



Dongguan Ampfort Electronics Co., Ltd.

东莞市安伏特电子有限公司



编号: AFT-CWFA00775

版本: A/1

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APPROVAL SHEET OF DELIVERY SPECIFICATION

规格书

客户名称 (CUSTOMER) :

产品名称 (PRODUCT ITEM) : 负温度传感器 NTC Sensor

客户料号 (CUSTOMER PART NO.) :

规格型号 (PART NO.) : CWF103F3950FA601RJ

编制日期 (DATE) :

2020-10-27

供货商确认 (SUPPLIER CONFIRM)			客户确认 (CUSTOMER CONFIRM)		
制作 (Edited)	审核 (Check)	批准 (Approve)	制作 (Edited)	审核 (Check)	批准 (Approve)
徐文杰	徐文杰				

_____ 公司

确认收到此规格书, 兹同意此规格书作为我公司的验收标准。

(收到该规格书后请在上一行相应处签字回传我司技术部)

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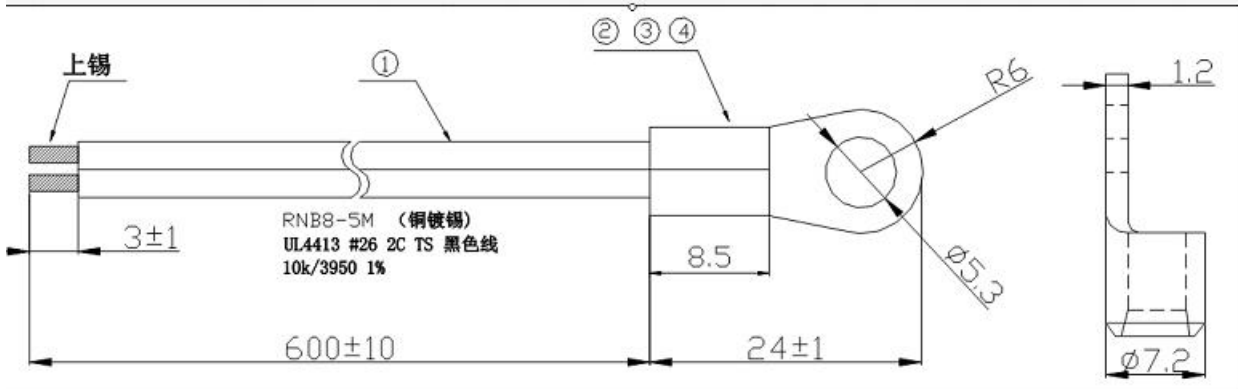
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1、外形尺寸 (Exterior dimension)

(单位: mm)



2、外型规格 (Exterior specification)

序号 Serial number	材料名称 Material name	规格/型号 Specifications / Models	材质 Texture of material	产地 Place of Origin
2-1.	LEAD WIRE (电线)	UL4413 #26AWG 2C TS 300V BLACK		D.H
2-2.	CAP (外壳)	RNB8-5M		K.S
2-3.	EPOXY FILLING (环氧树脂)	NB-5 BLACK		K. W
2-4.	THERMISTOR(电阻)	R25=10KΩ±1% B25/50=3950K±1% SE		S.M

3、电气特性 (Electrial characteristics)

序号 Serial number	项目 Item	符号 Symbol	测试条件 Test Conditions	最小值 Min.	正常值 Nor.	最大值 Max.	单位 Unit
3-1.	Resistance At 25°C	R25	Ta=25±0.05°C P _T ≤ 0.1mw	9.9	10	10.1	kΩ
3-2.	B Constant	B25/50	$B = LN \frac{R_{T1}}{R_{T2}} / \left(\frac{1}{T1} - \frac{1}{T2} \right)$	3910.	3950	3989.5	k
3-3.	Thermal Dissipation Constant	σ	Ta=25±0.5°C	/	2	/	mw/°C
3-4.	Thermal Time Constant (in water)	τ	25 °C → 85°C T1=25+(85-25)*63.2 %=62.9°C	/	/	7	sec
3-5.	Insulation test	/	500VDC	100	/	/	MΩ



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3-6.	Withstand voltage test	/	1500V AC 1mA	3	/	/	Sec
3-7.	Operation Temperature Range	/	/	-20	/	+125	°C
3-8.	25°C 最大功率 (Maximum Power Rating-At 25°C)	/				APPROX4. 5	mW

4、可靠性试验 (Reliability Test)

序号 Serial number	项目 Item	变量 Variable	测试条件及方法 Test Conditions
4-1.	高温试验 Hightemp.test	$\Delta R/R25 \leq \pm 3\%$	105±5°C, 1000±24h (Reference IEC60068-2-2/GB2423.2 test)
4-2.	低温试验 Low temp.test	$\Delta B/B \leq \pm 3\%$	-30±5°C, 1000±24h (Reference IEC60068-2-1/GB2423.1 test)
4-3.	耐潮湿试验 Humidity test	耐电压、绝缘性能无变化。外观无损伤。 Voltage and insulation resistance. Appearance without damage	60±2°C, 90%-95%RH 1000±24h (Reference IEC60068-2-3/GB2423.3 test)
4-4.	温度循环试验 Temp. cycle test		-30°C×30min→25°C×5min→105×30min→25°C×5min, X 5Cycles (Reference IEC60068-2-14/GB2423.22 test)
4-5.	负荷通电试验 Load test		在通电 MAXDC5V 1mA, 500hrs

5、机械性能(Mechanical Characteristics)

序号 Serial number	项目 Item	变量 Variable	测试条件及方法 Test Conditions
5-1.	引线强度 LEAD WIRE Strength	产品不被破坏和损坏 (No break out and obvious damage) 无可见性损伤 (No obvious damage)	缓慢加载 2KGF 测试力度, 10S Add 4KGF testing force slowly, last 10S
5-2.	跌落试验 Drop test		从 1m 高处自由落下混凝土地板, 共进行 5 次。 Free fall from the 1m height of the concrete floor, a total of 5 times



6、贮存方法 (Storage method)

6.1 贮存和运输过程中每堆叠放高度不超过 4 箱产品。During storage and transportation, no more than 4 boxes of products are placed in each stack.

6.2 允许用任何方法运输, 但要避免雨、雪的直接或间接的淋袭和机械损伤。Allows for the transport of any method, but to avoid direct or indirect rain and snow damage and mechanical damage.

6.3 产品应贮存环境在温度为-10℃/+45℃, 相对湿度不大于 80%, 周围环境不应有酸性、碱性物质及腐蚀气体或辐射源。Products should be stored in the environment at a temperature of minus 10 degrees C / C, 45 degrees Celsius, the relative humidity is less than 80%, the surrounding environment should not be acidic, alkaline substances and corrosive gases or radiation source.

7、检验标准 GB2828-2003 (Inspection standard GB2828-2003.)

项目 (Item)	判定标准 (Decision criteria)	检验水平 (Inspection level)	判定基准 Decision criteria
绝缘抵抗 Insulation test	DC500V/100MΩ↑	N=5	C=0
耐电压 Withstand voltage test	AC1500V1mA/5S	N=5	C=0
外观检查 Appearance check	无缺陷 No defect	S=3	C=0
引线强度 LEAD WIRE Strength	2kg.f↑	N=5	C=0
制品长度 Product length	参考图纸 Reference drawing	N=5	C=0
外壳长度 Shell length	参考图纸 Reference drawing	N=5	C=0
阻值 RT1 resistance RT1	Reference resources Electrical characteristics 3-1	S=3	C=0
B Constant	Reference resources Electrical characteristics 3-2	N=5	C=0

TEMPERATURE VS RESISTANCE TABLE

Resistance 10k Ohms at 25deg. C

Resistance Tolerance +/- 1%

B Value 3950K at 25/50deg. C

B Value Tolerance +/- 1%



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Temp. (deg. C)	Rmax (k Ohms)	Rnor (k Ohms)	Rmin (k Ohms)
-40	359.5644	343.6326	328.3739
-39	335.9504	321.2809	307.2213
-38	314.0464	300.5339	287.5741
-37	293.7175	281.2660	269.3154
-36	274.8405	263.3624	252.3384
-35	257.3023	246.7177	236.5449
-34	240.9996	231.2355	221.8447
-33	225.8377	216.8273	208.1555
-32	211.7294	203.4118	195.4013
-31	198.5951	190.9144	183.5124
-30	186.3613	179.2666	172.4247
-29	174.9608	168.4053	162.0793
-28	164.3317	158.2726	152.4218
-27	154.4170	148.8151	143.4022
-26	145.1643	139.9837	134.9746
-25	136.5254	131.7332	127.0964
-24	128.4558	124.0216	119.7285
-23	120.9146	116.8107	112.8348
-22	113.8640	110.0648	106.3818
-21	107.2691	103.7512	100.3387
-20	101.0977	97.8396	94.6771
-19	95.3201	92.3020	89.3705
-18	89.9088	87.1124	84.3946
-17	84.8385	82.2471	79.7268
-16	80.0856	77.6837	75.3463
-15	75.6284	73.4018	71.2336
-14	71.4468	69.3823	67.3708
-13	67.5220	65.6077	63.7412
-12	63.8370	62.0616	60.3295
-11	60.3755	58.7288	57.1212
-10	57.1228	55.5953	54.1032
-9	54.0651	52.6480	51.2629
-8	51.1895	49.8747	48.5889
-7	48.4842	47.2643	46.0705
-6	45.9381	44.8062	43.6978
-5	43.5409	42.4906	41.4615
-4	41.2831	40.3086	39.3531
-3	39.1559	38.2516	37.3644
-2	37.1508	36.3117	35.4880
-1	35.2603	34.4817	33.7169
0	33.4771	32.7547	32.0447



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1	31.7945	31.1243	30.4652
2	30.2064	29.5847	28.9728
3	28.7068	28.1301	27.5623
4	27.2904	26.7556	26.2286
5	25.9521	25.4562	24.9672
6	24.6872	24.2274	23.7738
7	23.4912	23.0650	22.6443
8	22.3599	21.9650	21.5750
9	21.2897	20.9239	20.5622
10	20.2768	19.9380	19.6028
11	19.3178	19.0041	18.6937
12	18.4096	18.1193	17.8318
13	17.5493	17.2807	17.0146
14	16.7340	16.4857	16.2394
15	15.9612	15.7317	15.5040
16	15.2284	15.0164	14.8059
17	14.5333	14.3376	14.1432
18	13.8738	13.6933	13.5139
19	13.2479	13.0816	12.9160
20	12.6537	12.5005	12.3479
21	12.0895	11.9485	11.8080
22	11.5535	11.4239	11.2946
23	11.0442	10.9252	10.8064
24	10.5602	10.4510	10.3419
25	10.1000	10.0000	9.9000
26	9.6709	9.5709	9.4710
27	9.2623	9.1626	9.0630
28	8.8732	8.7738	8.6747
29	8.5025	8.4037	8.3052
30	8.1494	8.0512	7.9534
31	7.8128	7.7154	7.6184
32	7.4919	7.3953	7.2993
33	7.1859	7.0903	6.9953
34	6.8940	6.7995	6.7056
35	6.6156	6.5221	6.4294
36	6.3498	6.2576	6.1660
37	6.0962	6.0051	5.9148
38	5.8540	5.7642	5.6752
39	5.6227	5.5342	5.4465
40	5.4018	5.3146	5.2283
41	5.1907	5.1049	5.0199
42	4.9890	4.9045	4.8210
43	4.7961	4.7130	4.6309
44	4.6117	4.5300	4.4494



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45	4.4354	4.3551	4.2759
46	4.2667	4.1878	4.1100
47	4.1053	4.0278	3.9515
48	3.9508	3.8748	3.7999
49	3.8030	3.7283	3.6548
50	3.6614	3.5882	3.5161
51	3.5258	3.4540	3.3833
52	3.3960	3.3255	3.2562
53	3.2715	3.2025	3.1346
54	3.1523	3.0846	3.0181
55	3.0380	2.9717	2.9065
56	2.9285	2.8635	2.7996
57	2.8234	2.7597	2.6972
58	2.7227	2.6603	2.5990
59	2.6260	2.5649	2.5049
60	2.5333	2.4734	2.4147
61	2.4443	2.3856	2.3282
62	2.3589	2.3014	2.2452
63	2.2768	2.2206	2.1656
64	2.1981	2.1431	2.0892
65	2.1224	2.0686	2.0159
66	2.0498	1.9970	1.9455
67	1.9800	1.9283	1.8779
68	1.9129	1.8623	1.8130
69	1.8484	1.7989	1.7507
70	1.7864	1.7380	1.6908
71	1.7267	1.6794	1.6332
72	1.6694	1.6231	1.5779
73	1.6142	1.5689	1.5247
74	1.5612	1.5168	1.4736
75	1.5101	1.4667	1.4245
76	1.4610	1.4185	1.3772
77	1.4137	1.3722	1.3317
78	1.3681	1.3275	1.2880
79	1.3243	1.2845	1.2458
80	1.2820	1.2431	1.2053
81	1.2413	1.2033	1.1663
82	1.2021	1.1649	1.1287
83	1.1644	1.1279	1.0926
84	1.1279	1.0923	1.0577
85	1.0928	1.0580	1.0241
86	1.0590	1.0249	0.9918
87	1.0264	0.9930	0.9606
88	0.9949	0.9623	0.9306



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89	0.9646	0.9326	0.9016
90	0.9353	0.9040	0.8737
91	0.9070	0.8764	0.8468
92	0.8797	0.8498	0.8208
93	0.8534	0.8241	0.7958
94	0.8280	0.7994	0.7716
95	0.8035	0.7754	0.7483
96	0.7798	0.7523	0.7258
97	0.7569	0.7300	0.7041
98	0.7348	0.7085	0.6831
99	0.7134	0.6877	0.6628
100	0.6928	0.6676	0.6433
101	0.6728	0.6482	0.6244
102	0.6536	0.6295	0.6062
103	0.6349	0.6113	0.5885
104	0.6169	0.5938	0.5715
105	0.5995	0.5769	0.5550
106	0.5826	0.5605	0.5391
107	0.5663	0.5447	0.5237
108	0.5506	0.5293	0.5089
109	0.5353	0.5145	0.4945
110	0.5206	0.5002	0.4806
111	0.5063	0.4863	0.4671
112	0.4924	0.4729	0.4541
113	0.4791	0.4599	0.4415
114	0.4661	0.4474	0.4293
115	0.4535	0.4352	0.4175
116	0.4414	0.4234	0.4061
117	0.4296	0.4120	0.3951
118	0.4182	0.4009	0.3844
119	0.4071	0.3902	0.3740
120	0.3964	0.3799	0.3640
121	0.3860	0.3698	0.3542
122	0.3760	0.3601	0.3448
123	0.3662	0.3506	0.3357
124	0.3568	0.3415	0.3269
125	0.3476	0.3326	0.3183