

Specification For Approval

Customer name : _____

Product name : **NTC Thermistor**

Customer PN : _____

MFG PN : **CWFB0104FC-301C12a**

MFG			Customer Confirmation		
Make	Check	Approval	Test	Check	Approval

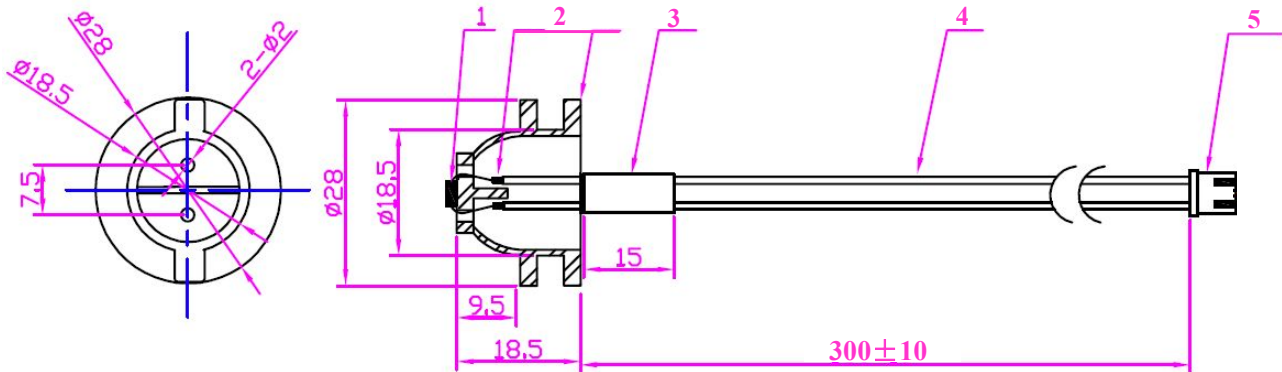
(Company name)

Confirm got the spec and accept as our company's warehouse accept standard.

Version	Revise content	Forwarder	Date
A/0	Just made	Cheng	2015-12-10

1、 Overall Dimension

(Unit: mm)


2、 Material explanation

NO	Material Name	Item/PN
2-1.	Element	R25=100K $\Omega \pm 1\%$ B25/50=3950 $\pm 1\%$ DD
2-2.	Housing	Brass 2×0.3mm , $\Phi 28 \times 18.5$ Silica Gel (Brown)
2-3.	Casing	$\Phi 2$ L=15mm Heat shrinkable casing (Black)
2-4.	Lead Wire	L=300mm AWG26 200°C Fluorine plastic wire (Black)
2-5.	Terminal	XH-2Y/ XH-2.54(White)

3、 Part Number :

CWF -
 1 2 3 4 5 6 7

- (1) NTC Thermistor Mark;
- (2) Head shape sign (B:Housing Type, D:Dip-Coating, M:Molding);
- (3) Series Type (0:Epoxy coating structure, 1:Epoxy coating structure(high temp)) ;
- (4) Nominal resistor is value at 25degree,unit is Ohm, previous two digital representation significant digitsofresistance, third digital representation the number of zero;
- (5) Resistance tolerance (%) ;
- (6) B Value constant sign In general, it is value of 25/50Deg, other conditions will remark and explain;
- (7) Length Sign, unit is mm ;
- (8) Special code ;

4、 Electrical Performance:

NO	Item	Sign	Test Conditions	Min.	Normal value	Max.	Unit
4-1.	Resistance at 25°C	R25	Ta=25±0.1°C P _T ≤ 0.1mw	99.0	100.0	101.0	k Ω
4-2.	B Value	B25/50	$B=LN \frac{R_{T1}}{R_{T2}} / \left(\frac{1}{T1} - \frac{1}{T2} \right)$	3910.5	3950	3989.5	k
4-3.	Dissipation factor	σ	Ta=25±0.5°C	2.5		/	mw/°C
4-4.	Time constant	τ	Ta=25±0.5°C	/	/	10	sec
4-5.	Operating temp.range	/	/	-40	/	+250	°C
4-6.	Insulation resistance	/	500V DC	100	/	/	M Ω
4-7.	Withstand voltage test	/	1500V AC	10			Sec

5、 Reliability Test

NO	Item	Technical requirements	Test conditions and method
5-1.	High temp. Test	$\Delta R/R25 \leq \pm 3\%$ $\Delta B/B \leq \pm 3\%$ No change with withstand voltage、 Insulation performance. Appearance without damage.	250±5°C , Shelf Test 1000±24 hrs
5-2.	Low temp. tes		-20±5°C , Shelf Test 1000±24 hrs
5-3.	Endure moisture test		Store in environment 60±2°C, 90%-95%RH for 1000±24 hrs
5-4.	Temp. cycle test		-20°C×30min→Room temp.×5min→ 80°C ×30min→Room temp.×10min 3 cycles
5-5.	Vibration test		Amplitude 1.5mm ,Frequency from 10HZ to 500 HZ, Vertical direction stop 30 minutes.
5-6.	Tensile tests		Put 20N of force lasts 1 min
5-7.	Service life		Normal use resistance drift rate 3%

6、 Storage Method

6.1 In the process of storage and transportation, per stack height is not more than 4 CTN products.

6.2 Available with all transport method, but avoid the rain, snow of direct or indirect leaching and mechanical damage.

6.3 Products should be stored in the temperature of environment - 5 °C / + 40 °C , relative humidity is not more than 80%, environment should not have acid, alkali and corrosion gas or radioactive source.

7、 R—T Conversion Table.

R—T CONVERSION TABLE

 R25=100K Ω \pm 1% B25/50=3950K \pm 1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
-55	20623.5	21986.1	23436.4	-22	996.936	1030.77	1065.65
-54	17809.1	18957.6	20178.2	-21	938.848	970.126	1002.34
-53	15466.5	16440.6	17474.2	-20	884.914	913.85	943.637
-52	13504.6	14335.4	15215.8	-19	834.767	861.555	889.114
-51	11851.5	12564	13318.1	-18	788.078	812.895	838.409
-50	10450.7	11064.9	11714.1	-17	744.551	767.557	791.194
-49	9257.29	9789.4	10351	-16	703.923	725.262	747.173
-48	8235.23	8698.31	9186.51	-15	665.955	685.759	706.082
-47	7355.59	7760.35	8186.56	-14	630.435	648.823	667.681
-46	6594.96	6950.2	7323.84	-13	597.168	614.249	631.756
-45	5934.27	6247.25	6576.08	-12	565.979	581.853	598.112
-44	5357.9	5634.67	5925.14	-11	536.711	551.468	566.575
-43	4853.03	5098.62	5356.1	-10	509.22	522.943	536.983
-42	4409.04	4627.67	4856.66	-9	483.374	496.14	509.192
-41	4017.11	4212.34	4416.62	-8	459.056	470.934	483.071
-40	3669.9	3844.74	4027.52	-7	436.156	447.211	458.499
-39	3361.23	3518.25	3682.23	-6	414.576	424.866	435.367
-38	3085.93	3227.3	3374.81	-5	394.224	403.803	413.574
-37	2839.61	2967.2	3100.21	-4	375.018	383.937	393.028
-36	2618.55	2733.97	2854.19	-3	356.881	365.185	373.645
-35	2419.59	2524.22	2633.12	-2	339.742	347.475	355.348
-34	2240.02	2335.07	2433.91	-1	323.538	330.738	338.065
-33	2077.52	2164.02	2253.91	0	308.207	314.913	321.731
-32	1930.09	2008.97	2090.85	1	293.697	299.94	306.285
-31	1796.02	1868.05	1942.78	2	279.954	285.767	291.671
-30	1673.8	1739.69	1808	3	266.934	272.345	277.838
-29	1562.14	1622.51	1685.04	4	254.59	259.627	264.737
-28	1459.91	1515.29	1572.61	5	242.884	247.572	252.325
-27	1366.12	1417	1469.61	6	231.778	236.139	240.559
-26	1279.91	1326.7	1375.06	7	221.236	225.293	229.402
-25	1200.52	1243.6	1288.1	8	211.226	214.999	218.817
-24	1127.28	1166.99	1207.98	9	201.717	205.225	208.772
-23	1059.59	1096.23	1134.02	10	192.681	195.941	199.236

R—T CONVERSION TABLE

 R25=100K Ω \pm 1% B25/50=3950K \pm 1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
11	184.092	187.121	190.18	44	44.694	45.503	46.321
12	175.925	178.737	181.576	45	42.925	43.719	44.523
13	168.157	170.767	173.4	46	41.233	42.012	42.802
14	160.766	163.187	165.628	47	39.614	40.379	41.154
15	153.731	155.976	158.237	48	38.065	38.815	39.576
16	147.034	149.114	151.208	49	36.582	37.317	38.064
17	140.657	142.582	144.52	50	35.162	35.884	36.616
18	134.582	136.364	138.155	51	33.803	34.51	35.228
19	128.794	130.442	132.097	52	32.502	33.195	33.898
20	123.279	124.8	126.328	53	31.256	31.934	32.624
21	118.021	119.425	120.834	54	30.063	30.727	31.402
22	113.009	114.303	115.6	55	28.919	29.57	30.231
23	108.229	109.42	110.614	56	27.824	28.461	29.109
24	103.669	104.765	105.862	57	26.774	27.397	28.032
25	99	100	101	58	25.769	26.378	26.999
26	95.092	96.091	97.091	59	24.804	25.401	26.009
27	91.055	92.051	93.049	60	23.88	24.464	25.059
28	87.205	88.197	89.191	61	22.994	23.565	24.147
29	83.532	84.518	85.507	62	22.144	22.702	23.272
30	80.028	81.007	81.989	63	21.329	21.875	22.432
31	76.683	77.654	78.629	64	20.548	21.081	21.626
32	73.491	74.453	75.419	65	19.798	20.319	20.852
33	70.444	71.395	72.353	66	19.078	19.588	20.109
34	67.534	68.475	69.422	67	18.388	18.886	19.395
35	64.755	65.684	66.621	68	17.725	18.212	18.71
36	62.101	63.018	63.943	69	17.089	17.565	18.052
37	59.565	60.47	61.383	70	16.479	16.943	17.419
38	57.142	58.035	58.935	71	15.892	16.346	16.812
39	54.827	55.706	56.593	72	15.329	15.773	16.228
40	52.615	53.48	54.354	73	14.789	15.222	15.666
41	50.5	51.351	52.211	74	14.269	14.692	15.127
42	48.477	49.314	50.161	75	13.77	14.184	14.608
43	46.544	47.366	48.199	76	13.291	13.694	14.109

R—T CONVERSION TABLE

 R25=100K Ω \pm 1% B25/50=3950K \pm 1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
77	12.83	13.224	13.629	110	4.357	4.539	4.729
78	12.387	12.772	13.168	111	4.227	4.405	4.59
79	11.961	12.337	12.724	112	4.101	4.276	4.457
80	11.552	11.919	12.297	113	3.98	4.15	4.328
81	11.158	11.517	11.886	114	3.863	4.03	4.203
82	10.78	11.13	11.491	115	3.75	3.913	4.082
83	10.415	10.758	11.11	116	3.641	3.8	3.965
84	10.065	10.4	10.744	117	3.535	3.69	3.852
85	9.708	10.035	10.371	118	3.433	3.585	3.743
86	9.404	9.723	10.052	119	3.334	3.483	3.638
87	9.092	9.403	9.725	120	3.238	3.384	3.535
88	8.791	9.096	9.41	121	3.146	3.288	3.436
89	8.502	8.799	9.106	122	3.057	3.196	3.341
90	8.224	8.514	8.814	123	2.97	3.106	3.248
91	7.956	8.239	8.532	124	2.887	3.02	3.158
92	7.697	7.974	8.26	125	2.806	2.936	3.072
93	7.449	7.719	7.999	126	2.727	2.855	2.988
94	7.209	7.473	7.746	127	2.652	2.776	2.906
95	6.978	7.236	7.503	128	2.578	2.7	2.827
96	6.756	7.008	7.268	129	2.507	2.626	2.751
97	6.541	6.787	7.042	130	2.438	2.555	2.677
98	6.334	6.575	6.824	131	2.372	2.486	2.605
99	6.135	6.37	6.613	132	2.307	2.419	2.536
100	5.943	6.173	6.41	133	2.245	2.354	2.469
101	5.758	5.982	6.214	134	2.184	2.291	2.403
102	5.579	5.798	6.025	135	2.126	2.23	2.34
103	5.406	5.621	5.843	136	2.069	2.171	2.279
104	5.24	5.449	5.666	137	2.014	2.114	2.219
105	5.08	5.284	5.496	138	1.961	2.059	2.162
106	4.925	5.124	5.332	139	1.909	2.005	2.106
107	4.775	4.97	5.173	140	1.859	1.953	2.052
108	4.631	4.822	5.02	141	1.81	1.902	1.999
109	4.491	4.678	4.872	142	1.763	1.853	1.948

R—T CONVERSION TABLE

 R25=100K $\Omega \pm 1\%$ B25/50=3950K $\pm 1\%$

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
143	1.717	1.806	1.898	176	0.764	0.81	0.859
144	1.673	1.759	1.85	177	0.747	0.792	0.84
145	1.63	1.715	1.804	178	0.73	0.774	0.821
146	1.588	1.671	1.758	179	0.714	0.757	0.803
147	1.548	1.629	1.714	180	0.698	0.74	0.785
148	1.508	1.588	1.672	181	0.682	0.724	0.768
149	1.47	1.548	1.63	182	0.667	0.708	0.751
150	1.433	1.51	1.59	183	0.652	0.692	0.735
151	1.397	1.472	1.551	184	0.638	0.677	0.719
152	1.362	1.436	1.513	185	0.624	0.663	0.704
153	1.328	1.4	1.476	186	0.61	0.648	0.689
154	1.295	1.366	1.44	187	0.597	0.634	0.674
155	1.263	1.332	1.405	188	0.584	0.62	0.659
156	1.232	1.3	1.371	189	0.571	0.607	0.645
157	1.202	1.268	1.338	190	0.559	0.594	0.632
158	1.173	1.238	1.306	191	0.547	0.581	0.618
159	1.144	1.208	1.275	192	0.535	0.569	0.605
160	1.117	1.179	1.245	193	0.524	0.557	0.593
161	1.09	1.151	1.216	194	0.512	0.545	0.58
162	1.064	1.124	1.187	195	0.502	0.534	0.568
163	1.038	1.097	1.159	196	0.491	0.523	0.556
164	1.013	1.071	1.132	197	0.481	0.512	0.545
165	0.989	1.046	1.106	198	0.47	0.501	0.534
166	0.966	1.022	1.08	199	0.461	0.491	0.523
167	0.943	0.998	1.055	200	0.451	0.481	0.512
168	0.921	0.975	1.031	201	0.442	0.471	0.501
169	0.9	0.952	1.007	202	0.432	0.461	0.491
170	0.879	0.93	0.984	203	0.423	0.451	0.481
171	0.858	0.909	0.962	204	0.415	0.442	0.472
172	0.839	0.888	0.94	205	0.406	0.433	0.462
173	0.819	0.868	0.919	206	0.398	0.424	0.453
174	0.8	0.848	0.898	207	0.39	0.416	0.444
175	0.782	0.829	0.878	208	0.382	0.407	0.435

R—T CONVERSION TABLE

 R25=100K Ω \pm 1% B25/50=3950K \pm 1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
209	0.374	0.399	0.426	242	0.197	0.211	0.227
210	0.366	0.391	0.418	243	0.193	0.207	0.223
211	0.359	0.383	0.41	244	0.189	0.204	0.219
212	0.352	0.376	0.401	245	0.186	0.2	0.215
213	0.345	0.368	0.394	246	0.183	0.196	0.211
214	0.338	0.361	0.386	247	0.179	0.193	0.207
215	0.331	0.354	0.378	248	0.176	0.189	0.204
216	0.325	0.347	0.371	249	0.173	0.186	0.2
217	0.318	0.34	0.364	250	0.17	0.182	0.196
218	0.312	0.334	0.357				
219	0.306	0.327	0.35				
220	0.3	0.321	0.343				
221	0.294	0.314	0.337				
222	0.288	0.308	0.33				
223	0.283	0.302	0.324				
224	0.277	0.297	0.318				
225	0.272	0.291	0.312				
226	0.266	0.285	0.306				
227	0.261	0.28	0.3				
228	0.256	0.275	0.294				
229	0.251	0.269	0.289				
230	0.247	0.264	0.283				
231	0.242	0.259	0.278				
232	0.237	0.255	0.273				
233	0.233	0.25	0.268				
234	0.228	0.245	0.263				
235	0.224	0.241	0.258				
236	0.22	0.236	0.253				
237	0.216	0.232	0.249				
238	0.212	0.227	0.244				
239	0.208	0.223	0.24				
240	0.204	0.219	0.235				
241	0.2	0.215	0.231				