

Temperature Measurement NTC Thermistor



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Applications

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PART NUMBER

Example: RND 155MF52A2 472J3950

RND 155MF52A2	472	J	3950
Type	Zero Power Resistance @ 25 °C 472 = 4.7 kΩ	Tolerance F = ± 1% G = ± 2% H = ± 3% J = ± 5 %	B Constant 3470 = 3470 K 3950 = 3950 K 4200 = 4200 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	4.7±5%
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%

Temperature Measurement NTC Thermistor

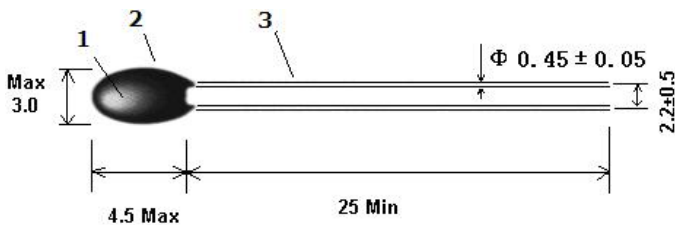
Caution

- 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 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

Temperature Measurement NTC Thermistor



R&T Table

R25=4.7KΩ TOLERANCE:±5% B25/50=3950K B25/85=3991K TOLERANCE:±1%(P213-2A)							
TEMP(°C)	RESISTANCE(KΩ)			RESISST-TOL(%)		TEMP-TOL(°C)	
	MIN	CENTER	MAX	△R	-△R	△T	-△T
-55	316.626	347.950	381.417	9.618	-9.002	1.307	-1.224
-54	295.128	324.095	355.015	9.540	-8.937	1.308	-1.225
-53	275.391	302.210	330.811	9.464	-8.874	1.309	-1.227
-52	257.256	282.114	308.601	9.388	-8.811	1.309	-1.229
-51	240.574	263.642	288.199	9.314	-8.749	1.309	-1.230
-50	225.210	246.640	269.435	9.241	-8.688	1.309	-1.231
-49	211.040	230.971	252.151	9.170	-8.628	1.309	-1.232
-48	197.953	216.507	236.208	9.099	-8.569	1.309	-1.233
-47	185.846	203.136	221.479	9.030	-8.511	1.309	-1.234
-46	174.629	190.756	207.850	8.961	-8.453	1.308	-1.234
-45	164.221	179.275	195.220	8.893	-8.397	1.308	-1.235
-44	154.548	168.612	183.496	8.827	-8.340	1.307	-1.235
-43	145.545	158.693	172.597	8.761	-8.285	1.306	-1.235
-42	137.153	149.454	162.450	8.695	-8.230	1.305	-1.235
-41	129.320	140.835	152.991	8.631	-8.175	1.304	-1.235
-40	122.000	132.784	144.160	8.567	-8.121	1.303	-1.235
-39	115.149	125.254	135.906	8.504	-8.068	1.302	-1.235
-38	108.730	118.204	128.182	8.441	-8.014	1.300	-1.234
-37	102.710	111.595	120.946	8.378	-7.961	1.299	-1.234
-36	97.058	105.394	114.160	8.316	-7.909	1.297	-1.233
-35	91.747	99.570	107.790	8.255	-7.856	1.295	-1.233
-34	86.752	94.096	101.807	8.194	-7.804	1.294	-1.232
-33	82.051	88.947	96.181	8.133	-7.752	1.292	-1.231
-32	77.623	84.100	90.889	8.072	-7.701	1.290	-1.230
-31	73.450	79.534	85.907	8.012	-7.649	1.288	-1.229
-30	69.516	75.232	81.215	7.952	-7.598	1.286	-1.229
-29	65.804	71.175	76.793	7.892	-7.546	1.284	-1.228
-28	62.301	67.349	72.625	7.832	-7.495	1.282	-1.226
-27	58.994	63.739	68.694	7.773	-7.444	1.279	-1.225
-26	55.870	60.331	64.985	7.714	-7.393	1.277	-1.224
-25	52.920	57.114	61.486	7.655	-7.343	1.275	-1.223
-24	50.132	54.076	58.184	7.596	-7.292	1.273	-1.222

Temperature Measurement

NTC Thermistor



-23	47.498	51.206	55.066	7.537	-7.242	1.271	-1.221
-22	45.008	48.495	52.122	7.479	-7.191	1.268	-1.219
-21	42.654	45.934	49.343	7.421	-7.141	1.266	-1.218
-20	40.428	43.514	46.717	7.362	-7.090	1.264	-1.217
-19	38.324	41.226	44.238	7.305	-7.040	1.261	-1.216
-18	36.334	39.065	41.896	7.247	-6.990	1.259	-1.214
-17	34.452	37.022	39.684	7.189	-6.940	1.256	-1.213
-16	32.673	35.091	37.594	7.132	-6.890	1.254	-1.212
-15	30.990	33.265	35.619	7.075	-6.841	1.252	-1.210
-14	29.398	31.540	33.753	7.018	-6.791	1.249	-1.209
-13	27.892	29.909	31.991	6.961	-6.741	1.247	-1.207
-12	26.468	28.366	30.325	6.904	-6.692	1.244	-1.206
-11	25.121	26.908	28.751	6.848	-6.643	1.242	-1.205
-10	23.846	25.530	27.264	6.792	-6.594	1.239	-1.203
-9	22.641	24.226	25.858	6.736	-6.545	1.237	-1.202
-8	21.500	22.994	24.530	6.680	-6.496	1.234	-1.200
-7	20.421	21.828	23.275	6.624	-6.447	1.232	-1.199
-6	19.400	20.726	22.088	6.569	-6.399	1.229	-1.197
-5	18.434	19.684	20.966	6.514	-6.350	1.227	-1.196
-4	17.519	18.698	19.906	6.459	-6.302	1.224	-1.194
-3	16.654	17.765	18.903	6.405	-6.254	1.222	-1.193
-2	15.834	16.882	17.955	6.351	-6.207	1.219	-1.191
-1	15.059	16.047	17.058	6.297	-6.159	1.217	-1.190
0	14.257	15.184	16.132	6.238	-6.107	1.218	-1.192
1	13.630	14.510	15.408	6.190	-6.064	1.211	-1.187
2	12.971	13.802	14.649	6.137	-6.017	1.209	-1.185
3	12.348	13.132	13.931	6.084	-5.971	1.206	-1.184
4	11.757	12.498	13.251	6.031	-5.924	1.203	-1.182
5	11.197	11.897	12.608	5.979	-5.878	1.201	-1.180
6	10.667	11.328	11.999	5.927	-5.832	1.198	-1.179
7	10.165	10.789	11.423	5.876	-5.786	1.195	-1.177
8	9.688	10.278	10.877	5.824	-5.740	1.193	-1.176
9	9.236	9.794	10.360	5.773	-5.695	1.190	-1.174
10	8.808	9.336	9.870	5.723	-5.649	1.187	-1.172
11	8.402	8.901	9.406	5.672	-5.604	1.185	-1.170
12	8.016	8.488	8.966	5.622	-5.559	1.182	-1.169
13	7.651	8.097	8.549	5.572	-5.515	1.179	-1.167
14	7.303	7.726	8.153	5.523	-5.471	1.177	-1.165
15	6.974	7.374	7.778	5.474	-5.426	1.174	-1.164
16	6.661	7.040	7.422	5.425	-5.383	1.171	-1.162
17	6.364	6.723	7.084	5.376	-5.339	1.169	-1.161
18	6.081	6.422	6.764	5.328	-5.296	1.166	-1.159
19	5.813	6.135	6.459	5.280	-5.252	1.164	-1.158
20	5.558	5.864	6.170	5.232	-5.209	1.162	-1.157
21	5.316	5.605	5.896	5.185	-5.167	1.161	-1.157

Temperature Measurement

NTC Thermistor



22	5.085	5.360	5.635	5.138	-5.124	1.160	-1.157
23	4.866	5.126	5.387	5.091	-5.082	1.163	-1.161
24	4.657	4.904	5.152	5.044	-5.040	1.178	-1.177
25	4.464	4.700	4.935	5.000	-5.000	1.176	-1.176
26	4.266	4.492	4.719	5.047	-5.042	1.122	-1.121
27	4.082	4.301	4.520	5.093	-5.084	1.157	-1.155
28	3.908	4.119	4.331	5.138	-5.125	1.180	-1.177
29	3.742	3.945	4.150	5.183	-5.165	1.201	-1.197
30	3.583	3.780	3.978	5.228	-5.206	1.221	-1.216
31	3.433	3.623	3.814	5.273	-5.246	1.240	-1.234
32	3.289	3.473	3.658	5.317	-5.286	1.259	-1.252
33	3.153	3.330	3.509	5.362	-5.326	1.278	-1.270
34	3.022	3.194	3.366	5.406	-5.366	1.297	-1.288
35	2.898	3.064	3.231	5.450	-5.405	1.316	-1.306
36	2.780	2.940	3.101	5.493	-5.444	1.335	-1.323
37	2.667	2.821	2.978	5.536	-5.483	1.354	-1.341
38	2.559	2.709	2.860	5.580	-5.521	1.374	-1.359
39	2.456	2.601	2.747	5.623	-5.560	1.393	-1.377
40	2.358	2.498	2.639	5.665	-5.598	1.412	-1.395
41	2.264	2.399	2.536	5.708	-5.636	1.431	-1.413
42	2.175	2.305	2.438	5.750	-5.674	1.451	-1.431
43	2.089	2.216	2.344	5.792	-5.711	1.470	-1.450
44	2.007	2.130	2.254	5.834	-5.748	1.490	-1.468
45	1.929	2.048	2.168	5.875	-5.785	1.509	-1.486
46	1.855	1.969	2.086	5.917	-5.822	1.529	-1.505
47	1.783	1.894	2.007	5.958	-5.859	1.549	-1.523
48	1.715	1.822	1.932	5.999	-5.895	1.569	-1.542
49	1.649	1.754	1.859	6.040	-5.931	1.589	-1.560
50	1.587	1.688	1.790	6.080	-5.967	1.609	-1.579
51	1.527	1.625	1.724	6.120	-6.003	1.629	-1.598
52	1.470	1.564	1.661	6.161	-6.039	1.649	-1.616
53	1.415	1.507	1.600	6.201	-6.074	1.669	-1.635
54	1.363	1.451	1.542	6.240	-6.109	1.690	-1.654
55	1.312	1.398	1.486	6.280	-6.144	1.710	-1.673
56	1.264	1.347	1.433	6.319	-6.179	1.731	-1.693
57	1.218	1.299	1.381	6.358	-6.213	1.752	-1.712
58	1.174	1.252	1.332	6.397	-6.248	1.773	-1.731
59	1.131	1.207	1.285	6.436	-6.282	1.794	-1.751
60	1.090	1.164	1.239	6.475	-6.316	1.815	-1.770
61	1.051	1.123	1.196	6.513	-6.350	1.836	-1.790
62	1.014	1.083	1.154	6.551	-6.383	1.857	-1.809
63	0.978	1.045	1.114	6.589	-6.417	1.878	-1.829
64	0.944	1.009	1.076	6.627	-6.450	1.900	-1.849
65	0.911	0.974	1.039	6.665	-6.483	1.921	-1.869
66	0.879	0.940	1.003	6.702	-6.516	1.943	-1.888

Temperature Measurement

NTC Thermistor

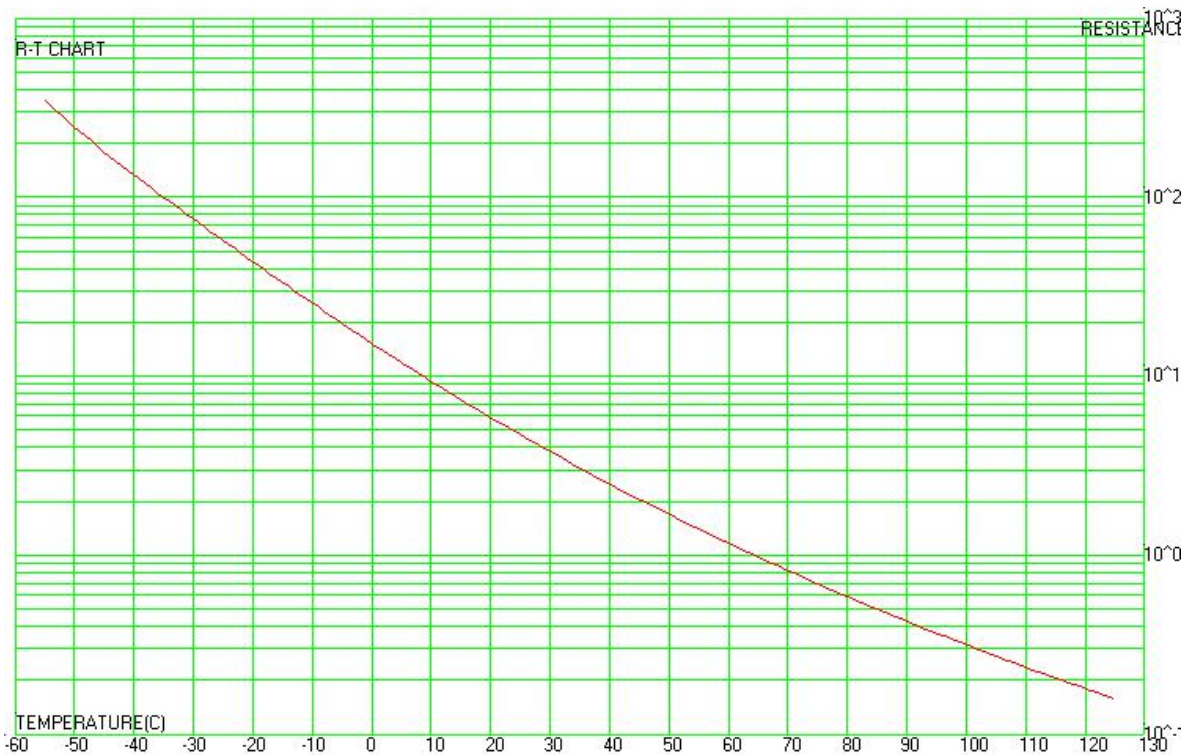


67	0.848	0.908	0.969	6.740	-6.548	1.964	-1.909
68	0.819	0.877	0.936	6.777	-6.581	1.986	-1.929
69	0.791	0.847	0.905	6.814	-6.613	2.008	-1.949
70	0.764	0.818	0.874	6.850	-6.645	2.030	-1.969
71	0.738	0.791	0.845	6.887	-6.677	2.052	-1.990
72	0.713	0.764	0.817	6.923	-6.709	2.074	-2.010
73	0.689	0.739	0.790	6.960	-6.740	2.097	-2.031
74	0.666	0.714	0.764	6.996	-6.772	2.119	-2.051
75	0.644	0.691	0.739	7.032	-6.803	2.141	-2.072
76	0.622	0.668	0.715	7.067	-6.834	2.164	-2.093
77	0.602	0.646	0.692	7.103	-6.865	2.187	-2.114
78	0.582	0.625	0.670	7.138	-6.896	2.209	-2.134
79	0.563	0.605	0.649	7.173	-6.926	2.232	-2.156
80	0.545	0.586	0.628	7.208	-6.957	2.255	-2.177
81	0.527	0.567	0.608	7.243	-6.987	2.278	-2.198
82	0.510	0.549	0.589	7.278	-7.017	2.302	-2.219
83	0.494	0.532	0.570	7.312	-7.047	2.325	-2.241
84	0.478	0.515	0.553	7.347	-7.077	2.348	-2.262
85	0.463	0.499	0.535	7.381	-7.106	2.372	-2.284
86	0.449	0.483	0.519	7.415	-7.135	2.395	-2.305
87	0.435	0.468	0.503	7.448	-7.165	2.419	-2.327
88	0.421	0.454	0.488	7.482	-7.194	2.443	-2.349
89	0.408	0.440	0.473	7.516	-7.223	2.467	-2.371
90	0.395	0.426	0.459	7.549	-7.251	2.491	-2.393
91	0.383	0.413	0.445	7.582	-7.280	2.515	-2.415
92	0.372	0.401	0.431	7.615	-7.308	2.539	-2.437
93	0.360	0.389	0.419	7.648	-7.337	2.564	-2.459
94	0.349	0.377	0.406	7.680	-7.365	2.588	-2.482
95	0.339	0.366	0.394	7.713	-7.393	2.613	-2.504
96	0.329	0.355	0.383	7.745	-7.421	2.637	-2.527
97	0.319	0.345	0.371	7.778	-7.448	2.662	-2.549
98	0.309	0.335	0.361	7.810	-7.476	2.687	-2.572
99	0.300	0.325	0.350	7.841	-7.503	2.712	-2.595
100	0.292	0.315	0.340	7.873	-7.530	2.737	-2.618
101	0.283	0.306	0.330	7.905	-7.557	2.762	-2.640
102	0.275	0.297	0.321	7.936	-7.584	2.787	-2.663
103	0.267	0.289	0.312	7.968	-7.611	2.812	-2.687
104	0.259	0.281	0.303	7.999	-7.638	2.838	-2.710
105	0.252	0.273	0.295	8.030	-7.664	2.863	-2.733
106	0.245	0.265	0.286	8.061	-7.691	2.889	-2.756
107	0.238	0.258	0.278	8.091	-7.717	2.915	-2.780
108	0.231	0.250	0.271	8.122	-7.743	2.941	-2.803
109	0.224	0.243	0.263	8.152	-7.769	2.966	-2.827
110	0.218	0.237	0.256	8.183	-7.795	2.992	-2.851
111	0.212	0.230	0.249	8.213	-7.821	3.019	-2.874

Temperature Measurement NTC Thermistor



112	0.206	0.224	0.242	8.243	-7.846	3.045	-2.898
113	0.201	0.218	0.236	8.273	-7.872	3.071	-2.922
114	0.195	0.212	0.229	8.303	-7.897	3.097	-2.946
115	0.190	0.206	0.223	8.332	-7.922	3.124	-2.970
116	0.184	0.200	0.217	8.362	-7.947	3.151	-2.994
117	0.179	0.195	0.211	8.391	-7.972	3.177	-3.018
118	0.175	0.190	0.206	8.421	-7.997	3.204	-3.043
119	0.170	0.185	0.200	8.450	-8.022	3.231	-3.067
120	0.165	0.180	0.195	8.479	-8.047	3.258	-3.092
121	0.161	0.175	0.190	8.508	-8.071	3.285	-3.116
122	0.157	0.170	0.185	8.537	-8.096	3.312	-3.141
123	0.152	0.166	0.180	8.566	-8.120	3.339	-3.165
124	0.148	0.162	0.176	8.595	-8.145	3.366	-3.190
125	0.145	0.157	0.171	8.624	-8.169	3.393	-3.215



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NTC Thermistor

