

东莞市天瑞电子有限公司 Dongguan Tianrui Electronics Co., Ltd	NO: AFT-182154
	Version: A/0

Specification For Approval

Customer name : _____

Product name : **NTC Thermistor**

Customer PN : _____

MFG PN : **CWF202F3914FD400BC**

MFG			Customer Confirmation		
Make	Check	Approval	Test	Check	Approval

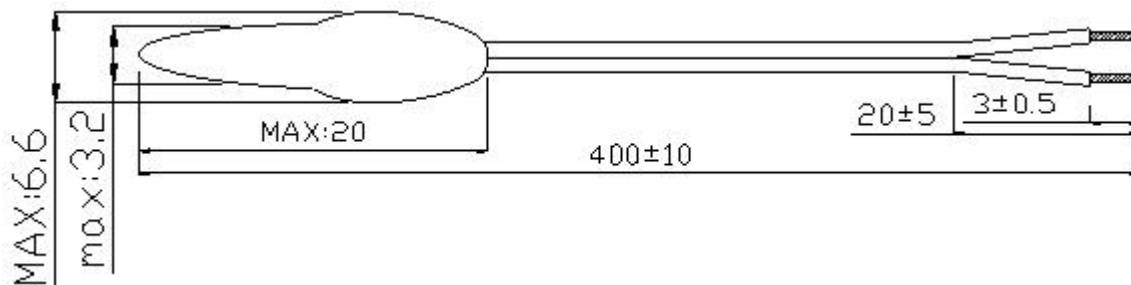
(Company name)

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

Version	Revise content	Forwarder	Date
A/0	Just Made	CHENG	2014-06-11

1、Overall Dimension

(Unit: mm)



2、Material Explanation

NO	Material Name	Item/PN
2-1.	Lead wire	UL2651#Φ1.8 *2C 105℃ 300V Grey White
2-2.	Thermistor	R0=6.65K Ω ± 1.5% R25=2K Ω ± 3.5% B0/25=3941K± 1% MF52
2-3.	Epoxy Resin	J105/J106B/J05X G108/GU01 Black

3、 Part number :

CWF xxx x xxxxx x x xxxxx x x ⑦ ⑧ ⑨

- ①NTC Thermistor Mark;
- ②Nominal resistor value at 25degree, unit is Ohm, previous two digital representation significant digits of resistance, third digital representation the number of zero;
- ③Resistance tolerance (%):

Sign	E	F	G	H	J	K	X
resistance	±0.5	±1.0	±2.0	±3.0	±5.0	±10	Special

- ④B Value constant sign In general, it is value of 25/50Deg, other conditions will remark and explain;
- ⑤B Value tolerance sign (%):

Sign	E	F	G	H	J	K	X
B Value	±0.5	±1.0	±2.0	±3.0	±5.0	±10	Special

- ⑥Temperature code of B value calculating;

Sign	A	B	C	D	E	F	G	H	M	N	X
Two temp. spots	25/50	25/ 85	-20/25	0/25	0/50	0/100	5/25	25/75	25/100	100/200	特殊 B 值

- ⑦Length Sign, unit is mm ;

- ⑧Head shape sign ;

Sign	A	B	C
Shape	Shell embedment type	Epoxy resin encapsulate type	Special

- ⑨Definition code sign.

Sign	C	J	T	W	R	X
Item	Standard	Glue Shell	Shell	Wire	Tube	Special

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4、Electrical Performance

NO	Item	Sign	Test Conditions	Min.	Normal value	Max.	Unit
4-1.	Resistance at 25°C	R25	Ta=5±0.05°C P _T ≤0.1mw	1.93	2	2.07	K
4-2.	B Value	B0/25	$B=LN \frac{R_{T1}}{R_{T2}} / \left(\frac{1}{T1} - \frac{1}{T2} \right)$	3874	3914	3953	k
4-3.	Dissipation factor	σ	Ta=25±0.5°C	1.5		/	mw/°C
4-4.	Time constant	τ	Ta=25±0.5°C	/	/	3	sec
4-5.	Insulation resistance	/	500VDC	100	/	/	MΩ
4-6	High-voltage Insulation Test	/	1500VAC	5			Sec
4-7	Operating temp.range	/	/	-10	/	+100	°C

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、 Insalution performance。 Appearance without damage.	100±5°C, power on 500±24 hrs, DC0.2mA
5-2.	Low temp. tes		-10±5°C, power on 500±24 hrs, DC0.2mA
5-3.	Endure moisture test		Store in environment 55±2°C,90%-95%RH for 240±24 hrs
5-4.	Temp. cycle test		-20°C×30min→Room temp.×10min→ in 100°C water×30min→Room temp.×10min 10 cycles
5-5	Load electrify test		Power on DC1mA,500hrs in room temp. and humid。
5-6	Drop test		Free fall into concrete floor from height 1m , 10 cycle。
5-7	Vibration test		Frequency range: 10~55HZ Total amplitude 1.52mm 1 cycle 1 min , direction and time X、 Y、 Z axis 2Hr each。
5-8	Bending test		Bend 180°binding site wire and epoxy resin。 Back and forth 10 times

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 - 10 °C / + 40 °C, relative humidity is not more than 80%, environment should not have acid, alkali and corrosion gas or radioactive source.

R-T CONVERSION TABLE

$R_{25}=2K\Omega\pm 3.5\%$ $B_{0/25}=3914K\pm 1\%$

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
-40	67.591	70.752	74.054	-2	7.106	7.272	7.440
-39	63.121	66.028	69.061	-1	6.752	6.905	7.061
-38	58.980	61.654	64.442	0	6.418	6.560	6.705
-37	55.142	57.603	60.167	1	6.101	6.233	6.367
-36	51.582	53.848	56.207	2	5.801	5.924	6.049
-35	48.279	50.365	52.537	3	5.519	5.632	5.748
-34	45.211	47.134	49.133	4	5.251	5.357	5.464
-33	42.361	44.133	45.975	5	4.998	5.096	5.195
-32	39.711	41.346	43.043	6	4.759	4.850	4.942
-31	37.247	38.755	40.320	7	4.532	4.617	4.702
-30	34.953	36.345	37.789	8	4.318	4.396	4.475
-29	32.817	34.103	35.435	9	4.115	4.188	4.261
-28	30.828	32.015	33.244	10	3.923	3.990	4.058
-27	28.973	30.070	31.205	11	3.741	3.803	3.866
-26	27.243	28.257	29.305	12	3.568	3.626	3.684
-25	25.629	26.566	27.535	13	3.404	3.458	3.511
-24	24.122	24.989	25.885	14	3.249	3.298	3.348
-23	22.715	23.517	24.345	15	3.102	3.147	3.193
-22	21.399	22.141	22.907	16	2.962	3.004	3.046
-21	20.169	20.856	21.565	17	2.829	2.868	2.907
-20	19.019	19.655	20.310	18	2.703	2.739	2.775
-19	17.946	18.535	19.142	19	2.584	2.617	2.650
-18	16.941	17.487	18.049	20	2.470	2.500	2.531
-17	15.998	16.505	17.025	21	2.362	2.390	2.418
-16	15.115	15.584	16.066	22	2.259	2.285	2.311
-15	14.286	14.721	15.168	23	2.161	2.185	2.209
-14	13.508	13.911	14.325	24	2.068	2.090	2.112
-13	12.777	13.151	13.535	25	1.930	2.000	2.070
-12	12.090	12.438	12.794	26	1.894	1.914	1.934
-11	11.445	11.768	12.098	27	1.812	1.832	1.852
-10	10.839	11.138	11.444	28	1.734	1.754	1.774
-9	10.269	10.546	10.830	29	1.660	1.680	1.700
-8	9.732	9.989	10.253	30	1.590	1.610	1.629
-7	9.227	9.466	9.710	31	1.523	1.542	1.562

-6	8.751	8.973	9.200	32	1.459	1.478	1.498
-5	8.303	8.509	8.719	33	1.398	1.417	1.436
-4	7.880	8.072	8.267	34	1.340	1.359	1.378
-3	7.482	7.660	7.841	35	1.285	1.304	1.322
R-T CONVERSION TABLE							
$R_{25}=2K\Omega\pm 3.5\%$				$B_{0/25}=3914K\pm 1\%$			
T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
36	1.232	1.251	1.269	74	0.296	0.305	0.314
37	1.182	1.200	1.218	75	0.287	0.295	0.304
38	1.134	1.152	1.170	76	0.277	0.285	0.294
39	1.089	1.106	1.124	77	0.268	0.276	0.285
40	1.045	1.062	1.080	78	0.259	0.267	0.276
41	1.003	1.020	1.037	79	0.251	0.259	0.267
42	0.964	0.980	0.997	80	0.243	0.251	0.259
43	0.926	0.942	0.959	81	0.235	0.243	0.250
44	0.889	0.906	0.922	82	0.228	0.235	0.243
45	0.855	0.871	0.887	83	0.221	0.228	0.235
46	0.822	0.837	0.853	84	0.214	0.221	0.228
47	0.790	0.805	0.821	85	0.207	0.214	0.221
48	0.760	0.775	0.790	86	0.201	0.207	0.214
49	0.731	0.746	0.760	87	0.195	0.201	0.208
50	0.703	0.718	0.732	88	0.189	0.195	0.202
51	0.677	0.691	0.705	89	0.183	0.189	0.196
52	0.651	0.665	0.679	90	0.178	0.184	0.190
53	0.627	0.640	0.654	91	0.172	0.178	0.184
54	0.604	0.617	0.630	92	0.167	0.173	0.179
55	0.581	0.594	0.608	93	0.162	0.168	0.174
56	0.560	0.573	0.586	94	0.157	0.163	0.169
57	0.540	0.552	0.565	95	0.153	0.158	0.164
58	0.520	0.532	0.545	96	0.148	0.154	0.159
59	0.501	0.513	0.525	97	0.144	0.149	0.155
60	0.483	0.495	0.507	98	0.140	0.145	0.150
61	0.466	0.478	0.489	99	0.136	0.141	0.146
62	0.450	0.461	0.472	100	0.132	0.137	0.142
63	0.434	0.445	0.456	101	0.128	0.133	0.138
64	0.418	0.429	0.440	102	0.125	0.130	0.135
65	0.404	0.414	0.425	103	0.121	0.126	0.131
66	0.390	0.400	0.411	104	0.118	0.123	0.127
67	0.377	0.387	0.397	105	0.115	0.119	0.124
68	0.364	0.374	0.384	106	0.112	0.116	0.121
69	0.351	0.361	0.371	107	0.109	0.113	0.118

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70	0.339	0.349	0.359	108	0.106	0.110	0.114
71	0.328	0.337	0.347	109	0.103	0.107	0.111
72	0.317	0.326	0.335	110	0.100	0.104	0.108
73	0.306	0.315	0.324				