NANJING SHIHENG ELECTRONICS CO., LTD.

APPROVAL SHEET

CUSTOMER _____

PARTNAME MF52 Series Temp Measurement NTC Thermistor

PART NUMBER MF52D 103F3950

DATE 2020-02-18

CONFIRM

CLIENT	MANUFACTOR
Quality Dep.: _____	Design: Hannah Zhong
Production Dep.: _____	Check by sales: _____
Engineering Dep.: _____	Check by R&D: Pong. CH.
	Check by QA: Lishao yuan

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MF52 Series Temp Measurement NTC Thermistor

版本 2.0

Part No: MF52D 103F3950

NANJING SHIHENG ELECTRONICS CO., LTD.

This detailed specification provide MF52D series NTC Thermistor's structure size、 product performance、test conditions、use requirement and other parameters, please confirm. If you have any doubt with this specification, please contact us (025-52121868). If no doubt, please confirm back. If you don't confirm back, we think you accept it. Your company if change product application and usage method, please contact us.	Customer：		
	customer confirm	Confirm:	Date:
		Approve:	Date:

1、Electrical Characteristics

	Item	Symbol	Test conditions	Unit	Specification
1.1	Zero Power Resistance at 25℃	R_{25}	Ta=25±0.01℃, Test Power≤0.1mW	KΩ	10KΩ±1%
1.2	B-value	$B_{25/85}$	$B=[(T_a\times T_b)/(T_b-T_a)]\times \ln(R_a/R_b)$ T_a=25℃±0.01℃ T_b=50℃±0.01℃	K	3950±1%
1.3	Thermal dissipation Coefficient	δ	In still air	mW/℃	≥2
1.4	Thermal time constant	τ	In still air	sec	≤7
1.5	Insulation resistance	/	100V/DC 1min	MΩ	≥100
1.6	NTC Operating temperature	/	/	℃	-40℃ ～ 105℃
1.7	Sensor Operating temperature		/	℃	-20℃ ～ 105℃
1.8	Maximum rated power	Pmax	/	mW	50
1.9	R&T-table	/	/	/	See attached table
1.10	Resistance tolerance	/	/	/	See attached curve

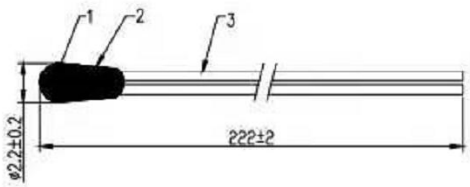
2、Reliability

	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℃ for 2-3sec	the coverage area should be more than 95%.
2.3	Welding heat resistant	Tin pan temperature : 260±5℃, immersion depth is apart from the body resistance 6mm , time:5±1sec	R25 ΔR/R≤±2%,
2.4	Steady humidity and heat	Temp：40℃±2℃, humidity：93±2%, Time ： 500hrs	R25 ΔR/R≤±2%,
2.5	Rapid changes in temperature	-20℃30min→25℃5min→125℃30min→25℃5min , 5cycles	R25 ΔR/R≤±2%
2.6	High temperature storage	Temp : 105℃±5℃, Time :1000hrs	R25 ΔR/R≤±2%
2.7	Low temperature storage	Temp : -20℃, Time :1000hrs	R25 ΔR/R≤±2%

4. Certificate

4.1 Quality management System ISO9001：2015
IATF16949:2016
4.2 Environment Management System ISO14001：2015
4.3 NTC core element pass UL
4.4 Environment Test Report RoHS
4.5 CQC Safe Certification
4.6 The Hi&Tech Product of Jiangsu Province
4.7 National Torch project products

5、Dimensions(mm)



No.	Name	Material specifications	Quantity	note
1	element	NTC Thermistor（chip）	1	
2	Epoxy resin	Coating types of resin	1	Black
3	Lead wire	UL1685 30#TC	2	Black

3、Matters need attention

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 soldering iron, the distance between welding place and coating head at least 2mm, welding temp lower than 360℃, and time＜3 secs,
3.4 Storage temp: -10℃～40℃； storage humidity: ≤75% RH;
3.5 Avoid putting in air corrosion or sunlight environment;
3.6 Remake sealed storage after package opening. The storage life is 1 year. Exceed storage period, can re-inspect per as the items stipulated in the standard. If it meets the requirements, it can still be used.
3.7 In the process using heat-shrink tube, blown by hair dryer is not allowed, we suggest put the product into the constant temperature oven and heat shrinkable at 110 ℃/10-12min.

6、 Product model specification

MF52 D - 103 F 3950
① ② ③ ④ ⑤

① MF52： Precision NTC Thermistor
② D: The lead wire is PVC wire
③ 103： Zero Power Resistance at 25℃is 10KΩ
④ F： Resistance precision code F-±1% G-±2% H-±3% J-±5%
⑤ 3950： $B_{25/85}$ =3950K

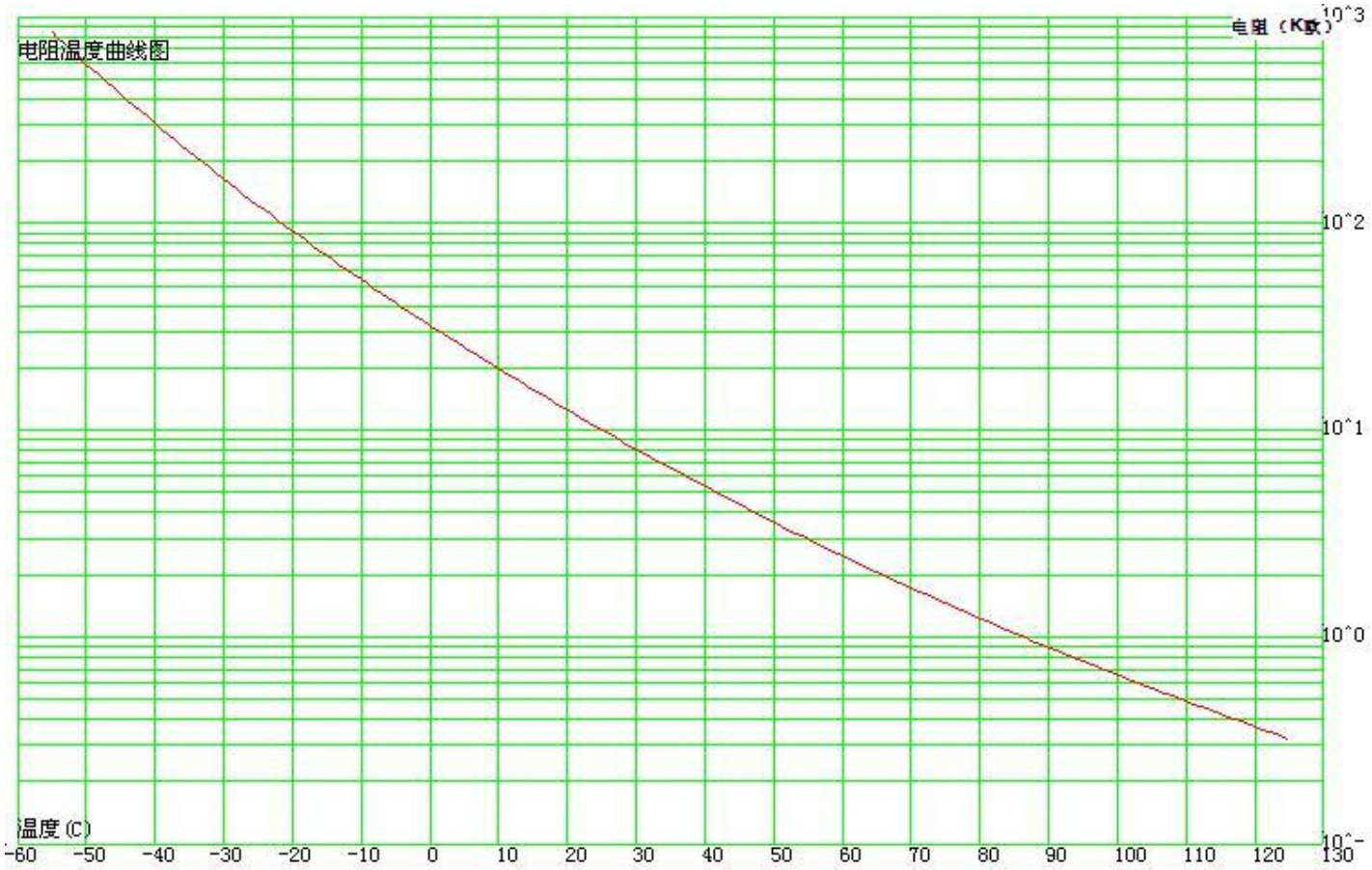
R&T Table

NANJING SHIHENG							
R25=10KΩ TOLERANCE:±1% B25/50=3950K TOLERANCE:±1%(P334-4)							
TEMP(℃)	RESISTANCE(KΩ)			RESISST-TOL(%)		TEMP-TOL(℃)	
	MIN	CENTER	MAX	△R	-△R	△T	-△T
-40	291.690	304.880	318.633	4.511	-4.326	0.670	-0.643
-39	273.794	285.991	298.701	4.444	-4.264	0.666	-0.639
-38	257.097	268.379	280.129	4.377	-4.203	0.661	-0.634
-37	241.514	251.953	262.818	4.312	-4.143	0.656	-0.630
-36	226.966	236.628	246.677	4.246	-4.083	0.651	-0.626
-35	213.381	222.326	231.623	4.181	-4.023	0.646	-0.621
-34	200.690	208.974	217.578	4.117	-3.963	0.641	-0.617
-33	188.832	196.505	204.470	4.053	-3.904	0.635	-0.612
-32	177.748	184.858	192.233	3.989	-3.846	0.630	-0.607
-31	167.384	173.973	180.804	3.926	-3.787	0.625	-0.603
-30	157.689	163.799	170.128	3.863	-3.729	0.619	-0.598
-29	148.618	154.284	160.149	3.801	-3.672	0.614	-0.593
-28	140.128	145.383	150.820	3.740	-3.614	0.608	-0.588
-27	132.177	137.053	142.095	3.678	-3.557	0.603	-0.583
-26	124.728	129.254	133.931	3.618	-3.501	0.597	-0.578
-25	117.748	121.950	126.288	3.557	-3.445	0.592	-0.573
-24	111.204	115.105	119.132	3.498	-3.389	0.586	-0.568
-23	105.065	108.689	112.427	3.438	-3.334	0.580	-0.562
-22	99.306	102.672	106.142	3.379	-3.279	0.574	-0.557
-21	93.899	97.027	100.250	3.321	-3.224	0.568	-0.551
-20	88.820	91.728	94.722	3.263	-3.169	0.562	-0.546
-19	84.049	86.752	89.533	3.205	-3.115	0.556	-0.540
-18	79.564	82.078	84.662	3.148	-3.062	0.550	-0.535
-17	75.346	77.684	80.086	3.091	-3.008	0.544	-0.529
-16	71.378	73.552	75.785	3.035	-2.955	0.537	-0.523
-15	67.643	69.666	71.741	2.979	-2.903	0.531	-0.517
-14	64.126	66.008	67.938	2.924	-2.850	0.525	-0.512
-13	60.812	62.563	64.358	2.869	-2.798	0.518	-0.506
-12	57.690	59.319	60.989	2.814	-2.746	0.512	-0.500
-11	54.745	56.262	57.815	2.759	-2.695	0.505	-0.493
-10	51.968	53.380	54.824	2.705	-2.644	0.499	-0.487
-9	49.347	50.661	52.005	2.652	-2.593	0.492	-0.481
-8	46.873	48.096	49.346	2.598	-2.542	0.485	-0.475
-7	44.536	45.675	46.838	2.545	-2.492	0.478	-0.468
-6	42.329	43.388	44.470	2.493	-2.442	0.471	-0.462
-5	40.242	41.229	42.235	2.440	-2.392	0.464	-0.455
-4	38.270	39.188	40.124	2.388	-2.342	0.457	-0.449
-3	36.404	37.258	38.129	2.337	-2.293	0.450	-0.442
-2	34.638	35.434	36.244	2.285	-2.244	0.443	-0.435

−1	32.967	33.708	34.461	2.234	−2.195	0.436	−0.428
0	31.352	32.040	32.739	2.182	−2.146	0.429	−0.422
1	29.887	30.528	31.179	2.133	−2.098	0.421	−0.414
2	28.467	29.063	29.669	2.083	−2.050	0.414	−0.407
3	27.122	27.676	28.239	2.033	−2.002	0.407	−0.400
4	25.847	26.362	26.885	1.983	−1.955	0.399	−0.393
5	24.637	25.116	25.602	1.934	−1.907	0.391	−0.386
6	23.490	23.935	24.386	1.885	−1.860	0.384	−0.379
7	22.401	22.815	23.234	1.836	−1.813	0.376	−0.371
8	21.368	21.753	22.142	1.787	−1.766	0.368	−0.364
9	20.388	20.744	21.105	1.739	−1.719	0.360	−0.356
10	19.456	19.788	20.122	1.691	−1.673	0.353	−0.349
11	18.572	18.879	19.189	1.643	−1.627	0.345	−0.341
12	17.732	18.016	18.304	1.596	−1.581	0.337	−0.333
13	16.933	17.197	17.464	1.549	−1.535	0.329	−0.326
14	16.174	16.419	16.665	1.502	−1.489	0.320	−0.318
15	15.453	15.679	15.907	1.455	−1.444	0.312	−0.310
16	14.766	14.976	15.187	1.408	−1.399	0.304	−0.302
17	14.114	14.308	14.503	1.362	−1.354	0.296	−0.294
18	13.493	13.672	13.852	1.316	−1.309	0.287	−0.286
19	12.902	13.068	13.234	1.270	−1.264	0.279	−0.277
20	12.340	12.493	12.646	1.225	−1.220	0.270	−0.269
21	11.805	11.945	12.086	1.179	−1.175	0.261	−0.260
22	11.295	11.425	11.554	1.134	−1.131	0.252	−0.252
23	10.810	10.929	11.048	1.089	−1.087	0.243	−0.243
24	10.348	10.457	10.567	1.045	−1.044	0.232	−0.232
25	9.900	10.000	10.100	1.000	−1.000	0.224	−0.224
26	9.480	9.580	9.680	1.043	−1.042	0.244	−0.243
27	9.073	9.172	9.272	1.087	−1.085	0.253	−0.253
28	8.685	8.784	8.883	1.131	−1.128	0.264	−0.263
29	8.315	8.413	8.512	1.174	−1.170	0.275	−0.274
30	7.963	8.060	8.159	1.217	−1.213	0.287	−0.286
31	7.627	7.724	7.821	1.261	−1.255	0.298	−0.297
32	7.307	7.403	7.500	1.304	−1.297	0.310	−0.309
33	7.002	7.097	7.193	1.346	−1.338	0.322	−0.320
34	6.711	6.805	6.900	1.389	−1.380	0.334	−0.332
35	6.434	6.527	6.620	1.431	−1.421	0.346	−0.344
36	6.170	6.261	6.353	1.473	−1.462	0.359	−0.356
37	5.917	6.008	6.099	1.515	−1.503	0.371	−0.368
38	5.676	5.765	5.855	1.557	−1.543	0.383	−0.380
39	5.447	5.534	5.623	1.599	−1.583	0.396	−0.392
40	5.227	5.313	5.401	1.640	−1.623	0.408	−0.404
41	5.018	5.102	5.188	1.681	−1.663	0.421	−0.416
42	4.817	4.901	4.985	1.722	−1.703	0.434	−0.429
43	4.626	4.708	4.791	1.763	−1.742	0.446	−0.441

44	4.444	4.524	4.606	1.804	−1.781	0.459	−0.454
45	4.269	4.348	4.429	1.844	−1.820	0.472	−0.466
46	4.103	4.180	4.259	1.884	−1.859	0.485	−0.479
47	3.943	4.019	4.097	1.924	−1.898	0.498	−0.492
48	3.791	3.866	3.942	1.964	−1.936	0.512	−0.504
49	3.645	3.718	3.793	2.004	−1.974	0.525	−0.517
50	3.506	3.578	3.651	2.043	−2.012	0.538	−0.530
51	3.372	3.443	3.514	2.082	−2.049	0.552	−0.543
52	3.244	3.314	3.384	2.121	−2.087	0.565	−0.556
53	3.122	3.190	3.259	2.160	−2.124	0.579	−0.569
54	3.005	3.072	3.139	2.199	−2.161	0.592	−0.582
55	2.893	2.958	3.025	2.237	−2.198	0.606	−0.596
56	2.786	2.850	2.915	2.275	−2.234	0.620	−0.609
57	2.683	2.746	2.809	2.313	−2.271	0.634	−0.622
58	2.585	2.646	2.708	2.351	−2.307	0.648	−0.636
59	2.491	2.550	2.611	2.389	−2.343	0.662	−0.649
60	2.400	2.459	2.518	2.426	−2.379	0.676	−0.663
61	2.314	2.371	2.429	2.464	−2.414	0.690	−0.676
62	2.230	2.286	2.344	2.501	−2.449	0.705	−0.690
63	2.151	2.206	2.262	2.538	−2.485	0.719	−0.704
64	2.074	2.128	2.183	2.574	−2.519	0.733	−0.718
65	2.001	2.053	2.107	2.611	−2.554	0.748	−0.732
66	1.931	1.982	2.034	2.647	−2.589	0.763	−0.746
67	1.863	1.913	1.965	2.683	−2.623	0.777	−0.760
68	1.798	1.847	1.897	2.720	−2.657	0.792	−0.774
69	1.736	1.784	1.833	2.755	−2.691	0.807	−0.788
70	1.676	1.723	1.771	2.791	−2.725	0.822	−0.802
71	1.618	1.664	1.711	2.827	−2.759	0.837	−0.817
72	1.563	1.608	1.654	2.862	−2.792	0.852	−0.831
73	1.510	1.554	1.599	2.897	−2.825	0.867	−0.845
74	1.459	1.502	1.546	2.932	−2.858	0.882	−0.860
75	1.410	1.452	1.495	2.967	−2.891	0.898	−0.875
76	1.363	1.404	1.446	3.002	−2.924	0.913	−0.889
77	1.318	1.358	1.399	3.036	−2.956	0.928	−0.904
78	1.274	1.313	1.354	3.070	−2.989	0.944	−0.919
79	1.232	1.270	1.310	3.105	−3.021	0.960	−0.934
80	1.192	1.229	1.268	3.139	−3.053	0.975	−0.949
81	1.153	1.189	1.227	3.173	−3.085	0.991	−0.964
82	1.115	1.151	1.188	3.206	−3.116	1.007	−0.979
83	1.079	1.114	1.150	3.240	−3.148	1.023	−0.994
84	1.044	1.079	1.114	3.273	−3.179	1.039	−1.009
85	1.011	1.045	1.079	3.307	−3.210	1.055	−1.024
86	0.979	1.012	1.045	3.340	−3.241	1.071	−1.039
87	0.948	0.980	1.013	3.373	−3.272	1.087	−1.055
88	0.918	0.949	0.981	3.406	−3.303	1.104	−1.070

89	0.889	0.920	0.951	3.438	-3.334	1.120	-1.086
90	0.861	0.891	0.922	3.471	-3.364	1.136	-1.101
91	0.834	0.864	0.894	3.503	-3.394	1.153	-1.117
92	0.808	0.837	0.867	3.535	-3.424	1.170	-1.133
93	0.783	0.811	0.840	3.568	-3.454	1.186	-1.149
94	0.759	0.787	0.815	3.600	-3.484	1.203	-1.164
95	0.736	0.763	0.791	3.631	-3.514	1.220	-1.180
96	0.714	0.740	0.767	3.663	-3.543	1.237	-1.196
97	0.692	0.718	0.744	3.695	-3.573	1.254	-1.212
98	0.671	0.696	0.722	3.726	-3.602	1.271	-1.228
99	0.651	0.676	0.701	3.758	-3.631	1.288	-1.245
100	0.631	0.656	0.680	3.789	-3.660	1.305	-1.261
101	0.613	0.636	0.660	3.820	-3.689	1.322	-1.277
102	0.595	0.617	0.641	3.851	-3.718	1.340	-1.293
103	0.577	0.599	0.623	3.882	-3.746	1.357	-1.310
104	0.560	0.582	0.605	3.912	-3.774	1.375	-1.326
105	0.544	0.565	0.587	3.943	-3.803	1.392	-1.343



Resistance Tolerance Table