

# Specifications for NTC Thermistor

Part No.	NTCM-HP-50K-1%
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## 1、Electrical Characteristics


	Item	Symbol	Test conditions	Unit	Specification
1.1	Zero Power Resistance at 25°C	R <sub>25</sub>	T <sub>a</sub> =25±0.05°C Test Power≤0.1mW	KΩ	50±1%
1.2	B-value	B <sub>25/50</sub>	$B=[(T_a \times T_b)/(T_b - T_a)] \times \ln(R_a/R_b)$ T <sub>b</sub> =50°C±0.01°C	K	3950±1%
1.3	Thermal dissipation Coefficient	δ	In still air	mW/°C	≥2
1.4	Thermal time constant	τ	In still air	sec	≤7
1.5	Insulation resistance	/	100V/DC 1min	MΩ	≥100
1.6	Operating temperature	/	/	°C	-55°C ~ 125°C
1.7	Maximum rated power	P <sub>max</sub>	/	mW	50
1.8	R&T-table	/	/	/	See attached table
1.9	Resistance tolerance	/	/	/	See attached curve

## 2、Reliability

	Item	Test conditions and methods	Technical requirements
2.1	Terminal strength	Fixed resistor end, Pull strength : 5±1 N , time : 10±1 sec	No obvious damage, R <sub>25</sub> ΔR/R≤±2%
2.2	Solderability	temperature : 245±5°C for 2-3sec	the coverage area should be more than 95%.
2.3	Welding heat resistant	Tin pan temperature : 260±5°C , immersion depth is apart from the body resistance 6mm , time:5±1sec	R <sub>25</sub> ΔR/R≤±2% ,
2.4	Steady humidity and heat	Temp : 40°C±2°C , humidity : 93±2% , Time : 500hrs	R <sub>25</sub> ΔR/R≤±2% ,
2.5	Rapid changes in temperature	-55°C 30min→25°C 5min→1 25°C 30min→25°C 5min , 5cycles	R <sub>25</sub> ΔR/R≤±2%
2.6	High temperature storage	Temp : 125°C±5°C, Time :1000hrs	R <sub>25</sub> ΔR/R≤±2%
2.7	Low temperature storage	Temp : -55°C, Time :1000hrs	R <sub>25</sub> ΔR/R≤±2%

4.2 Environment Management System Certification  
ISO14001 : 2004 ( 01113E20060R2M )

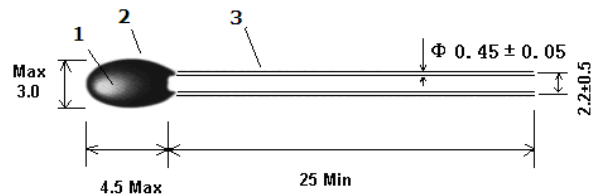
4.3 Environment Test Report RoHS  
( ECL01G030885001 )

4.4  CQC Safe Certification (CQC10001052282)

4.5  UL 1434 certificate (File # E240991)

4.6

## 5、Dimensions(mm)



No.	Name	Material specifications	Quantity	note
1	element	NTC Thermistor ( chip )	1	
2	Modified resin	Coating types of resin	1	Black
3	Lead wire	CP wire	2	Silver

## 3、Matters need attention

- 3.1 This product USES: Temperature measurement and control;
- 3.2 Avoid measurement error when current through the thermistor chip resulted in heating element itself;
- 3.3 When the soldering iron welding, the welding place at least 2 mm space from coating layer and the welding temperature should be lower than 300 °C, welding time < 3 ses
- 3.4 Storage temp : -10°C ~ 40°C ;storage humidity : ≤75% RH ;
- 3.5 Avoid air corrosion or sunlight
- 3.6 Remake sealed storage after package opening.

## 4. Certificate

4.1 Quality Control System Certification  
ISO9001 : 2008 ( 01112Q20216R4M )

# R&T Table

R25=50K $\Omega$ TOLERANCE: $\pm 1\%$ B25/50=3950K B25/85=4091K TOLERANCE: $\pm 1\%$ (P182-6B )							
TEMP (°C)	RESISTANCE (K $\Omega$ )			RESISST-TOL (%)		TEMP-TOL (°C)	
	MIN	CENTER	MAX	$\Delta R$	$-\Delta R$	$\Delta T$	$-\Delta T$
-55	3808.260	4019.230	4241.470	5.529	-5.249	0.737	-0.700
-54	3548.500	3742.410	3946.520	5.454	-5.181	0.733	-0.697
-53	3308.730	3487.070	3674.660	5.379	-5.114	0.729	-0.693
-52	3087.230	3251.350	3423.860	5.305	-5.047	0.725	-0.690
-51	2882.420	3033.560	3192.300	5.232	-4.982	0.721	-0.687
-50	2692.900	2832.150	2978.300	5.160	-4.916	0.717	-0.683
-49	2517.380	2645.750	2780.400	5.088	-4.852	0.713	-0.680
-48	2354.710	2473.110	2597.220	5.018	-4.787	0.709	-0.676
-47	2203.820	2313.090	2427.540	4.947	-4.724	0.704	-0.672
-46	2063.770	2164.660	2270.260	4.878	-4.660	0.700	-0.669
-45	1933.680	2026.880	2124.360	4.809	-4.598	0.695	-0.665
-44	1812.760	1898.900	1988.930	4.740	-4.535	0.691	-0.661
-43	1700.300	1779.930	1863.120	4.673	-4.474	0.686	-0.657
-42	1595.620	1669.280	1746.170	4.606	-4.412	0.682	-0.653
-41	1498.130	1566.300	1637.400	4.539	-4.351	0.677	-0.649
-40	1407.280	1470.380	1536.160	4.473	-4.291	0.672	-0.645
-39	1322.570	1381.000	1441.880	4.407	-4.231	0.667	-0.640
-38	1243.530	1297.660	1354.020	4.342	-4.171	0.662	-0.636
-37	1169.740	1219.910	1272.110	4.278	-4.112	0.657	-0.632
-36	1100.820	1147.330	1195.690	4.214	-4.053	0.652	-0.627
-35	1036.410	1079.540	1124.350	4.151	-3.995	0.647	-0.623
-34	976.183	1016.190	1057.730	4.088	-3.937	0.642	-0.618
-33	919.835	956.960	995.485	4.025	-3.879	0.637	-0.614
-32	867.092	901.550	937.285	3.963	-3.822	0.631	-0.609
-31	817.698	849.690	882.846	3.902	-3.765	0.626	-0.604
-30	771.419	801.129	831.900	3.840	-3.708	0.621	-0.599
-29	728.038	755.635	784.200	3.780	-3.652	0.615	-0.594
-28	687.354	712.995	739.518	3.720	-3.596	0.610	-0.589
-27	649.183	673.011	697.645	3.660	-3.540	0.604	-0.584
-26	613.354	635.503	658.385	3.600	-3.485	0.598	-0.579
-25	579.708	600.300	621.560	3.541	-3.430	0.593	-0.574
-24	548.099	567.247	587.004	3.483	-3.375	0.587	-0.569
-23	518.392	536.200	554.564	3.424	-3.321	0.581	-0.563
-22	490.460	507.025	524.096	3.367	-3.267	0.575	-0.558
-21	464.188	479.598	495.471	3.309	-3.213	0.569	-0.552
-20	439.466	453.805	468.565	3.252	-3.159	0.563	-0.547
-19	416.195	429.538	443.265	3.195	-3.106	0.557	-0.541
-18	394.281	406.700	419.467	3.139	-3.053	0.551	-0.536
-17	373.637	385.196	397.073	3.083	-3.000	0.544	-0.530
-16	354.184	364.944	375.993	3.027	-2.948	0.538	-0.524

R25=50K $\Omega$ TOLERANCE: $\pm 1\%$ B25/50=3950K B25/85=4091K TOLERANCE: $\pm 1\%$ (P182-6B )							
TEMP (°C)	RESISTANCE (K $\Omega$ )			RESISST-TOL (%)		TEMP-TOL (°C)	
-15	335.844	345.862	356.142	2.972	-2.896	0.532	-0.518
-14	318.550	327.876	337.442	2.917	-2.844	0.525	-0.512
-13	302.235	310.919	319.820	2.862	-2.792	0.519	-0.506
-12	286.840	294.925	303.208	2.808	-2.741	0.512	-0.500
-11	272.306	279.835	287.543	2.754	-2.690	0.506	-0.494
-10	258.582	265.593	272.766	2.700	-2.639	0.499	-0.488
-9	245.619	252.147	258.822	2.647	-2.588	0.492	-0.481
-8	233.370	239.448	245.661	2.594	-2.538	0.486	-0.475
-7	221.792	227.452	233.233	2.541	-2.488	0.479	-0.469
-6	210.845	216.116	221.495	2.489	-2.438	0.472	-0.462
-5	200.493	205.399	210.405	2.437	-2.388	0.465	-0.456
-4	190.698	195.267	199.925	2.385	-2.339	0.458	-0.449
-3	181.430	185.683	190.016	2.333	-2.290	0.451	-0.442
-2	172.656	176.615	180.646	2.282	-2.241	0.444	-0.436
-1	164.349	168.033	171.783	2.231	-2.192	0.436	-0.429
0	156.481	159.910	163.397	2.181	-2.144	0.429	-0.422
1	149.026	152.217	155.460	2.130	-2.096	0.422	-0.415
2	141.962	144.930	147.946	2.080	-2.048	0.414	-0.408
3	135.266	138.027	140.830	2.030	-2.000	0.407	-0.401
4	128.917	131.484	134.089	1.981	-1.952	0.400	-0.394
5	122.895	125.282	127.703	1.932	-1.905	0.392	-0.387
6	117.183	119.401	121.650	1.883	-1.858	0.384	-0.379
7	111.762	113.824	115.911	1.834	-1.811	0.377	-0.372
8	106.617	108.532	110.470	1.785	-1.764	0.369	-0.364
9	101.733	103.511	105.309	1.737	-1.717	0.361	-0.357
10	96.402	98.034	99.683	1.682	-1.664	0.355	-0.352
11	92.688	94.219	95.767	1.641	-1.625	0.345	-0.342
12	88.502	89.922	91.356	1.594	-1.579	0.337	-0.334
13	84.524	85.840	87.169	1.547	-1.533	0.329	-0.326
14	80.743	81.962	83.192	1.500	-1.488	0.321	-0.318
15	77.147	78.277	79.415	1.453	-1.442	0.313	-0.311
16	73.728	74.773	75.826	1.407	-1.397	0.305	-0.303
17	70.476	71.442	72.415	1.361	-1.352	0.296	-0.295
18	67.382	68.275	69.172	1.315	-1.307	0.288	-0.286
19	64.437	65.261	66.090	1.269	-1.263	0.280	-0.278
20	61.634	62.394	63.158	1.223	-1.219	0.271	-0.270
21	58.965	59.666	60.369	1.178	-1.174	0.263	-0.262
22	56.424	57.069	57.716	1.133	-1.130	0.254	-0.253
23	54.003	54.597	55.191	1.088	-1.087	0.245	-0.245
24	51.697	52.242	52.788	1.044	-1.043	0.237	-0.237
25	49.500	50.000	50.500	1.000	-1.000	0.228	-0.228
26	47.364	47.863	48.363	1.044	-1.043	0.239	-0.239
27	45.329	45.827	46.326	1.088	-1.086	0.251	-0.250
28	43.391	43.886	44.383	1.131	-1.129	0.262	-0.262

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TEMP (°C)	RESISTANCE (K Ω)			RESISST-TOL (%)		TEMP-TOL (°C)	
29	41.544	42.037	42.531	1.175	-1.171	0.274	-0.273
30	39.784	40.273	40.763	1.218	-1.213	0.286	-0.285
31	38.106	38.590	39.077	1.261	-1.256	0.298	-0.296
32	36.506	36.986	37.468	1.304	-1.298	0.310	-0.308
33	34.980	35.455	35.933	1.347	-1.339	0.322	-0.320
34	33.524	33.994	34.466	1.390	-1.381	0.334	-0.331
35	32.135	32.599	33.066	1.432	-1.422	0.346	-0.343
36	30.810	31.268	31.729	1.475	-1.463	0.358	-0.355
37	29.545	29.997	30.452	1.517	-1.504	0.370	-0.367
38	28.338	28.783	29.231	1.559	-1.545	0.383	-0.379
39	27.185	27.623	28.065	1.601	-1.585	0.395	-0.391
40	26.084	26.515	26.950	1.642	-1.625	0.408	-0.403
41	25.032	25.456	25.885	1.684	-1.666	0.420	-0.416
42	24.027	24.444	24.866	1.725	-1.705	0.433	-0.428
43	23.067	23.476	23.891	1.766	-1.745	0.445	-0.440
44	22.149	22.551	22.959	1.807	-1.785	0.458	-0.453
45	21.271	21.667	22.067	1.848	-1.824	0.471	-0.465
46	20.433	20.821	21.214	1.888	-1.863	0.484	-0.478
47	19.630	20.011	20.397	1.929	-1.902	0.497	-0.490
48	18.863	19.236	19.615	1.969	-1.941	0.510	-0.503
49	18.129	18.495	18.867	2.009	-1.979	0.523	-0.516
50	17.579	17.940	18.306	2.040	-2.009	0.539	-0.531
51	16.754	17.106	17.463	2.089	-2.056	0.550	-0.541
52	16.111	16.455	16.806	2.128	-2.094	0.564	-0.554
53	15.495	15.832	16.176	2.168	-2.131	0.577	-0.567
54	14.905	15.235	15.572	2.207	-2.169	0.591	-0.580
55	14.340	14.664	14.993	2.246	-2.206	0.604	-0.594
56	13.799	14.116	14.438	2.285	-2.244	0.618	-0.607
57	13.280	13.591	13.906	2.324	-2.281	0.632	-0.620
58	12.784	13.087	13.396	2.362	-2.318	0.646	-0.633
59	12.308	12.604	12.907	2.401	-2.354	0.660	-0.647
60	11.851	12.142	12.438	2.439	-2.391	0.674	-0.660
61	11.414	11.698	11.988	2.477	-2.427	0.688	-0.674
62	10.994	11.272	11.556	2.515	-2.463	0.702	-0.687
63	10.592	10.864	11.141	2.553	-2.499	0.716	-0.701
64	10.206	10.472	10.743	2.591	-2.535	0.731	-0.715
65	9.836	10.095	10.361	2.628	-2.571	0.745	-0.729
66	9.481	9.734	9.994	2.666	-2.606	0.759	-0.742
67	9.140	9.388	9.641	2.703	-2.642	0.774	-0.756
68	8.812	9.055	9.303	2.740	-2.677	0.789	-0.770
69	8.498	8.735	8.978	2.777	-2.712	0.803	-0.784
70	8.197	8.428	8.665	2.814	-2.746	0.818	-0.799
71	7.907	8.133	8.365	2.850	-2.781	0.833	-0.813
72	7.629	7.850	8.076	2.887	-2.816	0.848	-0.827

R25=50K Ω TOLERANCE: ±1% B25/50=3950K B25/85=4091K TOLERANCE: ±1% (P182-6B )							
TEMP (°C)	RESISTANCE (K Ω )			RESISST-TOL (%)		TEMP-TOL (°C)	
73	7.361	7.577	7.799	2.923	-2.850	0.863	-0.841
74	7.105	7.316	7.532	2.959	-2.884	0.878	-0.856
75	6.858	7.064	7.276	2.995	-2.918	0.893	-0.870
76	6.621	6.822	7.029	3.031	-2.952	0.909	-0.885
77	6.393	6.589	6.792	3.067	-2.986	0.924	-0.899
78	6.173	6.366	6.563	3.103	-3.019	0.939	-0.914
79	5.963	6.150	6.344	3.138	-3.052	0.955	-0.929
80	5.760	5.943	6.132	3.174	-3.086	0.970	-0.944
81	5.565	5.744	5.929	3.209	-3.119	0.986	-0.958
82	5.378	5.553	5.733	3.244	-3.151	1.002	-0.973
83	5.197	5.368	5.544	3.279	-3.184	1.018	-0.988
84	5.023	5.190	5.363	3.313	-3.217	1.033	-1.003
85	4.856	5.020	5.188	3.348	-3.249	1.049	-1.018
86	4.696	4.855	5.019	3.382	-3.281	1.065	-1.034
87	4.541	4.696	4.857	3.417	-3.314	1.082	-1.049
88	4.392	4.544	4.700	3.451	-3.345	1.098	-1.064
89	4.248	4.396	4.550	3.485	-3.377	1.114	-1.080
90	4.110	4.255	4.404	3.519	-3.409	1.130	-1.095
91	3.976	4.118	4.264	3.553	-3.440	1.147	-1.111
92	3.848	3.986	4.129	3.586	-3.472	1.163	-1.126
93	3.724	3.860	3.999	3.620	-3.503	1.180	-1.142
94	3.605	3.737	3.874	3.653	-3.534	1.197	-1.157
95	3.490	3.619	3.753	3.686	-3.565	1.213	-1.173
96	3.379	3.506	3.636	3.720	-3.596	1.230	-1.189
97	3.273	3.396	3.523	3.753	-3.626	1.247	-1.205
98	3.170	3.290	3.415	3.785	-3.657	1.264	-1.221
99	3.070	3.188	3.310	3.818	-3.687	1.281	-1.237
100	2.975	3.090	3.209	3.851	-3.718	1.298	-1.253
101	2.882	2.994	3.111	3.883	-3.748	1.315	-1.269
102	2.793	2.903	3.016	3.915	-3.778	1.333	-1.286
103	2.707	2.814	2.925	3.948	-3.807	1.350	-1.302
104	2.624	2.729	2.837	3.980	-3.837	1.367	-1.318
105	2.544	2.646	2.752	4.012	-3.866	1.385	-1.335
106	2.466	2.567	2.670	4.043	-3.896	1.402	-1.351
107	2.392	2.490	2.591	4.075	-3.925	1.420	-1.368
108	2.320	2.415	2.514	4.107	-3.954	1.438	-1.384
109	2.250	2.343	2.440	4.138	-3.983	1.456	-1.401
110	2.183	2.274	2.369	4.169	-4.012	1.473	-1.418
111	2.118	2.207	2.300	4.201	-4.041	1.491	-1.435
112	2.055	2.142	2.233	4.232	-4.069	1.509	-1.452
113	1.994	2.080	2.168	4.263	-4.098	1.528	-1.469
114	1.936	2.019	2.106	4.293	-4.126	1.546	-1.486
115	1.879	1.960	2.045	4.324	-4.154	1.564	-1.503
116	1.824	1.904	1.987	4.355	-4.182	1.582	-1.520

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TEMP ( $^{\circ}\text{C}$ )	RESISTANCE (K $\Omega$ )			RESISST-TOL (%)		TEMP-TOL ( $^{\circ}\text{C}$ )	
117	1.771	1.849	1.930	4.385	-4.210	1.601	-1.537
118	1.720	1.796	1.876	4.415	-4.238	1.619	-1.554
119	1.671	1.745	1.823	4.446	-4.266	1.638	-1.572
120	1.623	1.695	1.771	4.476	-4.293	1.657	-1.589
121	1.576	1.648	1.722	4.506	-4.321	1.675	-1.607
122	1.532	1.601	1.674	4.535	-4.348	1.694	-1.624
123	1.488	1.556	1.627	4.565	-4.375	1.713	-1.642
124	1.446	1.513	1.582	4.595	-4.402	1.732	-1.659
125	1.406	1.471	1.539	4.624	-4.429	1.751	-1.677

