



Specification For Approval

Customer name : _____

Product name : NTC Thermistor (CR149 Series)

Customer PN : _____

MFG PN : CWFB0503FC-421F1C

MFG			Customer Confirmation		
Make	Check	Approval	Test	Check	Approval
HD CHENG	XR LU	DZ LING			

(Company name)

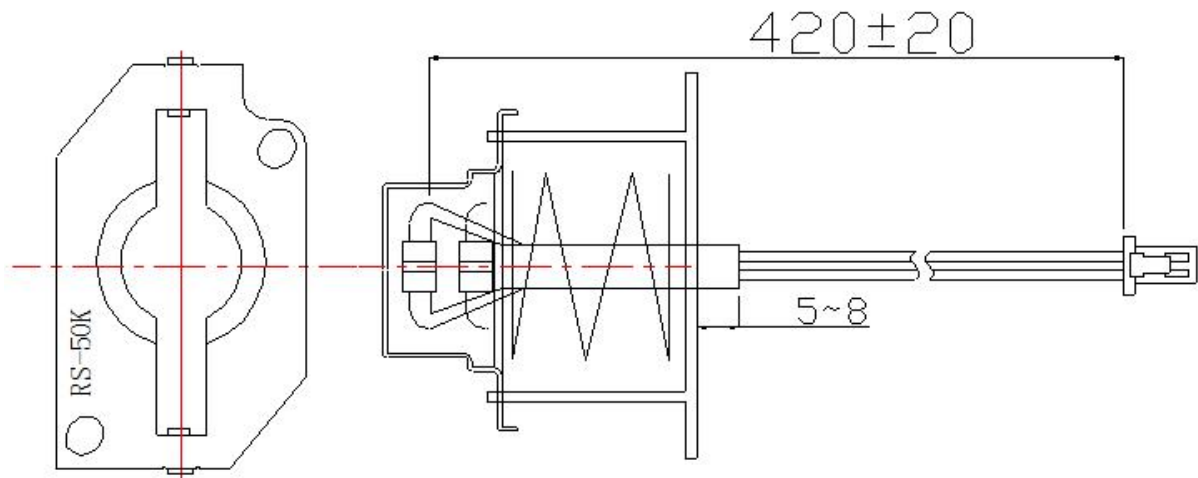
Confirm got the spec and accept as our company's warehouse accept standard.

Version	Revise content	Forwarder	Date
A/1	Just made	Cheng	2017-03-09



1、Overall Dimension

(Unit: mm)



2、Material explanation

NO	COMPONENT	MATERIAL AND SPECIFICATIONS	Q'TY	REMARK
2-1.	Element	R25=50KΩ±1% B25/50=3950±1% DD	1	
2-2.	Housing	Y216J-A Aluminum (surface of the sand)	1	
		Φ21×Φ25.5×3.6+21 Electrolytic plate inside the card		
		Electric rice cooker spring Φ0.8*6S SUS304		
2-3.	Coating	Thermal conductive silicone		
	Electrolytic plate	0.8 mm electrolytic iron base plate ("RS-50K" Logo)	1	
2-4.	Lead Wire	UL 1332# 22AWG 200℃ 300V	2	White
2-5.	Casing	Inside the outer plastic fibers Φ4.5*4.6 L1=32mm, PTFE Casing 13L 250℃ L=80mm		
2-6.	Tie	Cable Ties	1	White
2-7.	Copper strip	Riveting copper strip : 6.0 (riveting fuse), 4.0 (riveting Ground wire), 2.0 (Riveting resistance wire)	6	
2-8.	Terminal	XH-2.54 & XH-3Y	3	White
		187 Straight lock terminals (Riveting fuse the long end), 187 protect the casing(blue)	1	
		4.2*16.5 Ring terminal *2 (Ground wire end + Fuse(short end))	1	



3、Part Number :

CWF - × × × × × × × × × × × ×
 1 2 3 4 5 6 7 8

- (1) NTC Thermistor Mark;
- (2) Head shape sign (B:Housing Type, D:Dip-Coating, M:Molding);
- (3) Series Type (0:Epoxy coating structure, 1:Epoxy coating structure(high temp)) ;
- (4) Nominal Resistance at 25°C (previous two digits are significant figures, The last digit specifies the number of zeros to follow.);
- (5) Resistance tolerance (%);
- (6) B Value constant sign In general, it is value of 25/50Deg, other conditions will remark and explain;
- (7) Length Sign (unit is mm) ;
- (8) Special code ;

4、Electrical Performance:

NO	Item	Sign	Test Conditions	Min.	Normal value	Max.	Unit
4-1.	Resistance at 25°C	R25	Ta=25±0.05°C P _T ≤ 0.1mw	49.5	50.0	50.5	kΩ
4-2.	B Value	B25/50	$B = LN \frac{R_{T1}}{R_{T2}} / \left(\frac{1}{T1} - \frac{1}{T2} \right)$	3910.5	3950	3989.5	k
4-3.	Dissipation factor	σ	Ta=25±0.5°C	3	/	/	mw/°C
4-4.	Time constant	τ	Ta=25±0.5°C	/	/	15	sec
4-5.	Insulation resistance	/	500VDC	100	/	/	MΩ
4-6.	Withstand voltage	/	1500V AC	5	/	/	Sec
4-7.	Operating temp.range	/	/	-20	/	+250	°C

5、Reliability Test

NO	Item	Technical requirements	Test conditions and method
5-1.	High temp. Test	ΔR/R25 ≤ ±3% ΔB/B ≤ ±3% No change with withstand voltage. Insulation performance. Appearance without damage.	200±5°C, power on 500±24 hrs, DC0.2mA
5-2.	Low temp. tes		-20±5°C, power on 500±24 hrs, DC0.2mA
5-3.	Endure moisture test		Store in environment 55±2°C,90%-95%RH for 500±24 hrs
5-4.	Temp. cycle test		-20°C×30min→Room temp.×10min→ in 120°C water×30min→Room temp.×10min 10 cycles
5-5.	Load electrify test		Power on DC1mA, 500hrs in room temp. and humid.



5-6	Tensile tests		Applying 2 kg force lasts 1 min.
5-7	Drop test		Free fall into concrete floor from height 1M , 10 cycle。
5-8	Vibration test		Frequency range: 10~55HZ Total amplitude 1.52mm 1 cycle 1 min , direction and time X、Y、Z axis 2Hr each。
5-9	Bending test		Bend 180°binding site wire and epoxy resin。 Back and forth 10 times

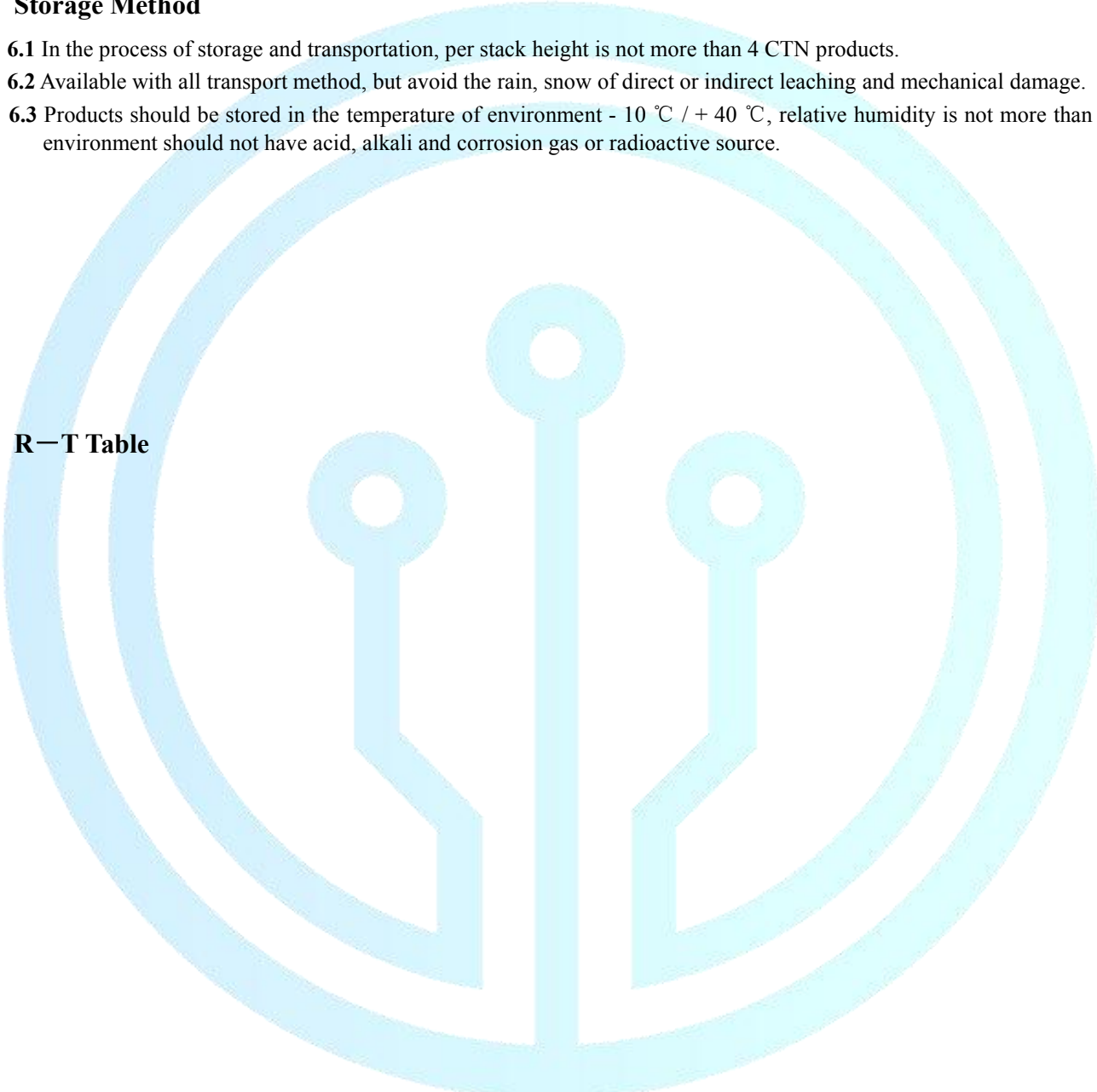
6、 Storage Method

6.1 In the process of storage and transportation, per stack height is not more than 4 CTN products.

6.2 Available with all transport method, but avoid the rain, snow of direct or indirect leaching and mechanical damage.

6.3 Products should be stored in the temperature of environment - 10 °C / + 40 °C, relative humidity is not more than 80%, environment should not have acid, alkali and corrosion gas or radioactive source.

7、 R—T Table





Dongguan Ampfort Electronics Co., Ltd.

东莞市安伏特电子有限公司

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R-T CONVERSION TABLE

R25=50K Ω \pm 1%

B25/50=3950K \pm 1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
-40	1457.763	1523.670	1592.398	-2	166.833	170.599	174.433
-39	1359.036	1419.474	1482.451	-1	159.182	162.698	166.275
-38	1268.066	1323.532	1381.285	0	151.936	155.219	158.557
-37	1184.168	1235.110	1288.114	1	144.916	147.977	151.087
-36	1106.726	1153.547	1202.230	2	138.250	141.102	144.000
-35	1035.179	1078.246	1122.992	3	131.917	134.576	137.274
-34	969.024	1008.665	1049.823	4	125.902	128.378	130.890
-33	907.802	944.316	982.201	5	120.185	122.492	124.830
-32	851.099	884.756	919.652	6	114.752	116.900	119.076
-31	798.540	829.584	861.749	7	109.587	111.586	113.610
-30	749.782	778.435	808.102	8	104.676	106.536	108.419
-29	704.514	730.977	758.359	9	100.006	101.736	103.486
-28	662.455	686.911	712.199	10	95.563	97.172	98.798
-27	623.347	645.963	669.331	11	91.336	92.831	94.342
-26	586.956	607.882	629.490	12	87.314	88.703	90.105
-25	553.069	572.442	592.435	13	83.486	84.775	86.076
-24	521.489	539.435	557.944	14	79.841	81.038	82.245
-23	492.038	508.673	525.817	15	76.371	77.481	78.599
-22	464.554	479.981	495.870	16	73.066	74.095	75.131
-21	438.888	453.202	467.936	17	69.918	70.871	71.830
-20	414.903	428.191	441.861	18	66.918	67.801	68.687
-19	393.038	405.405	418.118	19	64.060	64.876	65.696
-18	372.491	384.003	395.830	20	61.336	62.090	62.847
-17	353.172	363.891	374.898	21	58.739	59.435	60.133
-16	335.000	344.983	355.228	22	56.263	56.905	57.548
-15	317.898	327.198	336.737	23	53.901	54.493	55.085
-14	301.796	310.462	319.345	24	51.649	52.193	52.738
-13	286.629	294.706	302.980	25	49.500	50.000	50.500
-12	272.335	279.865	287.574	26	47.388	47.887	48.387
-11	258.859	265.880	273.063	27	45.375	45.873	46.371
-10	246.148	252.696	259.391	28	43.455	43.951	44.448
-9	234.154	240.261	246.503	29	41.625	42.118	42.612
-8	222.831	228.529	234.348	30	39.879	40.368	40.859
-7	212.138	217.454	222.881	31	38.214	38.699	39.186
-6	202.035	206.996	212.057	32	36.624	37.105	37.588
-5	192.486	197.116	201.837	33	35.108	35.583	36.062
-4	183.457	187.778	192.182	34	33.660	34.130	34.603
-3	174.916	178.950	183.059	35	32.278	32.742	33.210



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R-T CONVERSION TABLE

R25=50K Ω \pm 1%

B25/50=3950K \pm 1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
36	30.958	31.417	31.879	74	7.220	7.433	7.652
37	29.698	30.150	30.606	75	6.972	7.180	7.394
38	28.494	28.940	29.389	76	6.734	6.937	7.146
39	27.344	27.783	28.226	77	6.505	6.704	6.908
40	26.245	26.677	27.113	78	6.284	6.479	6.679
41	25.194	25.619	26.049	79	6.072	6.263	6.458
42	24.190	24.608	25.031	80	5.869	6.054	6.245
43	23.230	23.641	24.057	81	5.673	5.854	6.041
44	22.312	22.716	23.125	82	5.484	5.661	5.844
45	21.434	21.830	22.232	83	5.302	5.476	5.654
46	20.594	20.983	21.378	84	5.128	5.297	5.472
47	19.790	20.172	20.560	85	4.959	5.125	5.296
48	19.021	19.396	19.776	86	4.798	4.960	5.127
49	18.285	18.653	19.026	87	4.643	4.801	4.964
50	17.580	17.941	18.307	88	4.493	4.648	4.807
51	16.905	17.259	17.618	89	4.349	4.500	4.656
52	16.259	16.605	16.957	90	4.210	4.358	4.510
53	15.640	15.980	16.324	91	4.077	4.221	4.370
54	15.048	15.380	15.718	92	3.948	4.089	4.235
55	14.481	14.806	15.138	93	3.824	3.962	4.104
56	13.938	14.256	14.581	94	3.704	3.839	3.978
57	13.418	13.729	14.047	95	3.589	3.720	3.857
58	12.919	13.224	13.535	96	3.477	3.606	3.739
59	12.441	12.740	13.044	97	3.370	3.496	3.626
60	11.983	12.276	12.574	98	3.267	3.390	3.517
61	11.544	11.830	12.122	99	3.167	3.287	3.412
62	11.123	11.403	11.689	100	3.070	3.188	3.310
63	10.720	10.993	11.273	101	2.978	3.092	3.212
64	10.333	10.600	10.873	102	2.888	3.000	3.117
65	9.961	10.223	10.490	103	2.801	2.911	3.025
66	9.605	9.860	10.122	104	2.718	2.825	2.937
67	9.262	9.513	9.768	105	2.637	2.742	2.851
68	8.934	9.179	9.429	106	2.559	2.662	2.769
69	8.619	8.858	9.103	107	2.484	2.584	2.689
70	8.316	8.550	8.789	108	2.411	2.510	2.612
71	8.025	8.254	8.488	109	2.341	2.437	2.537
72	7.746	7.969	8.198	110	2.273	2.367	2.465
73	7.478	7.696	7.920	111	2.208	2.300	2.395



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R₂₅=50KΩ±1%

B_{25/50}=3950K±1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
112	2.144	2.234	2.328	150	0.778	0.819	0.862
113	2.083	2.171	2.263	151	0.759	0.799	0.841
114	2.024	2.110	2.199	152	0.741	0.780	0.821
115	1.966	2.051	2.138	153	0.723	0.761	0.802
116	1.911	1.993	2.079	154	0.706	0.743	0.783
117	1.857	1.938	2.022	155	0.689	0.726	0.765
118	1.805	1.884	1.967	156	0.672	0.708	0.747
119	1.755	1.832	1.913	157	0.656	0.692	0.729
120	1.707	1.782	1.861	158	0.641	0.676	0.712
121	1.660	1.734	1.811	159	0.625	0.660	0.696
122	1.614	1.687	1.762	160	0.611	0.644	0.680
123	1.570	1.641	1.715	161	0.596	0.629	0.664
124	1.527	1.597	1.669	162	0.582	0.615	0.649
125	1.486	1.554	1.625	163	0.569	0.601	0.634
126	1.446	1.513	1.582	164	0.556	0.587	0.620
127	1.407	1.473	1.541	165	0.543	0.573	0.606
128	1.370	1.434	1.501	166	0.530	0.560	0.592
129	1.334	1.396	1.462	167	0.518	0.548	0.579
130	1.299	1.360	1.424	168	0.506	0.535	0.566
131	1.264	1.324	1.387	169	0.495	0.523	0.553
132	1.231	1.290	1.352	170	0.484	0.511	0.541
133	1.199	1.257	1.317	171	0.473	0.500	0.529
134	1.168	1.225	1.284	172	0.462	0.489	0.517
135	1.138	1.193	1.251	173	0.452	0.478	0.506
136	1.109	1.163	1.219	174	0.441	0.467	0.494
137	1.080	1.133	1.189	175	0.432	0.457	0.484
138	1.053	1.105	1.159	176	0.422	0.447	0.473
139	1.026	1.077	1.130	177	0.413	0.437	0.463
140	1.000	1.050	1.102	178	0.404	0.427	0.453
141	0.975	1.024	1.075	179	0.395	0.418	0.443
142	0.950	0.998	1.048	180	0.386	0.409	0.434
143	0.926	0.973	1.023	181	0.378	0.400	0.424
144	0.903	0.949	0.998	182	0.369	0.392	0.415
145	0.881	0.926	0.973	183	0.361	0.383	0.406
146	0.859	0.903	0.950	184	0.354	0.375	0.398
147	0.838	0.881	0.927	185	0.346	0.367	0.389
148	0.818	0.860	0.905	186	0.339	0.359	0.381
149	0.798	0.839	0.883	187	0.331	0.352	0.373



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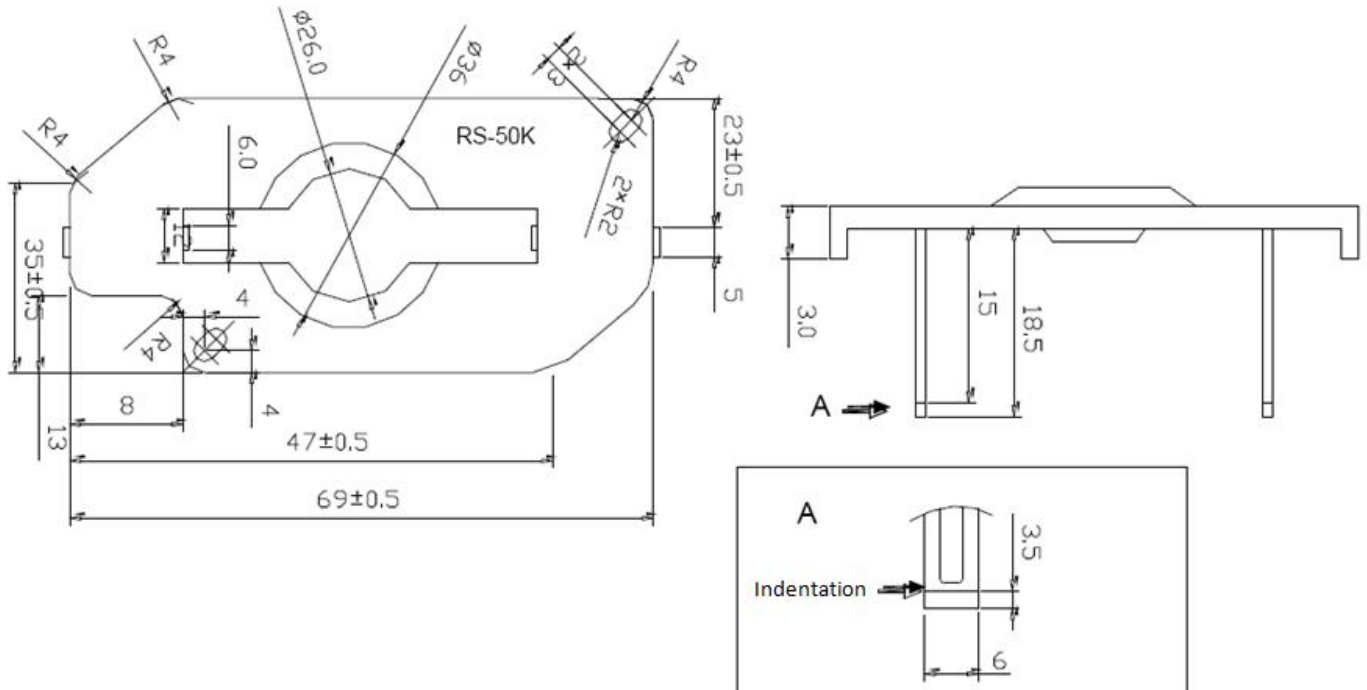
R₂₅=50KΩ±1%

B_{25/50}=3950K±1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
188	0.324	0.344	0.366	226	0.148	0.158	0.169
189	0.317	0.337	0.358	227	0.145	0.155	0.166
190	0.311	0.330	0.351	228	0.142	0.152	0.163
191	0.304	0.323	0.343	229	0.139	0.149	0.159
192	0.298	0.316	0.336	230	0.136	0.146	0.156
193	0.292	0.310	0.329	231	0.134	0.143	0.153
194	0.286	0.303	0.323	232	0.131	0.140	0.150
195	0.280	0.297	0.316	233	0.128	0.138	0.147
196	0.274	0.291	0.310	234	0.126	0.135	0.145
197	0.268	0.285	0.303	235	0.123	0.132	0.142
198	0.263	0.279	0.297	236	0.121	0.130	0.139
199	0.257	0.274	0.291	237	0.119	0.127	0.136
200	0.252	0.268	0.285	238	0.116	0.125	0.134
201	0.247	0.263	0.279	239	0.114	0.122	0.131
202	0.241	0.257	0.274	240	0.112	0.120	0.129
203	0.237	0.252	0.268	241	0.110	0.118	0.126
204	0.232	0.247	0.263	242	0.108	0.115	0.124
205	0.227	0.242	0.257	243	0.105	0.113	0.122
206	0.222	0.237	0.252	244	0.103	0.111	0.119
207	0.218	0.232	0.247	245	0.101	0.109	0.117
208	0.213	0.227	0.242	246	0.099	0.107	0.115
209	0.209	0.223	0.237	247	0.098	0.105	0.113
210	0.205	0.218	0.233	248	0.096	0.103	0.111
211	0.200	0.214	0.228	249	0.094	0.101	0.108
212	0.196	0.209	0.223	250	0.092	0.099	0.106
213	0.192	0.205	0.219				
214	0.188	0.201	0.215				
215	0.185	0.197	0.210				
216	0.181	0.193	0.206				
217	0.177	0.189	0.202				
218	0.174	0.185	0.198				
219	0.170	0.182	0.194				
220	0.167	0.178	0.190				
221	0.163	0.175	0.187				
222	0.160	0.171	0.183				
223	0.157	0.168	0.179				
224	0.154	0.164	0.176				
225	0.151	0.161	0.172				



Appended drawings: Change the screens shape



1. Product surface bright, no scratch, burr wait for a phenomenon
2. Material for electrolytic plate, surface polishing, the wall thickness of 0.8 mm
3. Not with tolerance of ± 0.3 mm
4. All the above materials for ROHS
5. The area shown in positive printing: RS - 50 k
6. Electric rice cooker iron stent: 69*51