TITLE : BP080WX7-200

Product Specification

Rev. P0

HEFEI BOE OPTOELECTRONICS TECHNOLOGY

REVISION HISTORY

REV.	ECN No.	DESCRIPTION OF CHANGES	DATE	PREPARED
P0		Initial Release	2014.2.24	占江徽

Contents

1.0 GENERAL DESCRIPTION

1.1 Introduction

BP080WX7-200 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 8.0inch diagonally measured active area with WXGA resolutions (**800** horizontal by **1280** 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 module is adapted for a low reflection and higher color type.
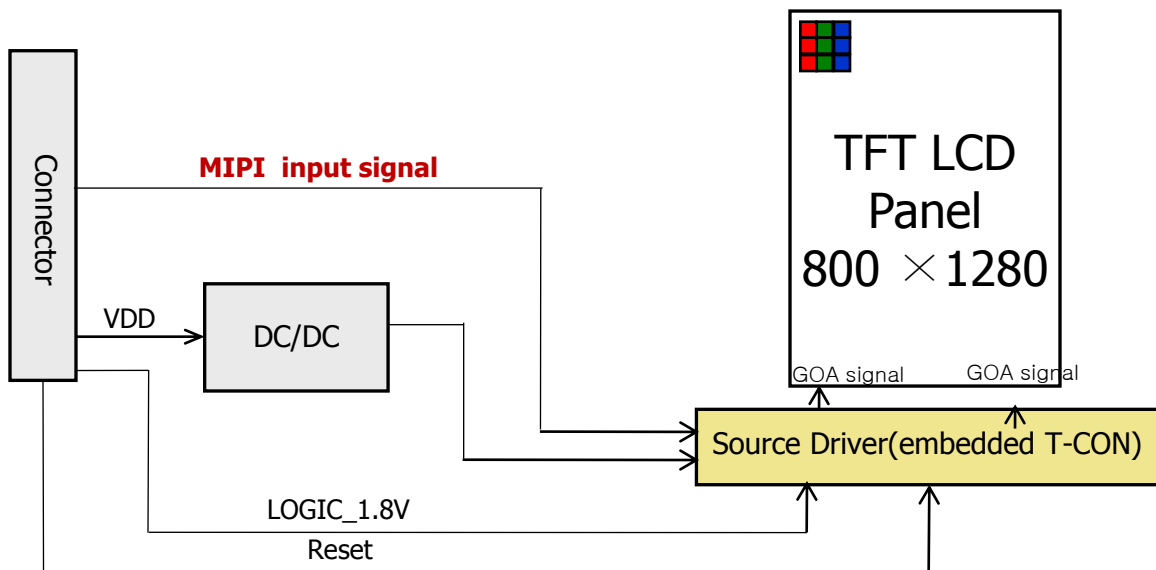
1.2 Features

- 4 lanes MIPI Interface
- Thin and light weight
- Data enable signal mode
- 8-bit color depth, display 16.7M colors
- Low driving voltage and low power consumption
- RoHS Compliant

1.3 Application

● AV application Products

1.4 General Specification

The followings are general specifications at the model BP080WX7-101. (listed in Table 1.)

< Table 1. General Specifications >

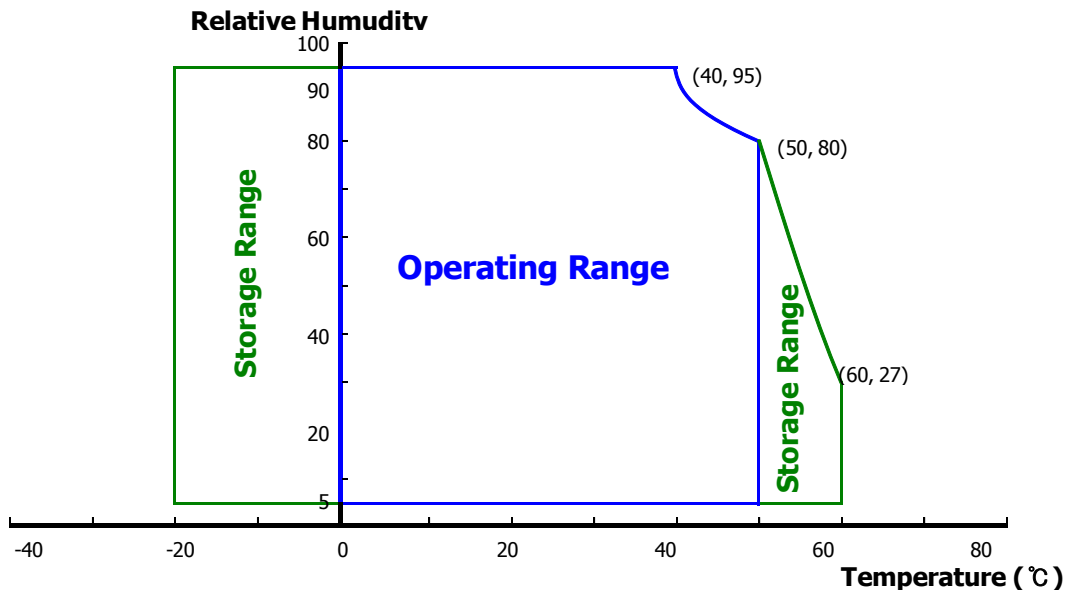| Parameter	Specification	Unit	Remarks
Active area	107.64(W) x 172.224(H)	mm	
Number of pixels	800(H) $\times$ 1280(V)	pixels	
Pixel pitch	44.85(H) $\times$ RGB $\times$ 134.55(V)	μm	
Pixel arrangement	Pixels RGB stripe arrangement		
Display colors	16.7M(Real 8bits)	colors	
Display mode	Normally Black		
Outline Dimension	112.64(V) $\times$ 181.824 (H)	mm	Tolerance: $\pm$ 0.15 mm
Thickness	0.69	mm	Tolerance: $\pm$ 0.03 mm
Weight	35g	gram	max.
Power Consumption	P_D : 045(max.)	Watt	
Surface Treatment	3H HC		

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. Absolute Maximum Ratings>   [VSS=GND=0V]

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage	VDD	-0.3	5.0	V	Note 1
Operating Temperature	TOP	-20	+60	℃	Note 2
Storage Temperature	TST	-20	+60	℃	

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 OC ≥ Ta)
   Maximum wet - bulb temperature at 39 OC or less. (Ta > 40 OC) No condensation.

3.0 ELECTRICAL SPECIFICATIONS

3.1 Electrical Specifications

< Table 3. Electrical specifications >   [Ta =25 ± 2 ℃]

Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
Power Supply Input Voltage	VDD	3.0	3.3	3.6	Vdc	
Logic Power Supply Input Voltage	VLOG	1.7	1.8	1.9	Vdc	
Power Supply Ripple Voltage	VRP		300		mV	
Power Supply Current	IDD	-	**82**	**128**	mA	1
Power Consumption	PDD		**0.30**	**0.45**	Watt	
Logic Power Supply Current	ILOG	14	15	16	mA	
Logic Power Consumption	PLOG		27		mW	
Rush current	IRUSH	-	1		A	2

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 f_V=60Hz and
     Clock frequency = 68.4MHz. Test pattern of power supply current is : typ@White, max@R/G/B
     2. The duration of rush current is about 2ms and rising time of Power input is 1ms(min)

4.0 INTERFACE CONNECTION

4.1 Module Input Signal & Power

< Table 4 FPC Signal interface : 34 Pin.(BF040-I34B-C08-A)>

Pin No	Symbol	I/O	Description	Remark
1	VLED	P	Anode for light bar	18V~19.2V
2	VLED	P	Anode for light bar	18V~19.2V
3	VLED	P	Anode for light bar	18V~19.2V
4	BC_C	O	LED ON/OFF Control signal	1.8V
5	CABC	O	CABC PWM Signal Output	1.8V
6	FB1	P	Cathode for light bar	
7	FB2	P	Cathode for light bar	
8	FB3	P	Cathode for light bar	
9	NC		No connection	
10	Reset	I	Device reset signal	1.7V~1.9V
11	GND	P	Ground	
12	VPP	NC	Internal use only	Floating it in system
13	D2_P	I	MIPI differential data2 input (Positive)	
14	GND	P	Ground	
15	D2_N	I	MIPI differential data2 input (Negative)	
16	D1_P	I	MIPI differential data1 input (positive)	
17	GND	P	Ground	
18	D1_N	I	MIPI differential data1 input (Negative)	
19	CLK_P	I	MIPI differential clock input (Positive)	
20	GND	P	Ground	
21	CLK_N	I	MIPI differential clock input (Negative)	
22	D0_P	I	MIPI differential data0 input (Positive)	
23	GND	P	Ground	
24	D0_N	I	MIPI differential data0 input (Negative)	
25	NC		No connection	
26	GND	P	Ground	
27	LOGIC 1.8V	P	1.8V input	1.7V~1.9V
28	D3_P	I	MIPI differential data3 input (Positive)	
29	VDD3V3	P	3.3V input	
30	D3_N	I	MIPI differential data3 input (Negative)	
31	VDD3V3	P	3.3V input	
32	GND	P	Ground	
33	VDD3V3	P	3.3V input	
34	NC		No connection	

Note.1

I/O definition : I---Input ; O---Output ; P---Power/Ground

5. Electrical Specification

5.1 MIPI Input Signal SPEC

< Table 5 MIPI Input Signal Spec>

Parameter	Symbol	Min	Typ	Max	Unit	Condition
MIPI digital operation current	I_{VCCIF}	14	15	16	mA	-
MIPI digital stand-by current	$I_{VCCIFST}$	-	200	-	uA	-
MIPI Characteristics for High Speed Receiver						
Single-ended input low voltage	V_{ILHS}	-40	-	-		
Single-ended input high voltage	V_{IHHS}	-	-	460	mV	
Common-mode voltage	V_{CMRXDC}	155	-	330	mV	
Differential input impedance	Z_{ID}	80	100	125	Ω	
HS transmit differential voltage($V_{OD}=V_{DP}-V_{DN}$)	$|V_{OD}|$	85	200	250	mV	
MIPI Characteristics for Low Power Receiver						
Pad signal voltage range	V_I	-50	-	1350	mV	
Ground shift	V_{GNDSH}	-50	-	50	mV	
Output low level	V_{OL}	-150	-	150	mV	
Output high level	V_{OH}	1.1	1.2	1.3	V	
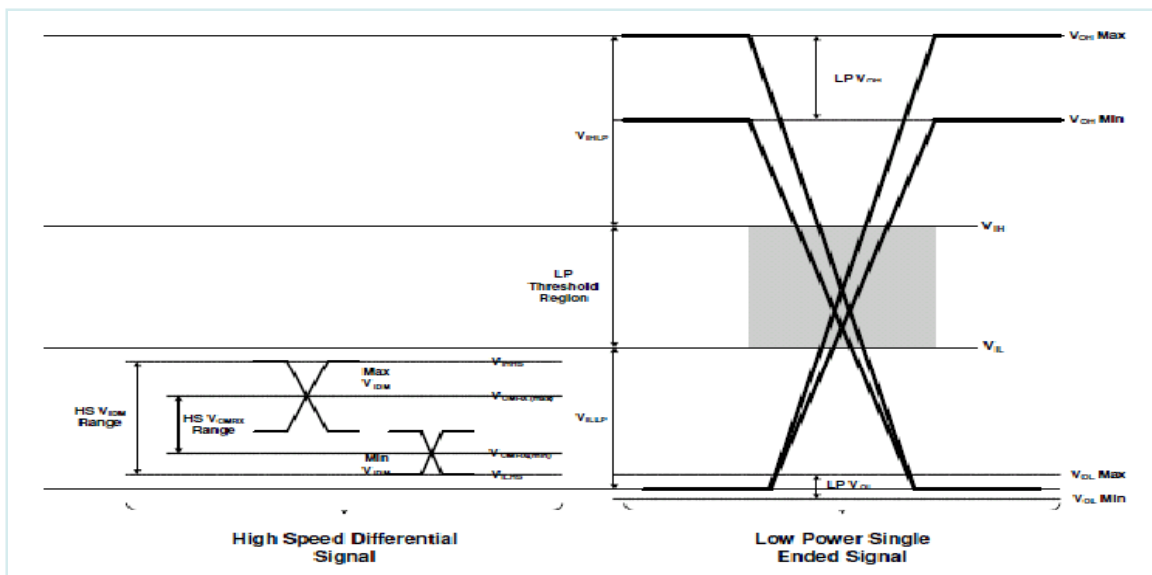
5.2 Signal Timing Spec

< Table 6 Signal Timing Spec>

Item	Symbol	Min	Typ	Max	Unit
Pixel CLK	Tpixclk		68.43		MHz
MIPI CLK	Period	4	4.44	4.8	ns
	Frequency	208	225	250	MHz
Hsync	Period	16			t_{pCLK}
	Frequency		77.76		KHz
Vsync	Period	4			Line
	Frequency		60	-	Hz
Horizontal Active Display Term rgb vporch 8 4 4 rgb hporch 16 48 16	HAdr		800	-	t_{pCLK}
	HBP	48			t_{pCLK}
	HFP	16			t_{pCLK}
	Total		880		t_{pCLK}
Vertical Active Display Term	Vadr		1280	-	Line
	VBP	4			Line
	VFP	8			Line
	Total		1296		Line

5.5 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
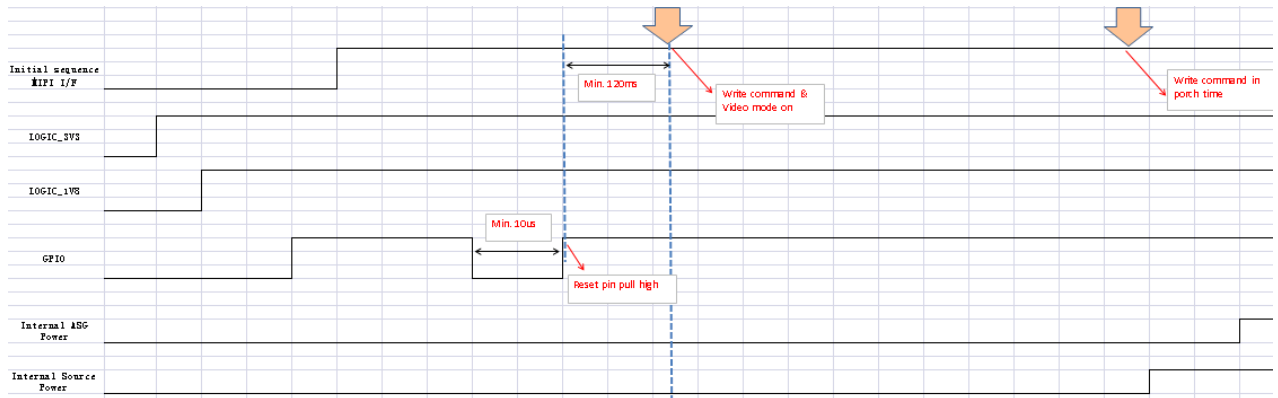
Notes:
1. When the power supply VDD is 0V, keep the level of input signals on the low or keep high impedance.
2. Do not keep the interface signal high impedance when power is on Back Light must be turn on after power for logic and interface signal are valid.

6.0 OPTICAL SPECIFICATIONS

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 (Goniometer system and TOPCON BM-5) 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 $\theta_{\emptyset=0}$ $(=\theta_3$) as the 3 o'clock direction (the "right"), $\theta_{\emptyset=90}$ $(= \theta_{12}$) as the 12 o'clock direction ("upward"), $\theta_{\emptyset=180}$ $(= \theta_9$) as the 9 o'clock direction ("left") and $\theta_{\emptyset=270}(= \theta_6$) as the 6 o'clock direction ("bottom"). While scanning θ and/or Ø, the center of the measuring spot on the Display surface shall stay fixed. The measurement shall be executed after 30 minutes warm-up period. VDD shall be 3.3V +/-10% at 25°C. Optimum viewing angle direction is 6 'clock.

< Table 7 Optical Spec>

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal	Θ_3	CR > 10		85	-	Deg.	Note 1、6
		Θ_9			85	-	Deg.	
	Vertical	Θ_{12}			85	-	Deg.	
		Θ_6			85	-	Deg.	
Color Gamut			-	50	55	-	%	NTSC
Contrast ratio		CR		700:1	800:1	-		Note 2、6
Trans.		-		-	6.8	-	%	Note 3、6
Reproduction of color	White	Wx	Θ = 0° (Center) Normal Viewing Angle	TYP. - 0.05	0.31	TYP. + 0.05		Note 4、6
		Wy			0.33			
	Red	R_x			TBD			
		R_y			TBD			
	Green	G_x			TBD			
		G_y			TBD			
	Blue	B_x			TBD			
		B_y			TBD			
Response Time		T_g		-	30	-	ms	Note 5、6
Gamma Scale				2.0	2.2	2.4		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.

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 shown in Appendix) Luminance Contrast Ratio (CR) is defined mathematically.

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

3. Center Luminance of white is defined as luminance values of center point of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. When the LED current is set at 20mA .

4. The color chromaticity coordinates specified in Table 7. 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 panel.

5. The electro-optical response time measurements shall be made as FIGURE 2 shown in Appendix by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Td, and 90% to 10% is Tr.

6. The listed optical specifications refer to the initial value of manufacture, but the condition of the specifications after long-term operation will not be warranted

7.0 MECHANICAL CHARACTERISTICS

7.1 Dimensional Requirements

FIGURE 3 (located in Appendix) shows mechanical outlines for the model BP080WX7-200. Other parameters are shown in Table 8.
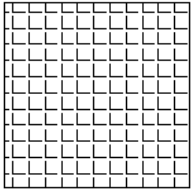
<Table 8. Dimensional Parameters>

Parameter	Specification	Unit
Dimensional outline	112.64(V) $\times$ 181.824 (H)	mm
Thickness	0.69 (typ.)	mm
Weight	35g (Max.)	gram
Active area	107.64(H) x 172.224(V)	mm
Pixel pitch	0.13455(H) $\times$ 0.13455(V)	mm
Number of pixels	800(H) $\times$ 1280(V) (1 pixel = R + G + B dots)	pixels

7.2 Mounting

See FIGURE 4. (shown in Appendix)

7.3 Surface Treatment of Polarizer.

The surface treatment of the CF POL is 3H HC.

8.0 RELIABLITY TEST

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

<Table 9. Reliability Test Parameters >

Test item	Test condition	No. of failures / No. of examinations
Low temperature storage test	Ta= -20°C, 240h	0/5
High temperature storage test	Ta= 70°C, 240h	0/5
Low temperature operation test	Ta= -10°C, 240h	0/5
High temperature operation test	Ta= 60°C, 240h	0/5
High temperature & High humidity operation test	Ta= 50°C, 90%RH, 240h	0/5
Thermal Shock	[(-20℃ 30min) → (70℃ 30min)]/cycle, 100cycles	0/5
Electrostatic discharge test	330ohm,150pf Air：+/-5KV, (Note 23,24)	0/5
Packing vibration-proof test	1.47G,5－200Hz,Random,+Z	0/1box
Packing drop test	1Angle,3Edge,6Face Height: 依据 JIS-Z-0200 Level 1	0/1box

9.0 Product Serial Number

```
BP080WX7-200

XXXXXXXXXXXXXXXXX
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1	2	3	4	5	6	7
X X	X	X	X X	1	0 0 X X	X X X X X X

Type designation

No 1. Control Number

No 2. Rank / Grade

No 3. Line classification

No 4. Year (10 : 2010, 11: 2011, …)
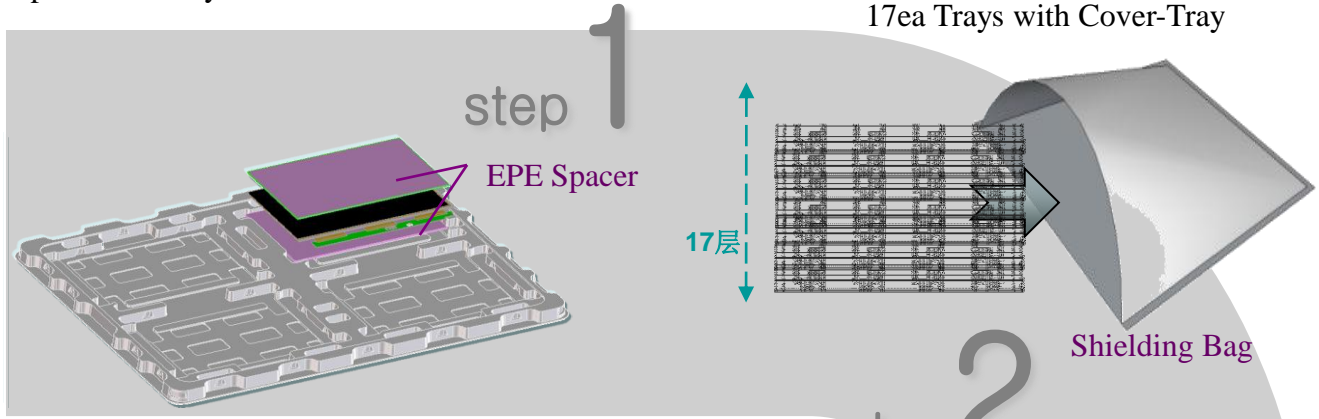
No 5. Month (1, 2, 3, …, 9, X, Y, Z)
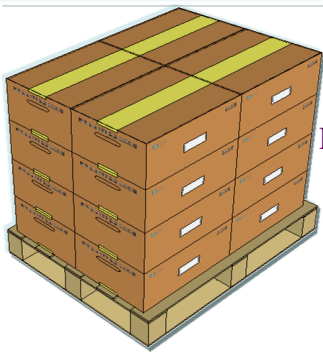
No 6. Product Identification (FG)
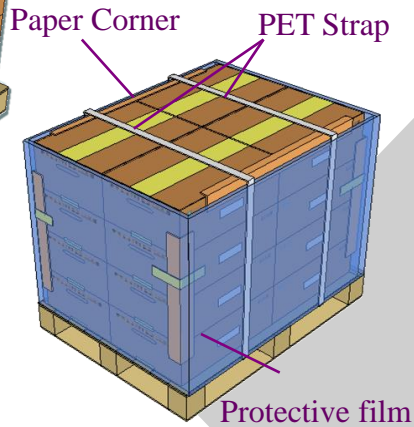
No 7. Serial Number

10.0 PACKING INFORMATION

4pcs Panel/Tray

17ea Trays with Cover-Tray

step 1

EPE Spacer

17层

Shielding Bag

step 2

EPE Board

Paper Corner   PET Strap

Inner Box

2EA Cushion -EPE Board per Inner Box
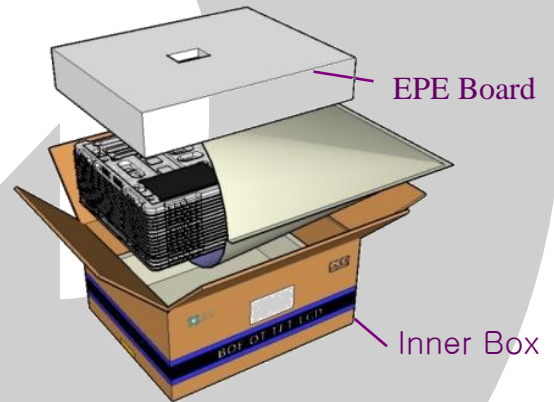
64pcs Panel per Inner Box

step 4

Protective film

step 3

4 layers per Pallet, 16inner boxes per layer

Pallet outer package : Protective film & Paper Corner

1024pcs Open Cells per Pallet

10.2 Box label

- Label Size : 108 mm (L) 56 mm (W)
- Contents
  Model : BP080WX7-200
  Q`ty : 64 Panel in one box.
  Serial No. : Box Serial No. See next page for detail description.
  Date : Packing Date
  FG Code : FG Code of Product

京东方 BOE HEFEI BOE OPTOELECTRONICS TECHNOLOGY

MODEL: BP080WX7-200   Q'TY: 64

SERIAL NO: XXXXXXXXXXXXX   DATE: 20XX / XX / XX

eco RoHS Compliant

XXXX-XXXXXX   XXXX

序列号	1	2	3	4	5	6	7	8	9	10	11	12	13
代码	4	J	P	3	1	2	7	0	0	0	1	H	D
描述	GBN代码		等级	B3	年份		月	Rev	序列号				

11.0 HANDLING & CAUTIONS

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

(2) Cautions for handling the module
- As the electrostatic discharges may break the LCD module, handle the LCD module with care. Peel a protection sheet off from the LCD panel surface as slowly as possible.
- As the LCD panel and back - light element are made from fragile glass material, impulse and pressure to the LCD module should be avoided.
- As the surface of the polarizer is very soft and easily scratched, use a soft dry cloth without chemicals for cleaning.
- Do not pull the interface connector in or out while the LCD module is operating.
- Put the module display side down on a flat horizontal plane.
- Handle connectors and cables with care.

(3) Cautions for the operation
- When the module is operating, do not lose CLK, ENAB signals. If any one of these signals is lost, the LCD panel would be damaged.
- Obey the supply voltage sequence. If wrong sequence is applied, the module would be damaged.

(4) Cautions for the atmosphere
- Dew drop atmosphere should be avoided.
- Do not store and/or operate the LCD module in a high temperature and/or humidity atmosphere. Storage in an electro-conductive polymer packing pouch and under relatively low temperature atmosphere is recommended.
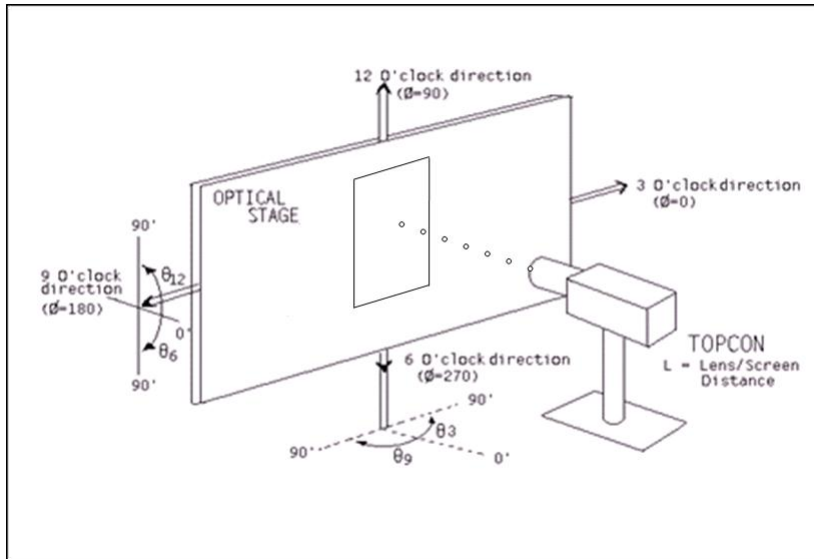
(5) Cautions for the module characteristics
- Do not apply fixed pattern data signal to the LCD module at product aging.
- Applying fixed pattern for a long time may cause image sticking.

(6) Other cautions
- Do not disassemble and/or re-assemble LCD module.
- Do not re-adjust variable resistor or switch etc.
- When returning the module for repair or etc., Please pack the module not to be broken. We recommend to use the original shipping packages.

12.0 APPENDIX

Figure 1. Measurement Set Up
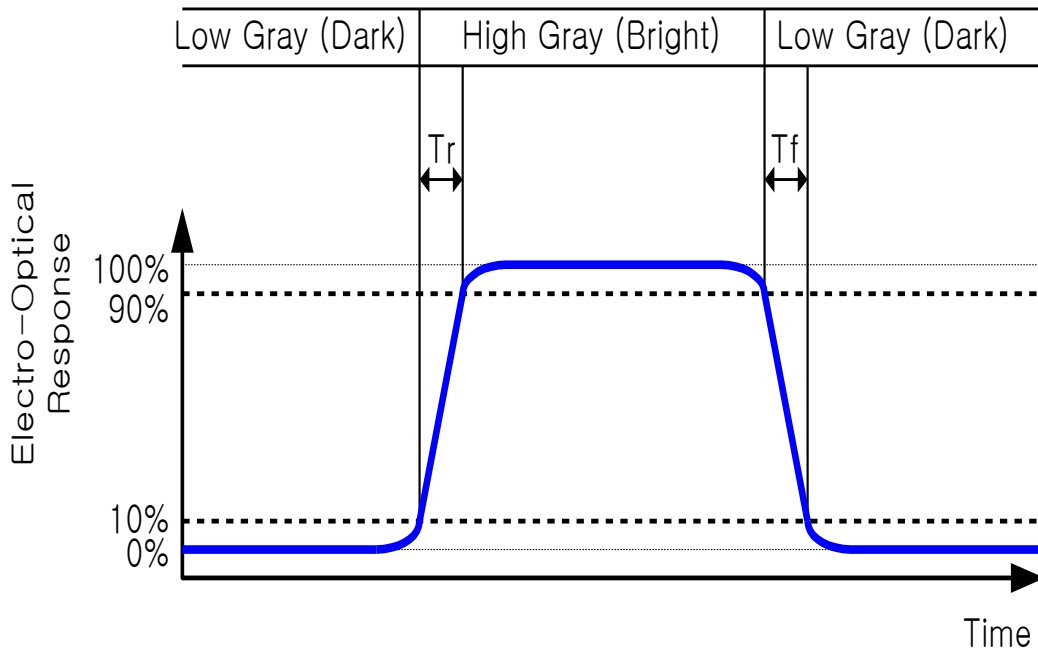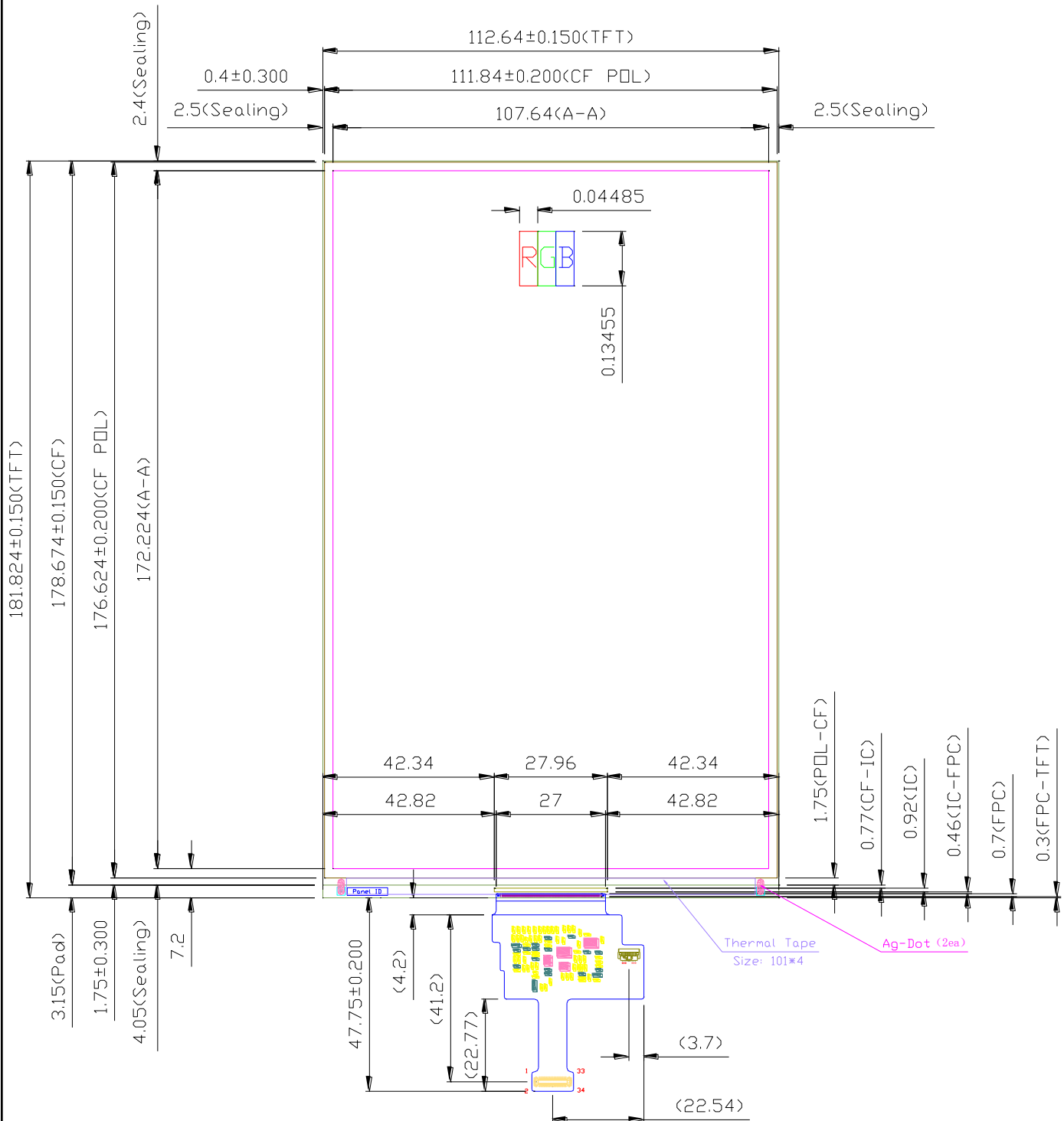

Figure 2. Response Time Testing

Figure 3. TFT-LCD Module Outline Dimensions (Front view)

Figure 4. TFT-LCD Module Outline Dimensions (Rear view)