



南京时恒电子科技有限公司

Nanjing Shiheng Electronics Co.,Ltd.

规格承认书

APPROVAL SHEET

客户名称 CUSTOMER :

MF52 测温型 NTC 热敏电阻器

产品名称 PART NAME :

MF52 Series Temp Measurement NTC Thermistor

产品规格 PART NUMBER :

MF52A 103F3435(A1)

产品编号 PRODUCTCODE:

版次 REV.NO:

B0

日期 DATE:

2022-8-19

确认

CONFIRM

客户 CLIENT		供货商/制造商 MANUFACTOR	
品保部 Quality Dep.		规格书制作 Design	吴迎丽
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

南京时恒电子科技有限公司

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1、产品型号说明 Product model specification

MF52 A 103 F 3435 (A1)


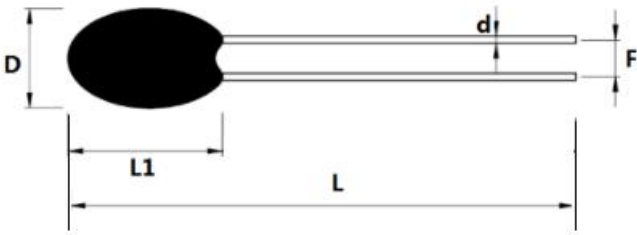
① ② ③ ④ ⑤ ⑥

- ① MF52: 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)
- ③ 103: 25℃ 的零功率电阻值 10KΩ (Zero Power Resistance at 25℃ is 10KΩ)
- 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 3435: B25/85 值 3435K (B25/85:3435K)
- ⑥ (A1): 线材规格: 引线外径 Φ0.3mm (Wire dimension: The outer diameter of lead wire is Φ0.3mm)

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℃}	T _a =25±0.01℃ Test Power≤0.1mW	KΩ	10KΩ±1%
2.2	B 值 B-value	B _{25/85}	$B=[(T_a \times T_b)/(T_b - T_a)] \times \ln(R_a/R_b)$ T _a =25±0.01℃ T _b =85℃±0.01℃	K	3435±1%
2.3	耗散系数 Thermal dissipation Coefficient	δ	静止空气中 In still air	mW/℃	≥2
2.4	时间常数 Thermal time constant	τ	静止空气中 In still air	sec	≤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℃~125℃
2.7	最大额定功率 Maximum rated power	P _{max}	/	mW	50
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.	MF52A 103F3435(A1)	审核 Approve:		日期 DATE	
尺寸 Dimensions:					
					
(Unit: mm)					
D±0.4	L1±1.0	L	d±0.05	F±0.5	
2.1	3.0	16±1	0.3	1.7	
技术要求 Technical requirements:					
1) 零功率阻值: R25: 10KΩ ±1% (Zero Power Resistance: R25: 10KΩ±1%);					
2) B25/85 数值: 3435K ±1% (B-value: B25/85: 3435K±1%);					
3) 线材: Φ0.3 镀锡铜包钢线 (Φ0.3 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 $R_{25} \Delta R/R \leq \pm 2\%$
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	$R_{25} \Delta R/R \leq \pm 2\%$
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	$R_{25} \Delta R/R \leq \pm 2\%$
4.4	温度快速变化 Rapid changes in temperature	IEC60068-2-14	-55°C 30min $\rightarrow 25^\circ\text{C}$ 5min $\rightarrow 125^\circ\text{C}$ 30min $\rightarrow 25^\circ\text{C}$ 5min, 5cycles	$R_{25} \Delta R/R \leq \pm 2\%$
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	$R_{25} \Delta R/R \leq \pm 2\%$
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	$R_{25} \Delta R/R \leq \pm 2\%$

▲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) $W \times H = 11\text{mm} \times 12\text{mm}$	500

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 CQC certificate	
8.5	苏省高新技术产品认证 High-tech product certificate in Jiangsu Province	
8.6	产品通过 AEC-Q200 测试 Passed by AECQ-200	
8.7	UL 认证 UL certificate	E240991
8.8	TUV 认证 TUV certificate	

附表 I (Attachment I)

南京时恒阻温特性表 SHIHENG R-T Table

R25=10KΩ 精度:±1% B25/50=3380K B25/85=3435K 精度:±1%(P174-9A)							
温度(°C) TEMP(°C)	电阻(KΩ) RESISTANCE(KΩ)			电阻精度(%) RESISST-TOL(%)		温度精度(°C) TEMP-TOL(°C)	
	最小值	中心值	最大值	ΔR	-ΔR	ΔT	-ΔT
-55	476.131	500.130	525.285	5.029	-4.798	0.752	-0.717
-54	449.575	471.961	495.412	4.968	-4.743	0.748	-0.714
-53	424.099	444.955	466.789	4.907	-4.687	0.744	-0.711
-52	399.782	419.191	439.499	4.844	-4.630	0.740	-0.707
-51	376.664	394.713	413.586	4.781	-4.572	0.736	-0.704
-50	354.759	371.534	389.063	4.718	-4.514	0.732	-0.701
-49	334.061	349.645	365.919	4.654	-4.456	0.728	-0.697
-48	314.547	329.020	344.125	4.590	-4.398	0.724	-0.694
-47	296.181	309.621	323.639	4.527	-4.340	0.720	-0.690
-46	278.922	291.402	304.410	4.463	-4.282	0.716	-0.686
-45	262.720	274.309	286.381	4.400	-4.224	0.711	-0.683
-44	247.524	258.287	269.492	4.337	-4.167	0.707	-0.679
-43	233.280	243.278	253.680	4.275	-4.109	0.703	-0.675
-42	219.934	229.223	238.882	4.213	-4.052	0.698	-0.672
-41	207.432	216.066	225.037	4.151	-3.996	0.694	-0.668
-40	195.722	203.750	212.085	4.090	-3.939	0.689	-0.664
-39	184.755	192.220	199.967	4.030	-3.883	0.685	-0.660
-38	174.482	181.427	188.630	3.970	-3.828	0.680	-0.656
-37	164.856	171.320	178.020	3.910	-3.772	0.675	-0.652
-36	155.836	161.854	168.087	3.851	-3.718	0.671	-0.647
-35	147.379	152.984	158.787	3.792	-3.663	0.666	-0.643
-34	139.447	144.670	150.073	3.734	-3.610	0.661	-0.639

-33	132.005	136.874	141.907	3.677	-3.556	0.656	-0.635
-32	125.020	129.559	134.250	3.620	-3.503	0.651	-0.630
-31	118.460	122.694	127.067	3.564	-3.451	0.646	-0.626
-30	112.296	116.247	120.325	3.508	-3.399	0.641	-0.621
-29	106.501	110.189	113.994	3.452	-3.347	0.636	-0.616
-28	101.050	104.494	108.045	3.398	-3.296	0.631	-0.612
-27	95.920	99.137	102.452	3.343	-3.245	0.625	-0.607
-26	91.090	94.096	97.192	3.289	-3.194	0.620	-0.602
-25	86.540	89.350	92.241	3.236	-3.144	0.614	-0.597
-24	82.251	84.877	87.579	3.183	-3.094	0.609	-0.592
-23	78.206	80.662	83.187	3.130	-3.045	0.603	-0.587
-22	74.389	76.687	79.047	3.078	-2.996	0.598	-0.582
-21	70.785	72.935	75.143	3.026	-2.947	0.592	-0.577
-20	67.382	69.394	71.459	2.975	-2.899	0.586	-0.571
-19	64.166	66.049	67.981	2.924	-2.851	0.581	-0.566
-18	61.125	62.888	64.696	2.874	-2.803	0.575	-0.561
-17	58.249	59.900	61.591	2.824	-2.756	0.569	-0.555
-16	55.527	57.073	58.657	2.774	-2.709	0.563	-0.550
-15	52.950	54.398	55.881	2.725	-2.662	0.557	-0.544
-14	50.509	51.866	53.254	2.676	-2.616	0.551	-0.538
-13	48.196	49.468	50.768	2.627	-2.570	0.544	-0.533
-12	46.004	47.196	48.413	2.579	-2.524	0.538	-0.527
-11	43.925	45.042	46.182	2.531	-2.478	0.532	-0.521
-10	41.953	43.000	44.068	2.483	-2.433	0.526	-0.515
-9	40.081	41.062	42.063	2.436	-2.388	0.519	-0.509
-8	38.304	39.224	40.161	2.389	-2.343	0.513	-0.503
-7	36.617	37.479	38.357	2.343	-2.299	0.506	-0.497

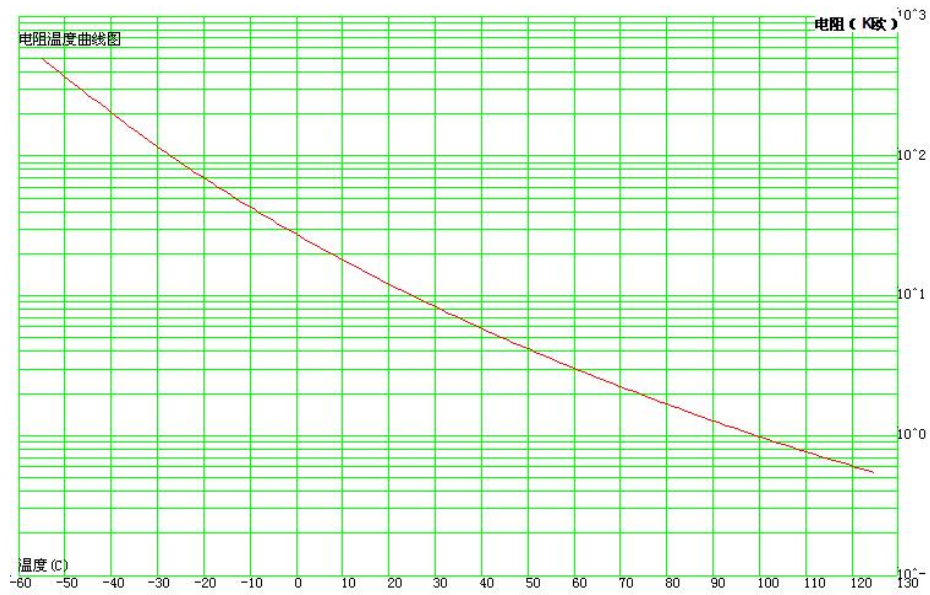
-6	35.014	35.822	36.644	2.296	-2.255	0.500	-0.490
-5	33.490	34.247	35.018	2.251	-2.211	0.493	-0.484
-4	32.041	32.751	33.474	2.205	-2.167	0.486	-0.478
-3	30.664	31.329	32.006	2.160	-2.124	0.479	-0.471
-2	29.354	29.977	30.611	2.114	-2.080	0.473	-0.465
-1	28.107	28.691	29.285	2.070	-2.038	0.466	-0.458
0	26.963	27.513	28.070	2.027	-1.996	0.458	-0.451
1	25.790	26.303	26.825	1.981	-1.952	0.452	-0.445
2	24.714	25.195	25.683	1.937	-1.910	0.445	-0.438
3	23.688	24.139	24.597	1.894	-1.868	0.437	-0.432
4	22.711	23.134	23.562	1.850	-1.826	0.430	-0.425
5	21.780	22.176	22.577	1.807	-1.785	0.423	-0.418
6	20.892	21.263	21.638	1.764	-1.744	0.416	-0.411
7	20.045	20.392	20.744	1.722	-1.702	0.408	-0.404
8	19.237	19.562	19.891	1.680	-1.662	0.401	-0.397
9	18.466	18.771	19.078	1.638	-1.621	0.393	-0.389
10	17.731	18.016	18.303	1.596	-1.581	0.386	-0.382
11	17.028	17.295	17.564	1.554	-1.540	0.378	-0.375
12	16.358	16.607	16.858	1.513	-1.500	0.370	-0.367
13	15.717	15.950	16.185	1.472	-1.461	0.363	-0.360
14	15.105	15.323	15.542	1.431	-1.421	0.355	-0.352
15	14.520	14.724	14.929	1.391	-1.382	0.347	-0.345
16	13.961	14.151	14.343	1.351	-1.343	0.339	-0.337
17	13.427	13.604	13.783	1.311	-1.304	0.331	-0.329
18	12.916	13.081	13.248	1.271	-1.265	0.323	-0.322
19	12.427	12.581	12.736	1.232	-1.227	0.315	-0.314
20	11.959	12.103	12.248	1.193	-1.188	0.307	-0.306

21	11.512	11.646	11.780	1.154	-1.150	0.298	-0.297
22	11.084	11.208	11.333	1.115	-1.112	0.290	-0.289
23	10.673	10.789	10.906	1.076	-1.075	0.281	-0.280
24	10.281	10.389	10.496	1.038	-1.037	0.271	-0.270
25	9.900	10.000	10.100	1.000	-1.000	0.262	-0.262
26	9.537	9.637	9.737	1.037	-1.036	0.281	-0.281
27	9.185	9.285	9.385	1.074	-1.073	0.291	-0.291
28	8.848	8.948	9.047	1.112	-1.109	0.303	-0.302
29	8.526	8.624	8.724	1.149	-1.146	0.315	-0.314
30	8.216	8.315	8.413	1.186	-1.182	0.326	-0.325
31	7.920	8.018	8.116	1.223	-1.218	0.338	-0.337
32	7.636	7.733	7.830	1.259	-1.254	0.351	-0.349
33	7.363	7.459	7.556	1.296	-1.289	0.363	-0.361
34	7.102	7.197	7.293	1.332	-1.324	0.375	-0.373
35	6.851	6.946	7.041	1.368	-1.360	0.388	-0.385
36	6.611	6.704	6.798	1.404	-1.394	0.400	-0.398
37	6.380	6.473	6.566	1.440	-1.429	0.413	-0.410
38	6.159	6.250	6.342	1.475	-1.464	0.426	-0.422
39	5.946	6.036	6.128	1.511	-1.498	0.438	-0.435
40	5.742	5.831	5.921	1.546	-1.532	0.451	-0.447
41	5.546	5.634	5.723	1.581	-1.566	0.464	-0.460
42	5.357	5.444	5.532	1.615	-1.600	0.477	-0.472
43	5.176	5.262	5.349	1.650	-1.633	0.490	-0.485
44	5.002	5.087	5.173	1.684	-1.666	0.503	-0.498
45	4.835	4.918	5.003	1.719	-1.699	0.517	-0.511
46	4.674	4.756	4.840	1.753	-1.732	0.530	-0.524
47	4.519	4.601	4.683	1.787	-1.765	0.543	-0.537

48	4.371	4.451	4.532	1.820	-1.798	0.557	-0.550
49	4.228	4.306	4.386	1.854	-1.830	0.570	-0.563
50	4.090	4.168	4.246	1.887	-1.862	0.584	-0.576
51	3.957	4.034	4.111	1.921	-1.894	0.598	-0.589
52	3.830	3.905	3.981	1.954	-1.926	0.611	-0.603
53	3.707	3.781	3.856	1.986	-1.958	0.625	-0.616
54	3.589	3.662	3.736	2.019	-1.989	0.639	-0.630
55	3.475	3.546	3.619	2.052	-2.020	0.653	-0.643
56	3.365	3.436	3.507	2.084	-2.051	0.667	-0.657
57	3.259	3.329	3.399	2.116	-2.082	0.682	-0.671
58	3.157	3.226	3.295	2.149	-2.113	0.696	-0.684
59	3.059	3.126	3.194	2.181	-2.144	0.710	-0.698
60	2.965	3.030	3.098	2.212	-2.174	0.724	-0.712
61	2.873	2.938	3.004	2.244	-2.205	0.739	-0.726
62	2.785	2.849	2.914	2.276	-2.235	0.754	-0.740
63	2.700	2.763	2.827	2.307	-2.265	0.768	-0.754
64	2.618	2.680	2.743	2.338	-2.294	0.783	-0.768
65	2.539	2.600	2.661	2.369	-2.324	0.798	-0.782
66	2.463	2.522	2.583	2.400	-2.354	0.812	-0.797
67	2.389	2.448	2.507	2.431	-2.383	0.827	-0.811
68	2.318	2.376	2.434	2.461	-2.412	0.842	-0.825
69	2.250	2.306	2.363	2.492	-2.441	0.857	-0.840
70	2.183	2.239	2.295	2.522	-2.470	0.873	-0.855
71	2.119	2.174	2.229	2.553	-2.499	0.888	-0.869
72	2.058	2.111	2.165	2.583	-2.527	0.903	-0.884
73	1.998	2.050	2.104	2.612	-2.556	0.919	-0.899
74	1.940	1.992	2.044	2.642	-2.584	0.934	-0.913

75	1.884	1.935	1.987	2.672	-2.612	0.950	-0.928
76	1.830	1.880	1.931	2.701	-2.640	0.965	-0.943
77	1.778	1.827	1.877	2.731	-2.668	0.981	-0.958
78	1.728	1.776	1.825	2.760	-2.696	0.997	-0.973
79	1.679	1.726	1.774	2.789	-2.723	1.012	-0.989
80	1.632	1.678	1.725	2.818	-2.751	1.028	-1.004
81	1.586	1.632	1.678	2.847	-2.778	1.044	-1.019
82	1.542	1.587	1.632	2.876	-2.805	1.061	-1.034
83	1.500	1.543	1.588	2.904	-2.832	1.077	-1.050
84	1.458	1.501	1.545	2.933	-2.859	1.093	-1.065
85	1.418	1.461	1.504	2.961	-2.886	1.109	-1.081
86	1.380	1.421	1.464	2.989	-2.912	1.126	-1.097
87	1.342	1.383	1.425	3.017	-2.939	1.142	-1.112
88	1.306	1.346	1.387	3.045	-2.965	1.159	-1.128
89	1.271	1.310	1.350	3.073	-2.991	1.175	-1.144
90	1.237	1.275	1.315	3.101	-3.017	1.192	-1.160
91	1.204	1.242	1.281	3.128	-3.043	1.209	-1.176
92	1.172	1.209	1.247	3.155	-3.069	1.226	-1.192
93	1.141	1.178	1.215	3.183	-3.094	1.243	-1.208
94	1.111	1.147	1.184	3.210	-3.120	1.260	-1.224
95	1.082	1.118	1.154	3.237	-3.145	1.277	-1.240
96	1.054	1.089	1.124	3.264	-3.170	1.294	-1.257
97	1.027	1.061	1.096	3.290	-3.195	1.311	-1.273
98	1.001	1.034	1.068	3.317	-3.220	1.328	-1.290
99	0.975	1.008	1.042	3.343	-3.245	1.346	-1.306
100	0.950	0.983	1.016	3.370	-3.270	1.363	-1.323
101	0.926	0.958	0.990	3.396	-3.294	1.381	-1.339

102	0.903	0.934	0.966	3.422	-3.318	1.398	-1.356
103	0.880	0.911	0.942	3.448	-3.343	1.416	-1.373
104	0.859	0.888	0.919	3.474	-3.367	1.434	-1.390
105	0.837	0.867	0.897	3.499	-3.391	1.452	-1.407
106	0.817	0.846	0.875	3.525	-3.415	1.470	-1.424
107	0.797	0.825	0.854	3.550	-3.438	1.488	-1.441
108	0.777	0.805	0.834	3.576	-3.462	1.506	-1.458
109	0.758	0.786	0.814	3.601	-3.485	1.524	-1.475
110	0.740	0.767	0.795	3.626	-3.508	1.543	-1.493
111	0.723	0.749	0.776	3.651	-3.532	1.561	-1.510
112	0.705	0.731	0.758	3.675	-3.555	1.579	-1.528
113	0.689	0.714	0.741	3.700	-3.577	1.598	-1.545
114	0.672	0.698	0.724	3.724	-3.600	1.617	-1.563
115	0.657	0.681	0.707	3.749	-3.623	1.635	-1.580
116	0.641	0.666	0.691	3.773	-3.645	1.654	-1.598
117	0.627	0.651	0.675	3.797	-3.667	1.673	-1.616
118	0.612	0.636	0.660	3.820	-3.689	1.692	-1.634
119	0.598	0.621	0.645	3.844	-3.711	1.711	-1.652
120	0.585	0.607	0.631	3.868	-3.733	1.730	-1.670
121	0.572	0.594	0.617	3.891	-3.755	1.749	-1.688
122	0.559	0.581	0.604	3.914	-3.777	1.768	-1.706
123	0.546	0.568	0.590	3.937	-3.798	1.788	-1.724
124	0.534	0.556	0.578	3.960	-3.819	1.807	-1.743
125	0.523	0.544	0.565	3.983	-3.840	1.827	-1.761



附表 II (Attachment II)

