



Cheemi Technology Co., Ltd

Specification

Product Name: NTC temperature sensor

Part Number: CM-MFNTC7210D-9

Date: 2023/08/06

★ 产品UL认证标准号Product UL certification standard number：E523747

1、一般参数 (Common Parameters)：

(1) 尺寸 (mm) (Size)



DMax	L1Max	L2Min	F	TMax	d
10.5	14.0	20.0	5 ± 0.5	5.0	0.8 ± 0.06

(2) 材料 (Materials)

- ①封装材料 (Wrapper)：聚硅树脂 (Phenolic resin)
- ②引线 (Down-lead)：镀锡电子线 (Tinned Electron Wire)
- ③颜色 (Coating color)：黑色 (Black)

2、主要技术参数 (Parameters of Technology)：

- ①25℃时零功率电阻值 (Ω) (Zero Power Resistance at 25℃)： $10 \pm 20\%$
- ②B 值 25/50℃ (K) (B Value)： $2800 \pm 10\%$
- ③热时间常数 (S) (Thermal Time Constant)： 30
- ④热耗散系数 ($\text{mW}/^\circ\text{C}$) (Thermal Dissipation Constant)： 15
- ⑤工作温度 ($^\circ\text{C}$) (Operating Temperature)： $-40 - +150$
- ⑥最大稳态电流 ($I_{\text{max}}/25^\circ\text{C}$) (Max Steady State Current)： 2A

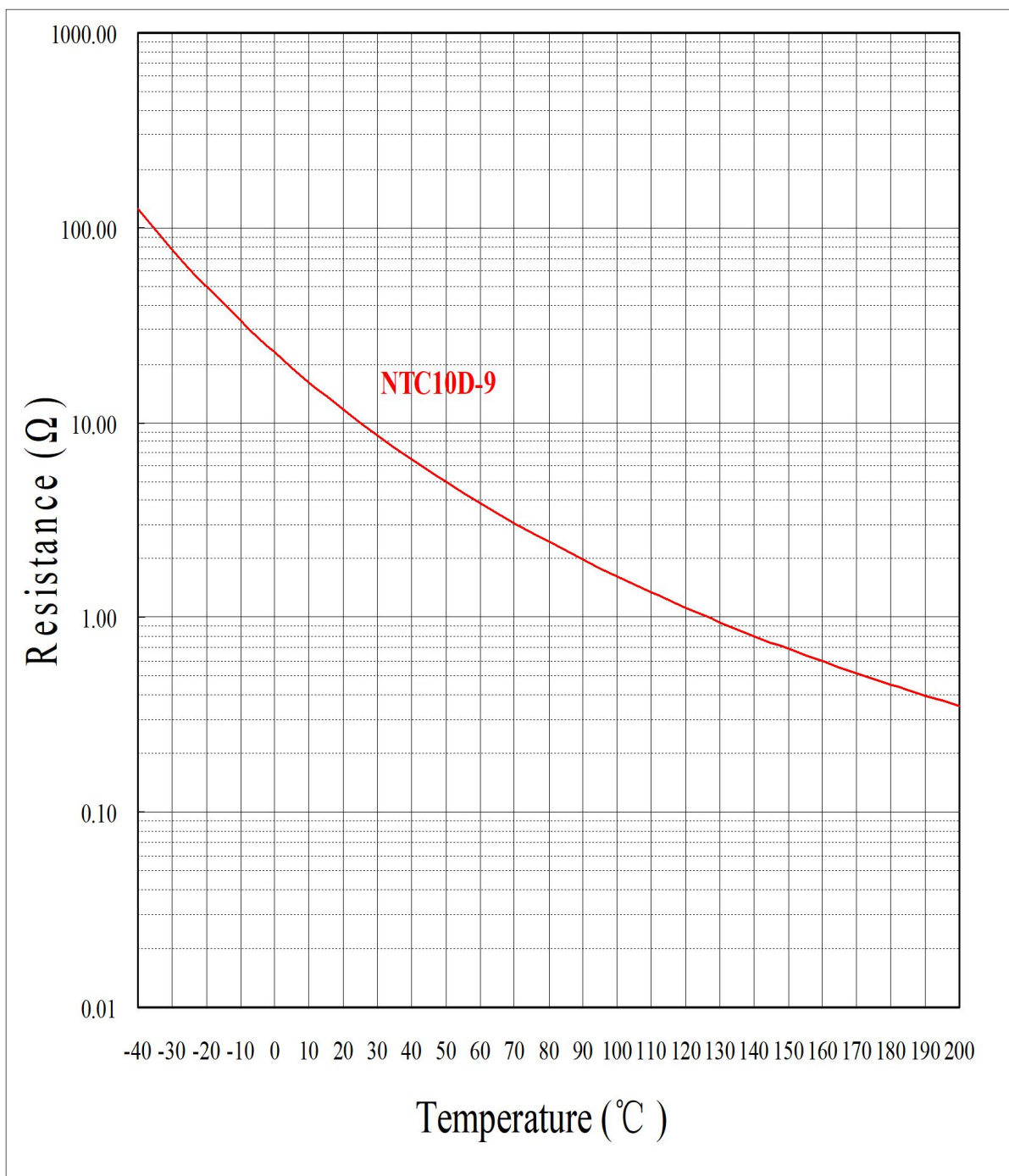
⑦最大冲击电容量(μF/240) (Max. Shock Capacity) : 220

3. 电气性能及要求 (electrical properties and requirements)

项目	测试方法	性能要求
零功率电阻值 Zero Power Resistance	在 25℃ 下, 当由于电阻体内部发热引起的电阻值变化相对于总测量误差可以忽略不计时所测得的电阻值。 At 25℃, the measured resistance value can be neglected compared to the general tolerance when the change of the resistance is made through its self-heat of the resistor.	见电特性参数 See Electrical Parameters
B 值 B-value	B 值可以用 25℃ 和 50℃ 时的零功率电阻值计算出来。其计算公式是: $B = \frac{T_1 \cdot T_2}{T_2 - T_1} \cdot \ln \left(\frac{R_1}{R_2} \right)$ The B value can be calculated using the zero power resistance value at 25℃ and 50℃. The equation is as above.	见电特性参数 See Electrical Parameters
热耗散系数 Thermal Dissipation Constant	在规定的温度下, 热敏电阻中耗散的功率变化与热敏电阻相应温度变化之比。其单位: mw/℃ The ratio of the change of the dissipation power to the corresponding change of the temperature at specified temperature. The unit is: mw/℃	见电特性参数 See Electrical Parameters
热时间常数 Thermal Time Constant	在零功率条件下, 当温度发生变化时, 热敏电阻的温度变化为其初始的和最终的温度差的 63.2% 所需的时间。 Under zero power condition, thermal time constant is the time required by a thermistor that its body temperature reach 63.2% of the difference between its initial and final temperature.	见电特性参数 See Electrical Parameters
工作温度 Operating	热敏电阻器长期连续工作所允许的温度范围。 Allowable temperature range while the thermistor work continuously for long time	-40~+150℃

Temperature		
稳态湿热 Damp Heat	温度 $40\pm 2^{\circ}\text{C}$ ，相对湿度 $93\pm 3\%$ ，存放 1000 ± 2 小时后，在正常状态下 1 小时。 The sample should be subjected to $40\pm 2^{\circ}\text{C}$, relative humidity $93\pm 3\%$ for 1000 ± 2 hours, then stored at room temperature and humidity for 1 hour.	无可见损伤、标志清晰、无击穿或飞弧，绝缘电阻大于 $100\text{M}\Omega$ 。电阻值的最大变化率在 $\pm 15\%$ 以内。 No visible damage, the mark is clear, no breakdown or arcing. Insulating resistance is $>100\text{M}\Omega$. The change ratio of the resistance is within $\pm 15\%$.
耐电压 Withstand Voltage	施加 700ACV 电压，时间 60S，电压加在电阻器引线及绝缘层之间 Applied AC voltage of 700V between the lead of the resistor and the insulating coating for 60S	无击穿或飞弧 No breakdown or arcing
耐焊接热 Resistance to Soldering Heat	将热敏电阻器引线在 $260\pm 10^{\circ}\text{C}$ 的焊锡液里，液面距电阻体 6mm 时间 10S。在室温下恢复到原来的状态。 Immerse the lead of the resistor into tin liquor of $260\pm 10^{\circ}\text{C}$ for 10S, the distance from the liquor surface to the resistor is 6mm. Then resume to the original state.	无可见损伤、电阻值的最大变化率在 $\pm 15\%$ 以内 No visible damage. The max change ratio of the resistance is within $\pm 15\%$
可焊性 Solderability	引线浸在 $260\pm 10^{\circ}\text{C}$ 的锡液里，时间 3 秒。 浸锡温度： $260\pm 5^{\circ}\text{C}$ 手锡温度： $260\pm 5^{\circ}\text{C}$ (5s) Immerse the lead into tin liquor of $260\pm 10^{\circ}\text{C}$ for 3 sec. The temperature of immerse welding: $260\pm 5^{\circ}\text{C}$, The temperature of hand welding: $260\pm 5^{\circ}\text{C}$ (5s)	焊锡涂布面积在 90% 以上 The covered surface area should be above 90%
引出端变曲强度 Bending Strength of	固定电阻体，在一根引出端悬挂 0.5kg 重力变曲 90 度；然后再回复，再把方向弯曲 90 度 Fix the resistor, hanging a force of 0.5kg to one terminal to bend it by 90 degree,	无可见损伤 NO visible damage

Terminals	then resume to the original state, bend it by 90 degree again.	
振 动 Vibration	频率: 10-50HZ; 振幅: 1.55mm 方向和时间: X、Y 及 Z 轴各 2 个小时 Frequency: 10-50HZ, Wave Amplitude:1.55mm. Direction and Time: 2 hours respectively f o r X , Y a n d Z a x i s .	无机械损伤 No mechanical damage
温度快速变化 Temperature Rapid Change	-40℃/30 $\longrightarrow$ 25℃/5 $\longrightarrow$ +160℃/30 $\longrightarrow$ 25℃/5	电阻变化率 $\pm 20\%$ The change ratio of the resistance is $\pm$ 20%
工作环境温度 Working environment temperature	热敏电阻器长期连续工作的环境温度范围 Thermistor long-term continuous working environment temperature range	-40-+125℃
储存条件 Storage conditions	-10℃ ~ 40℃ RH $\leq$ 75%	



型号: CM-MFNTC7210D-9

R: 10 ohms $\pm$ 20%
B: 2800 °K $\pm$ 10%

温度	阻值 (Ω)			温度系数	阻值精度偏差 (%)		测温精度偏差(°C)	
(°C)	下限值	中心值	上限值	(%/°C)	最小	最大	最小	最大
-40.0	84.6360	137.4974	214.4398	-5.16	-38.45	55.96	-10.84	7.45
-39.0	80.8096	130.6080	202.6506	-5.12	-38.13	55.16	-10.78	7.45
-38.0	77.1867	124.1184	191.6024	-5.07	-37.81	54.37	-10.71	7.45
-37.0	73.7551	118.0025	181.2431	-5.03	-37.50	53.59	-10.65	7.45
-36.0	70.5033	112.2361	171.5248	-4.99	-37.18	52.83	-10.59	7.45
-35.0	67.4205	106.7967	162.4032	-4.95	-36.87	52.07	-10.53	7.45
-34.0	64.4968	101.6634	153.8375	-4.91	-36.56	51.32	-10.46	7.45
-33.0	61.7228	96.8168	145.7897	-4.86	-36.25	50.58	-10.40	7.45
-32.0	59.0898	92.2388	138.2249	-4.82	-35.94	49.86	-10.34	7.45
-31.0	56.5896	87.9127	131.1107	-4.78	-35.63	49.14	-10.27	7.45
-30.0	54.2146	83.8228	124.4170	-4.74	-35.32	48.43	-10.21	7.45
-29.0	51.9576	79.9546	118.1160	-4.71	-35.02	47.73	-10.14	7.44
-28.0	49.8119	76.2944	112.1820	-4.67	-34.71	47.04	-10.08	7.44
-27.0	47.7714	72.8297	106.5910	-4.63	-34.41	46.36	-10.02	7.43
-26.0	45.8300	69.5486	101.3208	-4.59	-34.10	45.68	-9.95	7.43
-25.0	43.9822	66.4401	96.3507	-4.55	-33.80	45.02	-9.89	7.42
-24.0	42.2231	63.4940	91.6616	-4.52	-33.50	44.36	-9.82	7.42
-23.0	40.5475	60.7007	87.2357	-4.48	-33.20	43.71	-9.76	7.41
-22.0	38.9511	58.0511	83.0564	-4.45	-32.90	43.07	-9.69	7.40
-21.0	37.4295	55.5370	79.1083	-4.41	-32.60	42.44	-9.62	7.39
-20.0	35.9788	53.1504	75.3770	-4.37	-32.31	41.82	-9.56	7.38
-19.0	34.5950	50.8841	71.8491	-4.34	-32.01	41.20	-9.49	7.38
-18.0	33.2748	48.7311	68.5122	-4.31	-31.72	40.59	-9.43	7.37
-17.0	32.0147	46.6851	65.3547	-4.27	-31.42	39.99	-9.36	7.35
-16.0	30.8117	44.7399	62.3657	-4.24	-31.13	39.40	-9.29	7.34
-15.0	29.6627	42.8900	59.5351	-4.21	-30.84	38.81	-9.23	7.33
-14.0	28.5649	41.1300	56.8534	-4.17	-30.55	38.23	-9.16	7.32
-13.0	27.5158	39.4551	54.3118	-4.14	-30.26	37.65	-9.09	7.31
-12.0	26.5129	37.8604	51.9021	-4.11	-29.97	37.09	-9.02	7.29

-11.0	25.5537	36.3417	49.6166	-4.08	-29.68	36.53	-8.96	7.28
-10.0	24.6362	34.8948	47.4480	-4.05	-29.40	35.97	-8.89	7.26
-9.0	23.7583	33.5158	45.3896	-4.02	-29.11	35.43	-8.82	7.25
-8.0	22.9179	32.2012	43.4351	-3.99	-28.83	34.89	-8.75	7.23
-7.0	22.1133	30.9475	41.5786	-3.96	-28.55	34.35	-8.68	7.22
-6.0	21.3426	29.7515	39.8145	-3.93	-28.26	33.82	-8.61	7.20
-5.0	20.6043	28.6101	38.1376	-3.90	-27.98	33.30	-8.54	7.18
-4.0	19.8967	27.5206	36.5430	-3.87	-27.70	32.78	-8.48	7.16
-3.0	19.2185	26.4802	35.0263	-3.84	-27.42	32.27	-8.41	7.14
-2.0	18.5681	25.4864	33.5830	-3.81	-27.15	31.77	-8.34	7.12
-1.0	17.9443	24.5368	32.2092	-3.78	-26.87	31.27	-8.27	7.10
0.0	17.3458	23.6291	30.9011	-3.76	-26.59	30.78	-8.20	7.08
1.0	16.7714	22.7614	29.6551	-3.73	-26.32	30.29	-8.12	7.06
2.0	16.2200	21.9315	28.4679	-3.70	-26.04	29.80	-8.05	7.04
3.0	15.6906	21.1375	27.3363	-3.67	-25.77	29.33	-7.98	7.01
4.0	15.1820	20.3777	26.2575	-3.65	-25.50	28.85	-7.91	6.99
5.0	14.6935	19.6505	25.2285	-3.62	-25.23	28.39	-7.84	6.97
6.0	14.2240	18.9541	24.2468	-3.60	-24.96	27.92	-7.77	6.94
7.0	13.7728	18.2871	23.3099	-3.57	-24.69	27.47	-7.69	6.92
8.0	13.3389	17.6481	22.4156	-3.54	-24.42	27.01	-7.62	6.89
9.0	12.9216	17.0358	21.5615	-3.52	-24.15	26.57	-7.55	6.86
10.0	12.5202	16.4488	20.7457	-3.49	-23.88	26.12	-7.48	6.84
11.0	12.1339	15.8860	19.9662	-3.47	-23.62	25.68	-7.40	6.81
12.0	11.7622	15.3461	19.2212	-3.45	-23.35	25.25	-7.33	6.78
13.0	11.4044	14.8283	18.5089	-3.42	-23.09	24.82	-7.26	6.75
14.0	11.0598	14.3313	17.8277	-3.40	-22.83	24.40	-7.18	6.72
15.0	10.7279	13.8543	17.1760	-3.37	-22.57	23.98	-7.11	6.69
16.0	10.4082	13.3962	16.5525	-3.35	-22.31	23.56	-7.03	6.66
17.0	10.1001	12.9564	15.9556	-3.33	-22.05	23.15	-6.96	6.63
18.0	9.8032	12.5339	15.3842	-3.30	-21.79	22.74	-6.88	6.59
19.0	9.5169	12.1279	14.8369	-3.28	-21.53	22.34	-6.81	6.56
20.0	9.2409	11.7377	14.3127	-3.26	-21.27	21.94	-6.73	6.53
21.0	8.9747	11.3625	13.8103	-3.24	-21.02	21.54	-6.66	6.49
22.0	8.7178	11.0018	13.3289	-3.22	-20.76	21.15	-6.58	6.46
23.0	8.4700	10.6549	12.8673	-3.19	-20.51	20.76	-6.50	6.42
24.0	8.2309	10.3212	12.4246	-3.17	-20.25	20.38	-6.43	6.39
25.0	8.0000	10.0000	12.0000	-3.15	-20.00	20.00	-6.35	6.35
26.0	7.7284	9.6909	11.6656	-3.13	-20.25	20.38	-6.51	6.47
27.0	7.4677	9.3933	11.3427	-3.11	-20.50	20.75	-6.68	6.59

28.0	7.2175	9.1067	11.0308	-3.09	-20.75	21.13	-6.84	6.72
29.0	6.9773	8.8307	10.7295	-3.07	-20.99	21.50	-7.01	6.84
30.0	6.7465	8.5648	10.4382	-3.05	-21.23	21.87	-7.18	6.97
31.0	6.5249	8.3086	10.1568	-3.03	-21.47	22.24	-7.35	7.09
32.0	6.3118	8.0617	9.8847	-3.01	-21.71	22.61	-7.52	7.22
33.0	6.1071	7.8236	9.6216	-2.99	-21.94	22.98	-7.69	7.34
34.0	5.9103	7.5940	9.3671	-2.97	-22.17	23.35	-7.87	7.47
35.0	5.7211	7.3726	9.1210	-2.95	-22.40	23.71	-8.04	7.60
36.0	5.5390	7.1591	8.8829	-2.93	-22.63	24.08	-8.22	7.72
37.0	5.3639	6.9530	8.6524	-2.91	-22.86	24.44	-8.40	7.85
38.0	5.1954	6.7542	8.4294	-2.89	-23.08	24.80	-8.58	7.98
39.0	5.0332	6.5622	8.2135	-2.87	-23.30	25.16	-8.76	8.11
40.0	4.8771	6.3769	8.0044	-2.86	-23.52	25.52	-8.94	8.24
41.0	4.7268	6.1980	7.8020	-2.84	-23.74	25.88	-9.12	8.37
42.0	4.5820	6.0251	7.6059	-2.82	-23.95	26.24	-9.31	8.50
43.0	4.4425	5.8582	7.4159	-2.80	-24.17	26.59	-9.49	8.63
44.0	4.3081	5.6968	7.2319	-2.78	-24.38	26.95	-9.68	8.76
45.0	4.1786	5.5409	7.0535	-2.77	-24.59	27.30	-9.87	8.89
46.0	4.0537	5.3902	6.8806	-2.75	-24.79	27.65	-10.06	9.02
47.0	3.9334	5.2445	6.7130	-2.73	-25.00	28.00	-10.25	9.15
48.0	3.8173	5.1036	6.5504	-2.71	-25.20	28.35	-10.44	9.28
49.0	3.7053	4.9673	6.3928	-2.70	-25.41	28.70	-10.64	9.42
50.0	3.5973	4.8355	6.2399	-2.68	-25.61	29.04	-10.83	9.55
51.0	3.4931	4.7080	6.0916	-2.66	-25.81	29.39	-11.03	9.68
52.0	3.3925	4.5845	5.9477	-2.65	-26.00	29.73	-11.23	9.82
53.0	3.2954	4.4651	5.8080	-2.63	-26.20	30.08	-11.43	9.95
54.0	3.2016	4.3494	5.6725	-2.62	-26.39	30.42	-11.63	10.09
55.0	3.1111	4.2375	5.5409	-2.60	-26.58	30.76	-11.83	10.22
56.0	3.0236	4.1290	5.4131	-2.58	-26.77	31.10	-12.03	10.36
57.0	2.9391	4.0240	5.2890	-2.57	-26.96	31.44	-12.24	10.50
58.0	2.8575	3.9223	5.1685	-2.55	-27.15	31.77	-12.44	10.63
59.0	2.7786	3.8237	5.0514	-2.54	-27.33	32.11	-12.65	10.77
60.0	2.7023	3.7281	4.9377	-2.52	-27.52	32.44	-12.86	10.91
61.0	2.6286	3.6356	4.8272	-2.51	-27.70	32.78	-13.07	11.05
62.0	2.5573	3.5458	4.7198	-2.49	-27.88	33.11	-13.28	11.18
63.0	2.4883	3.4588	4.6154	-2.48	-28.06	33.44	-13.50	11.32
64.0	2.4216	3.3744	4.5139	-2.46	-28.24	33.77	-13.71	11.46
65.0	2.3570	3.2925	4.4152	-2.45	-28.41	34.10	-13.93	11.60
66.0	2.2946	3.2131	4.3193	-2.43	-28.59	34.43	-14.14	11.74

67.0	2.2341	3.1361	4.2260	-2.42	-28.76	34.75	-14.36	11.88
68.0	2.1756	3.0613	4.1352	-2.41	-28.93	35.08	-14.58	12.03
69.0	2.1190	2.9887	4.0469	-2.39	-29.10	35.40	-14.80	12.17
70.0	2.0641	2.9183	3.9610	-2.38	-29.27	35.73	-15.03	12.31
71.0	2.0110	2.8499	3.8773	-2.36	-29.44	36.05	-15.25	12.45
72.0	1.9595	2.7835	3.7959	-2.35	-29.60	36.37	-15.48	12.60
73.0	1.9097	2.7191	3.7167	-2.34	-29.77	36.69	-15.70	12.74
74.0	1.8613	2.6565	3.6396	-2.32	-29.93	37.01	-15.93	12.88
75.0	1.8145	2.5956	3.5645	-2.31	-30.09	37.33	-16.16	13.03
76.0	1.7691	2.5365	3.4914	-2.30	-30.25	37.64	-16.39	13.17
77.0	1.7251	2.4791	3.4202	-2.28	-30.41	37.96	-16.62	13.32
78.0	1.6824	2.4233	3.3508	-2.27	-30.57	38.27	-16.86	13.46
79.0	1.6410	2.3690	3.2832	-2.26	-30.73	38.59	-17.09	13.61
80.0	1.6009	2.3163	3.2173	-2.24	-30.89	38.90	-17.33	13.76
81.0	1.5620	2.2650	3.1532	-2.23	-31.04	39.21	-17.57	13.91
82.0	1.5242	2.2152	3.0906	-2.22	-31.19	39.52	-17.80	14.05
83.0	1.4875	2.1667	3.0297	-2.21	-31.35	39.83	-18.05	14.20
84.0	1.4519	2.1195	2.9702	-2.19	-31.50	40.14	-18.29	14.35
85.0	1.4174	2.0736	2.9123	-2.18	-31.65	40.45	-18.53	14.50
86.0	1.3839	2.0290	2.8558	-2.17	-31.79	40.75	-18.77	14.65
87.0	1.3513	1.9855	2.8007	-2.16	-31.94	41.06	-19.02	14.80
88.0	1.3197	1.9432	2.7470	-2.15	-32.09	41.36	-19.27	14.95
89.0	1.2890	1.9021	2.6946	-2.13	-32.23	41.66	-19.52	15.10
90.0	1.2591	1.8620	2.6434	-2.12	-32.38	41.97	-19.77	15.25
91.0	1.2302	1.8230	2.5935	-2.11	-32.52	42.27	-20.02	15.40
92.0	1.2020	1.7850	2.5448	-2.10	-32.66	42.57	-20.27	15.56
93.0	1.1746	1.7480	2.4973	-2.09	-32.80	42.87	-20.53	15.71
94.0	1.1480	1.7120	2.4510	-2.08	-32.94	43.16	-20.78	15.86
95.0	1.1221	1.6769	2.4057	-2.07	-33.08	43.46	-21.04	16.01
96.0	1.0970	1.6427	2.3615	-2.05	-33.22	43.76	-21.30	16.17
97.0	1.0726	1.6094	2.3183	-2.04	-33.36	44.05	-21.56	16.32
98.0	1.0488	1.5769	2.2762	-2.03	-33.49	44.34	-21.82	16.48
99.0	1.0257	1.5453	2.2351	-2.02	-33.63	44.64	-22.08	16.63
100.0	1.0032	1.5144	2.1949	-2.01	-33.76	44.93	-22.34	16.79
101.0	0.9813	1.4844	2.1556	-2.00	-33.89	45.22	-22.61	16.95
102.0	0.9600	1.4551	2.1173	-1.99	-34.03	45.51	-22.88	17.10
103.0	0.9392	1.4265	2.0798	-1.98	-34.16	45.80	-23.14	17.26
104.0	0.9191	1.3986	2.0432	-1.97	-34.29	46.09	-23.41	17.42
105.0	0.8994	1.3714	2.0074	-1.96	-34.41	46.37	-23.68	17.58

106.0	0.8803	1.3449	1.9724	-1.95	-34.54	46.66	-23.96	17.74
107.0	0.8617	1.3190	1.9382	-1.94	-34.67	46.95	-24.23	17.89
108.0	0.8436	1.2938	1.9048	-1.93	-34.80	47.23	-24.51	18.05
109.0	0.8259	1.2691	1.8721	-1.92	-34.92	47.51	-24.78	18.21
110.0	0.8088	1.2451	1.8402	-1.91	-35.05	47.80	-25.06	18.37
111.0	0.7920	1.2216	1.8090	-1.90	-35.17	48.08	-25.34	18.54
112.0	0.7757	1.1987	1.7784	-1.89	-35.29	48.36	-25.62	18.70
113.0	0.7598	1.1764	1.7485	-1.88	-35.41	48.64	-25.90	18.86
114.0	0.7443	1.1546	1.7193	-1.87	-35.53	48.92	-26.19	19.02
115.0	0.7292	1.1332	1.6907	-1.86	-35.65	49.19	-26.47	19.18
116.0	0.7145	1.1124	1.6627	-1.85	-35.77	49.47	-26.76	19.35
117.0	0.7001	1.0921	1.6354	-1.84	-35.89	49.75	-27.04	19.51
118.0	0.6861	1.0722	1.6086	-1.83	-36.01	50.02	-27.33	19.68
119.0	0.6725	1.0529	1.5824	-1.82	-36.13	50.29	-27.62	19.84
120.0	0.6592	1.0339	1.5567	-1.81	-36.24	50.57	-27.91	20.01
121.0	0.6462	1.0154	1.5316	-1.80	-36.36	50.84	-28.21	20.17
122.0	0.6336	0.9973	1.5070	-1.79	-36.47	51.11	-28.50	20.34
123.0	0.6212	0.9796	1.4830	-1.78	-36.58	51.38	-28.80	20.50
124.0	0.6092	0.9623	1.4594	-1.78	-36.70	51.65	-29.10	20.67
125.0	0.5974	0.9454	1.4363	-1.77	-36.81	51.92	-29.39	20.84
126.0	0.5860	0.9289	1.4137	-1.76	-36.92	52.19	-29.69	21.01
127.0	0.5748	0.9128	1.3916	-1.75	-37.03	52.46	-30.00	21.18
128.0	0.5639	0.8970	1.3699	-1.74	-37.14	52.72	-30.30	21.34
129.0	0.5532	0.8816	1.3487	-1.73	-37.25	52.99	-30.60	21.51
130.0	0.5428	0.8665	1.3279	-1.72	-37.36	53.25	-30.91	21.68
131.0	0.5326	0.8517	1.3075	-1.71	-37.47	53.52	-31.22	21.85
132.0	0.5227	0.8373	1.2875	-1.71	-37.57	53.78	-31.52	22.03
133.0	0.5130	0.8231	1.2680	-1.70	-37.68	54.04	-31.83	22.20
134.0	0.5035	0.8093	1.2488	-1.69	-37.78	54.30	-32.15	22.37
135.0	0.4943	0.7958	1.2300	-1.68	-37.89	54.56	-32.46	22.54
136.0	0.4852	0.7826	1.2116	-1.67	-37.99	54.82	-32.77	22.71
137.0	0.4764	0.7696	1.1935	-1.66	-38.10	55.08	-33.09	22.89
138.0	0.4678	0.7569	1.1758	-1.66	-38.20	55.34	-33.41	23.06
139.0	0.4594	0.7445	1.1585	-1.65	-38.30	55.59	-33.72	23.23
140.0	0.4511	0.7324	1.1414	-1.64	-38.40	55.85	-34.04	23.41
141.0	0.4431	0.7205	1.1247	-1.63	-38.50	56.11	-34.36	23.58
142.0	0.4352	0.7089	1.1084	-1.62	-38.60	56.36	-34.69	23.76
143.0	0.4275	0.6975	1.0923	-1.62	-38.70	56.61	-35.01	23.93
144.0	0.4200	0.6863	1.0766	-1.61	-38.80	56.87	-35.34	24.11

145.0	0.4127	0.6754	1.0611	-1.60	-38.90	57.12	-35.66	24.29
146.0	0.4055	0.6647	1.0460	-1.59	-39.00	57.37	-35.99	24.47
147.0	0.3984	0.6542	1.0311	-1.59	-39.09	57.62	-36.32	24.64
148.0	0.3916	0.6439	1.0165	-1.58	-39.19	57.87	-36.65	24.82
149.0	0.3848	0.6339	1.0022	-1.57	-39.29	58.12	-36.98	25.00
150.0	0.3783	0.6240	0.9882	-1.56	-39.38	58.37	-37.32	25.18
151.0	0.3718	0.6143	0.9744	-1.56	-39.48	58.61	-37.65	25.36
152.0	0.3655	0.6049	0.9609	-1.55	-39.57	58.86	-37.99	25.54
153.0	0.3594	0.5956	0.9476	-1.54	-39.66	59.11	-38.33	25.72
154.0	0.3533	0.5865	0.9346	-1.53	-39.76	59.35	-38.67	25.90
155.0	0.3474	0.5776	0.9218	-1.53	-39.85	59.60	-39.01	26.08
156.0	0.3417	0.5688	0.9092	-1.52	-39.94	59.84	-39.35	26.27
157.0	0.3360	0.5603	0.8969	-1.51	-40.03	60.08	-39.70	26.45
158.0	0.3305	0.5519	0.8848	-1.51	-40.12	60.32	-40.04	26.63
159.0	0.3250	0.5436	0.8729	-1.50	-40.21	60.56	-40.39	26.81
160.0	0.3197	0.5356	0.8612	-1.49	-40.30	60.80	-40.73	27.00
161.0	0.3145	0.5277	0.8498	-1.49	-40.39	61.04	-41.08	27.18
162.0	0.3095	0.5199	0.8385	-1.48	-40.48	61.28	-41.43	27.37
163.0	0.3045	0.5123	0.8274	-1.47	-40.57	61.52	-41.79	27.55
164.0	0.2996	0.5048	0.8166	-1.47	-40.65	61.76	-42.14	27.74
165.0	0.2948	0.4975	0.8059	-1.46	-40.74	62.00	-42.50	27.92
166.0	0.2901	0.4903	0.7954	-1.45	-40.83	62.23	-42.85	28.11
167.0	0.2855	0.4832	0.7851	-1.45	-40.91	62.47	-43.21	28.30
168.0	0.2810	0.4763	0.7750	-1.44	-41.00	62.70	-43.57	28.49
169.0	0.2766	0.4695	0.7650	-1.43	-41.08	62.94	-43.93	28.67
170.0	0.2723	0.4629	0.7552	-1.43	-41.17	63.17	-44.29	28.86
171.0	0.2681	0.4563	0.7456	-1.42	-41.25	63.40	-44.66	29.05
172.0	0.2640	0.4499	0.7362	-1.41	-41.33	63.63	-45.02	29.24
173.0	0.2599	0.4436	0.7269	-1.41	-41.41	63.86	-45.39	29.43
174.0	0.2559	0.4374	0.7178	-1.40	-41.50	64.09	-45.75	29.62
175.0	0.2520	0.4314	0.7088	-1.39	-41.58	64.32	-46.12	29.81
176.0	0.2482	0.4254	0.7000	-1.39	-41.66	64.55	-46.49	30.01
177.0	0.2444	0.4195	0.6913	-1.38	-41.74	64.78	-46.87	30.20
178.0	0.2407	0.4138	0.6828	-1.38	-41.82	65.01	-47.24	30.39
179.0	0.2371	0.4081	0.6744	-1.37	-41.90	65.23	-47.61	30.58
180.0	0.2336	0.4026	0.6662	-1.36	-41.98	65.46	-47.99	30.78
181.0	0.2301	0.3972	0.6580	-1.36	-42.06	65.69	-48.37	30.97

182.0	0.2267	0.3918	0.6501	-1.35	-42.14	65.91	-48.75	31.16
183.0	0.2234	0.3866	0.6422	-1.35	-42.22	66.13	-49.13	31.36
184.0	0.2201	0.3814	0.6345	-1.34	-42.29	66.36	-49.51	31.55
185.0	0.2169	0.3763	0.6269	-1.33	-42.37	66.58	-49.89	31.75
186.0	0.2137	0.3714	0.6194	-1.33	-42.45	66.80	-50.28	31.95
187.0	0.2106	0.3665	0.6121	-1.32	-42.52	67.02	-50.66	32.14
188.0	0.2076	0.3617	0.6049	-1.32	-42.60	67.24	-51.05	32.34
189.0	0.2046	0.3569	0.5978	-1.31	-42.67	67.46	-51.44	32.54
190.0	0.2017	0.3523	0.5908	-1.31	-42.75	67.68	-51.83	32.74
191.0	0.1988	0.3477	0.5839	-1.30	-42.82	67.90	-52.22	32.94
192.0	0.1960	0.3433	0.5771	-1.29	-42.90	68.12	-52.62	33.13
193.0	0.1932	0.3389	0.5704	-1.29	-42.97	68.34	-53.01	33.33
194.0	0.1905	0.3345	0.5639	-1.28	-43.04	68.55	-53.41	33.53
195.0	0.1879	0.3303	0.5574	-1.28	-43.12	68.77	-53.80	33.73
196.0	0.1852	0.3261	0.5510	-1.27	-43.19	68.99	-54.20	33.94
197.0	0.1827	0.3220	0.5448	-1.27	-43.26	69.20	-54.60	34.14
198.0	0.1802	0.3179	0.5386	-1.26	-43.33	69.41	-55.01	34.34
199.0	0.1777	0.3139	0.5325	-1.26	-43.41	69.63	-55.41	34.54
200.0	0.1752	0.3100	0.5266	-1.25	-43.48	69.84	-55.81	34.74