JEC
ISO-9001

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-2.2KR-B3950-1%**

供应商料号
Part Number _____

日　期
Date **2024-08-13**

客户承认	供应商承认
Customer Acknowledgement	Supplier Acknowledgement
	东莞市智旭电子有限公司 品保部

台湾:智旭电子有限公司
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THERMISTOR SPECIFICATIONS

1) SCOPE

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

2) PART NO. : MF52A-2.2KR-B3950-1%

3) RATING

3-1) Rated zero-power resistance R_{25} : 2.2kΩ ±1 % (at 25℃)

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

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

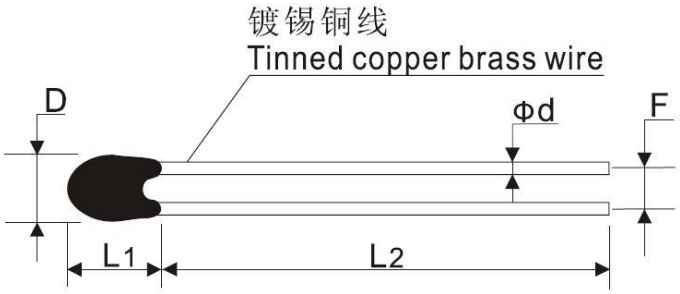
3-3) Dissipation factor. : ≥ 2 mW/℃(in air)

3-4) Thermal time constant. : ≤ 12 s (in air)

3-5) Maximum power rating. : ≤ 50 mW (at 25℃)

3-6) Category temperature range (=Operating temperature range) : -40 ~ 120 ℃

4) DIMENSIONS UNIT: [mm]



Dmax	Lmax	L2min	Φd±0.05	F±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 ℃ for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ± 1% of the initial value.

5-2) Damp heat

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

5-3) Cold

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

5-4) Humidity load

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

5-5) Change of temperature

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

.Room ambient temperature.(Initial value)
.At -30℃, for 30 minutes.
.Room ambient temperature, for 3 minutes.
.At + 90℃, 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 ±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℃ for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ±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℃ ±10% for 4 ±0.5 seconds, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

7) R-T characteristics

Resistance **2.2k Ohms at 25deg. C**

Resistance Tolerance **+ / -1%**

B Value **3950K at 25/50deg. C**

B Value Tolerance **+ / - 1%**

Temp. (deg. C)	Rmax (k Ohms)	Rnor (k Ohms)	Rmin (k Ohms)
-40	85.3526	81.5094	77.8314
-39	79.5622	76.0326	72.6522
-38	74.2056	70.9625	67.8544
-37	69.2474	66.2664	63.4073
-36	64.6553	61.9140	59.2830
-35	60.3999	57.8781	55.4560
-34	56.4543	54.1334	51.9027
-33	52.7939	50.6571	48.6019
-32	49.3962	47.4281	45.5339
-31	46.2406	44.4273	42.6809
-30	43.3084	41.6371	40.0263
-29	40.5823	39.0413	37.5550
-28	38.0464	36.6250	35.2533
-27	35.6862	34.3749	33.1084
-26	33.4885	32.2782	31.1086
-25	31.4411	30.3237	29.2431
-24	29.5326	28.5007	27.5022
-23	27.7528	26.7997	25.8766
-22	26.0923	25.2115	24.3580
-21	24.5422	23.7281	22.9388
-20	23.0945	22.3419	21.6117
-19	21.7419	21.0459	20.3702
-18	20.4774	19.8337	19.2083
-17	19.2948	18.6993	18.1204
-16	18.1883	17.6373	17.1012
-15	17.1526	16.6426	16.1461
-14	16.1826	15.7104	15.2506
-13	15.2737	14.8366	14.4106
-12	14.4219	14.0171	13.6223
-11	13.6230	13.2482	12.8823
-10	12.8736	12.5264	12.1873
-9	12.1703	11.8486	11.5342
-8	11.5099	11.2118	10.9204
-7	10.8895	10.6134	10.3432
-6	10.3066	10.0507	9.8001
-5	9.7586	9.5214	9.2891

-4	9.2432	9.0234	8.8080
-3	8.7582	8.5546	8.3548
-2	8.3018	8.1131	7.9278
-1	7.8721	7.6971	7.5253
0	7.4673	7.3051	7.1458
1	7.0858	6.9356	6.7878
2	6.7262	6.5870	6.4500
3	6.3871	6.2581	6.1311
4	6.0673	5.9477	5.8300
5	5.7654	5.6546	5.5455
6	5.4804	5.3778	5.2767
7	5.2112	5.1162	5.0225
8	4.9569	4.8690	4.7822
9	4.7166	4.6352	4.5548
10	4.4894	4.4141	4.3396
11	4.2745	4.2049	4.1360
12	4.0713	4.0068	3.9431
13	3.8789	3.8193	3.7603
14	3.6967	3.6417	3.5872
15	3.5243	3.4735	3.4231
16	3.3609	3.3140	3.2675
17	3.2061	3.1628	3.1198
18	3.0593	3.0194	2.9798
19	2.9201	2.8834	2.8468
20	2.7881	2.7543	2.7206
21	2.6628	2.6317	2.6008
22	2.5439	2.5154	2.4869
23	2.4311	2.4048	2.3787
24	2.3238	2.2998	2.2758
25	2.2220	2.2000	2.1780
26	2.1271	2.1051	2.0831
27	2.0368	2.0149	1.9930
28	1.9509	1.9290	1.9072
29	1.8690	1.8473	1.8256
30	1.7911	1.7696	1.7480
31	1.7169	1.6955	1.6742
32	1.6462	1.6250	1.6039
33	1.5789	1.5578	1.5370
34	1.5146	1.4938	1.4732
35	1.4534	1.4328	1.4124
36	1.3950	1.3747	1.3545
37	1.3392	1.3192	1.2994
38	1.2860	1.2663	1.2467

39	1.2353	1.2158	1.1965
40	1.1868	1.1676	1.1486
41	1.1405	1.1216	1.1029
42	1.0963	1.0777	1.0593
43	1.0540	1.0357	1.0177
44	1.0136	0.9956	0.9779
45	0.9750	0.9573	0.9399
46	0.9380	0.9207	0.9036
47	0.9027	0.8857	0.8689
48	0.8689	0.8522	0.8357
49	0.8366	0.8202	0.8040
50	0.8056	0.7895	0.7736
51	0.7760	0.7602	0.7446
52	0.7476	0.7321	0.7168
53	0.7204	0.7052	0.6902
54	0.6943	0.6794	0.6648
55	0.6694	0.6548	0.6404
56	0.6455	0.6311	0.6171
57	0.6225	0.6085	0.5947
58	0.6005	0.5868	0.5733
59	0.5794	0.5659	0.5527
60	0.5592	0.5460	0.5330
61	0.5397	0.5268	0.5141
62	0.5211	0.5084	0.4960
63	0.5032	0.4908	0.4787
64	0.4860	0.4739	0.4620
65	0.4695	0.4576	0.4460
66	0.4537	0.4420	0.4306
67	0.4384	0.4270	0.4159
68	0.4238	0.4126	0.4017
69	0.4097	0.3988	0.3881
70	0.3962	0.3855	0.3750
71	0.3832	0.3727	0.3625
72	0.3707	0.3604	0.3504
73	0.3586	0.3486	0.3388
74	0.3470	0.3372	0.3276
75	0.3359	0.3263	0.3169
76	0.3252	0.3158	0.3066
77	0.3148	0.3056	0.2967
78	0.3049	0.2959	0.2871
79	0.2953	0.2865	0.2779
80	0.2861	0.2774	0.2690
81	0.2772	0.2687	0.2605

82	0.2686	0.2604	0.2523
83	0.2604	0.2523	0.2444
84	0.2524	0.2445	0.2368
85	0.2447	0.2370	0.2294
86	0.2373	0.2297	0.2224
87	0.2302	0.2228	0.2155
88	0.2233	0.2160	0.2090
89	0.2167	0.2096	0.2026
90	0.2103	0.2033	0.1965
91	0.2041	0.1972	0.1906
92	0.1981	0.1914	0.1849
93	0.1923	0.1858	0.1794
94	0.1868	0.1804	0.1741
95	0.1814	0.1751	0.1690
96	0.1762	0.1700	0.1641
97	0.1712	0.1652	0.1593
98	0.1663	0.1604	0.1547
99	0.1616	0.1559	0.1503
100	0.1571	0.1515	0.1460
101	0.1527	0.1472	0.1418
102	0.1485	0.1431	0.1378
103	0.1444	0.1391	0.1339
104	0.1404	0.1352	0.1302
105	0.1366	0.1315	0.1266
106	0.1329	0.1279	0.1231
107	0.1293	0.1244	0.1197
108	0.1258	0.1210	0.1164
109	0.1225	0.1178	0.1132
110	0.1192	0.1146	0.1101
111	0.1161	0.1115	0.1072
112	0.1130	0.1086	0.1043
113	0.1101	0.1057	0.1015
114	0.1072	0.1029	0.0988
115	0.1044	0.1002	0.0962
116	0.1017	0.0976	0.0937
117	0.0991	0.0951	0.0912
118	0.0966	0.0927	0.0889
119	0.0941	0.0903	0.0866
120	0.0918	0.0880	0.0843