0189	51	1.9272	1.9650	2.0032
5	11.0942	11.2980	11.5044	52	1.8632	1.9003	1.9380
6	10.6312	10.8219	11.0148	53	1.8016	1.8381	1.8751
7	10.1902	10.3684	10.5488	54	1.7423	1.7782	1.8146
8	9.7698	9.9365	10.1050	55	1.6852	1.7205	1.7563
9	9.3692	9.5250	9.6825	56	1.6303	1.6650	1.7002
10	8.9872	9.1328	9.2799	57	1.5774	1.6115	1.6461
11	8.6228	8.7589	8.8962	58	1.5265	1.5600	1.5941
12	8.2753	8.4024	8.5306	59	1.4775	1.5104	1.5439
13	7.9436	8.0623	8.1819	60	1.4303	1.4626	1.4955
14	7.6271	7.7379	7.8494	61	1.3848	1.4165	1.4488
15	7.3249	7.4282	7.5323	62	1.3409	1.3721	1.4038
16	7.0363	7.1326	7.2296	63	1.2987	1.3293	1.3605

● 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)
64	1.2579	1.2880	1.3186	95	0.5026	0.5193	0.5365
65	1.2187	1.2482	1.2783	96	0.4890	0.5053	0.5222
66	1.1808	1.2098	1.2393	97	0.4757	0.4918	0.5084
67	1.1443	1.1727	1.2018	98	0.4629	0.4787	0.4950
68	1.1091	1.1370	1.1655	99	0.4505	0.4660	0.4820
69	1.0751	1.1025	1.1305	100	0.4385	0.4537	0.4694
70	1.0423	1.0692	1.0967	101	0.4269	0.4418	0.4572
71	1.0107	1.0371	1.0641	102	0.4156	0.4302	0.4453
72	0.9802	1.0061	1.0326	103	0.4046	0.4190	0.4338
73	0.9507	0.9761	1.0021	104	0.3940	0.4081	0.4226
74	0.9223	0.9472	0.9727	105	0.3837	0.3976	0.4118
75	0.8948	0.9193	0.9443	106	0.3738	0.3873	0.4013
76	0.8682	0.8923	0.9169	107	0.3641	0.3774	0.3911
77	0.8426	0.8662	0.8903	108	0.3547	0.3677	0.3812
78	0.8179	0.8410	0.8647	109	0.3456	0.3584	0.3716
79	0.7939	0.8166	0.8399	110	0.3367	0.3493	0.3623
80	0.7708	0.7931	0.8159	111	0.3282	0.3405	0.3533
81	0.7485	0.7703	0.7927	112	0.3198	0.3320	0.3445
82	0.7269	0.7483	0.7703	113	0.3118	0.3237	0.3360
83	0.7060	0.7270	0.7486	114	0.3039	0.3156	0.3277
84	0.6858	0.7064	0.7276	115	0.2963	0.3078	0.3196
85	0.6663	0.6865	0.7073	116	0.2889	0.3002	0.3118
86	0.6474	0.6672	0.6876	117	0.2817	0.2928	0.3042
87	0.6291	0.6486	0.6686	118	0.275	0.286	0.297
88	0.6114	0.6305	0.6501	119	0.268	0.279	0.290
89	0.5943	0.6131	0.6323	120	0.261	0.272	0.283
90	0.5778	0.5961	0.6150	121	0.258	0.268	0.279
91	0.5617	0.5798	0.5983	122	0.252	0.262	0.273
92	0.5462	0.5639	0.5821	123	0.246	0.256	0.266
93	0.5312	0.5486	0.5664	124	0.240	0.250	0.260
94	0.5167	0.5337	0.5512	125	0.234	0.244	0.254