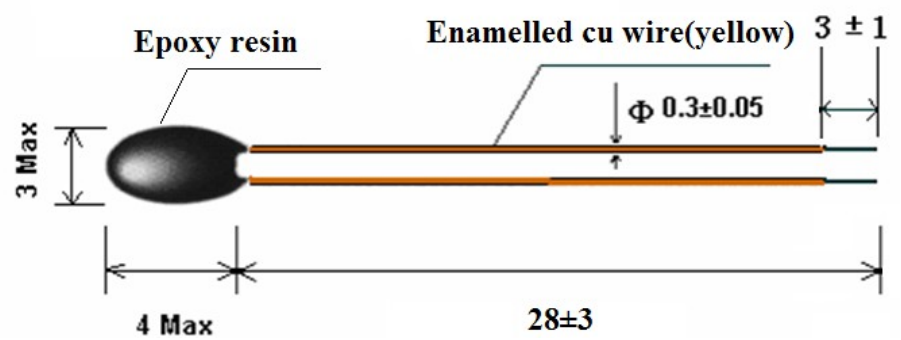
Specifications for NTC Thermistor

Part No.	NTCM-1K-B3950

1、Dimensions(mm)



2、Materials

Coating		Lead wire	
Material	Color	Material	Color
Epoxy Resin	Black	Enamelled Cu wire	Yellow

3、Ordering information

MF52	B2	102	F	3950
Pearl-Shape Temp Measurement NTC Thermistor	Enamelled cu wire	Resistance	Tolerance	B-value (25/50)
		10×10^2=1KΩ	±1%	3950K

4、Electrical characteristics

	Item	Symbol	Test conditions	Unit	Specification
4.1	Zero Power Resistance at 25℃	R_{25}	Ta=25±0.05℃ Test Power≤0.1mW Test in fluid liquid	KΩ	1±1%
4.2	B-value	$B_{25/50}$	$B=[(T_a\times T_b)/(T_b-T_a)]\times\ln(R_a/R_b)$ T_b=50℃±0.1℃	K	3950±1%
4.3	Thermal dissipation Coefficient	δ	In still air	mW/℃	≥2

4.4	Thermal time constant	τ	In still air	sec	≤7
4.5	Insulation resistance	/	100V/DC 1min	MΩ	≥100
4.6	Operating temperature	/	/	℃	-55 ~ 125
4.7	R&T-table	/	/	/	See attached table
4.8	Resistance tolerance	/	/	/	See attached curve

5、Reliability

	Item	Test conditions and methods	Technical requirements
5.1	Solderability	The lead wire shall be dipped into solder bath of 235±5℃ for 2~3sec with 6mm space from the body.	Solder dipped on lead wire should be uniform and smooth; the coverage area should be more than 95%.
5.2	Withstand Soldering heat	The lead wire shall be dipped into solder bath of 265±5℃ for 5±1sec with 6mm space from the body.	No obvious damage, R25 ΔR/R≤±2%
5.3	Terminal strength	Pull strength：5N，time：10sec	No obvious damage, R25 ΔR/R≤±2%
5.4	Temperature cycle	-55℃30min→25℃5min→125℃30min →25℃5min， 5cycles ,recover 4hrs	No obvious damage, R25 ΔR/R≤±2%
5.5	High temperature	Temperature：125℃，time：16hrs	No obvious damage, R25 ΔR/R≤±2%
5.6	Low temperature	Temperature：-55℃，Time：2hrs	No obvious damage, R25 ΔR/R≤±2%
5.7	Low atmospheric pressure	Atmospheric pressure：40±0.1Kpa， time :4hrs	No obvious damage, R25 ΔR/R≤±2%
5.8	Steady humidity and heat	Temp：40℃，humidity：93%， Time ：500±12hrs	No obvious damage, R25 ΔR/R≤±2%， Withstanding voltage ≥700V/AC 1min Insulating resistance ≥100MΩ
5.9	Damp heat	Temp：25~40℃，humidity：90%， Time：24hrs	No obvious damage, R25 ΔR/R≤±2%， Withstanding voltage ≥700V/AC 1min Insulating resistance ≥100MΩ
5.10	Zero power endurance at upper category temperature	Temp : 125℃±2℃, Time :1000±24hrs	No obvious damage, R25 ΔR/R≤±2%
5.11	Vibrate	Frequency :10~500HZ，swing :0.75m or 98m/S^2，time :2hurs	No obvious damage, R25 ΔR/R≤±2%
5.12	Bump	Acceleration :250m/S^2，pulse duration : 6mS，Bump times：4000times	No obvious damage, R25 ΔR/R≤±2%

6、Soldering conditions

When soldering, space between iron tip and thermistor body must be more than 6mm, temperature should be less than 350℃, soldering time should be as short as possible.

7、Storage conditions

7.1 Storage temp：-10℃ ～ 40℃；
7.2 Storage humidity ：≤75% RH；
7.3 Avoid air corrosion or sunlight
7.4 Remake sealed storage after package opening.

8. Certificate

8.1 Quality Control System Certification ISO9001：2000（01110Q20002R3M）

8.2 Environment Management System Certification ISO14001：2004（01110E20031R1M）

8.3 Environment Test Report RoHS （RLSHD000645310001C）

8.4 CQC Certification (CQC07001019009)

R&T Table

R25=1KΩ TOLERANCE:±1% B25/50=3950K TOLERANCE:±1% （P199-1）

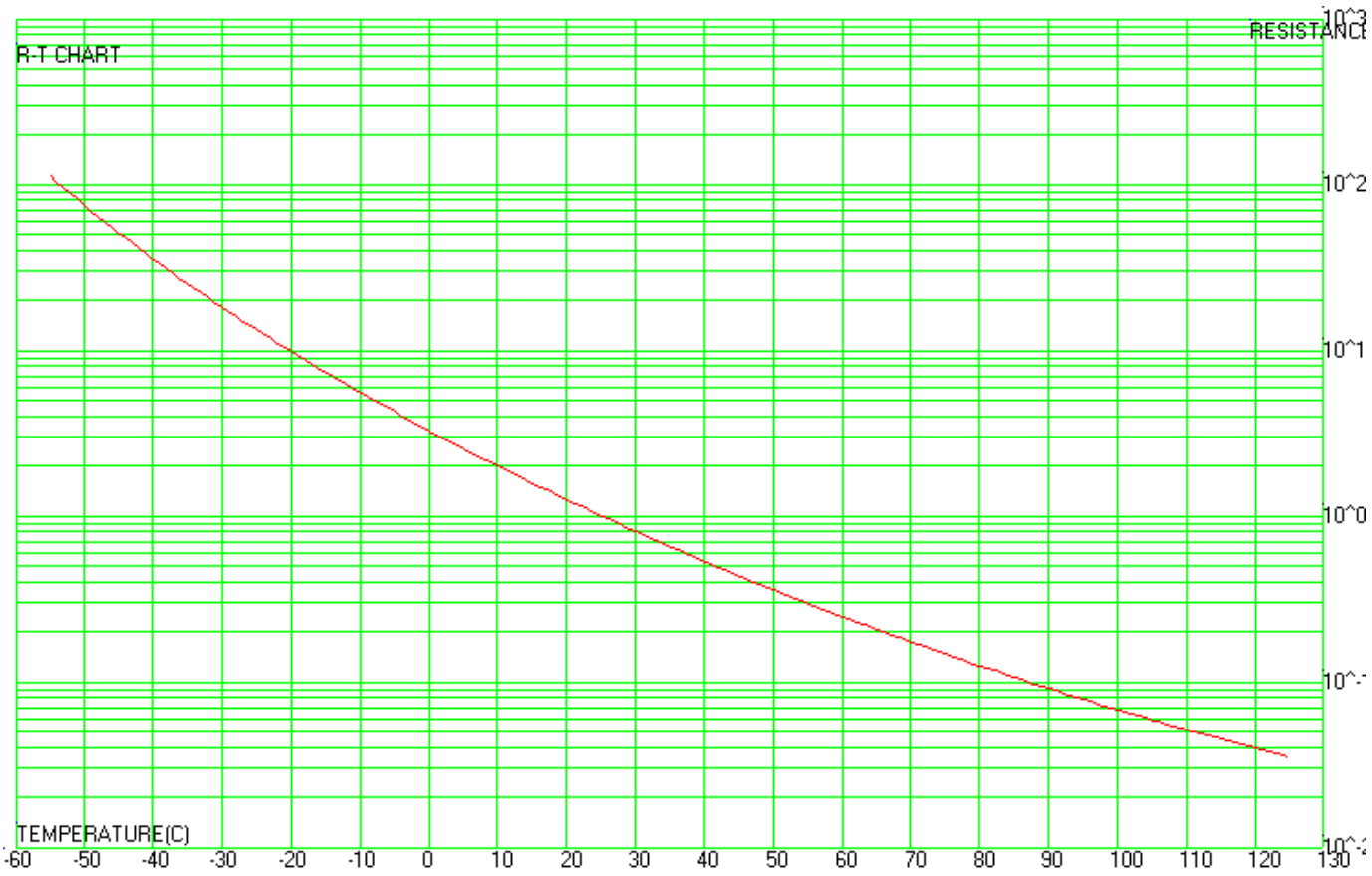
TEMP(℃)	RESISTANCE(KΩ)			RESISST-TOL(%)		TEMP-TOL(℃)	
	MIN	CENTER	MAX	△R	-△R	△T	-△T
-55	105.165	111.353	117.894	5.873	-5.557	0.729	-0.690
-54	96.841	102.454	108.381	5.785	-5.478	0.725	-0.687
-53	89.275	94.372	99.750	5.698	-5.400	0.721	-0.684
-52	82.388	87.022	91.906	5.613	-5.324	0.717	-0.680
-51	76.112	80.328	84.769	5.528	-5.248	0.713	-0.677
-50	70.385	74.225	78.267	5.445	-5.173	0.709	-0.674
-49	65.152	68.653	72.335	5.362	-5.099	0.705	-0.670
-48	60.364	63.559	66.916	5.281	-5.026	0.701	-0.667
-47	55.980	58.897	61.961	5.201	-4.953	0.696	-0.663
-46	51.959	54.626	57.425	5.122	-4.882	0.692	-0.660
-45	48.269	50.709	53.266	5.044	-4.811	0.688	-0.656
-44	44.877	47.111	49.451	4.966	-4.741	0.683	-0.652
-43	41.758	43.804	45.947	4.890	-4.672	0.679	-0.648
-42	38.885	40.762	42.724	4.815	-4.603	0.674	-0.644

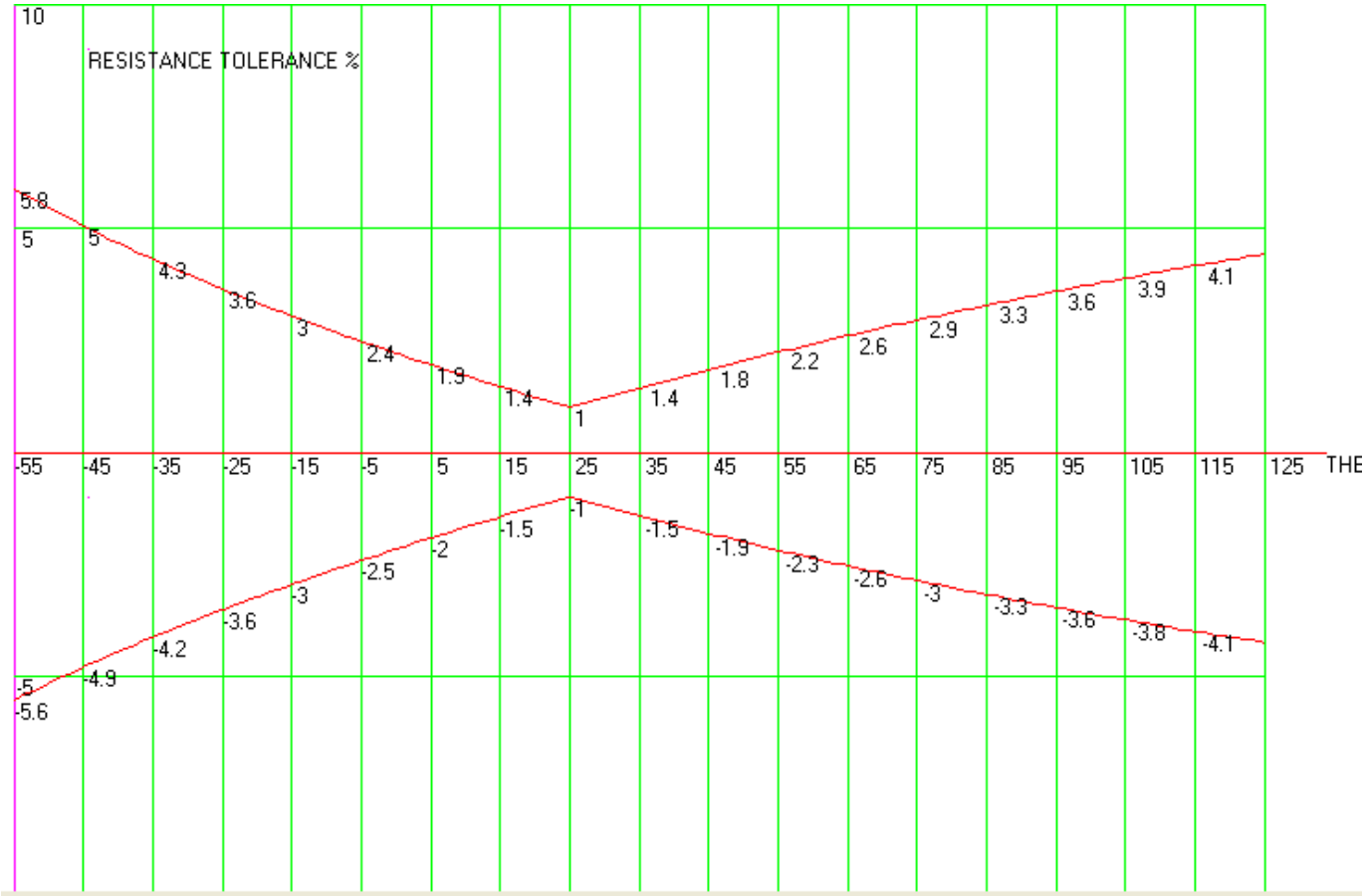
-41	36.238	37.959	39.759	4.740	-4.535	0.669	-0.640
-40	33.795	35.376	37.027	4.666	-4.468	0.665	-0.636
-39	31.540	32.992	34.507	4.593	-4.401	0.660	-0.632
-38	29.455	30.790	32.182	4.521	-4.335	0.655	-0.628
-37	27.527	28.755	30.034	4.450	-4.270	0.650	-0.624
-36	25.742	26.872	28.048	4.379	-4.205	0.645	-0.619
-35	24.088	25.128	26.211	4.309	-4.140	0.640	-0.615
-34	22.554	23.512	24.509	4.240	-4.077	0.635	-0.611
-33	21.131	22.014	22.932	4.171	-4.013	0.630	-0.606
-32	19.809	20.624	21.470	4.103	-3.951	0.625	-0.601
-31	18.580	19.332	20.112	4.036	-3.889	0.619	-0.597
-30	17.438	18.132	18.852	3.969	-3.827	0.614	-0.592
-29	16.375	17.015	17.680	3.903	-3.766	0.609	-0.587
-28	15.384	15.976	16.590	3.837	-3.705	0.603	-0.582
-27	14.462	15.009	15.575	3.773	-3.645	0.598	-0.577
-26	13.601	14.107	14.630	3.708	-3.585	0.592	-0.572
-25	12.798	13.266	13.750	3.645	-3.526	0.586	-0.567
-24	12.049	12.482	12.929	3.581	-3.467	0.581	-0.562
-23	11.348	11.749	12.163	3.519	-3.409	0.575	-0.557
-22	10.694	11.065	11.447	3.457	-3.351	0.569	-0.551
-21	10.082	10.425	10.779	3.395	-3.293	0.563	-0.546
-20	9.509	9.827	10.155	3.334	-3.236	0.557	-0.541
-19	8.973	9.267	9.571	3.274	-3.179	0.551	-0.535
-18	8.470	8.743	9.024	3.213	-3.123	0.545	-0.530
-17	7.999	8.253	8.513	3.154	-3.067	0.539	-0.524
-16	7.558	7.793	8.034	3.095	-3.011	0.533	-0.518
-15	7.144	7.361	7.585	3.036	-2.956	0.526	-0.512
-14	6.755	6.957	7.164	2.978	-2.901	0.520	-0.507
-13	6.390	6.577	6.769	2.920	-2.847	0.514	-0.501
-12	6.047	6.221	6.399	2.863	-2.793	0.507	-0.495
-11	5.724	5.886	6.051	2.806	-2.739	0.501	-0.489
-10	5.421	5.571	5.724	2.749	-2.685	0.494	-0.483
-9	5.136	5.275	5.417	2.693	-2.632	0.487	-0.476
-8	4.868	4.997	5.128	2.638	-2.580	0.481	-0.470
-7	4.615	4.735	4.857	2.582	-2.527	0.474	-0.464
-6	4.377	4.488	4.601	2.527	-2.475	0.467	-0.457
-5	4.153	4.256	4.361	2.473	-2.423	0.460	-0.451
-4	3.941	4.037	4.135	2.419	-2.372	0.453	-0.444
-3	3.742	3.831	3.921	2.365	-2.320	0.446	-0.438
-2	3.554	3.636	3.720	2.312	-2.269	0.439	-0.431
-1	3.376	3.453	3.531	2.259	-2.219	0.432	-0.425
0	3.208	3.280	3.352	2.206	-2.169	0.425	-0.418
1	3.050	3.116	3.183	2.154	-2.118	0.418	-0.411
2	2.900	2.962	3.024	2.102	-2.069	0.411	-0.404

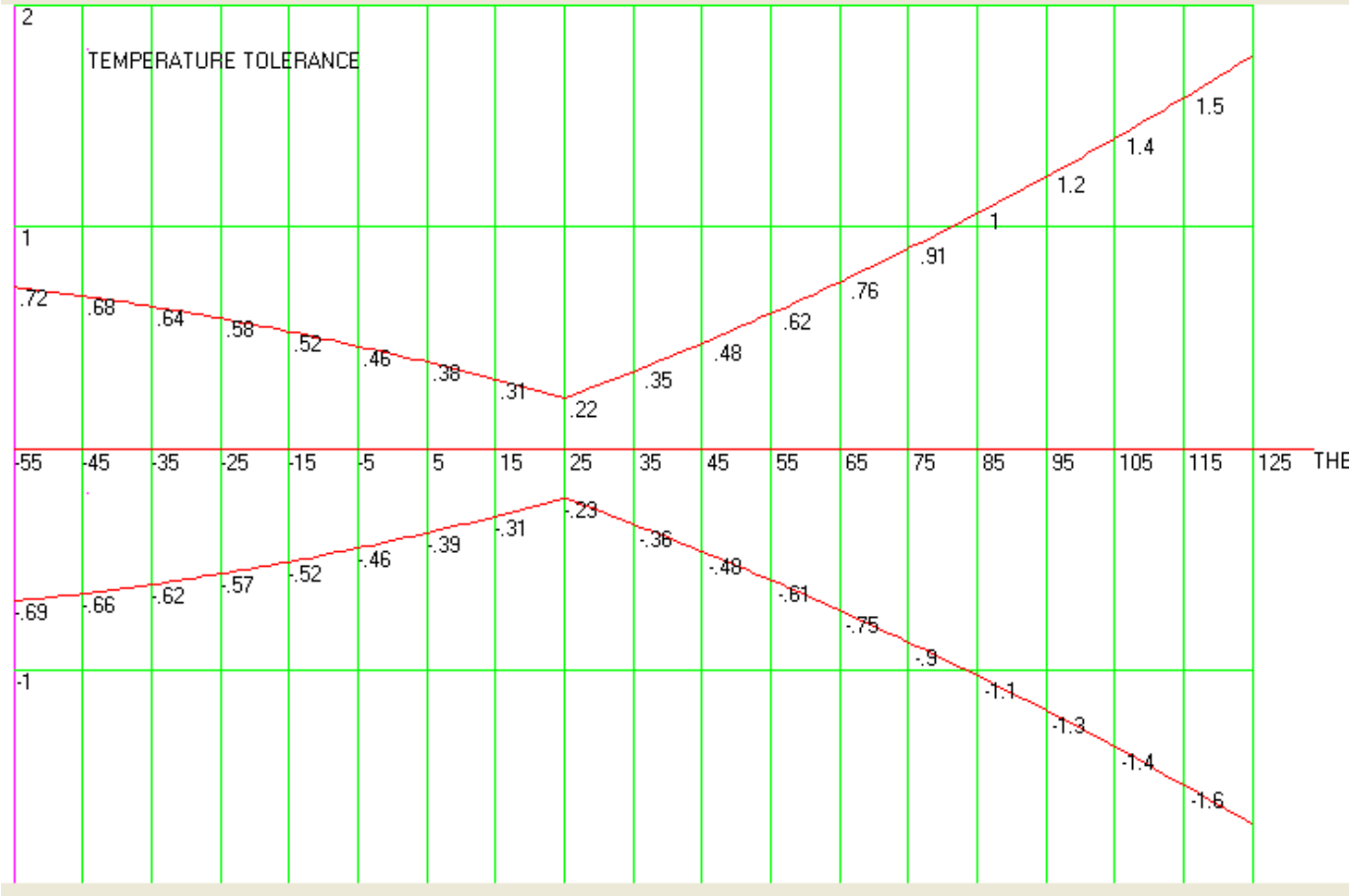
3	2.759	2.816	2.874	2.051	-2.019	0.403	-0.397
4	2.625	2.678	2.732	2.000	-1.970	0.396	-0.390
5	2.499	2.548	2.598	1.949	-1.921	0.388	-0.383
6	2.379	2.425	2.471	1.898	-1.873	0.381	-0.376
7	2.266	2.308	2.351	1.848	-1.824	0.373	-0.368
8	2.159	2.198	2.238	1.798	-1.776	0.366	-0.361
9	2.058	2.094	2.131	1.749	-1.729	0.358	-0.354
10	1.965	1.998	2.032	1.701	-1.683	0.350	-0.346
11	1.870	1.902	1.933	1.651	-1.634	0.342	-0.339
12	1.784	1.813	1.842	1.602	-1.587	0.334	-0.331
13	1.702	1.729	1.756	1.554	-1.540	0.326	-0.323
14	1.625	1.649	1.674	1.506	-1.494	0.318	-0.316
15	1.551	1.574	1.597	1.459	-1.448	0.310	-0.308
16	1.481	1.502	1.523	1.412	-1.402	0.302	-0.300
17	1.415	1.434	1.454	1.365	-1.356	0.294	-0.292
18	1.351	1.369	1.387	1.318	-1.311	0.286	-0.284
19	1.292	1.308	1.325	1.272	-1.265	0.278	-0.276
20	1.235	1.250	1.265	1.225	-1.221	0.269	-0.268
21	1.181	1.195	1.209	1.180	-1.176	0.261	-0.260
22	1.129	1.142	1.155	1.134	-1.131	0.252	-0.252
23	1.080	1.092	1.104	1.089	-1.087	0.244	-0.243
24	1.034	1.045	1.056	1.044	-1.043	0.235	-0.235
25	0.990	1.000	1.010	1.000	-1.000	0.227	-0.227
26	0.947	0.957	0.967	1.044	-1.043	0.238	-0.238
27	0.906	0.916	0.926	1.088	-1.086	0.250	-0.249
28	0.867	0.877	0.887	1.132	-1.129	0.261	-0.261
29	0.830	0.840	0.850	1.176	-1.172	0.273	-0.272
30	0.795	0.804	0.814	1.219	-1.214	0.285	-0.284
31	0.761	0.771	0.781	1.262	-1.256	0.297	-0.296
32	0.729	0.739	0.748	1.305	-1.298	0.309	-0.307
33	0.699	0.708	0.718	1.348	-1.340	0.321	-0.319
34	0.670	0.679	0.689	1.390	-1.381	0.333	-0.331
35	0.642	0.651	0.661	1.433	-1.422	0.346	-0.343
36	0.616	0.625	0.634	1.475	-1.463	0.358	-0.355
37	0.591	0.600	0.609	1.516	-1.504	0.370	-0.367
38	0.567	0.576	0.585	1.558	-1.544	0.383	-0.379
39	0.544	0.553	0.562	1.599	-1.584	0.396	-0.392
40	0.522	0.531	0.539	1.640	-1.624	0.408	-0.404
41	0.501	0.510	0.518	1.681	-1.663	0.421	-0.416
42	0.481	0.490	0.498	1.722	-1.703	0.434	-0.429
43	0.462	0.471	0.479	1.763	-1.742	0.447	-0.441
44	0.444	0.452	0.461	1.803	-1.781	0.460	-0.454
45	0.427	0.435	0.443	1.843	-1.819	0.473	-0.467
46	0.410	0.418	0.426	1.883	-1.858	0.486	-0.479

47	0.395	0.402	0.410	1.922	-1.896	0.499	-0.492
48	0.379	0.387	0.395	1.962	-1.934	0.512	-0.505
49	0.365	0.372	0.380	2.001	-1.971	0.526	-0.518
50	0.352	0.359	0.366	2.039	-2.008	0.539	-0.531
51	0.338	0.345	0.352	2.079	-2.046	0.553	-0.544
52	0.325	0.332	0.339	2.117	-2.083	0.566	-0.557
53	0.313	0.320	0.327	2.155	-2.120	0.580	-0.570
54	0.302	0.308	0.315	2.194	-2.156	0.594	-0.583
55	0.290	0.297	0.304	2.232	-2.193	0.607	-0.597
56	0.280	0.286	0.293	2.269	-2.229	0.621	-0.610
57	0.270	0.276	0.282	2.307	-2.265	0.635	-0.624
58	0.260	0.266	0.272	2.344	-2.300	0.649	-0.637
59	0.250	0.256	0.263	2.381	-2.336	0.663	-0.651
60	0.241	0.247	0.253	2.418	-2.371	0.678	-0.664
61	0.233	0.239	0.244	2.455	-2.406	0.692	-0.678
62	0.225	0.230	0.236	2.491	-2.441	0.706	-0.692
63	0.217	0.222	0.228	2.528	-2.475	0.721	-0.706
64	0.209	0.215	0.220	2.564	-2.510	0.735	-0.720
65	0.202	0.207	0.212	2.600	-2.544	0.750	-0.734
66	0.195	0.200	0.205	2.636	-2.578	0.765	-0.748
67	0.188	0.193	0.198	2.671	-2.611	0.779	-0.762
68	0.182	0.187	0.192	2.707	-2.645	0.794	-0.776
69	0.175	0.180	0.185	2.742	-2.678	0.809	-0.790
70	0.170	0.174	0.179	2.777	-2.711	0.824	-0.805
71	0.164	0.168	0.173	2.811	-2.744	0.839	-0.819
72	0.158	0.163	0.168	2.846	-2.777	0.854	-0.834
73	0.153	0.157	0.162	2.880	-2.810	0.870	-0.848
74	0.148	0.152	0.157	2.915	-2.842	0.885	-0.863
75	0.143	0.147	0.152	2.949	-2.874	0.900	-0.877
76	0.138	0.143	0.147	2.983	-2.906	0.916	-0.892
77	0.134	0.138	0.142	3.016	-2.938	0.931	-0.907
78	0.130	0.134	0.138	3.050	-2.969	0.947	-0.922
79	0.125	0.129	0.133	3.083	-3.000	0.963	-0.937
80	0.121	0.125	0.129	3.116	-3.032	0.978	-0.952
81	0.118	0.121	0.125	3.149	-3.063	0.994	-0.967
82	0.114	0.117	0.121	3.182	-3.093	1.010	-0.982
83	0.110	0.114	0.117	3.214	-3.124	1.026	-0.997
84	0.107	0.110	0.114	3.247	-3.154	1.042	-1.013
85	0.103	0.107	0.110	3.279	-3.185	1.059	-1.028
86	0.100	0.104	0.107	3.311	-3.215	1.075	-1.044
87	0.097	0.100	0.104	3.343	-3.244	1.091	-1.059
88	0.094	0.097	0.101	3.375	-3.274	1.108	-1.075
89	0.091	0.094	0.098	3.406	-3.304	1.124	-1.090
90	0.089	0.092	0.095	3.437	-3.333	1.141	-1.106

91	0.086	0.089	0.092	3.469	-3.362	1.157	-1.122
92	0.083	0.086	0.089	3.500	-3.391	1.174	-1.138
93	0.081	0.084	0.087	3.530	-3.420	1.191	-1.154
94	0.078	0.081	0.084	3.561	-3.448	1.208	-1.170
95	0.076	0.079	0.082	3.591	-3.477	1.225	-1.186
96	0.074	0.077	0.079	3.622	-3.505	1.242	-1.202
97	0.072	0.074	0.077	3.652	-3.533	1.259	-1.218
98	0.070	0.072	0.075	3.682	-3.561	1.276	-1.234
99	0.068	0.070	0.073	3.712	-3.588	1.293	-1.250
100	0.066	0.068	0.071	3.741	-3.616	1.311	-1.267
101	0.064	0.066	0.069	3.771	-3.643	1.328	-1.283
102	0.062	0.064	0.067	3.800	-3.671	1.346	-1.300
103	0.060	0.063	0.065	3.829	-3.698	1.363	-1.317
104	0.059	0.061	0.063	3.858	-3.725	1.381	-1.333
105	0.057	0.059	0.061	3.887	-3.751	1.399	-1.350
106	0.055	0.058	0.060	3.916	-3.778	1.417	-1.367
107	0.054	0.056	0.058	3.944	-3.804	1.435	-1.384
108	0.052	0.054	0.057	3.973	-3.830	1.453	-1.401
109	0.051	0.053	0.055	4.001	-3.856	1.471	-1.418
110	0.050	0.052	0.054	4.029	-3.882	1.489	-1.435
111	0.048	0.050	0.052	4.057	-3.908	1.507	-1.452
112	0.047	0.049	0.051	4.084	-3.934	1.525	-1.469
113	0.046	0.048	0.050	4.112	-3.959	1.544	-1.486
114	0.044	0.046	0.048	4.139	-3.984	1.562	-1.504
115	0.043	0.045	0.047	4.167	-4.009	1.581	-1.521
116	0.042	0.044	0.046	4.194	-4.034	1.599	-1.539
117	0.041	0.043	0.045	4.221	-4.059	1.618	-1.556
118	0.040	0.042	0.044	4.247	-4.084	1.637	-1.574
119	0.039	0.041	0.042	4.274	-4.108	1.656	-1.592
120	0.038	0.040	0.041	4.300	-4.133	1.675	-1.609
121	0.037	0.039	0.040	4.327	-4.157	1.694	-1.627
122	0.036	0.038	0.039	4.353	-4.181	1.713	-1.645
123	0.035	0.037	0.038	4.379	-4.205	1.732	-1.663
124	0.034	0.036	0.037	4.405	-4.229	1.751	-1.681
125	0.033	0.035	0.036	4.431	-4.252	1.771	-1.699


R-T CHART
RESISTANCE
10^3
10^2
10^1
10^0
TEMPERATURE(C)
-60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130


10
RESISTANCE TOLERANCE %
5.8
5
4.3
3.6
3
2.4
1.9
1.4
1
1.4
1.8
2.2
2.6
2.9
3.3
3.6
3.9
4.1
5
-5.6
-4.9
-4.2
-3.6
-3
-2.5
-2
-1.5
-1
-1.5
-1.9
-2.3
-2.6
-3
-3.3
-3.6
-3.8
-4.1
-55 -45 -35 -25 -15 -5 5 15 25 35 45 55 65 75 85 95 105 115 125 THE


2
TEMPERATURE TOLERANCE
1
.72
.68
.64
.58
.52
.46
.38
.31
.22
.35
.48
.62
.76
.91
1
1.2
1.4
1.5
-1
.69
.66
.62
.57
.52
.46
.39
.31
.23
.36
.48
.61
.75
.9
1.1
1.3
1.4
1.6
-55 -45 -35 -25 -15 -5 5 15 25 35 45 55 65 75 85 95 105 115 125 THE