TITLE : BP080WX7-100

Product Specification

Rev. P0

HEFEI BOE OPTOELECTRONICS TECHNOLOGY

REVISION HISTORY

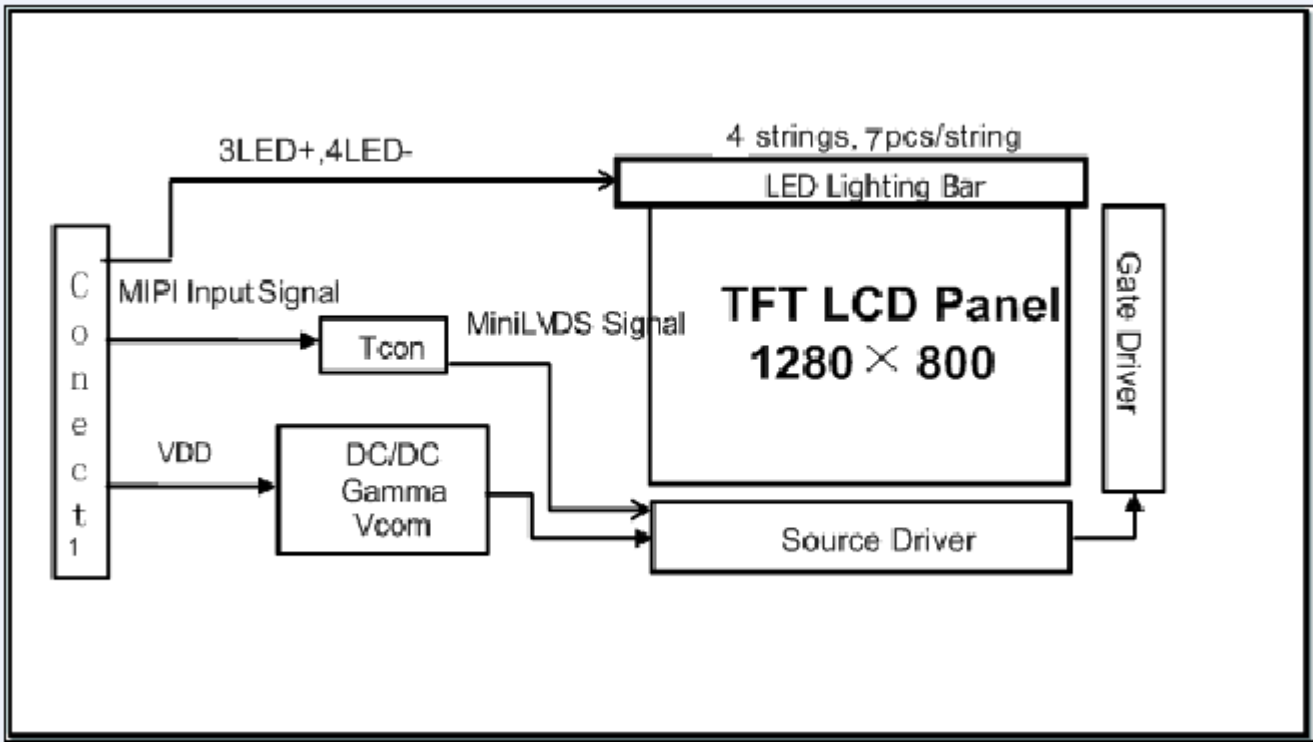
REV.	ECN No.	DESCRIPTION OF CHANGES	DATE	PREPARED
P0		Initial Release	2013.01.17	黄寅虎

Contents

1.0 GENERAL DESCRIPTION

1.1 Introduction

8inch WXGA is a color active matrix TFT LCD module using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This module has a 8.0 inch diagonally measured active area with WXGA resolutions (1280 horizontal by 800 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7M colors. The TFT-LCD panel used for this FOB is



1.2 Features

- 4 Lane MIPI Interface
- Thin and light weight
- 8-bit color depth, display 16.7M colors
- High luminance and contrast ratio, low reflection and wide viewing angle
- Low driving voltage and low power consumption
- RoHS Compliant

1.3 Application

- Tablet & Application Mini-PC (Wide Type)

1.4 General Specification

< Table 1. General Specifications >

Parameter	Specification	Unit	Remarks
Active area	172.224(H) x 107.64(V)	mm	
Number of pixels	1280(H) ×800(V)	pixels	
Pixel pitch	0.13455 (H) X0.13455 (V)×RGB	mm	
Pixel arrangement	Pixels RGB stripe arrangement		
Display colors	16.7M(6bits + Hi FRC)	colors	
Display mode	Transmission mode, Normally Black		
Outline Dimension	179.6(H)*116.9(V)*0.793（D）typ.	mm	
Weight	45 (max)	gram	
Surface Treatment	Hard Coating, 3H		

2.0 ABSOLUTE MAXIMUM RATINGS

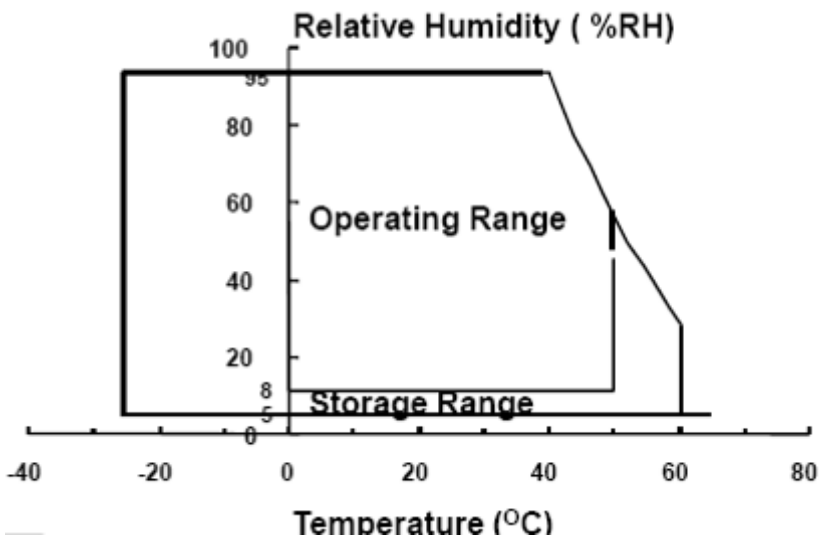
The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 2. LCD Module Electrical Specifications > [Ta =25±2 ℃]

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage	V_{DD}	2.8	4.5	V	Note 1
Power Supply For LED	V_{LED}	0	23	V	
Operating Temperature	T_{OP}	-20	+65	℃	Note 2
Storage Temperature	T_{ST}	-40	+85	℃	

Notes : 1. Permanent damage to the device may occur if maximum values are exceeded functional operation should be restricted to the condition described under normal operating conditions.

2. Temperature and relative humidity range are shown in the figure below.
95 % RH Max. (40 ^{O}C ≥ Ta)
Maximum wet - bulb temperature at 39 ^{O}C or less. (Ta > 40 ^{O}C) No condensation.



3.0 ELECTRICAL SPECIFICATIONS

3.1 Electrical Specifications

< Table 3. LCD Module Electrical Specifications > [Ta =25±2 ℃]

Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
Power Supply Input Voltage	V_{DD}	3.0	3.3	3.6	V	
Power Supply Ripple Voltage	VRP	-		350	mV	
Power Supply Current	I_{DD}	-	242	273	mA	
Power Consumption	P_D	-	0.63	0.9	W	1
Rush current	IRUSH	-	-	1	A	2
Current for each LED	I_{LED}	-	20	-	mA	
Voltage for each LED	V_{LED}	2.7	3.0	3..2	V	
L/B Input Current	I_B	-	80	-	mA	Total 28 LEDs, 4 Srings, 7 EA each sring
L/B Input Voltage	V_B			22.4	V	
Power Consumption for Backlight	P_B		1.68	1.8	W	

Notes : 1. The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for VDD=3.3V, Frame rate fV=60Hz and Clock frequency = 64.8MHz. Test pattern of power supply current is : typ@White,max@White
2. The duration of rush current is about 2ms and rising time of Power input is 1ms(min)

4.0 OPTICAL SPECIFICATION

4.1 Overview

The test of view angle range shall be measured in a dark room (ambient luminance ≤ 1lux and temperature = 25±2℃) with the equipment of Luminance meter system (Goniometer system and TOPCON BM-5A) 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°. We refer to θØ=0 (=θ3) as the 3 o'clock direction (the "right"), θØ=90 (= θ12) as the 12 o'clock direction ("upward"), θØ=180 (= θ9) as the 9 o'clock direction ("left") and θØ=270(= θ6) as the 6 o'clock direction ("bottom"). While scanning θand/or Ø, the center of the measuring spot on the Display surface shall stay fixed. The luminance, color and uniformity should be tested by CA210. The backlight should be operating for 30 minutes prior to measurement. VDD shall be 3.3 ± 0.3V at 25°C. Optimum viewing angle direction is 6 'clock.

4.2 Optical Specifications

<Table 5. Optical Specifications>

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	-	89	-	Deg.	Note 1
		Θ_9		-	89	-	Deg.	
	Vertical	Θ_{12}		-	89	-	Deg.	
		Θ_6		-	89	-	Deg.	
Color Gamut				50	55		%	
Luminance Contrast ratio		CR	Θ = 0°	700	900	-		Note 2
Reproduction of color	White	Wx	Θ = 0°	Typ. -0.03	0.301	Typ. +0.03		
		Wy			0.321			
	Red	R_x			0.612			
		R_y			0.352			
	Green	G_x			0.319			
		G_y			0.602			
	Blue	B_x			0.151			
		B_y			0.103			
Response Time (Rising + Falling)		T_{RT}	Ta= 25° C Θ = 0°	-	24	-	ms	Note 3
Cross Talk		CT	Θ = 0°	-	-	2.0	%	Note 4

Notes : 1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles 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 FIGURE 1).

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 FIGURE 1) Luminance Contrast Ratio (CR) is defined mathematically.

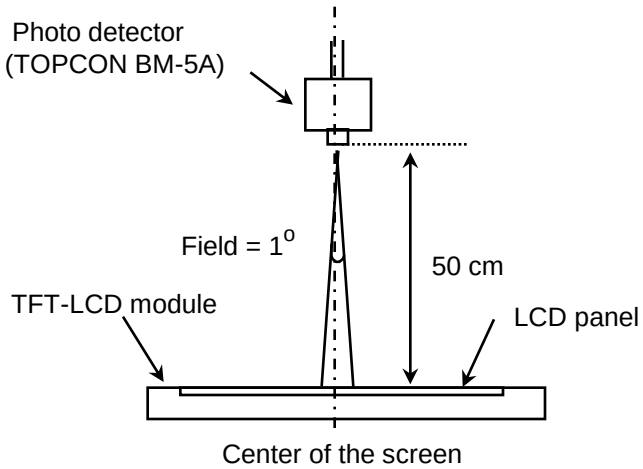
$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

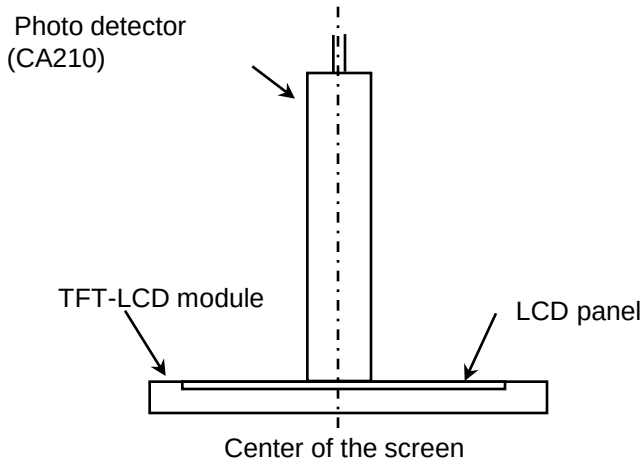
3. The electro-optical response time measurements shall be made as FIGURE 3 by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr, and 90% to 10% is Td.

4. Cross-Talk of one area of the LCD surface by another shall be measured by comparing the luminance (YA) of a 25mm diameter area, with all display pixels set to a gray level, to the luminance (YB) of that same area when any adjacent area is driven dark. (See FIGURE 4).

4.3 Optical measurements

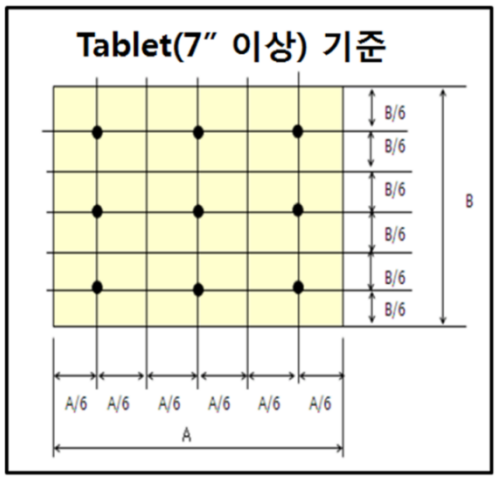
Figure 1. Measurement Set Up





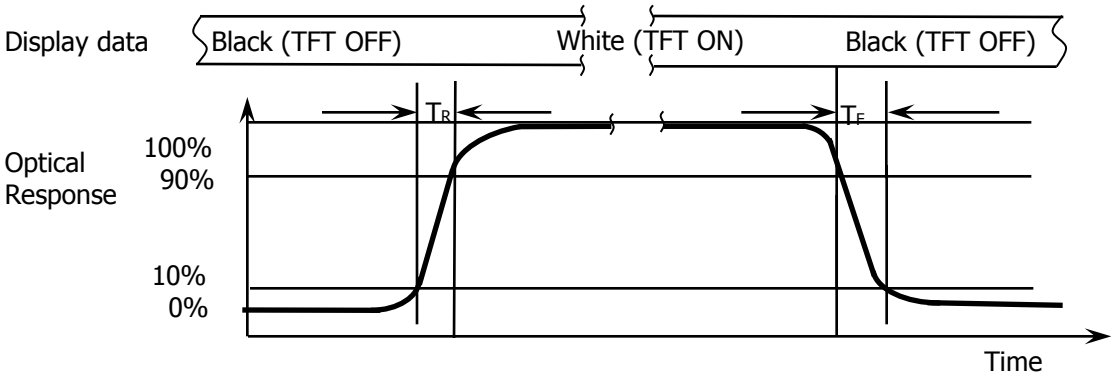
View angel range measurement setup Luminance , uniformity and color measurement setup

Figure 2. White Luminance and Uniformity Measurement Locations (9points)



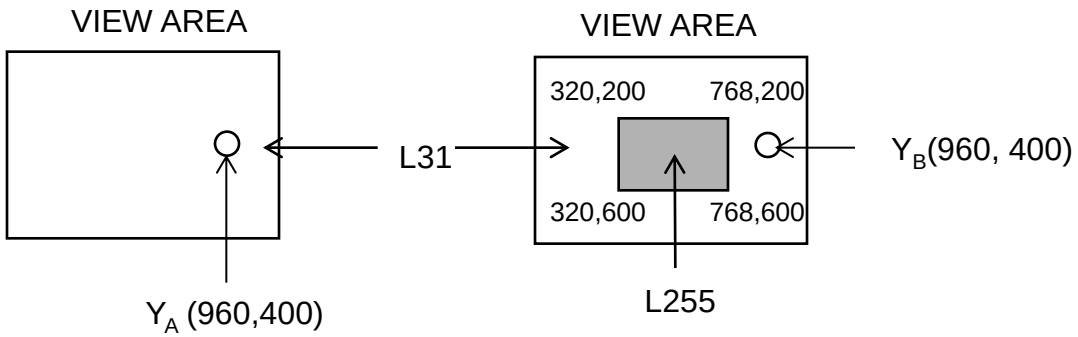
Center Luminance of white is defined as luminance values of center 9points across the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE 2 for a total of the measurements per display.
The White luminance uniformity on LCD surface is then expressed as : ΔY9 = Minimum Luminance of 9 points / Maximum Luminance of 9points (see FIGURE 2).

Figure 3. Response Time Testing



The electro-optical response time measurements shall be made as shown in FIGURE 3 by switching the “data” input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr and 90% to 10% is Td.

Figure 4. Cross Modulation Test Description



$$\text{Cross-Talk (\%)} = \left| \frac{Y_B - Y_A}{Y_A} \right| \times 100$$

Where:

Y_A = Initial luminance of measured area (cd/m^2)
Y_B = Subsequent luminance of measured area (cd/m^2)

The location measured will be exactly the same in both patterns

Cross-Talk of one area of the LCD surface by another shall be measured by comparing the luminance (YA) of a 25mm diameter area, with all display pixels set to a gray level, to the luminance (YB) of that same area when any adjacent area is driven dark (Refer to FIGURE 4).

5.0 INTERFACE CONNECTION.

5.1 Electrical Interface Connection

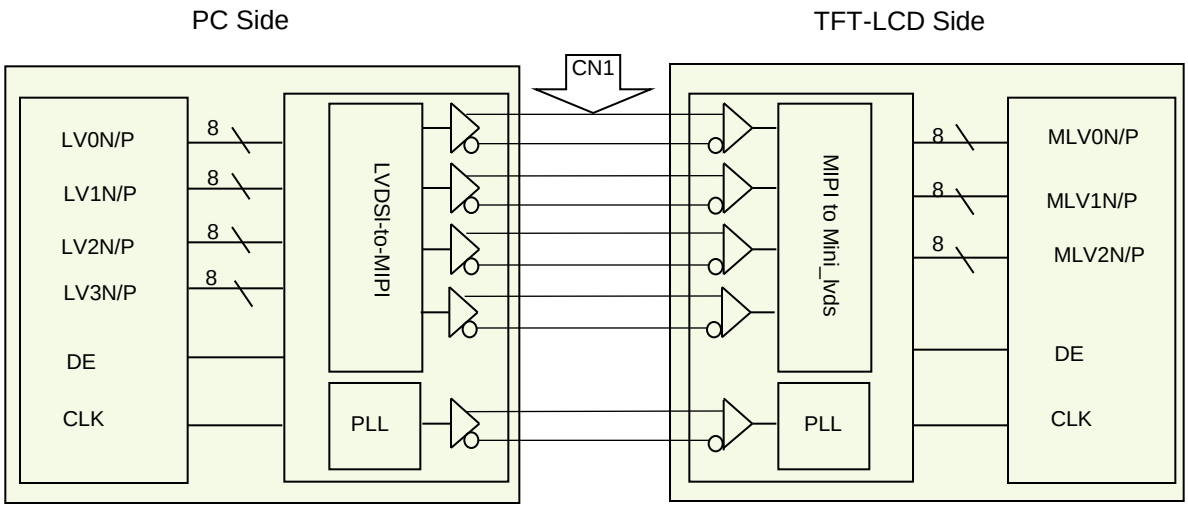
The electronics interface connector is UJU:PF030-B31B-N09

The connector interface pin assignments are listed in Table 6.

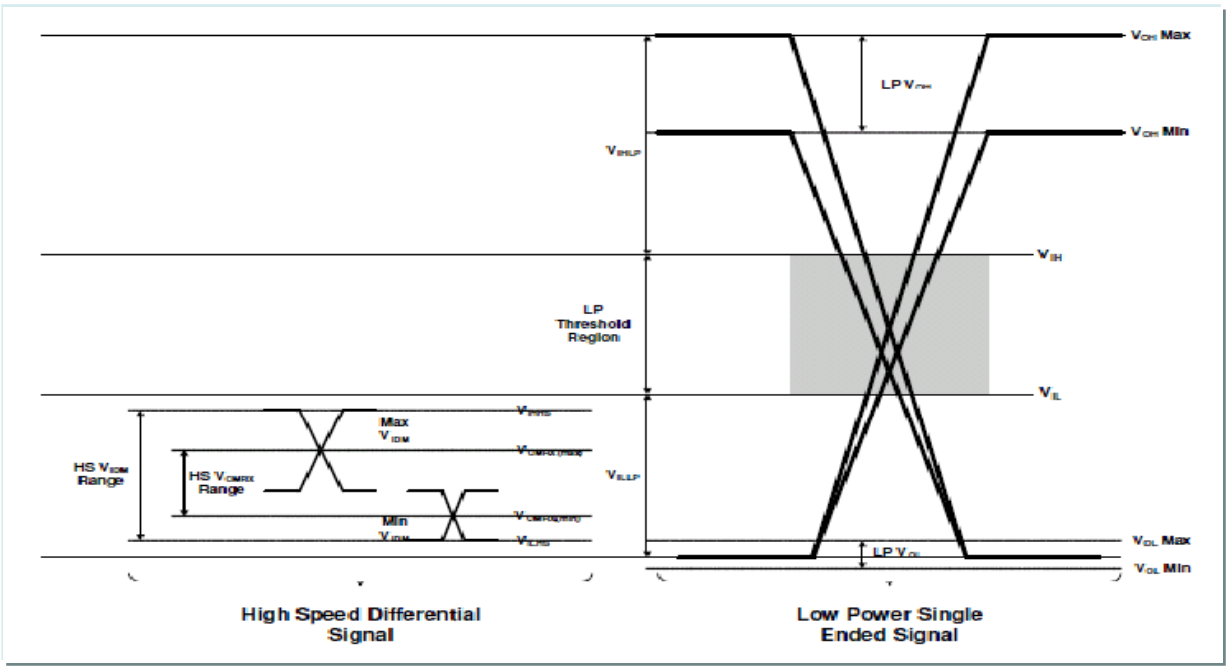
<Table 6. Pin Assignments for the Interface Connector>

Pin	Symbol	Functions	Pin	Symbol	Functions
1	VLED	Power supply for LED[Anode]	17	MIPI_CLKP	MIPI CLK positive signal(2P)
2	VLED	Power supply for LED[Anode]	18	MIPI_CLKN	MIPI CLK negative signal(2N)
3	VLED	Power supply for LED[Anode]	19	GND	Ground
4	NC	No Connect	20	MIPI_0P	MIPI data positive signal(0P)
5	FB1	Power supply for LED[Cathode]	21	MIPI_0N	MIPI data negative signal(0N)
6	FB2	Power supply for LED[Cathode]	22	GND	Ground
7	FB3	Power supply for LED[Cathode]	23	MIPI_3P	MIPI data positive signal(3P)
8	FB4	Power supply for LED[Cathode]	24	MIPI_3N	MIPI data negative signal(3N)
9	GND	Ground	25	GND	Ground
10	GND	Ground	26	ID	MDL ID
11	MIPI_2P	MIPI data positive signal(2P)	27	NC	No Connect
12	MIPI_2N	MIPI data negative signal(2N)	28	NC	No Connect
13	GND	Ground	29	VDD	Logic power 3.3V
14	MIPI_1P	MIPI data positive signal(1P)	30	VDD	Logic power 3.3V
15	MIPI_1N	MIPI data negative signal(1N)	31	VDD	Logic power 3.3V
16	GND	Ground			

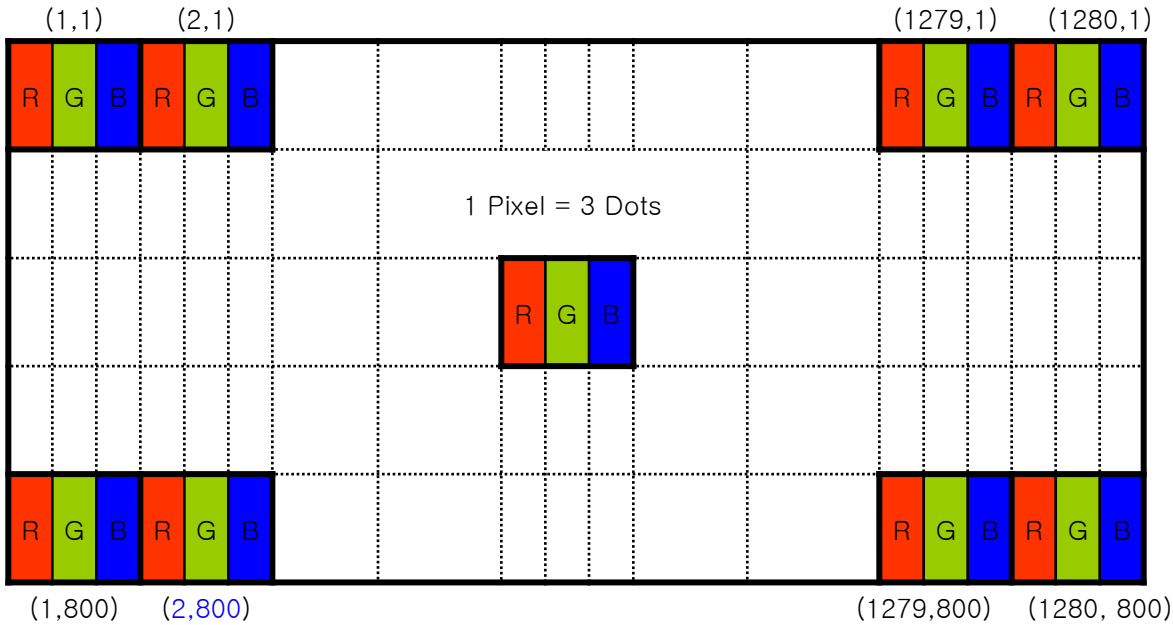
5.2 LVDS Interface



5.3 MIPI Input signal



5.4 Data Input Format

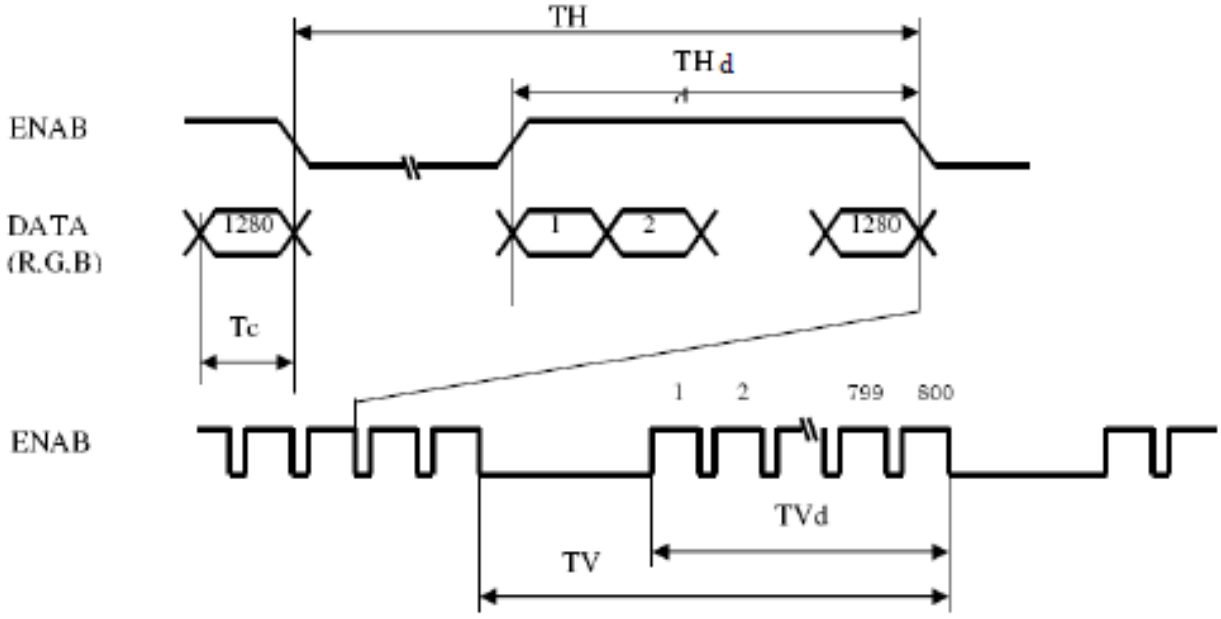


Display Position of Input Data (V-H)

6.0 SIGNAL TIMING SPECIFICATION

6.1 Signal timing

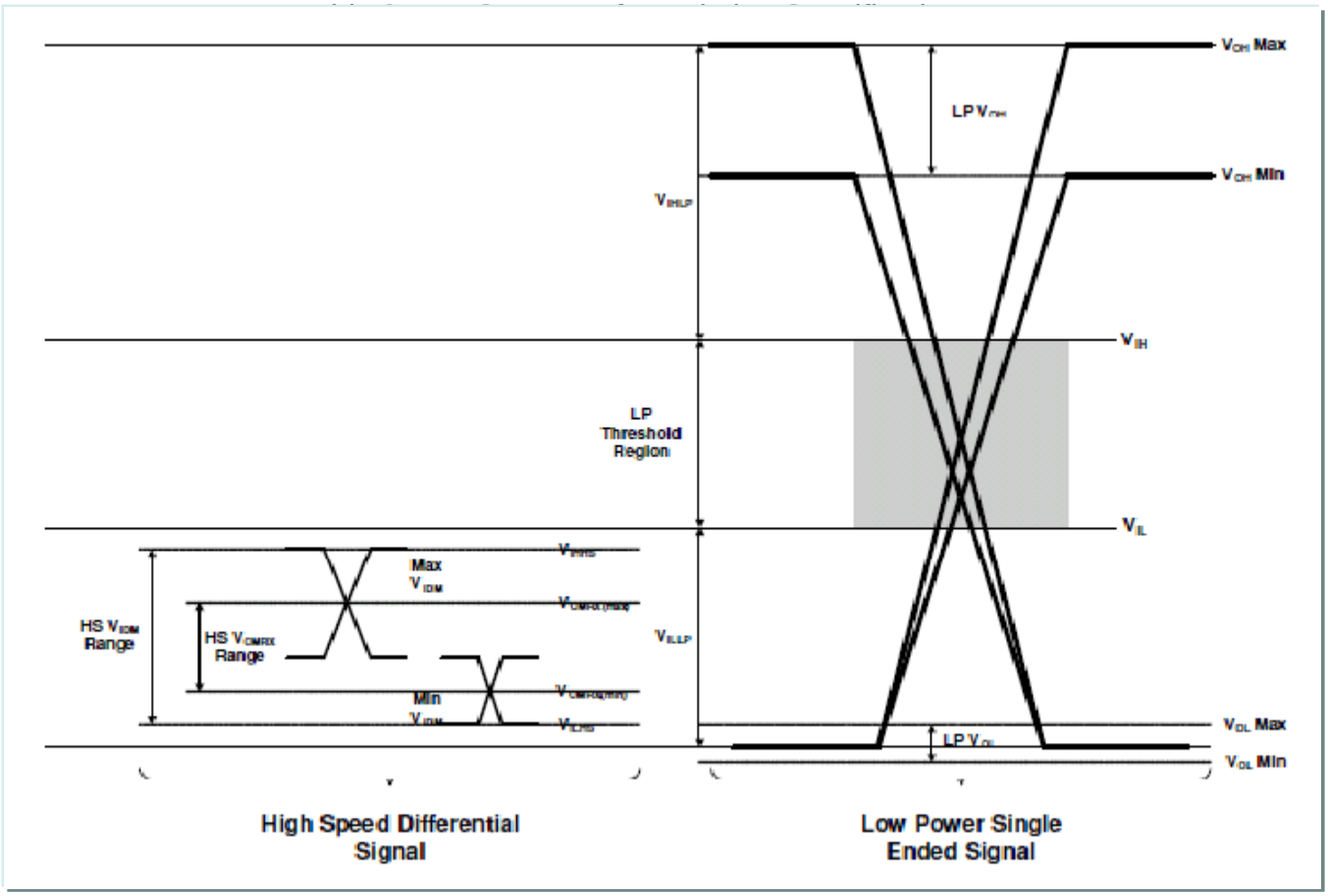
ITEM	Symbol		Min	Typ	Max	Unit	Note
CLK	Period	t_{CLK}	12.5	15.4	20	ns	
	Frequency	-	50	64.8	80	MHz	
Hsync	Period	t_{HP}	1320	1330	1420	t_{CLK}	
	Frequency	f_H	40	48.7	60	KHz	
Vsync	Period	t_{VP}	806	812	820	t_{HP}	
	Frequency	f_V	-	60	-	Hz	
Horizontal Active Display Term	Valid	t_{HV}	-	1280	-	t_{CLK}	
	Total	t_{HP}	1320	1330	1420	t_{CLK}	
Vertical Active Display Term	Valid	t_{VV}	-	800	-	t_{HP}	
	Total	t_{VP}	806	812	820	t_{HP}	



Interface Timing

6.2 MIPI Rx Interface Timing Parameter

The specification of the LVDS Rx interface timing parameter is shown in Table 8.

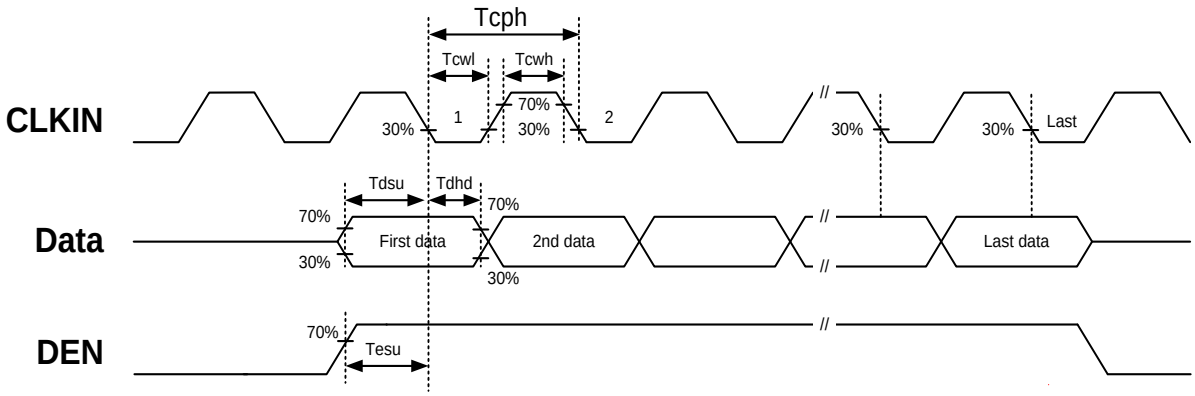


MIPI Receiver Differential Input (DC Characteristics)						
Symbol	Description	Min.	Typ.	Max.	Unit	Condition
BR_{MIPI}	Input data bit rate	200	-	1000	Mbps	
V_{CMRX}	Common-mode voltage(HS Rx mode)	70	-	330	mV	
V_{IDTH}	Differential input high threshold (HS Rx mode)	-	-	70	mV	
V_{IDTL}	Differential input low threshold (HS Rx mode)	-70	-	-	mV	
$\lvert V_{IDM} \rvert$	Differential input voltage range (HS Rx mode)	70	-	500	mV	
V_{IHHS}	Single-end input high voltage (HS Rx mode)	-	-	460	mV	
V_{ILHS}	Single-end input low voltage (HS Rx mode)	-40	-	-	mV	
Z_{ID}	Differential input impedance	80	100	125	ohm	
V_{IHLP}	Logic 1 input voltage (LP Rx mode)	880	-	-	mV	
V_{ILLP}	Logic 0 input voltage (LP Rx mode)	-	-	550	mV	
VOH	Output high level (LP Tx mode)	1.08	1.2	1.32	V	
VOL	Output low level (LP Tx mode)	-50	-	50	mV	

MIPI Receiver Differential Input (DC Characteristics)						
Symbol	Description	Min.	Typ.	Max.	Unit	Condition
T_{MIN-RX}	Minimum pulse width response (LP Rx mode)	50	-	-	ns	
$T_{LP-PULSE-TX}$	Pulse width of the LP exclusive-OR clock	50	55	58	ns	1st clock pulse after STOP state or last clock pulse before STOP state /all other pulse
$T_{RLP / TFLP}$	15%~85% rise time and fall time (LP Tx mode)	-	-	25	ns	
T_{REOT}	30%~85% rise time and fall time of EOT (LP Tx mode)	-	-	35	ns	
$T_{LP-PER-TX}$	Period of the LP exclusive-OR clock	90	-	-	ns	
T_{SETUP}	Data to clock setup time	0.15	-	-	UI	
T_{HOLD}	Data to clock hold time	0.15	-	-	UI	

7.0 SIGNAL TIMING WAVEFORMS OF INTERFACE SIGNAL

7.1 Input Clock and Data Timing Diagram



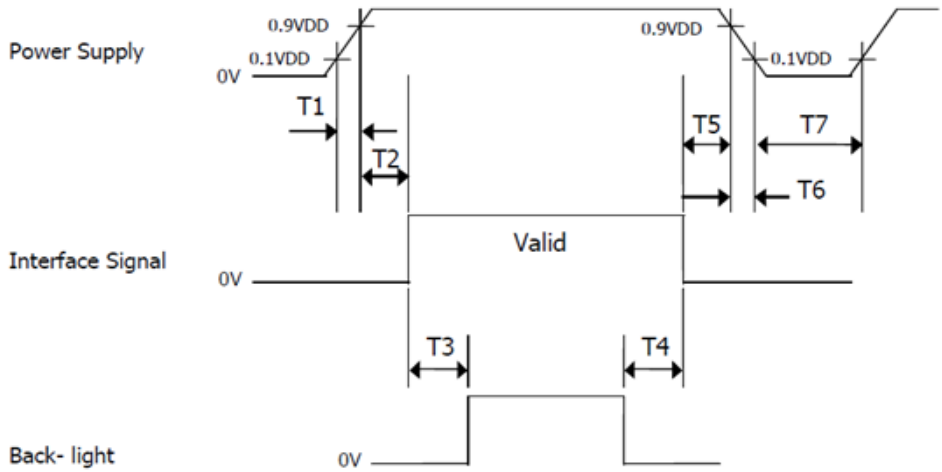
8.0 INPUT SIGNALS, BASIC DISPLAY COLORS & GRAY SCALE OF COLORS

Color & Gray Scale		Input Data Signal																							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale of Red	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	↑								↑								↑							
	▽	↓								↓								↓							
	Brighter	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	▽	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale of Green	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	△	↑								↑								↑							
	▽	↓								↓								↓							
	Brighter	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	▽	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale of Blue	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	△	↑								↑								↑							
	▽	↓								↓								↓							
	Brighter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	▽	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Gray Scale of White	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	Darker	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
	△	↑								↑								↑							
	▽	↓								↓								↓							
	Brighter	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1
	▽	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

9.0 POWER SEQUENCE

To prevent a latch-up or DC operation of the LCD module, the power on/off sequence shall be as shown in below

Power-On/Off Timing Sequence:



Parameter	Values			Units
	Min	Typ	Max	
T1	0	-	10	ms
T2	0	-	50	ms
T3	200	-	-	ms
T4	200	-	-	ms
T5	0.5	-	50	ms
T6	0	-	10	ms
T7	500	-	-	ms

Notes:

1. When the power supply VDD is 0V, keep the level of input signals on the low or keep high impedance.
2. Do not keep the interface signal high impedance when power is on. Back Light must be turn on after power for logic and interface signal are valid.

10.0 Connector Description

Physical interface is described as for the connector on LCM.
These connectors are capable of accommodating the following signals and will be following components.

10.1 TFT LCD Module

Connector Name /Description	For Signal Connector
Manufacturer	**UJU**
Type/ Part Number	**PF040-B09B-C09**

10.2 LED Connector

Pin No.	Symbol	For Signal Connector
1	FB4	LED Cathode Power Supply
2	FB3	LED Cathode Power Supply
3	FB2	LED Cathode Power Supply
4	FB1	LED Cathode Power Supply
5	NC	No Connection
6	NC	No Connection
7	VLED	LED Anode Power Supply
8	VLED	LED Anode Power Supply
9	VLED	LED Anode Power Supply

11.0 MECHANICAL CHARACTERISTICS

11.1 Dimensional Requirements

FIGURE 5 shows mechanical outlines for the model BP080WX7-100
Other parameters are shown in Table 9.

<Table 9. Dimensional Parameters>

Parameter	Specification	Unit
Active Area	172.224 (H) ×107.64 (V)	
Number of pixels	1280(H) X800 (V) (1 pixel = R + G + B dots)	
Pixel pitch	0.1695 (H) X0.1695 (V)	
Pixel arrangement	RGB Vertical stripe	
Display colors	16.7M	
Display mode	Normally Black	
Dimensional outline	179.6(H)*116.9(V)*0.793（D）typ.	mm
Weight	45(Max)	gram

11.2 Mounting

See FIGURE 6.

11.3 Glare and Polarizer Hardness.

The surface of the LCD has an low reflection coating and hard coating to reduce scratching.

11.4 Light Leakage

There shall not be visible light from the back-lighting system around the edges of the screen as seen from a distance 50cm from the screen with an overhead light level of 150lux.

12.0 RELIABILITY TEST

The Reliability test items and its conditions are shown in below.

<Table 10. Reliability test>

No	Test Items	Conditions
1	High temperature storage test	Ta = 80 ℃, 240 hrs
2	Low temperature storage test	Ta = -20 ℃, 240 hrs
3	High temperature & high humidity operation test	Ta = 60 ℃, 90%RH, 240 hrs
4	High temperature operation test	Ta = 60 ℃, 240 hrs
5	Low temperature operation test	Ta = -20 ℃, 240hrs
6	Thermal shock	Ta = -20 ℃ ↔ 70 ℃ (30min), 100 cycle

13.0 HANDLING & CAUTIONS

(1) Cautions when taking out the panel
- Pick the pouch only, when taking out panel from a shipping package.

(2) Cautions for handling the module
- As the electrostatic discharges may break the LCD panel, handle the LCD panel with care. Peel a protection sheet off from the LCD panel surface as slowly as possible.
- As the surface of the polarizer is very soft and easily scratched, use a soft dry cloth without chemicals for cleaning.
- Put the panel display side down on a flat horizontal plane.
- Handle connectors and cables with care.

(3) Cautions for the atmosphere
- Dew drop atmosphere should be avoided.
- Do not store and/or operate the LCD panel in a high temperature and/or humidity atmosphere. Storage in an electro-conductive polymer packing pouch and under relatively low temperature atmosphere is recommended.

(4) Cautions for the panel characteristics
- Do not apply fixed pattern data signal to the LCD module at product aging.
- Applying fixed pattern for a long time may cause image sticking.

14.0 LABEL

(1) Product label

Remark：Product ID Type Designation

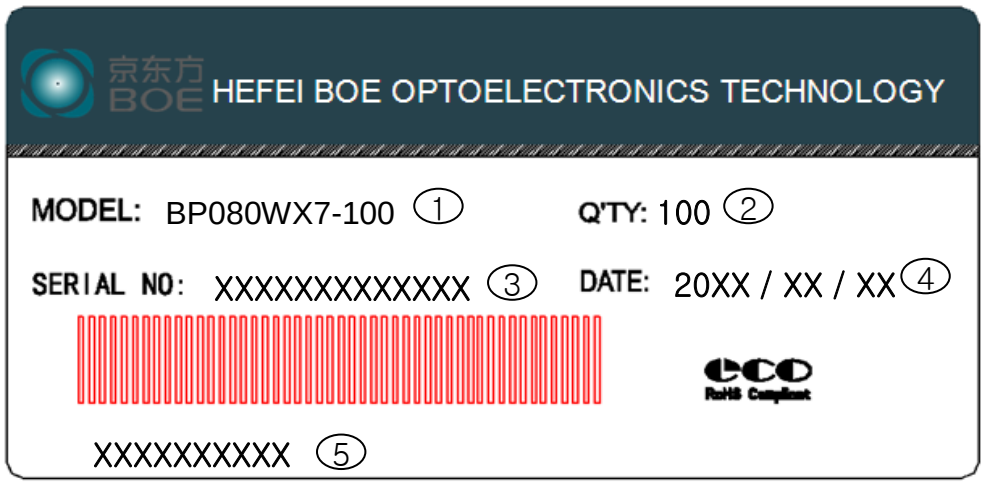
No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Code	4	F	P	3	1	2	7	0	0	1	E	E	J
Description	GBN Code		Grade	B3	Year		Month	Serial Number					

Code	Description
L	LCM
H	HYDIS
A	BOEOT
B	BOEOT
C	BOEOT
3	BOEHF

Code	Description
1	Jan.
2	Feb.
…	…
X	Oct.
Y	Nov.
Z	Dec.

(2) Box label

Label Size: 110 mm (L) × 56 mm (W)
Contents
Model: BP080WX7-100
Q`ty: FOB Quantity in one box
Serial No.: Box Serial No. See next figure for detail description.
Date: Packing Date
Internal use of Product



Remark：

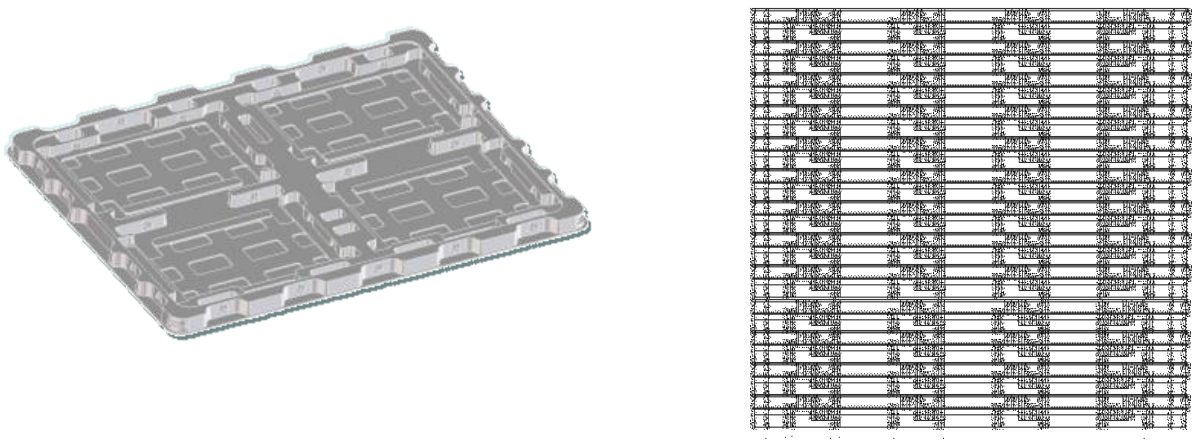
1. FG-CODE
2. Box Product Quantity
3. Box ID, Type Designation as below
4. Box Packing Date
5. Product Material Code (Client-Side)

No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Code	4	J	P	3	1	2	7	0	0	0	1	H	D
Description	GBN Code		Grade	B3	Year		Month	Rev	Serial Number				

15.0 PACKING INFORMATION

15.1 Packing Description

Packing Condition	Contents
Packing type	PET + Antistatic Backing packing type
PET material model	PET (10^6~10^{11} Ω/ sq)
PET packing type	-
Number of panels per PET	4 pieces
Number of PET per inner box	17units (16 units + 1 unit empty)
Number of inner box per out box	16 pcs
Number of panels per inner box	64 pieces
Number of panels per out box	1024 pieces



picture 1

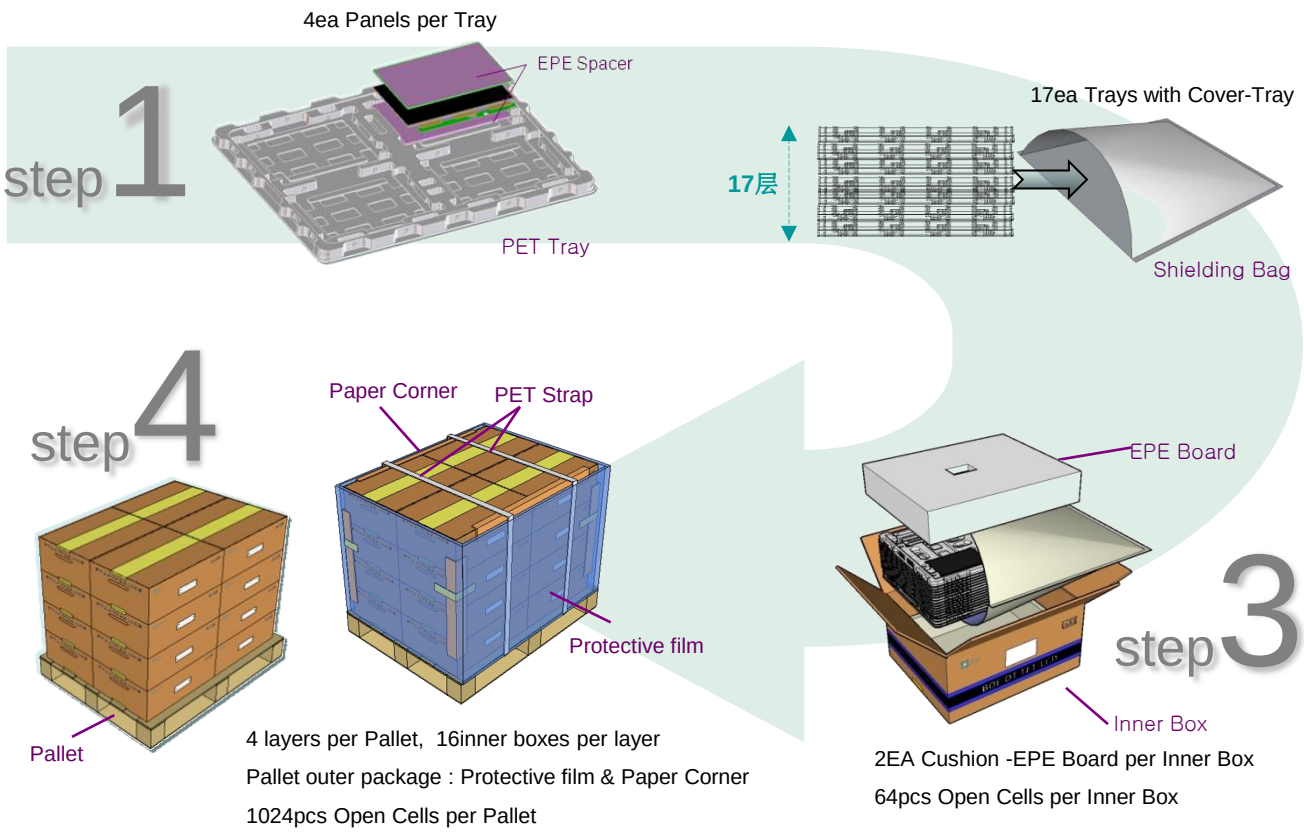
15.0 PACKING INFORMATION

15.2 Description of PET material composed

Components	Item contained
Base resin	Polyethylene terephthalate
Additive	Antistatic backing

Remarks : Antistatic backing is overlaid on Polyethylene terephthalate.

15.3 Description of packing procedure (picture)



4 layers per Pallet, 16inner boxes per layer
Pallet outer package : Protective film & Paper Corner
1024pcs Open Cells per Pallet

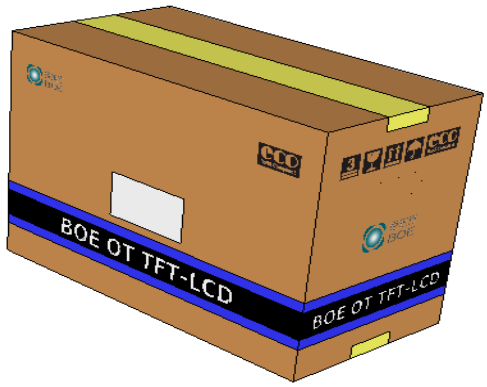
2EA Cushion -EPE Board per Inner Box
64pcs Open Cells per Inner Box

No.	Description	Quantity
1	TFT-LCD	1024pcs/Pallet
2	Module/PET Tray	4pcs
3	PET Tray	17 ea (1ea : empty) / Inner Box
4	Inner Box	16ea/Pallet
5	Shielding Bag	16ea/Pallet
6	Paper Conner	6ea/Pallet
7	Belt tape	1,920-1,984 cm
8	Stretch Film	28 ~ 30M
9	Distribution label	1pcs

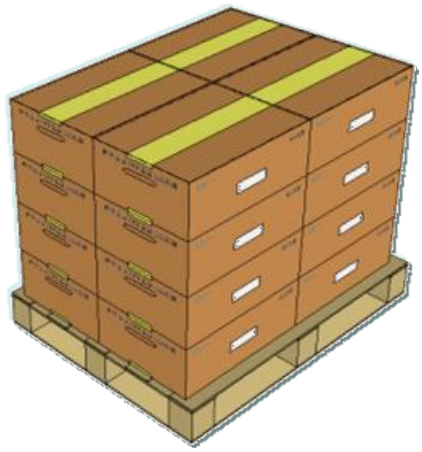
※ Standard packing dimensions is 510×410×252mm, it would be observed strictly.

15.3 Description of packing procedure (picture)

Inner Box



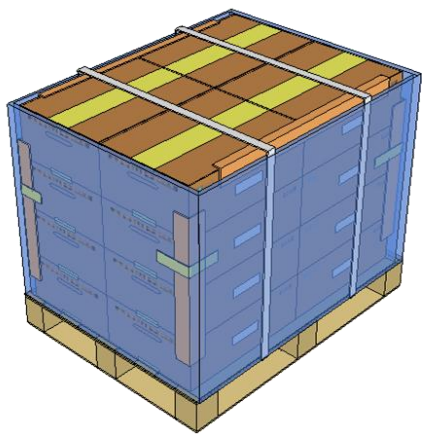
Inner Box On Pallet



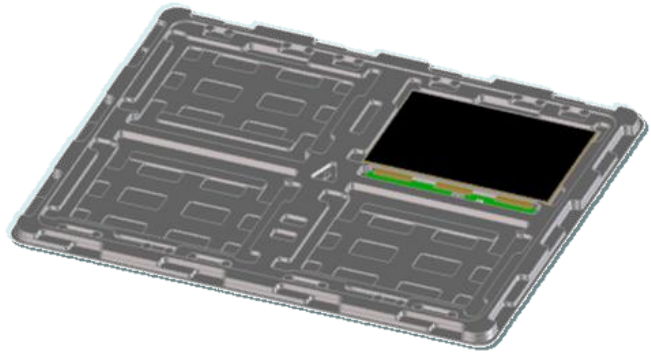
Protective film

&

Paper Corner



15.4 ESD Measurement



Features

: Good Electrical Conductivity

: Good Dimensional Stability

: Good Stiffness / Toughness Balance

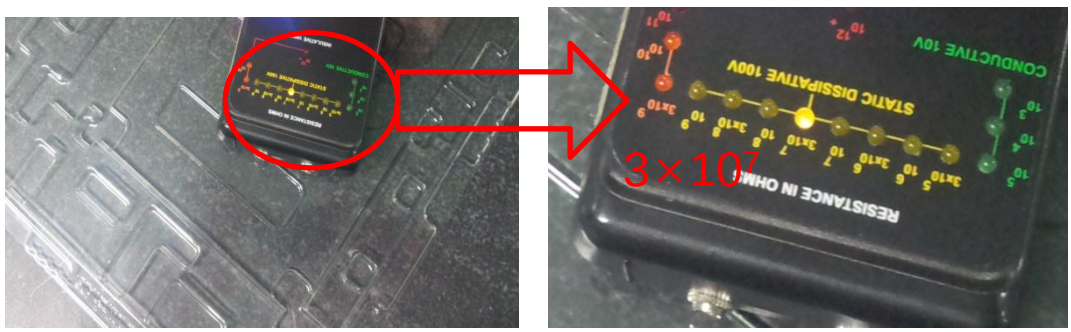
: Low plough-out

Properties	Test Methods	Units	Kenneled
Base Polymer	-	-	PET
Thickness	Thickness gauge	mm	1.0±0.3
Surface Resistivity	ASTM D257	Ω / sq	$10^{6\sim11}$
ESD	ESD Tester	V	<= 100

Test Result

ITEM	Spec		Test1	Test2	Test3	Test4	Test5	Test Result
	BOE	SMC						
Value	$10^{6\sim11}$	$10^{4\sim9}$	10^{8}	3×10^{7}	10^{8}	10^{8}	10^{7}	OK

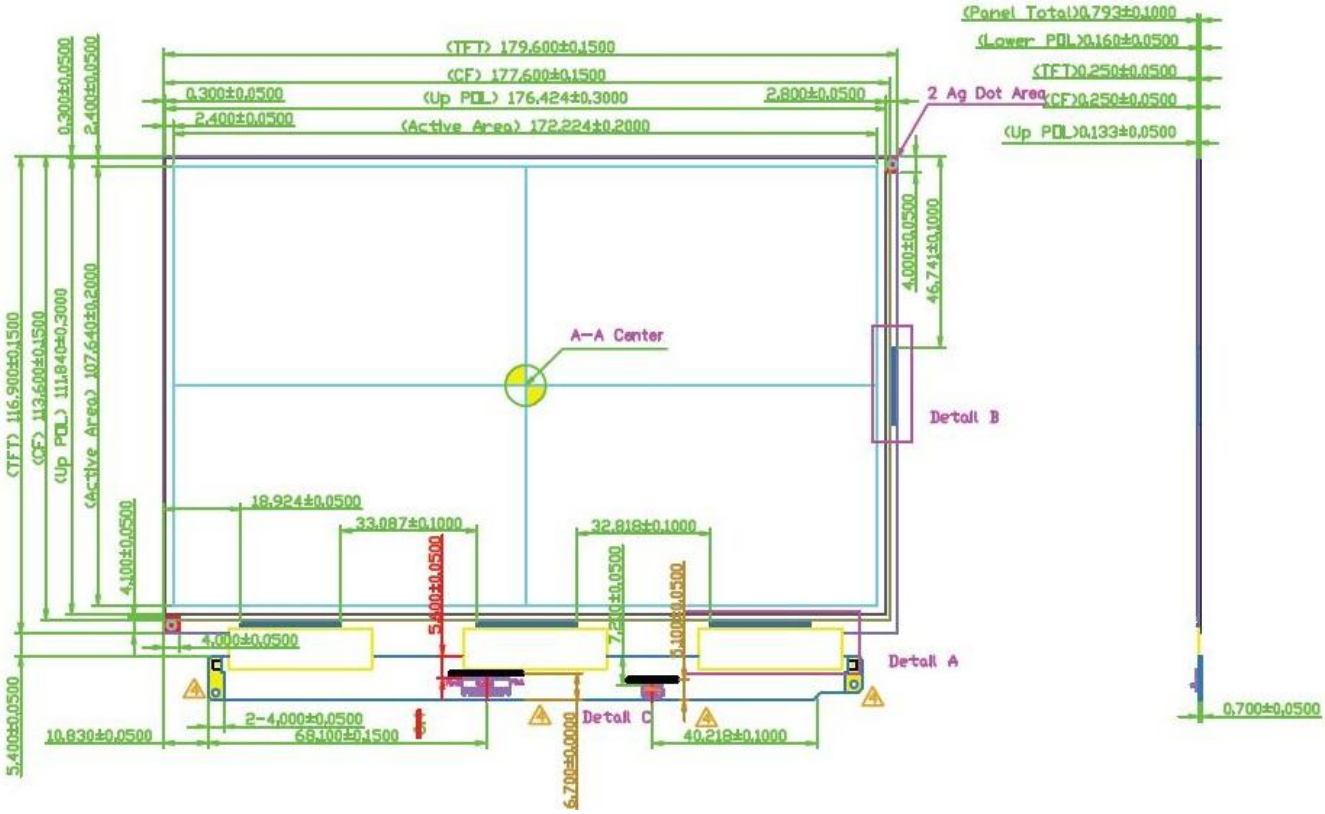
Test Methods



1. Put Tray On Marble platform
2. Put Electrostatic Tester On Tray (Inside & Outside)
3. Test Frequency : 4 times on Inside , 4 times On Outside
   (Test Result is Max Value)
4. Test Tray Q'ty : 5 ea

16.0 MECHANICAL OUTLINE DIMENSION

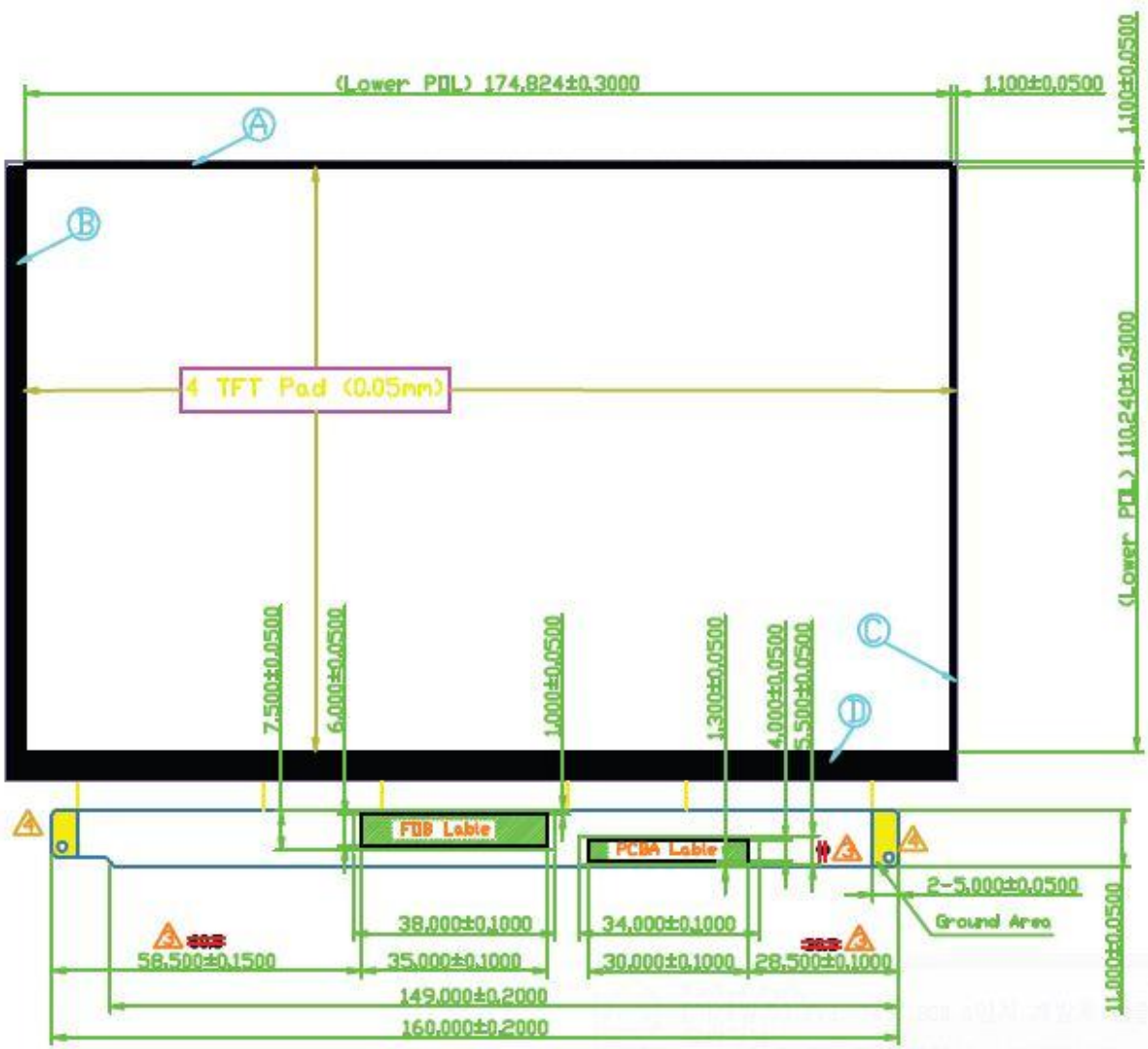
Figure 6. FOB Outline Dimension (Front View)



Connector Model: PF030-B31B-N09 (UJU)

Light Bar Connector Model: PF040-B09B-C09 (UJU)

Figure 7. TFT-LCD Panel Outline Dimensions (Rear view)



Part of TFT Pad	Dimension	Thickness	Material
A	174.8±0.8	0.05	PET Single Tape, Black
B	110±3		
C	178.8±5 ⚠5		
D	110±0.8		