

**SINLOON**

# Approval

**Manufacturer:**

Mayloon Electronic Co., Ltd.,  
Falt E, 17/F Houston Ind., Bldg.,  
32-40 Wang Lung St., Tsuen Wan.

**Customer:**

Approved By:	Checked By:	Prepared By :

Approved By:	Examined By:	Tested By :

Company's Stamp	
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Company's Stamp	
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Approval No. : \_\_\_\_\_

Product : NTC THERMISTOR

UNIX's Part No. : SMD05-223 J 3900 H

Customer's Part No. : \_\_\_\_\_

Specifications : R<sub>25</sub> 22,000 Ω ± 5 %

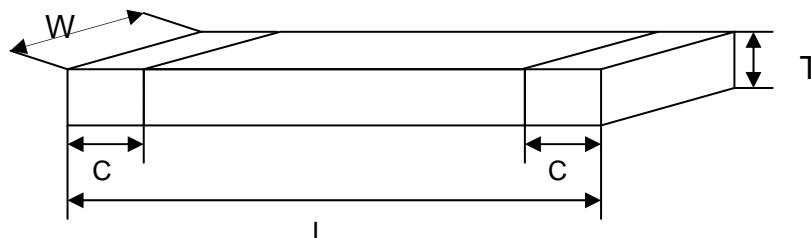
B<sub>25-85</sub> 3900 °K ± 3 %

Date : \_\_\_\_\_

## Specification of SMD Chips Thermistor

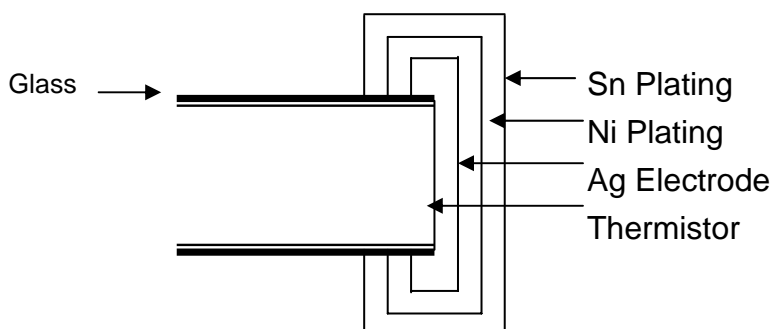
◆ **PART NO. : SMD05-223 J 3900 H**

◆ **CHIP DIMENSIONS**



Item	L(mm)	W(mm)	T(mm)	C(mm)
2125 ( 0805 )	2.00 ±0.20	1.25 ±0.20	1.20±0.20	0.50±0.20

◆ **CHIP STRUCTURE**



◆ **ELECTRICAL CHARACTERISTICS**

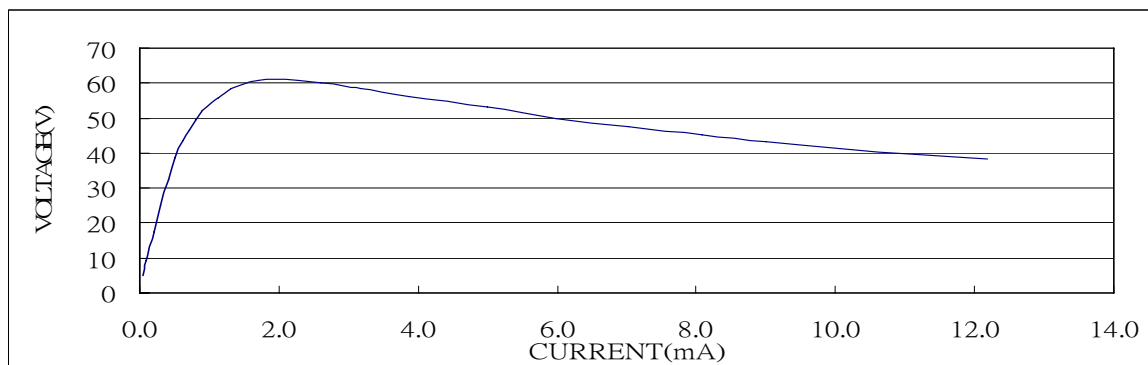
Style	Symbol	Condition	Specification
Resistance at 25°C	R25	T = 25 ± 0.1°C	22K Ω ± 5 %
B Constant	B	25°C to 85°C	3900 °K ± 3 %
Thermal Time Constant	T	T = 25 ± 0.1°C	Approx. 7.5 sec
Thermal Dissipation Constant	C	T = 25 ± 0.1°C	Approx. 4 mW/°C
Maximum Power Rating*	Pw	T = 25 ± 0.1°C	400 mW
Operation Temp. Range	--	--	-40°C ~ 125°C

\*Maximum Power Rating = Thermal Dissipation Constant × (125°C - 25°C)

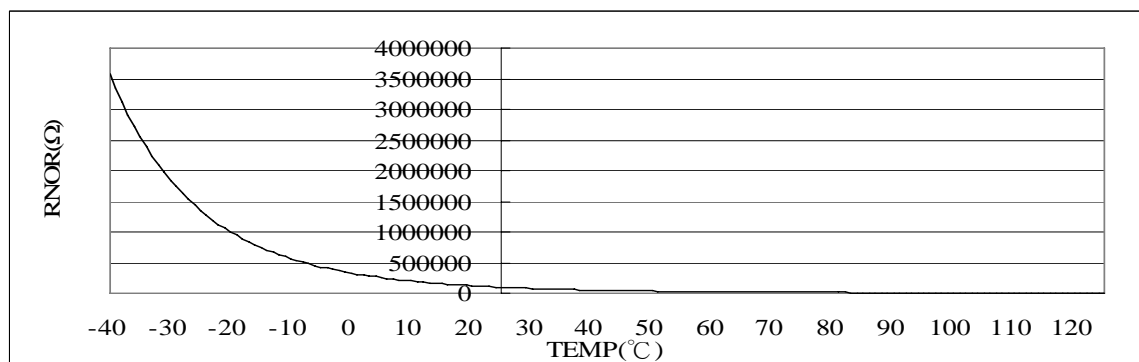
◆ RELIABILITY TEST

PERFORMANCE	TEST METHOD	APPRAISE
Life	MIL – STD – 202F , Method 108A 1000 hours at 125°C NTC WV intermittent	Within ±3 %
Humidity	MIL – STD – 202F , Method 103B 1000 hours at Temperature: 40°C Humidity: 95%	Within ±3 %
Thermal Shock	MIL – STD – 202F , Method 107 10 cycles, -40°C to +125°C	Within ±3 %
Solderability	MIL – STD – 202F , Method 208 235°C for 2 seconds	95% min. coverage
Resistance to Soldering Heat	MIL – R – 55342D , Para 4.7.7 Soldered to test board at 260°C for 10 seconds	Within ±3 %
Bending Strength	JIS C 5202 6.1.4 Pressurizing rod at a rate at 1mm/sec for 1mm	Within ±3 %
Resistance to flexure of Substrate	JIS C 5202 6.2.1 Pressurizing force shall be 3kg (min.)	Over 3 kg
Insulation Resistance	MIL – STD – 202F , Method 302 DC 250V For 10 seconds	Over 1000MΩ
Dielectric Withstand Voltage	MIL – STD – 202F , Method 301 DC 250V For 10 seconds	Not Short

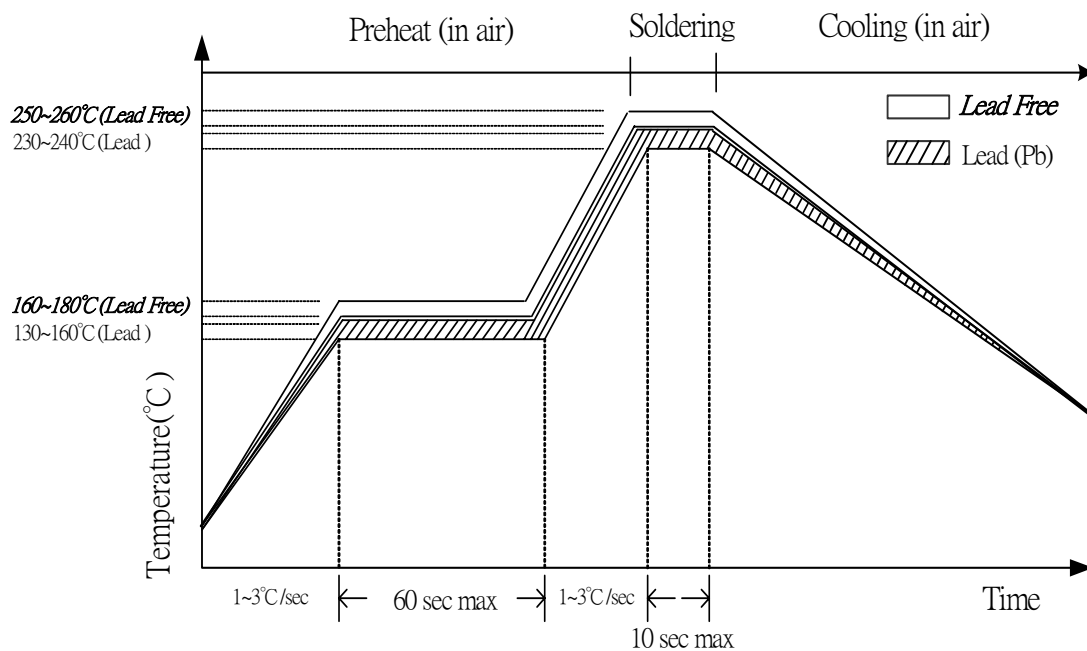
◆ VOLTAGE – CURRENT CURVE



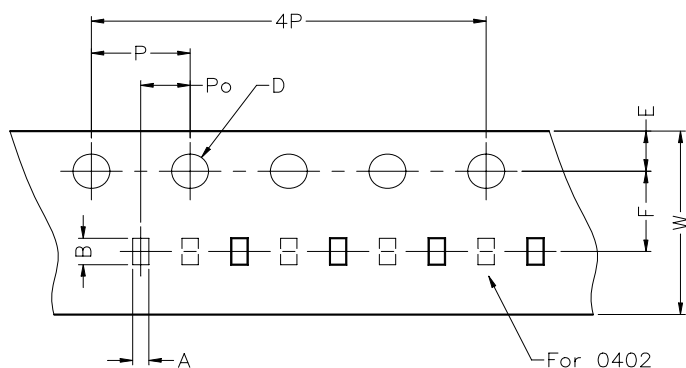
◆ RESISTANCE – TEMP CURVE



### ◆ REFLOW SOLDERING PROFILE



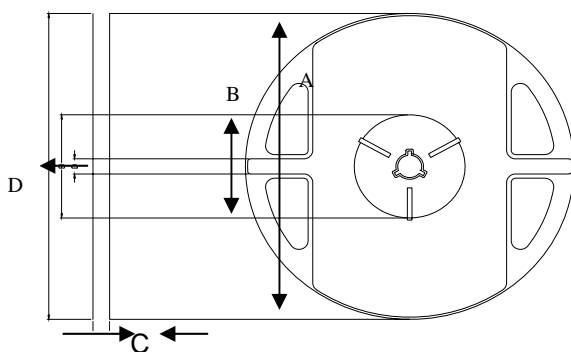
### ◆ TAPING DIMENSIONS



Unit: mm

Dimension	0805	0603	0402
A	1.50 ± 0.05	1.08 ± 0.05	0.66 ± 0.03
B	2.30 ± 0.05	1.85 ± 0.05	1.15 ± 0.03
W	8.00 ± 0.05	8.00 ± 0.05	8.00 ± 0.05
D	1.50 ± 0.10	1.50 ± 0.10	1.50 ± 0.10
E	1.75 ± 0.05	1.75 ± 0.05	1.75 ± 0.05
F	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05
P	4.00 ± 0.05	4.00 ± 0.05	4.00 ± 0.05
P <sub>o</sub>	2.00 ± 0.05	2.00 ± 0.05	2.00 ± 0.05
4P	16.00 ± 0.05	16.00 ± 0.05	16.00 ± 0.05

◆ REEL DIMENSIONS



Unit: mm

Item	A	B	C	D
Dimension	178.0±1.0	60.0±1.0	9.0±0.1	13.0±0.1

◆ ORDERING INFORMATION

SMD    05    223    J    3900    H  
 ①        ②        ③        ④        ⑤        ⑥

1. Series SMD Thermistor. (Lead Free)
2. Dimension : 06 ( 1206 ) , 05 ( 0805 ) , 03 ( 0603 ) , 02 ( 0402 )
3. Resistance : 223 =  $22 \times 10^3 = 22,000$  ohm
4. R Tolerance : F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%
5. B value : 3215, 3435, 3700, 3900, 4000, 4100,.....etc.
6. B Tolerance : F:±1% ; G:±2% ; H:±3%

● ACCESSORY : RESISTANCE-TEMPERATURE CHARACTERISTICS

## RESISTANCE-TEMPERATURE CHARACTERISTICS

PART NO.: **SMD05-223 J 3900 H**

R : 22,000 ohms ± 5%  
B : 3900 °K ± 3%

Temperature (°C)	Resistance (Ω)			Temperture Coef.	Resist. Tolerance (%)		Temp. Tolerance (°C)	
	MIN.	CENTER	MAX.	(%/°C)	MIN.	MAX.	MIN.	MAX.
-40.0	718461	843708	988314	-7.17	-14.84	17.14	-2.39	2.07
-39.0	670360	785537	918203	-7.11	-14.66	16.89	-2.37	2.06
-38.0	625849	731822	853599	-7.05	-14.48	16.64	-2.36	2.05
-37.0	584633	682188	794032	-6.99	-14.30	16.39	-2.34	2.04
-36.0	546445	636297	739072	-6.93	-14.12	16.15	-2.33	2.04
-35.0	511042	593841	688330	-6.88	-13.94	15.91	-2.31	2.03
-34.0	478200	554538	641454	-6.82	-13.77	15.67	-2.30	2.02
-33.0	447716	518131	598122	-6.76	-13.59	15.44	-2.28	2.01
-32.0	419405	484387	558040	-6.71	-13.42	15.21	-2.27	2.00
-31.0	393096	453093	520943	-6.65	-13.24	14.97	-2.25	1.99
-30.0	368633	424054	486587	-6.60	-13.07	14.75	-2.24	1.98
-29.0	345875	397091	454750	-6.54	-12.90	14.52	-2.22	1.97
-28.0	324691	372042	425232	-6.49	-12.73	14.30	-2.20	1.96
-27.0	304961	348757	397846	-6.44	-12.56	14.08	-2.19	1.95
-26.0	286575	327101	372425	-6.38	-12.39	13.86	-2.17	1.94
-25.0	269432	306948	348814	-6.33	-12.22	13.64	-2.15	1.93
-24.0	253441	288184	326871	-6.28	-12.06	13.42	-2.14	1.92
-23.0	238515	270703	306468	-6.23	-11.89	13.21	-2.12	1.91
-22.0	224577	254410	287486	-6.18	-11.73	13.00	-2.10	1.90
-21.0	211554	239215	269816	-6.13	-11.56	12.79	-2.09	1.89
-20.0	199380	225037	253360	-6.09	-11.40	12.59	-2.07	1.87
-19.0	187995	211801	238025	-6.04	-11.24	12.38	-2.05	1.86
-18.0	177342	199438	223727	-5.99	-11.08	12.18	-2.03	1.85
-17.0	167368	187885	210391	-5.94	-10.92	11.98	-2.02	1.84
-16.0	158027	177084	197943	-5.90	-10.76	11.78	-2.00	1.82
-15.0	149273	166980	186321	-5.85	-10.60	11.58	-1.98	1.81
-14.0	141066	157524	175462	-5.81	-10.45	11.39	-1.96	1.80
-13.0	133368	148670	165313	-5.76	-10.29	11.19	-1.94	1.79
-12.0	126145	140376	155822	-5.72	-10.14	11.00	-1.92	1.77
-11.0	119364	132603	146942	-5.67	-9.98	10.81	-1.91	1.76
-10.0	112994	125314	138630	-5.63	-9.83	10.63	-1.89	1.75
-9.0	107009	118477	130845	-5.59	-9.68	10.44	-1.87	1.73

-8.0	101383	112060	123552	-5.55	-9.53	10.26	-1.85	1.72
-7.0	96091	106035	116716	-5.51	-9.38	10.07	-1.83	1.70
-6.0	91112	100376	110305	-5.46	-9.23	9.89	-1.81	1.69
-5.0	86425	95057	104289	-5.42	-9.08	9.71	-1.79	1.67
-4.0	82012	90057	98643	-5.38	-8.93	9.53	-1.77	1.66
-3.0	77854	85354	93342	-5.34	-8.79	9.36	-1.75	1.64
-2.0	73935	80928	88361	-5.30	-8.64	9.18	-1.73	1.63
-1.0	70241	76762	83679	-5.27	-8.50	9.01	-1.71	1.61
0.0	66756	72839	79277	-5.23	-8.35	8.84	-1.69	1.60
1.0	63467	69142	75137	-5.19	-8.21	8.67	-1.67	1.58
2.0	60363	65658	71240	-5.15	-8.07	8.50	-1.65	1.57
3.0	57431	62373	67572	-5.11	-7.92	8.33	-1.63	1.55
4.0	54661	59275	64117	-5.08	-7.78	8.17	-1.61	1.53
5.0	52044	56350	60861	-5.04	-7.64	8.00	-1.59	1.52
6.0	49569	53590	57793	-5.00	-7.50	7.84	-1.57	1.50
7.0	47228	50983	54899	-4.97	-7.37	7.68	-1.55	1.48
8.0	45013	48520	52169	-4.93	-7.23	7.52	-1.52	1.46
9.0	42917	46192	49593	-4.90	-7.09	7.36	-1.50	1.45
10.0	40932	43992	47161	-4.86	-6.95	7.21	-1.48	1.43
11.0	39052	41910	44865	-4.83	-6.82	7.05	-1.46	1.41
12.0	37271	39940	42695	-4.80	-6.68	6.90	-1.44	1.39
13.0	35582	38076	40644	-4.76	-6.55	6.74	-1.42	1.38
14.0	33981	36311	38704	-4.73	-6.42	6.59	-1.39	1.36
15.0	32462	34640	36870	-4.70	-6.28	6.44	-1.37	1.34
16.0	31021	33055	35135	-4.66	-6.15	6.29	-1.35	1.32
17.0	29654	31554	33492	-4.63	-6.02	6.14	-1.33	1.30
18.0	28355	30130	31937	-4.60	-5.89	6.00	-1.30	1.28
19.0	27122	28780	30464	-4.57	-5.76	5.85	-1.28	1.26
20.0	25950	27499	29068	-4.54	-5.63	5.71	-1.26	1.24
21.0	24836	26283	27745	-4.51	-5.51	5.56	-1.23	1.22
22.0	23777	25128	26490	-4.48	-5.38	5.42	-1.21	1.20
23.0	22770	24032	25300	-4.45	-5.25	5.28	-1.19	1.18
24.0	21812	22990	24171	-4.42	-5.13	5.14	-1.16	1.16
25.0	20900	22000	23100	-4.39	-5.00	5.00	-1.14	1.14
26.0	19980	21059	22141	-4.36	-5.12	5.14	-1.18	1.18
27.0	19105	20164	21227	-4.33	-5.25	5.27	-1.22	1.21
28.0	18275	19312	20357	-4.30	-5.37	5.41	-1.26	1.25
29.0	17486	18502	19528	-4.27	-5.49	5.55	-1.30	1.29
30.0	16735	17731	18738	-4.24	-5.61	5.68	-1.34	1.32
31.0	16022	16996	17985	-4.22	-5.73	5.82	-1.38	1.36

32.0	15343	16297	17267	-4.19	-5.85	5.95	-1.42	1.40
33.0	14698	15631	16581	-4.16	-5.97	6.08	-1.46	1.43
34.0	14083	14996	15927	-4.13	-6.09	6.21	-1.50	1.47
35.0	13498	14390	15303	-4.11	-6.20	6.35	-1.55	1.51
36.0	12940	13813	14708	-4.08	-6.32	6.48	-1.59	1.55
37.0	12410	13262	14139	-4.05	-6.43	6.61	-1.63	1.59
38.0	11904	12737	13595	-4.03	-6.54	6.74	-1.67	1.62
39.0	11421	12236	13076	-4.00	-6.66	6.86	-1.71	1.66
40.0	10961	11757	12579	-3.98	-6.77	6.99	-1.76	1.70
41.0	10523	11300	12105	-3.95	-6.88	7.12	-1.80	1.74
42.0	10104	10864	11651	-3.93	-6.99	7.25	-1.85	1.78
43.0	9705	10447	11217	-3.90	-7.10	7.37	-1.89	1.82
44.0	9324	10048	10802	-3.88	-7.21	7.50	-1.93	1.86
45.0	8960	9667	10404	-3.85	-7.31	7.62	-1.98	1.90
46.0	8613	9303	10024	-3.83	-7.42	7.75	-2.02	1.94
47.0	8281	8955	9659	-3.81	-7.53	7.87	-2.07	1.98
48.0	7963	8621	9310	-3.78	-7.63	7.99	-2.11	2.02
49.0	7660	8302	8976	-3.76	-7.74	8.11	-2.16	2.06
50.0	7370	7997	8656	-3.73	-7.84	8.24	-2.21	2.10
51.0	7093	7705	8349	-3.71	-7.94	8.36	-2.25	2.14
52.0	6828	7425	8054	-3.69	-8.05	8.48	-2.30	2.18
53.0	6574	7157	7772	-3.67	-8.15	8.60	-2.35	2.22
54.0	6331	6900	7501	-3.64	-8.25	8.72	-2.39	2.26
55.0	6098	6654	7242	-3.62	-8.35	8.84	-2.44	2.30
56.0	5876	6418	6992	-3.60	-8.45	8.95	-2.49	2.35
57.0	5662	6192	6753	-3.58	-8.55	9.07	-2.54	2.39
58.0	5458	5975	6524	-3.56	-8.64	9.19	-2.58	2.43
59.0	5262	5766	6303	-3.54	-8.74	9.30	-2.63	2.47
60.0	5075	5567	6091	-3.51	-8.84	9.42	-2.68	2.51
61.0	4895	5375	5888	-3.49	-8.93	9.53	-2.73	2.56
62.0	4723	5191	5692	-3.47	-9.03	9.65	-2.78	2.60
63.0	4557	5015	5504	-3.45	-9.12	9.76	-2.83	2.64
64.0	4398	4845	5323	-3.43	-9.22	9.88	-2.88	2.69
65.0	4246	4682	5150	-3.41	-9.31	9.99	-2.93	2.73
66.0	4100	4525	4983	-3.39	-9.40	10.10	-2.98	2.77
67.0	3960	4375	4822	-3.37	-9.49	10.21	-3.03	2.82
68.0	3825	4230	4667	-3.35	-9.58	10.32	-3.08	2.86
69.0	3696	4091	4518	-3.33	-9.68	10.43	-3.13	2.90
70.0	3571	3958	4375	-3.31	-9.77	10.54	-3.18	2.95
71.0	3452	3829	4237	-3.29	-9.85	10.65	-3.24	2.99

72.0	3337	3705	4104	-3.27	-9.94	10.76	-3.29	3.04
73.0	3227	3586	3976	-3.25	-10.03	10.87	-3.34	3.08
74.0	3121	3472	3853	-3.24	-10.12	10.98	-3.39	3.13
75.0	3019	3362	3734	-3.22	-10.21	11.09	-3.45	3.17
76.0	2920	3256	3620	-3.20	-10.29	11.19	-3.50	3.22
77.0	2826	3153	3510	-3.18	-10.38	11.30	-3.55	3.26
78.0	2735	3055	3403	-3.16	-10.46	11.41	-3.61	3.31
79.0	2648	2960	3301	-3.14	-10.55	11.51	-3.66	3.35
80.0	2564	2869	3202	-3.13	-10.63	11.62	-3.72	3.40
81.0	2483	2781	3107	-3.11	-10.72	11.72	-3.77	3.45
82.0	2405	2696	3014	-3.09	-10.80	11.83	-3.82	3.49
83.0	2329	2614	2926	-3.07	-10.88	11.93	-3.88	3.54
84.0	2257	2535	2840	-3.06	-10.96	12.03	-3.94	3.59
85.0	2187	2459	2757	-3.04	-11.04	12.13	-3.99	3.63
86.0	2120	2385	2677	-3.02	-11.13	12.24	-4.05	3.68
87.0	2055	2315	2600	-3.01	-11.21	12.34	-4.10	3.73
88.0	1993	2246	2526	-2.99	-11.29	12.44	-4.16	3.77
89.0	1932	2180	2454	-2.97	-11.36	12.54	-4.22	3.82
90.0	1874	2116	2384	-2.96	-11.44	12.64	-4.27	3.87
91.0	1818	2055	2317	-2.94	-11.52	12.74	-4.33	3.92
92.0	1764	1996	2252	-2.92	-11.60	12.84	-4.39	3.97
93.0	1712	1938	2189	-2.91	-11.68	12.94	-4.45	4.01
94.0	1661	1883	2128	-2.89	-11.75	13.04	-4.51	4.06
95.0	1613	1829	2069	-2.88	-11.83	13.13	-4.56	4.11
96.0	1566	1777	2013	-2.86	-11.91	13.23	-4.62	4.16
97.0	1520	1727	1958	-2.85	-11.98	13.33	-4.68	4.21
98.0	1477	1679	1905	-2.83	-12.06	13.43	-4.74	4.26
99.0	1434	1632	1853	-2.82	-12.13	13.52	-4.80	4.31
100.0	1393	1587	1803	-2.80	-12.21	13.62	-4.86	4.36
101.0	1354	1543	1755	-2.79	-12.28	13.71	-4.92	4.41
102.0	1316	1501	1708	-2.77	-12.35	13.81	-4.98	4.46
103.0	1279	1460	1663	-2.76	-12.42	13.90	-5.04	4.51
104.0	1243	1421	1619	-2.74	-12.50	14.00	-5.10	4.56
105.0	1209	1382	1577	-2.73	-12.57	14.09	-5.17	4.61
106.0	1175	1345	1536	-2.71	-12.64	14.18	-5.23	4.66
107.0	1143	1309	1496	-2.70	-12.71	14.27	-5.29	4.71
108.0	1112	1275	1458	-2.68	-12.78	14.37	-5.35	4.76
109.0	1081	1241	1420	-2.67	-12.85	14.46	-5.41	4.81
110.0	1052	1208	1384	-2.66	-12.92	14.55	-5.48	4.86
111.0	1024	1177	1349	-2.64	-12.99	14.64	-5.54	4.92

<b>112.0</b>	996	1146	1315	-2.63	-13.06	14.73	-5.60	4.97
<b>113.0</b>	970	1116	1282	-2.62	-13.13	14.82	-5.67	5.02
<b>114.0</b>	944	1088	1250	-2.60	-13.19	14.91	-5.73	5.07
<b>115.0</b>	919	1060	1219	-2.59	-13.26	15.00	-5.80	5.12
<b>116.0</b>	895	1033	1189	-2.58	-13.33	15.09	-5.86	5.18
<b>117.0</b>	872	1007	1159	-2.56	-13.40	15.18	-5.92	5.23
<b>118.0</b>	849	981	1131	-2.55	-13.46	15.27	-5.99	5.28
<b>119.0</b>	827	957	1103	-2.54	-13.53	15.36	-6.06	5.33
<b>120.0</b>	806	933	1077	-2.52	-13.59	15.44	-6.12	5.39
<b>121.0</b>	785	909	1051	-2.51	-13.66	15.53	-6.19	5.44
<b>122.0</b>	765	887	1025	-2.50	-13.72	15.62	-6.25	5.49
<b>123.0</b>	746	865	1001	-2.49	-13.79	15.70	-6.32	5.55
<b>124.0</b>	727	844	977	-2.47	-13.85	15.79	-6.39	5.60
<b>125.0</b>	709	823	954	-2.46	-13.92	15.88	-6.45	5.66