Specification
For
Approval

■ Preliminary specification
□ Final specification

Title	12.1SVGA TN TFT-LCD (Module)

Buyer	
Model	

Supplier	Cheng Du BOE Optoelectronics Technology CO., LTD
Model	BA121S01-100

TITLE/SIGNATURE	DATE
_____	_____
_____	_____
_____	_____
_____	_____

Please return one copy confirmation with signature and your comments

ITEM	SIGNATURE/DATE
Approved	_____
Reviewed	_____
Reviewed	_____
Prepared	_____

BOE CHENG DU
Optoelectronics Technology CO., LTD

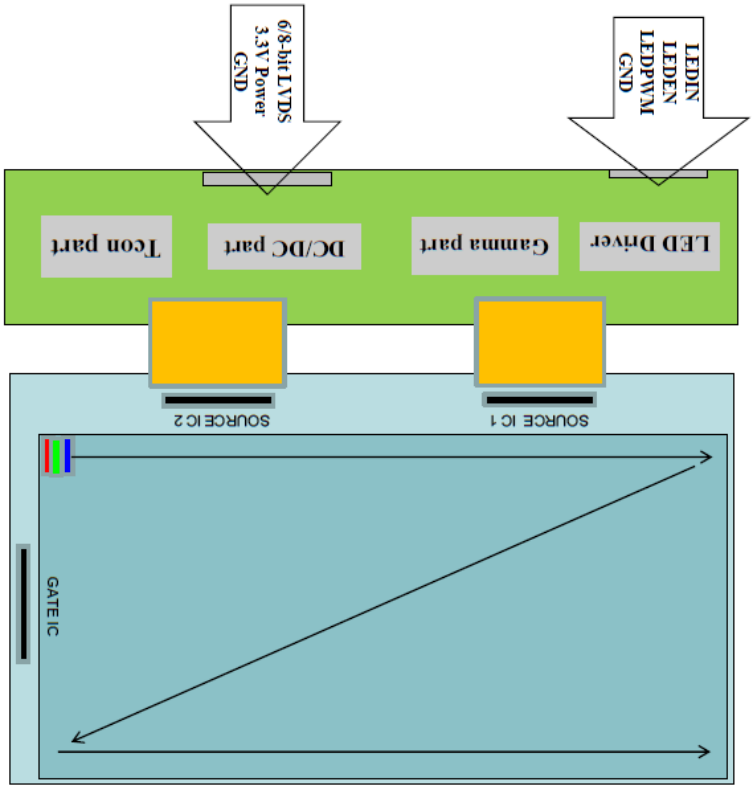
CONTENT LIST

Record of Revisions				
Revision	Date	Page	Description	Released by
Pre.0	2014.07.02		Initial Released	Huangli
Pre.1	2014.07.07	P9 P14 P16 P18 P21	1. Add Backlight Driving Conditions 2. Add Luminance & Uniformity 3. Figure3. Uniformity Measurement Locations change 4. Figure 6. BLU drawing change 5. Add Packing method	Huangli
Pre.2	2014.07.10	P9 P13 P14	1. Add LED life time 2. Normal mode Power Consumption 3. Add BLU Power Connector 4. Add PWM frequency 5. Viewing angle change	Huangli

1.0 GENERAL DESCRIPTION

1.1 Introduction

BA121S01-100 is a color active matrix TFT-LCD Panel using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This model is composed of a TFT-LCD Panel, a driving circuit and a back light system. It is a transmissive type display operating in the normal white. This TFT-LCD has a 12.1 inch diagonally measured active area with SVGA resolutions (800 horizontal by 600 vertical pixel array). Each pixel is divided into Red, Green, Blue dots which are arranged in vertical stripe and this panel can display 16.7M colors.



1.2 Features

- 0.5t Glass (Single)
- Thin and light weight
- High luminance and contrast ratio, low reflection and wide viewing angle
- Module Design
- RoHS Compliant

1.3 Application

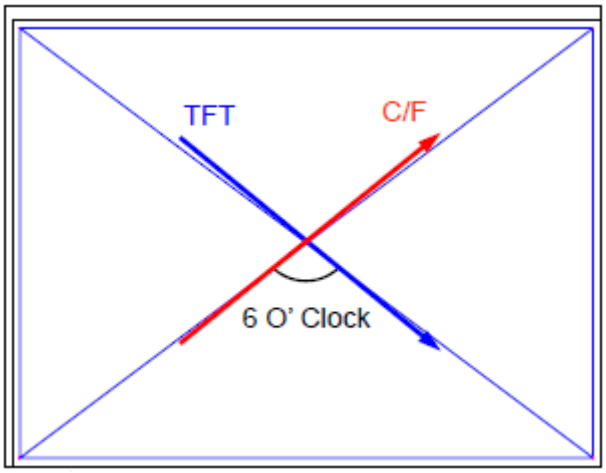
- Application

1.4 General Specifications (H: horizontal length, V: vertical length**)**

Parameter	Specification	Unit	Remark
Active Area	246.0(H) × 184.5(V)	mm	
Number of Pixels	800(H) RGB × 600(V)	pixels	
Pixel Pitch	0.3075(H) × 0.3075(V)	mm	
Pixel Arrangement	RGB Vertical stripe		
Display Colors	16.7 M	colors	
Color Gamut	55%(typ.)		
Display Mode	Normally White, Transmissive mode		
Dimensional Outline	279±0.5(H) × 209±0.5(V) × 9±0.3(D)	mm	Module
Viewing Direction (Human Eye)	12 O'clock		Note 1,2
D-IC	Source: HX8245-C01 / Gate: HX8677-G T-con: HX8841		
Weight	TBD	gram	

Note:

1. The biggest CR is 6 O'clock, the worst gray inversion is 6 O'clock;
2. The TFT and CF Rubbing Direction;



2.0 ELECTRICAL SPECIFICATION

2.1 Absolute Maximum Ratings

The absolute maximum ratings are list on table as follows. When used out of the absolute maximum ratings, the LSI may be permanently damaged. Using the LSI within the following electrical characteristics limit is strongly recommended for normal operation. If these electrical characteristic conditions are exceeded during normal operation, the LSI will malfunction and cause poor reliability.

Source IC--- HX8245-C

Parameter	Symbol	Value	Unit
Power Supply voltage	AVDD	14.85	V
Driver supply voltage	VDD	3.96	V
Input voltage	Vr1~Vr18	AVDD+0.3	V
	Others	0.6AVDD	V
Operating temperature range	TOPR	-30~85	℃
Storage Temperature range	TSTG	-55~125	℃

Gate IC--- HX8677-G

Item	Symbol	Value	Unit
Power supply voltage1	VDD	7.0	V
Power supply voltage1	VGH	42.0	V
Power supply voltage3	VGH-42	VGH-42	V
Power supply voltage4	VGH-VGL	42.0	V
Operating temperature range	TOPR	-40~95	℃
Storage Temperature range	TSTG	-55~125	℃

Tcon IC---HX8841

Item	Symbol	Value	Unit
Supply voltage	VDD	3.6	V
CMOS/TTL input voltage	Vin	3.6	V
CMOS/TTL input voltage	Vout	3.6	V
LVDS receiver input voltage	Vin	3.6	V
Operating temperature range	TOPR	-40~95	℃
Storage Temperature range	TSTG	-55~125	℃

Note:

If the absolute maximum rating of even is one of the above parameters is exceeded even momentarily, the quality of the product may be degraded. Absolute maximum ratings, therefore, specify the values exceeding which the product may be physically damaged. Be sure to use the product within the range of the absolute maximum ratings.

2.2 DC Characteristics

Source IC--- HX8245-C

(For the analog circuit)

Parameter	Symbol	Spec. Min.	Spec. Typ.	Spec. Max.	Unit	Conditions
Supply Voltage	AVDD	6.5	8.4	13.5	V	For the analog circuit power
Input Level of $V_{\gamma1}$ ~ $V_{\gamma7}$	V_{REF}	0.4AVDD	-	AVDD-0.1	V	Gamma correction voltage
Input Level of $V_{\gamma8}$ ~ $V_{\gamma14}$	V_{REF}	0.1	-	0.6AVDD	V	Gamma correction voltage
Output Voltage Deviation	V_{OD}	-	-	±20	mV	-
Voltage Output Offset between Chips	V_{OC}	-	-	±15	mV	-
Dynamic Range of Output	V_{DR}	0.1	-	AVDD-0.1	V	OUT1~OUT1200/1026
Sinking Current of Outputs	I_{OL}	-	|-80|	-	μA	OUT1~OUT1200/1026; AVDD=10V Vo=0.1V v.s 1.0V
Driving Current of Outputs	I_{OH}	-	|80|	-	μA	OUT1~OUT1200/1026; AVDD=10V Vo=9.9V v.s 9.0V
Impedance of Gamma Correction	R_I	0.8Rn	1.1Rn	1.4Rn	Ω	Rn: Internal gamma resistor
Analog Stand-by Current	I_{SC}	-	3.7	-	mA	No load, AVDD=8.4V and all operating is stopped
Analog Operating Current	I_{OC}	-	19	-	mA	F_{CLK}=40MHz F_{LD}=50KHz AVDD=8.4V $V_{\gamma1}$=8V $V_{\gamma14}$=0.4V in black pattern

Table 6. 3 DC electrical characteristics of analog circuit

Gate IC--- HX8677-G

Parameter	Symbol	Applicable pin	Condition	Spec. Min.	Spec. Typ.	Spec. Max.	Unit
Input H voltage	V_{IH}	All input pins	-	0.7VDD	-	VDD	V
Input L voltage	V_{IL}	All input pins	-	VSS	-	0.3VDD	
Output H voltage	V_{OH}	STV1,2	I_{OH}=40μA	VDD-0.4	-	VDD	
Output L voltage	V_{OL}	STV1,2	I_{OL}=40μA	VSS	-	VSS+0.4	
Output H resistance	R_{OH}	OUT1 ~ OUT600	V_{OUT}= VGH-0.5V	-	-	1000	Ω
Output L resistance	R_{OL}	OUT1 ~ OUT600	V_{OUT}= VGL+0.5V	-	-	1000	Ω
Input leakage current	I_{IN}	Note(1)	-	-1.0	-	+1.0	μA
Pull high resistance1	R_{PU}	/XAO	V_{IN}=VSS	40	-	200	kΩ
Pull high resistance2	R_{PU}	Note(2)	VDD=3.3V, T_A=25℃	70	200	400	kΩ
Pull low resistance	R_{PD}	Note(3)	VDD=3.3V, T_A=25℃	70	200	400	kΩ
Power off reset threshold voltage	V_{POFF}	-	-	-	1.6	-	V
VGH Power consumption	I_{VGH}	VGH	Note(4)	-	-	200	μA
VDD Power consumption	I_{VDD}	VDD		-	-	100	

Note: (1) All input except /XAO, MODE1, MODE2, SEG1, SEG2, EVEN.
(2) MODE1, MODE2.
(3) SEG1, SEG2, EVEN.
(4) Power consumption in the following condition:
Output no load, VGH=20V, VGL=-8V, VDD=3.0V, V_{IH}=VDD, V_{IL}=VSS, F_{CPV}=50KHz,
SEG1=SEG2=EVEN=OE1=OE2=OE3=V_{IL}; MODE1=MODE2=/XAO=V_{IH}.

Tcon IC---HX8841

For VDD33 = 3.3 V operation

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_{DD}	Supply Current	F=54MHz, VDD33=3.3V, PI=13KΩ,RL=100Ω pixel checker pattern	-	75	-	mA
CMOS/TTL DC SPECIFICATIONS						
V_{IH}	High Level Input Voltage	-	0.7VDD33	-	VDD33	V
V_{IL}	Low Level Input Voltage	-	VSS	-	0.3VDD33	V
V_{OH}	High Level Output Voltage	-	0.8 VDD33	-	VDD33	V
V_{OL}	Low Level Output Voltage	-	VSS	-	0.2 VDD33	V
I_{IN}	Input Current	-	-10	-	10	μA
LVDS DC SPECIFICATIONS						
V_{TH}	Differential Input High Threshold	Vlvcm=1.2V	-	-	+100	mV
V_{TL}	Differential Input Low Threshold		-100	-	-	mV
V_{IC}	LVDS Common mode voltage	-	0.7	-	1.6	V
V_{ID}	LVDS swing voltage	-	±100	-	±600	mV
I_{IN}	Input Current	V_{IN}=+2.4V/0V	-	-	10	μA
RSDS DC SPECIFICATIONS						
Vod	Output differential voltage	RL=100Ω PI=13KΩ (Temp=25℃)	-	TBD	-	mV
Vos	Output offset voltage		1.0	1.2	1.4	V
Ios	Output current	output shorted to GND	-	-3.5	-5.0	mA

2.3 Backlight Driving Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Remark
LED Forward Voltage	V_F		27	28.8	V	-
LED Forward Current	I_F		160		mA	-
LED Power Consumption	P_{LED}		4.32	4.61	W	Note 1
LED Life-Time	N/A		(50,000)		Hrs	IF = 80mA Note 2

Notes:

1. Calculator Value for reference ILED×VLED×LED Quantity = PLED
2. The LED Life-time define as the estimated time to 50% degradation of initial luminous.

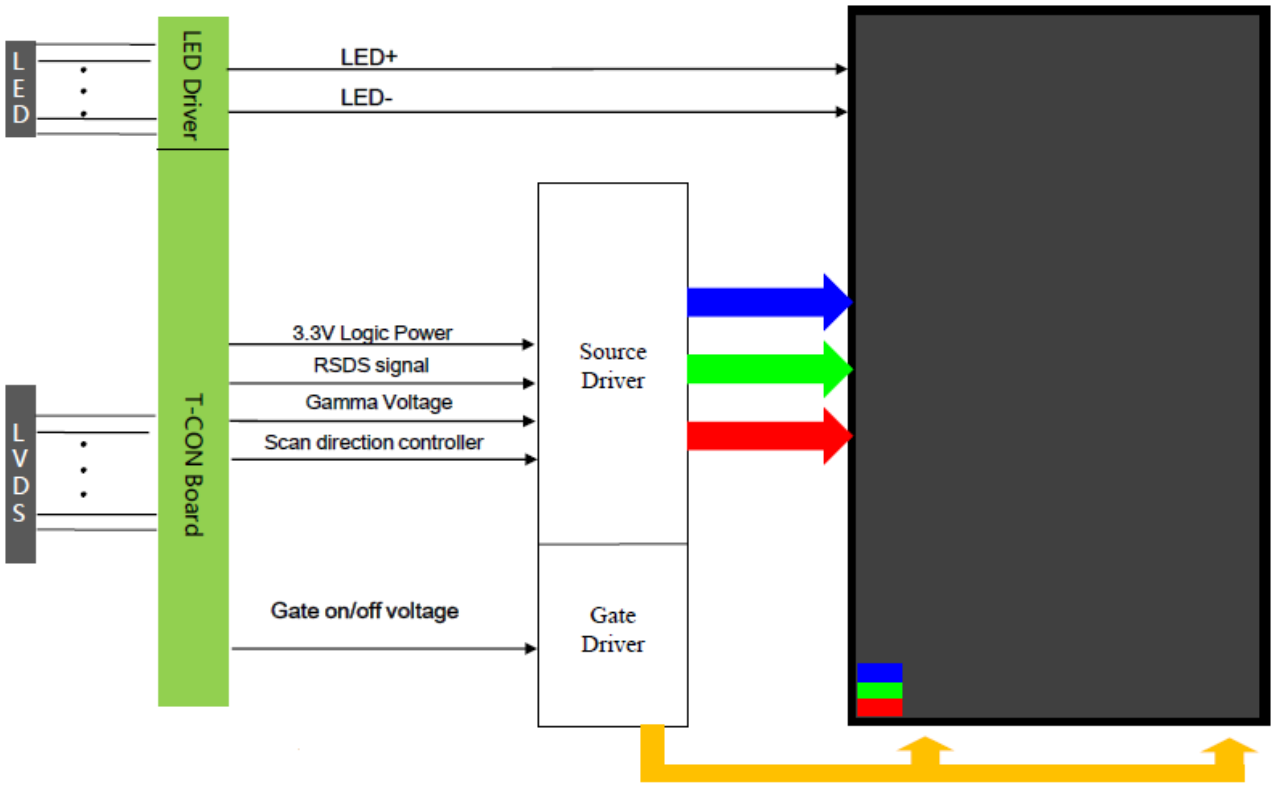
2.4 Power Consumption

Parameter	Symbol	Typ	Max	Unit	Remark
Normal mode	I_{VDDI}+ I_{VCI}	6.7		W	Note

Note:

Frame rate=60HZ, Typ. Pattern White pattern, worst case pattern 1x1 checker 25℃.

2.5 Block Diagram



2.6 Power ON/OFF Sequence

Power on Sequence

Power up sequence

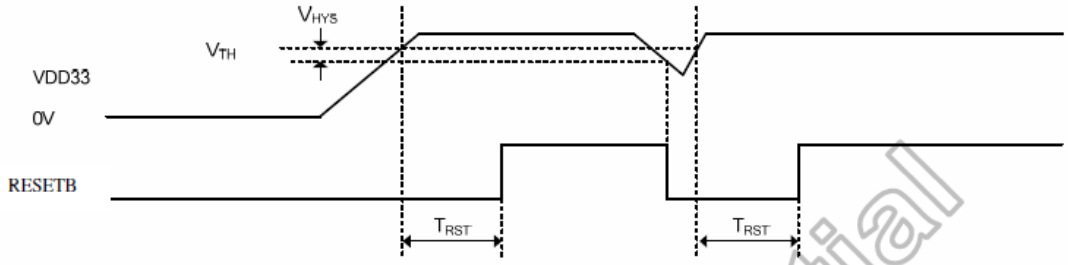
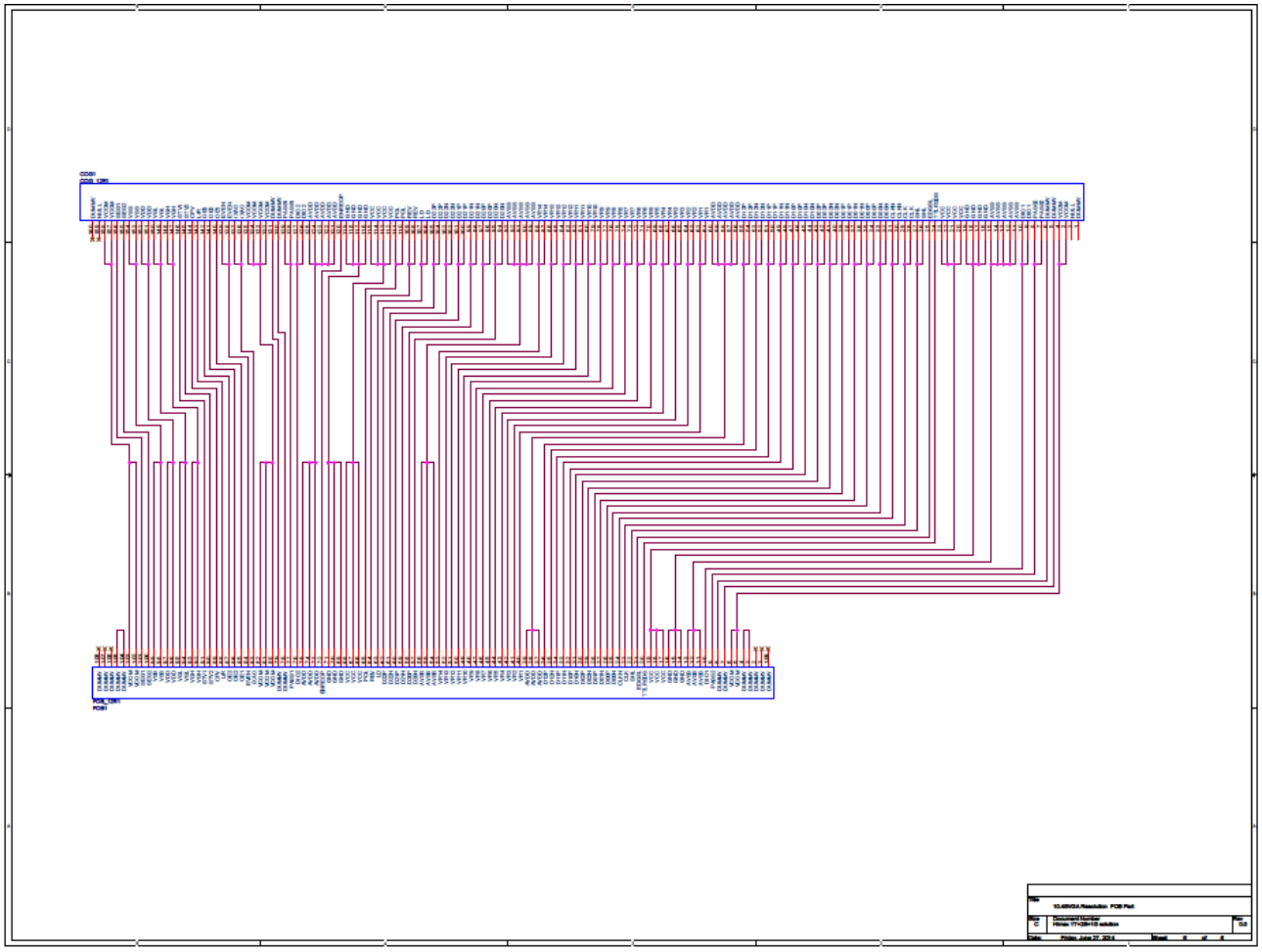


Figure 0.3: Power up sequence

Symbol	Parameter	Condition	Spec.			Unit
			Min.	Typ.	Max.	
V_{TH}	Reset threshold voltage	-	2	2.1	2.2	V
V_{HYS}	Hysteresis voltage	-	-	200	-	mV
T_{RST}	Reset duration @R=10KΩ, C=1μF	-	10	-	-	ms

2.7 FPC Schematic



3.0 SIGNAL TIMING SPECIFICATION

Ideal strobe position for LVDS input

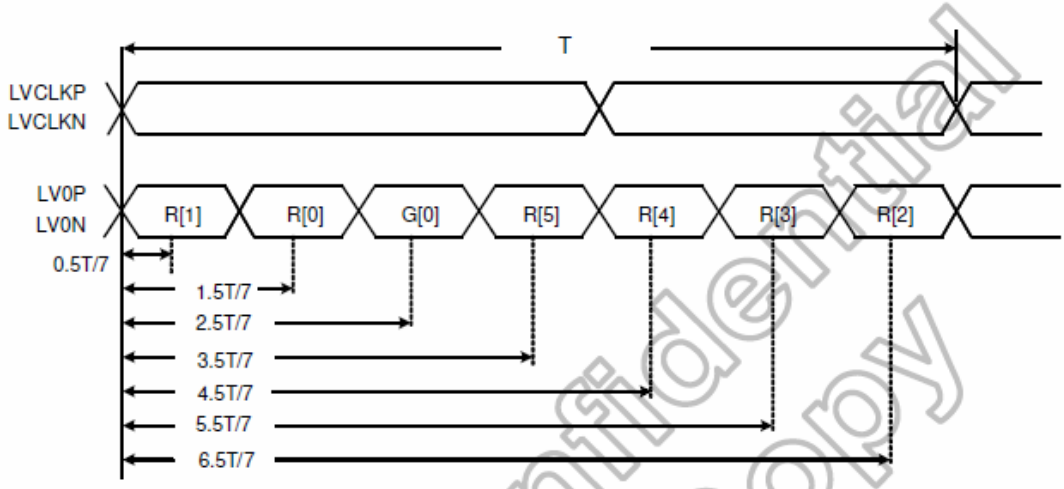


Figure 6.1: LVDS input data ideal strobe position

LVDS input data mapping

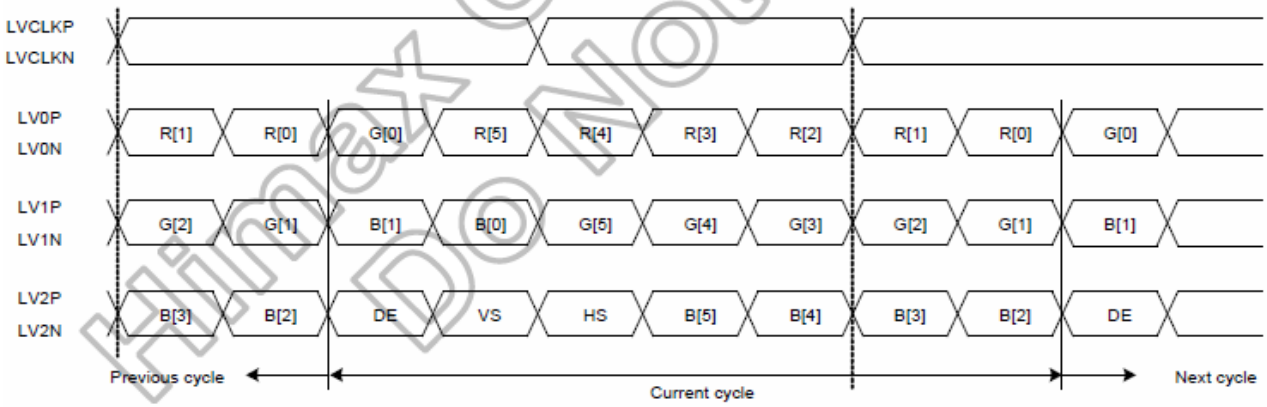


Figure 6.2: LVDS input data mapping

4.0 INTERFACE CONNECTION

20Pin data connector

Input Signal Interface		
Pin No.	**Symbol**	**Description**
1	VDD	Power Supply, 3.3V (typical)
2	VDD	Power Supply, 3.3V (typical)
3	GND	Ground
4	SEL68	6/ 8bits LVDS data input selection [H: 8bits L/NC: 6bit]
5	RIN0-	LVDS receiver signal channel 0
6	RIN0+	LVDS Differential Data Input (R0, R1, R2, R3, R4, R5, G0)
7	GND	Ground
8	RIN1-	LVDS receiver signal channel 1
9	RIN1+	LVDS Differential Data Input (G1, G2, G3, G4, G5, B0, B1)
10	GND	Ground
11	RIN2-	LVDS receiver signal channel 2
12	RIN2+	LVDS Differential Data Input (B2, B3, B4, B5, HS, VS, DE)
13	GND	Ground
14	CLKIN-	LVDS receiver signal clock
15	CLKIN+	
16	GND	Ground
17	RIN3-	LVDS receiver signal channel 3, NC for 6 bit LVDS Input
18	RIN3+	LVDS Differential Data Input (R6, R7, G6, G7, B6, B7, RSV)
19	RSV	Reverse Scan Function [H: Enable; L/NC: Disable]
20	NC/GND	Reserved for AUO internal test. Please treat it as NC.

5Pin B/L power connector

Pin No.	symbol	description
Pin1	VCC	12V input
Pin2	GND	GND
Pin3	On/OFF	5V-ON,0V-OFF
Pin4	Dimming	PWM
Pin5	NA	

Remark: PWM frequency 120~1Khz

5.0 OPTICAL SPECIFICATIONS

5.1 Overview

The test of Optical specifications shall be measured in a dark room(ambient luminance≤ 1 lux and temperature = 25±2℃) with the equipment of Luminance meter system (Topcon SR-UL1R and Westar TRD-100A) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0°.The center of the measuring spot on the Display surface shall stay fixed.

The backlight should be operating for 30 minutes prior to measurement.

5.2 Optical Specifications

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Threshold Voltage		Vsat		2.0	2.2	2.4	V	Fig.1
		Vth		1.1	1.3	1.5	V	
Viewing Angle	Horizontal	Θ3	CR>10	70	80		°	Note 1
		Θ9		70	80		°	
	Vertical	Θ12		55	65		°	
		Θ6		65	75		°	
Contrast Ratio		CR	Θ= 0°	600	800			Note 2
Luminance		cd/m2	Θ= 0°	300	400		nit	Note 3
Uniformity		%	Θ= 0°	75	80			Note 4
NTSC		%	Θ= 0°		55%			
Reproduction Of color	Red	Rx	Θ= 0°		TBD			Note 5 * Module
		Ry			TBD			
	Green	Gx			TBD			
		Gy			TBD			
	Blue	Bx			TBD			
		By			TBD			
White		Wx	Θ= 0°		TBD			
		Wy			TBD			
Response Time		Tr+Tf	Θ= 0°		30		ms	Note 6

Note:

1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIG.2).
2. Contrast measurements shall be made at viewing angle of Θ= 0° and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state. (See FIG. 2) Luminance Contrast Ratio (CR) is defined mathematically.

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Surface luminance is the center point across the LCD surface 50cm from the surface with all pixels displaying white. This measurement shall be taken at the locations shown in FIG. 2.

4. Uniformity measurement shall be taken at the locations shown in FIG. 2&3, for a total of the measurements per display, measure surface luminance of these nine points across the LCD surface 50cm from the surface with all pixels displaying white.

$$\text{Uniformity} = \frac{\text{Min Luminance of 9 points}}{\text{Max Luminance of 9 points}} \times 100\%$$

5. The color chromaticity coordinates specified in Table1 shall be calculated from The spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the Module.

6. The electro-optical response time measurements shall be made as FIG.4 by switching the "data" input signal ON and OFF.

The times needed for the luminance to change from 10% to 90% is Tf and 90% to 10% is Tr.

Figure 1. The definition of Vth & Vsat

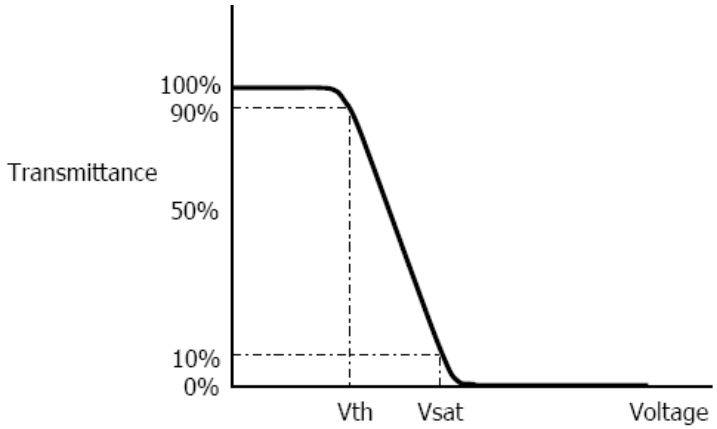


Figure 2. Measurement Set Up

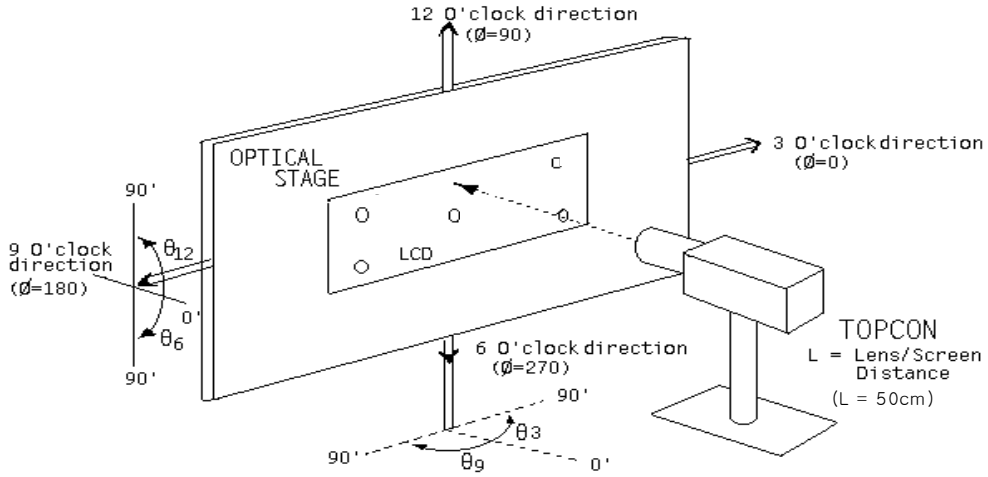


Figure 3. Uniformity Measurement Locations

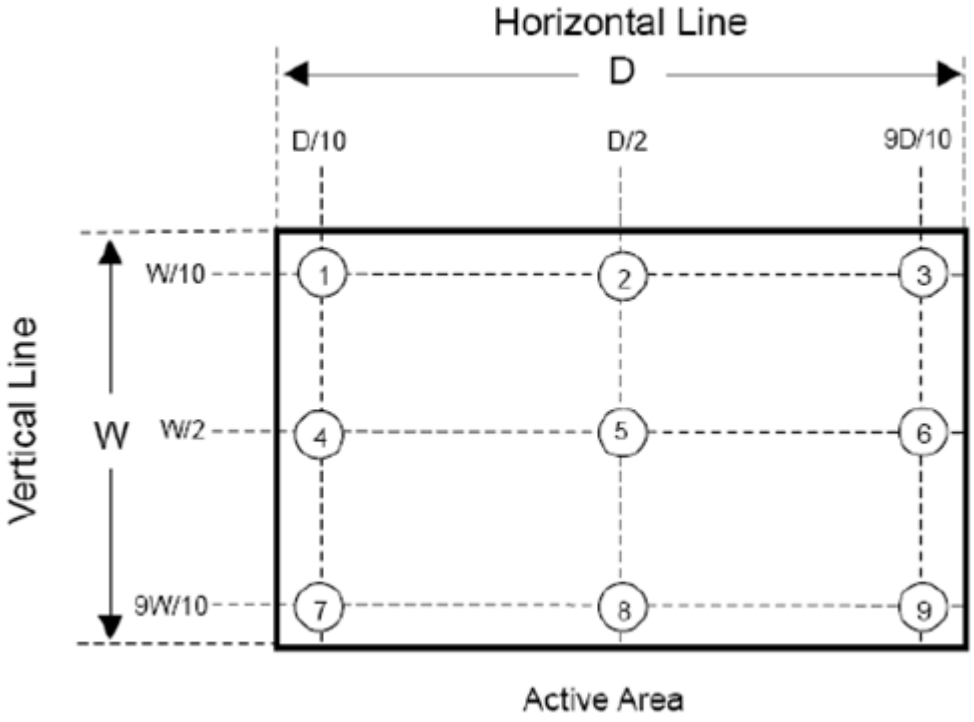
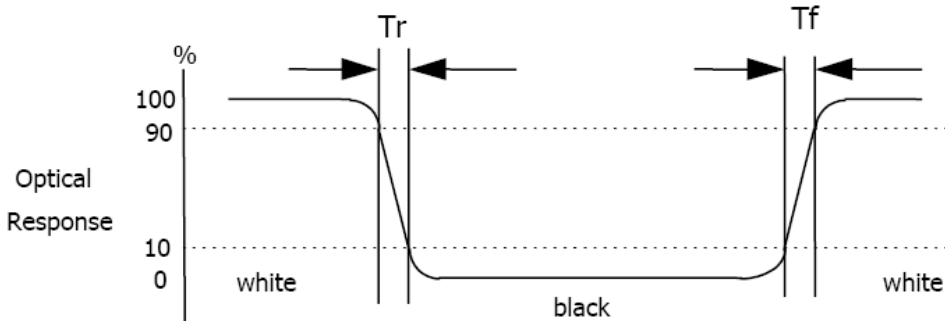


Figure 4. Response Time Testing



6.0 MECHANICAL CHARACTERISTICS

6.1 Dimension Requirements for LCD Part

Mechanical outlines for the panel **(**H: horizontal length, V: Vertical length**)**

Parameter	Specification	Unit	Remark
Panel size	256.0(H) × 197.2(V)	mm	
CF size	252.4(H) × 191.5(V)	mm	
Active area	246.0(H) × 184.5(V)	mm	
Number of pixels	800(H)RGB × 600(V) (1 pixel = R + G + B dots)	pixels	
Pixel pitch	0.3075(H) ×0.3075(V)	mm	
Pixel arrangement	RGB Vertical Stripe		
Panel ID	10 × 2	mm	
COG pad area(G/S)	3.6/ 5.7	mm	
D-IC to FPC distance	0.5	mm	Source
D-IC width(G/S)	0.67/ 1.07	mm	
D-IC to CF edge(G/S)	1.93/ 2.93	mm	
FPC to Glass edge	0.3	mm	Source
FPC width	0.9	mm	Source
Seal Area (U/D/L/R)	3.5/3.5/3.2/3.2	mm	
Dimensional outline	279±0.5(H) × 209±0.5(V) × 9±0.3(D)	mm	Module
Display mode	Normally White		

Note:

1. Source pad up.
2. The size specified is calculated by IC–driver Source: HX8245-C, Gate: HX8677-G, T-con: HX8841, the size maybe changed if customer use other IC.

Figure5.LCM Outline Dimension (unit: mm)

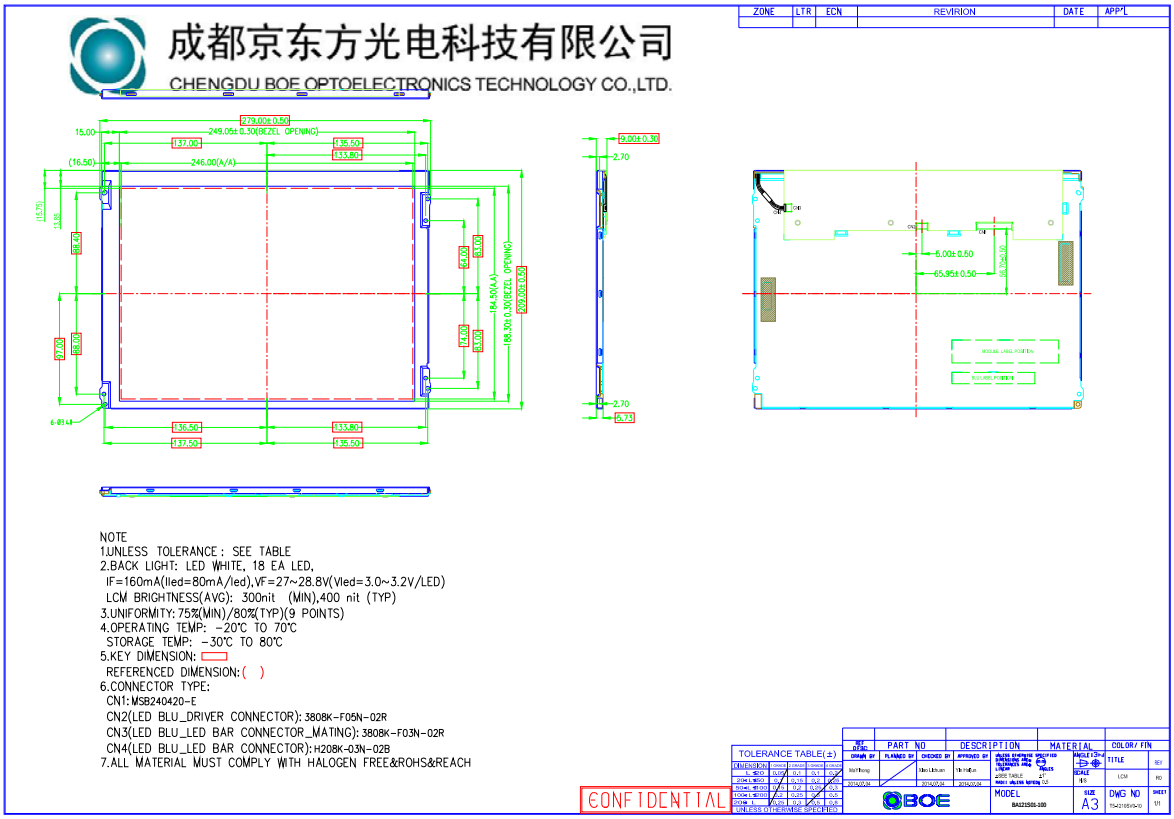
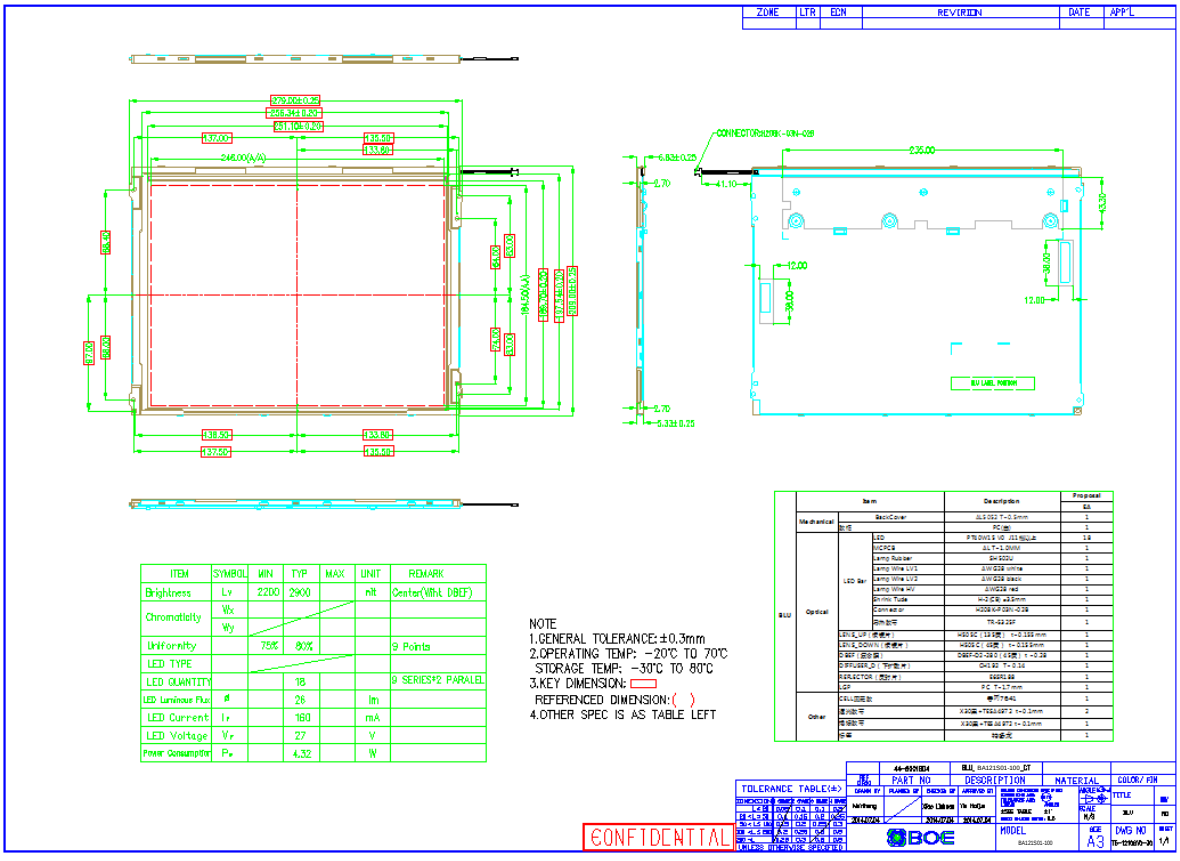
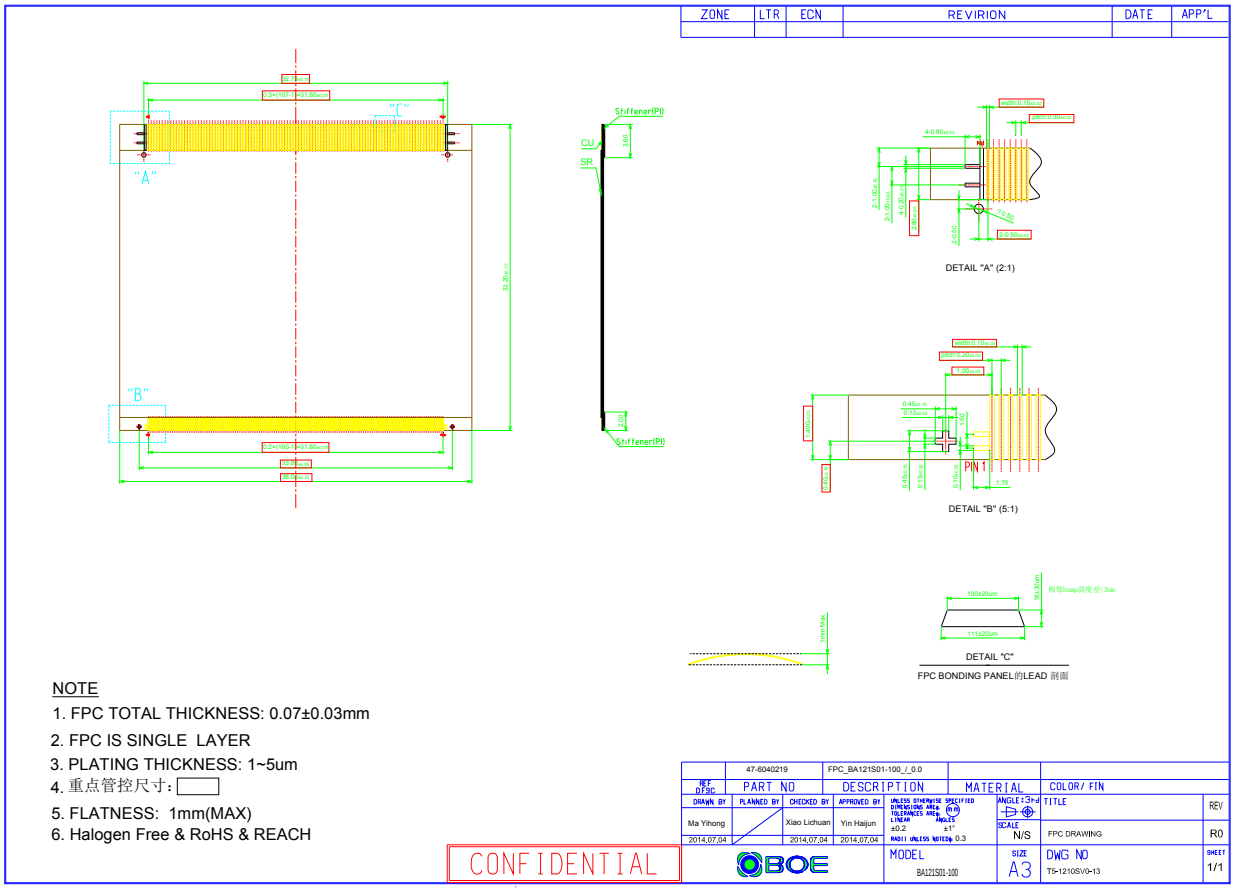


Figure 6. BLU Outline Dimension (unit: mm)



ITEM	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Brightness	Lv	2200	2900		nit	Center(With DIEF)
Chromaticity	Wx					
	Wy					
Uniformity		75%	80%			9 Points
LED TYPE						
LED QUANTITY			18			9 SERIES*2 PARALEL
LED Luminous Flux	Φ		26		lm	
LED Current	If		160		mA	
LED Voltage	Vf		27		V	
Power Consumption	Pw		4.32		W	

Figure 7. LCM FPC main structure (unit: mm)

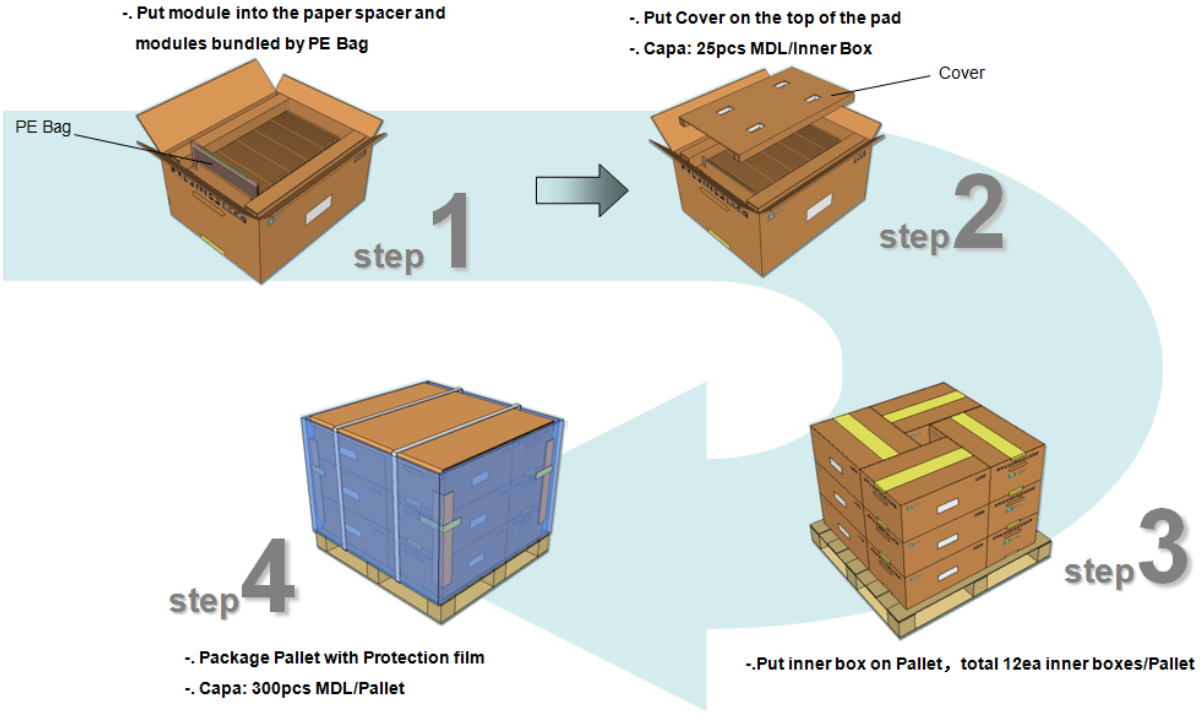


7.0 RELIABILITY TEST

TBD

8.0 PACKING METHOD

Item		Specification	Q'ty/MDL	Remark
MDL	Model	BA121S01-100	1	
PE Bag	Material	Thickness : 0.07mm	1	
Inner Box	Material	Corrugated Paper(BC)	0.04	
	Outline	580mm×400mm×285mm		
Pallet	Outline	1080mm×1080mm×130 mm	0.0034	
Protection film	Material	OPP	0.0034	



9.0 PRODUCT ID RULE

BA121S01-100

1 2 3 4 5 6 7 8

1 <Company>

Code	Description
T	Tablet PC
N	Notebook
S	Special display

2 <Mode>

Code	Description
T	TN-a Si
V	ADS-a Si
S	ADS-LTPS

3 <Size>

Code	Description
121	12.1”
055	5.5”
060	6.0”

4 <Resolution>

Code	Description
S0	SVGA
FH	FHD
WH	WQHD

5 <Production type>

Code	Description
M	Module
Q	Q-Panel
S	Q-Panel SLM

6 <Product state>

Code	Description
N	Normal
E	In Cell Touch
A	Add On Touch

7 <Customer>

Code	Description
W	华南

8 <Product Rev>

Code	Description
0	First Mode
1	Second Mode
2	Third Mode

10.0 HANDDLING & CAUTIONS

10.1 Mounting Method

● The panel of the LCM consists of two thin glasses with polarizer which easily get damaged. So extreme care should be taken when handling the LCM.

● Excessive stress or pressure on the glass of the LCM should be avoided. Care must be taken to insure that no torsional or compressive forces are applied to the LCM unit when it is mounted.

● If the customer's set presses the main parts of the LCM, the LCM may show the abnormal display. But this phenomenon does not mean the malfunction of the LCM and should be pressed by the way of mutual agreement.

● To determine the optimum mounting angle, refer to the viewing angle range in the specification for each model.

● Mount a LCM with the specified mounting parts.

10.2 Caution of LCM Handling and Cleaning

● Since the LCM is made of glass, do not apply strong mechanical impact or static load onto it. Handling with care since shock, vibration, and careless handling may seriously affect the product. If it falls from a high place or receives a strong shock, the glass maybe broken.

● The polarizer on the surface of panel are made from organic substances. Be very careful for chemicals not to touch the polarizer or it leads the polarizer to be deteriorated.

● If the use of a chemical is unavoidable, use soft cloth with solvent recommended below to clean the LCM's surface with wipe lightly.

-IPA (Isopropyl Alcohol), Ethyl Alcohol, Tri-chloro, tri-florothane.

● Do not wipe the LCM's surface with dry or hard materials that will damage the polarizer and others. Do not use the following solvent—Water, acetone, Aromatics.

● It is recommended that the LCM be handled with soft gloves during assembly, etc.

The polarizer on the LCM's surface are vulnerable to scratch and thus to be damaged by shape particles.

● Do not drop water or any chemicals onto the LCM's surface.

● A protective film is supplied on the LCM and should be left in place until the LCM is required for operation.

● The ITO pad area needs special careful caution because it could be easily corroded. Do not contact the ITO pad area with HCFC, Soldering flux, Chlorine, Sulfur, saliva or fingerprint. To prevent from the ITO corrosion, customers are recommended that the ITO area would be covered by UV or silicon.

● Please handle FPC with care.

10.3 Caution Against Static Charge

● The LCM use C-MOS LSI drivers, so customers are recommended that any unused input terminal would be connected to Vdd or Vss, do not input any signals before power is turn on, and ground you body, work/assembly area, assembly equipments to protect against static electricity.

● Remove the protective film slowly, keeping the removing direction approximate 30-degree not vertical from panel surface, if possible, under ESD control device like ion blower, and the humidity of working room should be kept over 50%RH to reduce the risk of static charge.

● Avoid the use work clothing made of synthetic fibers. We recommend cotton clothing or other conductivity-treated fibers.

● In handling the LCM, wear non-charged material gloves. And the conducting wrist to the earth and the conducting shoes to the earth are necessary.

10.4 Caution For Operation

● It is indispensable to drive the LCM within the specified voltage limit since the higher voltage than the limit causes LCM's life shorter. An electro-chemical reaction due to DC causes undesirable deterioration of the LCM so that the use of DC drive should avoid.

● Do not connect or disconnect the LCM to or from the system when power is on.

● Never use the LCM under abnormal conditions of high temperature and high humidity.

● When expose to drastic fluctuation of temperature(hot to cold or cold to hot), the LCM may be affected; specifically, drastic temperature fluctuation from cold to hot, produces dew on the LCM's surface which may affect the operation of the polarizer on the LCM.

● Response time will be extremely delay at lower temperature than the operating temperature range and on the other hand LCM may turn black at temperature above its operational range. However those phenomenon do not mean malfunction or out of order with the LCM. The LCM will revert to normal operation once the temperature returns to the recommended temperature range for normal operation.

● Do not display the fixed pattern for a long time because it may develop image sticking due to the LCM structure. If the screen is displayed with fixed pattern, use a screen saver.

● Do not disassemble and/or re-assemble LCM module

10.5 Packaging

● Modules use LCM element, and must be treated as such.

-Avoid intense shock and falls from a height.

-To prevent modules from degradation, do not operate or store them exposed directly to sunshine or high temperature/humidity for long periods.

10.6 Storage

- A slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit. Relative humidity of the environment should therefore be kept below 60%RH.
- Original protective film should be used on LCM's surface (polarizer). Adhesive type protective film should be avoided, because it may change color and/or properties of the polarizer.
- Do not store the LCM near organic solvents or corrosive gasses.
- Keep the LCM safe from vibration, shock and pressure.
- Black or white air-bubbles may be produced if the LCM is stored for long time in the lower temperature or mechanical shocks are applied onto the LCM.
- In the case of storing for a long period of time for the purpose or replacement use, the following ways are recommended.

-Store in a polyethylene bag with sealed so as not to enter fresh air outside in it.
-Store in a dark place where neither exposure to direct sunlight nor light is.
-Keep temperature in the specified storage temperature range.
-Store with no touch on polarizer surface by the anything else. If possible, store the LCM in the packaging situation when it was delivered.

10.7 Safety

- For the crash damaged or unnecessary LCM, it is recommended to wash off liquid crystal by either of solvents such as acetone and ethanol an should be burned up later.
- In the case of LCM is broken, watch out whether liquid crystal leaks out or not. If your hands touch the liquid crystal, wash your hands cleanly with water and soap as soon as possible.
- If you should swallow the liquid crystal, first, wash your mouth thoroughly with water, then drink a lot of water and induce vomiting, and then, consult a physician.
- If the liquid crystal get in your eyes, flush your eyes with running water for at least fifteen minutes.
- If the liquid crystal touches your skin or clothes, remove it and wash the affected part of your skin or clothes with soap and running water.

11.0 Applicable Scope

- This product specification only applies to the products manufactured and sold by our company.
- Any specification, quality etc. about other parts mentioned in this product spec are no concern of our company.