



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-20KR-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) ELECTRONICS LTD 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-20KR-B3950-1%

3) RATING

3-1) Rated zero-power resistance $R_{25} : 20k\ \Omega \pm 1\%$ (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)

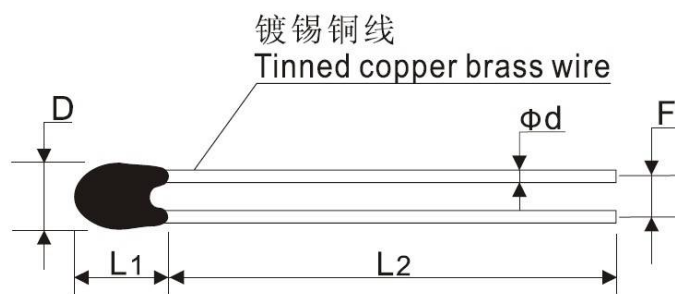
3-4) Thermal time constant. $\leq 12\text{ s}$ (in air)

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 ± 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

Resistance **20k Ohms at 25deg. C**

Resistance Tolerance **+ / - 1%**

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

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

Temp. (deg. C)	Rmax (k Ohms)	Rnor (k Ohms)	Rmin (k Ohms)
-40	688.1987	657.9919	629.0482
-39	643.7599	615.9106	589.2072
-38	602.4863	576.8007	552.1550
-37	564.1317	540.4332	517.6785
-36	528.4718	506.5988	485.5824
-35	495.2999	475.1047	455.6873
-34	464.4269	445.7744	427.8283
-33	435.6793	418.4460	401.8542
-32	408.8972	392.9701	377.6256
-31	383.9342	369.2097	355.0143
-30	360.6556	347.0387	333.9024
-29	338.9373	326.3410	314.1813
-28	318.6652	307.0097	295.7509
-27	299.7341	288.9462	278.5186
-26	282.0473	272.0597	262.3996
-25	265.5154	256.2664	247.3149
-24	250.0560	241.4889	233.1921
-23	235.5931	227.6558	219.9639
-22	222.0566	214.7011	207.5685
-21	209.3816	202.5638	195.9484
-20	197.5082	191.1875	185.0505
-19	186.3809	180.5199	174.8257
-18	175.9485	170.5127	165.2284
-17	166.1635	161.1213	156.2165
-16	156.9819	152.3040	147.7508
-15	148.3632	144.0226	139.7951
-14	140.2694	136.2413	132.3156
-13	132.6656	128.9270	125.2812
-12	125.5193	122.0490	118.6627
-11	118.8004	115.5788	112.4333
-10	112.4809	109.4899	106.5678
-9	106.5348	103.7577	101.0429
-8	100.9380	98.3593	95.8369
-7	95.6678	93.2733	90.9296
-6	90.7035	88.4799	86.3021

-5	86.0256	83.9607	81.9371
-4	81.6159	79.6984	77.8181
-3	77.4577	75.6770	73.9298
-2	73.5351	71.8816	70.2582
-1	69.8336	68.2982	66.7899
0	66.3394	64.9138	63.5125
1	63.0399	61.7164	60.4146
2	59.9231	58.6944	57.4853
3	56.9779	55.8375	54.7144
4	54.1939	53.1356	52.0927
5	51.5615	50.5795	49.6113
6	49.0715	48.1606	47.2618
7	46.7156	45.8707	45.0366
8	44.4858	43.7024	42.9285
9	42.3747	41.6485	40.9307
10	40.3753	39.7024	39.0367
11	38.4811	37.8578	37.2408
12	36.6861	36.1089	35.5372
13	34.9845	34.4503	33.9208
14	33.3710	32.8768	32.3867
15	31.8406	31.3836	30.9301
16	30.3886	29.9663	29.5469
17	29.0105	28.6205	28.2329
18	27.7022	27.3423	26.9844
19	26.4599	26.1280	25.7976
20	25.2798	24.9740	24.6694
21	24.1585	23.8770	23.5964
22	23.0929	22.8339	22.5757
23	22.0798	21.8419	21.6044
24	21.1164	20.8981	20.6800
25	20.2000	20.0000	19.8000
26	19.3450	19.1451	18.9454
27	18.5306	18.3312	18.1321
28	17.7547	17.5560	17.3578
29	17.0152	16.8176	16.6206
30	16.3103	16.1139	15.9184
31	15.6381	15.4433	15.2494
32	14.9971	14.8040	14.6119
33	14.3856	14.1944	14.0043
34	13.8020	13.6129	13.4250
35	13.2451	13.0582	12.8726
36	12.7134	12.5288	12.3456
37	12.2057	12.0235	11.8428

38	11.7208	11.5411	11.3630
39	11.2575	11.0804	10.9050
40	10.8148	10.6404	10.4677
41	10.3917	10.2200	10.0501
42	9.9872	9.8183	9.6512
43	9.6005	9.4343	9.2700
44	9.2306	9.0672	8.9058
45	8.8767	8.7161	8.5576
46	8.5381	8.3803	8.2247
47	8.2140	8.0591	7.9063
48	7.9038	7.7517	7.6018
49	7.6068	7.4575	7.3105
50	7.3223	7.1759	7.0317
51	7.0499	6.9062	6.7649
52	6.7888	6.6480	6.5094
53	6.5387	6.4006	6.2648
54	6.2989	6.1636	6.0305
55	6.0691	5.9364	5.8061
56	5.8487	5.7187	5.5911
57	5.6373	5.5100	5.3851
58	5.4346	5.3099	5.1875
59	5.2401	5.1180	4.9982
60	5.0534	4.9338	4.8166
61	4.8743	4.7572	4.6425
62	4.7023	4.5877	4.4754
63	4.5371	4.4250	4.3151
64	4.3786	4.2688	4.1613
65	4.2262	4.1188	4.0137
66	4.0799	3.9748	3.8719
67	3.9393	3.8364	3.7359
68	3.8042	3.7035	3.6052
69	3.6743	3.5758	3.4796
70	3.5494	3.4530	3.3590
71	3.4293	3.3351	3.2431
72	3.3138	3.2216	3.1317
73	3.2027	3.1126	3.0246
74	3.0958	3.0077	2.9217
75	2.9930	2.9068	2.8227
76	2.8940	2.8097	2.7275
77	2.7988	2.7163	2.6360
78	2.7070	2.6264	2.5479
79	2.6187	2.5398	2.4631
80	2.5337	2.4565	2.3815

81	2.4518	2.3763	2.3030
82	2.3728	2.2991	2.2274
83	2.2968	2.2246	2.1546
84	2.2235	2.1530	2.0844
85	2.1529	2.0839	2.0169
86	2.0848	2.0173	1.9519
87	2.0191	1.9532	1.8892
88	1.9558	1.8913	1.8288
89	1.8948	1.8317	1.7706
90	1.8359	1.7742	1.7144
91	1.7791	1.7188	1.6603
92	1.7243	1.6653	1.6082
93	1.6714	1.6137	1.5578
94	1.6203	1.5639	1.5093
95	1.5710	1.5159	1.4625
96	1.5234	1.4695	1.4173
97	1.4775	1.4247	1.3737
98	1.4331	1.3815	1.3316
99	1.3903	1.3398	1.2910
100	1.3489	1.2995	1.2518
101	1.3089	1.2606	1.2139
102	1.2702	1.2230	1.1774
103	1.2329	1.1867	1.1421
104	1.1967	1.1516	1.1080
105	1.1618	1.1176	1.0750
106	1.1281	1.0849	1.0432
107	1.0955	1.0532	1.0124
108	1.0639	1.0225	0.9826
109	1.0334	0.9929	0.9539
110	1.0039	0.9643	0.9261
111	0.9753	0.9365	0.8992
112	0.9477	0.9097	0.8732
113	0.9209	0.8838	0.8481
114	0.8950	0.8587	0.8238
115	0.8700	0.8344	0.8003
116	0.8457	0.8109	0.7775
117	0.8223	0.7882	0.7555
118	0.7995	0.7662	0.7342
119	0.7775	0.7449	0.7136
120	0.7562	0.7242	0.6936
121	0.7355	0.7042	0.6743
122	0.7155	0.6849	0.6555
123	0.6961	0.6661	0.6374
124	0.6773	0.6480	0.6198
125	0.6590	0.6304	0.6028