



東莞市智旭電子有限公司  
**JYH HSU (JEC) ELECTRONICS LTD.,**

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承 認 書

**SPECIFICATION FOR APPROVAL**

客户名称  
 Customer \_\_\_\_\_


品 名  
 Part Name \_\_\_\_\_ NTC Thermistor \_\_\_\_\_

客户料号  
 Customer Part No: \_\_\_\_\_

承認規格  
 Approve Item \_\_\_\_\_ MF52A-50KR-B3950-1% \_\_\_\_\_

供应商料号  
 Part Number \_\_\_\_\_

日 期  
 Date \_\_\_\_\_ 2024-08-13 \_\_\_\_\_

客户承认 Customer Acknowledgement	供应商承认 Supplier Acknowledgement 
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台湾:智旭电子有限公司  
 JYH HSU(JEC) ELECTRONICSLTD台  
 湾台中大里市仁路222 巷64号E-  
 mail:vinkyuan@gmail.com

广东: 智旭电子有限公司  
 JYH HSU(JEC) ELECTRONICS LTD  
 东莞市道窖镇蔡白村道厚路律冲桥头  
 旁E-mail:vinkyuan@gmail.com

# THERMISTOR SPECIFICATIONS

## 1) SCOPE

This specifications define ratings, dimension, insulation, climatic sequence and mechanical characteristics for thermistor.

**2) PART NO. : MF52A-50KR-B3950-1%**

## 3) RATING

3-1) Rated zero-power resistance  $R_{25} : 50k\ \Omega \pm 1\%$  (at 25°C)

3-2) B value.  $B_{25/50} : 3,950K \pm 1\%$

\*The B value is calculated using the zero-power resistance values measured at 25°C and 50°C.

3-3) Dissipation factor.  $\geq 2\text{ mW}/^\circ\text{C}$  (in air)

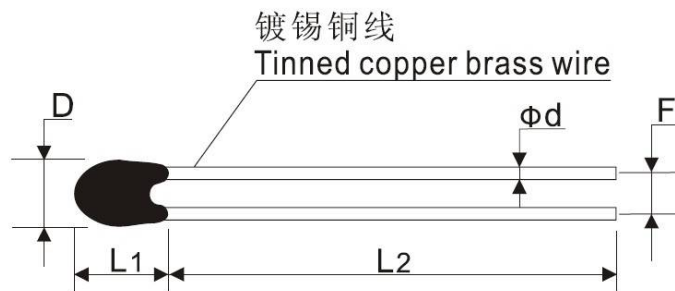
3-4) Thermal time constant.  $\leq 12\text{ s}$  (in air)

3-5) Maximum power rating.  $\leq 50\text{ mW}$  (at 25°C)

3-6) Category temperature range :  $-40 \sim 120\text{ }^\circ\text{C}$

(=Operating temperature range)

## 4) DIMENSIONS UNIT: [mm]



Dmax	Lmax	L2min	$\Phi d \pm 0.05$	$F \pm 0.05$
2.4	3.2	25	0.33	2.0

## 5) Climatic test

### 5-1) Dry Heat

After the test samples were exposed in air at 110 °C for 1,000 hours, the change ratio of the rated zero-power resistance shall be within  $\pm 1\%$  of the initial value.

### 5-2) Damp heat

After the test samples were exposed in the humidity of 95% at 40 °C for 1,000 hours, the change ratio of the rated zero-power resistance shall be within  $\pm 1\%$  of the initial value.

### 5-3) Cold

After the test samples were exposed in air at -30 °C for 1,000 hours, the change ratio of the rated zero-power resistance shall be within  $\pm 1\%$  of the initial value.

### 5-4) Humidity load

After DC 1mA current was applied to the test samples in the temperature of 40 °C and the humidity of 95% for 1,000 hours, the change ratio of the rated zero-power resistance shall be within  $\pm 1\%$  of the initial value.

### 5-5) Change of temperature

One cycle of the change of temperature shall be carried out in the order of the following conditions.

.Room ambient temperature.( Initial value)

.At -30 °C, for 30 minutes.

.Room ambient temperature, for 3 minutes.

.At + 90 °C, for 30 minutes.

.Room ambient temperature, for 3 minutes.

After 100 cycles of change of temperature, the change ratio of the rated zero-power resistance shall be within  $\pm 1\%$  of the initial value.

### 5-6) High temperature load

After DC 1mA current was applied to the test samples in the temperature of 110 °C for 1,000 hours, the change ratio of the rated zero-power resistance shall be within  $\pm 1\%$  of the initial value.

## **6) Mechanical characteristics**

### 6-1) Robustness of terminations

Ua: Tensile

After 2N loading weight for 3 seconds was applied to the wire terminations, there shall be no visible damage.

### 6-2) Free fall

After one time natural fall to a maple board from 1m high, there shall be no visible damage.

### 6-3) Resistance to soldering heat

After lead wire of the test samples were dipped on time within 8.5 mm from end of lead wire in solder bath at  $260^{\circ}\text{C} \pm 10\%$  for  $4 \pm 0.5$  seconds, the change ratio of the rated zero-power resistance shall be within  $\pm 1\%$  of the initial value.

## 7) R-T characteristics

R25=50K  $\Omega$   $\pm$  1%

B25/50=3950K  $\pm$  1%

temp.(°C)	Rmin(K $\Omega$ )	Rnom(K $\Omega$ )	Rmax(K $\Omega$ )
-40	1428.264	1492.529	1559.530
-39	1323.934	1382.445	1443.398
-38	1232.080	1285.598	1341.306
-37	1150.527	1199.672	1250.791
-36	1077.537	1122.820	1169.890
-35	1011.721	1053.568	1097.036
-34	951.958	990.723	1030.964
-33	897.339	933.323	970.653
-32	847.125	880.583	915.271
-31	800.713	831.864	864.141
-30	757.608	786.643	816.709
-29	717.404	744.487	772.516
-28	679.764	705.042	731.188
-27	644.411	668.015	692.414
-26	611.116	633.161	655.935
-25	579.687	600.278	621.537
-24	549.963	569.195	589.041
-23	521.810	539.771	558.294
-22	495.113	511.884	529.169
-21	469.776	485.430	501.557
-20	445.714	460.322	475.362
-19	422.854	436.481	450.502
-18	401.133	413.840	426.906
-17	380.494	392.337	404.509
-16	360.884	371.918	383.251
-15	342.257	352.532	363.080
-14	324.568	334.134	343.947
-13	307.777	316.678	325.803
-12	291.845	300.124	308.607

-11	276.736	284.433	292.315
-10	262.412	269.567	276.888
-9	248.841	255.488	262.287
-8	235.989	242.163	248.474
-7	223.824	229.557	235.413
-6	212.314	217.636	223.069
-5	204.429	210.369	211.908
-4	191.139	195.723	200.396
-3	184.415	188.668	191.001
-2	174.230	177.875	181.192
-1	167.556	169.814	173.938
0	161.366	164.159	167.210
1	147.636	150.782	153.980
2	140.340	143.258	146.221
3	133.455	136.161	138.907
4	126.959	129.468	132.012
5	120.830	123.156	125.514
6	115.047	117.203	119.388
7	109.589	111.589	113.613
8	104.439	106.293	108.168
9	99.578	101.296	103.034
10	94.988	96.581	98.191
11	90.654	92.131	93.623
12	86.560	87.929	89.311
13	82.691	83.960	85.241
14	79.034	80.210	81.396
15	75.575	76.665	77.764
16	72.302	73.312	74.329
17	69.203	70.139	71.081
18	66.268	67.135	68.007
19	63.486	64.289	65.095
20	60.847	61.590	62.336

21	58.342	59.029	59.719
22	55.963	56.598	57.235
23	53.701	54.288	54.876
24	51.549	52.091	52.634
25	49.500	50.000	50.500
26	47.508	48.008	48.507
27	45.610	46.108	46.607
28	43.799	44.295	44.792
29	42.069	42.562	43.057
30	40.415	40.905	41.397
31	38.832	39.319	39.808
32	37.316	37.799	38.284
33	35.862	36.341	36.821
34	34.467	34.940	35.416
35	33.126	33.594	34.065
36	31.836	32.298	32.764
37	30.594	31.050	31.511
38	29.397	29.847	30.302
39	28.242	28.686	29.134
40	27.126	27.564	28.006
41	26.048	26.479	26.915
42	25.006	25.430	25.858
43	23.996	24.413	24.835
44	23.018	23.428	23.842
45	22.070	22.472	22.879
46	21.151	21.545	21.944
47	20.258	20.645	21.037
48	19.392	19.770	20.154
49	18.550	18.921	19.297
50	17.579	17.940	18.306
51	17.070	17.425	17.785
52	16.434	16.782	17.136

53	15.825	16.167	16.514
54	15.242	15.576	15.917
55	14.682	15.010	15.344
56	14.146	14.467	14.794
57	13.632	13.947	14.267
58	13.139	13.447	13.761
59	12.665	12.967	13.275
60	12.211	12.507	12.808
61	11.776	12.065	12.360
62	11.357	11.640	11.929
63	10.955	11.233	11.516
64	10.570	10.841	11.118
65	10.199	10.465	10.736
66	9.843	10.103	10.368
67	9.501	9.755	10.015
68	9.173	9.421	9.675
69	8.857	9.100	9.349
70	8.553	8.791	9.034
71	8.261	8.494	8.732
72	7.980	8.208	8.441
73	7.710	7.933	8.161
74	7.450	7.668	7.891
75	7.200	7.413	7.632
76	6.960	7.168	7.382
77	6.728	6.932	7.141
78	6.506	6.705	6.909
79	6.291	6.486	6.686
80	6.085	6.275	6.471
81	5.886	6.072	6.263
82	5.694	5.876	6.064
83	5.510	5.688	5.871
84	5.332	5.506	5.685



85	5.161	5.331	5.506
86	4.996	5.162	5.334
87	4.837	5.000	5.167
88	4.684	4.843	5.007
89	4.536	4.691	4.852
90	4.393	4.545	4.702
91	4.256	4.405	4.558
92	4.123	4.269	4.419
93	3.996	4.138	4.285
94	3.872	4.012	4.155
95	3.754	3.890	4.030
96	3.639	3.772	3.909
97	3.528	3.658	3.792
98	3.421	3.548	3.680
99	3.318	3.442	3.571
100	3.218	3.340	3.466
101	3.122	3.241	3.364
102	3.029	3.146	3.266
103	2.940	3.054	3.171
104	2.853	2.964	3.080
105	2.769	2.878	2.991
106	2.688	2.795	2.906
107	2.610	2.715	2.823
108	2.535	2.637	2.743
109	2.462	2.562	2.665
110	2.391	2.489	2.591
111	2.323	2.419	2.518
112	2.257	2.351	2.448
113	2.194	2.285	2.380
114	2.132	2.222	2.315
115	2.072	2.160	2.251
116	2.015	2.101	2.190

117	1.959	2.043	2.130
118	1.905	1.987	2.073
119	1.853	1.933	2.017
120	1.802	1.881	1.963
121	1.753	1.831	1.911
122	1.706	1.782	1.860
123	1.660	1.734	1.811
124	1.616	1.688	1.764
125	1.573	1.644	1.718
126	1.531	1.601	1.673
127	1.491	1.559	1.630
128	1.452	1.519	1.588
129	1.414	1.479	1.548
130	1.377	1.441	1.508
131	1.342	1.405	1.470
132	1.307	1.369	1.433
133	1.274	1.334	1.397
134	1.242	1.301	1.363
135	1.210	1.268	1.329
136	1.180	1.237	1.296
137	1.150	1.206	1.264
138	1.122	1.177	1.234
139	1.094	1.148	1.204
140	1.067	1.120	1.175
141	1.041	1.093	1.147
142	1.016	1.067	1.119
143	0.991	1.041	1.093
144	0.968	1.016	1.067
145	0.945	0.992	1.042
146	0.922	0.969	1.018
147	0.900	0.946	0.994
148	0.879	0.924	0.971

149	0.859	0.903	0.949
150	0.839	0.882	0.928
151	0.819	0.861	0.906
152	0.799	0.841	0.885
153	0.780	0.821	0.864
154	0.762	0.802	0.845
155	0.744	0.784	0.825
156	0.727	0.766	0.806
157	0.710	0.748	0.788
158	0.694	0.731	0.770
159	0.678	0.715	0.753
160	0.662	0.698	0.736
161	0.647	0.683	0.720
162	0.633	0.667	0.704
163	0.618	0.652	0.688
164	0.604	0.638	0.673
165	0.591	0.624	0.658
166	0.578	0.610	0.644
167	0.565	0.597	0.630
168	0.552	0.583	0.616
169	0.540	0.571	0.603
170	0.528	0.558	0.590
171	0.517	0.546	0.577
172	0.506	0.535	0.565
173	0.495	0.523	0.553
174	0.484	0.512	0.541
175	0.474	0.501	0.530
176	0.464	0.490	0.519
177	0.454	0.480	0.508
178	0.444	0.470	0.497
179	0.435	0.460	0.487
180	0.425	0.451	0.477

181	0.417	0.441	0.467
182	0.408	0.432	0.458
183	0.399	0.423	0.448
184	0.391	0.415	0.439
185	0.383	0.406	0.430
186	0.375	0.398	0.422
187	0.368	0.390	0.413
188	0.360	0.382	0.405
189	0.353	0.374	0.397
190	0.346	0.367	0.389
191	0.339	0.359	0.381
192	0.332	0.352	0.374
193	0.325	0.345	0.367
194	0.319	0.339	0.359
195	0.313	0.332	0.352
196	0.306	0.325	0.346
197	0.300	0.319	0.339
198	0.294	0.313	0.332
199	0.289	0.307	0.326
200	0.283	0.301	0.320
201	0.278	0.295	0.314
202	0.272	0.290	0.308
203	0.267	0.284	0.302
204	0.262	0.279	0.296
205	0.257	0.274	0.291
206	0.252	0.268	0.286
207	0.247	0.263	0.280
208	0.243	0.259	0.275
209	0.238	0.254	0.270
210	0.234	0.249	0.265
211	0.229	0.244	0.260
212	0.225	0.240	0.256

213	0.221	0.236	0.251
214	0.217	0.231	0.247
215	0.213	0.227	0.242
216	0.209	0.223	0.238
217	0.205	0.219	0.234
218	0.202	0.215	0.229
219	0.198	0.211	0.225
220	0.194	0.208	0.221
221	0.191	0.204	0.217
222	0.188	0.200	0.214
223	0.184	0.197	0.210
224	0.181	0.193	0.206
225	0.178	0.190	0.203
226	0.175	0.187	0.199
227	0.172	0.183	0.196
228	0.169	0.180	0.193
229	0.166	0.177	0.189
230	0.163	0.174	0.186
231	0.160	0.171	0.183
232	0.157	0.168	0.180
233	0.155	0.165	0.177
234	0.152	0.163	0.174
235	0.149	0.160	0.171
236	0.147	0.157	0.168
237	0.144	0.155	0.165
238	0.142	0.152	0.163
239	0.140	0.150	0.160
240	0.137	0.147	0.157
241	0.135	0.145	0.155
242	0.133	0.142	0.152
243	0.131	0.140	0.150
244	0.129	0.138	0.148

<b>245</b>	<b>0.126</b>	<b>0.136</b>	<b>0.145</b>
<b>246</b>	<b>0.124</b>	<b>0.133</b>	<b>0.143</b>
<b>247</b>	<b>0.122</b>	<b>0.131</b>	<b>0.141</b>
<b>248</b>	<b>0.120</b>	<b>0.129</b>	<b>0.138</b>
<b>249</b>	<b>0.118</b>	<b>0.127</b>	<b>0.136</b>
<b>250</b>	<b>0.117</b>	<b>0.125</b>	<b>0.134</b>