

Cheemi Technology Co., Ltd

规格承认书

APPROVAL SHEET

客户名称 CUSTOMER :

产品名称 PART NAME :

产品规格 PART NUMBER :

产品编号 PRODUCTCODE:

版次 REV.NO:

日期 DATE:

测温型 NTC 热敏电阻器

Temp Measurement NTC Thermistor

CMNTC-52A222F3470045W

B0

2023-10-18

确认

CONFIRM

客户 CLIENT		供货商/制造商 MANUFACTOR	
品保部 Quality Dep.		规格书制作 Design	刘星月
制造部 Production Dep.		业务部审核 Checked by sales	
工程部 Engineering Dep.		技术部审核 Checked by R&D	程鹏
		品质部审核 Checked by QA	李少媛

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变更记录表

[illegible]

1、产品型号说明 Product model specification

CMNTC A 222 F 3470 045W

① ② ③ ④ ⑤ ⑥

- ① CMNTC: 测温型 NTC 热敏电阻器系列 (Series Temp Measurement NTC Thermistor)
- ② A: 指引线为镀锡线 (Refers to tinned lead)
- ③ 222: 25℃ 的零功率电阻值 2.2KΩ (Zero Power Resistance at 25℃ is 2.2KΩ)
- ④ F: 阻值精度代码 F-±1% G-±2% H-±3% J-±5% (Resistance precision code F-±1% G-±2% H-±3% J-±5%)
- ⑤ 3470: B25/50 值 3470K (B25/50:3470K)
- ⑥ 045W: 线材规格: 引线外径 Φ0.45mm (Wire dimension: The outer diameter of lead wire is Φ0.45mm)

2、电气性能 Electrical Characteristics

No.	项目 Item	符号 Symbol	测试条件 Test conditions	单位 Unit	性能要求 Requirements
2.1	25℃ 的零功率电阻值 Zero Power Resistance at 25℃	$R_{25^{\circ}\text{C}}$	$T_a=25\pm0.01^{\circ}\text{C}$ Test Power $\leq 0.1\text{mW}$	KΩ	$2.2\text{K}\Omega\pm 1\%$
2.2	B 值 B-value	$B_{25/50}$	$B=[(T_a\times T_b)/(T_b-T_a)]\times \ln(R_a/R_b)$ $T_a=25\pm0.01^{\circ}\text{C}$ $T_b=50^{\circ}\text{C}\pm 0.01^{\circ}\text{C}$	K	$3470\pm 1\%$
2.3	耗散系数 Thermal dissipation Coefficient	δ	静止空气中 In still air	mW/℃	约 2
2.4	时间常数 Thermal time constant	τ	静止空气中 In still air	sec	约 7
2.5	绝缘电阻 Insulation resistance	/	100V/DC 1min	MΩ	≥ 100
2.6	工作温度范围 Operating temperature range	/	/	℃	$-55^{\circ}\text{C}\sim 125^{\circ}\text{C}$
2.7	最大额定功率 Maximum rated power	Pmax	/	mW	100
2.8	阻温特性 R&T-table	/	/	/	见附表 I See attached table I
2.9	阻值误差&B 值误差 Resistance tolerance& B-value tolerance	/	/	/	见附表 II See attached table II

3、产品图纸 Product drawing

产品图纸 Product drawing		客户 确认 Customer confirm	客户名称 Customer:			
			确认 Confirm		日期 DATE	
产品型号 MODEL NO.	CMNTC-52A222F3470045W		审核 Approve:		日期 DATE	

尺寸 Dimensions: (Unit: mm)

技术要求 Technical requirements:

- 1) 零功率阻值: R25: $2.2K\Omega \pm 1\%$ (Zero Power Resistance: R25: $2.2K\Omega \pm 1\%$);
- 2) B25/50 数值: $3470K \pm 1\%$ (B-value: B25/50: $3470K \pm 1\%$);
- 3) 线材: $\Phi 0.45$ 镀锡铜包钢线 ($\Phi 0.45$ tinned copper-weld steel wire);
- 4) 封装: 黑色改性环氧树脂包封 (Black function improvement Epoxy resin);
- 5) 符合 RoHS 环保要求 (Meet environmental protection requirements: RoHS)。

更新履历 Revised record sheet				
版本 REV. NO	更新时间 REV. DATE	更新内容 Change content	申请人 Applicant	批准人 Approved
B0		版本发行	王月婷	李少媛

4、可靠性 Reliability

No.	项目 Item	试验标准	试验条件及方法 Test conditions and methods	性能要求 Requirements
4.1	引出端强度 Terminal strength	IEC60068-2-21	固定电阻端, 拉力: 5 ± 1 N, 时间: 10 ± 1 秒 Fixed resistor end, Pull strength: 5 ± 1 N, time: 10 ± 1 sec	无可见性损伤 No obvious damage $ \Delta R_{25}/R_{25} \leq \pm 2\%$
4.2	可焊性 Solderability	IEC60068-2-20	温度 $245 \pm 5^\circ\text{C}$ 时间 2-3 秒 temperature : $245 \pm 5^\circ\text{C}$ for 2-3sec	着锡面积 $\geq 95\%$ Coverage area $\geq 95\%$.
4.3	耐焊接热 Withstand weiling temp	IEC60068-2-20	锡锅温度: $260 \pm 5^\circ\text{C}$, 浸入深度距电阻体 6mm, 时间 5 ± 1 秒 Temperature of tin pot: $260 \pm 5^\circ\text{C}$, insert depth from body of resistance 6mm, time 5 ± 1 seconds	$ \Delta R_{25}/R_{25} \leq \pm 2\%$
4.3	稳态湿热 Steady humidity and heat	IEC60068-2-78	温度: $40^\circ\text{C} \pm 2^\circ\text{C}$, 湿度: $93 \pm 2\%$, 时间: 500 小时 Temp: $40^\circ\text{C} \pm 2^\circ\text{C}$, humidity: $93 \pm 2\%$, Time : 500hrs	$ \Delta R_{25}/R_{25} \leq \pm 2\%$
4.4	温度快速变化 Rapid changes in temperature	IEC60068-2-14	-55°C 30min $\rightarrow$ 25°C 5min $\rightarrow$ 125°C 30min $\rightarrow$ 25°C 5min, 5cycles	$ \Delta R_{25}/R_{25} \leq \pm 2\%$
4.5	高温储存 High temperature storage	IEC60068-2-2	温度: $125^\circ\text{C} \pm 5^\circ\text{C}$ 时间: 1000 小时 Temp : $125^\circ\text{C} \pm 5^\circ\text{C}$, Time : 1000hrs	$ \Delta R_{25}/R_{25} \leq \pm 2\%$
4.6	低温储存 Low temperature storage	IEC60068-2-1	温度: -55°C 时间: 1000 小时 Temp : -55°C , Time : 1000hrs	$ \Delta R_{25}/R_{25} \leq \pm 2\%$

▲注: 1) 稳态湿热及温度快速变化试验结束后, 样品需在常温环境下静置 2 小时后再做性能测试;

▲Note: 1) After the test of steady-state humid heat and rapid temperature change, the sample should be kept for 2 hours at room temperature before performance test ;

2) 高温存储及低温存储结束后, 需随测试环境自然恢复至常温, 再取出做性能测试。

2) After the test of high - and low-temperature storage is complete, and then take it out for performance test when the test environment naturally regain to normal temperature.

5、产品包装 Product packaging

5.1 包装方式 Packing Type

■ 散装方式 Bulk Type □ 编带方式 Reel Type

5.2 包装规格 Packing specification

No.	包装规格 Packing specification	包装材料、尺寸 Packing material, size	产品数量 Quantity
1	包装袋 Packing bag	自封口袋(self sealing bag) $W \times H = 11\text{mm} \times 12\text{mm}$	

6、安装&使用注意事项 Installation & Use precautions

6.1 本产品的用途：温度测量与控制；application:test and control for temperature

6.2 避免过大的电流引起元件自身发热而产生测量误差；To avoid of testing tolerance caused by huge current upon the self-heat of component.

6.3 烙铁焊接时，焊接处距包封头部距离至少 2mm，焊接温度应低于 360℃，焊接时间<3ses；

When welded by soldering iron,weld spot should be 2mm at least from head,weld temperature should be under 360℃,time<3ses

6.4 储存温度：-10℃ ~ 40℃；储存湿度：≤75% RH；storage temp:-10℃ ~ 40℃；storage humidity:≤75% RH

6.5 避免存放在具有腐蚀性气体及光照的环境下；To avoid of leaving with such environment as corrosive gases and illumination

6.6 包装打开后需重新密封保存，贮存期 1 年，超过贮存期，可按本标准规定的项目重新检验，如符合要求仍可使用；

The packing need to be resealed since opened,storage period 1 year.once valid,it should be retest according to regulated of criterion and can be still used if meet the requirement.

6.7 如在加工过程中需使用热缩管，热缩管热缩时不可使用电吹风进行吹制，建议热缩工艺，将套好热缩管后的产品放入恒温烘箱中，按 110℃/10-12min 进行热缩；

In case of useing heat-shrink tube,hair drier is prohibited.we suggest that put the product with heat shrink into constant-temperature box and heat shrink under 110℃/10-12min

7、产品认证 Product certification

No.	项目 Projects	产品认证 Product certification
8.1	质量管理体系认证 Quality Management System Certification	ISO9001:2015
		IATF16949: 2016
8.2	环境管理体系认证 Environmental Management System Certification	ISO14001:2015
8.3	环保检测报告 Environmental test report	RoHS 2.0
8.4	CQC 认证 (CQC07001019008) CQC certificate (CQC07001019008)	
8.5	江苏省高新技术产品认证 High-tech product certificate in Jiangsu Province	
8.6	TUV 认证 (R50245893) TUV certificate (R50245893)	
8.7	UL 认证(E240993) ULcertificate(E240993)	

附表 I (Attachment I)

R25=2.2K Ω 精度: $\pm 1\%$				B25/50=3470K 精度: $\pm 1\%$ (P219-2)			
温度($^{\circ}\text{C}$)	电阻(K Ω)			电阻精度(%)		温度精度($^{\circ}\text{C}$)	
	最小值	中心值	最大值	ΔR	$-\Delta R$	ΔT	$-\Delta T$
-55	121.561	128.048	134.535	5.065	-5.065	0.729	-0.729
-54	114.849	120.905	126.96	5.008	-5.008	0.725	-0.725
-53	108.198	113.831	119.463	4.948	-4.948	0.722	-0.722
-52	101.718	106.943	112.168	4.885	-4.885	0.718	-0.718
-51	95.484	100.321	105.158	4.821	-4.821	0.714	-0.714
-50	89.544	94.016	98.488	4.756	-4.756	0.711	-0.711
-49	83.925	88.056	92.187	4.691	-4.691	0.707	-0.707
-48	78.641	82.454	86.268	4.625	-4.625	0.703	-0.703
-47	73.69	77.211	80.731	4.559	-4.559	0.699	-0.699
-46	69.067	72.317	75.566	4.493	-4.493	0.696	-0.696
-45	64.758	67.759	70.76	4.428	-4.428	0.692	-0.692
-44	60.748	63.52	66.292	4.364	-4.364	0.688	-0.688
-43	57.019	59.581	62.143	4.3	-4.3	0.684	-0.684
-42	53.554	55.923	58.292	4.236	-4.236	0.68	-0.68
-41	50.332	52.525	54.717	4.173	-4.173	0.676	-0.676
-40	47.338	49.368	51.397	4.111	-4.111	0.671	-0.671
-39	44.552	46.433	48.314	4.05	-4.05	0.667	-0.667
-38	41.959	43.703	45.447	3.989	-3.989	0.663	-0.663
-37	39.544	41.162	42.779	3.929	-3.929	0.658	-0.658
-36	37.293	38.794	40.296	3.87	-3.87	0.654	-0.654
-35	35.192	36.587	37.981	3.812	-3.812	0.649	-0.649
-34	33.23	34.526	35.822	3.753	-3.753	0.645	-0.645
-33	31.395	32.6	33.806	3.696	-3.696	0.64	-0.64
-32	29.679	30.8	31.921	3.639	-3.639	0.635	-0.635

-31	28.071	29.114	30.158	3.583	-3.583	0.631	-0.631
-30	26.564	27.535	28.507	3.527	-3.527	0.626	-0.626
-29	25.15	26.055	26.96	3.472	-3.472	0.621	-0.621
-28	23.822	24.665	25.508	3.417	-3.417	0.616	-0.616
-27	22.575	23.361	24.146	3.363	-3.363	0.611	-0.611
-26	21.402	22.134	22.867	3.309	-3.309	0.605	-0.605
-25	20.298	20.981	21.664	3.255	-3.255	0.6	-0.6
-24	19.258	19.896	20.533	3.202	-3.202	0.595	-0.595
-23	18.279	18.874	19.468	3.149	-3.149	0.59	-0.59
-22	17.356	17.911	18.466	3.097	-3.097	0.584	-0.584
-21	16.486	17.004	17.522	3.045	-3.045	0.579	-0.579
-20	15.665	16.148	16.632	2.993	-2.993	0.573	-0.573
-19	14.89	15.341	15.793	2.942	-2.942	0.568	-0.568
-18	14.158	14.579	15.001	2.891	-2.891	0.562	-0.562
-17	13.467	13.86	14.254	2.84	-2.84	0.556	-0.556
-16	12.813	13.181	13.549	2.79	-2.79	0.551	-0.551
-15	12.196	12.54	12.883	2.74	-2.74	0.545	-0.545
-14	11.612	11.933	12.254	2.691	-2.691	0.539	-0.539
-13	11.06	11.36	11.66	2.641	-2.641	0.533	-0.533
-12	10.537	10.818	11.099	2.592	-2.592	0.527	-0.527
-11	10.043	10.305	10.568	2.544	-2.544	0.521	-0.521
-10	9.575	9.82	10.065	2.496	-2.496	0.515	-0.515
-9	9.132	9.361	9.59	2.448	-2.448	0.509	-0.509
-8	8.712	8.927	9.141	2.4	-2.4	0.503	-0.503
-7	8.315	8.515	8.716	2.353	-2.353	0.496	-0.496
-6	7.938	8.125	8.313	2.306	-2.306	0.49	-0.49
-5	7.581	7.756	7.931	2.26	-2.26	0.483	-0.483
-4	7.242	7.406	7.57	2.214	-2.214	0.477	-0.477
-3	6.921	7.074	7.228	2.168	-2.168	0.47	-0.47

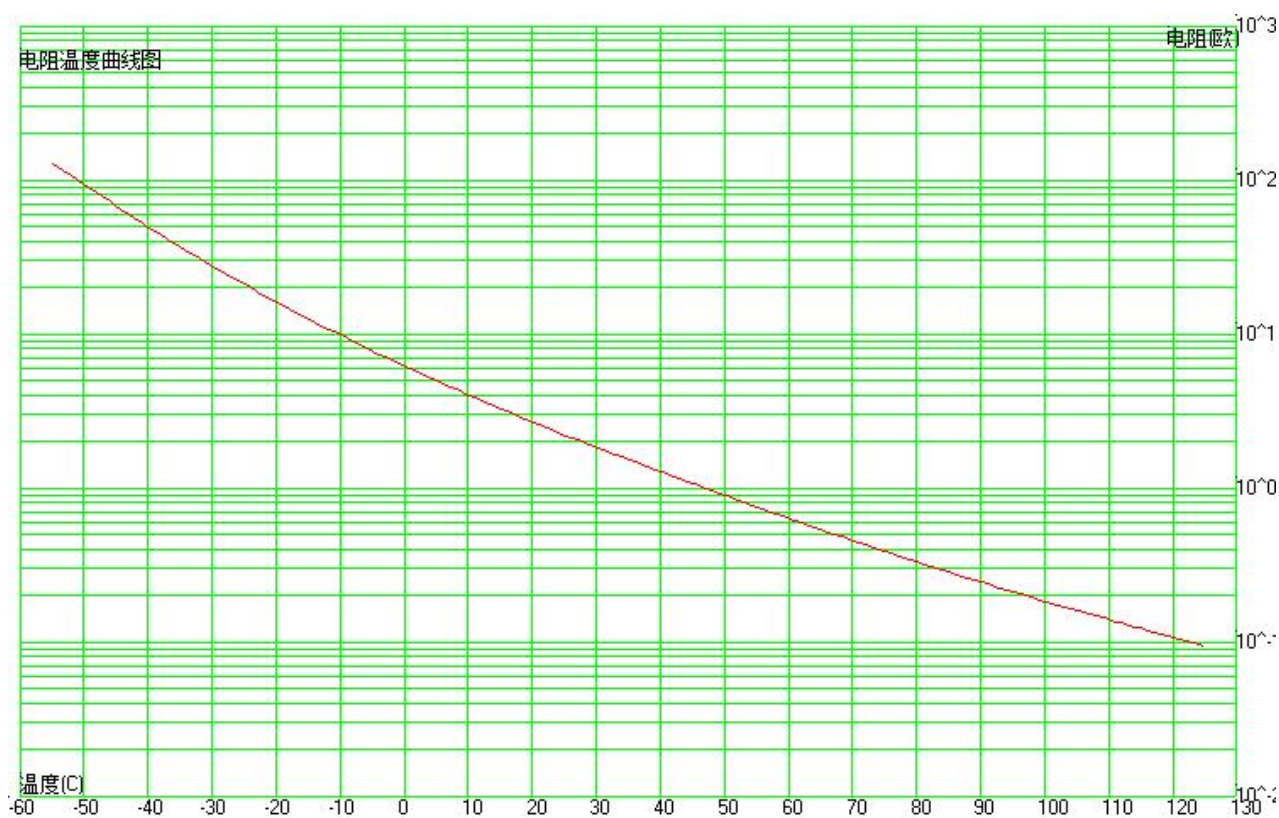
-2	6.616	6.76	6.903	2.122	-2.122	0.464	-0.464
-1	6.327	6.461	6.595	2.077	-2.077	0.457	-0.457
0	6.063	6.189	6.314	2.034	-2.034	0.45	-0.45
1	5.791	5.909	6.026	1.988	-1.988	0.444	-0.444
2	5.544	5.653	5.763	1.943	-1.943	0.437	-0.437
3	5.308	5.411	5.514	1.9	-1.9	0.43	-0.43
4	5.084	5.18	5.277	1.856	-1.856	0.423	-0.423
5	4.871	4.961	5.051	1.813	-1.813	0.416	-0.416
6	4.669	4.753	4.837	1.77	-1.77	0.408	-0.408
7	4.476	4.555	4.634	1.727	-1.727	0.401	-0.401
8	4.293	4.366	4.44	1.685	-1.685	0.394	-0.394
9	4.118	4.187	4.256	1.643	-1.643	0.386	-0.386
10	3.951	4.016	4.08	1.601	-1.601	0.379	-0.379
11	3.793	3.853	3.913	1.56	-1.56	0.371	-0.371
12	3.642	3.698	3.754	1.519	-1.519	0.363	-0.363
13	3.497	3.55	3.602	1.478	-1.478	0.355	-0.355
14	3.359	3.409	3.458	1.437	-1.437	0.347	-0.347
15	3.228	3.274	3.32	1.397	-1.397	0.339	-0.339
16	3.103	3.145	3.188	1.357	-1.357	0.331	-0.331
17	2.983	3.022	3.062	1.317	-1.317	0.322	-0.322
18	2.868	2.905	2.942	1.278	-1.278	0.314	-0.314
19	2.758	2.793	2.828	1.238	-1.238	0.304	-0.304
20	2.654	2.686	2.718	1.199	-1.199	0.295	-0.295
21	2.553	2.583	2.613	1.16	-1.16	0.284	-0.284
22	2.457	2.485	2.513	1.122	-1.122	0.272	-0.272
23	2.366	2.391	2.417	1.083	-1.083	0.257	-0.257
24	2.278	2.302	2.326	1.045	-1.045	0.229	-0.229
25	2.178	2.2	2.222	1	-1	0.221	-0.221
26	2.111	2.133	2.155	1.03	-1.03	0.337	-0.337

27	2.032	2.054	2.076	1.068	-1.068	0.314	-0.314
28	1.956	1.978	2	1.105	-1.105	0.316	-0.316
29	1.884	1.906	1.927	1.143	-1.143	0.323	-0.323
30	1.814	1.836	1.858	1.18	-1.18	0.332	-0.332
31	1.748	1.769	1.791	1.217	-1.217	0.342	-0.342
32	1.684	1.705	1.726	1.254	-1.254	0.352	-0.352
33	1.622	1.643	1.665	1.291	-1.291	0.364	-0.364
34	1.563	1.584	1.605	1.328	-1.328	0.375	-0.375
35	1.506	1.527	1.548	1.364	-1.364	0.386	-0.386
36	1.452	1.473	1.493	1.401	-1.401	0.398	-0.398
37	1.4	1.42	1.441	1.437	-1.437	0.41	-0.41
38	1.35	1.37	1.39	1.473	-1.473	0.422	-0.422
39	1.301	1.321	1.341	1.509	-1.509	0.434	-0.434
40	1.255	1.275	1.294	1.545	-1.545	0.446	-0.446
41	1.21	1.23	1.249	1.581	-1.581	0.458	-0.458
42	1.167	1.187	1.206	1.617	-1.617	0.47	-0.47
43	1.126	1.145	1.164	1.652	-1.652	0.483	-0.483
44	1.086	1.105	1.124	1.688	-1.688	0.495	-0.495
45	1.048	1.067	1.085	1.723	-1.723	0.508	-0.508
46	1.011	1.03	1.048	1.758	-1.758	0.521	-0.521
47	0.976	0.994	1.012	1.794	-1.794	0.533	-0.533
48	0.942	0.96	0.977	1.829	-1.829	0.546	-0.546
49	0.909	0.927	0.944	1.864	-1.864	0.559	-0.559
50	0.878	0.895	0.912	1.898	-1.898	0.572	-0.572
51	0.848	0.864	0.881	1.933	-1.933	0.585	-0.585
52	0.818	0.835	0.851	1.968	-1.968	0.598	-0.598
53	0.79	0.806	0.823	2.003	-2.003	0.611	-0.611
54	0.763	0.779	0.795	2.037	-2.037	0.624	-0.624
55	0.737	0.753	0.768	2.071	-2.071	0.638	-0.638

56	0.712	0.727	0.743	2.106	-2.106	0.651	-0.651
57	0.688	0.703	0.718	2.14	-2.14	0.665	-0.665
58	0.665	0.679	0.694	2.174	-2.174	0.678	-0.678
59	0.642	0.657	0.671	2.208	-2.208	0.692	-0.692
60	0.621	0.635	0.649	2.242	-2.242	0.705	-0.705
61	0.6	0.614	0.628	2.276	-2.276	0.719	-0.719
62	0.58	0.593	0.607	2.309	-2.309	0.733	-0.733
63	0.56	0.574	0.587	2.343	-2.343	0.747	-0.747
64	0.542	0.555	0.568	2.376	-2.376	0.761	-0.761
65	0.524	0.537	0.55	2.409	-2.409	0.775	-0.775
66	0.507	0.519	0.532	2.442	-2.442	0.789	-0.789
67	0.49	0.502	0.515	2.475	-2.475	0.803	-0.803
68	0.474	0.486	0.498	2.508	-2.508	0.818	-0.818
69	0.459	0.471	0.482	2.541	-2.541	0.832	-0.832
70	0.444	0.455	0.467	2.574	-2.574	0.847	-0.847
71	0.429	0.441	0.452	2.606	-2.606	0.861	-0.861
72	0.416	0.427	0.438	2.638	-2.638	0.876	-0.876
73	0.402	0.413	0.424	2.671	-2.671	0.89	-0.89
74	0.389	0.4	0.411	2.703	-2.703	0.905	-0.905
75	0.377	0.388	0.398	2.734	-2.734	0.92	-0.92
76	0.365	0.376	0.386	2.766	-2.766	0.935	-0.935
77	0.354	0.364	0.374	2.798	-2.798	0.95	-0.95
78	0.343	0.353	0.363	2.829	-2.829	0.965	-0.965
79	0.332	0.342	0.352	2.86	-2.86	0.98	-0.98
80	0.322	0.331	0.341	2.892	-2.892	0.995	-0.995
81	0.312	0.321	0.331	2.923	-2.923	1.011	-1.011
82	0.302	0.311	0.321	2.953	-2.953	1.026	-1.026
83	0.293	0.302	0.311	2.984	-2.984	1.042	-1.042
84	0.284	0.293	0.302	3.014	-3.014	1.057	-1.057

85	0.276	0.284	0.293	3.045	-3.045	1.073	-1.073
86	0.267	0.276	0.284	3.075	-3.075	1.089	-1.089
87	0.259	0.268	0.276	3.105	-3.105	1.104	-1.104
88	0.252	0.26	0.268	3.135	-3.135	1.12	-1.12
89	0.244	0.252	0.26	3.164	-3.164	1.136	-1.136
90	0.237	0.245	0.253	3.194	-3.194	1.152	-1.152
91	0.23	0.238	0.245	3.223	-3.223	1.168	-1.168
92	0.223	0.231	0.238	3.252	-3.252	1.185	-1.185
93	0.217	0.224	0.232	3.281	-3.281	1.201	-1.201
94	0.211	0.218	0.225	3.31	-3.31	1.217	-1.217
95	0.205	0.212	0.219	3.338	-3.338	1.234	-1.234
96	0.199	0.206	0.213	3.367	-3.367	1.25	-1.25
97	0.193	0.2	0.207	3.395	-3.395	1.267	-1.267
98	0.188	0.194	0.201	3.423	-3.423	1.283	-1.283
99	0.183	0.189	0.196	3.452	-3.452	1.3	-1.3
100	0.177	0.184	0.19	3.479	-3.479	1.317	-1.317
101	0.173	0.179	0.185	3.507	-3.507	1.334	-1.334
102	0.168	0.174	0.18	3.535	-3.535	1.351	-1.351
103	0.163	0.169	0.175	3.562	-3.562	1.368	-1.368
104	0.159	0.165	0.171	3.59	-3.59	1.385	-1.385
105	0.154	0.16	0.166	3.617	-3.617	1.402	-1.402
106	0.15	0.156	0.162	3.644	-3.644	1.419	-1.419
107	0.146	0.152	0.157	3.671	-3.671	1.437	-1.437
108	0.142	0.148	0.153	3.698	-3.698	1.454	-1.454
109	0.138	0.144	0.149	3.725	-3.725	1.472	-1.472
110	0.135	0.14	0.145	3.751	-3.751	1.489	-1.489
111	0.131	0.136	0.141	3.778	-3.778	1.507	-1.507
112	0.128	0.133	0.138	3.804	-3.804	1.524	-1.524
113	0.124	0.129	0.134	3.831	-3.831	1.542	-1.542

114	0.121	0.126	0.131	3.857	-3.857	1.56	-1.56
115	0.118	0.123	0.127	3.884	-3.884	1.578	-1.578
116	0.115	0.119	0.124	3.91	-3.91	1.596	-1.596
117	0.112	0.116	0.121	3.936	-3.936	1.614	-1.614
118	0.109	0.113	0.118	3.963	-3.963	1.632	-1.632
119	0.106	0.11	0.115	3.989	-3.989	1.65	-1.65
120	0.103	0.107	0.112	4.015	-4.015	1.668	-1.668
121	0.1	0.105	0.109	4.041	-4.041	1.686	-1.686
122	0.098	0.102	0.106	4.068	-4.068	1.705	-1.705
123	0.095	0.099	0.103	4.094	-4.094	1.723	-1.723
124	0.093	0.097	0.101	4.121	-4.121	1.741	-1.741
125	0.09	0.094	0.098	4.147	-4.147	1.76	-1.76



附表 II (Attachment II)

