

东莞市天瑞电子有限公司 DONGGUAN TIANRUI ELECTRONICS CO., LTD	NO: CWF04041H
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Specification For Approval

Customer name : _____

Product name : **NTC Thermistor**

Customer PN : _____

MFG PN : **CWF222F3950FA365AW**

MFG			Customer Confirmation		
Make	Check	Approval	Test	Check	Approval

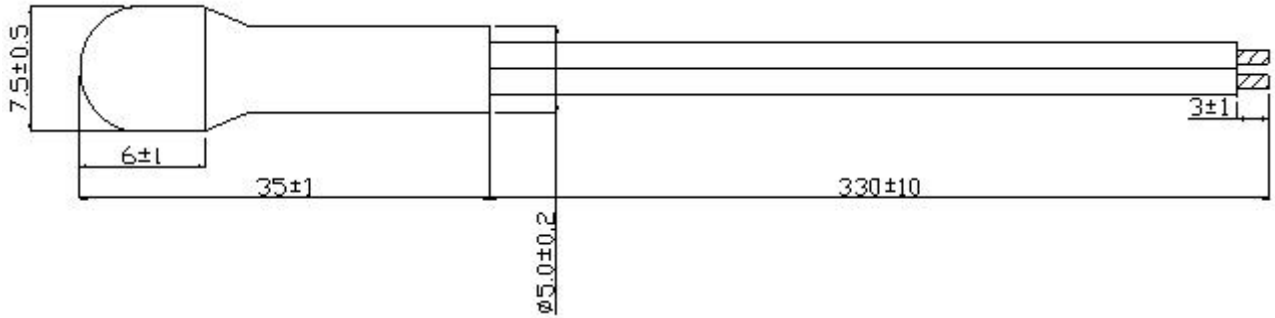
(Company name)

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

Version	Revise content	Forwarder	Date
A/1	Just Made		2015-12-09

1、Overall Dimension

(Unit: mm)



2、Material explanation

NO	Material Name	Item/PN
2-1.	Thermistor	R25=2.2K Ω ± 1% B25/50=3950K ± 1% MF52
2-2.	Lead Wire	UL2651#24AWG*2C 105℃ 300V Black
2-3.	Epoxy Resin	J105/J106B/J05X G108/GU01 Black
2-4.	Shell	Φ 5.0×35+30.0 Aluminium Housing

3、 Part number :

CWF xxx x xxxx x x xxx x x

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①NTC Thermistor Mark;

②Nominal resistor is 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	Special B

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

4、Electrical Performance

NO	Item	Sign	Test Conditions	Min.	Normal value	Max.	Unit
4-1.	Resistance at 25°C	R25	Ta=25±0.05°C P _T ≤0.1mw	2.178	2.200	2.222	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	/	/	20	sec
4-5.	Insulation resistance	/	500VDC	100	/	/	M Ω
4-6.	Withstand voltage test	/	1500V AC (3mA)	5	/	/	Sec
4-7.	Operating temp.range	/	/	-10	/	105	°C

5、Reliability Test

NO	Item	Technical requirements	Test conditions and method
5-1.	High temp. Test	ΔR/R25≤±3% ΔB/B≤±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							
R25=2.200KΩ±1%				B25/50=3950K±1%			
T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
-10	11.852	12.178	12.513	28	1.931	1.953	1.909
-9	11.231	11.534	11.844	29	1.850	1.871	1.828
-8	10.646	10.927	11.215	30	1.772	1.794	1.751
-7	10.095	10.356	10.623	31	1.699	1.720	1.677
-6	9.576	9.819	10.07	32	1.628	1.650	1.607
-5	9.087	9.312	9.542	33	1.561	1.583	1.541
-4	8.626	8.835	9.048	34	1.498	1.518	1.477
-3	8.190	8.385	8.582	35	1.437	1.457	1.416
-2	7.780	7.960	8.144	36	1.379	1.399	1.359
-1	7.392	7.560	7.730	37	1.323	1.343	1.304
0	7.026	7.182	7.340	38	1.271	1.290	1.251
1	6.681	6.825	6.972	39	1.220	1.240	1.201
2	6.354	6.488	6.624	40	1.172	1.191	1.153
3	6.045	6.170	6.296	41	1.126	1.145	1.107
4	5.754	5.869	5.986	42	1.082	1.100	1.063
5	5.477	5.585	5.693	43	1.040	1.058	1.022
6	5.216	5.316	5.416	44	0.9995	1.018	0.9818
7	4.969	5.061	5.155	45	0.9611	0.9788	0.9436
8	4.735	4.820	4.907	46	0.9243	0.9417	0.9072
9	4.513	4.592	4.673	47	0.8892	0.9063	0.8724
10	4.303	4.377	4.451	48	0.8556	0.8723	0.8390
11	4.104	4.172	4.241	49	0.8234	0.8398	0.8072
12	3.915	3.978	4.042	50	0.7926	0.8087	0.7767
13	3.736	3.795	3.854	51	0.7630	0.7789	0.7475

14	3.567	3.621	3.675	52	0.7348	0.7503	0.7195
15	3.406	3.455	3.506	53	0.7077	0.7230	0.6927
16	3.253	3.299	3.345	54	0.6818	0.6967	0.6671
17	3.107	3.150	3.193	55	0.6569	0.6716	0.6426
18	2.970	3.009	3.049	56	0.6331	0.6475	0.6190
19	2.839	2.875	2.911	57	0.6103	0.6243	0.5965
20	2.714	2.748	2.781	58	0.5884	0.6022	0.5749
21	2.596	2.627	2.658	59	0.5674	0.5809	0.5542
22	2.483	2.512	2.540	60	0.5473	0.5605	0.5343
23	2.376	2.402	2.429	61	0.5279	0.5409	0.5152
24	2.274	2.298	2.322	62	0.5094	0.5221	0.4970
25	2.178	2.200	2.222	63	0.4916	0.5040	0.4794
26	2.084	2.106	2.128	64	0.4745	0.4866	0.4626
27	1.994	2.016	2.038	65	0.4581	0.4700	0.4464

R-T CONVERSION TABLE

R₂₅=2.200KΩ±1% B_{25/50}=3950K±1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
66	0.4309	0.4423	0.4539				
67	0.4160	0.4272	0.4386				
68	0.4017	0.4126	0.4238				
69	0.3880	0.3986	0.4095				
70	0.3747	0.3852	0.3959				
71	0.3621	0.3723	0.3827				
72	0.3498	0.3598	0.3701				
73	0.3381	0.3479	0.3579				
74	0.3268	0.3364	0.3462				
75	0.3160	0.3253	0.3349				
76	0.3056	0.3147	0.3241				
77	0.2955	0.3045	0.3136				
78	0.2858	0.2946	0.3036				
79	0.2765	0.2851	0.2939				
80	0.2676	0.2760	0.2846				
81	0.2590	0.2672	0.2756				
82	0.2507	0.2587	0.2669				
83	0.2427	0.2505	0.2586				
84	0.2350	0.2426	0.2505				
85	0.2276	0.2351	0.2428				
86	0.2204	0.2277	0.2353				

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87	0.2135	0.2207	0.2281				
88	0.2069	0.2139	0.2211				
89	0.2005	0.2073	0.2144				
90	0.1943	0.2010	0.2079				
91	0.1883	0.1949	0.2017				
92	0.1826	0.1890	0.1957				
93	0.1770	0.1833	0.1898				
94	0.1717	0.1778	0.1842				
95	0.1665	0.1726	0.1788				
96	0.1615	0.1674	0.1735				
97	0.1567	0.1625	0.1685				
98	0.1521	0.1577	0.1636				
99	0.1476	0.1531	0.1588				
100	0.1433	0.1487	0.1543				