深圳市勋瑞光电科技有限公司
Xunrui photoelectric technology (shenzhen) CO,.LTD.

Product Specification

Customer: ______________________

Model Name: H069BHD30I4001

Date: 2025-04-18

Version: A0

■ **Preliminary Specification**

□ **Final Specification**

For Customer's Acceptance

Approved by	Comment

Approved by	Reviewed by	Prepared by

LIST OF CONTENTS

1. Revision History

Rev	Issued Date	Description	Editor
A0	2024/04/18	First Release.	

2. GENERAL INFORMATION

Item	Specification	Unit
LCD size 液晶面板尺寸	6.90	inch
Display Mode 显示模式	Normally Black	--
Resolution 分辨率	280(RGB)x1424	Pixel
Pixel pitch 像素尺寸	40(H) x3 x 120(V)	mm
Pixel Arrangement 像素排列	RGB Vertical Stripe	
Viewing direction 视角	ALL	-
Module outline dimension(LCM)	38.20 (H)*181.47(V)*3.45(D)	mm
Module outline dimension(LCM+CTP)	-	mm
LCD AA 液晶显示区域	33.60 (H)*170.88 (V)	mm
TP VA 触摸可视区域	-	mm
Colors 颜色深度	16.7M	-
Weight 重量(TP+LCM)	TBD	g
Driver IC 驱动芯片	ST7703I	-
Driver IC RAM Sise 记忆体	-	-
Interface 接口类型	MIPI	--
Backlight 背光类型	White LED	--
Touch IC 触摸芯片	-	--
Surface hardness 表面硬度	-	--
支持点数	-	--
Touch structure 触摸结构	-	--
Cover lens 盖板	-	mm
Colors 颜色	Black	--
Operating Temperature 工作温度	-30℃~ +80℃	--
Storage Temperature 存储温度	-40℃~ +85℃	--
环保要求	ROHS	--

3. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit	Note
Power Supply voltage 1	VCC~GND	-0.3	+6.6	V	
Power Supply voltage 2	IOVCC~GND	-0.3	+5.5	V	
Logic Input Voltage Range	V_{IN}	-0.3	IOVCC+0.3	V	
Logic Output Voltage Range	V_O	-0.3	IOVCC+0.3	V	

* The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

4. DC ELECTRICAL CHARACTERISTICS

4.1 Driving TFT LCD Panel

AGND = GND = 0V, Ta = 25℃

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage for analog circuit	VCC	2.5	2.8	3.3	V
Supply voltage for logic circuit	IOVCC	1.65	1.8	2.0	V
Input voltage 'H'level	V_{IH}	0.7*IOVCC	—	IOVCC	V
Input voltage 'L'level	V_{IL}	GND	—	0.3*IOVCC	V
Output voltage 'H'level	V_{OH}	0.8*IOVCC	—	IOVCC	V
Output voltage 'L'level	V_{OL}	GND	—	0.2*IOVCC	V
Operating circuit	Ioc	—	60	90	mA
Sleep circuit	Isc	—	50	—	uA

*Note: VCC is the external power supply for LCM,IOVCC is the internal power supply.

4.2 Backlight Characteristics

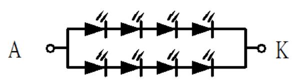
Ta = 25℃

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Forward Current	I_F	-	80	-	mA	
Forward Voltage	V_F	10.8	11.8	12.8	V	
Backlight Power consumption	W_{BL}	0.86	0.94	1.024	W	
LED Lifetime		50000	-	-	Hrs	

Note 1: Each LED: IF = 40 mA, VF = 2.9V.

Note 2: Optical performance should be evaluated at Ta=25℃ only.

Note 3: If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

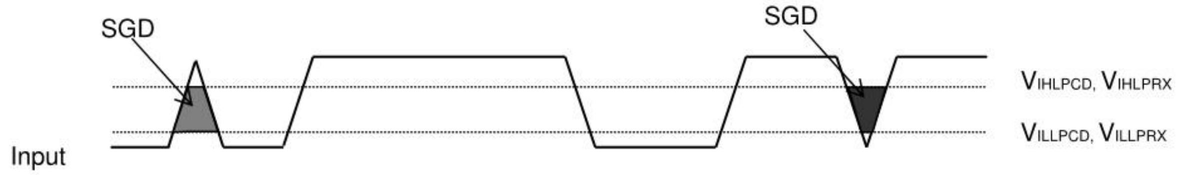


BACKLIGHT CIRCUIT DIAGRAM:
(If=80mA , 10.8V~12.8V)

5. TIMING CHARACTERISTICS

5.1 LP Mode

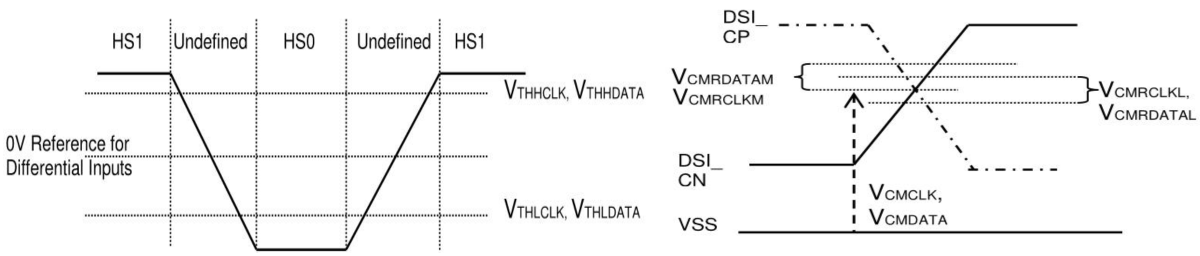
Parameter	Symbol	Conditions	Spec. Min.	Spec. Typ.	Spec. Max.	Unit
Logic high level input voltage	V_{IHLPCD}	LP-CD	450	-	1350	mV
Logic low level input voltage	V_{ILLPCD}	LP-CD	0	-	200	mV
Logic high level input voltage	V_{IHLPRX}	LP-RX(CLK, D0)	880	-	1350	mV
Logic low level input voltage	V_{ILLPRX}	LP-RX(CLK, D0)	0	-	550	mV
Logic low level input voltage	$V_{ILLPRXULP}$	LP-RX(CLK ULP mode)	0	-	300	mV
Logic high level output voltage	V_{OHLPTX}	LP-TX(D0)	1.1	-	1.3	V
Logic low level output voltage	V_{OLLPTX}	LP-TX(D0)	-50	-	50	mV
Logic high level input current	V_{IH}	LP-CD, LP-RX	-	-	10	uA
Logic low level input current	V_{IL}	LP-CD, LP-RX	-10	-	-	uA
Input pulse rejection	SGD	DSI-CLK+/-, DSI-D0+/1	-	-	300	Vps



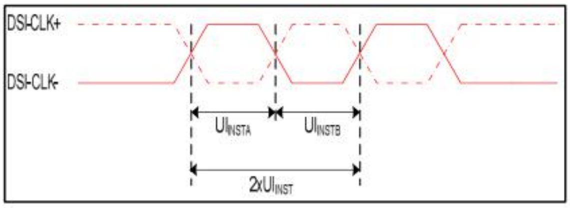
Input glitch rejections of low-power receivers

5.2 High Speed Mode

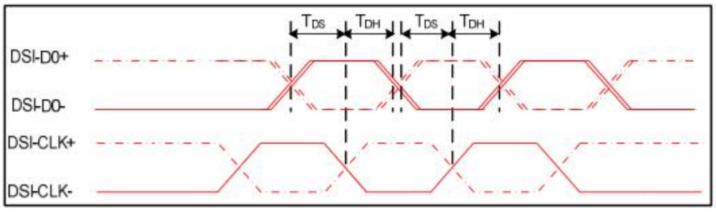
Parameter	Symbol	Conditions	Spec. Min.	Spec. Typ.	Spec. Max.	Unit
Input common mode	V_{CMCLK} V_{CMDATA}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	70	-	330	mV
Input common mode variation <450 MHZ	$V_{CMRCLKL}$ $V_{CMRDATAL}$	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-50	-	50	mV
Input common mode variation >450 MHZ	$V_{CMRCLKM}$ $V_{CMRDATAM}$	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-	-	100	mV
Low-level differential Input threshold	V_{THLCLK} $V_{THLDATA}$	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-70	-	-	mV
High-level differential Input threshold	V_{THHCLK} $V_{THHDATA}$	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-	-	70	mV
Single ended input low voltage	V_{ILHS}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-40	-	-	mV
Single ended input high voltage	V_{IHHS}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-	-	460	mV
Differential input termination resistor	R_{TERM}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	80	100	125	Ω
Single-ended threshold voltage for termination enable	V_{TERMEN}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-	-	450	mV
Termination capacitor	C_{TERM}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-	-	-	pF



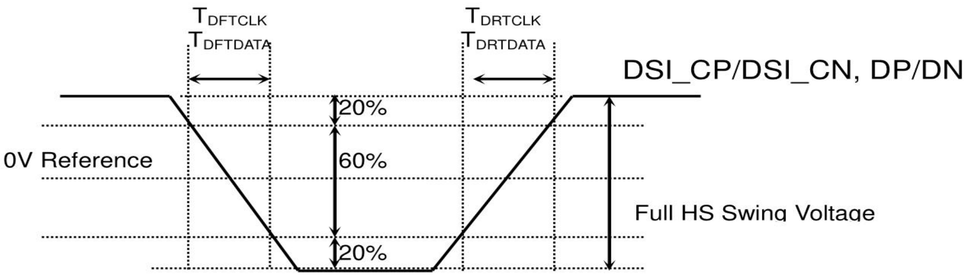
Differential voltage range and Command mode voltage



DSI clock channel timing



Rising and falling time on clock and data channel



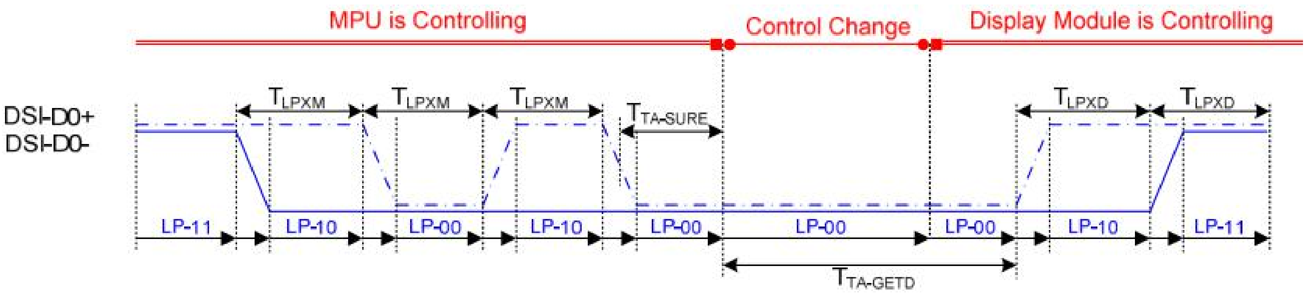
Rising and falling time on clock and data channel

(VSSA=0V, IOVCC=1.65V to 3.3V, VCI=2.5V to 3.3V, T_A = -30 to 70°C)

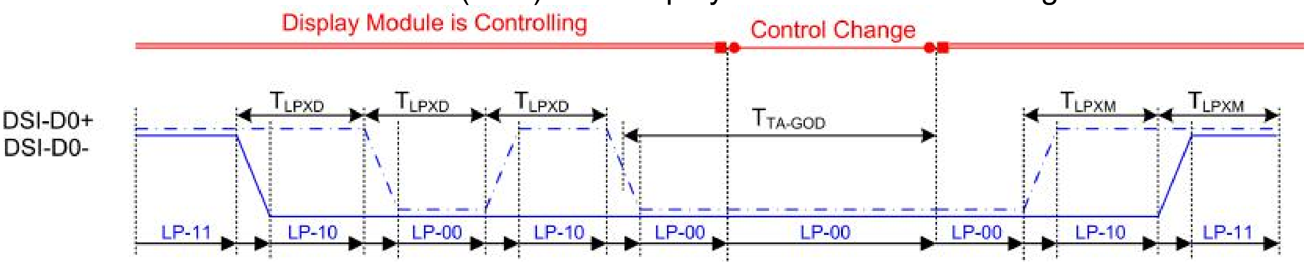
Signal	Item	Symbol	Spec. Min.	Spec. Typ.	Spec. Max.	Unit
DSI_CP/ DSI_CN	Double UI instantaneous	$2xU_{INST}$	TBD	-	25	ns
	UI instantaneous	U_{INSTA} U_{INSTB}	TBD	-	12.5	ns
DP/DN	Data to clock setup time	T_{DS}	0.15xUI	-	-	ps
	Data to clock hold time	T_{DH}	0.15xUI	-	-	ps
DSI_CP/ DSI_CN	Differential rise time for clock	T_{DRTCLK}	150	-	0.3UI	ps
	Differential fall time for clock	T_{DFTCLK}	150	-	0.3UI	ps
DP/DN	Differential rise time for data	$T_{DRTDATA}$	150	-	0.3UI	ps
	Differential fall time for data	$T_{DFTDATA}$	150	-	0.3UI	ps

High Speed Mode Timing Characteristics

5.3 Low Power Mode



Bus Turnaround (BTA) from display module to MPU Timing



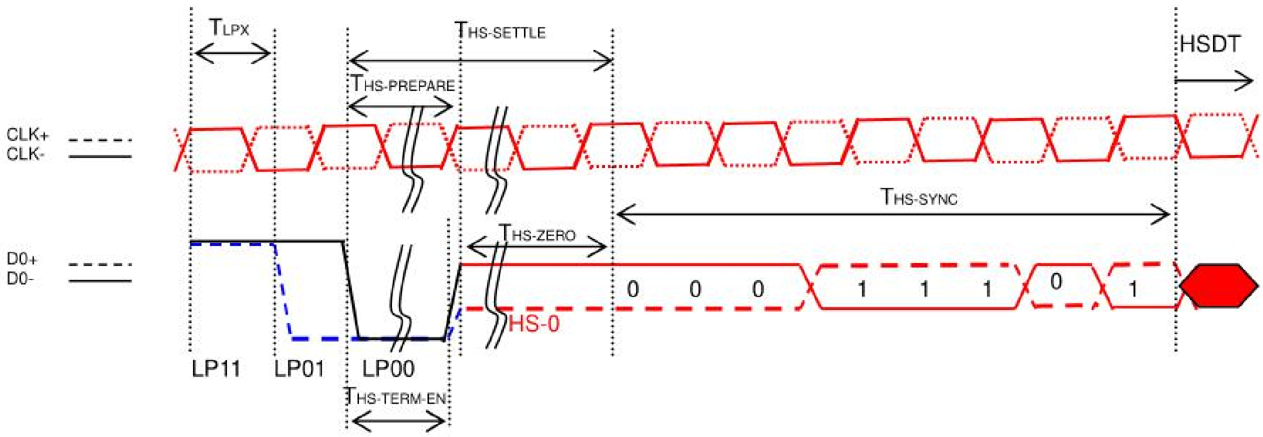
Bus Turnaround (BTA) from MPU to display module Timing

(VSSA=0V, IOVCC=1.65V to 2.0V, VCI=2.3V to 3.3V,T_A = -30 to 70°C)

Signal	Item	Symbol	Spec.			Unit
			Min.	Typ.	Max.	
DSI_D0P/ DSI_D0P	Length of LP-00/LP01/LP10/LP11 Host→ Display module	T_{LPXM}	50	-	-	ns
	Length of LP-00/LP01/LP10/LP11 Display module →Host	T_{LPXD}	50	-	-	ns
	Time-out before the MPU start driver	$T_{TA\text{-}SURE}$	T_{LPXD}	-	2xT_{LPXD}	ns
	Time to drive LP-00 by display module	$T_{TA\text{-}GET}$	5xT_{LPXD}	-	-	ns
	Time to drive LP-00 after turnaround request Host	T_{TAGO}	4xT_{LPXD}	-	-	ns

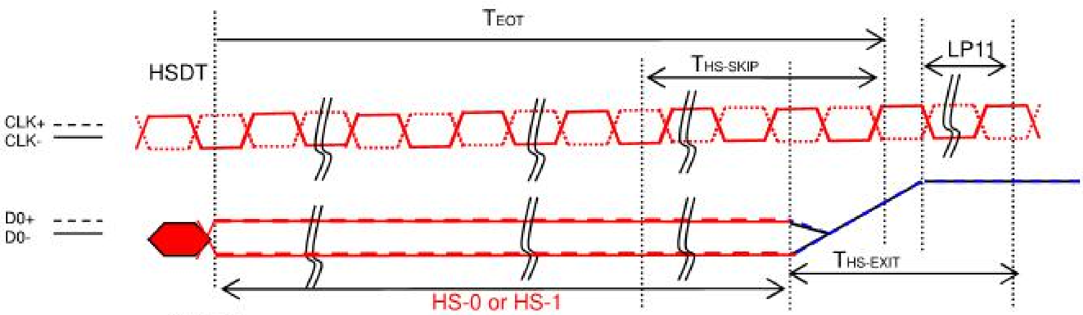
DSI Low Power Mode Characteristics

5.4 DSI Bursts Mode



Signal	Item	Symbol	Spec.			Unit
			Min.	Typ.	Max.	
DSI_D0P/ DSI_D0P	Length of LP-00/LP01/LP10/LP11	T_{LPX}	50	-	-	ns
	Time to Driver LP-00 to prepare for HS transmission	$T_{HS\text{-}PREPARE}$	40+4UI	-	85+6UI	ns
	Time to enable data receiver line termination	$T_{HS\text{-}TERM\text{-}EN}$	-	-	35+4xUI	ns
	Time to drive LP-00 by display module	$T_{TA\text{-}GET}$	5xT_{LPXD}	-	-	ns
	Time to drive LP-00 after turnaround request Host	T_{TAGO}	4xT_{LPXD}	-	-	ns

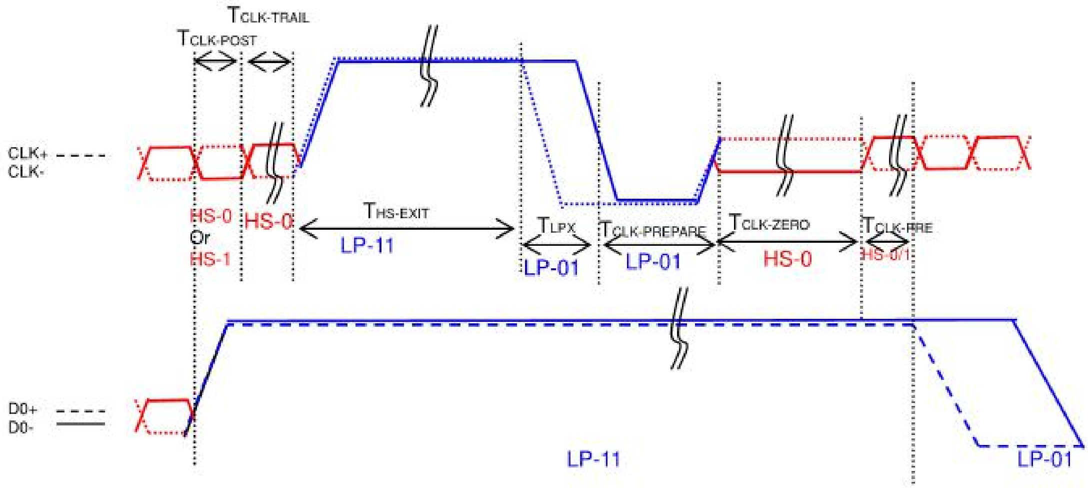
DSI Low Power Mode to/from High Speed Mode Timing



NOTE:
If the last bit is HS-0, the transmitter changes from HS-0 to HS-1
If the last bit is HS-0, the transmitter changes from HS-1 to HS-0

Signal	Item	Symbol	Spec.			Unit
			Min.	Typ.	Max.	
DSI_D0P/ DSI_D0P	Time-Out at Display Module to Ignore Transition Period of EoT	$T_{HS\text{-}SKIP}$	40	-	55+4xUI	ns
	Time to Driver LP-11 after HS Burst	$T_{HS\text{-}EXIT}$	100	-	-	ns

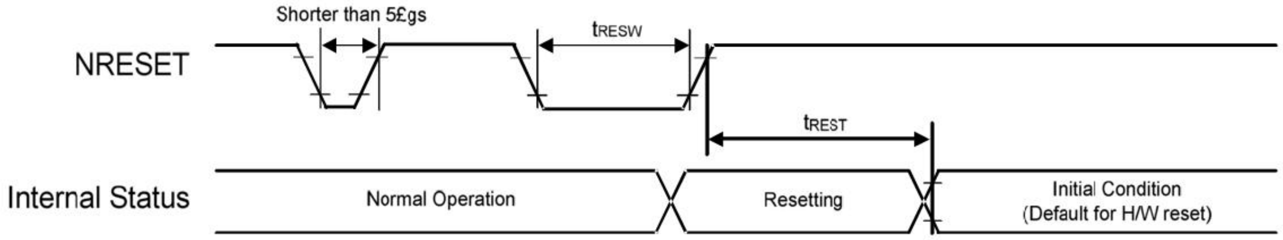
DSI Low Power Mode to High Speed Mode Timing



Signal	Item	Symbol	Spec.			Unit
			Min.	Typ.	Max.	
DSI_CP/ DSI_CN	Time that the MCU shall continue sending HS clock after the last associated Data Lane has transitioned to LP mode	$T_{CLK\text{-}POST}$	60+52xUI	-	-	ns
	Time to drive HS differential state after last payload clock bit of a HS transmission burst	$T_{CLK\text{-}TRAIL}$	60	-	-	ns
	Time to drive LP-11 after HS burst	$T_{HS\text{-}EXIT}$	100	-	-	ns
	Time to drive LP-00 to prepare for HS transmission	$T_{CLK\text{-}PREPARE}$	38	-	95	ns
	Time-out at Clock Lane Display Module to enable HS Termination	$T_{CLK\text{-}TERM\text{-}EN}$	-	-	38	ns
	Minimum lead HS-0 drive period before starting Clock	$T_{CLK\text{-}PREPARE} + T_{CLK\text{-}ZERO}$	300	-	-	ns
	Time that the HS clock shall be driven prior to any associated data Lane beginning the transition from LP to HS mode	$T_{CLK\text{-}PRE}$	8xUI			

Clock Lanes High Speed Mode to/from Low Power Mode Timing

6. Reset Timing



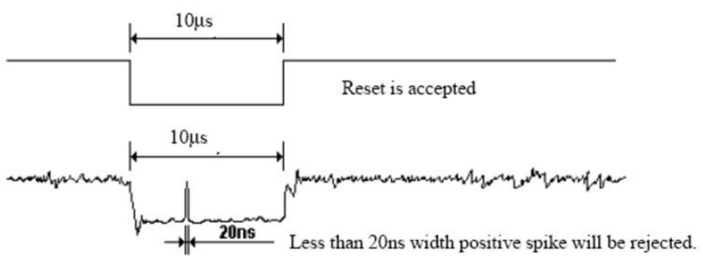
Symbol	Parameter	Related Pins	Spec.			Note	Unit
			Min.	Typ.	Max.		
tRESW	Reset low pulse width(1)	NRESET	10	-	-	-	µs
tREST	Reset complete time(2)	-	15	-	-	When reset applied during SLPIN mode	ms
		-	120	-	-	When reset applied during SLPOUT mode	ms

Notes:

1. The reset cancel includes also required time for loading ID bytes, VCOM setting and other settings from NVM (or similar device) to registers. This loading is done every time when there is HW reset cancel time (tREST) within 5 ms after a rising edge of NRESET .
2. Spike due to an electrostatic discharge on NRESET line does not cause irregular system reset according to the table below:

NRESET Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 10us	Reset
Between 5us and 10us	Reset starts

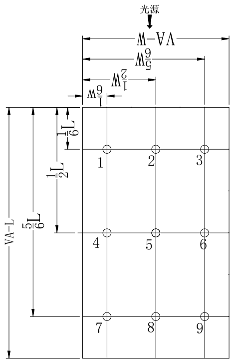
3. During the Resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In –mode.) and then return to Default condition for Hardware Reset.
4. Spike Rejection also applies during a valid reset pulse as shown below:



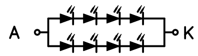
5. It is necessary to wait 15msec after releasing NRESET before sending commands. Also Sleep Out command cannot be sent for 120msec.

7. EXTERNALDIMENSIONS

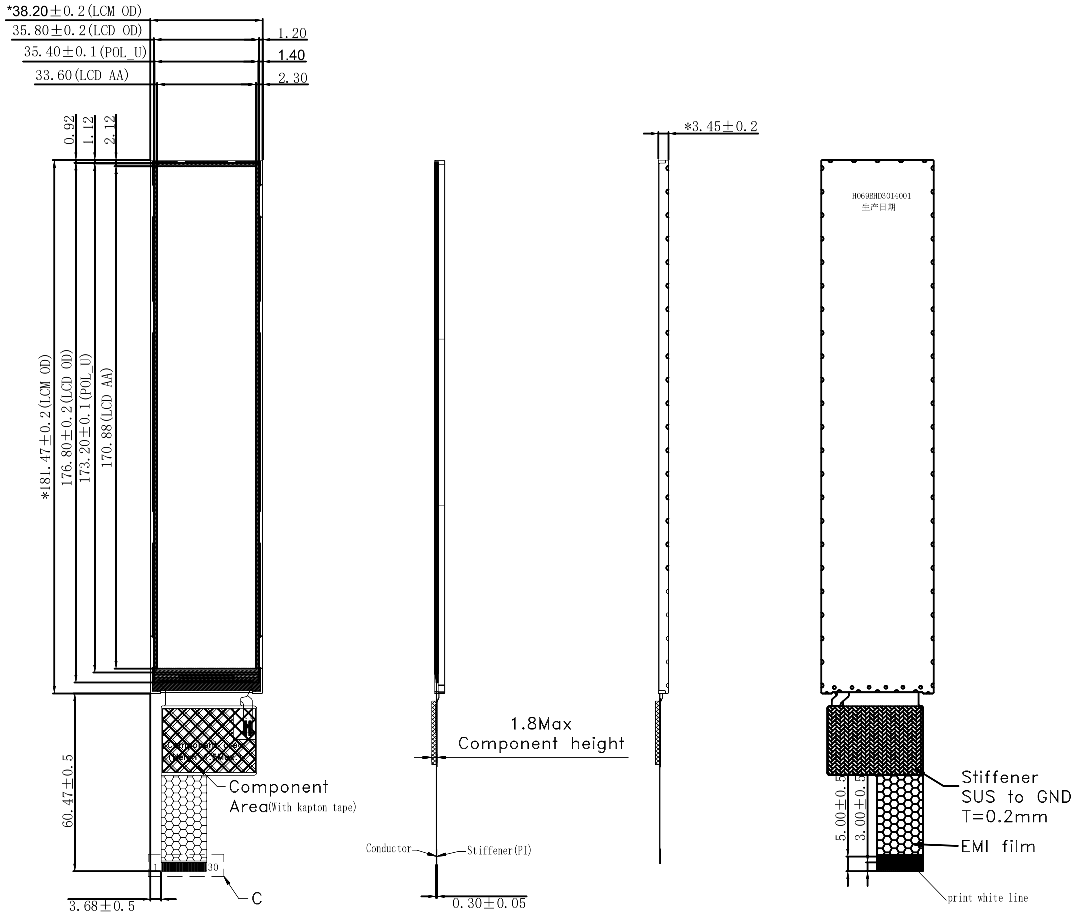
第三视角

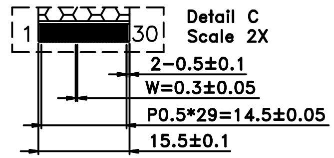


9点均匀性测试点示意图



BACKLIGHT CIRCUIT DIAGRAM:
(If=80mA , 10.8V~12.8V)





LCD PIN

1	GND
2	D3N
3	D3P
4	GND
5	D2N
6	D2P
7	GND
8	CLKN
9	CLKP
10	GND
11	D1N
12	D1P
13	GND
14	D0N
15	D0P
16	GND
17	GND
18	TE
19	RESET
20	GND
21	VCC
22	VCC
23	VCC
24	GND
25	NC
26	NC
27	VLED-
28	VLED-
29	VLED+
30	VLED+

NOTES:
1. Unit:mm, Do not scale drawing.
2. ⚠Modification rev.number
3. *为重要尺寸,( )为参考尺寸,▭ 为CPK>=1.33,"△"modify
4. 未注尺寸公差要求:±0.2mm,Draft angle 1°.
Unmarked angle radius:R=0.2
5. Standard of the dimensions as below:
6. Non-marked dimension refer to CAD file andgeneral tolerance.
7. Requirements on environment protection: 所有材料及工艺符合ROHS.
8. OPTICAL MEASUE INSTRUMENT: BM-7 .
9. ESD:R>=20MΩ Open circuit:Reverse
10. SPECIAL RELIABILITY TEST ITEMS(实验要求):
高温高湿,冷热冲击,高低温储存实验
11. 同一片背光X,Y坐标要求,最大和最少值相差不能超过0.015
12. Flatness requirement :≤L*0.25%mm(平整度要求:≤L*0.25%mm)
13. 胶类需做激活率管控70%(MIN)。

10	遮光胶		1
9	FPC固定胶		1
8	上增光膜		1
7	下增光膜		1
6	扩散膜		1
5	反射膜		1
4	FPC		1
3	LED		8
2	导光板		1
1	胶铁一体		1
NO:	物料名称	材质名称	原材厂	用量

项目		符号	最小值	典型值	最大值	单位	备注
光电参数	亮度	Lv	400	450	---	cd/m²	环境照度:1LUX以下; 环境温度:23±3℃ 环境湿度:50±20% 测试仪器:日本TOPCON BM-7 测试方式:距离500MM,角度1度,9点测试法 均匀性:亮度的最小值除以最大值乘以百分之百 备注:色坐标要求范围,为组装模组后的测试数据
	均匀性	Avg	75	80	---	%	
	色坐标	X	0.300	0.320	0.340		
		Y	0.339	0.359	0.379		
电气参数	正向电压	Vf	10.8	11.8	12.8	V	当长期工作温度环境高于35°时,产品工作电流不能大于额定电流的80%。最小的寿命是指辉度减半的工作时间的总和
	正向电流	If	---	80	---	mA	
	反向电流	Ir	---	---	50	uA	
	功率	W	---	0.94	---	W	
	工作寿命	L	50000	---	---	h	
其它参数	防静电要求		注意:接触产品请带防静电手腕带			V	接触产品时必须带上防静电手腕带
	焊接温度	Ts	200	---	260	℃	焊接时间少于3秒,烙铁少于40W
	工作温度	Topr	-20	---	+70	℃	相对湿度:30%---80%
	贮存温度	Tstg	-30	---	+80	℃	相对湿度:30%---80%

REV 修(订)	DATE 日期	DESCRIPTION 内容	DESIGNED	CHECK	APPROVED
产品类型	LCM	单位	mm	批准	
勋瑞型号	H069BHD30I4001	页次	1/1	审核	
客户型号		视图	3rd	设计	

深圳市勋瑞光电科技有限公司
Xunrui photoelectric technology (shenzhen) CO.,LTD.

8. INTERFACE SIGNAL

Pin No.	Symbol	Description
1	GND	Power ground
2	D3N	MIPI-DSI data lane 3 negtive input pin
3	D3P	MIPI-DSI data lane 3 posivtve input pin
4	GND	Power ground
5	D2N	MIPI-DSI data lane 2 negtive input pin
6	D2P	MIPI-DSI data lane 2 posivtve input pin
7	GND	Power ground
8	CLKN	MIPI-DSI data lane CLKN negtive input pin
9	CLKP	MIPI-DSI data lane CLKP posivtve input pin
10	GND	Power ground
11	D1N	MIPI-DSI data lane 1 negtive input pin
12	D1P	MIPI-DSI data lane 1 posivtve input pin
13	GND	Power ground
14	D0N	MIPI-DSI data lane 0 negtive input pin
15	D0P	MIPI-DSI data lane 0 posivtve input pin
16	GND	Power ground
17	GND	Power ground
18	TE	Frame synchronization output signal pin.
19	RESET	Reset signal(low active)
20	GND	Power ground
21-23	VCC/VCI	Power supply for the analog power
24	GND	Power ground
25-26	NC	NC
27-28	VLED-	LED backlight cathode
29-30	VLED+	LED backlight anode

9. ELECTRO-OPTICAL CHARACTERISTICS

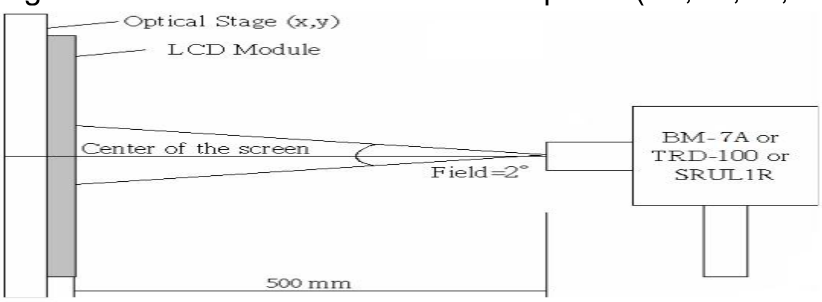
Test conditions, VF=11.8V,IF=80MA, room temperature 25°

Item		Symbol	Condition	Min	Typ	Max	Unit	Note
Transmittance (w/o polarizer)		T%	θ=0° Ta=25℃	3.6	4.1	-	%	1
Contrast ratio		Cr		900	1200	-	-	3
Response time		Ton+Toff		-	-	35	ms	4
Surface Luminance		LV		400	450	-	cd/㎡	2
Viewing angle range	H or Ver	Θ_{x+}	Center CR>10	80	85	-	deg	5
		Θ_{x-}		80	85	-	deg	
		Θ_{Y+}		80	85	-	deg	
		Θ_{Y-}		80	85	-	deg	
CIE(x,y) chromaticity	Red	x	Viewing normal angle Θx=θy=0° Ta=25℃	0.570	0.620	0.670	-	6
		y		0.300	0.350	0.400	-	
	Green	x		0.250	0.300	0.350	-	
		y		0.590	0.640	0.690	-	
	Blue	x		0.070	0.120	0.170	-	
		y		0.050	0.100	0.150	-	
	White	x		0.240	0.290	0.340	-	
		y		0.300	0.350	0.400	-	

Note 1.Ambient condition：25℃±2℃，60±10%RH，under 10 Lunx in the darkroom。

Note 2.Measure device：BM-7A (TOPCON)，viewing cone=2°

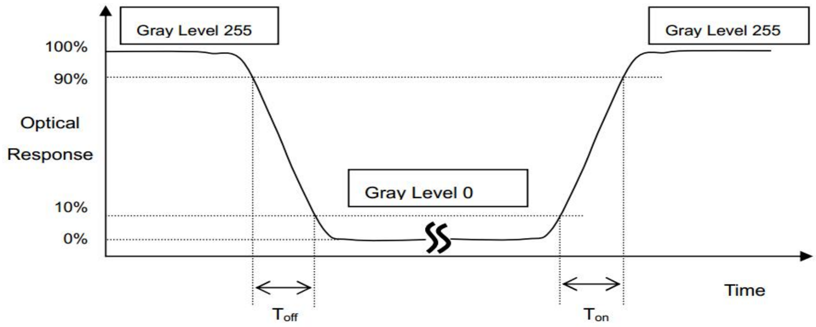
Lv = Average Surface Luminance with all white pixels (P1,P2,P3,P4,P5)



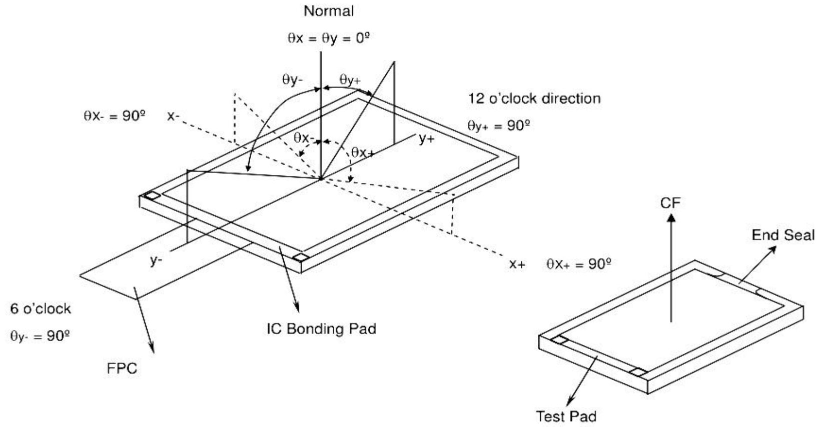
Note 3. Definition of Contrast Ratio：

$$CR = \frac{\text{Average Surface Luminance with all white pixels (P1,P2,P3,P4,P5)}}{\text{Average Surface Luminance with all black pixels (P1,P2,P3,P4,P5)}}$$

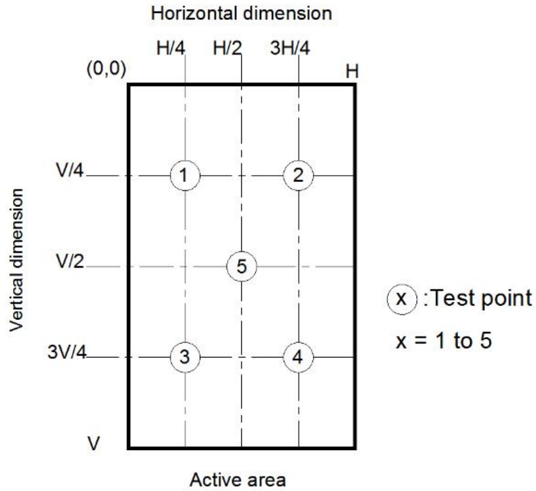
Note 4. Definition of Response Time (Ton, Toff), The response time is defined as the time interval between the 10% and 90% amplitudes.



Note 5. Definition of view angle(θ，ψ)：



Note 6. 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 20 minutes in a windless room. Measouring method for Contrast ratio, surface luminance, Luminance uniformity,CIE(x,y) chromaticity.



Light spot size ∅=7mm, 500mm distance from the LCD surface to detector lens measurement instrument is TOPCON's luminance meter BM-7

10. RELIABILITY TEST

Reliability test conditions (Polarizer characteristics null)

No.	Items	Condition	Inspection after test
1	High Temperature Storage	T = 85℃±5℃ for 240 hr	Inspection after 4 hours storage at room temperature, the sample shall be free from defects: 1.Air bubble in the LCD 2.Sealleak; 3.Non-display; 4.missing segments; 5.Glass crack; 6.Current Idd is twice higher than initial value.
2	Low Temperature Storage	T = -40℃±5℃ for 240 hr	
3	High Temperature Operating	T = 80℃±5℃ for 240 hr	
4	Low Temperature Operating	T = -30℃±5℃ for 240 hr (But no condensation of dew)	
5	High Temp. and High Humidity Operating	T = 60℃±5℃ /90% for 240hr (But no condensation dew)	
6	Thermal Shock	-30℃ → +25℃ → 80℃ → +25℃ (30mins) (5mins) (30mins) (5mins) 20 Cycle	
7	Dropping test (non-operation)	Drop to the ground from 76cm height, one time, every side of carton. (Packing condition)	
8	Packing Vibration (non-operation)	Frequency：10Hz~55Hz~10Hz Amplitude：1.0mm, X，Y，Z direction for total 3hours (Packing condition)	
9	ESD	Voltage:±6KV R: 330Ω C: 150pF Air discharge, 10time	

Note:

(1)The test samples should be applied to only one test item.

(2)Sample size for each test item is 5~10pcs.

(3)In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.
Using ionizer(an antistatic blower) is recommended at working area in order to reduce electro-static voltage.
When removing protection film from LCM panel, peel off the tag slowly (recommended more than one second) while blowing with ionizer toward the peeling face to minimize ESD which may damage electrical circuit.

(4) Please use automatic switch testing mode when test operating mode.

11. INSPECTION CRITERION

The LCM inspection standard shall be subject to the quality agreement signed by both parties!!!

12. PRECAUTIONS FOR USE OF LCD MODULES

1. Handling Precautions

(1) The display panel is made of glass and polarizer. As glass is fragile. It tends to become or chipped during handling especially on the edges. Please avoid dropping or jarring. Do not subject it to a mechanical shock by dropping it or impact.

(2) If the display panel is damaged and the liquid crystal substance leaks out, be sure not to get any in your mouth. If the substance contacts your skin or clothes, wash it off using soap and water.

(3) Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary. Do not touch the display with bare hands. This will stain the display area and degraded insulation between terminals (some cosmetics are determined to the polarizer).

(4) The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully. Do not touch, push or rub the exposed polarizers with anything harder than an HB pencil lead (glass, tweezers, etc.). Do not put or attach anything on the display area to avoid leaving marks on. Condensation on the surface and contact with terminals due to cold will damage, stain or dirty the polarizer. After products are tested at low temperature they must be warmed up in a container before coming is contacting with room temperature air.

(5) If the display surface becomes contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If it is heavily contaminated, moisten cloth with one of the following solvents

- Isopropyl alcohol
- Ethyl alcohol

Do not scrub hard to avoid damaging the display surface.

(6) Solvents other than those above-mentioned may damage the polarizer. Especially, do not use the following.

- Water
- Ketone
- Aromatic solvents

Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or color fading. Avoid contacting oil and fats.

(7) Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.

(8) Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.

(9) Do not attempt to disassemble or process the LCD module.

(10) NC terminal should be open. Do not connect anything.

(11) If the logic circuit power is off, do not apply the input signals.

(12) Electro-Static Discharge Control，Since this module uses a CMOS LSI, the same careful attention should be paid to electrostatic discharge as for an ordinary CMOS IC. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

- Before remove LCM from its packing case or incorporating it into a set, be sure the module and your body have the same electric potential. Be sure to ground the body when handling the LCD modules.
- Tools required for assembling, such as soldering irons, must be properly grounded. Make certain the AC power source for the soldering iron does not leak. When using an electric screwdriver to attach LCM, the screwdriver should be of ground potentiality to minimize as much as possible any transmission of electromagnetic waves produced sparks coming from the commutator of the motor.
- To reduce the amount of static electricity generated, do not conduct assembling and other work under dry conditions. To reduce the generation of static electricity be careful that the air in the work is not too dried. A relative humidity of 50%-60% is recommended. As far as possible make the electric potential of your work clothes and that of the work bench the ground potential
- The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated

(13)Since LCM has been assembled and adjusted with a high degree of precision, avoid applying excessive shocks to the module or making any alterations or modifications to it.

- Do not alter, modify or change the shape of the tab on the metal frame.
- Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
- Do not damage or modify the pattern writing on the printed circuit board.
- Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector.
- Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
- Do not drop, bend or twist LCM.

2. Storage precautions

2.1 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

2.2 The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

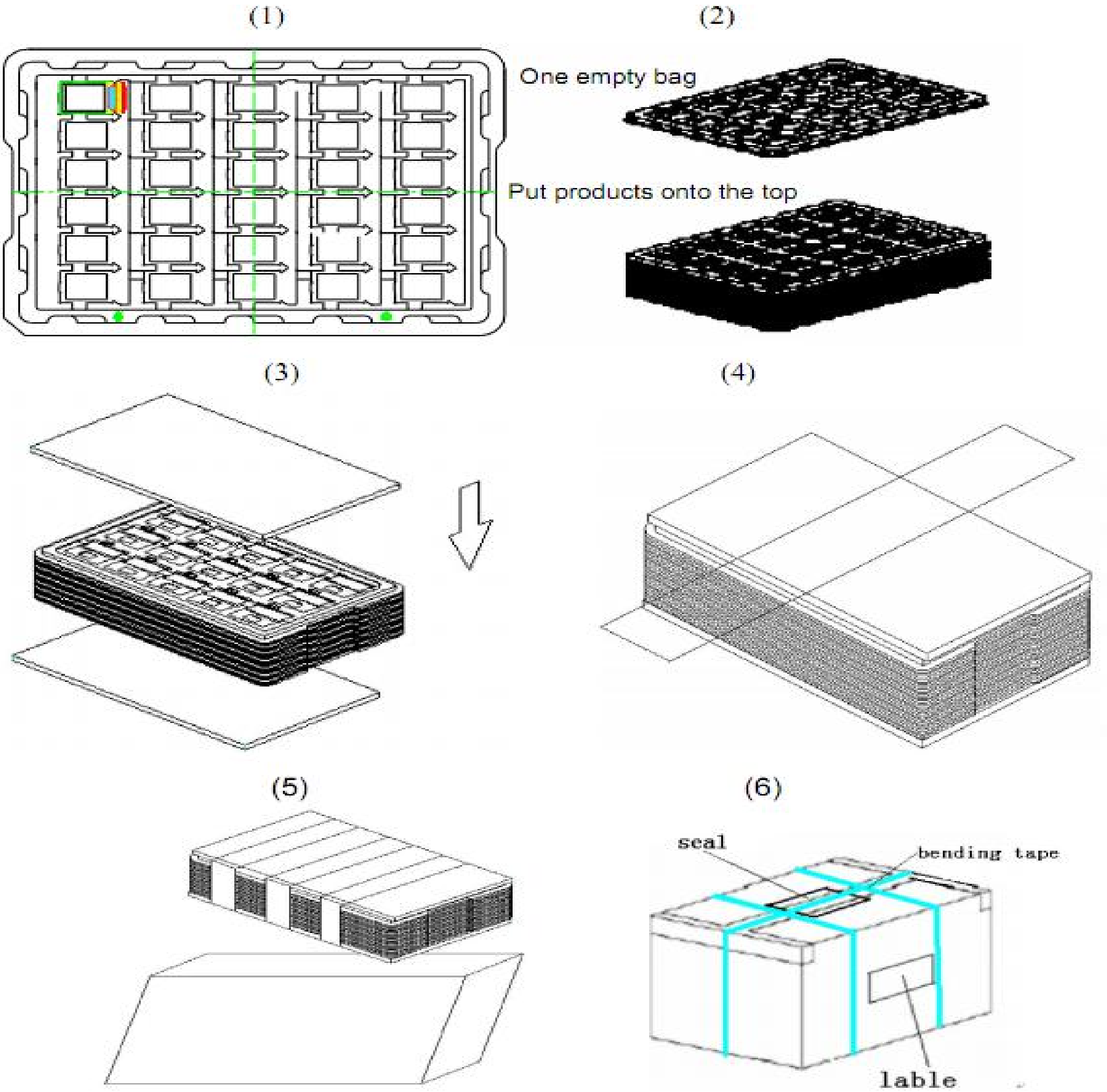
Temperature : 0℃ ～ 40℃ Relatively humidity: ≤80%

2.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

2.4 The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.

13. Packing

Packing Method



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