

NANJING SHIHENG ELECTRONICS CO., LTD.

APPROVAL SHEET

CUSTOMER

PART NAME

CMF Chip NTC Thermistor

PART NUMBER

CMF B 103F3970

DATE

2016-05-03

CONFIRM

CLIENT

Quality

Dep. : _____

Produce

Dep. : _____

Engineering

Dep. : _____

MANUFACTOR

Design : JUXIAOLI

Check : ZUYU

Approval : _____

NANJING SHIHENG ELECTRONICS CO., LTD.

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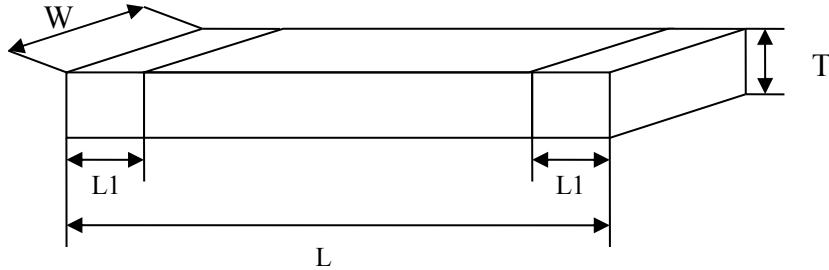
[Http://www.shiheng.com.cn](http://www.shiheng.com.cn)

E-MAIL: sales@shiheng.com.cn

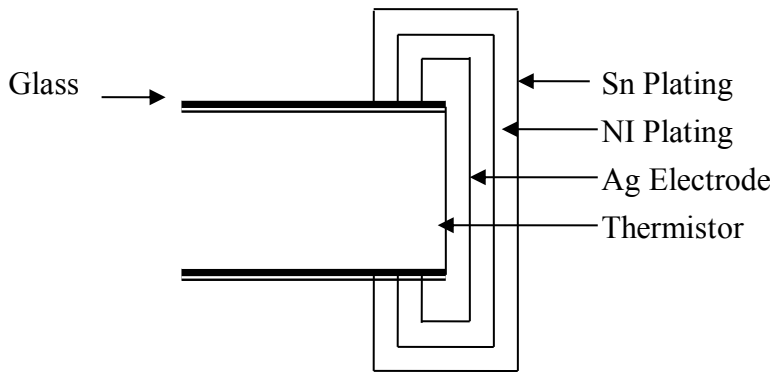
Specification of SMD Chips Thermistor

PART NO. : CMF B 103F3970

DIMENSION



	L(mm)	W(mm)	T(mm)	L1(mm)
2012 (0805)	2.0±0.2	1.25±0.2	1.20max	0.20~0.60



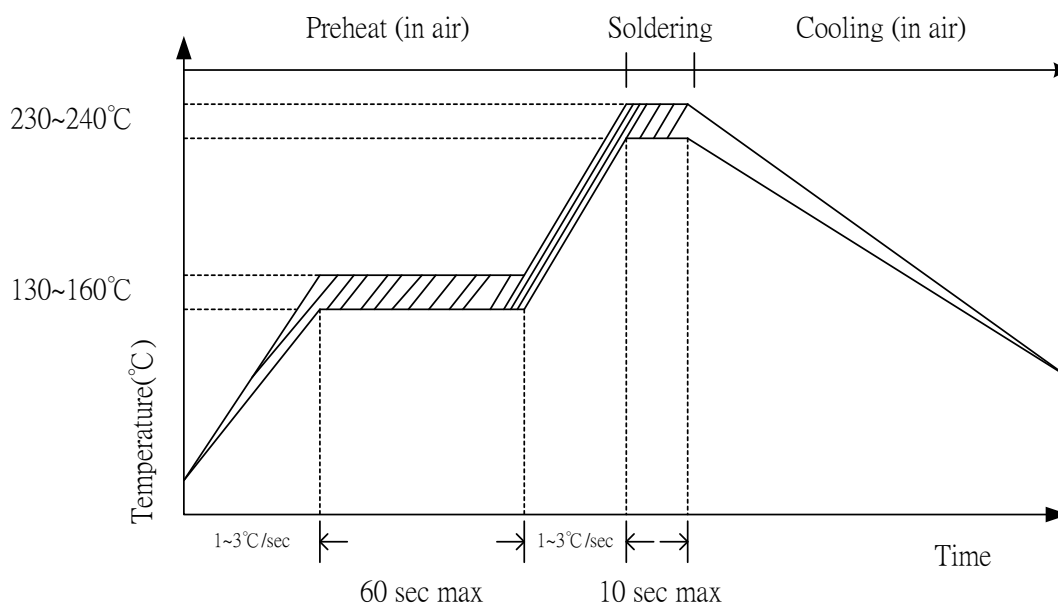
ELECTRICAL CHARACTERISTICS

Style	Symbol	Condition	Specification
Resistance at 25°C	R25	T = 25 ± 0.1°C	10KΩ ±1%
B Constant	B	25°C to 85°C	3970° K ±1%
Thermal Time Constant	T	T = 25 ± 0.1°C	Approx. 7.5sec
Thermal Dissipation Constant	C	T = 25 ± 0.1°C	Approx. 4mw/°C
Maximum Power Rating	Pw	T = 25 ± 0.1°C	400 mW
Operation Temp. Range	--	--	-40°C ~ 125°C

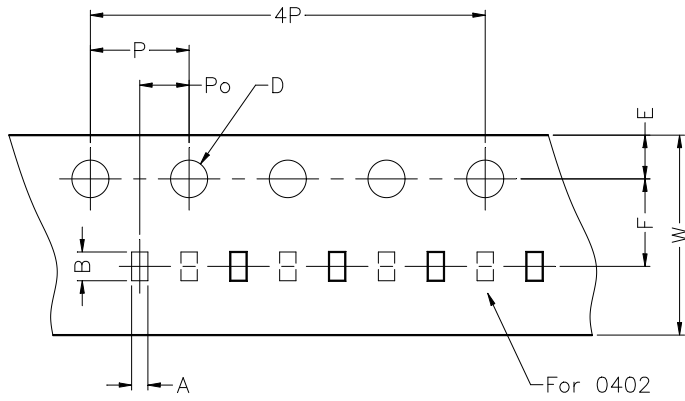
ENVIRONMENTAL CHARACTERISTICS

PERFORMANCE	TEST METHOD	APPRAISE
Life	MIL – STD – 202F , Method 108A 1000 hours at 70°C NTCWV intermittent	Within ±3%
Humidity (Steady State)	MIL – STD – 202F . Method 103B 1000 hours at Temperature: 40°C Humidity: 95%	Within ±3%
Thermal Shock	MIL – STD – 202F . Method 107 10 cycles, -40°C to +125°C	Within ±3%
Solderability	MIL – STD – 202F . Method 208 235°C for 2 seconds	95% min . coverage
Resistance to Soldering Heat	MIL – R – 55342D ,Para 4.7.7 Soldered to test board at 260°C for 10 seconds	Within ±3%
Bending Strength	JIS C 5202 5.7 Pressurizing rod at a rate at 1mm/sec for 1mm	Within ±3%
Resistance to flexure of Substrate	JIS C 5202 5.7 Pressurizing force shall be 3kg(min)	Over 3kg
Insulation Resistance	MIL – STD – 202F . Method 302 DC250V For 10seconds	Over 1000Mohm
Dielectric Withstand Voltage	MIL – STD – 202F . Method 301 DC250V For 10seconds	Not Short

REFLOW SOLDERING PROFILE



TAPING

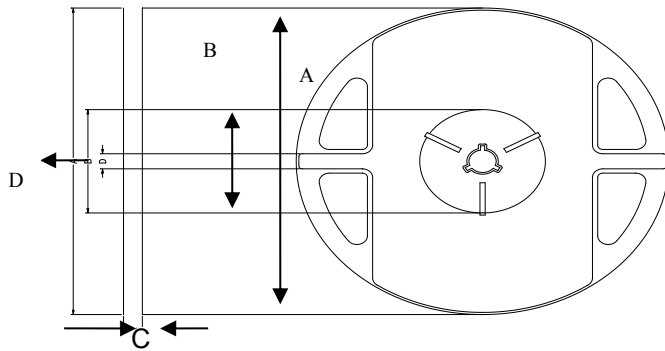


Taping Dimensions

Unit : mm

Dimension	0805		0603		0402	
A	1.50	+0.05 -0.10	1.08	+0.05 -0.10	0.66	+0.03 -0.03
B	2.30	+0.05 -0.10	1.85	+0.05 -0.10	1.15	+0.03 -0.03
W	8.00	+0.05 -0.05	8.00	+0.05 -0.05	8.00	+0.05 -0.05
D	1.50	+0.10 -0.00	1.50	+0.10 -0.00	1.50	+0.10 -0.00
E	1.75	+0.05 -0.05	1.75	+0.05 -0.05	1.75	+0.05 -0.05
F	3.50	+0.05 -0.05	3.50	+0.05 -0.05	3.50	+0.05 -0.05
P	4.00	+0.05 -0.05	4.00	+0.05 -0.05	4.00	+0.05 -0.05
Po	2.00	+0.05 -0.05	2.00	+0.05 -0.05	2.00	+0.05 -0.05
4P	16.00	+0.05 -0.05	16.00	+0.05 -0.05	16.00	+0.05 -0.05

REEL DIMENSIONS



Unit: mm

A	B	C	D
178.0±1.0	60.0±1.0	9.0±0.1	13.0±0.1

ORDERING INFORMATION

CMF B 103 F 3970
 ① ② ③ ④ ⑤

1. Series : CHIP NTC Thermistor.
2. Dimension : B (0805) , A (0603) , X (0402)
3. Resistance : 103 = 10,000 ohm
4. R Tolerance : F±1% ; H±3% ; J±5%
5. B value : 3970K

Accessory : RESISTANCE-TEMPERATURE CHARACTERISTICS

RESISTANCE-TEMPERATURE CHARACTERISTICS

R-T Table

Resistance@25°C 10.000 kΩ ±1.0%

B Constant 3970K (25°C/85°C) ±1.0%

Temp °C	Rmin kΩ	Ravg kΩ	Rmax kΩ	ΔR	-ΔR	ΔT(°C)	
-40	320.911	335.745	351.229	4.611	-4.418	0.667	-0.639
-39	300.530	314.213	328.487	4.542	-4.354	0.662	-0.634
-38	281.572	294.198	307.361	4.473	-4.291	0.657	-0.630
-37	263.929	275.584	287.726	4.405	-4.229	0.652	-0.626
-36	247.502	258.265	269.468	4.337	-4.167	0.647	-0.621
-35	232.201	242.142	252.483	4.270	-4.105	0.642	-0.617
-34	217.941	227.126	236.674	4.203	-4.043	0.637	-0.612
-33	204.646	213.135	221.954	4.137	-3.982	0.631	-0.608
-32	192.244	200.093	208.240	4.071	-3.922	0.626	-0.603
-31	180.671	187.929	195.459	4.006	-3.861	0.621	-0.598
-30	169.867	176.580	183.541	3.941	-3.802	0.615	-0.593
-29	159.775	165.987	172.423	3.877	-3.742	0.610	-0.589
-28	150.344	156.094	162.047	3.813	-3.683	0.604	-0.584
-27	141.529	146.852	152.359	3.750	-3.624	0.599	-0.579
-26	133.284	138.213	143.310	3.687	-3.566	0.593	-0.574
-25	125.570	130.136	134.853	3.625	-3.508	0.587	-0.568
-24	118.350	122.579	126.947	3.563	-3.450	0.582	-0.563
-23	111.589	115.508	119.553	3.501	-3.392	0.576	-0.558
-22	105.255	108.887	112.634	3.440	-3.335	0.570	-0.553
-21	99.319	102.687	106.157	3.380	-3.279	0.564	-0.547
-20	93.754	96.876	100.092	3.319	-3.222	0.558	-0.542
-19	88.535	91.430	94.411	3.260	-3.166	0.552	-0.536
-18	83.637	86.323	89.086	3.200	-3.111	0.546	-0.531
-17	79.040	81.531	84.093	3.141	-3.055	0.540	-0.525
-16	74.723	77.035	79.410	3.083	-3.000	0.534	-0.519
-15	70.668	72.813	75.016	3.025	-2.946	0.527	-0.513
-14	66.857	68.848	70.891	2.967	-2.891	0.521	-0.508
-13	63.275	65.123	67.018	2.910	-2.837	0.515	-0.502
-12	59.905	61.621	63.379	2.853	-2.783	0.508	-0.496
-11	56.736	58.328	59.960	2.796	-2.730	0.502	-0.490
-10	53.752	55.231	56.745	2.740	-2.677	0.495	-0.483
-9	50.944	52.317	53.722	2.685	-2.624	0.488	-0.477
-8	48.298	49.574	50.877	2.629	-2.572	0.482	-0.471
-7	45.806	46.990	48.200	2.574	-2.520	0.475	-0.465
-6	43.457	44.557	45.680	2.520	-2.468	0.468	-0.458
-5	41.242	42.264	43.306	2.466	-2.416	0.461	-0.452
-4	39.154	40.102	41.070	2.412	-2.365	0.454	-0.445
-3	37.183	38.064	38.962	2.359	-2.314	0.447	-0.439
-2	35.323	36.141	36.974	2.306	-2.263	0.440	-0.432
-1	33.567	34.326	35.100	2.253	-2.213	0.433	-0.425
0	31.908	32.613	33.331	2.201	-2.163	0.426	-0.419
1	30.341	30.996	31.662	2.149	-2.113	0.419	-0.412
2	28.860	29.468	30.086	2.097	-2.064	0.411	-0.405
3	27.460	28.024	28.598	2.046	-2.014	0.404	-0.398
4	26.136	26.660	27.192	1.995	-1.966	0.397	-0.391

R-T Table

Resistance@25°C 10.000 kΩ ±1.0%

B Constant 3970K (25°C/85°C) ±1.0%

Temp °C	Rmin kΩ	Ravg kΩ	Rmax kΩ	ΔR	-ΔR	ΔT(°C)	
5	24.883	25.370	25.863	1.944	-1.917	0.389	-0.384
6	23.698	24.149	24.607	1.894	-1.869	0.382	-0.377
7	22.576	22.994	23.419	1.844	-1.820	0.374	-0.369
8	21.513	21.901	22.295	1.794	-1.773	0.367	-0.362
9	20.507	20.867	21.231	1.745	-1.725	0.359	-0.355
10	19.554	19.888	20.225	1.696	-1.678	0.351	-0.347
11	18.649	18.959	19.271	1.648	-1.631	0.343	-0.340
12	17.792	18.079	18.368	1.599	-1.584	0.335	-0.332
13	16.980	17.245	17.513	1.551	-1.538	0.327	-0.325
14	16.209	16.454	16.702	1.504	-1.491	0.319	-0.317
15	15.477	15.704	15.933	1.456	-1.445	0.311	-0.309
16	14.783	14.993	15.204	1.409	-1.400	0.303	-0.301
17	14.123	14.317	14.512	1.363	-1.354	0.295	-0.293
18	13.497	13.676	13.856	1.316	-1.309	0.287	-0.285
19	12.902	13.067	13.233	1.270	-1.264	0.279	-0.277
20	12.337	12.489	12.642	1.224	-1.219	0.270	-0.269
21	11.799	11.940	12.080	1.179	-1.175	0.262	-0.261
22	11.288	11.417	11.547	1.134	-1.131	0.253	-0.253
23	10.802	10.921	11.040	1.089	-1.087	0.245	-0.245
24	10.340	10.449	10.558	1.044	-1.043	0.236	-0.236
25	9.900	10.000	10.100	1.000	-1.000	0.228	-0.228
26	9.472	9.572	9.672	1.044	-1.043	0.239	-0.239
27	9.066	9.165	9.265	1.088	-1.086	0.251	-0.251
28	8.679	8.778	8.878	1.131	-1.128	0.263	-0.262
29	8.311	8.409	8.508	1.175	-1.171	0.275	-0.274
30	7.960	8.058	8.156	1.218	-1.213	0.286	-0.285
31	7.627	7.724	7.821	1.261	-1.255	0.298	-0.297
32	7.309	7.405	7.501	1.303	-1.296	0.310	-0.309
33	7.006	7.101	7.196	1.346	-1.338	0.323	-0.321
34	6.717	6.811	6.905	1.388	-1.379	0.335	-0.333
35	6.441	6.534	6.628	1.430	-1.420	0.347	-0.345
36	6.179	6.271	6.363	1.472	-1.460	0.359	-0.357
37	5.928	6.019	6.110	1.513	-1.501	0.372	-0.369
38	5.690	5.779	5.868	1.555	-1.541	0.384	-0.381
39	5.461	5.549	5.638	1.596	-1.581	0.397	-0.393
40	5.244	5.330	5.417	1.637	-1.620	0.410	-0.405
41	5.036	5.121	5.207	1.678	-1.660	0.422	-0.418
42	4.837	4.921	5.006	1.718	-1.699	0.435	-0.430
43	4.648	4.730	4.813	1.758	-1.738	0.448	-0.443
44	4.467	4.547	4.629	1.798	-1.776	0.461	-0.455
45	4.294	4.373	4.453	1.838	-1.815	0.474	-0.468
46	4.128	4.206	4.285	1.878	-1.853	0.487	-0.481
47	3.970	4.046	4.124	1.917	-1.891	0.500	-0.493
48	3.818	3.893	3.970	1.957	-1.929	0.514	-0.506
49	3.674	3.747	3.822	1.996	-1.966	0.527	-0.519

R-T Table

Resistance@25°C 10.000 kΩ ±1.0%

B Constant 3970K (25°C/85°C) ±1.0%

Temp °C	Rmin kΩ	Ravg kΩ	Rmax kΩ	ΔR	-ΔR	ΔT(°C)	
50	3.534	3.607	3.680	2.035	-2.004	0.540	-0.532
51	3.402	3.473	3.545	2.073	-2.041	0.554	-0.545
52	3.275	3.345	3.416	2.112	-2.078	0.567	-0.558
53	3.154	3.222	3.291	2.150	-2.114	0.581	-0.571
54	3.037	3.104	3.172	2.188	-2.151	0.595	-0.585
55	2.926	2.991	3.058	2.226	-2.187	0.609	-0.598
56	2.819	2.883	2.948	2.263	-2.223	0.623	-0.611
57	2.717	2.780	2.843	2.301	-2.259	0.636	-0.625
58	2.619	2.680	2.743	2.338	-2.294	0.651	-0.638
59	2.524	2.585	2.646	2.375	-2.330	0.665	-0.652
60	2.434	2.493	2.553	2.412	-2.365	0.679	-0.666
61	2.348	2.405	2.464	2.449	-2.400	0.693	-0.679
62	2.265	2.321	2.379	2.485	-2.435	0.707	-0.693
63	2.185	2.240	2.297	2.522	-2.469	0.722	-0.707
64	2.109	2.163	2.218	2.558	-2.504	0.736	-0.721
65	2.035	2.088	2.142	2.594	-2.538	0.751	-0.735
66	1.965	2.017	2.070	2.629	-2.572	0.766	-0.749
67	1.897	1.948	2.000	2.665	-2.606	0.780	-0.763
68	1.832	1.882	1.932	2.701	-2.639	0.795	-0.777
69	1.769	1.818	1.868	2.736	-2.673	0.810	-0.791
70	1.709	1.757	1.806	2.771	-2.706	0.825	-0.806
71	1.652	1.698	1.746	2.806	-2.739	0.840	-0.820
72	1.596	1.642	1.688	2.841	-2.772	0.855	-0.835
73	1.543	1.588	1.633	2.875	-2.805	0.870	-0.849
74	1.492	1.535	1.580	2.910	-2.837	0.886	-0.864
75	1.442	1.485	1.529	2.944	-2.869	0.901	-0.878
76	1.395	1.437	1.479	2.978	-2.901	0.916	-0.893
77	1.349	1.390	1.432	3.012	-2.933	0.932	-0.908
78	1.305	1.345	1.386	3.046	-2.965	0.948	-0.923
79	1.263	1.302	1.342	3.079	-2.997	0.963	-0.937
80	1.222	1.261	1.300	3.113	-3.028	0.979	-0.952
81	1.183	1.221	1.259	3.146	-3.060	0.995	-0.967
82	1.145	1.182	1.220	3.179	-3.091	1.011	-0.983
83	1.109	1.145	1.182	3.212	-3.122	1.027	-0.998
84	1.074	1.109	1.145	3.245	-3.152	1.043	-1.013
85	1.040	1.075	1.110	3.277	-3.183	1.059	-1.028
86	1.008	1.041	1.076	3.310	-3.213	1.075	-1.044
87	0.976	1.009	1.043	3.342	-3.244	1.091	-1.059
88	0.946	0.978	1.011	3.374	-3.274	1.108	-1.075
89	0.917	0.948	0.981	3.406	-3.304	1.124	-1.090
90	0.889	0.920	0.951	3.438	-3.334	1.141	-1.106
91	0.862	0.892	0.923	3.470	-3.363	1.157	-1.122
92	0.836	0.865	0.895	3.502	-3.393	1.174	-1.137
93	0.810	0.839	0.869	3.533	-3.422	1.191	-1.153
94	0.786	0.814	0.843	3.564	-3.451	1.207	-1.169

R-T Table

Resistance@25°C 10.000 kΩ ±1.0%

B Constant 3970K (25°C/85°C) ±1.0%

Temp °C	Rmin kΩ	Ravg kΩ	Rmax kΩ	ΔR	-ΔR	ΔT(°C)	
95	0.762	0.790	0.818	3.595	-3.480	1.224	-1.185
96	0.740	0.767	0.794	3.626	-3.509	1.241	-1.201
97	0.718	0.744	0.771	3.657	-3.538	1.258	-1.217
98	0.697	0.722	0.749	3.688	-3.566	1.275	-1.233
99	0.676	0.701	0.728	3.719	-3.595	1.293	-1.250
100	0.656	0.681	0.706	3.750	-3.624	1.310	-1.266
101	0.637	0.662	0.687	3.779	-3.651	1.327	-1.282
102	0.619	0.643	0.667	3.809	-3.679	1.345	-1.299
103	0.601	0.624	0.648	3.839	-3.707	1.362	-1.315
104	0.584	0.607	0.630	3.869	-3.735	1.380	-1.332
105	0.567	0.589	0.612	3.899	-3.762	1.397	-1.348
106	0.551	0.573	0.595	3.929	-3.790	1.415	-1.365
107	0.536	0.557	0.579	3.958	-3.817	1.433	-1.382
108	0.520	0.541	0.563	3.988	-3.844	1.451	-1.399
109	0.506	0.526	0.547	4.017	-3.871	1.469	-1.416
110	0.492	0.512	0.532	4.046	-3.898	1.487	-1.433
111	0.478	0.498	0.518	4.075	-3.925	1.505	-1.450
112	0.465	0.484	0.504	4.104	-3.951	1.523	-1.467
113	0.452	0.471	0.490	4.132	-3.978	1.542	-1.484
114	0.440	0.458	0.477	4.161	-4.004	1.560	-1.501
115	0.428	0.446	0.464	4.189	-4.030	1.578	-1.518
116	0.416	0.434	0.452	4.218	-4.056	1.597	-1.536
117	0.405	0.422	0.440	4.246	-4.082	1.615	-1.553
118	0.394	0.411	0.429	4.274	-4.108	1.634	-1.571
119	0.384	0.400	0.417	4.302	-4.134	1.653	-1.588
120	0.373	0.390	0.406	4.330	-4.160	1.672	-1.606
121	0.363	0.379	0.396	4.357	-4.185	1.691	-1.624
122	0.354	0.369	0.386	4.385	-4.210	1.710	-1.641
123	0.345	0.360	0.376	4.412	-4.235	1.729	-1.659
124	0.336	0.351	0.366	4.440	-4.261	1.748	-1.677
125	0.327	0.342	0.357	4.467	-4.286	1.767	-1.695

X-ON Electronics

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