

# Temperature Measurement NTC Thermistor



## Features

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## Applications

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## PART NUMBER

Example: RND 155MF52A2 503F3950

RND 155MF52A2	503	F	3950
Type	Zero Power Resistance @ 25 °C 503 = 50 kΩ	Tolerance F = ± 1% G = ± 2% H = ± 3% J = ± 5%	B Constant 3470 = 3470 K 3950 = 3950 K 4200 = 4200 K 4450 = 4450 K

## Electrical Characteristics

	Item	Symbol	Test conditions	Unit	Specification
1.1	Zero Power Resistance at 25°C	R25	Ta=25±0.05 °C Test Power≤0.1mW	kΩ	50±1%
1.2	B-value	B25/50	$B = [(Ta \times Tb) / (Tb - Ta)] \times \ln(Ra / Rb)$ Tb=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	Pmax	/	mW	50
1.8	R&T-table	/	/	/	See attached table
1.9	Resistance tolerance	/	/	/	See attached curve

## 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, R25 ΔR/R≤±2%
2.2	Solderability	Temperature : 245±5 °C for 2-3sec	coverage area ≥ 95%
2.3	Welding heat resistant	Tin pan temperature: 260°C ±5°C, immersion depth is apart from the body resistance 6 mm, time 5±1 sec	R25 ΔR/R≤±2%,
2.4	Steady humidity and heat	Temp: 40°C±2°C, Humidity: 93±2%, Time : 500hrs	R25 ΔR/R≤±2%,
2.5	Rapid changes in temperature	-55°C30min→25°C5min→1 25°C30min→25°C5min , 5cycles	R25 ΔR/R≤±2%
2.6	High temperature storage	Temp : 125°C±5°C, Time :1000hrs	R25 ΔR/R≤±2%
2.7	Low temperature storage	Temp : -55°C, Time :1000hrs	R25 ΔR/R≤±2%

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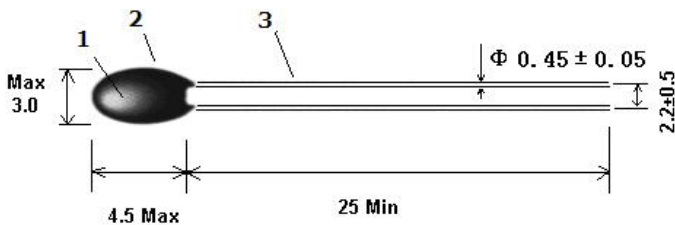
## Caution

- 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 sec.
- 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

## Certificate

Quality Control System Certification ISO9001 : 2008 (01112Q20216R4M)  
Environment Management System Certification ISO14001:2015(01116E30085R3M)  
Environment Test Report RoHS  
CQC Safe Certification

## Dimensions



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

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## R-T Table

R25=50KΩ TOLERANCE:±1% B25/50=3950K B25/85=4091K TOLERANCE:±1%(P182-6B)							
TEMP(°C)	RESISTANCE(KΩ)			RESISST-TOL(%)		TEMP-TOL(°C)	
	MIN	CENTER	MAX	△R	-△R	△T	-△T
-55	3874.630	4090.000	4316.900	5.547	-5.265	0.737	-0.699
-54	3555.130	3749.480	3954.050	5.456	-5.183	0.733	-0.697
-53	3279.550	3456.010	3641.600	5.370	-5.105	0.730	-0.694
-52	3038.720	3199.760	3368.990	5.288	-5.032	0.726	-0.691
-51	2825.760	2973.330	3128.290	5.211	-4.963	0.722	-0.687
-50	2635.430	2771.110	2913.480	5.137	-4.896	0.718	-0.684
-49	2463.730	2588.800	2719.950	5.066	-4.831	0.714	-0.680
-48	2307.540	2423.080	2544.150	4.996	-4.768	0.709	-0.677
-47	2164.460	2271.360	2383.310	4.928	-4.706	0.705	-0.673
-46	2032.590	2131.640	2235.280	4.862	-4.646	0.700	-0.669
-45	1910.460	2002.300	2098.340	4.796	-4.586	0.696	-0.665
-44	1796.890	1882.100	1971.150	4.731	-4.527	0.691	-0.661
-43	1690.910	1770.010	1852.630	4.667	-4.468	0.686	-0.657
-42	1591.780	1665.230	1741.890	4.603	-4.410	0.682	-0.653
-41	1498.870	1567.070	1638.220	4.540	-4.352	0.677	-0.649
-40	1411.650	1475.000	1541.030	4.476	-4.294	0.672	-0.644
-39	1329.700	1388.520	1449.810	4.413	-4.236	0.667	-0.640
-38	1252.630	1307.260	1364.140	4.350	-4.178	0.662	-0.636
-37	1180.130	1230.860	1283.640	4.287	-4.121	0.657	-0.631
-36	1111.920	1159.010	1207.980	4.225	-4.063	0.652	-0.627
-35	1047.720	1091.440	1136.880	4.162	-4.005	0.647	-0.622
-34	987.321	1027.900	1070.050	4.100	-3.948	0.641	-0.618
-33	930.489	968.157	1007.240	4.037	-3.890	0.636	-0.613
-32	877.030	911.988	948.246	3.975	-3.833	0.631	-0.608
-31	826.755	859.197	892.823	3.913	-3.775	0.625	-0.603
-30	779.485	809.591	840.775	3.851	-3.718	0.620	-0.599
-29	735.052	762.989	791.909	3.790	-3.661	0.615	-0.594
-28	693.295	719.220	746.040	3.729	-3.604	0.609	-0.589
-27	654.059	678.118	702.991	3.668	-3.547	0.603	-0.584
-26	617.199	639.527	662.597	3.607	-3.491	0.598	-0.579
-25	582.576	603.300	624.698	3.546	-3.435	0.592	-0.574

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-24	550.056	569.292	589.142	3.486	-3.378	0.586	-0.568
-23	519.513	537.371	555.787	3.427	-3.323	0.581	-0.563
-22	490.827	507.407	524.496	3.367	-3.267	0.575	-0.558
-21	463.883	479.280	495.139	3.308	-3.212	0.569	-0.552
-20	438.575	452.875	467.595	3.250	-3.157	0.563	-0.547
-19	414.799	428.083	441.749	3.192	-3.103	0.557	-0.542
-18	392.460	404.802	417.491	3.134	-3.048	0.551	-0.536
-17	371.466	382.935	394.719	3.077	-2.995	0.545	-0.530
-16	351.732	362.392	373.338	3.020	-2.941	0.539	-0.525
-15	333.177	343.087	353.256	2.964	-2.888	0.533	-0.519
-14	315.725	324.939	334.389	2.908	-2.835	0.526	-0.513
-13	299.306	307.875	316.658	2.852	-2.783	0.520	-0.507
-12	283.853	291.823	299.987	2.797	-2.731	0.513	-0.501
-11	269.304	276.719	284.309	2.742	-2.679	0.507	-0.495
-10	255.601	262.500	269.558	2.688	-2.628	0.500	-0.489
-9	242.689	249.108	255.672	2.635	-2.577	0.494	-0.483
-8	230.517	236.492	242.597	2.581	-2.526	0.487	-0.477
-7	219.038	224.600	230.279	2.528	-2.476	0.480	-0.470
-6	208.208	213.385	218.669	2.476	-2.426	0.474	-0.464
-5	197.986	202.806	207.722	2.424	-2.376	0.467	-0.457
-4	188.333	192.820	197.395	2.372	-2.327	0.460	-0.451
-3	179.212	183.391	187.647	2.321	-2.278	0.453	-0.444
-2	170.592	174.483	178.444	2.270	-2.229	0.446	-0.438
-1	162.441	166.063	169.749	2.219	-2.181	0.438	-0.431
0	154.543	157.910	161.333	2.168	-2.131	0.431	-0.424
1	147.429	150.569	153.761	2.119	-2.085	0.424	-0.417
2	140.518	143.441	146.410	2.070	-2.037	0.416	-0.410
3	133.970	136.691	139.453	2.020	-1.990	0.409	-0.403
4	127.764	130.297	132.866	1.972	-1.943	0.401	-0.396
5	121.881	124.237	126.627	1.923	-1.896	0.394	-0.388
6	116.299	118.492	120.714	1.875	-1.850	0.386	-0.381
7	111.003	113.043	115.109	1.827	-1.804	0.378	-0.374
8	105.976	107.872	109.792	1.779	-1.758	0.371	-0.366
9	101.201	102.964	104.748	1.732	-1.712	0.363	-0.358
10	96.665	98.304	99.960	1.685	-1.667	0.355	-0.351
11	92.354	93.876	95.414	1.638	-1.621	0.346	-0.343
12	88.255	89.669	91.096	1.591	-1.576	0.338	-0.335
13	84.357	85.669	86.993	1.545	-1.531	0.330	-0.327
14	80.648	81.865	83.093	1.499	-1.486	0.322	-0.319
15	77.119	78.247	79.385	1.453	-1.442	0.313	-0.311
16	73.759	74.805	75.858	1.407	-1.398	0.304	-0.302
17	70.559	71.528	72.502	1.362	-1.353	0.296	-0.294
18	67.512	68.408	69.309	1.317	-1.309	0.287	-0.285
19	64.608	65.437	66.269	1.272	-1.266	0.277	-0.276
20	61.841	62.606	63.374	1.227	-1.222	0.268	-0.267

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21	59.203	59.909	60.617	1.182	-1.178	0.258	-0.257
22	56.687	57.338	57.991	1.138	-1.135	0.246	-0.246
23	54.288	54.888	55.488	1.094	-1.092	0.233	-0.232
24	51.999	52.551	53.103	1.050	-1.049	0.210	-0.210
25	49.500	50.000	50.500	1.000	-1.000	0.201	-0.201
26	47.696	48.196	48.696	1.037	-1.036	0.283	-0.283
27	45.669	46.167	46.666	1.080	-1.078	0.272	-0.272
28	43.735	44.231	44.728	1.123	-1.121	0.277	-0.277
29	41.890	42.383	42.878	1.167	-1.163	0.286	-0.285
30	40.130	40.619	41.111	1.210	-1.205	0.296	-0.294
31	38.449	38.935	39.423	1.252	-1.247	0.306	-0.305
32	36.845	37.326	37.810	1.295	-1.288	0.317	-0.315
33	35.313	35.789	36.268	1.338	-1.330	0.328	-0.326
34	33.851	34.321	34.795	1.380	-1.371	0.340	-0.338
35	32.454	32.919	33.387	1.423	-1.412	0.351	-0.349
36	31.119	31.579	32.041	1.465	-1.453	0.363	-0.360
37	29.845	30.298	30.754	1.507	-1.494	0.375	-0.372
38	28.627	29.073	29.523	1.549	-1.535	0.387	-0.384
39	27.463	27.902	28.346	1.590	-1.575	0.399	-0.395
40	26.350	26.783	27.220	1.632	-1.616	0.412	-0.407
41	25.287	25.713	26.143	1.673	-1.656	0.424	-0.419
42	24.270	24.689	25.112	1.715	-1.696	0.436	-0.431
43	23.298	23.710	24.126	1.756	-1.735	0.449	-0.444
44	22.368	22.773	23.182	1.797	-1.775	0.461	-0.456
45	21.479	21.876	22.278	1.838	-1.814	0.474	-0.468
46	20.629	21.019	21.413	1.879	-1.854	0.487	-0.480
47	19.815	20.198	20.585	1.919	-1.893	0.500	-0.493
48	19.037	19.412	19.792	1.960	-1.932	0.513	-0.505
49	18.292	18.660	19.033	2.000	-1.970	0.526	-0.518
50	17.579	17.940	18.306	2.040	-2.009	0.539	-0.531
51	16.897	17.250	17.609	2.080	-2.047	0.552	-0.543
52	16.243	16.590	16.941	2.120	-2.086	0.565	-0.556
53	15.618	15.957	16.302	2.160	-2.124	0.579	-0.569
54	15.019	15.351	15.689	2.199	-2.162	0.592	-0.582
55	14.446	14.771	15.101	2.239	-2.199	0.606	-0.595
56	13.896	14.214	14.538	2.278	-2.237	0.619	-0.608
57	13.370	13.682	13.999	2.317	-2.274	0.633	-0.621
58	12.866	13.171	13.481	2.356	-2.311	0.647	-0.635
59	12.383	12.681	12.985	2.395	-2.348	0.661	-0.648
60	11.920	12.212	12.509	2.433	-2.385	0.675	-0.661
61	11.477	11.761	12.052	2.472	-2.422	0.689	-0.675
62	11.051	11.330	11.614	2.510	-2.458	0.703	-0.688
63	10.644	10.916	11.194	2.548	-2.495	0.717	-0.702
64	10.253	10.519	10.791	2.586	-2.531	0.731	-0.716
65	9.878	10.138	10.404	2.624	-2.567	0.746	-0.729

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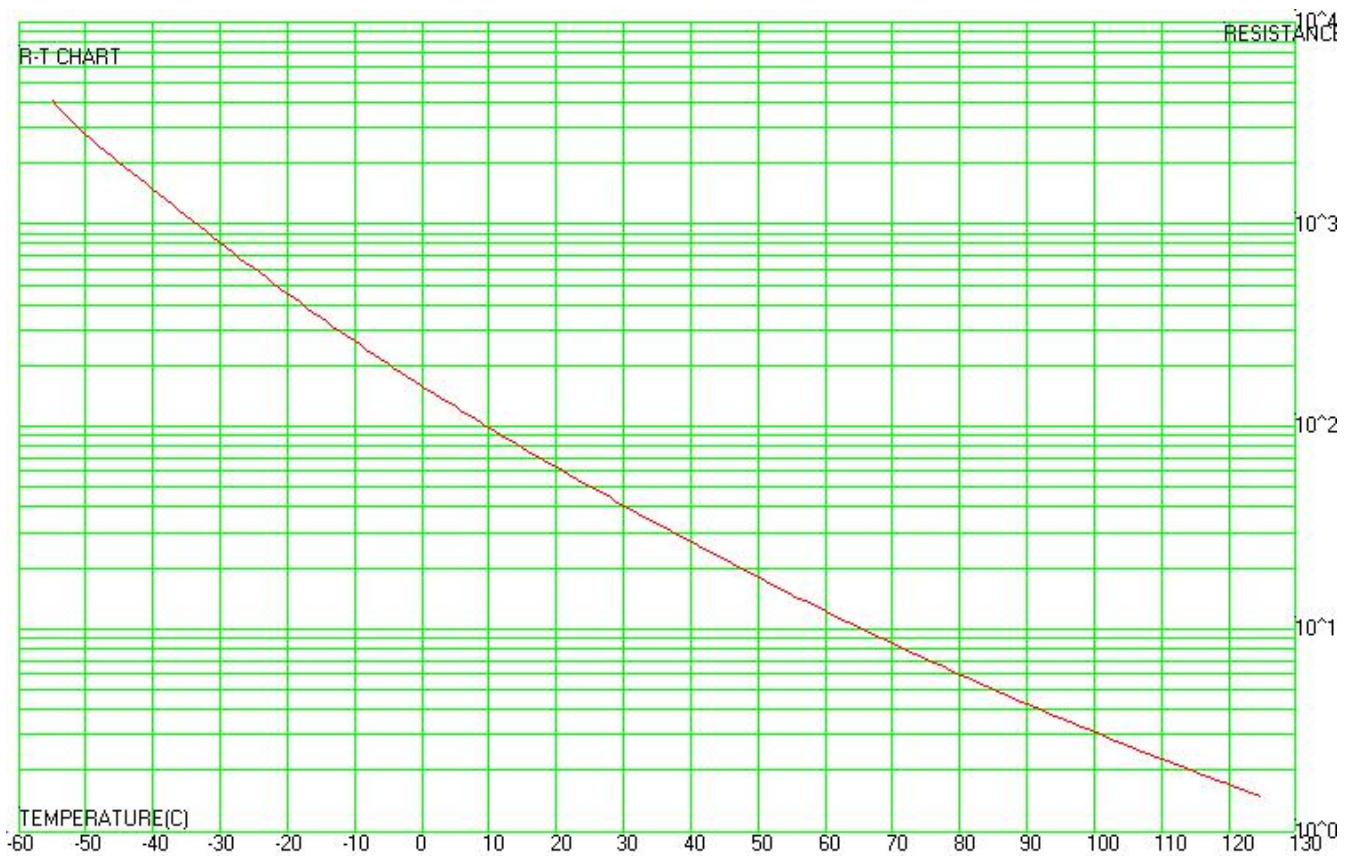
66	9.518	9.772	10.033	2.662	-2.602	0.760	-0.743
67	9.173	9.422	9.676	2.699	-2.638	0.775	-0.757
68	8.842	9.085	9.334	2.737	-2.673	0.789	-0.771
69	8.524	8.762	9.005	2.774	-2.709	0.804	-0.785
70	8.220	8.452	8.689	2.811	-2.744	0.819	-0.799
71	7.927	8.154	8.386	2.848	-2.779	0.833	-0.813
72	7.646	7.867	8.094	2.885	-2.813	0.848	-0.827
73	7.376	7.593	7.815	2.921	-2.848	0.863	-0.842
74	7.117	7.329	7.545	2.958	-2.882	0.878	-0.856
75	6.869	7.075	7.287	2.994	-2.917	0.894	-0.870
76	6.630	6.831	7.038	3.030	-2.951	0.909	-0.885
77	6.400	6.597	6.799	3.066	-2.984	0.924	-0.900
78	6.180	6.372	6.570	3.102	-3.018	0.940	-0.914
79	5.968	6.155	6.349	3.137	-3.052	0.955	-0.929
80	5.764	5.947	6.136	3.173	-3.085	0.971	-0.944
81	5.568	5.747	5.931	3.208	-3.118	0.986	-0.958
82	5.379	5.554	5.735	3.243	-3.151	1.002	-0.973
83	5.198	5.369	5.545	3.278	-3.184	1.018	-0.988
84	5.024	5.191	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	4.695	4.854	5.019	3.383	-3.281	1.065	-1.034
87	4.540	4.696	4.856	3.417	-3.314	1.082	-1.049
88	4.391	4.543	4.699	3.451	-3.346	1.098	-1.064
89	4.247	4.395	4.548	3.485	-3.378	1.114	-1.080
90	4.108	4.253	4.403	3.519	-3.409	1.130	-1.095
91	3.975	4.117	4.263	3.553	-3.441	1.147	-1.111
92	3.847	3.985	4.128	3.587	-3.472	1.163	-1.126
93	3.723	3.858	3.998	3.620	-3.503	1.180	-1.142
94	3.604	3.736	3.873	3.654	-3.534	1.196	-1.157
95	3.489	3.618	3.752	3.687	-3.565	1.213	-1.173
96	3.379	3.505	3.635	3.720	-3.596	1.230	-1.189
97	3.272	3.395	3.523	3.753	-3.627	1.247	-1.205
98	3.169	3.290	3.414	3.786	-3.657	1.264	-1.221
99	3.070	3.188	3.309	3.818	-3.687	1.281	-1.237
100	2.975	3.090	3.209	3.851	-3.718	1.298	-1.253
101	2.883	2.995	3.111	3.883	-3.747	1.315	-1.269
102	2.794	2.903	3.017	3.915	-3.777	1.333	-1.286
103	2.708	2.815	2.926	3.947	-3.807	1.350	-1.302
104	2.625	2.730	2.839	3.979	-3.837	1.367	-1.318
105	2.545	2.648	2.754	4.011	-3.866	1.385	-1.335
106	2.468	2.569	2.672	4.043	-3.895	1.402	-1.351
107	2.394	2.492	2.594	4.074	-3.924	1.420	-1.368
108	2.322	2.418	2.517	4.105	-3.953	1.438	-1.385
109	2.253	2.347	2.444	4.137	-3.982	1.456	-1.401
110	2.186	2.278	2.373	4.168	-4.011	1.474	-1.418

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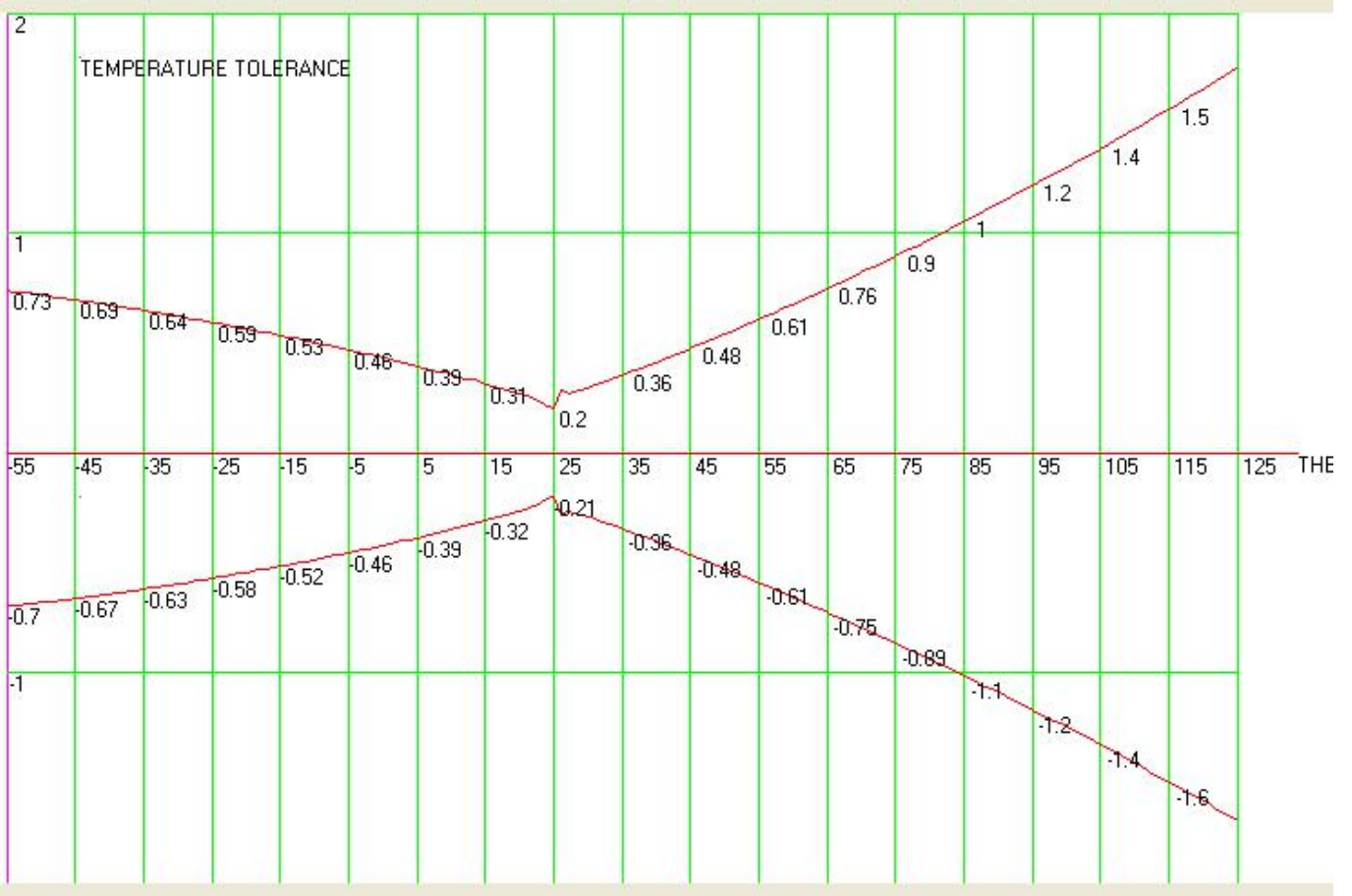
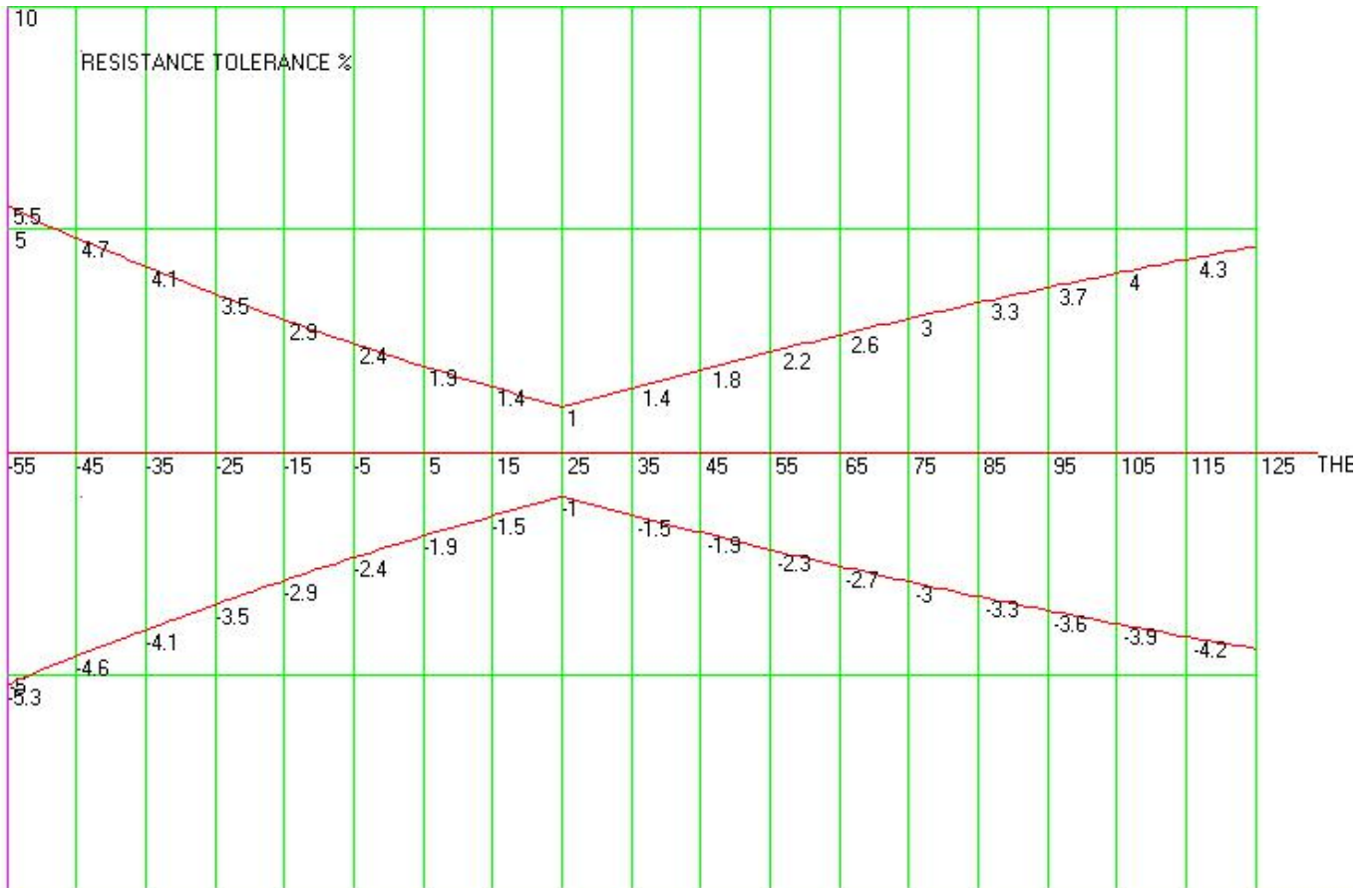
111	2.122	2.211	2.304	4.199	-4.039	1.492	-1.435
112	2.059	2.147	2.238	4.229	-4.067	1.510	-1.452
113	1.999	2.084	2.173	4.260	-4.096	1.528	-1.469
114	1.941	2.024	2.111	4.291	-4.124	1.546	-1.486
115	1.885	1.966	2.051	4.321	-4.151	1.564	-1.503
116	1.830	1.910	1.993	4.351	-4.179	1.583	-1.520
117	1.778	1.856	1.937	4.381	-4.207	1.601	-1.537
118	1.727	1.803	1.883	4.411	-4.234	1.620	-1.555
119	1.678	1.753	1.831	4.441	-4.262	1.638	-1.572
120	1.631	1.704	1.780	4.471	-4.289	1.657	-1.590
121	1.585	1.656	1.731	4.500	-4.316	1.676	-1.607
122	1.540	1.610	1.683	4.529	-4.343	1.695	-1.625
123	1.498	1.566	1.637	4.559	-4.369	1.714	-1.643
124	1.456	1.523	1.593	4.588	-4.396	1.733	-1.660
125	1.416	1.482	1.550	4.617	-4.422	1.752	-1.678

R-T Chart



# Temperature Measurement

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