

Temperature Measurement NTC Thermistor



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Applications

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PART NUMBER

Example: RND 155MF52A1 502F3950

RND 155MF52A1	502	F	3950
Type	Zero Power Resistance @ 25 °C 502 = 5 kΩ	Tolerance F = ± 1% G = ± 2% H = ± 3% J = ± 5%	B Constant 3600 = 3600 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	5±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≤±3%
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°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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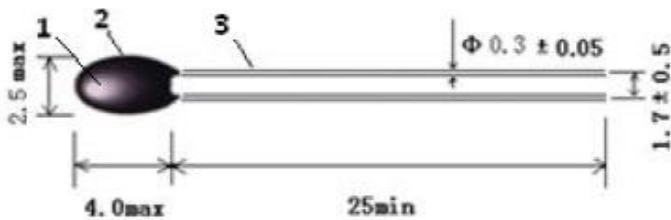
Caution

- 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=5KΩ TOLERANCE:±1%				B25/50=3950K TOLERANCE:±1% P213-2A			
TEMP(°C)	RESISTANCE(Ω)			RESIST-TOL(%)		TEMP-TOL(°C)	
	MIN	CENTER	MAX	△R	-△R	△T	-△T
-55	351.018	370.160	390.305	5.442	-5.171	0.740	-0.703
-54	327.185	344.782	363.288	5.367	-5.103	0.736	-0.700
-53	305.305	321.500	338.520	5.293	-5.037	0.732	-0.696
-52	285.200	300.121	315.792	5.221	-4.971	0.728	-0.693
-51	266.706	280.470	294.915	5.150	-4.907	0.724	-0.690
-50	249.673	262.383	275.713	5.080	-4.844	0.720	-0.686
-49	233.964	245.713	258.027	5.011	-4.781	0.715	-0.683
-48	219.455	230.327	241.713	4.943	-4.720	0.711	-0.679
-47	206.033	216.102	226.640	4.876	-4.659	0.707	-0.675
-46	193.598	202.932	212.694	4.810	-4.599	0.702	-0.671
-45	182.059	190.718	199.769	4.745	-4.540	0.698	-0.667
-44	171.336	179.374	187.772	4.681	-4.481	0.693	-0.663
-43	161.355	168.823	176.619	4.617	-4.423	0.688	-0.659
-42	152.051	158.993	166.236	4.555	-4.366	0.683	-0.655
-41	143.368	149.824	156.556	4.493	-4.309	0.679	-0.651
-40	135.252	141.260	147.520	4.431	-4.253	0.674	-0.647
-39	127.657	133.249	139.073	4.370	-4.197	0.669	-0.642
-38	120.541	125.749	131.169	4.310	-4.141	0.664	-0.638
-37	113.867	118.718	123.764	4.250	-4.086	0.658	-0.633
-36	107.601	112.121	116.820	4.190	-4.031	0.653	-0.628
-35	101.713	105.926	110.302	4.131	-3.977	0.648	-0.624
-34	96.176	100.102	104.179	4.072	-3.922	0.643	-0.619
-33	90.964	94.624	98.423	4.013	-3.868	0.637	-0.614
-32	86.055	89.468	93.007	3.955	-3.814	0.632	-0.609
-31	81.429	84.611	87.909	3.897	-3.761	0.626	-0.604
-30	77.067	80.034	83.107	3.839	-3.707	0.621	-0.599
-29	72.952	75.719	78.583	3.782	-3.654	0.615	-0.594
-28	69.068	71.648	74.317	3.725	-3.600	0.609	-0.589
-27	65.402	67.807	70.294	3.667	-3.547	0.603	-0.584

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-26	61.939	64.182	66.500	3.610	-3.494	0.598	-0.578
-25	58.668	60.760	62.919	3.554	-3.441	0.592	-0.573
-24	55.578	57.527	59.539	3.497	-3.389	0.586	-0.568
-23	52.657	54.475	56.349	3.441	-3.336	0.580	-0.562
-22	49.896	51.591	53.337	3.384	-3.283	0.574	-0.557
-21	47.287	48.866	50.492	3.328	-3.231	0.568	-0.551
-20	44.819	46.291	47.806	3.272	-3.178	0.561	-0.545
-19	42.487	43.858	45.269	3.217	-3.126	0.555	-0.540
-18	40.281	41.558	42.872	3.161	-3.074	0.549	-0.534
-17	38.195	39.385	40.608	3.106	-3.022	0.543	-0.528
-16	36.222	37.331	38.470	3.051	-2.970	0.536	-0.522
-15	34.356	35.389	36.449	2.996	-2.918	0.530	-0.516
-14	32.591	33.553	34.540	2.941	-2.866	0.523	-0.510
-13	30.922	31.818	32.736	2.886	-2.815	0.517	-0.504
-12	29.343	30.177	31.032	2.832	-2.763	0.510	-0.498
-11	27.850	28.626	29.421	2.777	-2.712	0.503	-0.492
-10	26.437	27.160	27.899	2.723	-2.661	0.497	-0.485
-9	25.100	25.773	26.461	2.669	-2.610	0.490	-0.479
-8	23.836	24.462	25.102	2.616	-2.559	0.483	-0.473
-7	22.639	23.222	23.817	2.563	-2.508	0.476	-0.466
-6	21.507	22.049	22.603	2.509	-2.458	0.469	-0.460
-5	20.436	20.940	21.455	2.456	-2.407	0.462	-0.453
-4	19.422	19.891	20.369	2.404	-2.357	0.455	-0.446
-3	18.463	18.899	19.343	2.351	-2.307	0.448	-0.440
-2	17.554	17.960	18.373	2.299	-2.257	0.441	-0.433
-1	16.695	17.072	17.456	2.247	-2.208	0.434	-0.426
0	15.806	16.154	16.508	2.191	-2.154	0.427	-0.420
1	15.110	15.436	15.767	2.144	-2.109	0.419	-0.413
2	14.380	14.683	14.990	2.093	-2.060	0.412	-0.406
3	13.689	13.970	14.256	2.043	-2.012	0.405	-0.399
4	13.034	13.295	13.560	1.992	-1.963	0.397	-0.391
5	12.414	12.656	12.902	1.942	-1.915	0.390	-0.384
6	11.826	12.051	12.279	1.892	-1.867	0.382	-0.377
7	11.269	11.478	11.689	1.842	-1.819	0.375	-0.370
8	10.741	10.934	11.130	1.793	-1.771	0.367	-0.362
9	10.240	10.419	10.601	1.744	-1.724	0.359	-0.355
10	9.765	9.932	10.100	1.695	-1.677	0.351	-0.348
11	9.315	9.469	9.625	1.647	-1.630	0.344	-0.340
12	8.887	9.030	9.175	1.598	-1.583	0.336	-0.333
13	8.482	8.614	8.748	1.550	-1.537	0.328	-0.325
14	8.097	8.219	8.343	1.503	-1.490	0.320	-0.317
15	7.731	7.845	7.959	1.456	-1.444	0.312	-0.310
16	7.385	7.489	7.595	1.408	-1.399	0.304	-0.302

Temperature Measurement

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17	7.055	7.152	7.249	1.362	-1.353	0.296	-0.294
18	6.742	6.831	6.921	1.315	-1.308	0.288	-0.286
19	6.445	6.527	6.610	1.269	-1.263	0.279	-0.278
20	6.162	6.238	6.314	1.223	-1.218	0.271	-0.270
21	5.893	5.963	6.033	1.178	-1.174	0.263	-0.262
22	5.637	5.702	5.766	1.132	-1.130	0.255	-0.255
23	5.394	5.454	5.513	1.087	-1.086	0.248	-0.248
24	5.163	5.217	5.272	1.043	-1.042	0.243	-0.243
25	4.950	5.000	5.050	1.000	-1.000	0.235	-0.235
26	4.729	4.779	4.829	1.045	-1.044	0.232	-0.232
27	4.526	4.575	4.625	1.089	-1.087	0.247	-0.247
28	4.332	4.382	4.431	1.133	-1.130	0.260	-0.259
29	4.148	4.197	4.247	1.176	-1.172	0.272	-0.271
30	3.973	4.022	4.071	1.220	-1.215	0.285	-0.283
31	3.806	3.854	3.903	1.263	-1.257	0.297	-0.295
32	3.647	3.695	3.743	1.305	-1.298	0.309	-0.307
33	3.495	3.543	3.590	1.348	-1.340	0.321	-0.319
34	3.351	3.398	3.445	1.390	-1.381	0.333	-0.331
35	3.213	3.259	3.306	1.432	-1.422	0.346	-0.343
36	3.082	3.127	3.174	1.474	-1.463	0.358	-0.355
37	2.956	3.002	3.047	1.516	-1.503	0.371	-0.367
38	2.837	2.881	2.926	1.558	-1.543	0.383	-0.380
39	2.723	2.767	2.811	1.599	-1.583	0.396	-0.392
40	2.614	2.657	2.701	1.640	-1.623	0.408	-0.404
41	2.510	2.553	2.595	1.681	-1.663	0.421	-0.417
42	2.411	2.453	2.495	1.721	-1.702	0.434	-0.429
43	2.316	2.357	2.399	1.762	-1.741	0.447	-0.442
44	2.225	2.266	2.307	1.802	-1.780	0.460	-0.454
45	2.139	2.178	2.219	1.842	-1.818	0.473	-0.467
46	2.056	2.095	2.134	1.882	-1.857	0.486	-0.480
47	1.977	2.015	2.054	1.921	-1.895	0.499	-0.492
48	1.901	1.939	1.977	1.961	-1.933	0.512	-0.505
49	1.829	1.866	1.903	2.000	-1.970	0.526	-0.518
50	1.759	1.796	1.832	2.039	-2.008	0.539	-0.531
51	1.693	1.728	1.764	2.078	-2.045	0.553	-0.544
52	1.630	1.664	1.700	2.116	-2.082	0.566	-0.557
53	1.569	1.603	1.637	2.155	-2.119	0.580	-0.570
54	1.511	1.544	1.578	2.193	-2.156	0.594	-0.584
55	1.455	1.487	1.521	2.231	-2.192	0.607	-0.597
56	1.401	1.433	1.466	2.269	-2.228	0.621	-0.610
57	1.350	1.382	1.413	2.307	-2.264	0.635	-0.624
58	1.301	1.332	1.363	2.344	-2.300	0.649	-0.637
59	1.254	1.284	1.315	2.381	-2.336	0.663	-0.651

Temperature Measurement

NTC Thermistor

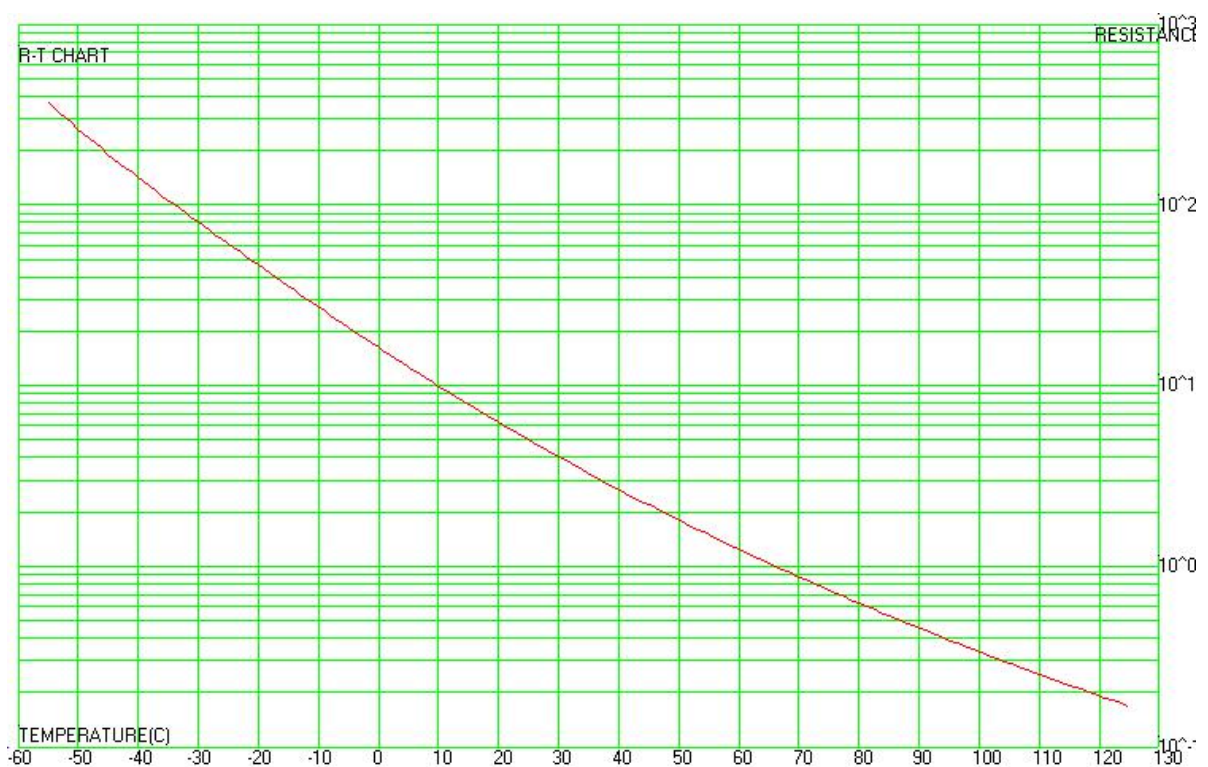


60	1.209	1.238	1.268	2.419	-2.371	0.678	-0.664
61	1.166	1.195	1.224	2.455	-2.406	0.692	-0.678
62	1.124	1.152	1.181	2.492	-2.441	0.706	-0.692
63	1.084	1.112	1.140	2.529	-2.476	0.721	-0.706
64	1.046	1.073	1.101	2.565	-2.511	0.735	-0.719
65	1.010	1.036	1.063	2.601	-2.545	0.750	-0.733
66	0.974	1.000	1.027	2.638	-2.579	0.764	-0.747
67	0.941	0.966	0.992	2.673	-2.614	0.779	-0.762
68	0.908	0.933	0.958	2.709	-2.647	0.794	-0.776
69	0.877	0.901	0.926	2.745	-2.681	0.809	-0.790
70	0.847	0.871	0.895	2.780	-2.714	0.824	-0.804
71	0.818	0.841	0.865	2.815	-2.748	0.839	-0.819
72	0.790	0.813	0.836	2.850	-2.781	0.854	-0.833
73	0.764	0.786	0.809	2.885	-2.814	0.869	-0.847
74	0.738	0.760	0.782	2.920	-2.847	0.884	-0.862
75	0.714	0.735	0.757	2.954	-2.879	0.899	-0.877
76	0.690	0.711	0.732	2.988	-2.911	0.915	-0.891
77	0.667	0.688	0.708	3.023	-2.944	0.930	-0.906
78	0.645	0.665	0.686	3.057	-2.976	0.946	-0.921
79	0.624	0.644	0.664	3.090	-3.007	0.962	-0.936
80	0.604	0.623	0.643	3.124	-3.039	0.977	-0.951
81	0.585	0.603	0.622	3.158	-3.071	0.993	-0.966
82	0.566	0.584	0.603	3.191	-3.102	1.009	-0.981
83	0.548	0.565	0.584	3.224	-3.133	1.025	-0.996
84	0.530	0.548	0.566	3.257	-3.164	1.041	-1.011
85	0.514	0.531	0.548	3.290	-3.195	1.057	-1.027
86	0.497	0.514	0.531	3.323	-3.225	1.073	-1.042
87	0.482	0.498	0.515	3.355	-3.256	1.090	-1.057
88	0.467	0.483	0.499	3.387	-3.286	1.106	-1.073
89	0.452	0.468	0.484	3.420	-3.316	1.122	-1.088
90	0.438	0.454	0.469	3.452	-3.346	1.139	-1.104
91	0.425	0.440	0.455	3.484	-3.376	1.155	-1.120
92	0.412	0.426	0.442	3.515	-3.406	1.172	-1.135
93	0.399	0.414	0.428	3.547	-3.435	1.189	-1.151
94	0.387	0.401	0.416	3.578	-3.464	1.206	-1.167
95	0.376	0.389	0.403	3.610	-3.493	1.222	-1.183
96	0.364	0.378	0.392	3.641	-3.522	1.239	-1.199
97	0.354	0.367	0.380	3.672	-3.551	1.257	-1.215
98	0.343	0.356	0.369	3.703	-3.580	1.274	-1.231
99	0.333	0.346	0.358	3.733	-3.608	1.291	-1.248
100	0.323	0.336	0.348	3.764	-3.637	1.308	-1.264
101	0.314	0.326	0.338	3.794	-3.665	1.325	-1.280
102	0.305	0.316	0.329	3.824	-3.693	1.343	-1.297

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103	0.296	0.307	0.319	3.854	-3.721	1.360	-1.313
104	0.287	0.299	0.310	3.884	-3.749	1.378	-1.330
105	0.279	0.290	0.302	3.914	-3.776	1.396	-1.346
106	0.271	0.282	0.293	3.944	-3.804	1.413	-1.363
107	0.264	0.274	0.285	3.974	-3.831	1.431	-1.380
108	0.256	0.266	0.277	4.003	-3.858	1.449	-1.397
109	0.249	0.259	0.269	4.032	-3.886	1.467	-1.414
110	0.242	0.252	0.262	4.061	-3.912	1.485	-1.431
111	0.235	0.245	0.255	4.090	-3.939	1.503	-1.448
112	0.229	0.238	0.248	4.119	-3.966	1.521	-1.465
113	0.222	0.232	0.241	4.148	-3.993	1.540	-1.482
114	0.216	0.225	0.235	4.177	-4.019	1.558	-1.499
115	0.210	0.219	0.228	4.205	-4.045	1.577	-1.516
116	0.205	0.213	0.222	4.234	-4.071	1.595	-1.534
117	0.199	0.208	0.216	4.262	-4.098	1.614	-1.551
118	0.194	0.202	0.211	4.291	-4.124	1.632	-1.569
119	0.188	0.197	0.205	4.319	-4.149	1.651	-1.586
120	0.183	0.191	0.200	4.347	-4.175	1.670	-1.604
121	0.178	0.186	0.194	4.375	-4.201	1.689	-1.622
122	0.174	0.181	0.189	4.402	-4.226	1.708	-1.639
123	0.169	0.177	0.184	4.430	-4.252	1.727	-1.657
124	0.165	0.172	0.180	4.458	-4.277	1.746	-1.675
125	0.160	0.168	0.175	4.485	-4.302	1.765	-1.693



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