

规格承认书

SPECIFICATION FOR APPROVAL

客户(Customer):

品名(Product Name): NTC热敏传感器 NTC thermal sensor

维宏料号(Part Number): WH1103F3950 50-2

发布日期(Issue Date): 2024.12.13

发布版本(Rev. No.): V1.1

文件编号(Doc. No.): WH-0-01

客户承认Customer Approved

判定结果 Result		
检验 Inspector	审核 Checked	核准 Approved

维宏感应（山东）科技有限公司

Weihong Induction (Shandong) Technology Co., Ltd

地址：山东省枣庄市峰城区科达西路汉芯半导体产业园

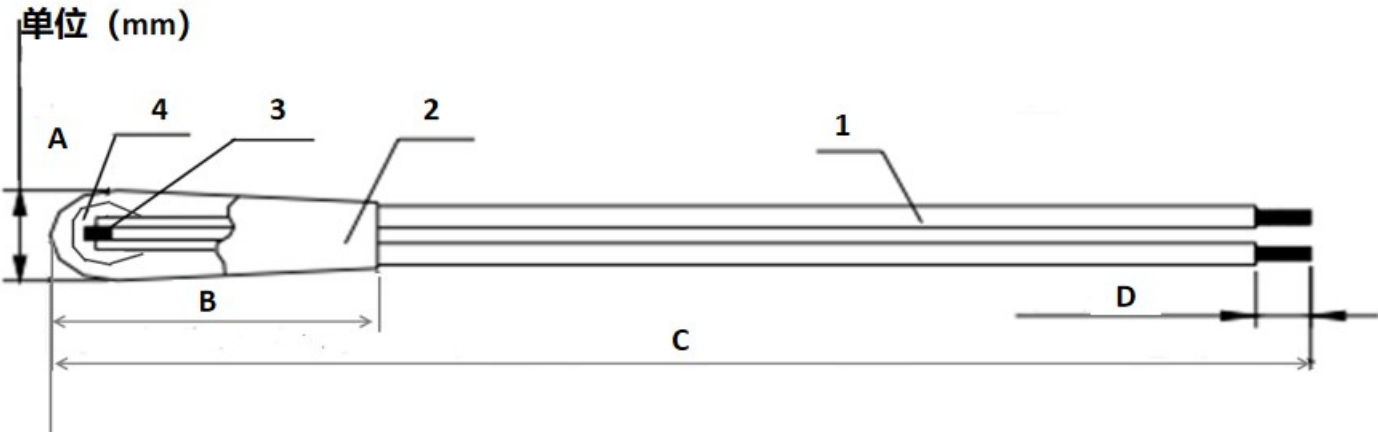
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Zaozhuang City, Shandong Province

修订记录清单 Revised Record Sheet

版本 REV. NO	发布日期 REV. Date	修改内容 Revised Content
V1.1	2024.12.13	新版本发布(New Released)

1. 外形尺寸 Shape and Dimensions:

材料清单 Bill of Material									
NO	名称name	材料规格Material specifications	数量number	备注notes	NO	名称name	材料规格Material specifications	数量number	备注notes
1	线材 wire rod	UL3302-30#	2	黑色 Black	2	环氧树脂 epoxy resin	包封类环氧树脂 Encapsulated epoxy resin	1	黑色 black
3	芯片 chip	R25=10KΩ, B25/50=3950, 1%	1	/	4	硅胶 silica gel	硅胶 silica gel	1	透明 transp arent
主要参数									
项目				数值					
R25阻值 resistance				10KΩ ±1%					
B25/50				3950K ±1%					



A	B	C	D
Max 3.0	Max 7.5	50±5	2±0.5

版本	修改内容 REVISION	修改者 Modified By	修改日期 modification date	确认 confirm	维宏料号 Weihong part number	WH1103F3950 50-2
V1.1	新做成	刘兆霞	2024.12.13	马国辉	日期date	2024.12.13

2. 产品型号说明 Product Identification(Part Number):

WH1	103	F	3950	50	2
①	②	③	④	⑤	⑥

①WH1:

- 维宏公司: 3302 30#单线

Weihong company: 3302 30 # single line

②103: 标准阻值 Standard resistance value

- 25℃的零功率电阻值10KΩ Zero power resistance value of 10K Ω at 25 °C

③F: 阻值允许偏差代号

Code for allowable deviation of resistance value

- F: ±1%, G: ±2%, H: ±3%, J: ±5%, K: ±10%

④3950: B值

- B25/50℃ 值: 3950K

⑤50: 产品长度 (mm) Product length (mm)

⑥2: 尾部侵锡长度 (mm) Tail tin penetration length (mm)

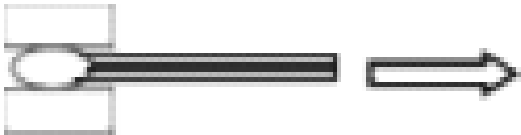
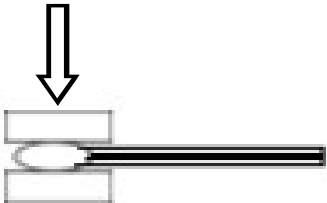
3. 电气特性 Electrical Characteristics:

序号	项目 project	符号 symbol	测试条件 Test conditions	单位 unit	性能要求 Performance Requirement
3.1	25℃的零功率电阻Zero power resistance value at 25 °C	$R_{25^{\circ}\text{C}}$	$T_a=25\pm0.05^{\circ}\text{C}$ 测试功率 $\leq 0.1\text{mw}$	K Ω	$10\text{K}\Omega\pm 1\%$
3.2	B值	$B_{25/50}$	$B=\frac{(T_a\times T_b)}{(T_b-T_a)}\times\ln(R_a/R_b)$ $T_b=50^{\circ}\text{C}\pm 0.05^{\circ}\text{C}$	K	$3950\pm 1\%$
3.3	耗散系数 Dissipation coefficient	δ	静止空气中In still air	mW/°C	≥ 2
3.4	时间常数 time constant	τ	静止空气中In still air	sec	≤ 7
3.5	绝缘耐压 insulation resistance	/	300V/DC 1min	M Ω	≥ 300
3.6	工作温度范围 Operating temperature range	/	/	/	$-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
3.7	最大额定功率 Maximum rated power	P_{max}	/	mW	10
3.8	阻温特性 Resistance temperature characteristic	/	/	/	见附表1

4. 信赖性试验 Reliability Test:

项目 project	测试条件 Test conditions	技术要求 technical requirement
4.1尾部焊接 soldering resistance	温度: $260\pm 5^{\circ}\text{C}$, 浸入深度距电阻体6mm, 时间 5 ± 1 秒	$R_{25} \Delta R/R \leq \pm 2\%$
4.2稳态湿热 Damp heat steady state	温度: $40^{\circ}\text{C}\pm 2^{\circ}\text{C}$, 湿度: $93\pm 2\%$, 时间: 500小时	$R_{25} \Delta R/R \leq \pm 2\%$
4.3冷热冲击 Thermal Shock	-40°C 30min $\rightarrow$ 25°C 5min $\rightarrow$ 105°C 30min $\rightarrow$ 25°C 5min, 反复5次	$R_{25} \Delta R/R \leq \pm 2\%$
4.4低温储存 low temperature storage	温度: -40°C 时间:1000小时	$R_{25} \Delta R/R \leq \pm 2\%$
4.5高温高湿老化 High temperature and high humidity storage	温度: $85^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 湿度: 85% 时间:1000小时 Temperature: $85^{\circ}\text{C}\pm 5^{\circ}\text{C}$ Humidity: 85% Time: 1000 hours	$R_{25} \Delta R/R \leq \pm 5\%$

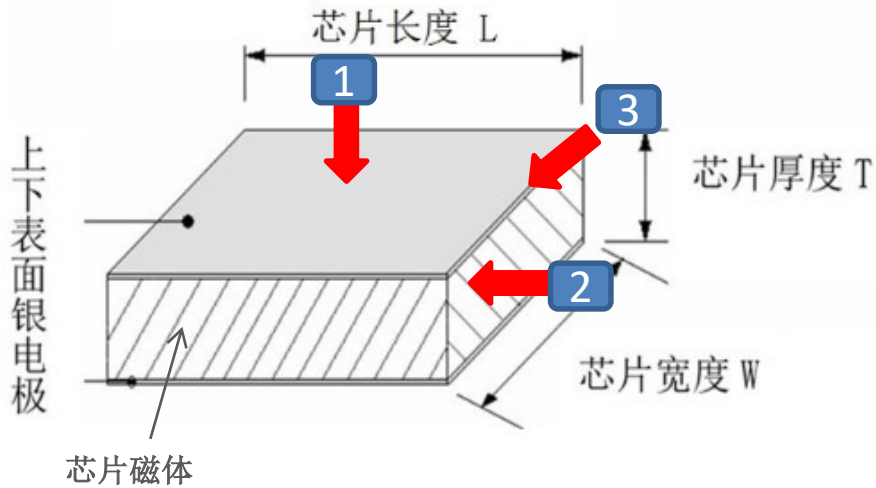
5. 机械性能: Mechanical performance:

项目 project	测试条件 Test conditions	技术要求 technical requirement
5.1自由跌落 free fall	跌落高度: 1.0m Drop height: 1.0m 跌落次数: 3次 Number of drops: 3 times 跌落面: 木板 Falling surface: wooden board	外观无损伤 $\Delta R_{25}/R_{25}$ $\leq 1\%$ $\Delta B/B$ $\leq 1\%$
5.2 水平拉力 Horizontal tensile force	 固定环氧头部: 拉力: $F=5\pm 1\text{N}$, 时间: 10 ± 1 秒 Fixed resistor end: tension: $5 \pm 1\text{ N}$, time: 10 ± 1 seconds	无可见性损伤 No visible damage $R_{25} \Delta R/R \leq \pm 2\%$
5.3垂直拉力 Vertical tension	 固定产品两端引线 $F=1\text{N}$, 1min Fixed product leads at both ends $F=1\text{N}$, 1min	外观无损伤 $\Delta R_{25}/R_{25}$ $\leq 2\%$ $\Delta B/B$ $\leq 2\%$
5.4压力测试 Stress testing	 常规室温接通阻值测试仪/万用表, 阻值稳定后施加50N压力持续5秒 Connect the resistance tester/multimeter to the conventional room temperature at the tail line, and apply 50N pressure for 5 seconds after the resistance stabilizes	$R_{25} \Delta R/R \leq \pm 2\%$

6.高精度NTC热敏电阻芯片特性:

Characteristics of high-precision NTC thermistor chip:

芯片结构chip structure



芯片压力极限测试: Chip Pressure Limit Test

受力方向 Direction of force	极限压力值 Ultimate pressure value	受损部位 Damaged area
①正面 Frontal	80N	电极表面OK, 芯片磁体破损。 The electrode surface is OK, and the chip magnet is damaged.
②侧面 Sides	40N	芯片电极/磁体均出现破损 Both chip electrodes and magnets are damaged
③侧面45度 45 degrees on the side	10N	芯片电极/磁体开裂分离 Chip electrode/magnet cracking separation
芯片电极与磁体结合力 Bonding force between chip electrode and magnet	2N	芯片电极/磁体交接处分离 Separation of chip electrode/magnet junction

7. 使用注意事项 Notes & Warnings:

7.1 本产品的用途：温度测量与控制；

The purpose of this product: temperature measurement and control;

7.2 避免流过热敏电阻芯片的电流引起元件自身发热而产生测量误差；

To avoid measurement errors caused by the heating of the component itself caused by the current flowing through the thermistor chip;

7.3 焊接时，焊接温度应低于 275℃，焊接时间<3ses；

When welding, the welding temperature should be lower than 275 °C and the welding time should be less than 3 seconds;

7.4 允许任何方法运输，但要避免雨/雪直接或间接的淋袭。

Any method of transportation is allowed, but direct or indirect rain/snow should be avoided.

7.5 生产、运输或使用过程中应避免80N以上的外力挤压或损伤。

During production, transportation, or use, external forces exceeding 80N should be avoided from squeezing or damaging.

7.6 存储：Storage:

最佳存储温度： 25℃±3℃ 湿度：30%~60%

Class I: Storage temperature: 25 °C ± 3 °C Humidity: 30%~60%

存储有效期12个月内阻值变化3%以内（仅限整包密封包装），不排除锡脚表面氧化的可能。The resistance change within 12 months of storage validity is within 3% (limited to whole package vacuum packaging), and the possibility of oxidation on the surface of the tin feet cannot be ruled out.

常规存储温度：-10℃~40℃ 湿度：<75%

Class II: Storage temperature: -10 °C ~40 °C Humidity:<75%

存储有效期6个月内阻值变化3%以内（仅限整包密封包装），不排除锡脚表面氧化的可能。The resistance change within 6 months of storage is within 3% (limited to whole package vacuum packaging), and the possibility of oxidation on the surface of the tin feet cannot be ruled out.

R25 = 10.00kΩ±1%

B25/50 = 3950K±1%

温度 [°C]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [°C]	
-50	718.3	681.7	646.9	-0.8	+0.8
-49	668.0	634.4	602.5	-0.8	+0.8
-48	621.6	590.8	561.5	-0.8	+0.8
-47	578.9	550.6	523.6	-0.8	+0.8
-46	539.4	513.4	488.6	-0.8	+0.8
-45	502.9	479.0	456.2	-0.8	+0.8
-44	469.2	447.2	426.1	-0.7	+0.8
-43	438.0	417.7	398.3	-0.7	+0.8
-42	409.1	390.4	372.6	-0.7	+0.7
-41	382.4	365.1	348.7	-0.7	+0.7
-40	357.6	341.7	326.5	-0.7	+0.7
-39	334.2	319.6	305.6	-0.7	+0.7
-38	312.5	299.1	286.1	-0.7	+0.7
-37	292.5	280.0	268.1	-0.7	+0.7
-36	273.8	262.3	251.3	-0.7	+0.7
-35	256.5	245.9	235.7	-0.7	+0.7
-34	240.4	230.6	221.2	-0.7	+0.7
-33	225.5	216.4	207.7	-0.7	+0.7
-32	211.5	203.2	195.1	-0.7	+0.7
-31	198.6	190.9	183.4	-0.7	+0.7
-30	186.5	179.4	172.5	-0.7	+0.7
-29	175.1	168.5	162.1	-0.7	+0.7
-28	164.5	158.4	152.5	-0.7	+0.7
-27	154.6	148.9	143.5	-0.7	+0.7
-26	145.4	140.1	135.1	-0.6	+0.7
-25	136.8	131.9	127.2	-0.6	+0.6
-24	128.7	124.2	119.9	-0.6	+0.6
-23	121.2	117.1	113.0	-0.6	+0.6
-22	114.2	110.3	106.6	-0.6	+0.6
-21	107.6	104.1	100.6	-0.6	+0.6
-20	101.5	98.19	95.01	-0.6	+0.6
-19	95.65	92.61	89.66	-0.6	+0.6
-18	90.21	87.39	84.66	-0.6	+0.6
-17	85.11	82.51	79.97	-0.6	+0.6
-16	80.34	77.93	75.58	-0.6	+0.6
-15	75.88	73.64	71.45	-0.6	+0.6
-14	71.69	69.61	67.58	-0.6	+0.6
-13	67.76	65.83	63.95	-0.6	+0.6
-12	64.08	62.29	60.54	-0.6	+0.6
-11	60.62	58.96	57.34	-0.6	+0.6
-10	57.37	55.83	54.32	-0.5	+0.5
-9	54.28	52.85	51.45	-0.5	+0.5
-8	51.37	50.05	48.75	-0.5	+0.5
-7	48.64	47.41	46.21	-0.5	+0.5
-6	46.08	44.93	43.82	-0.5	+0.5
-5	43.66	42.60	41.57	-0.5	+0.5
-4	41.39	40.41	39.45	-0.5	+0.5
-3	39.26	38.34	37.45	-0.5	+0.5
-2	37.24	36.40	35.57	-0.5	+0.5
-1	35.35	34.56	33.79	-0.5	+0.5
0	33.56	32.83	32.12	-0.5	+0.5

温度 [°C]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [°C]	
1	31.87	31.19	30.53	-0.5	+0.5
2	30.27	29.64	29.02	-0.5	+0.5
3	28.77	28.18	27.61	-0.5	+0.5
4	27.34	26.80	26.27	-0.4	+0.4
5	26.00	25.50	25.00	-0.4	+0.4
6	24.73	24.27	23.81	-0.4	+0.4
7	23.54	23.11	22.68	-0.4	+0.4
8	22.41	22.01	21.61	-0.4	+0.4
9	21.34	20.97	20.60	-0.4	+0.4
10	20.33	19.98	19.64	-0.4	+0.4
11	19.36	19.04	18.72	-0.4	+0.4
12	18.44	18.15	17.85	-0.4	+0.4
13	17.58	17.30	17.03	-0.4	+0.4
14	16.76	16.50	16.25	-0.4	+0.4
15	15.98	15.74	15.51	-0.4	+0.4
16	15.24	15.03	14.81	-0.4	+0.4
17	14.55	14.35	14.15	-0.3	+0.3
18	13.89	13.70	13.52	-0.3	+0.3
19	13.26	13.09	12.92	-0.3	+0.3
20	12.67	12.51	12.35	-0.3	+0.3
21	12.10	11.95	11.81	-0.3	+0.3
22	11.56	11.43	11.29	-0.3	+0.3
23	11.05	10.93	10.80	-0.3	+0.3
24	10.57	10.45	10.34	-0.3	+0.3
25	10.10	10.00	9.900	-0.3	+0.3
26	9.670	9.569	9.469	-0.3	+0.3
27	9.260	9.160	9.060	-0.3	+0.3
28	8.870	8.770	8.671	-0.3	+0.3
29	8.499	8.400	8.301	-0.3	+0.3
30	8.146	8.047	7.949	-0.3	+0.3
31	7.808	7.710	7.613	-0.3	+0.3
32	7.486	7.389	7.292	-0.4	+0.4
33	7.179	7.083	6.988	-0.4	+0.4
34	6.887	6.792	6.697	-0.4	+0.4
35	6.608	6.514	6.421	-0.4	+0.4
36	6.342	6.250	6.158	-0.4	+0.4
37	6.089	5.998	5.907	-0.4	+0.4
38	5.847	5.757	5.668	-0.4	+0.4
39	5.617	5.528	5.440	-0.4	+0.4
40	5.397	5.309	5.222	-0.5	+0.5
41	5.185	5.099	5.013	-0.5	+0.5
42	4.983	4.898	4.814	-0.5	+0.5
43	4.790	4.707	4.624	-0.5	+0.5
44	4.606	4.524	4.443	-0.5	+0.5
45	4.430	4.350	4.270	-0.5	+0.5
46	4.262	4.183	4.104	-0.5	+0.5
47	4.101	4.023	3.946	-0.5	+0.5
48	3.947	3.871	3.795	-0.6	+0.6
49	3.800	3.725	3.651	-0.6	+0.6
50	3.659	3.586	3.513	-0.6	+0.6
51	3.523	3.451	3.380	-0.6	+0.6
52	3.393	3.322	3.252	-0.6	+0.6
53	3.268	3.199	3.130	-0.6	+0.6
54	3.149	3.081	3.014	-0.6	+0.6
55	3.034	2.968	2.902	-0.6	+0.6
56	2.925	2.859	2.795	-0.7	+0.7
57	2.820	2.756	2.693	-0.7	+0.7
58	2.719	2.657	2.595	-0.7	+0.7
59	2.623	2.561	2.501	-0.7	+0.7
60	2.531	2.470	2.411	-0.7	+0.7
61	2.441	2.382	2.324	-0.7	+0.7

温度 [°C]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [°C]	
62	2.356	2.298	2.241	-0.7	+0.7
63	2.274	2.217	2.162	-0.7	+0.8
64	2.195	2.139	2.085	-0.8	+0.8
65	2.119	2.065	2.012	-0.8	+0.8
66	2.047	1.994	1.942	-0.8	+0.8
67	1.977	1.925	1.874	-0.8	+0.8
68	1.910	1.859	1.809	-0.8	+0.8
69	1.846	1.796	1.747	-0.8	+0.8
70	1.784	1.735	1.688	-0.8	+0.9
71	1.724	1.677	1.630	-0.9	+0.9
72	1.667	1.620	1.575	-0.9	+0.9
73	1.612	1.566	1.522	-0.9	+0.9
74	1.559	1.514	1.470	-0.9	+0.9
75	1.508	1.464	1.421	-0.9	+0.9
76	1.459	1.416	1.374	-0.9	+0.9
77	1.412	1.370	1.329	-0.9	+1.0
78	1.366	1.325	1.285	-1.0	+1.0
79	1.323	1.282	1.243	-1.0	+1.0
80	1.280	1.241	1.203	-1.0	+1.0
81	1.240	1.201	1.164	-1.0	+1.0
82	1.201	1.163	1.126	-1.0	+1.0
83	1.163	1.126	1.090	-1.0	+1.0
84	1.127	1.091	1.056	-1.1	+1.1
85	1.092	1.057	1.022	-1.1	+1.1
86	1.058	1.024	0.9904	-1.1	+1.1
87	1.026	0.9917	0.9593	-1.1	+1.1
88	0.9937	0.9610	0.9293	-1.1	+1.1
89	0.9634	0.9315	0.9005	-1.1	+1.1
90	0.9343	0.9030	0.8727	-1.1	+1.2
91	0.9060	0.8754	0.8458	-1.2	+1.2
92	0.8788	0.8488	0.8198	-1.2	+1.2
93	0.8525	0.8232	0.7948	-1.2	+1.2
94	0.8272	0.7985	0.7707	-1.2	+1.2
95	0.8027	0.7746	0.7475	-1.2	+1.2
96	0.7791	0.7516	0.7250	-1.2	+1.2
97	0.7563	0.7294	0.7034	-1.3	+1.3
98	0.7343	0.7080	0.6825	-1.3	+1.3
99	0.7130	0.6873	0.6624	-1.3	+1.3
100	0.6925	0.6673	0.6429	-1.3	+1.3
101	0.6726	0.6479	0.6240	-1.3	+1.3
102	0.6533	0.6291	0.6058	-1.3	+1.3
103	0.6347	0.6110	0.5882	-1.3	+1.4
104	0.6167	0.5935	0.5712	-1.4	+1.4
105	0.5993	0.5766	0.5548	-1.4	+1.4
106	0.5825	0.5603	0.5389	-1.4	+1.4
107	0.5663	0.5445	0.5236	-1.4	+1.4
108	0.5505	0.5293	0.5087	-1.4	+1.4
109	0.5353	0.5145	0.4944	-1.4	+1.5
110	0.5206	0.5002	0.4806	-1.5	+1.5
111	0.5063	0.4863	0.4671	-1.5	+1.5
112	0.4924	0.4729	0.4540	-1.5	+1.5
113	0.4790	0.4598	0.4414	-1.5	+1.5
114	0.4660	0.4472	0.4292	-1.5	+1.5
115	0.4534	0.4351	0.4174	-1.5	+1.6
116	0.4413	0.4233	0.4059	-1.6	+1.6
117	0.4295	0.4118	0.3949	-1.6	+1.6
118	0.4181	0.4008	0.3842	-1.6	+1.6
119	0.4070	0.3901	0.3738	-1.6	+1.6
120	0.3963	0.3797	0.3638	-1.6	+1.6
121	0.3859	0.3697	0.3540	-1.6	+1.7
122	0.3758	0.3599	0.3446	-1.7	+1.7

温度 [°C]	R最大 [kΩ]	R中心 [kΩ]	R最小 [kΩ]	温度偏差 [°C]	
123	0.3661	0.3505	0.3355	-1.7	+1.7
124	0.3566	0.3413	0.3266	-1.7	+1.7
125	0.3474	0.3324	0.3181	-1.7	+1.7
126	0.3385	0.3238	0.3097	-1.7	+1.8
127	0.3299	0.3155	0.3017	-1.8	+1.8
128	0.3216	0.3074	0.2939	-1.8	+1.8
129	0.3135	0.2996	0.2863	-1.8	+1.8
130	0.3056	0.2920	0.2790	-1.8	+1.8
131	0.2979	0.2846	0.2719	-1.8	+1.8
132	0.2905	0.2774	0.2649	-1.8	+1.9
133	0.2832	0.2704	0.2582	-1.9	+1.9
134	0.2762	0.2637	0.2517	-1.9	+1.9
135	0.2694	0.2571	0.2454	-1.9	+1.9
136	0.2628	0.2508	0.2392	-1.9	+1.9
137	0.2564	0.2446	0.2333	-1.9	+2.0
138	0.2502	0.2386	0.2275	-2.0	+2.0
139	0.2442	0.2328	0.2219	-2.0	+2.0
140	0.2383	0.2271	0.2164	-2.0	+2.0
141	0.2326	0.2216	0.2111	-2.0	+2.0
142	0.2270	0.2163	0.2060	-2.0	+2.0
143	0.2216	0.2111	0.2010	-2.0	+2.1
144	0.2164	0.2060	0.1961	-2.1	+2.1
145	0.2113	0.2011	0.1914	-2.1	+2.1
146	0.2063	0.1963	0.1868	-2.1	+2.1
147	0.2015	0.1917	0.1824	-2.1	+2.1
148	0.1968	0.1872	0.1781	-2.1	+2.2
149	0.1922	0.1828	0.1739	-2.2	+2.2
150	0.1878	0.1786	0.1698	-2.2	+2.2