

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 3470K, tolerance ±1%
- Excellent solder ability
- Operating temperature: -30°C to +125°C
- Lead-Free & Halogen Free

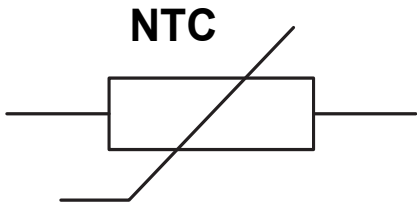
Applications

- 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	10±1%	KΩ
Resistance At 50°C	R ₅₀	T _a =50°C ±0.05°C	4.06 (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	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:

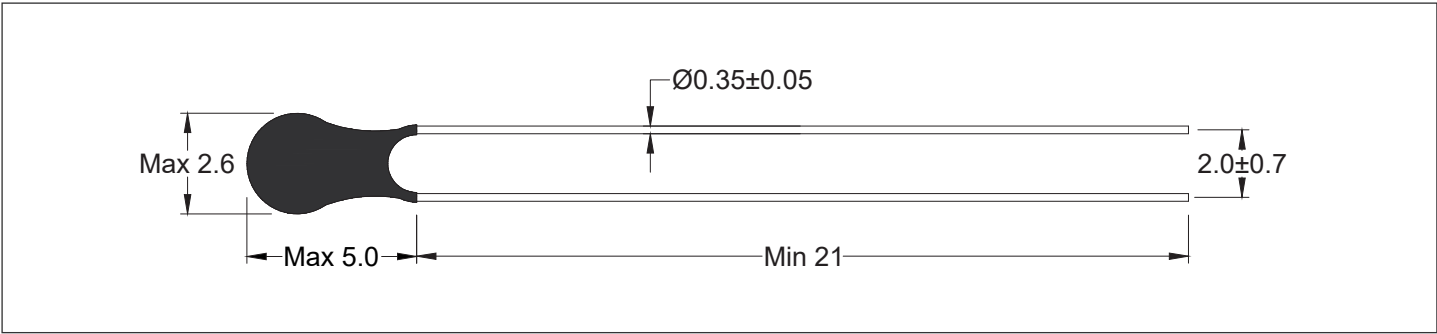
● Reliability Test

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-103F3470FB	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	121.373	125.742	130.256	17	13.538	13.718	13.899
-29	114.956	119.030	123.235	18	13.008	13.175	13.344
-28	108.922	112.720	116.638	19	12.502	12.658	12.814
-27	103.244	106.786	110.439	20	12.018	12.163	12.309
-26	97.899	101.204	104.609	21	11.556	11.691	11.826
-25	92.867	95.950	99.126	22	11.114	11.239	11.365
-24	88.125	91.003	93.965	23	10.691	10.807	10.924
-23	83.657	86.343	89.107	24	10.287	10.395	10.503
-22	79.444	81.953	84.532	25	9.900	10.000	10.100
-21	75.471	77.813	80.221	26	9.523	9.623	9.722
-20	71.721	73.910	76.157	27	9.162	9.261	9.361
-19	68.183	70.227	72.325	28	8.816	8.916	9.015
-18	64.841	66.751	68.711	29	8.486	8.585	8.684
-17	61.684	63.469	65.300	30	8.169	8.268	8.366
-16	58.701	60.370	62.079	31	7.867	7.964	8.062
-15	55.881	57.441	59.038	32	7.577	7.673	7.771
-14	53.214	54.672	56.165	33	7.299	7.395	7.491
-13	50.691	52.055	53.450	34	7.033	7.128	7.223
-12	48.304	49.579	50.883	35	6.778	6.872	6.967
-11	46.043	47.236	48.455	36	6.533	6.626	6.720
-10	43.903	45.018	46.158	37	6.299	6.391	6.484
-9	41.875	42.919	43.984	38	6.074	6.165	6.257
-8	39.953	40.930	41.926	39	5.859	5.949	6.039
-7	38.131	39.045	39.976	40	5.652	5.741	5.830
-6	36.404	37.258	38.129	41	5.454	5.541	5.630
-5	34.765	35.564	36.379	42	5.263	5.350	5.437
-4	33.210	33.958	34.719	43	5.080	5.166	5.252
-3	31.733	32.433	33.145	44	4.905	4.989	5.074
-2	30.332	30.987	31.652	45	4.736	4.819	4.903
-1	29.000	29.613	30.236	46	4.574	4.656	4.739
0	27.735	28.308	28.891	47	4.419	4.499	4.581
1	26.533	27.069	27.613	48	4.269	4.349	4.429
2	25.390	25.891	26.400	49	4.126	4.204	4.283
3	24.302	24.772	25.247	50	3.988	4.064	4.142
4	23.268	23.707	24.152	51	3.855	3.930	4.007
5	22.284	22.694	23.110	52	3.727	3.801	3.877
6	21.347	21.731	22.119	53	3.604	3.677	3.752
7	20.455	20.814	21.177	54	3.486	3.558	3.631
8	19.606	19.941	20.280	55	3.373	3.443	3.515
9	18.796	19.110	19.426	56	3.263	3.333	3.403
10	18.025	18.318	18.613	57	3.158	3.226	3.295
11	17.290	17.563	17.839	58	3.056	3.123	3.192
12	16.589	16.844	17.101	59	2.959	3.025	3.092
13	15.920	16.158	16.398	60	2.865	2.929	2.995
14	15.282	15.504	15.728	61	2.774	2.838	2.902
15	14.673	14.881	15.089	62	2.687	2.749	2.813
16	14.092	14.286	14.480	63	2.603	2.664	2.726

HNTC-103F3470FB

MF52 Series NTC Thermistor

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	2.521	2.582	2.643	95	1.017	1.051	1.085
65	2.443	2.502	2.563	96	0.990	1.023	1.057
66	2.368	2.426	2.485	97	0.963	0.996	1.029
67	2.295	2.352	2.410	98	0.938	0.970	1.003
68	2.225	2.281	2.338	99	0.913	0.944	0.977
69	2.157	2.212	2.268	100	0.889	0.920	0.951
70	2.092	2.146	2.201	101	0.866	0.896	0.927
71	2.029	2.082	2.136	102	0.843	0.873	0.903
72	1.968	2.020	2.073	103	0.821	0.850	0.880
73	1.910	1.961	2.013	104	0.800	0.829	0.858
74	1.853	1.903	1.954	105	0.780	0.808	0.837
75	1.798	1.847	1.898	106	0.760	0.787	0.816
76	1.746	1.794	1.843	107	0.740	0.767	0.795
77	1.694	1.742	1.790	108	0.722	0.748	0.775
78	1.645	1.692	1.739	109	0.703	0.729	0.756
79	1.598	1.643	1.690	110	0.686	0.711	0.738
80	1.551	1.596	1.642	111	0.669	0.694	0.720
81	1.507	1.551	1.596	112	0.652	0.677	0.702
82	1.464	1.507	1.551	113	0.636	0.660	0.685
83	1.422	1.465	1.508	114	0.620	0.644	0.668
84	1.382	1.424	1.466	115	0.605	0.628	0.652
85	1.343	1.384	1.426	116	0.590	0.613	0.637
86	1.306	1.345	1.386	117	0.576	0.598	0.621
87	1.269	1.308	1.349	118	0.562	0.584	0.607
88	1.234	1.272	1.312	119	0.548	0.570	0.592
89	1.200	1.238	1.276	120	0.535	0.556	0.578
90	1.167	1.204	1.242	121	0.522	0.543	0.565
91	1.135	1.171	1.209	122	0.510	0.530	0.551
92	1.104	1.140	1.176	123	0.498	0.518	0.539
93	1.074	1.109	1.145	124	0.486	0.506	0.526
94	1.045	1.079	1.115	125	0.474	0.494	0.514