



Cheemi Technology Co., Ltd

Specification

Product Name: NTC temperature sensor

Part Number: CM-MFNTC7210D-15

Date: 2023/08/08

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
16.5	21.0	20	7.5 ± 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) : 3000
- ③热时间常数(S) (Thermal Time Constant) : 78
- ④热耗散系数 ($\text{mW}/^\circ\text{C}$) (Thermal Dissipation Constant) : 25
- 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) : 5A

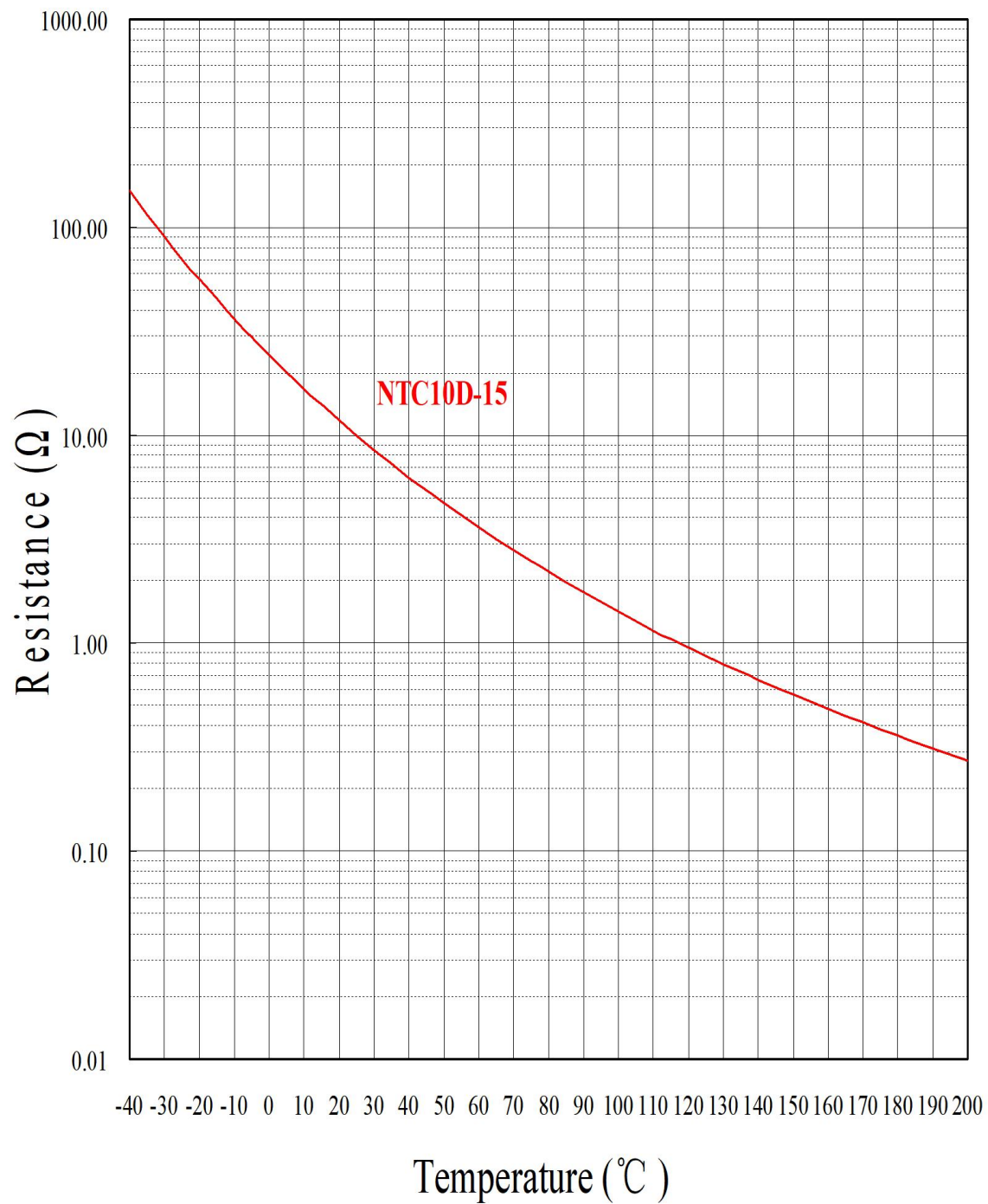
⑦最大冲击电容量(μ F/240V) (Max. Shock Capacity) : 570

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: $B = \frac{T_1 \cdot T_2}{T_2 - T_1} * \ln \left(\frac{R_1}{R_2} \right)$ 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 ThermalTimeConstant	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 $\longrightarrow$ +180℃/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-15

R: 10 ohms $\pm$ 20%

B: 3000 °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	99.7030	164.9505	261.9813	-5.51	-39.56	58.82	-10.68	7.18
-39.0	94.8996	156.1446	246.6385	-5.46	-39.22	57.96	-10.61	7.18
-38.0	90.3653	147.8774	232.3128	-5.42	-38.89	57.10	-10.54	7.18
-37.0	86.0831	140.1121	218.9296	-5.37	-38.56	56.25	-10.47	7.18
-36.0	82.0373	132.8147	206.4201	-5.33	-38.23	55.42	-10.40	7.18
-35.0	78.2131	125.9536	194.7211	-5.28	-37.90	54.60	-10.34	7.18
-34.0	74.5968	119.4998	183.7744	-5.24	-37.58	53.79	-10.27	7.17
-33.0	71.1756	113.4260	173.5262	-5.19	-37.25	52.99	-10.20	7.17
-32.0	67.9377	107.7073	163.9272	-5.15	-36.92	52.20	-10.13	7.17
-31.0	64.8719	102.3205	154.9317	-5.11	-36.60	51.42	-10.06	7.16
-30.0	61.9678	97.2439	146.4974	-5.07	-36.28	50.65	-9.99	7.16
-29.0	59.2159	92.4576	138.5856	-5.03	-35.95	49.89	-9.93	7.15
-28.0	56.6071	87.9429	131.1602	-4.99	-35.63	49.14	-9.86	7.15
-27.0	54.1329	83.6825	124.1880	-4.95	-35.31	48.40	-9.79	7.14
-26.0	51.7855	79.6604	117.6381	-4.91	-34.99	47.67	-9.72	7.13
-25.0	49.5576	75.8616	111.4822	-4.87	-34.67	46.95	-9.65	7.12
-24.0	47.4421	72.2722	105.6939	-4.83	-34.36	46.24	-9.58	7.12
-23.0	45.4328	68.8792	100.2486	-4.79	-34.04	45.54	-9.51	7.11
-22.0	43.5235	65.6706	95.1238	-4.75	-33.72	44.85	-9.44	7.10
-21.0	41.7086	62.6350	90.2983	-4.71	-33.41	44.17	-9.37	7.09
-20.0	39.9827	59.7620	85.7528	-4.68	-33.10	43.49	-9.30	7.08
-19.0	38.3410	57.0417	81.4691	-4.64	-32.78	42.82	-9.23	7.07
-18.0	36.7787	54.4651	77.4304	-4.60	-32.47	42.17	-9.16	7.05
-17.0	35.2915	52.0236	73.6210	-4.57	-32.16	41.51	-9.09	7.04
-16.0	33.8753	49.7092	70.0264	-4.53	-31.85	40.87	-9.02	7.03
-15.0	32.5262	47.5145	66.6331	-4.50	-31.54	40.24	-8.95	7.01
-14.0	31.2406	45.4324	63.4284	-4.46	-31.24	39.61	-8.87	7.00
-13.0	30.0151	43.4565	60.4006	-4.43	-30.93	38.99	-8.80	6.98
-12.0	28.8464	41.5806	57.5389	-4.40	-30.63	38.38	-8.73	6.97

-11.0	27.7317	39.7991	54.8330	-4.36	-30.32	37.77	-8.66	6.95
-10.0	26.6680	38.1065	52.2734	-4.33	-30.02	37.18	-8.59	6.93
-9.0	25.6526	36.4979	49.8513	-4.30	-29.71	36.59	-8.51	6.92
-8.0	24.6831	34.9686	47.5584	-4.26	-29.41	36.00	-8.44	6.90
-7.0	23.7571	33.5140	45.3869	-4.23	-29.11	35.43	-8.37	6.88
-6.0	22.8724	32.1302	43.3297	-4.20	-28.81	34.86	-8.30	6.86
-5.0	22.0269	30.8132	41.3801	-4.17	-28.51	34.29	-8.22	6.84
-4.0	21.2185	29.5593	39.5316	-4.14	-28.22	33.74	-8.15	6.82
-3.0	20.4454	28.3651	37.7784	-4.11	-27.92	33.19	-8.08	6.80
-2.0	19.7059	27.2274	36.1151	-4.08	-27.62	32.64	-8.00	6.77
-1.0	18.9983	26.1433	34.5364	-4.05	-27.33	32.10	-7.93	6.75
0.0	18.3209	25.1097	33.0375	-4.02	-27.04	31.57	-7.86	6.73
1.0	17.6724	24.1241	31.6138	-3.99	-26.74	31.05	-7.78	6.70
2.0	17.0513	23.1839	30.2612	-3.96	-26.45	30.53	-7.71	6.68
3.0	16.4563	22.2867	28.9756	-3.93	-26.16	30.01	-7.63	6.65
4.0	15.8861	21.4304	27.7532	-3.90	-25.87	29.50	-7.56	6.63
5.0	15.3395	20.6127	26.5907	-3.88	-25.58	29.00	-7.48	6.60
6.0	14.8155	19.8318	25.4846	-3.85	-25.29	28.50	-7.41	6.57
7.0	14.3129	19.0856	24.4320	-3.82	-25.01	28.01	-7.33	6.54
8.0	13.8307	18.3726	23.4298	-3.79	-24.72	27.53	-7.26	6.52
9.0	13.3680	17.6910	22.4754	-3.77	-24.44	27.04	-7.18	6.49
10.0	12.9239	17.0392	21.5662	-3.74	-24.15	26.57	-7.10	6.46
11.0	12.4975	16.4157	20.6998	-3.71	-23.87	26.10	-7.03	6.43
12.0	12.0880	15.8192	19.8739	-3.69	-23.59	25.63	-6.95	6.39
13.0	11.6947	15.2483	19.0864	-3.66	-23.30	25.17	-6.87	6.36
14.0	11.3168	14.7017	18.3352	-3.64	-23.02	24.71	-6.79	6.33
15.0	10.9535	14.1784	17.6185	-3.61	-22.74	24.26	-6.72	6.30
16.0	10.6043	13.6770	16.9345	-3.59	-22.47	23.82	-6.64	6.26
17.0	10.2686	13.1967	16.2815	-3.56	-22.19	23.38	-6.56	6.23
18.0	9.9456	12.7364	15.6579	-3.54	-21.91	22.94	-6.48	6.19
19.0	9.6349	12.2951	15.0621	-3.51	-21.64	22.51	-6.40	6.16
20.0	9.3360	11.8719	14.4929	-3.49	-21.36	22.08	-6.33	6.12
21.0	9.0482	11.4661	13.9488	-3.47	-21.09	21.65	-6.25	6.08
22.0	8.7712	11.0767	13.4287	-3.44	-20.81	21.23	-6.17	6.04
23.0	8.5045	10.7030	12.9312	-3.42	-20.54	20.82	-6.09	6.01
24.0	8.2475	10.3444	12.4553	-3.40	-20.27	20.41	-6.01	5.97
25.0	8.0000	10.0000	12.0000	-3.37	-20.00	20.00	-5.93	5.93
26.0	7.7095	9.6693	11.6422	-3.35	-20.27	20.40	-6.09	6.05
27.0	7.4313	9.3516	11.2974	-3.33	-20.53	20.81	-6.25	6.17

28.0	7.1649	9.0463	10.9650	-3.31	-20.80	21.21	-6.41	6.29
29.0	6.9097	8.7530	10.6444	-3.29	-21.06	21.61	-6.58	6.41
30.0	6.6652	8.4710	10.3352	-3.26	-21.32	22.01	-6.74	6.53
31.0	6.4309	8.1998	10.0370	-3.24	-21.57	22.41	-6.91	6.65
32.0	6.2063	7.9390	9.7493	-3.22	-21.83	22.80	-7.08	6.77
33.0	5.9909	7.6881	9.4715	-3.20	-22.08	23.20	-7.25	6.90
34.0	5.7843	7.4468	9.2035	-3.18	-22.32	23.59	-7.42	7.02
35.0	5.5861	7.2144	8.9446	-3.16	-22.57	23.98	-7.59	7.14
36.0	5.3960	6.9908	8.6947	-3.14	-22.81	24.37	-7.77	7.27
37.0	5.2134	6.7755	8.4533	-3.12	-23.05	24.76	-7.94	7.39
38.0	5.0382	6.5681	8.2201	-3.10	-23.29	25.15	-8.12	7.52
39.0	4.8699	6.3683	7.9947	-3.08	-23.53	25.54	-8.30	7.64
40.0	4.7082	6.1758	7.7769	-3.06	-23.76	25.92	-8.47	7.77
41.0	4.5529	5.9903	7.5664	-3.04	-24.00	26.31	-8.66	7.89
42.0	4.4036	5.8116	7.3628	-3.02	-24.23	26.69	-8.84	8.02
43.0	4.2602	5.6392	7.1660	-3.00	-24.45	27.07	-9.02	8.15
44.0	4.1222	5.4730	6.9756	-2.98	-24.68	27.46	-9.21	8.27
45.0	3.9896	5.3126	6.7914	-2.96	-24.90	27.84	-9.39	8.40
46.0	3.8620	5.1580	6.6132	-2.95	-25.12	28.21	-9.58	8.53
47.0	3.7393	5.0087	6.4407	-2.93	-25.34	28.59	-9.77	8.66
48.0	3.6212	4.8647	6.2738	-2.91	-25.56	28.97	-9.96	8.79
49.0	3.5075	4.7256	6.1122	-2.89	-25.78	29.34	-10.15	8.92
50.0	3.3980	4.5914	5.9557	-2.87	-25.99	29.71	-10.34	9.05
51.0	3.2927	4.4618	5.8041	-2.86	-26.20	30.09	-10.54	9.18
52.0	3.1912	4.3366	5.6573	-2.84	-26.41	30.46	-10.73	9.31
53.0	3.0934	4.2156	5.5151	-2.82	-26.62	30.83	-10.93	9.44
54.0	2.9992	4.0987	5.3773	-2.80	-26.83	31.19	-11.13	9.57
55.0	2.9084	3.9858	5.2437	-2.79	-27.03	31.56	-11.33	9.70
56.0	2.8209	3.8766	5.1143	-2.77	-27.23	31.93	-11.53	9.83
57.0	2.7365	3.7710	4.9888	-2.75	-27.43	32.29	-11.73	9.97
58.0	2.6551	3.6689	4.8671	-2.74	-27.63	32.66	-11.94	10.10
59.0	2.5766	3.5702	4.7490	-2.72	-27.83	33.02	-12.14	10.23
60.0	2.5009	3.4747	4.6346	-2.70	-28.02	33.38	-12.35	10.37
61.0	2.4279	3.3823	4.5235	-2.69	-28.22	33.74	-12.56	10.50
62.0	2.3574	3.2929	4.4157	-2.67	-28.41	34.10	-12.77	10.64
63.0	2.2893	3.2064	4.3112	-2.66	-28.60	34.46	-12.98	10.77
64.0	2.2236	3.1226	4.2097	-2.64	-28.79	34.81	-13.19	10.91
65.0	2.1602	3.0415	4.1111	-2.62	-28.98	35.17	-13.40	11.04
66.0	2.0989	2.9630	4.0155	-2.61	-29.16	35.52	-13.62	11.18

67.0	2.0397	2.8869	3.9226	-2.59	-29.35	35.87	-13.84	11.32
68.0	1.9825	2.8132	3.8324	-2.58	-29.53	36.23	-14.05	11.45
69.0	1.9273	2.7419	3.7447	-2.56	-29.71	36.58	-14.27	11.59
70.0	1.8738	2.6727	3.6596	-2.55	-29.89	36.93	-14.49	11.73
71.0	1.8222	2.6056	3.5769	-2.53	-30.07	37.27	-14.72	11.87
72.0	1.7723	2.5406	3.4965	-2.52	-30.24	37.62	-14.94	12.01
73.0	1.7240	2.4776	3.4183	-2.50	-30.42	37.97	-15.16	12.15
74.0	1.6773	2.4165	3.3424	-2.49	-30.59	38.31	-15.39	12.29
75.0	1.6321	2.3573	3.2685	-2.48	-30.76	38.66	-15.62	12.43
76.0	1.5884	2.2998	3.1967	-2.46	-30.93	39.00	-15.85	12.57
77.0	1.5461	2.2441	3.1269	-2.45	-31.10	39.34	-16.08	12.71
78.0	1.5051	2.1900	3.0590	-2.43	-31.27	39.68	-16.31	12.85
79.0	1.4655	2.1375	2.9929	-2.42	-31.44	40.02	-16.54	12.99
80.0	1.4271	2.0865	2.9286	-2.41	-31.60	40.36	-16.78	13.14
81.0	1.3900	2.0371	2.8661	-2.39	-31.77	40.70	-17.01	13.28
82.0	1.3540	1.9891	2.8052	-2.38	-31.93	41.03	-17.25	13.42
83.0	1.3191	1.9424	2.7460	-2.37	-32.09	41.37	-17.49	13.57
84.0	1.2853	1.8972	2.6883	-2.35	-32.25	41.70	-17.73	13.71
85.0	1.2526	1.8532	2.6321	-2.34	-32.41	42.03	-17.97	13.86
86.0	1.2208	1.8105	2.5775	-2.33	-32.57	42.36	-18.21	14.00
87.0	1.1901	1.7690	2.5242	-2.31	-32.72	42.70	-18.46	14.15
88.0	1.1603	1.7286	2.4724	-2.30	-32.88	43.02	-18.70	14.29
89.0	1.1314	1.6894	2.4218	-2.29	-33.03	43.35	-18.95	14.44
90.0	1.1033	1.6513	2.3726	-2.27	-33.19	43.68	-19.20	14.59
91.0	1.0761	1.6143	2.3247	-2.26	-33.34	44.01	-19.45	14.73
92.0	1.0498	1.5783	2.2779	-2.25	-33.49	44.33	-19.70	14.88
93.0	1.0242	1.5432	2.2324	-2.24	-33.64	44.66	-19.96	15.03
94.0	0.9993	1.5092	2.1880	-2.23	-33.78	44.98	-20.21	15.18
95.0	0.9752	1.4761	2.1447	-2.21	-33.93	45.30	-20.47	15.33
96.0	0.9518	1.4438	2.1025	-2.20	-34.08	45.62	-20.72	15.48
97.0	0.9291	1.4125	2.0614	-2.19	-34.22	45.94	-20.98	15.63
98.0	0.9071	1.3820	2.0213	-2.18	-34.36	46.26	-21.24	15.78
99.0	0.8856	1.3523	1.9822	-2.17	-34.51	46.58	-21.50	15.93
100.0	0.8648	1.3234	1.9440	-2.15	-34.65	46.90	-21.77	16.08
101.0	0.8446	1.2952	1.9068	-2.14	-34.79	47.21	-22.03	16.23
102.0	0.8250	1.2678	1.8704	-2.13	-34.93	47.53	-22.30	16.39
103.0	0.8059	1.2412	1.8350	-2.12	-35.07	47.84	-22.56	16.54
104.0	0.7874	1.2152	1.8004	-2.11	-35.20	48.15	-22.83	16.69
105.0	0.7694	1.1899	1.7666	-2.10	-35.34	48.47	-23.10	16.84

106.0	0.7519	1.1653	1.7337	-2.09	-35.47	48.78	-23.37	17.00
107.0	0.7349	1.1413	1.7015	-2.08	-35.61	49.09	-23.65	17.15
108.0	0.7183	1.1179	1.6701	-2.07	-35.74	49.40	-23.92	17.31
109.0	0.7022	1.0951	1.6394	-2.05	-35.87	49.70	-24.20	17.46
110.0	0.6866	1.0729	1.6095	-2.04	-36.01	50.01	-24.47	17.62
111.0	0.6714	1.0512	1.5802	-2.03	-36.14	50.32	-24.75	17.78
112.0	0.6566	1.0301	1.5516	-2.02	-36.26	50.62	-25.03	17.93
113.0	0.6422	1.0096	1.5237	-2.01	-36.39	50.93	-25.31	18.09
114.0	0.6281	0.9895	1.4964	-2.00	-36.52	51.23	-25.60	18.25
115.0	0.6145	0.9700	1.4698	-1.99	-36.65	51.53	-25.88	18.41
116.0	0.6012	0.9509	1.4438	-1.98	-36.77	51.83	-26.17	18.56
117.0	0.5883	0.9323	1.4183	-1.97	-36.90	52.13	-26.45	18.72
118.0	0.5757	0.9141	1.3934	-1.96	-37.02	52.43	-26.74	18.88
119.0	0.5635	0.8964	1.3691	-1.95	-37.14	52.73	-27.03	19.04
120.0	0.5515	0.8792	1.3454	-1.94	-37.27	53.03	-27.32	19.20
121.0	0.5399	0.8623	1.3221	-1.93	-37.39	53.33	-27.62	19.36
122.0	0.5286	0.8458	1.2994	-1.92	-37.51	53.62	-27.91	19.52
123.0	0.5176	0.8298	1.2772	-1.91	-37.63	53.92	-28.21	19.69
124.0	0.5068	0.8141	1.2555	-1.90	-37.75	54.21	-28.50	19.85
125.0	0.4963	0.7988	1.2342	-1.89	-37.87	54.50	-28.80	20.01
126.0	0.4861	0.7839	1.2134	-1.88	-37.98	54.79	-29.10	20.17
127.0	0.4762	0.7693	1.1931	-1.87	-38.10	55.09	-29.40	20.34
128.0	0.4665	0.7551	1.1732	-1.86	-38.21	55.38	-29.71	20.50
129.0	0.4571	0.7411	1.1537	-1.85	-38.33	55.66	-30.01	20.66
130.0	0.4479	0.7276	1.1347	-1.85	-38.44	55.95	-30.32	20.83
131.0	0.4389	0.7143	1.1160	-1.84	-38.56	56.24	-30.62	20.99
132.0	0.4301	0.7013	1.0978	-1.83	-38.67	56.53	-30.93	21.16
133.0	0.4216	0.6887	1.0799	-1.82	-38.78	56.81	-31.24	21.33
134.0	0.4133	0.6763	1.0624	-1.81	-38.89	57.10	-31.55	21.49
135.0	0.4051	0.6642	1.0453	-1.80	-39.00	57.38	-31.87	21.66
136.0	0.3972	0.6524	1.0285	-1.79	-39.11	57.66	-32.18	21.83
137.0	0.3895	0.6408	1.0121	-1.78	-39.22	57.95	-32.50	22.00
138.0	0.3819	0.6295	0.9960	-1.77	-39.33	58.23	-32.81	22.16
139.0	0.3746	0.6185	0.9803	-1.77	-39.44	58.51	-33.13	22.33
140.0	0.3674	0.6077	0.9649	-1.76	-39.54	58.79	-33.45	22.50
141.0	0.3604	0.5971	0.9498	-1.75	-39.65	59.07	-33.78	22.67
142.0	0.3535	0.5868	0.9350	-1.74	-39.75	59.34	-34.10	22.84
143.0	0.3468	0.5767	0.9205	-1.73	-39.86	59.62	-34.42	23.01
144.0	0.3403	0.5668	0.9063	-1.72	-39.96	59.90	-34.75	23.18

145.0	0.3339	0.5571	0.8924	-1.72	-40.06	60.17	-35.08	23.35
146.0	0.3277	0.5477	0.8787	-1.71	-40.17	60.45	-35.41	23.53
147.0	0.3216	0.5384	0.8654	-1.70	-40.27	60.72	-35.74	23.70
148.0	0.3157	0.5294	0.8523	-1.69	-40.37	60.99	-36.07	23.87
149.0	0.3099	0.5205	0.8394	-1.68	-40.47	61.26	-36.40	24.05
150.0	0.3042	0.5119	0.8268	-1.68	-40.57	61.54	-36.73	24.22
151.0	0.2987	0.5034	0.8145	-1.67	-40.67	61.81	-37.07	24.39
152.0	0.2932	0.4951	0.8024	-1.66	-40.77	62.07	-37.41	24.57
153.0	0.2879	0.4869	0.7905	-1.65	-40.87	62.34	-37.75	24.74
154.0	0.2828	0.4790	0.7789	-1.64	-40.96	62.61	-38.09	24.92
155.0	0.2777	0.4712	0.7675	-1.64	-41.06	62.88	-38.43	25.10
156.0	0.2728	0.4636	0.7563	-1.63	-41.16	63.14	-38.77	25.27
157.0	0.2679	0.4561	0.7453	-1.62	-41.25	63.41	-39.12	25.45
158.0	0.2632	0.4488	0.7345	-1.61	-41.35	63.67	-39.46	25.63
159.0	0.2586	0.4416	0.7240	-1.61	-41.44	63.94	-39.81	25.80
160.0	0.2541	0.4346	0.7136	-1.60	-41.53	64.20	-40.16	25.98
161.0	0.2497	0.4277	0.7034	-1.59	-41.63	64.46	-40.51	26.16
162.0	0.2453	0.4210	0.6934	-1.58	-41.72	64.72	-40.86	26.34
163.0	0.2411	0.4144	0.6837	-1.58	-41.81	64.98	-41.22	26.52
164.0	0.2370	0.4079	0.6740	-1.57	-41.90	65.24	-41.57	26.70
165.0	0.2329	0.4016	0.6646	-1.56	-41.99	65.50	-41.93	26.88
166.0	0.2290	0.3954	0.6554	-1.56	-42.09	65.76	-42.29	27.06
167.0	0.2251	0.3893	0.6463	-1.55	-42.18	66.02	-42.65	27.24
168.0	0.2213	0.3833	0.6373	-1.54	-42.26	66.27	-43.01	27.43
169.0	0.2176	0.3775	0.6286	-1.53	-42.35	66.53	-43.37	27.61
170.0	0.2140	0.3717	0.6200	-1.53	-42.44	66.79	-43.73	27.79
171.0	0.2104	0.3661	0.6115	-1.52	-42.53	67.04	-44.10	27.97
172.0	0.2069	0.3606	0.6032	-1.51	-42.62	67.29	-44.46	28.16
173.0	0.2035	0.3552	0.5951	-1.51	-42.70	67.55	-44.83	28.34
174.0	0.2002	0.3499	0.5871	-1.50	-42.79	67.80	-45.20	28.53
175.0	0.1969	0.3447	0.5793	-1.49	-42.87	68.05	-45.57	28.71
176.0	0.1937	0.3396	0.5715	-1.49	-42.96	68.30	-45.94	28.90
177.0	0.1906	0.3346	0.5640	-1.48	-43.04	68.55	-46.32	29.08
178.0	0.1875	0.3297	0.5565	-1.47	-43.13	68.80	-46.69	29.27
179.0	0.1845	0.3249	0.5492	-1.47	-43.21	69.05	-47.07	29.46
180.0	0.1815	0.3202	0.5420	-1.46	-43.29	69.30	-47.45	29.65