

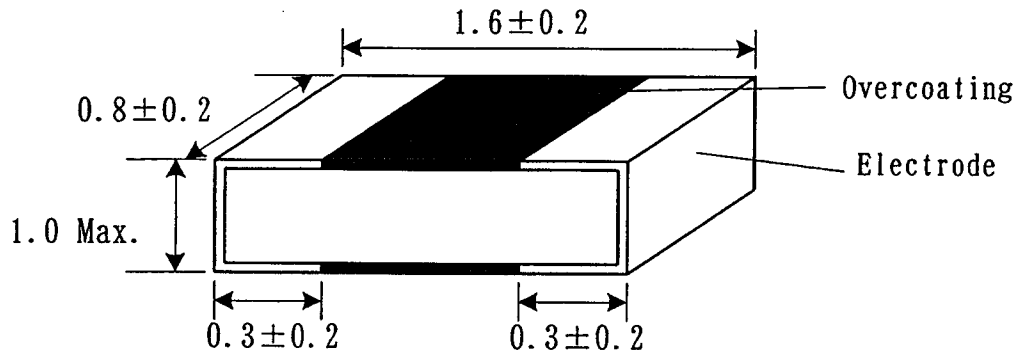
S P E C I F I C A T I O N S
Chip thermistor
NSM3 TYPE

1. Scope

This specification is applicable to dimensions and electrical characteristics of SMD type chip thermistor.

2. Shape & Dimensions

Unit; mm



3. Electrical characteristics

Item	Standard	Test Method & Condition
1. Resistance (R25)	REFER TO THE LIST ON PAGE 3	R ₂₅ ; The resistance value at 25°C
2. B-value (B25/85)		B25/85 ; Calculated by Ln (R25/R85) / (1/T25-1/T85) (T25, T85 are absolute temperature values with for 25°C & 85°C respectively)
3. Maximum rated wattage (at 25°C)	150 mW	This value is measured in the still air with the sample which is soldered on a glass epoxy board t=1.6mm
4. Thermal dissipation constant	1.7 mW/°C	This value is measured in the still air with the sample which is soldered on a solder coated copper wire φ=0.25mm
5. Category temperature	-40°C~+125°C	

Approved;	<i>N. Takahashi</i>
Checked ;	<i>T. Sawame</i>
Designed;	<i>T. Nishimura</i>
8) April 27, 2004	

4. Soldering condition

This device can be applied to both flow and reflow soldering

5. Meaning of Part No.

NSM 3 000 □ 000 □ ○ ○
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Chip type thermistor
- ② Chip size
- ③ Resistance value
- ④ Tolerance of Resistance
- ⑤ B-value
- ⑥ Tolerance of B-value
- ⑦ Electrode structures (tin plating)
- ⑧ Packing

Tolerance

Symbol	Tolerance of Resistance	Tolerance of B-value
F	1 %	
G	2 %	
H	3 %	3 %
J	5 %	5 %
K	10 %	

Packing

Symbol	Form of packing
Z	Bulk
R	Punched carrier tape

For example

NSM 3 101 J 280 J 3 R
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Chip type thermistor
- ② Chip size : 1.6×0.8 mm size
- ③ Resistance value : 10×10¹ ohm
- ④ Tolerance of Resistance : ±5%
- ⑤ B-value : 2800K
- ⑥ Tolerance of B-value : ±5%
- ⑦ Electrode structures : Three sided Electrodes
- ⑧ Packing : Taping Reel Type

6. Specifications

PART No.	R25 (Ω)	B25/85 (K)	B25/50 (K)
NSM3400□280□3	40	2800	2800
NSM3500□280□3	50	2800	2800
NSM3680□280□3	68	2800	2800
NSM3800□280□3	80	2800	2800
NSM3101□280□3	100	2800	2800
NSM3221□295□3	220	2950	2950
NSM3331□320□3	330	3200	3150
NSM3471□320□3	470	3200	3150
NSM3501□320□3	500	3200	3150
NSM3681□325□3	680	3250	3200
NSM3102□325□3	1 k	3250	3200
NSM3152□345□3	1.5 k	3450	4100
NSM3202□410□3	2 k	4100	4100
NSM3222□410□3	2.2 k	4100	4100
NSM3252□410□3	2.5 k	4100	4100
NSM3272□410□3	2.7 k	4100	4100
NSM3302□410□3	3 k	4100	4100
NSM3332□410□3	3.3 k	4100	4100
NSM3472□355□3	4.7 k	3550	3500
NSM3502□355□3	5 k	3550	3500
NSM3682□355□3	6.8 k	3550	3500
NSM3103□344□3	10 k	3435	3390
NSM3103□375□3	10 k	3750	3700
NSM3103□400□3	10 k	4000	3950
NSM3153□380□3	15 k	3800	3750
NSM3203□380□3	20 k	3800	3750
NSM3223□380□3	22 k	3800	3750
NSM3303□400□3	30 k	4000	3950
NSM3333□400□3	33 k	4000	3950
NSM3473□400□3	47 k	4000	3950
NSM3503□400□3	50 k	4000	3950
NSM3683□400□3	68 k	4000	3950
NSM3104□415□3	100 k	4150	4100
NSM3154□425□3	150 k	4250	4200
NSM3204□425□3	200 k	4250	4200
NSM3474□435□3	470 k	4350	4300

※ B25/50 ; nominal B constant for the range 25°C to 50°C (reference value)

7. Testing

No	Item	Performance	Test method
1	Solderability	The dipped terminal area shall be at least 90% covered with new solder coating.	The terminal area shall be immersed in a solder tank kept at $235\pm 5^{\circ}\text{C}$ for 2 ± 0.5 seconds.
2	Resistance to soldering heat	$\Delta R/R$ Not exceeding $\pm 5\%$ No mechanical damage and no make change in appearance.	A thermistor shall be immersed in solder pot kept as $260\pm 5^{\circ}\text{C}$ for 10 ± 1 seconds. It shall be left at room temperature for more than one hour before the resistance value is measured.
3	Thermal shock test	$\Delta R/R$ Not exceeding $\pm 5\%$ No mechanical damage and no make change in appearance.	One cycle during which the thermistor is kept at -40°C for 30 minutes and at $+125^{\circ}\text{C}$ for 30 minutes shall be repeated 100 cycles. The thermistor shall be left at room temperature for 1~24 hours before the resistance value is measured.
4	Damp heat test (steady state)	$\Delta R/R$ Not exceeding $\pm 5\%$ No mechanical damage and no make change in appearance.	It shall be left at $65\pm 2^{\circ}\text{C}$ and 90~95 %RH with no load for 1000 hours. The thermistor shall be left at room temperature for 1~24 hours before the resistance value is measured.
5	Dry heat test	$\Delta R/R$ Not exceeding $\pm 5\%$ No mechanical damage and no make change in appearance.	It shall be left in a thermostatic oven kept at $+125\pm 3^{\circ}\text{C}$ with no load for 1000 hours. The thermistor shall be left at room temperature for 1~24 hours before the resistance value is measured.
6	Cold test	$\Delta R/R$ Not exceeding $\pm 5\%$ No mechanical damage and no make change in appearance.	It shall be left in a thermostatic oven kept at $-40\pm 3^{\circ}\text{C}$ with no load for 1000 hours. The thermistor shall be left at room temperature for 1~24 hours before the resistance value is measured.

SPECIFICATION

TAPING OF RECTANGULAR CHIP THERMISTOR

1.6 mm×0.8 mm size
(NSM3 TYPE · NSH3 TYPE)

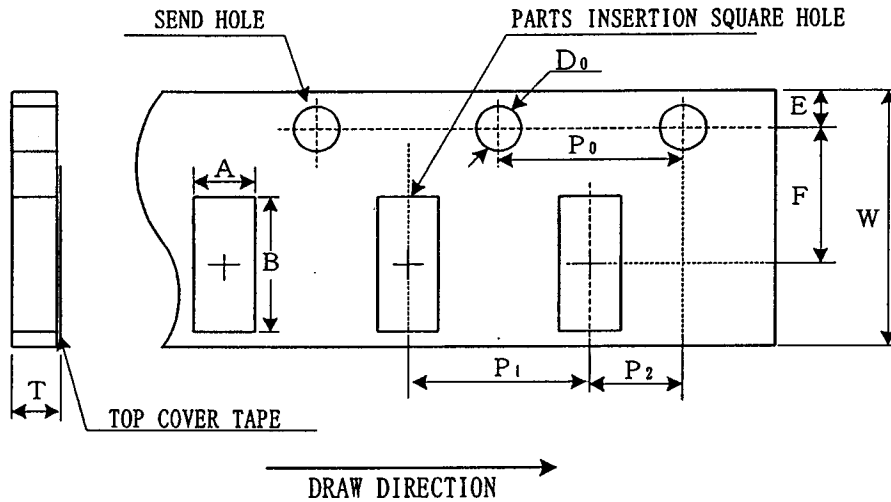
1. SCOP

This specification defines the taping configuration, space dimensions and packing of chip type thermistor.

Reel packing of electronic components covers this specification, JIS C 0806.

2. TAPING SHAPE AND DIMENSIONS, JIS C 0806 TP.

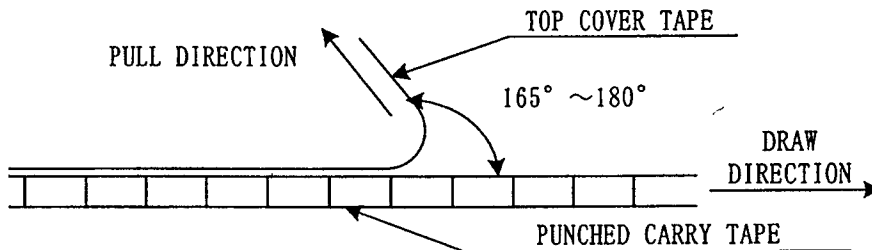
TP TYPE; Punched carrier tape



Unit; mm

SYMBOL	A	B	W	F	E
TP	1.10±0.1	1.90±0.1	8.0±0.3	3.5±0.05	1.75±0.1
SYMBOL	P ₁	P ₂	P ₀	D ₀	T
TP	4.0±0.1	2.0±0.05	4.0±0.1	1.55±0.05	0.8±0.2

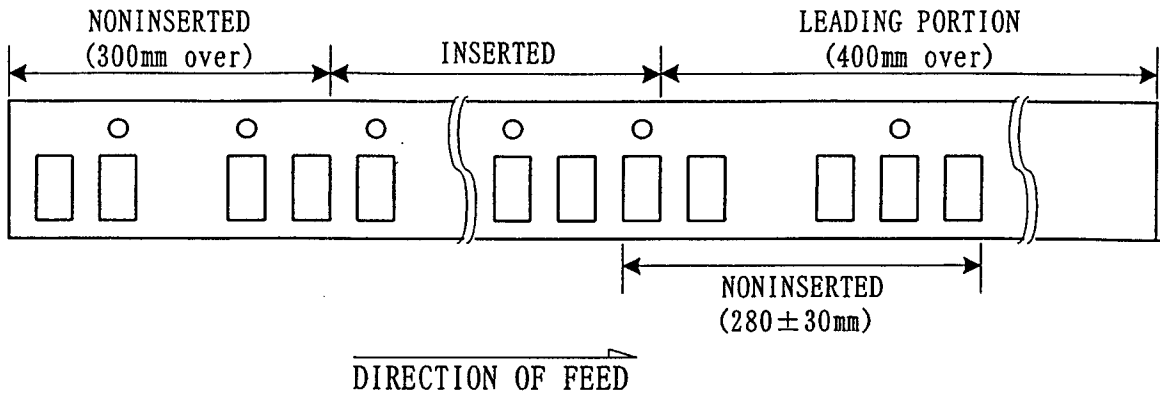
- NOTE
1. Accumulated tolerance shall be ±0.2mm per 10 pitches.
 2. Carrier tape can be bent up to a radius~10mm
 3. Cover tape width; 5.5±0.1mm(not across the sprocket hole).
 4. Force required to take the cover tape off shall be 0.1N~0.7N.



5. Missing chips from the tape shall be zero.
6. The chips shall fall out smoothly from the tape pocket by their own weight, after tearing off the cover tape.

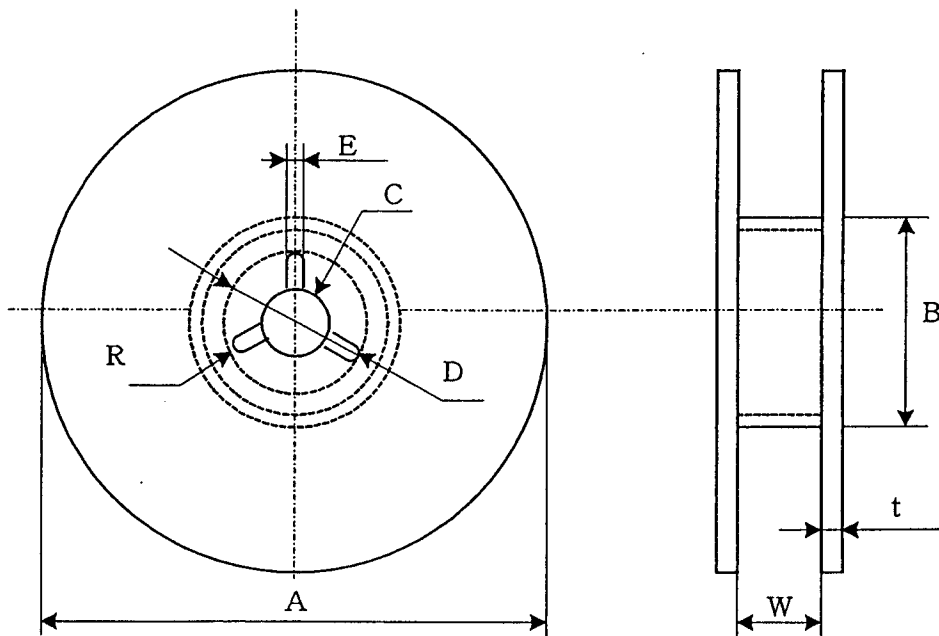
Approved;	<i>N. Takahashi</i>
Checked;	<i>T. Sawami</i>
Designed;	<i>T. Nishimura</i>
4) July 8, 2004	

3. TAPING CONITION



4. TAPING REEL DIMENSIONS

Material: plastics



Unit; mm

SYMBOL	A	B	C	D
R08B	$\phi 180 \pm 2.0$	$\phi 60 \text{ min.}$	$\phi 13 \pm 0.5$	$\phi 21 \pm 0.8$
SYMBOL	E	W	t	R
R08B	2.0 ± 0.5	10.0 ± 1.5	2.0 ± 0.5	R1.0

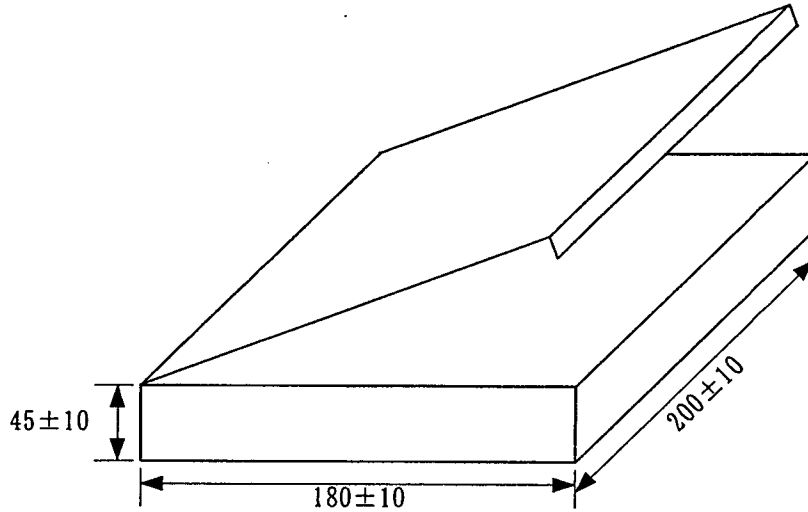
5. CALCULATION

1 reel package: 3,000-piece max.

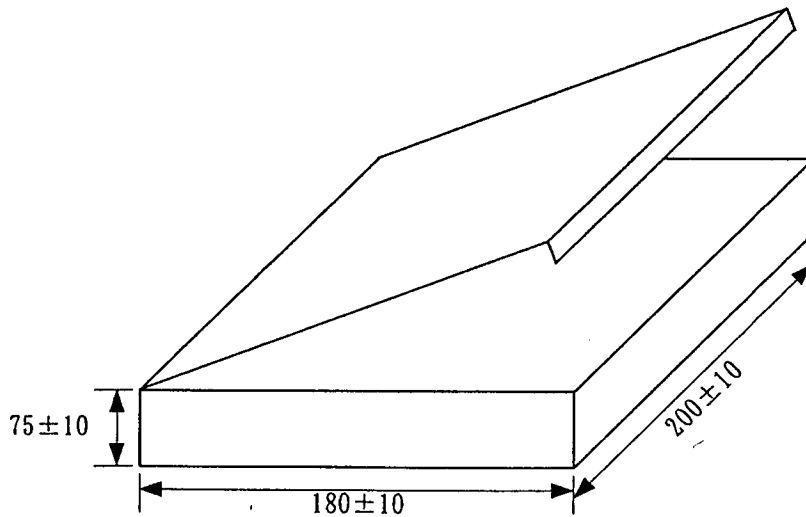
6. PACKING

6-1 INSIDE PACKING

- ① The number of articles : 3 reel max.
Corrugated board carton.
unit : mm



- ② The number of articles : 6 reel max.
Corrugated board carton.
unit : mm



6-2 OUTSIDE PACKING

In inside packing box.

7. INDICATION

In the case that there is not the designation of a label it attaches and attaches a label to a reel and also a packing box.

Moreover in the case of a "lead-less article", it indicates to the portion as for which the display label is vacant by lead free.

[surface of reel]

サーミスタ
(THERMISTOR)

部品番号 (CUSTOMER PART No.)

品 番 (PART No.)

ロットNo.(LOT No.)

個 数 (QUANTITY)

 株式会社 大泉製作所
 OHIZUMI MFG.CO.,LTD.

Lot number for example

2004 ———— 4 7 * * * * OS Lot number
 | | | |
 7 July
 X October
 Y November

R - T CONVERSION TABLE

(1/4)

Part No.: NSM3102J325H3
 R 25 : 1000 Tolerance is 5 %
 B 25/85 : 3250 K Tolerance is 3 %

Tx(°C)	Rmin.()	Rnom.()	Rmax.()
-40	15551.506	17848.225	20433.181
-39	14750.354	16901.091	19317.242
-38	13995.883	16010.597	18269.747
-37	13285.077	15172.996	17286.063
-36	12615.130	14384.809	16361.898
-35	11983.436	13642.810	15493.275
-34	11387.568	12944.000	14676.508
-33	10825.271	12285.596	13908.175
-32	10294.442	11665.008	13185.102
-31	9793.126	11079.830	12504.342
-30	9319.498	10527.822	11863.158
-29	8871.857	10006.899	11259.004
-28	8448.619	9515.119	10689.515
-27	8048.304	9050.674	10152.491
-26	7669.529	8611.878	9645.882
-25	7311.006	8197.159	9167.782
-24	6971.529	7805.049	8716.414
-23	6649.970	7434.181	8290.123
-22	6345.278	7083.276	7887.365
-21	6056.466	6751.141	7506.701
-20	5782.612	6436.659	7146.787
-19	5522.853	6138.788	6806.370
-18	5276.379	5856.552	6484.278
-17	5042.434	5589.039	6179.417
-16	4820.307	5335.394	5890.765
-15	4609.331	5094.817	5617.365
-14	4408.883	4866.560	5358.322
-13	4218.375	4649.920	5112.801
-12	4037.258	4444.239	4880.016
-11	3865.015	4248.899	4659.235
-10	3701.159	4063.322	4449.769
-9	3545.236	3886.963	4250.975
-8	3396.814	3719.313	4062.247
-7	3255.492	3559.892	3883.020
-6	3120.890	3408.250	3712.761
-5	2992.649	3263.964	3550.972
-4	2870.435	3126.635	3397.183
-3	2753.930	2995.889	3250.955
-2	2642.835	2871.375	3111.874
-1	2536.870	2752.760	2979.551
0	2435.769	2639.733	2853.620
1	2339.283	2532.000	2733.739
2	2247.175	2429.284	2619.582
3	2159.222	2331.324	2510.845
4	2075.216	2237.873	2407.242
5	1994.957	2148.701	2308.503

Part No.: NSM3102J325H3

Tx(°C)	Rmin.()	Rnom.()	Rmax.()
6	1918.258	2063.587	2214.373
7	1844.942	1982.326	2124.612
8	1774.842	1904.722	2038.993
9	1707.799	1830.592	1957.305
10	1643.664	1759.761	1879.345
11	1582.295	1692.065	1804.923
12	1523.559	1627.349	1733.861
13	1467.328	1565.465	1665.988
14	1413.483	1506.276	1601.146
15	1361.910	1449.650	1539.183
16	1312.501	1395.462	1479.956
17	1265.155	1343.595	1423.330
18	1219.774	1293.938	1369.178
19	1176.266	1246.384	1317.379
20	1134.546	1200.834	1267.818
21	1094.529	1157.194	1220.387
22	1056.139	1115.374	1174.985
23	1019.301	1075.287	1131.513
24	983.943	1036.855	1089.881
25	950.000	1000.000	1050.000
26	915.514	964.737	1014.066
27	882.479	930.922	979.570
28	850.827	898.488	946.447
29	820.493	867.371	914.636
30	791.414	837.511	884.077
31	763.532	808.849	854.715
32	736.791	781.332	826.495
33	711.139	754.908	799.369
34	686.525	729.528	773.286
35	662.903	705.144	748.203
36	640.226	681.713	724.075
37	618.452	659.192	700.860
38	597.540	637.541	678.521
39	577.453	616.723	657.018
40	558.152	596.700	636.317
41	539.603	577.438	616.383
42	521.773	558.905	597.183
43	504.630	541.069	578.688
44	488.145	523.900	560.868
45	472.289	507.369	543.694
46	457.034	491.451	527.140
47	442.355	476.119	511.180
48	428.227	461.349	495.791
49	414.626	447.116	480.948
50	401.531	433.400	466.630
51	388.920	420.178	452.815
52	376.772	407.430	439.483
53	365.069	395.138	426.615
54	353.791	383.282	414.193
55	342.922	371.844	402.198

Part No.: NSM3102J325H3

Tx(°C)	Rmin.()	Rnom.()	Rmax.()
56	332.444	360.809	390.615
57	322.342	350.159	379.426
58	312.600	339.880	368.617
59	303.203	329.956	358.173
60	294.138	320.374	348.079
61	285.391	311.121	338.323
62	276.950	302.183	328.891
63	268.802	293.548	319.770
64	260.936	285.204	310.950
65	253.341	277.141	302.419
66	246.006	269.347	294.166
67	238.920	261.812	286.181
68	232.075	254.527	278.453
69	225.461	247.481	270.973
70	219.069	240.666	263.732
71	212.891	234.074	256.722
72	206.918	227.695	249.933
73	201.143	221.523	243.358
74	195.558	215.548	236.989
75	190.155	209.765	230.819
76	184.930	204.166	224.840
77	179.873	198.744	219.046
78	174.980	193.493	213.430
79	170.245	188.407	207.986
80	165.660	183.479	202.707
81	161.192	178.672	197.554
82	156.902	174.054	192.598
83	152.747	169.578	187.792
84	148.724	165.239	183.130
85	144.826	161.033	178.607
86	141.050	156.955	174.218
87	137.391	153.001	169.958
88	133.845	149.165	165.824
89	130.408	145.445	161.810
90	127.075	141.835	157.914
91	123.845	138.333	154.130
92	120.712	134.935	150.456
93	117.674	131.636	146.887
94	114.727	128.434	143.420
95	111.867	125.325	140.051
96	109.093	122.307	136.778
97	106.401	119.376	133.598
98	103.789	116.529	130.506
99	101.253	113.764	127.501
100	98.791	111.077	124.579
101	96.401	108.467	121.739
102	94.079	105.931	118.976
103	91.825	103.465	116.289
104	89.636	101.069	113.676
105	87.508	98.740	111.134

Part No.: NSM3102J325H3

Tx(°C)	Rmin.()	Rnom.()	Rmax.()
106	85.442	96.475	108.660
107	83.434	94.273	106.254
108	81.482	92.131	103.911
109	79.585	90.048	101.632
110	77.741	88.022	99.413
111	75.948	86.050	97.252
112	74.205	84.132	95.149
113	72.510	82.266	93.101
114	70.862	80.450	91.106
115	69.258	78.682	89.163
116	67.698	76.961	87.271
117	66.181	75.285	85.427
118	64.704	73.654	83.631
119	63.267	72.065	81.881
120	61.868	70.518	80.175
121	60.507	69.011	78.512
122	59.182	67.543	76.892
123	57.891	66.112	75.312
124	56.635	64.719	73.772
125	55.411	63.361	72.270