

Temperature Measurement NTC Thermistor



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PART NUMBER

Example: RND 155MF52A2 103F3470

RND 155MF52A2	103	F	3470
Type	Zero Power Resistance @ 25 °C 103 = 10 kΩ	Tolerance F = ± 1% G = ± 2% H = ± 3% J = ± 5 %	B Constant 3470 = 3470 K 3950 = 3950 K 4050 = 4050 K 4500 = 4500 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	10±1%
1.2	B-value	B25/50	$B = [(Ta \times Tb) / (Tb - Ta)] \times \ln(Ra / Rb)$ Tb=50°C±0.01°C	K	3470±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≤±3%
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%

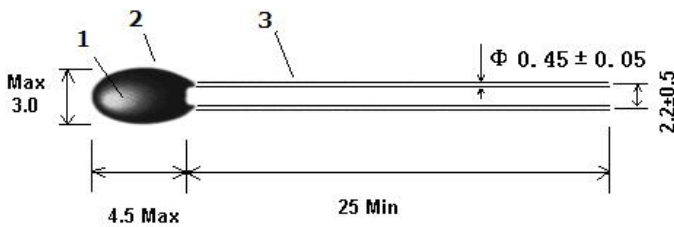
Temperature Measurement NTC Thermistor

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 soldering iron, the distance between welding place and coating head at least 2mm, welding temp lower than 360°C, and time < 3 secs;
- 3.4 Storage temp: -10°C~40°C ; storage humidity: ≤75% RH;
- 3.5 Avoid putting in air corrosion or sunlight environment;
- 3.6 Remake sealed storage after package opening. The storage life is 1 year. Exceed storage period, can re-inspect per as the items stipulated in the standard. If it meets the requirements, it can still be used.
- 3.7 In the process using heat-shrink tube, blown by hair dryer is not allowed, we suggest put the product into the constant temperature oven and heat shrinkable at 110 °C/10-12min.

Certificate

Quality Management System ISO9001 : 2015, IATF16949:2016
Environment Management System ISO14001:2015
NTC core element pass AEC-Q200 test
CQC Safe Certification



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=10KΩ TOLERANCE:±1%				B25/50=3470K TOLERANCE:±1% P175-9			
TEMP(°C)	RESISTANCE(Ω)			RESIST-TOL(%)		TEMP-TOL(°C)	
	MIN	CENTER	MAX	△R	-△R	△T	-△T
-55	510.492	536.600	563.986	5.103	-4.865	0.750	-0.715
-54	475.327	499.276	524.379	5.027	-4.796	0.746	-0.712
-53	443.959	466.006	489.099	4.955	-4.731	0.742	-0.709
-52	415.717	436.072	457.378	4.885	-4.667	0.739	-0.706
-51	390.081	408.918	428.621	4.818	-4.606	0.735	-0.702
-50	366.645	384.109	402.365	4.752	-4.546	0.731	-0.699
-49	345.087	361.304	378.245	4.688	-4.488	0.727	-0.696
-48	325.155	340.231	355.969	4.625	-4.430	0.723	-0.692
-47	306.646	320.673	335.308	4.563	-4.374	0.718	-0.688
-46	289.395	302.456	316.075	4.502	-4.318	0.714	-0.685
-45	273.270	285.438	298.118	4.442	-4.262	0.710	-0.681
-44	258.162	269.502	281.313	4.382	-4.207	0.705	-0.677
-43	243.980	254.552	265.556	4.322	-4.153	0.700	-0.673
-42	230.648	240.506	250.761	4.263	-4.098	0.696	-0.669
-41	218.102	227.295	236.853	4.204	-4.044	0.691	-0.665
-40	206.285	214.860	223.768	4.146	-3.990	0.687	-0.661
-39	195.149	203.146	211.450	4.087	-3.936	0.682	-0.657
-38	184.649	192.108	199.849	4.029	-3.883	0.677	-0.652
-37	174.746	181.705	188.921	3.971	-3.829	0.672	-0.648
-36	165.405	171.897	178.625	3.913	-3.776	0.667	-0.644
-35	156.594	162.649	168.922	3.856	-3.722	0.662	-0.639
-34	148.281	153.930	159.779	3.799	-3.669	0.657	-0.635
-33	140.439	145.710	151.163	3.742	-3.617	0.652	-0.630
-32	133.041	137.958	143.043	3.685	-3.564	0.647	-0.626
-31	126.062	130.650	135.392	3.629	-3.511	0.642	-0.621
-30	119.478	123.760	128.182	3.573	-3.459	0.637	-0.616
-29	113.267	117.263	121.387	3.517	-3.407	0.631	-0.612
-28	107.408	111.137	114.985	3.461	-3.355	0.626	-0.607
-27	101.880	105.362	108.951	3.406	-3.304	0.621	-0.602

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-26	96.665	99.915	103.264	3.351	-3.252	0.615	-0.597
-25	91.745	94.780	97.905	3.297	-3.201	0.610	-0.592
-24	87.102	89.936	92.852	3.243	-3.150	0.604	-0.587
-23	82.720	85.367	88.089	3.189	-3.100	0.598	-0.582
-22	78.584	81.056	83.598	3.135	-3.050	0.593	-0.577
-21	74.679	76.989	79.362	3.082	-3.000	0.587	-0.571
-20	70.992	73.150	75.367	3.029	-2.950	0.581	-0.566
-19	67.509	69.526	71.597	2.977	-2.901	0.575	-0.561
-18	64.219	66.105	68.039	2.925	-2.852	0.570	-0.555
-17	61.110	62.873	64.680	2.874	-2.803	0.564	-0.550
-16	58.171	59.819	61.508	2.822	-2.755	0.558	-0.544
-15	55.392	56.934	58.512	2.772	-2.707	0.551	-0.539
-14	52.764	54.206	55.681	2.721	-2.659	0.545	-0.533
-13	50.277	51.626	53.005	2.671	-2.611	0.539	-0.527
-12	47.924	49.185	50.475	2.621	-2.564	0.533	-0.521
-11	45.696	46.876	48.082	2.572	-2.517	0.527	-0.515
-10	43.585	44.690	45.817	2.523	-2.471	0.520	-0.509
-9	41.586	42.619	43.674	2.474	-2.424	0.514	-0.503
-8	39.690	40.658	41.644	2.426	-2.378	0.507	-0.497
-7	37.894	38.799	39.722	2.378	-2.333	0.501	-0.491
-6	36.189	37.037	37.900	2.331	-2.287	0.494	-0.485
-5	34.572	35.365	36.173	2.283	-2.242	0.487	-0.479
-4	33.037	33.780	34.536	2.236	-2.197	0.481	-0.472
-3	31.580	32.275	32.982	2.190	-2.153	0.474	-0.466
-2	30.196	30.847	31.508	2.144	-2.108	0.467	-0.459
-1	28.881	29.490	30.108	2.098	-2.064	0.460	-0.453
0	27.542	28.110	28.686	2.049	-2.017	0.454	-0.447
1	26.442	26.975	27.517	2.007	-1.977	0.446	-0.439
2	25.311	25.811	26.317	1.962	-1.934	0.439	-0.432
3	24.236	24.703	25.177	1.917	-1.891	0.432	-0.426
4	23.212	23.649	24.092	1.873	-1.848	0.424	-0.419
5	22.237	22.646	23.060	1.828	-1.805	0.417	-0.412
6	21.309	21.691	22.079	1.785	-1.763	0.410	-0.405
7	20.424	20.782	21.144	1.741	-1.721	0.402	-0.398
8	19.582	19.916	20.254	1.698	-1.679	0.395	-0.390
9	18.778	19.091	19.407	1.655	-1.638	0.387	-0.383
10	18.012	18.305	18.600	1.612	-1.596	0.379	-0.376
11	17.282	17.555	17.830	1.569	-1.555	0.372	-0.368
12	16.585	16.840	17.097	1.527	-1.514	0.364	-0.361
13	15.919	16.158	16.398	1.485	-1.473	0.356	-0.353
14	15.284	15.507	15.731	1.444	-1.433	0.348	-0.346
15	14.678	14.886	15.094	1.402	-1.393	0.340	-0.338
16	14.099	14.292	14.487	1.361	-1.352	0.332	-0.330

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17	13.546	13.726	13.907	1.320	-1.313	0.324	-0.322
18	13.017	13.185	13.354	1.279	-1.273	0.316	-0.314
19	12.512	12.669	12.826	1.239	-1.233	0.307	-0.306
20	12.029	12.175	12.321	1.198	-1.194	0.299	-0.298
21	11.568	11.703	11.839	1.158	-1.155	0.290	-0.289
22	11.126	11.252	11.378	1.119	-1.116	0.281	-0.281
23	10.704	10.820	10.937	1.079	-1.078	0.271	-0.271
24	10.299	10.408	10.516	1.040	-1.039	0.259	-0.259
25	9.900	10.000	10.100	1.000	-1.000	0.250	-0.250
26	9.535	9.635	9.735	1.037	-1.036	0.280	-0.280
27	9.174	9.273	9.373	1.076	-1.074	0.287	-0.286
28	8.828	8.927	9.027	1.114	-1.112	0.297	-0.297
29	8.497	8.596	8.695	1.152	-1.149	0.308	-0.308
30	8.180	8.278	8.377	1.190	-1.186	0.320	-0.319
31	7.876	7.974	8.072	1.228	-1.223	0.332	-0.330
32	7.586	7.683	7.780	1.266	-1.260	0.344	-0.342
33	7.307	7.403	7.500	1.304	-1.297	0.356	-0.354
34	7.041	7.136	7.231	1.341	-1.333	0.368	-0.366
35	6.785	6.879	6.974	1.378	-1.369	0.380	-0.378
36	6.540	6.633	6.727	1.415	-1.405	0.393	-0.390
37	6.305	6.397	6.490	1.452	-1.441	0.405	-0.402
38	6.079	6.171	6.262	1.488	-1.476	0.418	-0.415
39	5.863	5.953	6.044	1.525	-1.512	0.431	-0.427
40	5.656	5.745	5.835	1.561	-1.547	0.443	-0.439
41	5.457	5.545	5.633	1.597	-1.582	0.456	-0.452
42	5.266	5.353	5.440	1.633	-1.616	0.469	-0.464
43	5.083	5.168	5.254	1.668	-1.651	0.482	-0.477
44	4.907	4.991	5.076	1.704	-1.685	0.495	-0.490
45	4.738	4.821	4.904	1.739	-1.719	0.508	-0.503
46	4.575	4.657	4.740	1.774	-1.753	0.522	-0.515
47	4.419	4.500	4.581	1.809	-1.787	0.535	-0.528
48	4.269	4.349	4.429	1.844	-1.820	0.548	-0.541
49	4.125	4.203	4.282	1.879	-1.854	0.562	-0.554
50	3.987	4.064	4.141	1.913	-1.887	0.575	-0.567
51	3.854	3.929	4.006	1.947	-1.920	0.589	-0.581
52	3.726	3.800	3.875	1.981	-1.953	0.603	-0.594
53	3.602	3.675	3.749	2.015	-1.985	0.616	-0.607
54	3.484	3.556	3.628	2.049	-2.018	0.630	-0.621
55	3.370	3.440	3.512	2.083	-2.050	0.644	-0.634
56	3.260	3.329	3.400	2.116	-2.082	0.658	-0.648
57	3.154	3.222	3.292	2.150	-2.114	0.672	-0.661
58	3.053	3.120	3.188	2.183	-2.146	0.687	-0.675
59	2.955	3.020	3.087	2.216	-2.178	0.701	-0.689

Temperature Measurement

NTC Thermistor

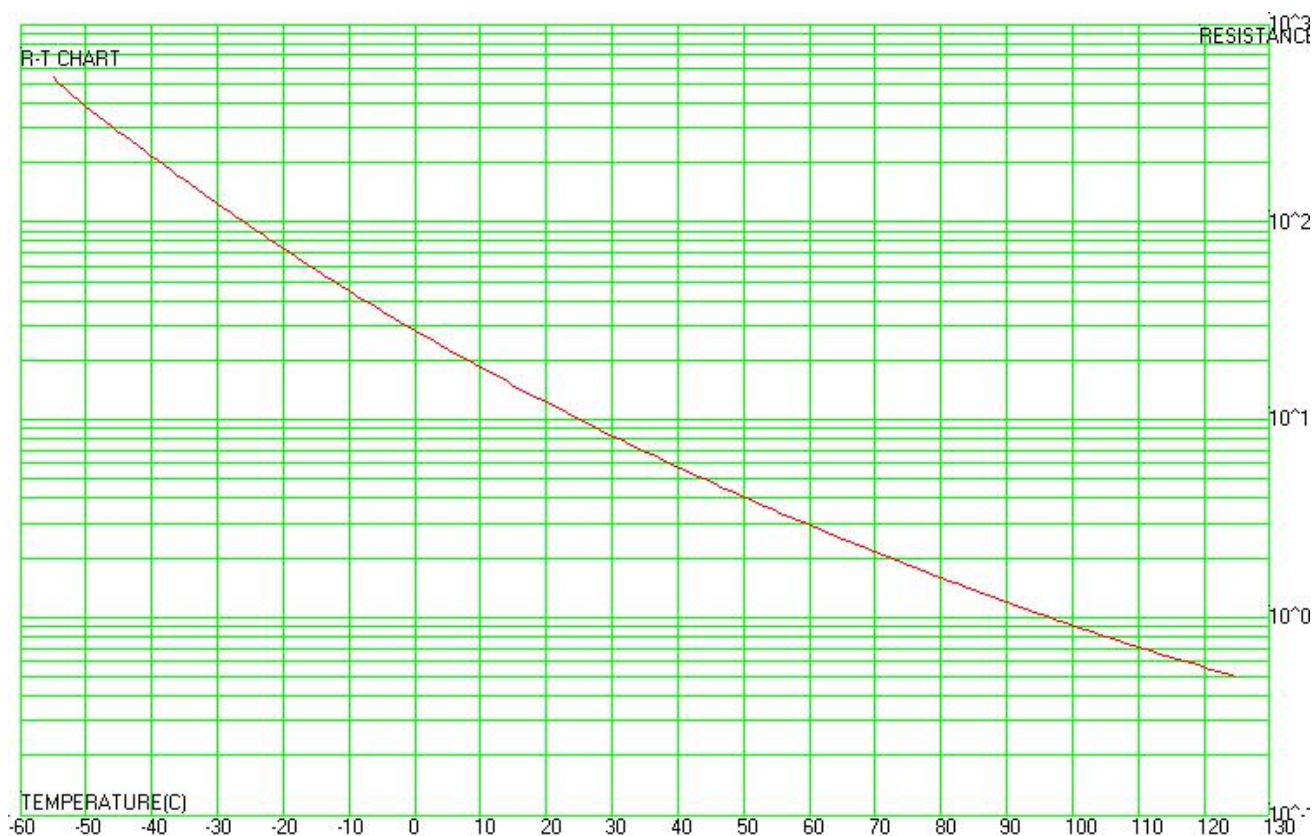


60	2.860	2.925	2.991	2.249	-2.209	0.715	-0.702
61	2.769	2.833	2.897	2.281	-2.240	0.730	-0.716
62	2.682	2.744	2.808	2.314	-2.271	0.744	-0.730
63	2.597	2.658	2.721	2.346	-2.302	0.759	-0.744
64	2.516	2.576	2.637	2.379	-2.333	0.773	-0.758
65	2.437	2.496	2.557	2.411	-2.364	0.788	-0.772
66	2.362	2.420	2.479	2.443	-2.394	0.803	-0.787
67	2.289	2.346	2.404	2.474	-2.424	0.817	-0.801
68	2.218	2.274	2.331	2.506	-2.455	0.832	-0.815
69	2.150	2.205	2.261	2.538	-2.485	0.847	-0.830
70	2.085	2.139	2.194	2.569	-2.515	0.862	-0.844
71	2.022	2.074	2.128	2.600	-2.544	0.878	-0.859
72	1.961	2.012	2.065	2.632	-2.574	0.893	-0.873
73	1.902	1.953	2.005	2.663	-2.603	0.908	-0.888
74	1.845	1.895	1.946	2.693	-2.633	0.924	-0.903
75	1.790	1.839	1.889	2.724	-2.662	0.939	-0.917
76	1.737	1.785	1.834	2.755	-2.691	0.955	-0.932
77	1.686	1.733	1.781	2.785	-2.719	0.970	-0.947
78	1.636	1.682	1.730	2.816	-2.748	0.986	-0.962
79	1.588	1.634	1.680	2.846	-2.777	1.002	-0.977
80	1.542	1.587	1.632	2.876	-2.805	1.017	-0.992
81	1.497	1.541	1.586	2.906	-2.833	1.033	-1.008
82	1.454	1.497	1.541	2.936	-2.862	1.049	-1.023
83	1.412	1.454	1.498	2.965	-2.890	1.065	-1.038
84	1.372	1.413	1.456	2.995	-2.917	1.082	-1.054
85	1.333	1.374	1.415	3.024	-2.945	1.098	-1.069
86	1.295	1.335	1.376	3.054	-2.973	1.114	-1.085
87	1.259	1.298	1.338	3.083	-3.000	1.131	-1.100
88	1.224	1.262	1.301	3.112	-3.027	1.147	-1.116
89	1.189	1.227	1.265	3.141	-3.055	1.164	-1.132
90	1.156	1.193	1.231	3.169	-3.082	1.180	-1.147
91	1.124	1.161	1.198	3.198	-3.108	1.197	-1.163
92	1.094	1.129	1.165	3.226	-3.135	1.214	-1.179
93	1.064	1.098	1.134	3.255	-3.162	1.230	-1.195
94	1.035	1.069	1.104	3.283	-3.188	1.247	-1.211
95	1.007	1.040	1.075	3.311	-3.214	1.264	-1.228
96	0.980	1.013	1.046	3.339	-3.240	1.282	-1.244
97	0.954	0.986	1.019	3.366	-3.266	1.299	-1.260
98	0.928	0.960	0.993	3.394	-3.292	1.316	-1.277
99	0.904	0.935	0.967	3.421	-3.318	1.333	-1.293
100	0.880	0.911	0.942	3.448	-3.343	1.351	-1.310
101	0.857	0.887	0.918	3.476	-3.368	1.368	-1.326
102	0.835	0.864	0.895	3.502	-3.394	1.386	-1.343

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103	0.813	0.842	0.872	3.529	-3.418	1.404	-1.360
104	0.793	0.821	0.850	3.556	-3.443	1.421	-1.376
105	0.772	0.800	0.829	3.582	-3.468	1.439	-1.393
106	0.753	0.780	0.808	3.608	-3.492	1.457	-1.410
107	0.734	0.761	0.789	3.634	-3.516	1.475	-1.427
108	0.716	0.742	0.769	3.660	-3.540	1.493	-1.445
109	0.698	0.724	0.751	3.686	-3.564	1.512	-1.462
110	0.681	0.707	0.733	3.711	-3.588	1.530	-1.479
111	0.665	0.690	0.715	3.736	-3.611	1.548	-1.496
112	0.649	0.673	0.699	3.761	-3.634	1.567	-1.514
113	0.633	0.657	0.682	3.786	-3.657	1.585	-1.531
114	0.618	0.642	0.666	3.810	-3.680	1.604	-1.549
115	0.604	0.627	0.651	3.835	-3.703	1.623	-1.567
116	0.590	0.613	0.636	3.859	-3.725	1.642	-1.585
117	0.576	0.599	0.622	3.882	-3.747	1.660	-1.602
118	0.563	0.586	0.608	3.906	-3.769	1.680	-1.620
119	0.551	0.573	0.595	3.929	-3.790	1.699	-1.639
120	0.539	0.560	0.582	3.952	-3.811	1.718	-1.657
121	0.527	0.548	0.570	3.975	-3.832	1.737	-1.675
122	0.516	0.536	0.558	3.997	-3.853	1.757	-1.693
123	0.505	0.525	0.546	4.019	-3.874	1.776	-1.712
124	0.494	0.514	0.535	4.041	-3.894	1.796	-1.730
125	0.484	0.504	0.524	4.063	-3.914	1.816	-1.749



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