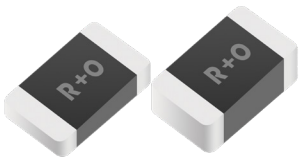
Chip NTC Thermistor Datasheet

Features

- Leadless , Size 0805
- SMD type suitable for high density mounting
- B constant tolerance ±1%
- Excellent solder ability
- Operating temperature：-40℃ to +125℃
- RoHS compliant & Lead-Free & Halogen Free

HNTC0805 Series

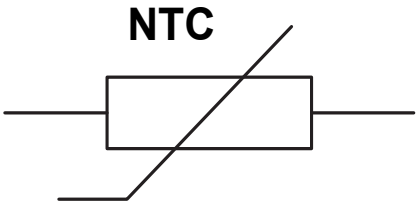


Applications

- Consumer Electronics，mobile phone，wearable device，TWS headphones，etc.
- Office automation such as printer ，facsimile,word processor，etc.
- Industrial Power Supplies
- Medical Electronics
- IoT Sensor Nodes

Part Number Code

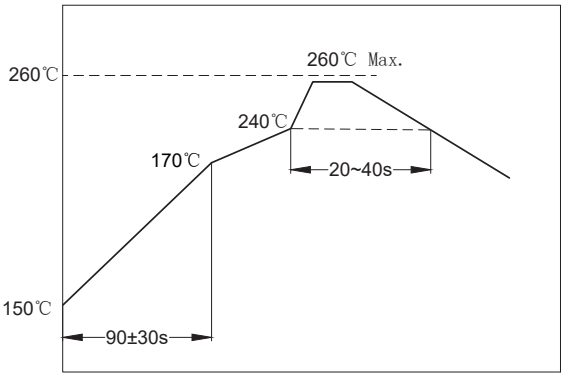
H NTC □□□□ - □□□ F □□□□ F B
① ② ③ ④ ⑤ ⑥ ⑦ ⑧



① "HJC" Brand Code
② Chip NTC Thermistor
③ Chip Size/package
④ Rated Zero-Power Resistance：103=10000Ω, 503=50000Ω, 104=100000Ω
⑤ Resistance Tolerance F: 1% G: 2% H: 3% J:5%
⑥ B Constant
⑦ B Constant Tolerance F: 1% H: 3%
⑧ B Constant calculation method A: 25℃/85℃ B: 25℃/50℃

Recommended Soldering Conditions

Reflow Soldering Recommendation



Profile Feature		Condition
Pre-heat	Temperature Min	+150°C
	Temperature Max	+170°C
	Pre-heat Time	90±30 secs.
ramp up rate		3°C /sec. Max
Time above 240°C		20~40 secs
Peak Temperature		+260°C，10 secs. Max
Ramp-down Rate		6°C /sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

Iron Soldering Recommendation

Item	Conditions
Temperature of Soldering Iron-tip	280°C Max
Soldering Time	3 secs. Max
Times for iron soldering	1 time Max
Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.	

Electrical Characteristics (Ta=25°C Unless otherwise specified)

PARAMETER	CONDITION	VALUE	UNIT
Rated Zero-Power Resistance	T_a=25°C ±0.1°C	100±1%	KΩ
B Constant (Material Constant)	25°C /50°C	4250±1%	K
Permissible Operating Current	T_a=25°C ±0.1°C	0.14	mA
Thermal Dissipation Constant	T_a=25°C ±0.1°C	2.0	mW/°C
Thermal Time Constant	T_a=25°C ±0.1°C	＜5	sec
Rated Electric Power	T_a=25°C ±0.1°C	200	mW
Operating Temperature Range	/	-40 to + 125	°C

Test and Measurement Procedures

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

Items	Condition
Ambient Temperature:	20±15°C
Relative Humidity:	65±20%
Air Pressure:	86kPa to 106kPa

If any doubt on the results, measurements/tests should be made within the following limits:

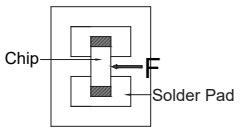
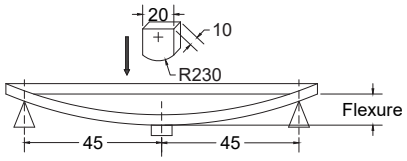
Items	Condition
Ambient Temperature:	25±2°C
Relative Humidity:	65±5%
Air Pressure:	86kPa to 106kPa

Inspection Equipment
1.Visual Examination: 20×magnifier
2.Resistance value test: Thermistor resistance tester

Electrical Test

Items	Test Methods and Remarks
Nominal Zero-Power Resistance at 25°C	Ambient temperature：25±0.05°C ; Measuring electric power：≤ 0.1mW
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: $\delta = \frac{W}{T-T_0}$
Rated Power	The necessary electric power makes thermistor’ s temperature rise 100°C by self-heating at ambient temperature 25°C .
Permissible operating current	The current that keep body temperature of chip NTC on the PC board in still air rising 1° C by self-heating.

Reliability Test

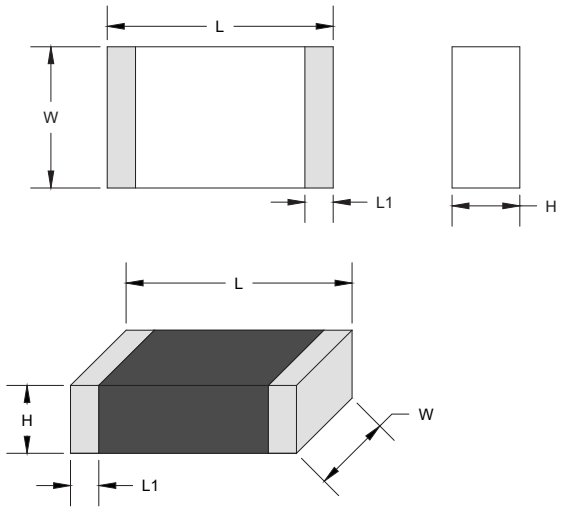
<table>
<tr><th>Items</th><th>Standard</th><th>Test Methods and Remarks</th><th>Requirements</th></tr>
<tr><td>Terminal Strength</td><td>IEC 60068-2-21</td><td>Solder the chip to the testing jig using eutectic solder. Then apply a force in the direction of the arrow.
<table>
<tr><th>Size</th><th>F</th><th>Duration</th></tr>
<tr><td>0402, 0603</td><td>5N</td><td>10±1s</td></tr>
<tr><td>0805</td><td>10N</td><td>10±1s</td></tr>
</table></td><td>No removal or split of the termination or other defects shall occur.
 
</td></tr>
<tr><td>Resistance to Flexure</td><td>IEC 60068-2-21</td><td>Solder the chip to the test jig (glass epoxy board shown in the right) using a eutectic solder. Then apply a force in the direction shown as follow;
 

<table>
<tr><th>Size</th><th>Flexure</th><th>Speed</th><th>Duration</th></tr>
<tr><td>0402, 0603</td><td>1mm</td><td>＜0.5mm/s</td><td>10±1s</td></tr>
<tr><td>0805</td><td>2mm</td><td>＜0.5mm/s</td><td>10±1s</td></tr>
</table></td><td>No visible damage.
| Δ R25/R25 | ⩽ 5%</td></tr>
<tr><td>Dropping</td><td>IEC 60068-2-32</td><td>Drop a chip 10 times on a concrete floor from a height of 1 meter.</td><td>No visible damage.</td></tr>
<tr><td>Solderability</td><td>IEC 60068-2-58</td><td>1. Solder temperature: 245±5°C
2. Duration: 3±0.3s
3. Solder: Sn/3.0Ag/0.5Cu
4. 25% Resin and 75% ethanol in weight</td><td>No visible damage
Wetting shall exceed 95% coverage.</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>IEC 60068-2-58</td><td>1. Solder temperature: 260±5°C
2. Duration: 10±1s
3. Solder: Sn/3.0Ag/0.5Cu
4. 25% Resin and 75% ethanol in weight
5. The chip shall be stabilized at normal condition for 1~2 hours before measuring</td><td>No visible damage.
| Δ R25/R25 | ⩽ 5%
| Δ B/B | ⩽ 2%</td></tr>
<tr><td>Temperature cycling</td><td>IEC 60068-2-14</td><td>1. 5 cycles of following sequence without loading.
<table>
<tr><th>Step</th><th>Temperature</th><th>Period</th></tr>
<tr><td>1</td><td>-40±5°C</td><td>30±3min</td></tr>
<tr><td>2</td><td>Room Temperature</td><td>5±3min</td></tr>
<tr><td>3</td><td>125±2°C</td><td>30±3min</td></tr>
<tr><td>4</td><td>Room Temperature</td><td>5±3min</td></tr>
</table>
2. The chip shall be stabilized at normal condition for 1~2 hours before measuring.</td><td>No visible damage
| Δ R25/R25 | ⩽ 3%
| Δ B/B | ⩽ 2%</td></tr>
<tr><td>Resistance to dry heat</td><td>IEC 60068-2-2</td><td>1. 125±5°C in air, for 1000±24 hours without loading
2. The chip shall be stabilized at normal condition for 1~2 hours before measuring</td><td>No visible damage.
| Δ R25/R25 | ⩽ 5%
| Δ B/B | ⩽ 2%</td></tr>
<tr><td>Resistance to cold</td><td>IEC 60068-2- 1</td><td>1. -40±3°C in air, for 1000±24 hours without loading.
2. The chip shall be stabilized at normal condition for 1~2 hours before measuring.</td><td>No visible damage.
| Δ R25/R25 | ⩽ 5%
| Δ B/B | ⩽ 2%</td></tr>
<tr><td>Resistance to damp heat</td><td>IEC 60068-2-78</td><td>1. 40±2°C , 90~95%RH in air, for 1000±24 hours without loading
2. The chip shall be stabilized at normal condition for 1~2 hours before measuring.</td><td>No visible damage.
| Δ R25/R25 | ⩽ 3%
| Δ B/B | ⩽ 2%</td></tr>
<tr><td>Resistance to high temperature load</td><td>IEC 60539-1 5.25.4</td><td>1. 85±2°C in air with permissive operating current for 1000±48 hours
2. The chip shall be stabilized at normal condition for 1~2 hours before measuring</td><td>No visible damage.
| Δ R25/R25 | ⩽ 5%
| Δ B/B | ⩽ 2%</td></tr>
</table>

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 6 months after delivery

Physical Dimensions

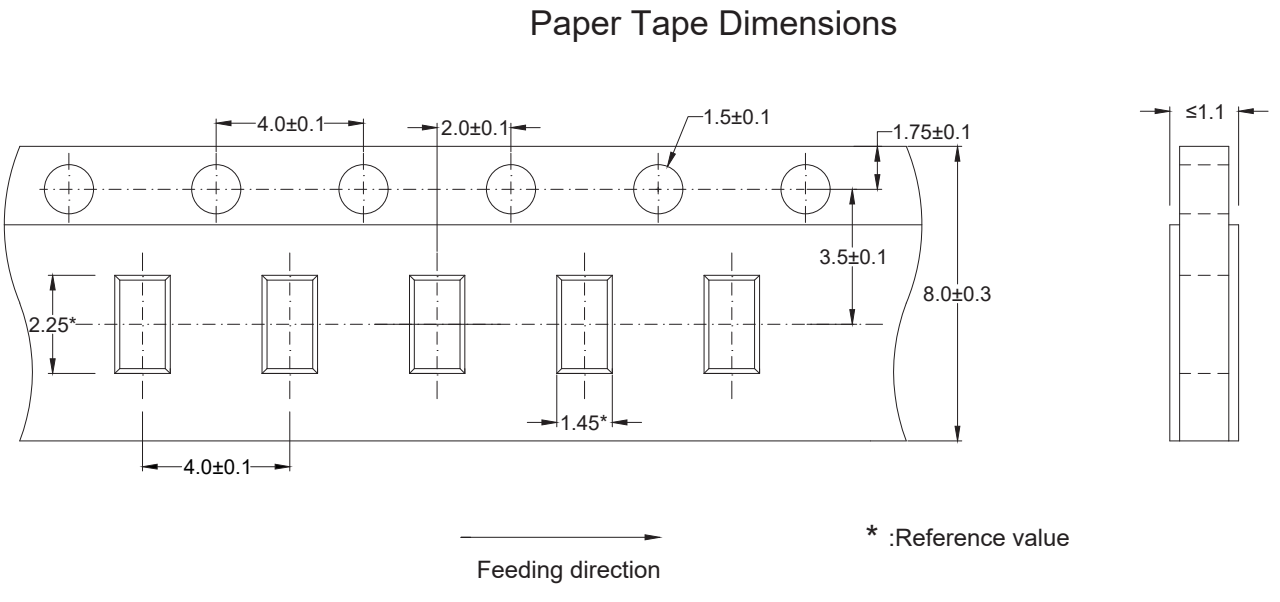


Part Package	L	W	H	L1
	(mm)	(mm)	(mm)	(mm)
0805	2.00±0.20	1.25±0.20	0.85±0.20	0.5±0.30

Ordering Information

PACKAGE	Part Number	DELIVERY MODE	MPQ(PCS)
0805	HNTC0805-104F4250FB	7''REEL	4,000

Packaging Information



R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	R_Tolerance	Temp._Tolerance(℃)
-40	4191.522	4397.119	4612.340	4.89%	0.66
-39	3904.301	4092.874	4290.126	4.82%	0.65
-38	3638.686	3811.717	3992.576	4.74%	0.65
-37	3392.915	3551.749	3717.646	4.67%	0.64
-36	3165.377	3311.236	3463.470	4.60%	0.64
-35	2954.603	3088.599	3228.349	4.52%	0.63
-34	2759.251	2882.396	3010.735	4.45%	0.63
-33	2578.097	2691.310	2809.213	4.38%	0.62
-32	2410.018	2514.137	2622.492	4.31%	0.62
-31	2253.988	2349.778	2449.393	4.24%	0.61
-30	2109.070	2197.225	2288.836	4.17%	0.61
-29	1974.402	2055.558	2139.835	4.10%	0.60
-28	1849.196	1923.932	2001.488	4.03%	0.59
-27	1732.729	1801.573	1872.966	3.96%	0.59
-26	1624.337	1687.773	1753.511	3.89%	0.58
-25	1523.411	1581.881	1642.430	3.83%	0.58
-24	1429.203	1483.100	1538.875	3.76%	0.57
-23	1341.418	1391.113	1442.505	3.69%	0.57
-22	1259.579	1305.413	1352.779	3.63%	0.56
-21	1183.249	1225.531	1269.196	3.56%	0.55
-20	1112.022	1151.037	1191.301	3.50%	0.55
-19	1045.527	1081.535	1118.671	3.43%	0.54
-18	983.422	1016.661	1050.919	3.37%	0.53
-17	925.389	956.080	987.689	3.31%	0.53
-16	871.138	899.481	928.652	3.24%	0.52
-15	820.400	846.579	873.505	3.18%	0.52
-14	772.928	797.111	821.969	3.12%	0.51
-13	728.490	750.834	773.786	3.06%	0.50
-12	686.877	707.524	728.718	3.00%	0.50
-11	647.891	666.972	686.547	2.93%	0.49
-10	611.352	628.988	647.069	2.87%	0.48
-9	577.042	593.342	610.042	2.81%	0.48
-8	544.864	559.931	575.357	2.75%	0.47
-7	514.674	528.602	542.852	2.70%	0.46
-6	486.337	499.212	512.377	2.64%	0.46
-5	459.730	471.632	483.794	2.58%	0.45
-4	434.767	445.772	457.009	2.52%	0.44
-3	411.305	421.480	431.863	2.46%	0.43
-2	389.245	398.652	408.245	2.41%	0.43
-1	368.496	377.193	386.056	2.35%	0.42
0	348.972	357.012	365.200	2.29%	0.41
1	330.575	338.006	345.569	2.24%	0.41
2	313.254	320.122	327.107	2.18%	0.40
3	296.941	303.287	309.737	2.13%	0.39
4	281.571	287.434	293.389	2.07%	0.38
5	267.084	272.500	277.997	2.02%	0.38
6	253.425	258.426	263.501	1.96%	0.37

R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	R_Tolerance	Temp._Tolerance(℃)
7	240.541	245.160	249.842	1.91%	0.36
8	228.386	232.649	236.968	1.86%	0.35
9	216.913	220.847	224.830	1.80%	0.34
10	206.081	209.710	213.381	1.75%	0.34
11	195.850	199.196	202.579	1.70%	0.33
12	186.184	189.268	192.384	1.65%	0.32
13	177.048	179.890	182.758	1.59%	0.31
14	168.411	171.028	173.667	1.54%	0.30
15	160.243	162.651	165.078	1.49%	0.30
16	152.512	154.726	156.957	1.44%	0.29
17	145.197	147.232	149.281	1.39%	0.28
18	138.273	140.142	142.022	1.34%	0.27
19	131.717	133.432	135.156	1.29%	0.26
20	125.508	127.080	128.659	1.24%	0.25
21	119.626	121.066	122.510	1.19%	0.25
22	114.052	115.368	116.689	1.14%	0.24
23	108.766	109.970	111.175	1.10%	0.23
24	103.754	104.852	105.951	1.05%	0.22
25	99.000	100.000	101.000	1.00%	0.21
26	94.400	95.398	96.397	1.05%	0.22
27	90.037	91.032	92.029	1.09%	0.23
28	85.899	86.889	87.881	1.14%	0.25
29	81.973	82.956	83.942	1.19%	0.26
30	78.247	79.222	80.200	1.24%	0.27
31	74.710	75.675	76.645	1.28%	0.28
32	71.351	72.306	73.266	1.33%	0.29
33	68.161	69.104	70.054	1.37%	0.31
34	65.130	66.061	66.999	1.42%	0.32
35	62.249	63.167	64.093	1.47%	0.33
36	59.510	60.415	61.327	1.51%	0.34
37	56.906	57.797	58.696	1.56%	0.35
38	54.429	55.306	56.190	1.60%	0.37
39	52.073	52.934	53.805	1.64%	0.38
40	49.830	50.677	51.532	1.69%	0.39
41	47.697	48.528	49.369	1.73%	0.40
42	45.666	46.482	47.308	1.78%	0.42
43	43.732	44.533	45.343	1.82%	0.43
44	41.890	42.675	43.470	1.86%	0.44
45	40.134	40.904	41.684	1.91%	0.46
46	38.459	39.213	39.978	1.95%	0.47
47	36.863	37.601	38.350	1.99%	0.48
48	35.340	36.063	36.797	2.04%	0.49
49	33.888	34.595	35.314	2.08%	0.51
50	32.502	33.195	33.898	2.12%	0.52
51	31.182	31.859	32.548	2.16%	0.53
52	29.921	30.584	31.258	2.20%	0.55
53	28.718	29.366	30.025	2.25%	0.56

R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	R_Tolerance	Temp._Tolerance(℃)
54	27.569	28.203	28.847	2.29%	0.57
55	26.472	27.091	27.721	2.33%	0.59
56	25.424	26.028	26.645	2.37%	0.60
57	24.422	25.013	25.615	2.41%	0.62
58	23.464	24.042	24.631	2.45%	0.63
59	22.549	23.113	23.688	2.49%	0.64
60	21.674	22.224	22.787	2.53%	0.66
61	20.837	21.374	21.924	2.57%	0.67
62	20.036	20.561	21.097	2.61%	0.69
63	19.269	19.782	20.306	2.65%	0.70
64	18.536	19.036	19.548	2.69%	0.72
65	17.834	18.323	18.822	2.73%	0.73
66	17.163	17.640	18.128	2.77%	0.74
67	16.521	16.986	17.463	2.81%	0.76
68	15.906	16.360	16.825	2.85%	0.77
69	15.316	15.760	16.214	2.88%	0.79
70	14.752	15.184	15.628	2.92%	0.80
71	14.209	14.631	15.064	2.96%	0.82
72	13.689	14.101	14.523	3.00%	0.83
73	13.190	13.592	14.004	3.04%	0.85
74	12.712	13.104	13.506	3.07%	0.86
75	12.253	12.635	13.029	3.11%	0.88
76	11.814	12.187	12.571	3.15%	0.89
77	11.393	11.757	12.131	3.19%	0.91
78	10.988	11.344	11.709	3.22%	0.92
79	10.600	10.947	11.304	3.26%	0.94
80	10.228	10.566	10.914	3.30%	0.96
81	9.870	10.200	10.539	3.33%	0.97
82	9.526	9.848	10.180	3.37%	0.99
83	9.196	9.510	9.834	3.40%	1.00
84	8.879	9.185	9.501	3.44%	1.02
85	8.574	8.873	9.181	3.48%	1.03
86	8.281	8.572	8.873	3.51%	1.05
87	7.999	8.283	8.577	3.55%	1.07
88	7.728	8.006	8.292	3.58%	1.08
89	7.467	7.738	8.018	3.62%	1.10
90	7.217	7.481	7.754	3.65%	1.12
91	6.976	7.234	7.501	3.69%	1.13
92	6.745	6.997	7.258	3.72%	1.15
93	6.523	6.769	7.023	3.76%	1.17
94	6.309	6.548	6.797	3.79%	1.18
95	6.102	6.337	6.579	3.83%	1.20
96	5.903	6.132	6.368	3.86%	1.22
97	5.711	5.934	6.165	3.89%	1.23
98	5.526	5.744	5.969	3.93%	1.25
99	5.348	5.561	5.781	3.96%	1.27
100	5.177	5.384	5.599	3.99%	1.28

R-T Chart

Temp.(℃)	R_Min(KΩ)	R_Typ(KΩ)	R_Max(KΩ)	R_Tolerance	Temp._Tolerance(℃)
101	5.012	5.214	5.424	4.03%	1.30
102	4.853	5.051	5.256	4.06%	1.32
103	4.700	4.893	5.093	4.09%	1.34
104	4.553	4.741	4.937	4.13%	1.35
105	4.410	4.594	4.785	4.16%	1.37
106	4.273	4.453	4.639	4.19%	1.39
107	4.141	4.316	4.498	4.22%	1.41
108	4.013	4.184	4.362	4.26%	1.42
109	3.890	4.057	4.231	4.29%	1.44
110	3.771	3.934	4.104	4.32%	1.46
111	3.656	3.816	3.982	4.35%	1.48
112	3.545	3.701	3.863	4.38%	1.49
113	3.438	3.591	3.749	4.42%	1.51
114	3.335	3.484	3.639	4.45%	1.53
115	3.235	3.380	3.532	4.48%	1.55
116	3.139	3.281	3.429	4.51%	1.57
117	3.047	3.185	3.330	4.54%	1.59
118	2.957	3.093	3.234	4.57%	1.60
119	2.871	3.003	3.141	4.60%	1.62
120	2.787	2.916	3.052	4.63%	1.64
121	2.706	2.832	2.964	4.66%	1.66
122	2.627	2.751	2.880	4.70%	1.68
123	2.551	2.672	2.798	4.73%	1.70
124	2.478	2.596	2.719	4.76%	1.72
125	2.407	2.522	2.643	4.79%	1.74