编码(Coding)：JK/JXD221201005

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：	
产品名称 PART NAME：	MF52 测温型 NTC 热敏电阻器 MF52 Series Temp Measurement NTC Thermistor
产品规格 PART NUMBER：	MF52A 503F3950(A1)
产品编号 PRODUCTCODE：	
版次 REV.NO：	B0
日期 DATE：	2022-12-1

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

NANJING SHIHENG ELECTRONICS CO., LTD.

地址：南京市江宁区湖熟镇金阳路 18 号邮编 Postcode：211121

Address：No.18 Jinyang Road Hushu Town Jiangning District Nanjing China

TEL：025-52121868

Http: //www.shiheng.com.cn **E-MAIL:sales@shiheng.com.cn**

变 更 记 录 表

REVISED RECORD SHEET

版次 REV. NO	变更日期 REV.DATE	变更内容 CHANGE CONTENT	申请人 APPLICANT	批准人 APPROVED
A0	2015/10/11	版本制定。 Version formulation	鞠晓丽	李少媛
B0	2022/4/1	更新规格书版本格式，增加版次管控，细化规格纸。 Update for version form of datasheet,add to management and control for number of edition,refine to PN and draw.	王月婷	李少媛

1、产品型号说明 Product model specification

MF52	A	503	F	3950	(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)

③ 503： 25℃的零功率电阻值 50KΩ(Zero Power Resistance at 25℃is50KΩ)

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 3950：B25/50 值 3950K（B25/50:3950K）

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

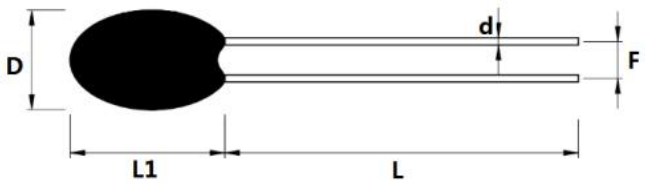
No.	项目 Item	符号 Symbol	测试条件 Test conditions	单位 Unit	性能要求 Requirements
2.1	25℃的零功率电阻值 Zero Power Resistance at 25℃	$R_{25℃}$	Ta=25±0.01℃ Test Power≤0.1mW	KΩ	50KΩ±1%
2.2	B 值 B-value	$B_{25/50}$	$B=[(T_a\times T_b)/(T_b-T_a)]\times\ln(R_a/R_b)$ Ta=25±0.01℃ T_b=50℃±0.01℃	K	3950±1%
2.3	耗散系数 Thermal dissipation 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	Pmax	/	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 503F3950(A1)		审核 Approve:		日期 DATE	

尺寸 Dimensions：

（Unit：mm）



D±0.4	L1±1.0	L±2.0	d±0.05	F±0.5
2.1	3.0	27	0.3	1.7

技术要求 Technical requirements：

1）零功率阻值：R25：50KΩ±1%(Zero Power Resistance: R25：50KΩ±1%)；
2）B25/50 数值：3950K±1%(B-value:B25/50: 3950K±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} ΔR/R≤±2%
4.2	可焊性 Solderability	IEC60068-2-20	温度 245±5℃时间 2-3 秒 temperature : 245±5℃ for 2-3sec	着锡面积≥95% Coverage area ≥ 95%.
4.3	耐焊接热 Withstand weiling temp	IEC60068-2-20	锡锅温度：260±5℃，浸入深度距电阻体 6mm，时间 5±1 秒 Temperature of tin pot:260±5℃, insert deepth from body of resistance 6mm, time 5±1senconds	R_{25} ΔR/R≤±2%
4.3	稳态湿热 Steady humidity and heat	IEC60068-2-78	温度：40℃±2℃，湿度：93±2%，时间：500 小时 Temp：40℃±2℃，humidity：93±2%， Time ： 500hrs	R_{25} ΔR/R≤±2%
4.4	温度快速变化 Rapid changes in temperature	IEC60068-2-14	-55℃30min→25℃5min→125℃ 30min→25℃5min，5cycles	R_{25} ΔR/R≤±2%
4.5	高温储存 High temperature storage	IEC60068-2-2	温度: 125℃±5℃ 时间:1000 小时 Temp : 125℃±5℃, Time :1000hrs	R_{25} ΔR/R≤±2%
4.6	低温储存 Low temperature storage	IEC60068-2-1	温度:-55℃时间:1000 小时 Temp : -55℃, Time :1000hrs	R_{25} ΔR/R≤±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×H＝11mm×12mm	**1000**

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

附表Ⅰ（Attachment I）

南京时恒阻温特性表

R25=50KΩ 精度:±1% B25/50=3950K B25/85=4091K 精度:±1%(P182-6B)

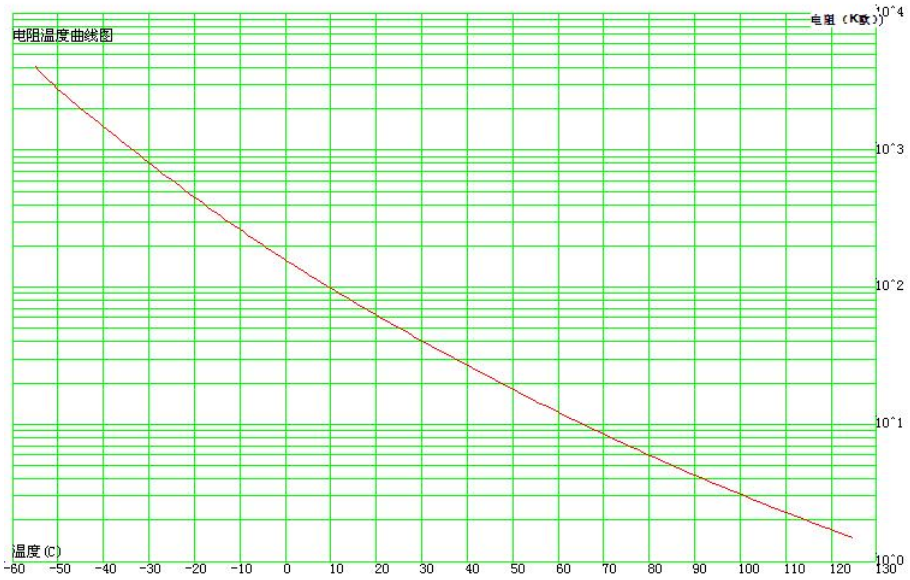
温度(℃)	电阻(KΩ)			电阻精度(%)		温度精度(℃)	
	最小值	中心值	最大值	△R	-△R	△T	-△T
-55	3874.630	4090.000	4316.900	5.547	-5.265	0.737	-0.699
-54	3562.720	3757.560	3962.660	5.458	-5.185	0.733	-0.697
-53	3291.040	3468.240	3654.620	5.373	-5.109	0.730	-0.694
-52	3051.730	3213.590	3383.710	5.293	-5.036	0.726	-0.691
-51	2838.780	2987.170	3143.000	5.216	-4.967	0.722	-0.687
-50	2647.560	2783.990	2927.160	5.142	-4.900	0.718	-0.684
-49	2474.460	2600.190	2732.040	5.070	-4.835	0.713	-0.680
-48	2316.650	2432.740	2554.400	5.000	-4.772	0.709	-0.677
-47	2171.900	2279.260	2391.680	4.932	-4.710	0.705	-0.673
-46	2038.460	2137.850	2241.860	4.865	-4.649	0.700	-0.669
-45	1914.880	2006.980	2103.300	4.798	-4.588	0.696	-0.665
-44	1800.050	1885.440	1974.690	4.733	-4.529	0.691	-0.661
-43	1693.010	1772.230	1854.970	4.668	-4.470	0.686	-0.657
-42	1593.000	1666.520	1743.250	4.604	-4.411	0.682	-0.653
-41	1499.400	1567.630	1638.810	4.540	-4.352	0.677	-0.649
-40	1411.650	1475.000	1541.030	4.476	-4.294	0.672	-0.644
-39	1329.310	1388.120	1449.380	4.413	-4.236	0.667	-0.640
-38	1251.990	1306.580	1363.420	4.350	-4.178	0.662	-0.636
-37	1179.330	1230.020	1282.750	4.287	-4.120	0.657	-0.631
-36	1111.040	1158.090	1207.010	4.224	-4.062	0.652	-0.627
-35	1046.830	1090.510	1135.890	4.161	-4.005	0.647	-0.622
-34	986.469	1027.000	1069.100	4.099	-3.947	0.641	-0.618
-33	929.708	967.336	1006.380	4.036	-3.889	0.636	-0.613
-32	876.342	911.266	947.487	3.974	-3.832	0.631	-0.608
-31	826.173	858.586	892.182	3.912	-3.775	0.625	-0.603
-30	779.014	809.097	840.257	3.851	-3.718	0.620	-0.599
-29	734.692	762.611	791.513	3.789	-3.661	0.615	-0.594
-28	693.039	718.952	745.759	3.728	-3.604	0.609	-0.589
-27	653.900	677.951	702.817	3.667	-3.547	0.603	-0.584
-26	617.126	639.450	662.516	3.607	-3.491	0.598	-0.579
-25	582.576	603.300	624.698	3.546	-3.435	0.592	-0.574

-24	550.117	569.356	589.209	3.486	-3.379	0.586	-0.568
-23	519.622	537.485	555.907	3.427	-3.323	0.581	-0.563
-22	490.972	507.560	524.655	3.368	-3.268	0.575	-0.558
-21	464.054	479.459	495.325	3.309	-3.212	0.569	-0.552
-20	438.760	453.069	467.797	3.250	-3.158	0.563	-0.547
-19	414.990	428.282	441.956	3.192	-3.103	0.557	-0.541
-18	392.648	404.998	417.694	3.135	-3.049	0.551	-0.536
-17	371.643	383.120	394.912	3.077	-2.995	0.545	-0.530
-16	351.893	362.560	373.513	3.020	-2.942	0.539	-0.525
-15	333.317	343.233	353.408	2.964	-2.888	0.532	-0.519
-14	315.842	325.060	334.515	2.908	-2.836	0.526	-0.513
-13	299.395	307.968	316.754	2.852	-2.783	0.520	-0.507
-12	283.914	291.886	300.052	2.797	-2.731	0.513	-0.501
-11	269.334	276.750	284.342	2.743	-2.679	0.507	-0.495
-10	255.601	262.500	269.558	2.688	-2.628	0.500	-0.489
-9	242.658	249.077	255.640	2.634	-2.576	0.494	-0.483
-8	230.457	236.430	242.533	2.581	-2.526	0.487	-0.477
-7	218.950	224.509	230.185	2.528	-2.475	0.480	-0.470
-6	208.094	213.267	218.547	2.475	-2.425	0.474	-0.464
-5	197.846	202.661	207.573	2.423	-2.375	0.467	-0.458
-4	188.170	192.652	197.221	2.371	-2.326	0.460	-0.451
-3	179.029	183.201	187.452	2.320	-2.277	0.453	-0.444
-2	170.390	174.274	178.228	2.269	-2.228	0.446	-0.438
-1	162.222	165.838	169.516	2.218	-2.179	0.439	-0.431
0	154.543	157.910	161.333	2.168	-2.131	0.431	-0.424
1	147.186	150.318	153.501	2.117	-2.083	0.424	-0.417
2	140.264	143.179	146.141	2.068	-2.036	0.417	-0.410
3	133.709	136.422	139.176	2.018	-1.988	0.409	-0.403
4	127.498	130.023	132.584	1.969	-1.941	0.402	-0.396
5	121.611	123.959	126.341	1.921	-1.894	0.394	-0.389
6	116.028	118.213	120.427	1.872	-1.848	0.387	-0.382
7	110.732	112.764	114.821	1.824	-1.801	0.379	-0.374
8	105.706	107.595	109.507	1.776	-1.755	0.371	-0.367
9	100.934	102.690	104.466	1.729	-1.709	0.363	-0.359
10	96.402	98.034	99.683	1.682	-1.664	0.355	-0.352
11	92.096	93.612	95.143	1.635	-1.618	0.347	-0.344
12	88.004	89.411	90.831	1.588	-1.573	0.339	-0.336
13	84.113	85.419	86.736	1.542	-1.528	0.331	-0.328
14	80.412	81.623	82.845	1.496	-1.484	0.323	-0.320
15	76.891	78.014	79.146	1.450	-1.439	0.315	-0.312
16	73.540	74.581	75.628	1.404	-1.395	0.306	-0.304

17	70.350	71.314	72.283	1.359	-1.350	0.298	-0.296
18	67.312	68.204	69.100	1.314	-1.306	0.289	-0.287
19	64.419	65.243	66.071	1.269	-1.263	0.280	-0.279
20	61.661	62.422	63.187	1.224	-1.219	0.271	-0.270
21	59.033	59.736	60.441	1.179	-1.175	0.261	-0.260
22	56.528	57.175	57.825	1.135	-1.132	0.251	-0.250
23	54.139	54.735	55.332	1.091	-1.089	0.239	-0.239
24	51.860	52.408	52.957	1.047	-1.046	0.221	-0.221
25	49.500	50.000	50.500	1.000	-1.000	0.213	-0.213
26	47.574	48.073	48.573	1.039	-1.038	0.265	-0.265
27	45.556	46.054	46.553	1.083	-1.081	0.265	-0.264
28	43.631	44.127	44.624	1.126	-1.123	0.273	-0.272
29	41.795	42.288	42.782	1.169	-1.165	0.282	-0.282
30	40.042	40.532	41.023	1.212	-1.207	0.293	-0.292
31	38.370	38.855	39.343	1.255	-1.249	0.304	-0.303
32	36.773	37.254	37.737	1.297	-1.290	0.315	-0.314
33	35.248	35.724	36.203	1.340	-1.332	0.327	-0.325
34	33.793	34.263	34.737	1.382	-1.373	0.339	-0.336
35	32.402	32.867	33.335	1.424	-1.414	0.350	-0.348
36	31.074	31.532	31.995	1.466	-1.455	0.362	-0.360
37	29.804	30.257	30.713	1.508	-1.496	0.374	-0.371
38	28.591	29.037	29.488	1.550	-1.536	0.387	-0.383
39	27.432	27.872	28.315	1.591	-1.576	0.399	-0.395
40	26.324	26.757	27.194	1.633	-1.617	0.411	-0.407
41	25.264	25.690	26.120	1.674	-1.657	0.424	-0.419
42	24.251	24.670	25.093	1.716	-1.696	0.436	-0.431
43	23.283	23.694	24.110	1.757	-1.736	0.449	-0.443
44	22.356	22.760	23.170	1.797	-1.776	0.461	-0.456
45	21.470	21.867	22.269	1.838	-1.815	0.474	-0.468
46	20.622	21.011	21.406	1.879	-1.854	0.487	-0.480
47	19.810	20.193	20.580	1.919	-1.893	0.500	-0.493
48	19.034	19.409	19.789	1.960	-1.932	0.513	-0.505
49	18.290	18.658	19.031	2.000	-1.971	0.526	-0.518
50	17.579	17.940	18.306	2.040	-2.009	0.539	-0.531
51	16.898	17.251	17.610	2.080	-2.047	0.552	-0.544
52	16.246	16.592	16.944	2.120	-2.086	0.565	-0.556
53	15.621	15.960	16.305	2.159	-2.124	0.579	-0.569
54	15.023	15.355	15.693	2.199	-2.161	0.592	-0.582
55	14.450	14.775	15.106	2.238	-2.199	0.606	-0.595
56	13.901	14.219	14.543	2.277	-2.237	0.620	-0.608
57	13.376	13.687	14.004	2.317	-2.274	0.633	-0.622

58	12.872	13.176	13.487	2.355	-2.311	0.647	-0.635
59	12.389	12.687	12.991	2.394	-2.348	0.661	-0.648
60	11.926	12.217	12.515	2.433	-2.385	0.675	-0.661
61	11.482	11.767	12.058	2.471	-2.421	0.689	-0.675
62	11.057	11.336	11.620	2.510	-2.458	0.703	-0.688
63	10.649	10.921	11.200	2.548	-2.494	0.717	-0.702
64	10.258	10.524	10.796	2.586	-2.530	0.731	-0.716
65	9.883	10.143	10.409	2.624	-2.566	0.746	-0.729
66	9.523	9.777	10.037	2.661	-2.602	0.760	-0.743
67	9.178	9.426	9.681	2.699	-2.638	0.775	-0.757
68	8.846	9.089	9.338	2.736	-2.673	0.789	-0.771
69	8.528	8.766	9.009	2.773	-2.708	0.804	-0.785
70	8.223	8.455	8.693	2.811	-2.743	0.819	-0.799
71	7.930	8.157	8.389	2.847	-2.778	0.834	-0.813
72	7.649	7.871	8.098	2.884	-2.813	0.848	-0.827
73	7.379	7.595	7.817	2.921	-2.848	0.863	-0.842
74	7.120	7.331	7.548	2.957	-2.882	0.878	-0.856
75	6.871	7.077	7.289	2.994	-2.916	0.894	-0.871
76	6.631	6.833	7.040	3.030	-2.950	0.909	-0.885
77	6.402	6.599	6.801	3.066	-2.984	0.924	-0.900
78	6.181	6.373	6.571	3.102	-3.018	0.940	-0.914
79	5.969	6.156	6.350	3.137	-3.051	0.955	-0.929
80	5.765	5.948	6.137	3.173	-3.085	0.971	-0.944
81	5.568	5.748	5.932	3.208	-3.118	0.986	-0.958
82	5.380	5.555	5.735	3.243	-3.151	1.002	-0.973
83	5.199	5.370	5.546	3.278	-3.184	1.018	-0.988
84	5.024	5.191	5.363	3.313	-3.217	1.034	-1.003
85	4.856	5.020	5.188	3.348	-3.249	1.049	-1.018
86	4.695	4.854	5.019	3.383	-3.282	1.065	-1.034
87	4.540	4.695	4.856	3.417	-3.314	1.082	-1.049
88	4.390	4.542	4.699	3.451	-3.346	1.098	-1.064
89	4.246	4.395	4.548	3.485	-3.378	1.114	-1.080
90	4.108	4.253	4.403	3.519	-3.409	1.130	-1.095
91	3.975	4.116	4.263	3.553	-3.441	1.147	-1.110
92	3.846	3.985	4.128	3.587	-3.472	1.163	-1.126
93	3.723	3.858	3.998	3.620	-3.503	1.180	-1.142
94	3.604	3.736	3.872	3.654	-3.535	1.196	-1.157
95	3.489	3.618	3.751	3.687	-3.565	1.213	-1.173
96	3.378	3.504	3.635	3.720	-3.596	1.230	-1.189
97	3.272	3.395	3.522	3.753	-3.627	1.247	-1.205
98	3.169	3.289	3.414	3.786	-3.657	1.264	-1.221

99	3.070	3.188	3.309	3.818	-3.687	1.281	-1.237
100	2.975	3.090	3.209	3.851	-3.718	1.298	-1.253
101	2.883	2.995	3.111	3.883	-3.747	1.315	-1.269
102	2.794	2.904	3.017	3.915	-3.777	1.333	-1.286
103	2.708	2.815	2.927	3.947	-3.807	1.350	-1.302
104	2.626	2.730	2.839	3.979	-3.836	1.367	-1.318
105	2.546	2.648	2.755	4.011	-3.866	1.385	-1.335
106	2.469	2.569	2.673	4.042	-3.895	1.402	-1.351
107	2.395	2.493	2.594	4.074	-3.924	1.420	-1.368
108	2.323	2.419	2.518	4.105	-3.953	1.438	-1.385
109	2.254	2.347	2.444	4.136	-3.982	1.456	-1.401
110	2.187	2.278	2.373	4.167	-4.010	1.474	-1.418
111	2.122	2.212	2.305	4.198	-4.039	1.492	-1.435
112	2.060	2.147	2.238	4.229	-4.067	1.510	-1.452
113	2.000	2.085	2.174	4.260	-4.095	1.528	-1.469
114	1.942	2.025	2.112	4.290	-4.123	1.546	-1.486
115	1.885	1.967	2.052	4.320	-4.151	1.564	-1.503
116	1.831	1.911	1.994	4.351	-4.179	1.583	-1.520
117	1.779	1.857	1.938	4.381	-4.206	1.601	-1.538
118	1.728	1.804	1.884	4.411	-4.234	1.620	-1.555
119	1.679	1.753	1.831	4.441	-4.261	1.638	-1.572
120	1.631	1.704	1.780	4.470	-4.288	1.657	-1.590
121	1.585	1.657	1.731	4.500	-4.315	1.676	-1.607
122	1.541	1.611	1.684	4.529	-4.342	1.695	-1.625
123	1.498	1.566	1.638	4.558	-4.369	1.714	-1.643
124	1.456	1.523	1.593	4.588	-4.396	1.733	-1.660
125	1.416	1.482	1.550	4.617	-4.422	1.752	-1.678



附表Ⅱ（Attachment Ⅱ）