

Approval

Manufacturer:

Mayloon Electronic Co., Ltd.,
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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

Mayloon Part No. : SMD03-234 F 4600F

Customer's Part No. : _____

Specifications : R25 230K Ω ± 1 %

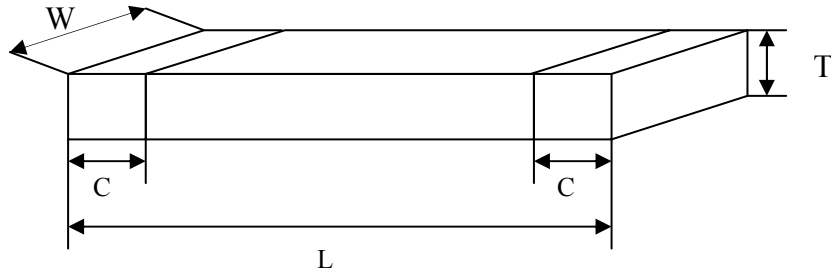
B25-85 4600 °K ± 1 %

Date : _____

Specification of SMD Chips Thermistor

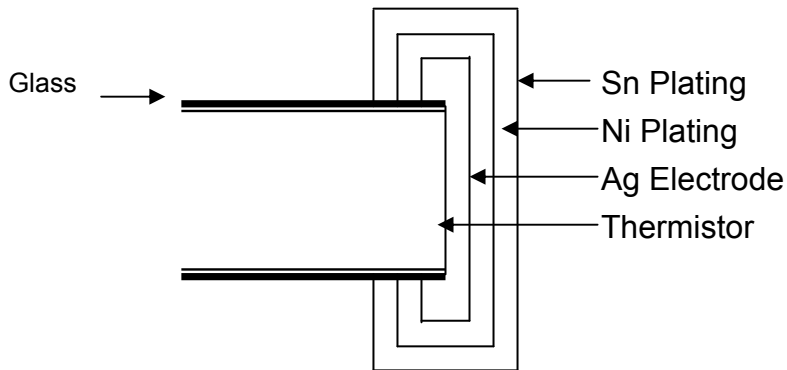
◆ PART NO. : SMD03-234F 4600 F

◆ CHIP DIMENSIONS



Item	L(mm)	W(mm)	T(mm)	C(mm)
1608 (0603)	1.60 ±0.05	0.80 ±0.05	0.95 ±0.10	0.40±0.20

◆ CHIP STRUCTURE



◆ ELECTRICAL CHARACTERISTICS

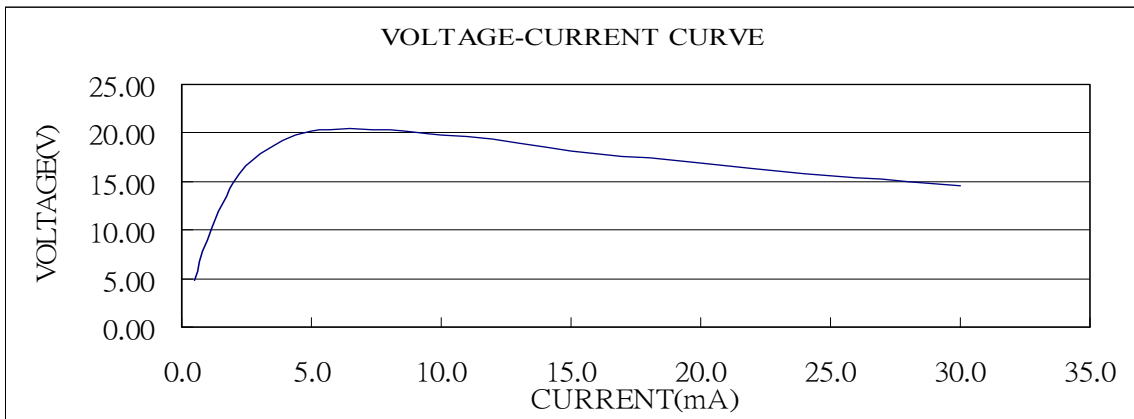
Style	Symbol	Condition	Specification
Resistance at 25°C	R25	T = 25 ± 0.1°C	230K Ω ± 1 %
B Constant	B	25°C to 85°C	4600 °K ± 1 %
Thermal Time Constant	T	T = 25 ± 0.1°C	Approx. 5 sec
Thermal Dissipation Constant	C	T = 25 ± 0.1°C	Approx. 3.5 mW/°C
Maximum Power Rating*	Pw	T = 25 ± 0.1°C	350 mW
Operation Temp. Range	--	--	-40°C ~ 125°C

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

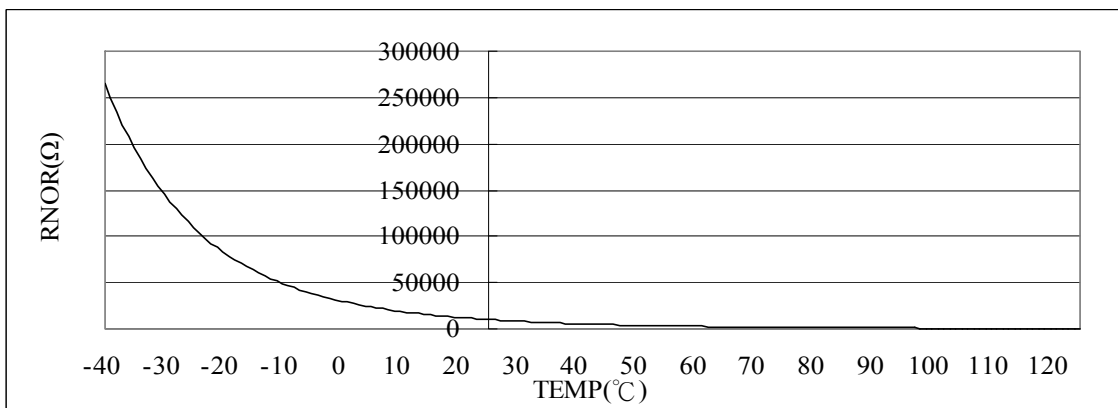
◆ RELIABILITY TEST

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

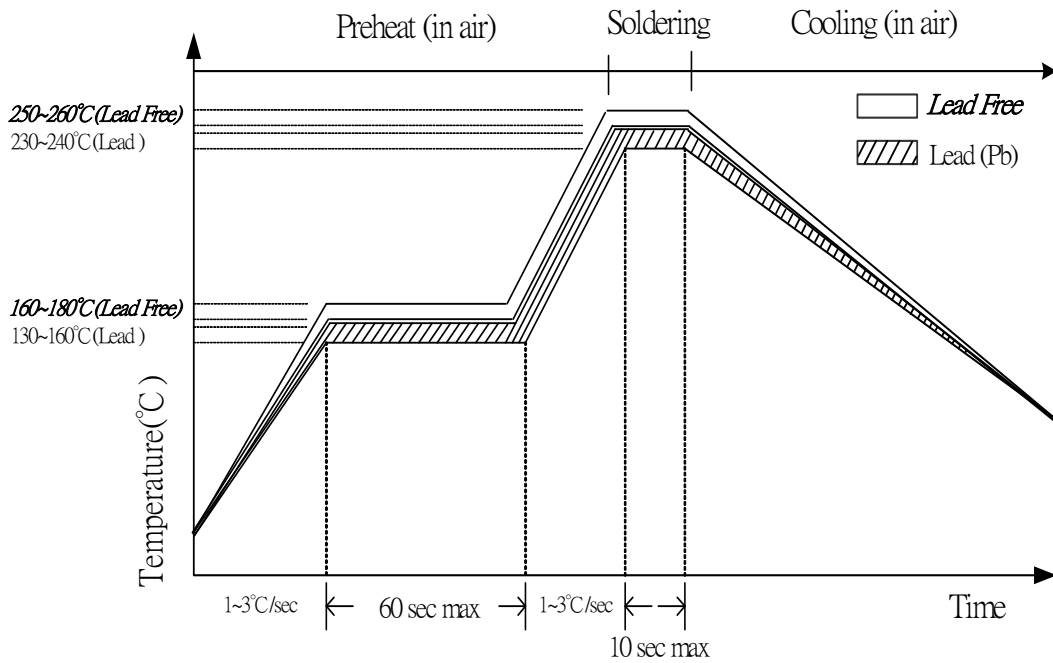
◆ VOLTAGE – CURRENT CURVE



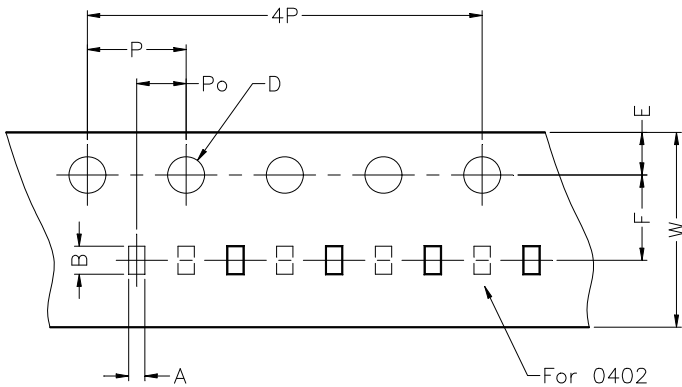
◆ RESISTANCE – TEMP CURVE



◆ REFLOW SOLDERING PROFILE



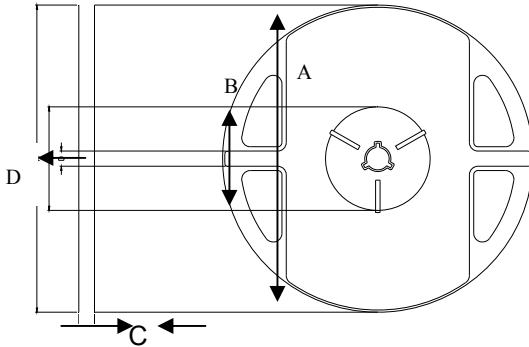
◆ TAPING DIMENSIONS



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 ₀	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 03 234 F 4600 F
 ① ② ③ ④ ⑤ ⑥

1. Series SMD Thermistor. (TH - Lead (Pb) ; TF - Lead Free)
2. Dimension : 05 (0805) , 03 (0603) , 02 (0402)
3. Resistance : 470 = 47 ohm
4. R Tolerance : F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%
5. B value : 3125, 3435 , 3550, 3700, 4100,4600etc.
6. B Tolerance : F:±1% ; G:±2% ; H:±3%

● ACCESSORY : RESISTANCE-TEMPERATURE CHARACTERISTICS

RESISTANCE-TEMPERATURE CHARACTERISTICS

PART NO.: **SMD 03 -234F 4600F**

R : 230,000 ohms ± 1%

B : 4600 °K ± 1%

Temperature (°C)	Resistance (Ω)			Temperture Coef. (%/°C)	Resist. Tolerance (%)		Temp. Tolerance (°C)	
	MIN.	CENTER	MAX.		MIN.	MAX.	MIN.	MAX.
-40.0	16096030	16973208	17896400	-8.46	-5.17	5.44	-0.64	0.61
-39.0	14807798	15601621	16436355	-8.39	-5.09	5.35	-0.64	0.61
-38.0	13632338	14351151	15106355	-8.32	-5.01	5.26	-0.63	0.60
-37.0	12558981	13210250	13893902	-8.25	-4.93	5.18	-0.63	0.60
-36.0	11578141	12168547	12787782	-8.18	-4.85	5.09	-0.62	0.59
-35.0	10681195	11216724	11777925	-8.11	-4.77	5.00	-0.62	0.59
-34.0	9860381	10346397	10855282	-8.04	-4.70	4.92	-0.61	0.58
-33.0	9108708	9550022	10011715	-7.98	-4.62	4.83	-0.61	0.58
-32.0	8419871	8820802	9239899	-7.91	-4.55	4.75	-0.60	0.57
-31.0	7788184	8152611	8533236	-7.84	-4.47	4.67	-0.60	0.57
-30.0	7208511	7539920	7885777	-7.78	-4.40	4.59	-0.59	0.56
-29.0	6676211	6977739	7292156	-7.72	-4.32	4.51	-0.58	0.56
-28.0	6187089	6461558	6747528	-7.65	-4.25	4.43	-0.58	0.55
-27.0	5737347	5987299	6247516	-7.59	-4.17	4.35	-0.57	0.55
-26.0	5323547	5551273	5788161	-7.53	-4.10	4.27	-0.57	0.54
-25.0	4942574	5150138	5365882	-7.47	-4.03	4.19	-0.56	0.54
-24.0	4591600	4780867	4977437	-7.41	-3.96	4.11	-0.55	0.53
-23.0	4268062	4440713	4619887	-7.35	-3.89	4.03	-0.55	0.53
-22.0	3969630	4127187	4290568	-7.29	-3.82	3.96	-0.54	0.52
-21.0	3694189	3838024	3987061	-7.24	-3.75	3.88	-0.54	0.52
-20.0	3439813	3571170	3707172	-7.18	-3.68	3.81	-0.53	0.51
-19.0	3204753	3324755	3448906	-7.12	-3.61	3.73	-0.52	0.51
-18.0	2987412	3097078	3210449	-7.07	-3.54	3.66	-0.52	0.50
-17.0	2786338	2886590	2990151	-7.01	-3.47	3.59	-0.51	0.50
-16.0	2600207	2691882	2786510	-6.96	-3.41	3.52	-0.51	0.49
-15.0	2427809	2511665	2598157	-6.90	-3.34	3.44	-0.50	0.48
-14.0	2268042	2344767	2423845	-6.85	-3.27	3.37	-0.49	0.48
-13.0	2119899	2190117	2262435	-6.80	-3.21	3.30	-0.49	0.47
-12.0	1982456	2046736	2112888	-6.74	-3.14	3.23	-0.48	0.47
-11.0	1854874	1913730	1974256	-6.69	-3.08	3.16	-0.47	0.46

-10.0	1736379	1790281	1845672	-6.64	-3.01	3.09	-0.47	0.45
-9.0	1626267	1675642	1726343	-6.59	-2.95	3.03	-0.46	0.45
-8.0	1523891	1569126	1615543	-6.54	-2.88	2.96	-0.45	0.44
-7.0	1428657	1470107	1512608	-6.49	-2.82	2.89	-0.45	0.43
-6.0	1340022	1378009	1416930	-6.45	-2.76	2.82	-0.44	0.43
-5.0	1257486	1292303	1327951	-6.40	-2.69	2.76	-0.43	0.42
-4.0	1180592	1212507	1245160	-6.35	-2.63	2.69	-0.42	0.41
-3.0	1108918	1138175	1168087	-6.30	-2.57	2.63	-0.42	0.41
-2.0	1042076	1068898	1096301	-6.26	-2.51	2.56	-0.41	0.40
-1.0	979711	1004301	1029406	-6.21	-2.45	2.50	-0.40	0.39
0.0	921494	944039	967039	-6.17	-2.39	2.44	-0.40	0.39
1.0	867124	887794	908865	-6.12	-2.33	2.37	-0.39	0.38
2.0	816323	835272	854575	-6.08	-2.27	2.31	-0.38	0.37
3.0	768834	786205	803887	-6.03	-2.21	2.25	-0.37	0.37
4.0	724421	740343	756540	-5.99	-2.15	2.19	-0.37	0.36
5.0	682866	697458	712291	-5.95	-2.09	2.13	-0.36	0.35
6.0	643967	657339	670921	-5.90	-2.03	2.07	-0.35	0.34
7.0	607538	619789	632223	-5.86	-1.98	2.01	-0.34	0.34
8.0	573408	584629	596009	-5.82	-1.92	1.95	-0.33	0.33
9.0	541417	551691	562105	-5.78	-1.86	1.89	-0.33	0.32
10.0	511417	520823	530348	-5.74	-1.81	1.83	-0.32	0.31
11.0	483274	491881	500590	-5.70	-1.75	1.77	-0.31	0.31
12.0	456861	464734	472694	-5.66	-1.69	1.71	-0.30	0.30
13.0	432062	439259	446531	-5.62	-1.64	1.66	-0.29	0.29
14.0	408767	415343	421984	-5.58	-1.58	1.60	-0.29	0.28
15.0	386877	392883	398942	-5.54	-1.53	1.54	-0.28	0.28
16.0	366299	371780	377305	-5.50	-1.47	1.49	-0.27	0.27
17.0	346946	351944	356979	-5.46	-1.42	1.43	-0.26	0.26
18.0	328738	333292	337876	-5.43	-1.37	1.38	-0.25	0.25
19.0	311600	315747	319916	-5.39	-1.31	1.32	-0.25	0.24
20.0	295464	299235	303024	-5.35	-1.26	1.27	-0.24	0.24
21.0	280265	283690	287129	-5.32	-1.21	1.21	-0.23	0.23
22.0	265943	269051	272168	-5.28	-1.16	1.16	-0.22	0.22
23.0	252442	255258	258079	-5.24	-1.10	1.11	-0.21	0.21
24.0	239710	242257	244807	-5.21	-1.05	1.05	-0.20	0.20
25.0	227700	230000	232300	-5.17	-1.00	1.00	-0.19	0.19
26.0	216143	218439	220737	-5.14	-1.05	1.05	-0.20	0.20
27.0	205243	207530	209821	-5.11	-1.10	1.10	-0.22	0.22
28.0	194960	197233	199511	-5.07	-1.15	1.16	-0.23	0.23
29.0	185256	187510	189772	-5.04	-1.20	1.21	-0.24	0.24

30.0	176093	178325	180568	-5.01	-1.25	1.26	-0.25	0.25
31.0	167440	169647	171866	-4.97	-1.30	1.31	-0.26	0.26
32.0	159265	161444	163636	-4.94	-1.35	1.36	-0.27	0.27
33.0	151538	153687	155851	-4.91	-1.40	1.41	-0.29	0.28
34.0	144233	146350	148483	-4.88	-1.45	1.46	-0.30	0.30
35.0	137324	139407	141508	-4.84	-1.49	1.51	-0.31	0.31
36.0	130787	132836	134902	-4.81	-1.54	1.56	-0.32	0.32
37.0	124601	126613	128645	-4.78	-1.59	1.60	-0.34	0.33
38.0	118744	120720	122715	-4.75	-1.64	1.65	-0.35	0.34
39.0	113198	115135	117094	-4.72	-1.68	1.70	-0.36	0.36
40.0	107944	109843	111764	-4.69	-1.73	1.75	-0.37	0.37
41.0	102964	104825	106708	-4.66	-1.77	1.80	-0.39	0.38
42.0	98244	100066	101911	-4.63	-1.82	1.84	-0.40	0.39
43.0	93768	95551	97358	-4.60	-1.87	1.89	-0.41	0.41
44.0	89522	91266	93035	-4.57	-1.91	1.94	-0.42	0.42
45.0	85494	87199	88929	-4.54	-1.96	1.98	-0.44	0.43
46.0	81670	83337	85029	-4.52	-2.00	2.03	-0.45	0.44
47.0	78040	79668	81322	-4.49	-2.04	2.08	-0.46	0.46
48.0	74592	76182	77799	-4.46	-2.09	2.12	-0.48	0.47
49.0	71316	72869	74449	-4.43	-2.13	2.17	-0.49	0.48
50.0	68203	69719	71262	-4.41	-2.17	2.21	-0.50	0.49
51.0	65244	66724	68230	-4.38	-2.22	2.26	-0.52	0.51
52.0	62431	63875	65345	-4.35	-2.26	2.30	-0.53	0.52
53.0	59755	61163	62598	-4.32	-2.30	2.35	-0.54	0.53
54.0	57209	58582	59983	-4.30	-2.34	2.39	-0.56	0.55
55.0	54786	56125	57492	-4.27	-2.39	2.43	-0.57	0.56
56.0	52479	53785	55118	-4.25	-2.43	2.48	-0.58	0.57
57.0	50283	51556	52856	-4.22	-2.47	2.52	-0.60	0.59
58.0	48191	49432	50699	-4.19	-2.51	2.56	-0.61	0.60
59.0	46197	47407	48643	-4.17	-2.55	2.61	-0.63	0.61
60.0	44298	45477	46682	-4.14	-2.59	2.65	-0.64	0.63
61.0	42487	43636	44811	-4.12	-2.63	2.69	-0.65	0.64
62.0	40761	41880	43025	-4.10	-2.67	2.74	-0.67	0.65
63.0	39114	40204	41321	-4.07	-2.71	2.78	-0.68	0.67
64.0	37543	38605	39693	-4.05	-2.75	2.82	-0.70	0.68
65.0	36044	37078	38139	-4.02	-2.79	2.86	-0.71	0.69
66.0	34613	35621	36654	-4.00	-2.83	2.90	-0.73	0.71
67.0	33246	34228	35235	-3.98	-2.87	2.94	-0.74	0.72
68.0	31942	32898	33879	-3.95	-2.91	2.98	-0.75	0.74
69.0	30695	31627	32583	-3.93	-2.94	3.02	-0.77	0.75

70.0	29504	30411	31343	-3.91	-2.98	3.06	-0.78	0.76
71.0	28366	29250	30158	-3.88	-3.02	3.10	-0.80	0.78
72.0	27278	28139	29023	-3.86	-3.06	3.14	-0.81	0.79
73.0	26238	27076	27938	-3.84	-3.10	3.18	-0.83	0.81
74.0	25243	26059	26899	-3.82	-3.13	3.22	-0.84	0.82
75.0	24291	25086	25904	-3.80	-3.17	3.26	-0.86	0.84
76.0	23380	24154	24952	-3.77	-3.21	3.30	-0.88	0.85
77.0	22508	23262	24039	-3.75	-3.24	3.34	-0.89	0.86
78.0	21673	22408	23165	-3.73	-3.28	3.38	-0.91	0.88
79.0	20874	21590	22328	-3.71	-3.31	3.42	-0.92	0.89
80.0	20109	20806	21525	-3.69	-3.35	3.46	-0.94	0.91
81.0	19375	20054	20755	-3.67	-3.39	3.49	-0.95	0.92
82.0	18673	19334	20017	-3.65	-3.42	3.53	-0.97	0.94
83.0	17999	18644	19309	-3.63	-3.46	3.57	-0.98	0.95
84.0	17354	17982	18630	-3.61	-3.49	3.61	-1.00	0.97
85.0	16735	17346	17979	-3.59	-3.53	3.64	-1.02	0.98
86.0	16141	16737	17353	-3.57	-3.56	3.68	-1.03	1.00
87.0	15572	16152	16753	-3.55	-3.59	3.72	-1.05	1.01
88.0	15025	15591	16176	-3.53	-3.63	3.76	-1.06	1.03
89.0	14501	15052	15623	-3.51	-3.66	3.79	-1.08	1.04
90.0	13998	14535	15091	-3.49	-3.70	3.83	-1.10	1.06
91.0	13514	14038	14580	-3.47	-3.73	3.86	-1.11	1.08
92.0	13050	13561	14089	-3.45	-3.76	3.90	-1.13	1.09
93.0	12605	13102	13618	-3.43	-3.80	3.94	-1.15	1.11
94.0	12176	12661	13164	-3.41	-3.83	3.97	-1.16	1.12
95.0	11765	12238	12728	-3.39	-3.86	4.01	-1.18	1.14
96.0	11370	11830	12308	-3.38	-3.89	4.04	-1.20	1.15
97.0	10989	11439	11905	-3.36	-3.93	4.08	-1.21	1.17
98.0	10624	11062	11517	-3.34	-3.96	4.11	-1.23	1.19
99.0	10273	10700	11143	-3.32	-3.99	4.15	-1.25	1.20
100.0	9935	10351	10784	-3.30	-4.02	4.18	-1.27	1.22
101.0	9609	10016	10438	-3.29	-4.05	4.22	-1.28	1.23
102.0	9297	9693	10105	-3.27	-4.09	4.25	-1.30	1.25
103.0	8995	9382	9784	-3.25	-4.12	4.28	-1.32	1.27
104.0	8706	9082	9475	-3.23	-4.15	4.32	-1.34	1.28
105.0	8427	8794	9177	-3.22	-4.18	4.35	-1.35	1.30
106.0	8158	8516	8890	-3.20	-4.21	4.38	-1.37	1.32
107.0	7899	8249	8613	-3.18	-4.24	4.42	-1.39	1.33
108.0	7650	7991	8347	-3.17	-4.27	4.45	-1.41	1.35
109.0	7410	7743	8090	-3.15	-4.30	4.48	-1.42	1.37

110.0	7178	7503	7842	-3.13	-4.33	4.52	-1.44	1.38
111.0	6955	7272	7603	-3.12	-4.36	4.55	-1.46	1.40
112.0	6740	7050	7373	-3.10	-4.39	4.58	-1.48	1.42
113.0	6533	6835	7151	-3.08	-4.42	4.61	-1.50	1.43
114.0	6333	6628	6936	-3.07	-4.45	4.65	-1.51	1.45
115.0	6140	6428	6729	-3.05	-4.48	4.68	-1.53	1.47
116.0	5954	6235	6529	-3.04	-4.51	4.71	-1.55	1.48
117.0	5775	6049	6336	-3.02	-4.54	4.74	-1.57	1.50
118.0	5602	5870	6150	-3.01	-4.57	4.77	-1.59	1.52
119.0	5435	5696	5970	-2.99	-4.59	4.81	-1.61	1.54
120.0	5273	5529	5796	-2.98	-4.62	4.84	-1.63	1.55
121.0	5117	5367	5628	-2.96	-4.65	4.87	-1.64	1.57
122.0	4967	5211	5466	-2.95	-4.68	4.90	-1.66	1.59
123.0	4822	5060	5309	-2.93	-4.71	4.93	-1.68	1.61
124.0	4682	4914	5158	-2.92	-4.74	4.96	-1.70	1.62
125.0	4546	4773	5012	-2.90	-4.76	4.99	-1.72	1.64
126.0	4415	4637	4870	-2.89	-4.79	5.02	-1.74	1.66
127.0	4288	4505	4733	-2.87	-4.82	5.05	-1.76	1.68
128.0	4166	4378	4601	-2.86	-4.85	5.08	-1.78	1.69
129.0	4048	4255	4473	-2.84	-4.87	5.11	-1.80	1.71
130.0	3933	4136	4349	-2.83	-4.90	5.14	-1.82	1.73
131.0	3823	4021	4229	-2.82	-4.93	5.17	-1.84	1.75
132.0	3716	3910	4113	-2.80	-4.95	5.20	-1.86	1.77
133.0	3612	3802	4001	-2.79	-4.98	5.23	-1.88	1.79
134.0	3512	3697	3892	-2.77	-5.01	5.26	-1.90	1.80
135.0	3416	3597	3787	-2.76	-5.03	5.29	-1.92	1.82
136.0	3322	3499	3685	-2.75	-5.06	5.32	-1.94	1.84
137.0	3231	3404	3586	-2.73	-5.08	5.35	-1.96	1.86
138.0	3143	3313	3491	-2.72	-5.11	5.37	-1.98	1.88
139.0	3058	3224	3398	-2.71	-5.14	5.40	-2.00	1.90
140.0	2976	3138	3308	-2.69	-5.16	5.43	-2.02	1.92
141.0	2896	3055	3222	-2.68	-5.19	5.46	-2.04	1.93
142.0	2819	2974	3137	-2.67	-5.21	5.49	-2.06	1.95
143.0	2744	2896	3056	-2.66	-5.24	5.52	-2.08	1.97
144.0	2672	2820	2977	-2.64	-5.26	5.54	-2.10	1.99
145.0	2602	2747	2900	-2.63	-5.29	5.57	-2.12	2.01
146.0	2534	2676	2825	-2.62	-5.31	5.60	-2.14	2.03
147.0	2468	2607	2753	-2.61	-5.34	5.63	-2.16	2.05
148.0	2404	2540	2683	-2.59	-5.36	5.66	-2.18	2.07
149.0	2342	2475	2616	-2.58	-5.39	5.68	-2.20	2.09