Temperature Measuring NTC Thermistor Datasheet

Features

- MF52 Series Temperature Measuring NTC Thermistor
- Zero Power Resistance at 25°C :10KΩ, tolerance ±1%
- $B_{25/85}$ constant 3435K, tolerance ±1%
- Excellent solder ability
- Operating temperature：-30°C to +125°C
- Lead-Free & Halogen Free

HNTC MF52 Series

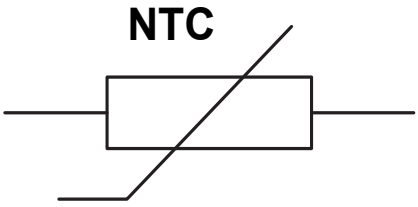
Applications

- 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 A 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 85°C	R_{85}	T_a=85°C ±0.05°C	1.45（Typ）	KΩ
B Constant（Material Constant）	$B_{25/85}$	25°C /85°C	3435±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 . $B_{(25/50℃)} = \frac{\ln R_{25} - \ln R_{50}}{1/T_{25} - 1/T_{50}}$ $B_{(25/85℃)} = \frac{\ln R_{25} - \ln R_{85}}{1/T_{25} - 1/T_{85}}$
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:

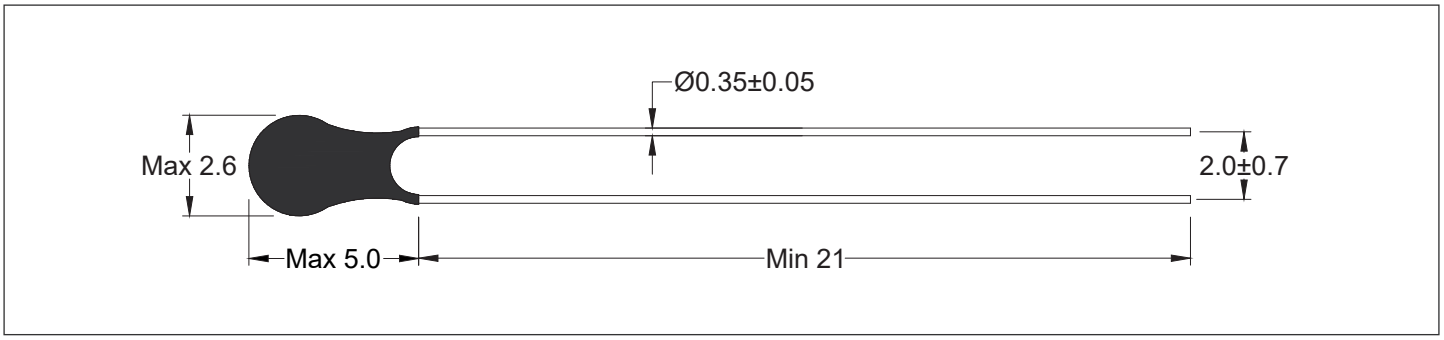
Reliability Test

Items	Standard	Test Conditions & Methods	Requirements
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:125 °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 (mm)



Ordering Information

Part Number	DELIVERY MODE	MPQ(PCS)
HNTC-103F3435FA	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.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)
-40	194.3148	202.2693	210.5283	7	20.0486	20.3959	20.7472
-39	183.6545	191.0637	198.7519	8	19.2392	19.5644	19.8931
-38	173.6511	180.5546	187.7137	9	18.4670	18.7714	19.0789
-37	164.2601	170.6944	177.3629	10	17.7303	18.0151	18.3027
-36	155.4400	161.4387	167.6522	11	17.0270	17.2935	17.5624
-35	147.1525	152.7468	158.5379	12	16.3556	16.6048	16.8561
-34	139.3620	144.5807	149.9798	13	15.7145	15.9475	16.1823
-33	132.0356	136.9052	141.9402	14	15.1020	15.3198	15.5391
-32	125.1427	129.6879	134.3847	15	14.5168	14.7203	14.9251
-31	118.6550	122.8985	127.2809	16	13.9576	14.1475	14.3387
-30	112.5462	116.5089	120.5991	17	13.4229	13.6003	13.7786
-29	106.7917	110.4932	114.3116	18	12.9117	13.0772	13.2434
-28	101.3688	104.8272	108.3927	19	12.4228	12.5771	12.7320
-27	96.2564	99.4883	102.8185	20	11.9550	12.0988	12.2431
-26	91.4348	94.4558	97.5669	21	11.5074	11.6413	11.7756
-25	86.8857	89.7101	92.6171	22	11.0790	11.2037	11.3286
-24	82.5920	85.2332	87.9501	23	10.6689	10.7848	10.9009
-23	78.5378	81.0082	83.5479	24	10.2762	10.3839	10.4917
-22	74.7084	77.0194	79.3940	25	9.9000	10.0000	10.1000
-21	71.0899	73.2523	75.4728	26	9.5325	9.6324	9.7323
-20	67.6695	69.6931	71.7700	27	9.1806	9.2802	9.3800
-19	64.4351	66.3291	68.2720	28	8.8435	8.9428	9.0424
-18	61.3754	63.1485	64.9663	29	8.5206	8.6195	8.7186
-17	58.4802	60.1402	61.8412	30	8.2113	8.3096	8.4082
-16	55.7394	57.2939	58.8858	31	7.9147	8.0124	8.1105
-15	53.1440	54.5998	56.0899	32	7.6305	7.7275	7.8249
-14	50.6855	52.0490	53.4439	33	7.3579	7.4541	7.5508
-13	48.3557	49.6330	50.9389	34	7.0965	7.1919	7.2878
-12	46.1473	47.3439	48.5666	35	6.8458	6.9403	7.0353
-11	44.0532	45.1743	46.3192	36	6.6052	6.6987	6.7929
-10	42.0668	43.1172	44.1895	37	6.3744	6.4669	6.5601
-9	40.1820	41.1663	42.1705	38	6.1527	6.2442	6.3364
-8	38.3930	39.3153	40.2558	39	5.9400	6.0304	6.1216
-7	36.6943	37.5587	38.4396	40	5.7357	5.8250	5.9151
-6	35.0810	35.8910	36.7162	41	5.5394	5.6276	5.7167
-5	33.5481	34.3074	35.0802	42	5.3509	5.4380	5.5259
-4	32.0914	32.8029	33.5269	43	5.1698	5.2557	5.3425
-3	30.7065	31.3734	32.0515	44	4.9957	5.0804	5.1661
-2	29.3896	30.0145	30.6497	45	4.8283	4.9119	4.9964
-1	28.1368	28.7225	29.3174	46	4.6674	4.7498	4.8331
0	26.9448	27.4936	28.0508	47	4.5127	4.5939	4.6761
1	25.8102	26.3245	26.8464	48	4.3639	4.4439	4.5249
2	24.7300	25.2119	25.7006	49	4.2207	4.2995	4.3793
3	23.7013	24.1527	24.6103	50	4.0830	4.1605	4.2392
4	22.7213	23.1442	23.5726	51	3.9504	4.0268	4.1042
5	21.7874	22.1835	22.5846	52	3.8228	3.8980	3.9742
6	20.8973	21.2682	21.6436	53	3.7000	3.7739	3.8490

R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)
54	3.5817	3.6544	3.7283	90	1.2320	1.2704	1.3099
55	3.4677	3.5393	3.6121	91	1.1991	1.2368	1.2756
56	3.3580	3.4284	3.5000	92	1.1673	1.2043	1.2424
57	3.2523	3.3215	3.3919	93	1.1364	1.1728	1.2102
58	3.1504	3.2185	3.2877	94	1.1065	1.1422	1.1789
59	3.0522	3.1191	3.1872	95	1.0775	1.1126	1.1487
60	2.9575	3.0234	3.0903	96	1.0494	1.0839	1.1193
61	2.8663	2.9310	2.9968	97	1.0222	1.0560	1.0908
62	2.7783	2.8419	2.9066	98	0.9958	1.0290	1.0632
63	2.6934	2.7559	2.8196	99	0.9702	1.0028	1.0364
64	2.6115	2.6729	2.7355	100	0.9453	0.9774	1.0104
65	2.5325	2.5929	2.6544	101	0.9212	0.9527	0.9851
66	2.4563	2.5156	2.5761	102	0.8979	0.9288	0.9606
67	2.3827	2.4410	2.5004	103	0.8752	0.9055	0.9368
68	2.3117	2.3690	2.4274	104	0.8532	0.8830	0.9137
69	2.2432	2.2994	2.3568	105	0.8319	0.8611	0.8913
70	2.1770	2.2322	2.2886	106	0.8111	0.8399	0.8696
71	2.1131	2.1673	2.2227	107	0.7910	0.8193	0.8484
72	2.0513	2.1046	2.1590	108	0.7715	0.7992	0.8279
73	1.9917	2.0440	2.0974	109	0.7525	0.7798	0.8079
74	1.9340	1.9854	2.0379	110	0.7341	0.7609	0.7886
75	1.8783	1.9288	1.9804	111	0.7162	0.7425	0.7697
76	1.8245	1.8740	1.9247	112	0.6989	0.7247	0.7514
77	1.7725	1.8211	1.8709	113	0.6820	0.7074	0.7336
78	1.7221	1.7699	1.8188	114	0.6656	0.6906	0.7164
79	1.6735	1.7204	1.7685	115	0.6497	0.6742	0.6996
80	1.6264	1.6725	1.7197	116	0.6342	0.6583	0.6832
81	1.5809	1.6262	1.6725	117	0.6192	0.6429	0.6673
82	1.5369	1.5813	1.6269	118	0.6046	0.6278	0.6519
83	1.4943	1.5379	1.5827	119	0.5904	0.6132	0.6369
84	1.4531	1.4959	1.5399	120	0.5766	0.5990	0.6223
85	1.4132	1.4553	1.4984	121	0.5631	0.5852	0.6081
86	1.3746	1.4159	1.4583	122	0.5501	0.5718	0.5942
87	1.3372	1.3778	1.4194	123	0.5374	0.5587	0.5808
88	1.3010	1.3408	1.3817	124	0.5250	0.5460	0.5677
89	1.2660	1.3051	1.3452	125	0.5130	0.5336	0.5550