Project No. 项目编号	TXW397017S2
Customer 客户名称	
Module No. 客户型号	
Product type 产品内容	Standard LCD Module TFT：480 x 3RGB x800Dots 3.97”TFT LCD

客户确认Customer Approval	
项目负责人Project Manager	
品质主管Director of Quality	
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1. Document revision history :

DOCUMENT REVISION	DATE	DESCRIPTION	PREPARED BY	APPROVED BY
A	2018.03.30	First Release.		

2. General Description

- 3.97”(diagonal), 480 x3 RGB x800dots, 16.7M colors, Transmissive, TFT LCD module.
- Viewing Direction: ALL
- **Driving IC: ILI9806E**
- RGB 24 bit Interface
- power voltage: 2.8V -3.3V

3. Mechanical Specifications

The mechanical detail is shown in Fig. 1 and summarized in Table 1 below.

Table 1

Parameter		Specifications	Unit
主屏 Color TFT 480 x3 RGB x800	Outline dimensions	56.84(H) x96.85(V) x 2.15(D)	mm
	LCD active area	51.84(H) x86.4(V)	mm
	Display format	480 x3 RGB x800	dots
	Color configuration	RGB stripes	-
Weight		TBD	grams

4. Interface signals

Figure 1: Outline Drawing

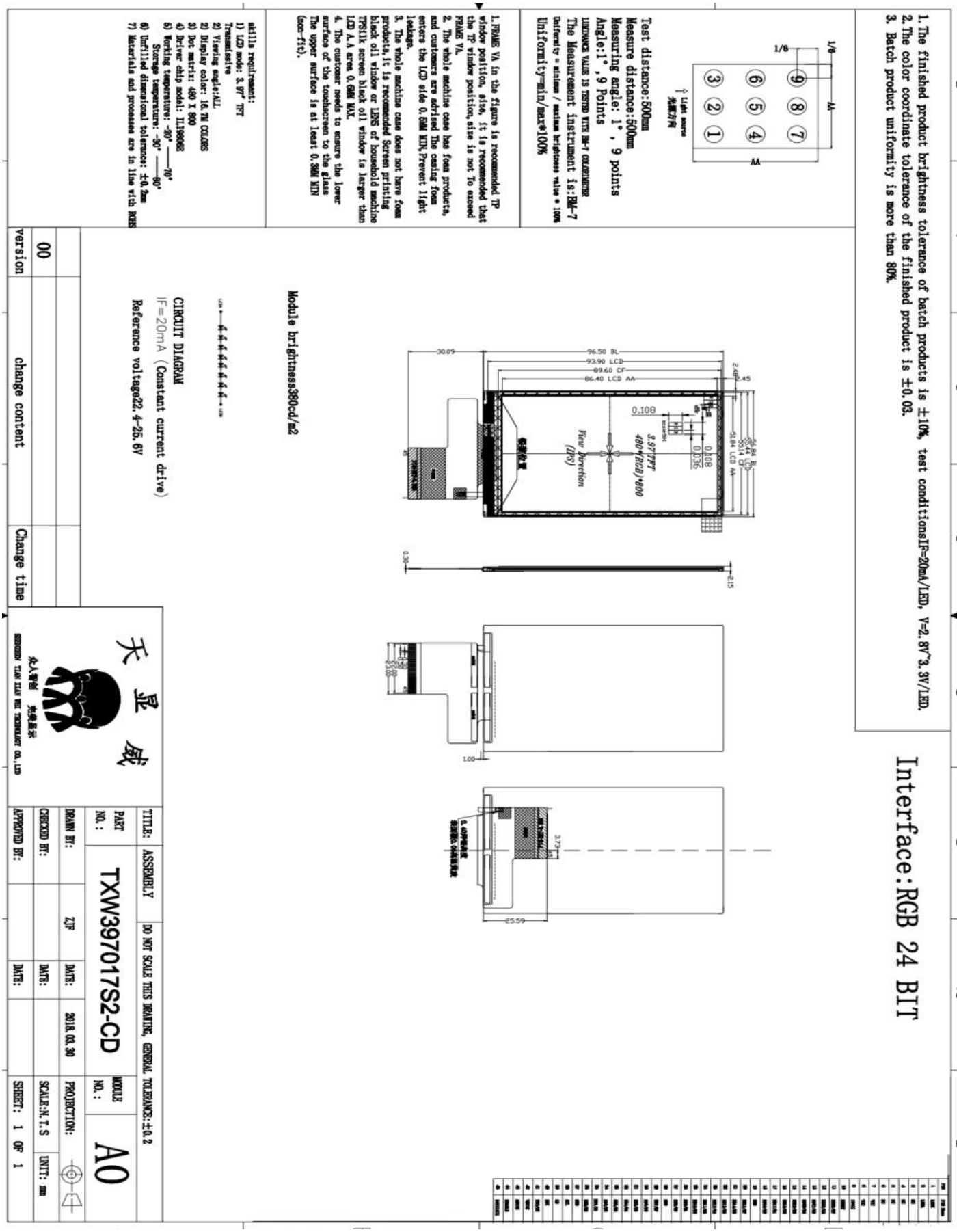


Table 2: Pin assignment

Pin No.	Symbol	Description
1	LEDK	POWER SUPPLY- FOR BACKLIGHT CATHODE.
2	LEDA	POWER SUPPLY+ FOR BACKLIGHT ANODE.
3-6	NC	NC
7-8	VCC(2.8V)	POWER SUPPLY（2.8V）.
9	IOVCC(1.8V)	POWER SUPPLY（1.8V/2.8V）.
10	RESET	Reset signal.
11-18	R7-R0	RED DATA.
19	GND	Ground.
20-27	G7-G0	GREEN DATA.
28	GND	Ground.
29-36	B7-B0	BULE DATA.
37	GND	Ground.
38	SCL	SCL pin as serial clock when operates in the serial interface.
39	CS	select signal.
40	SDI	SDI pin as serial data input/output bidirection when operates in the serial interface.
41	NC	NC
42	VSYNC	Frame synchronizing signal
43	HSYNC	Line synchronizing signal
44	DE	Data enable signal
45	PCLK	Dot clock signal

5. Absolute Maximum Ratings

5.1 Electrical Maximum Ratings – for IC Only

Table 3: Electrical Maximum Ratings – for IC

Parameter	Symbol	Min.	Max.	Unit	Note
Power supply voltage (VDD)	VDD	-0.3	+5.1	V	1
Power supply voltage (IOVCC)	IOVCC	-0.3	+3.6	V	1

Note:

1.IOVCC,VCI, GND must be maintained.

2.The modules may be destroyed if they are used beyond the absolute maximum ratings.

5.2 Environmental Condition

Table 4

Item	Operating temperature (Topr)		Storage temperature (Tstg) (Note 1)		Remark
	Min.	Max.	Min.	Max.	
Ambient temperature	-20°C	+70°C	-30°C	+80°C	Dry
Humidity (Note 1)	80% max. RH for Ta < 50% RH for 40,C < Ta Maximum operating temperature				No condensation

Note 1: Product cannot sustain at extreme storage conditions for long time.

6. Electrical Specifications

Supply voltage of white LED backlight	VLED =$V_{(BL+)}$-$V_{(BL-)}$	Forward current =20mA Number of LED dies = 8	22.4	24	25.6	V
Luminance (on the module surface)			350	380	400	cd/m^2

7. Optical Characteristics

Table 7: Optical specifications

Items	Symbol	Condition	Specifications			Unit	Note
			Min.	Typ.	Max.		
Contrast Ratio	CR		720	900	-	-	
Response Time	T_R		-	16	21	ms	
	T_F		-	19	24	ms	

Chromaticity	Red	X_R		±.02	0.647	±.02	-	
		Y_R			0.3178		-	
	Green	X_G			0.275		-	
		Y_G			0.582		-	
	Blue	X_B			0.140		-	
		Y_B			0.088		-	
	White	X_W			0.310		-	
		Y_W			0.336		-	
Viewing angle	Hor.	ϕ1(3 o'clock)	Center CR≥10	-	80	-	deg.	
		ϕ2(9 o'clock)		-	80	-		
	Ver.	θ2(12 o'clock)		-	80	-		
		θ1(6 o'clock)		-	80	-		
NTSC ratio					70		%	

Note 1: Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L63 / L0

L63: Luminance of gray level 63

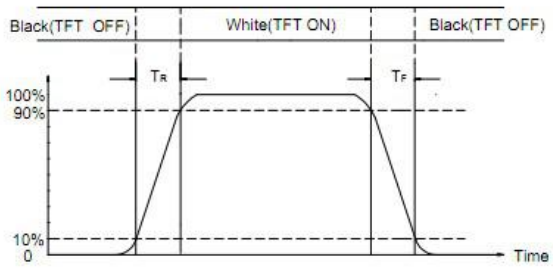
L0: Luminance of gray level 0

CR = CR (10)

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note 5.

Note 2: Definition of Response Time (TR, TF):

Figure 3 Definition of Response Time



Note (5) Definition of Transmittance(Module is with signal input)

$$\text{Transmittance} = \frac{\text{Center Luminance of LCD}}{\text{Center Luminance of Back Light}} \times 100\%$$

Figure 3

Note 3: Viewing Angle

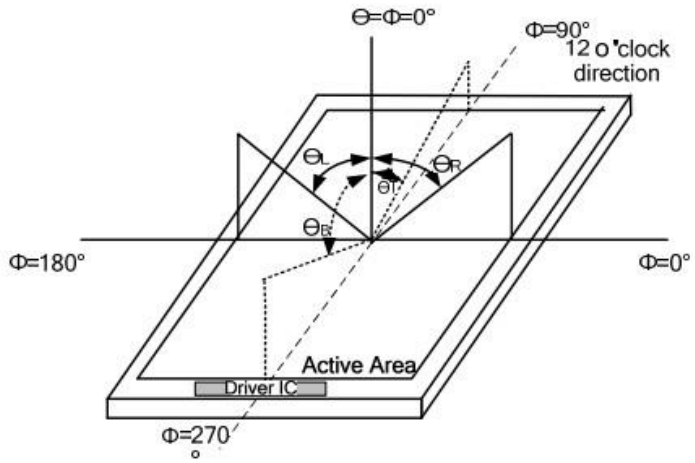


Figure 4

Note 4: Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 15 minutes in a windless room.

Figure 1 Measurement Setup

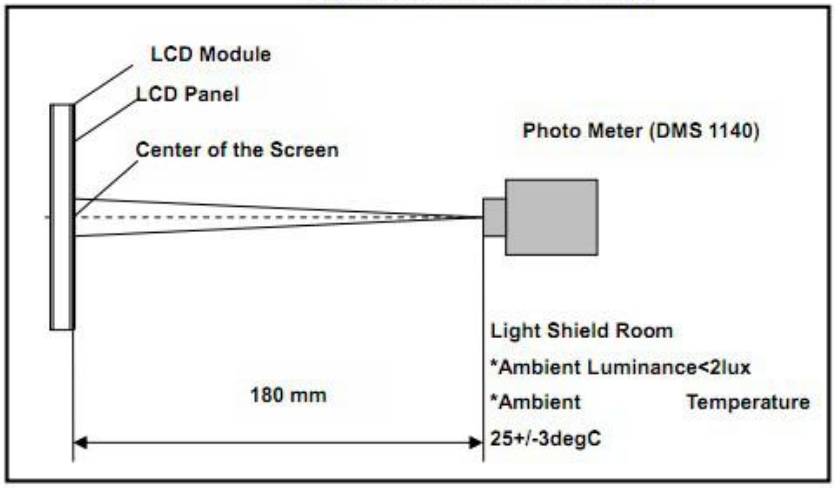


Figure 5

8. Timing Characteristics

8.1 RGB Interface Timing Characteristics of IC

Table 8: Normal Write Mode (VCC = IOVCC=2.4~3.3V)

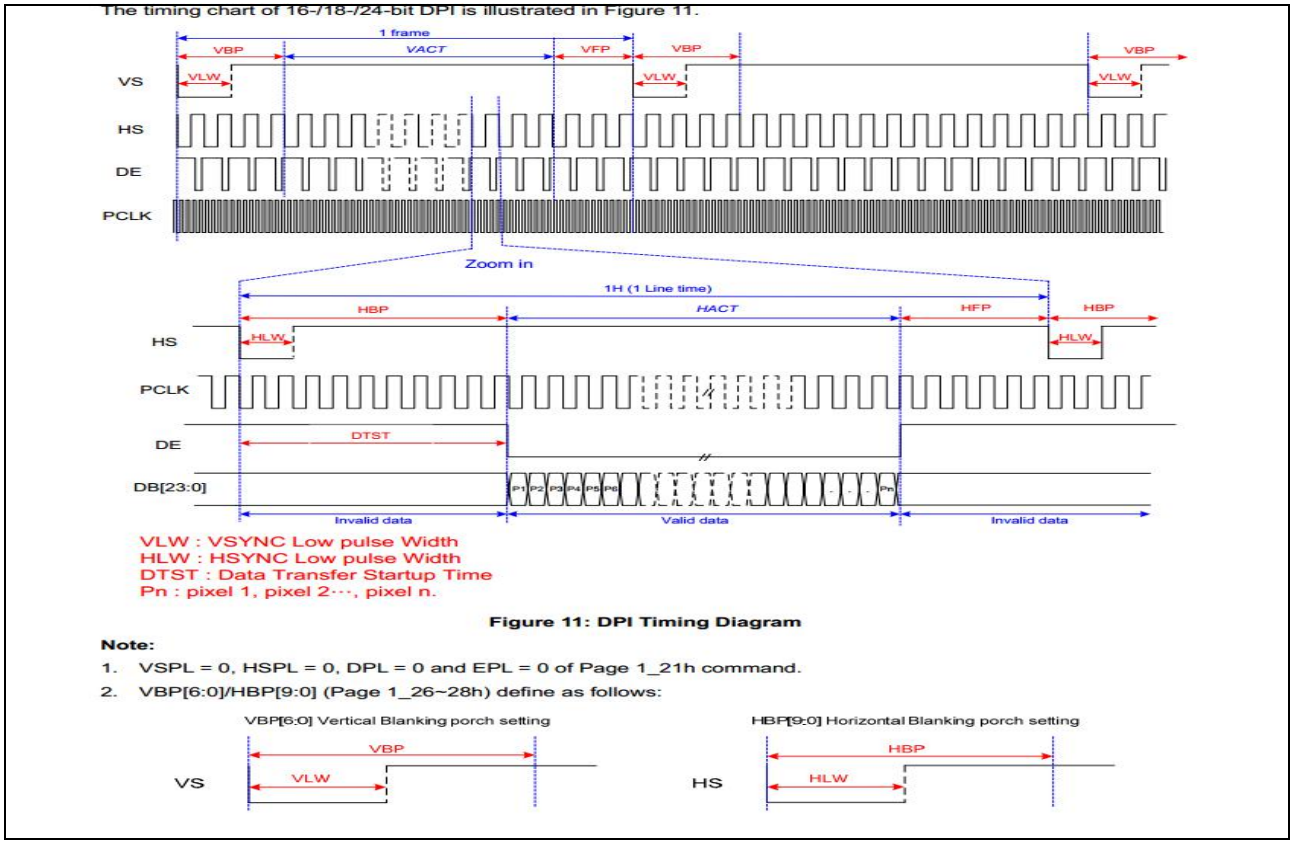


Figure 7. RGB Intderface Bus Timing

8.2 Reset Operation of IC

Table 9: Reset Timing Characteristics (VCC = IOVCC=2.4~3.3V)

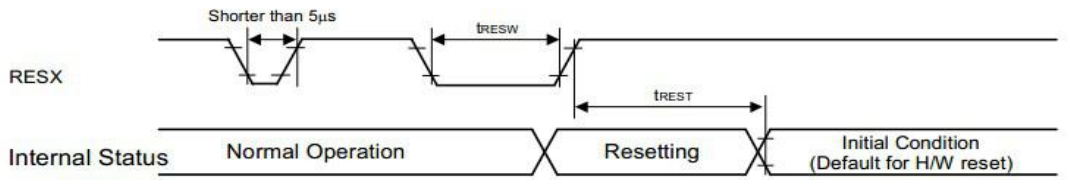


Table 7.3.2.1 Reset input timing — VSS=0V, VDDIO=1.6V to 3.6V, VCI=2.5V to 5.5V,Ta = -30 to 70°C

Symbol	Parameter	Related Pins	MIN	TYP	MAX	Note	Unit
t_{RESW}	*1) Reset low pulse width	RESX	10	-	-	-	µs
t_{REST}	*2) Reset complete time	-	-	-	5	When reset applied during Sleep in mode	ms
		-		-	120	When reset applied during Sleep out mode	ms

Figure 8: Reset Timing

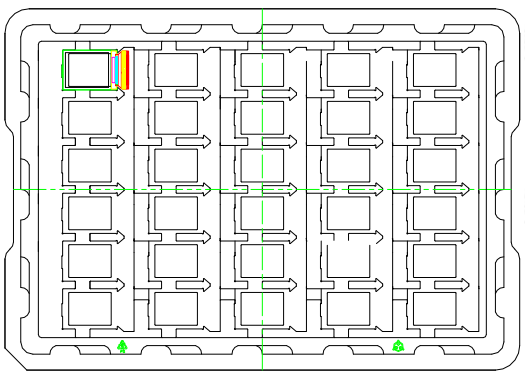
9. Reliability Test Item

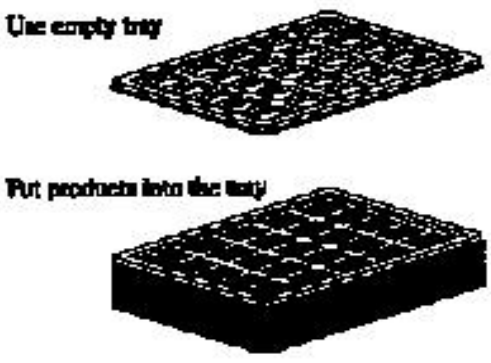
Test Item	Sample Type	Test Condition	Test result determinant gist
High temperature storage	Normal temperature	70±3℃;96H	the inspection of appearance and function character.
	Wide temperature	80±3℃;96H	
Low temperature storage	Normal temperature	-20±3℃;120H	
	Wide temperature	-30±3℃;120H	
High temperature /humidity storage	Normal temperature	50℃±3℃,90%±3%RH;96H	
	Wide temperature	60℃±3℃,90%±3%RH;96H	
High temperature operation	Normal temperature	60±3℃;96H	no objection of the function character; no fatal objection of the appearance.
	Wide temperature	70±3℃;96H	
Low temperature operation	Normal temperature	0±3℃;96H	
	Wide temperature	-20±3℃;96H	
High temperature /humidity operation	Normal temperature	40℃±3℃,90%±3%RH;96H	
	Wide temperature	50℃±3℃,90%±3%RH;96H	
Temperature Shock	Normal temperature	-20±3℃,30min→70±3℃,30 min;10cycle	inspect the objections appearance、function & the whole structure
	Wide temperature	-30±3℃,30min 80±3,30min;10cycle	The inspection of appearance、function & the whole structure

10. Packing (Reference only)

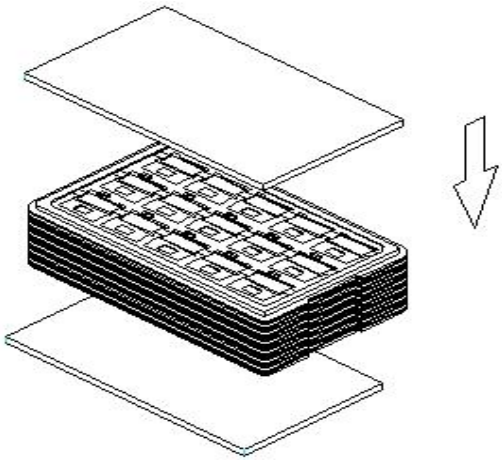
Packing Method

(1) (2)

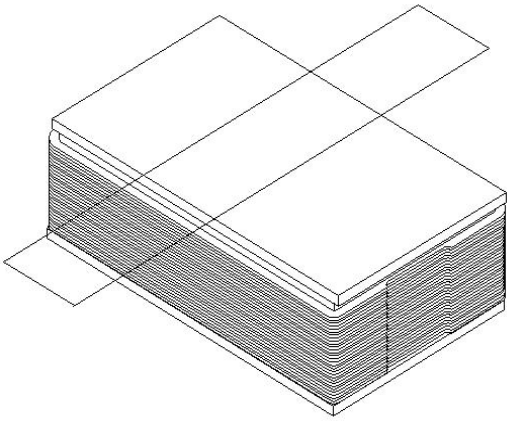




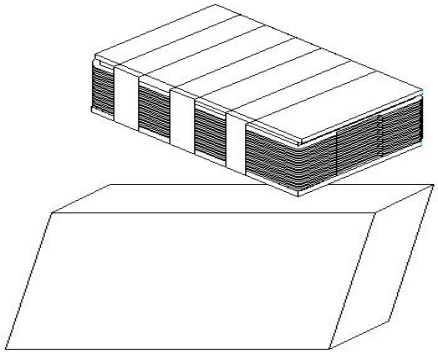
(3) (4)

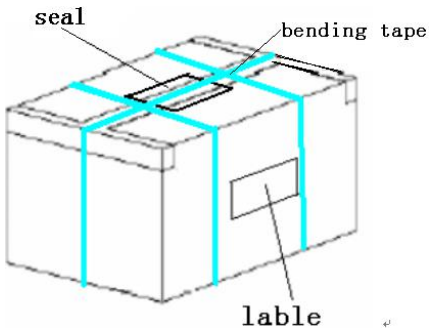


(5)



(6)





1. Put module into tray cavity :
2. Tray stacking
3. Put 1 cardboard under the tray stack and 1 cardboard above:
4. Fix the cardboard to the tray stack with adhesive tape:
5. Put the tray stack into carton.
6. Carton sealing with adhesive tape.

- END -