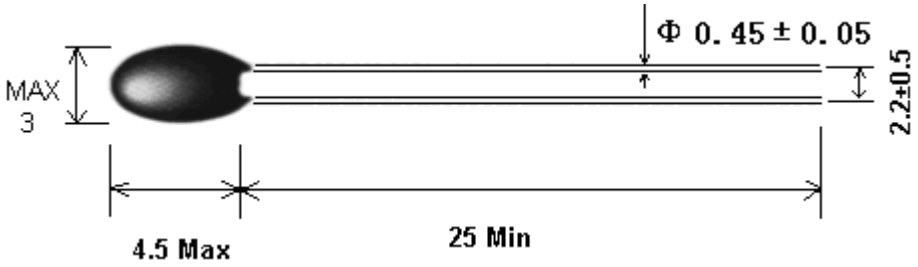
Specifications for NTC Thermistor

Part No.	MF52A2 104F3950

1、Dimensions(mm)



2、Materials

Coating		Lead wire
Material	Color	Material
Modified Resin	Black	CP wire

3、Ordering information

MF52	A2	104	F	3950
Pearl-Shape Temp Measurement NTC Thermistor	CP wire	Resistance	Tolerance	B-value (25/50)
		10×10^4=100KΩ	±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	100±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	τ	In still air	sec	≤7

	constant				
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 10mm, temperature should be less than 350℃, and 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 （RLSHF001439940001）

8.4 Environment Test Report REACH (RLSHD000712710001C)

8.5 CQC Certification (CQC07001019009)

8.6 UL 1434 Certification (File # E240991)

8.7 The Hi&Tech Product of Jiangsu Province (070115G0058N)

R&T Table

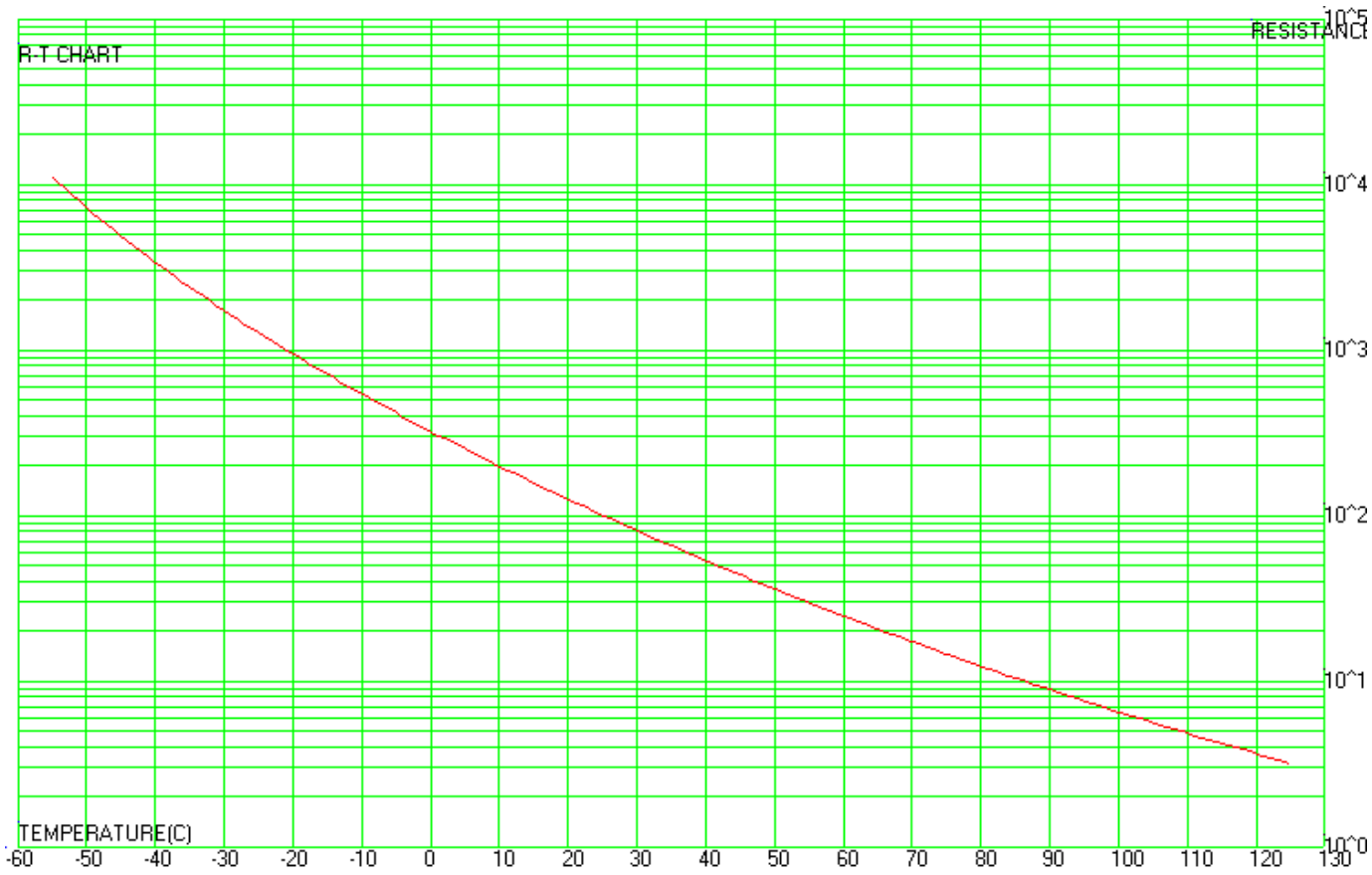
R25=100KΩ TOLERANCE:±1% B25/50=3950K TOLERANCE:±1% (P209-15A)							
TEMP(℃)	RESISTANCE(KΩ)			RESISST-TOL(%)		TEMP-TOL(℃)	
	MIN	CENTER	MAX	△R	-△R	△T	-△T
-55	10477.600	11093.800	11745.000	5.869	-5.553	0.729	-0.690
-54	9600.550	10156.100	10742.700	5.776	-5.470	0.725	-0.687
-53	8809.950	9311.690	9841.020	5.684	-5.388	0.722	-0.684
-52	8096.030	8549.810	9028.120	5.594	-5.307	0.718	-0.681
-51	7450.220	7861.200	8294.020	5.505	-5.227	0.714	-0.678
-50	6865.020	7237.730	7629.920	5.418	-5.149	0.710	-0.675
-49	6333.860	6672.310	7028.140	5.332	-5.072	0.706	-0.671
-48	5850.990	6158.700	6481.950	5.248	-4.996	0.702	-0.668
-47	5411.340	5691.440	5985.430	5.165	-4.921	0.698	-0.665

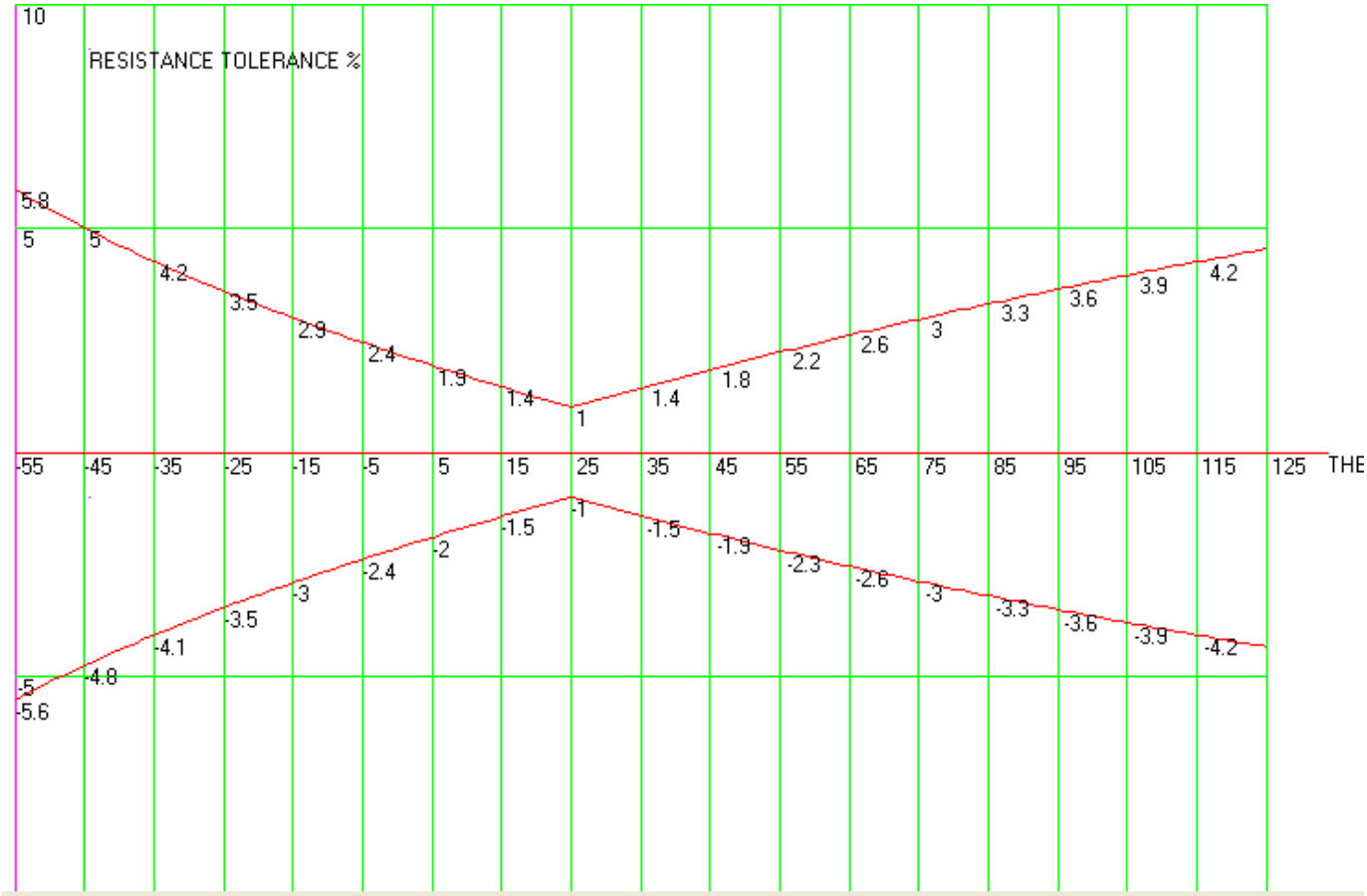
-46	5010.440	5265.690	5533.390	5.083	-4.847	0.693	-0.661
-45	4644.340	4877.200	5121.230	5.003	-4.774	0.689	-0.657
-44	4309.570	4522.230	4744.900	4.924	-4.702	0.685	-0.654
-43	4003.020	4197.420	4400.820	4.845	-4.631	0.680	-0.650
-42	3721.950	3899.830	4085.810	4.768	-4.561	0.676	-0.646
-41	3463.920	3626.830	3797.030	4.692	-4.491	0.671	-0.642
-40	3226.740	3376.080	3531.980	4.617	-4.423	0.666	-0.638
-39	3008.480	3145.490	3288.420	4.543	-4.355	0.662	-0.634
-38	2807.390	2933.200	3064.330	4.470	-4.289	0.657	-0.630
-37	2621.920	2737.530	2857.940	4.398	-4.222	0.652	-0.626
-36	2450.670	2556.980	2667.630	4.327	-4.157	0.647	-0.622
-35	2292.390	2390.220	2491.970	4.257	-4.092	0.642	-0.618
-34	2145.940	2236.030	2329.670	4.187	-4.028	0.637	-0.613
-33	2010.310	2093.330	2179.550	4.118	-3.965	0.632	-0.609
-32	1884.580	1961.130	2040.570	4.051	-3.902	0.627	-0.604
-31	1767.930	1838.540	1911.790	3.983	-3.840	0.622	-0.599
-30	1659.590	1724.780	1792.340	3.917	-3.779	0.617	-0.595
-29	1558.890	1619.100	1681.460	3.851	-3.718	0.611	-0.590
-28	1465.210	1520.850	1578.440	3.786	-3.658	0.606	-0.585
-27	1378.000	1429.440	1482.650	3.722	-3.598	0.600	-0.580
-26	1296.740	1344.320	1393.510	3.658	-3.539	0.595	-0.575
-25	1220.960	1265.000	1310.480	3.595	-3.480	0.589	-0.570
-24	1150.260	1191.020	1233.100	3.533	-3.422	0.584	-0.565
-23	1084.220	1121.980	1160.930	3.471	-3.364	0.578	-0.560
-22	1022.520	1057.500	1093.560	3.410	-3.307	0.572	-0.555
-21	964.822	997.241	1030.640	3.349	-3.250	0.566	-0.549
-20	910.828	940.885	971.837	3.289	-3.194	0.560	-0.544
-19	860.271	888.148	916.835	3.230	-3.138	0.554	-0.539
-18	812.903	838.764	865.362	3.171	-3.083	0.548	-0.533
-17	768.495	792.494	817.161	3.112	-3.028	0.542	-0.527
-16	726.839	749.115	771.996	3.054	-2.973	0.536	-0.522
-15	687.740	708.422	729.653	2.996	-2.919	0.530	-0.516
-14	651.022	670.228	689.932	2.939	-2.865	0.523	-0.510
-13	616.520	634.359	652.649	2.883	-2.812	0.517	-0.504
-12	584.084	600.657	617.638	2.827	-2.759	0.511	-0.498
-11	553.574	568.973	584.741	2.771	-2.706	0.504	-0.492
-10	524.861	539.171	553.816	2.716	-2.654	0.497	-0.486
-9	497.827	511.127	524.729	2.661	-2.602	0.491	-0.480
-8	472.360	484.723	497.358	2.606	-2.550	0.484	-0.474
-7	448.360	459.851	471.590	2.552	-2.499	0.477	-0.467
-6	425.730	436.413	447.320	2.499	-2.447	0.471	-0.461
-5	404.383	414.316	424.450	2.445	-2.397	0.464	-0.455
-4	384.239	393.473	402.889	2.393	-2.346	0.457	-0.448
-3	365.220	373.806	382.555	2.340	-2.296	0.450	-0.441

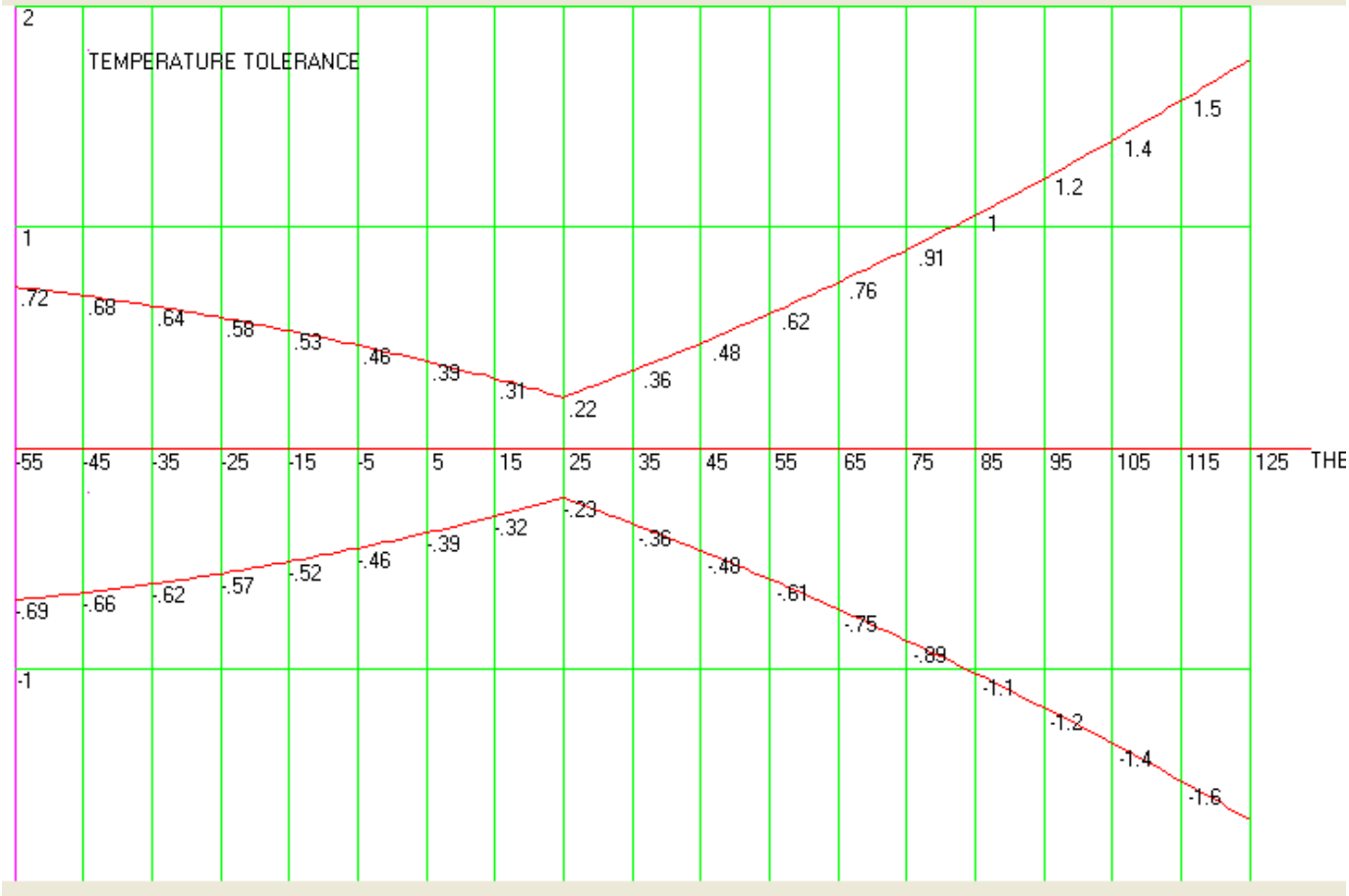
-2	347.257	355.239	363.369	2.288	-2.247	0.443	-0.435
-1	330.284	337.705	345.259	2.236	-2.197	0.436	-0.428
0	314.240	321.140	328.157	2.185	-2.148	0.428	-0.421
1	299.069	305.482	312.002	2.134	-2.099	0.421	-0.414
2	284.718	290.679	296.735	2.083	-2.050	0.414	-0.407
3	271.136	276.676	282.301	2.033	-2.002	0.407	-0.400
4	258.279	263.427	268.651	1.983	-1.954	0.399	-0.393
5	246.103	250.886	255.737	1.933	-1.906	0.392	-0.386
6	234.569	239.012	243.514	1.883	-1.858	0.384	-0.379
7	223.638	227.764	231.943	1.834	-1.811	0.377	-0.372
8	213.275	217.106	220.984	1.786	-1.764	0.369	-0.364
9	203.449	207.005	210.601	1.737	-1.717	0.361	-0.357
10	195.201	198.530	201.895	1.695	-1.676	0.352	-0.348
11	185.283	188.343	191.434	1.641	-1.624	0.345	-0.342
12	176.887	179.724	182.589	1.593	-1.578	0.338	-0.334
13	168.916	171.545	174.198	1.546	-1.532	0.330	-0.327
14	161.344	163.780	166.236	1.499	-1.487	0.322	-0.319
15	154.152	156.407	158.679	1.452	-1.441	0.313	-0.311
16	147.316	149.403	151.504	1.406	-1.396	0.305	-0.303
17	140.818	142.748	144.690	1.360	-1.351	0.297	-0.295
18	134.640	136.423	138.216	1.314	-1.307	0.289	-0.287
19	128.764	130.410	132.064	1.268	-1.262	0.280	-0.279
20	123.173	124.692	126.217	1.223	-1.218	0.272	-0.271
21	117.852	119.253	120.658	1.177	-1.174	0.264	-0.263
22	112.788	114.078	115.370	1.133	-1.130	0.255	-0.254
23	107.966	109.152	110.341	1.088	-1.086	0.246	-0.246
24	103.374	104.464	105.555	1.044	-1.043	0.238	-0.238
25	99.000	100.000	101.000	1.000	-1.000	0.229	-0.229
26	94.749	95.747	96.747	1.043	-1.043	0.241	-0.240
27	90.701	91.697	92.694	1.087	-1.085	0.252	-0.252
28	86.846	87.837	88.830	1.131	-1.128	0.264	-0.263
29	83.172	84.157	85.146	1.174	-1.170	0.276	-0.275
30	79.672	80.650	81.632	1.217	-1.212	0.287	-0.286
31	76.335	77.305	78.280	1.260	-1.254	0.299	-0.298
32	73.154	74.115	75.081	1.302	-1.296	0.311	-0.309
33	70.121	71.072	72.028	1.345	-1.337	0.323	-0.321
34	67.227	68.167	69.113	1.387	-1.378	0.335	-0.333
35	64.467	65.395	66.330	1.429	-1.419	0.347	-0.345
36	61.833	62.749	63.672	1.471	-1.460	0.360	-0.357
37	59.318	60.222	61.134	1.513	-1.500	0.372	-0.369
38	56.918	57.809	58.708	1.555	-1.541	0.384	-0.381
39	54.626	55.503	56.389	1.596	-1.581	0.397	-0.393
40	52.436	53.300	54.173	1.637	-1.620	0.410	-0.405
41	50.345	51.195	52.054	1.678	-1.660	0.422	-0.418

42	48.346	49.183	50.028	1.719	-1.700	0.435	-0.430
43	46.437	47.259	48.090	1.759	-1.739	0.448	-0.442
44	44.611	45.419	46.236	1.800	-1.778	0.461	-0.455
45	42.865	43.659	44.462	1.840	-1.817	0.473	-0.467
46	41.196	41.975	42.764	1.880	-1.855	0.486	-0.480
47	39.600	40.364	41.139	1.920	-1.894	0.500	-0.493
48	38.072	38.822	39.583	1.960	-1.932	0.513	-0.505
49	36.611	37.346	38.093	1.999	-1.970	0.526	-0.518
50	35.119	35.840	36.571	2.041	-2.010	0.539	-0.530
51	33.873	34.580	35.299	2.078	-2.045	0.553	-0.544
52	32.591	33.284	33.989	2.117	-2.083	0.566	-0.557
53	31.363	32.043	32.734	2.156	-2.120	0.580	-0.570
54	30.188	30.853	31.530	2.194	-2.157	0.593	-0.583
55	29.061	29.713	30.377	2.233	-2.194	0.607	-0.596
56	27.982	28.620	29.271	2.271	-2.230	0.621	-0.610
57	26.948	27.573	28.210	2.309	-2.267	0.635	-0.623
58	25.956	26.568	27.192	2.347	-2.303	0.649	-0.636
59	25.006	25.605	26.216	2.385	-2.339	0.663	-0.650
60	24.095	24.681	25.279	2.423	-2.375	0.677	-0.664
61	23.221	23.794	24.380	2.460	-2.411	0.691	-0.677
62	22.382	22.944	23.517	2.497	-2.446	0.705	-0.691
63	21.578	22.127	22.688	2.534	-2.482	0.720	-0.705
64	20.807	21.344	21.893	2.571	-2.517	0.734	-0.718
65	20.066	20.592	21.129	2.608	-2.552	0.748	-0.732
66	19.355	19.869	20.395	2.645	-2.586	0.763	-0.746
67	18.673	19.175	19.690	2.681	-2.621	0.778	-0.760
68	18.017	18.509	19.012	2.718	-2.656	0.792	-0.774
69	17.388	17.869	18.361	2.754	-2.690	0.807	-0.788
70	16.783	17.253	17.735	2.790	-2.724	0.822	-0.803
71	16.203	16.662	17.133	2.826	-2.758	0.837	-0.817
72	15.645	16.094	16.555	2.861	-2.792	0.852	-0.831
73	15.108	15.548	15.998	2.897	-2.825	0.867	-0.846
74	14.593	15.022	15.463	2.932	-2.858	0.882	-0.860
75	14.097	14.517	14.948	2.968	-2.892	0.897	-0.875
76	13.621	14.031	14.453	3.003	-2.925	0.913	-0.889
77	13.163	13.564	13.976	3.037	-2.958	0.928	-0.904
78	12.722	13.114	13.517	3.072	-2.990	0.944	-0.919
79	12.298	12.681	13.075	3.107	-3.023	0.959	-0.933
80	11.890	12.265	12.650	3.141	-3.055	0.975	-0.948
81	11.498	11.864	12.241	3.176	-3.087	0.991	-0.963
82	11.120	11.478	11.846	3.210	-3.120	1.006	-0.978
83	10.756	11.106	11.467	3.244	-3.151	1.022	-0.993
84	10.406	10.748	11.101	3.277	-3.183	1.038	-1.008
85	10.069	10.404	10.748	3.311	-3.215	1.054	-1.024

86	9.744	10.071	10.408	3.345	-3.246	1.070	-1.039
87	9.432	9.751	10.081	3.378	-3.277	1.087	-1.054
88	9.130	9.443	9.765	3.411	-3.308	1.103	-1.070
89	8.840	9.146	9.461	3.444	-3.339	1.119	-1.085
90	8.560	8.859	9.167	3.477	-3.370	1.136	-1.101
91	8.291	8.583	8.884	3.510	-3.401	1.152	-1.116
92	8.031	8.316	8.611	3.543	-3.431	1.169	-1.132
93	7.781	8.060	8.348	3.575	-3.461	1.185	-1.148
94	7.539	7.812	8.094	3.608	-3.492	1.202	-1.163
95	7.306	7.573	7.849	3.640	-3.522	1.219	-1.179
96	7.081	7.342	7.612	3.672	-3.551	1.236	-1.195
97	6.865	7.120	7.383	3.704	-3.581	1.253	-1.211
98	6.656	6.905	7.163	3.735	-3.611	1.270	-1.227
99	6.454	6.698	6.950	3.767	-3.640	1.287	-1.243
100	6.259	6.498	6.744	3.799	-3.669	1.304	-1.260
101	6.071	6.304	6.546	3.830	-3.698	1.321	-1.276
102	5.890	6.118	6.354	3.861	-3.727	1.339	-1.292
103	5.714	5.937	6.169	3.892	-3.756	1.356	-1.309
104	5.545	5.763	5.990	3.923	-3.785	1.374	-1.325
105	5.382	5.595	5.817	3.954	-3.813	1.391	-1.342
106	5.224	5.433	5.649	3.985	-3.841	1.409	-1.358
107	5.072	5.276	5.488	4.015	-3.870	1.427	-1.375
108	4.924	5.124	5.331	4.045	-3.898	1.444	-1.392
109	4.782	4.977	5.180	4.076	-3.926	1.462	-1.408
110	4.644	4.836	5.034	4.106	-3.953	1.480	-1.425
111	4.511	4.698	4.893	4.136	-3.981	1.498	-1.442
112	4.383	4.566	4.756	4.165	-4.008	1.516	-1.459
113	4.258	4.438	4.624	4.195	-4.036	1.535	-1.476
114	4.138	4.314	4.496	4.225	-4.063	1.553	-1.493
115	4.022	4.194	4.372	4.254	-4.090	1.571	-1.511
116	3.910	4.077	4.252	4.283	-4.117	1.590	-1.528
117	3.801	3.965	4.136	4.312	-4.144	1.608	-1.545
118	3.696	3.856	4.024	4.341	-4.170	1.627	-1.563
119	3.594	3.751	3.915	4.370	-4.197	1.646	-1.580
120	3.495	3.649	3.810	4.399	-4.223	1.664	-1.598
121	3.400	3.551	3.708	4.428	-4.249	1.683	-1.615
122	3.307	3.455	3.609	4.456	-4.276	1.702	-1.633
123	3.218	3.363	3.513	4.484	-4.302	1.721	-1.651
124	3.131	3.273	3.421	4.513	-4.327	1.740	-1.669
125	3.048	3.186	3.331	4.541	-4.353	1.759	-1.687


R-T CHART
RESISTANCE
10^5
10^4
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
-5
-55 -45 -35 -25 -15 -5 5 15 25 35 45 55 65 75 85 95 105 115 125 THE
5.8
5
4.2
3.5
2.9
2.4
1.9
1.4
1
1.4
1.8
2.2
2.6
3
3.3
3.6
3.9
4.2
-5.6
-4.8
-4.1
-3.5
-3
-2.4
-2
-1.5
-1
-1.5
-1.9
-2.3
-2.6
-3
-3.3
-3.6
-3.9
-4.2


2
TEMPERATURE TOLERANCE
1
-1
-55 -45 -35 -25 -15 -5 5 15 25 35 45 55 65 75 85 95 105 115 125 THE
.72
.68
.64
.58
.53
.46
.39
.31
.22
.36
.48
.62
.76
.91
1
1.2
1.4
1.5
-.69
-.66
-.62
-.57
-.52
-.46
-.39
-.32
-.23
-.36
-.48
-.61
-.75
-.89
-1.1
-1.2
-1.4
-1.6