SPECIFICATION
FOR

Module:YS-T043002BCT01 V1.0

Designed by	R&D Checked by	Quality Department by	Approved by

Approval by Customer:

OK

NG, Problem survey

Approved By_____

Revision Record

REV NO.	REV DATE	Contents Before Change	Contents After Change	Note
V1.0	2021/7/14	NEW ISSUE By Abel;		

Contents

1. Technical parameters

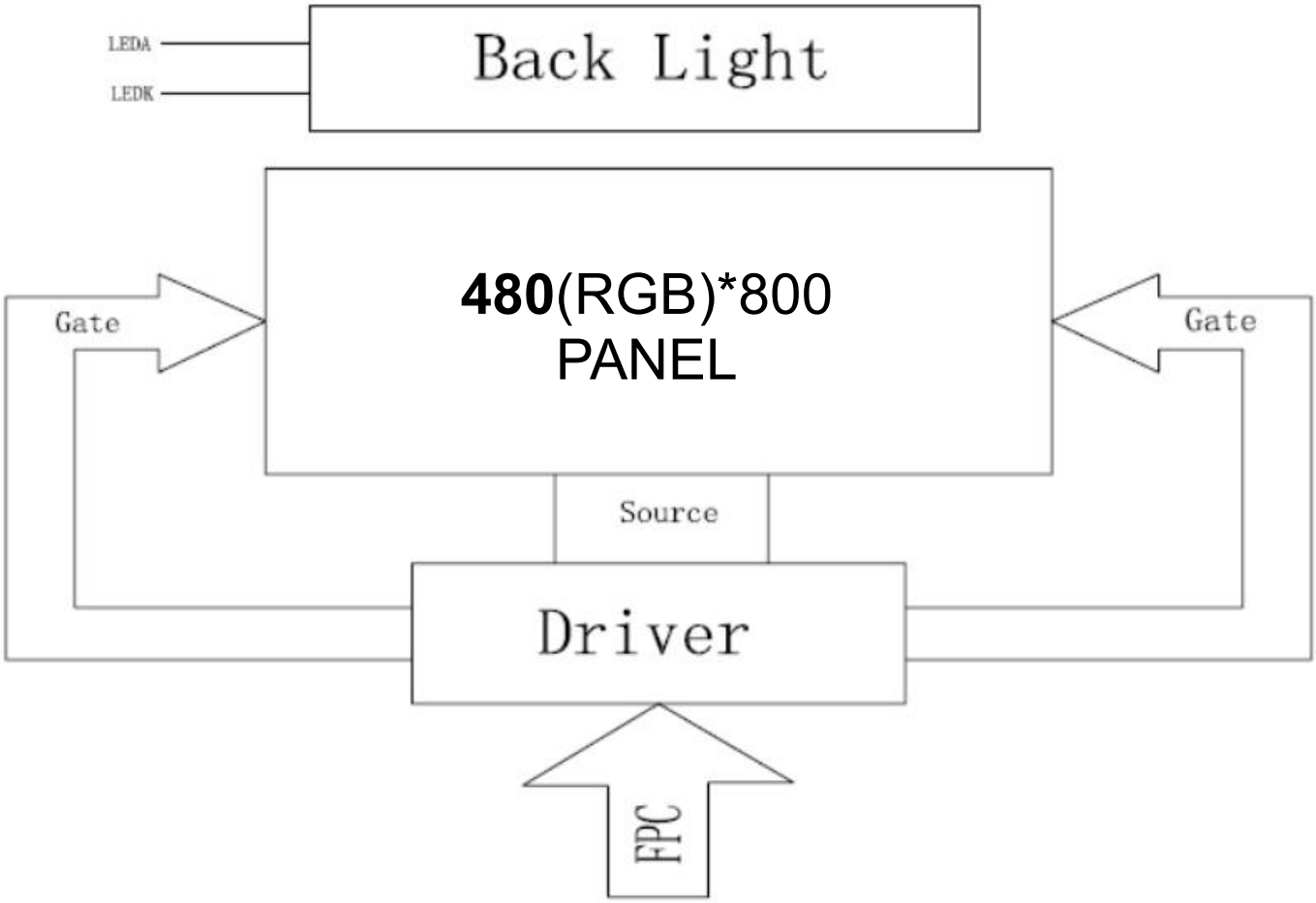
1.1 LCM General Information

ITEM	STANDARD VALUES	UNITS
LCD type	4.3TFT	--
Dot arrangement	480(RGB)×800	dots
Color filter array	RGB vertical stripe	--
Display mode	IPS / Transmission / Normally White	-
Eyes Viewing Direction	80/80/80/80	--
Driver IC	JD9161BA	--
Module size	65.8(W)×117(H)×3.83(T)(Exclude FPC)	mm
Active area	56.16(W)×93.6(H)	mm
Interface	RGB24	--
Operating temperature	-20 ~ +70	°C
Storage temperature	-30 ~ +80	°C
Back Light	White LED*8	--

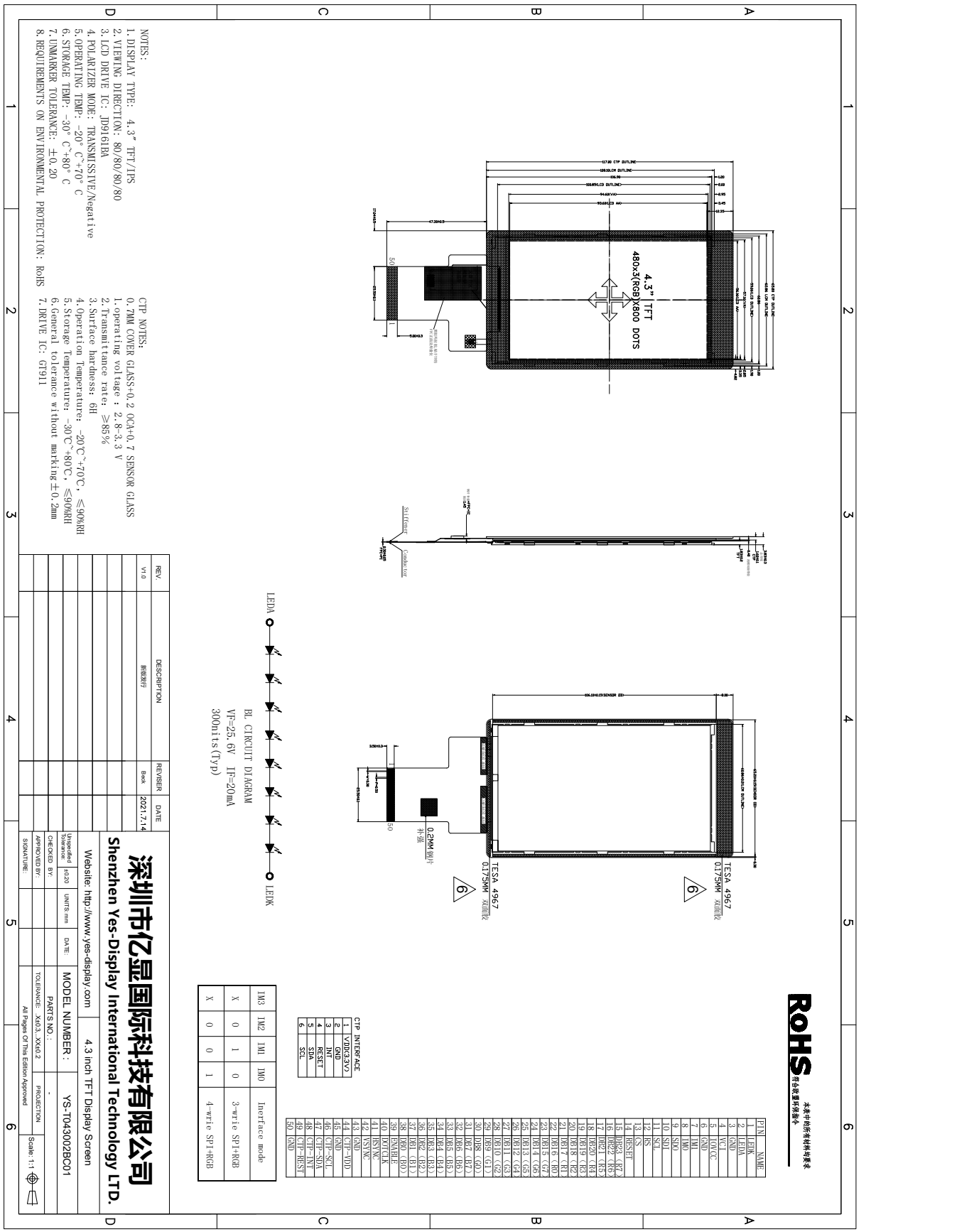
1.2 CTP General Information

CTP type	4.3”	--
Outline Dimension	65.80(W)×117.00(H)X1.60(T)	mm
Touch area	57.16(W)X94.60(H)	mm
Max Number of Fingers	5 point	--
Driver IC	GT911	--
surface hardness	6H	--
Operating temperature	-20 ~ +70	℃
Storage temperature	-30 ~ +80	℃

2. Block Dimension



3. Outline Dimension



4. Input terminal Pin Assignment Description

4.1 TFT Pin Description

PIN NO.	PIN NAME	DESCRIPTION
1	LEDK	LED backlight (Cathode).
2	LEDA	LED backlight (Anode).
3	GND	Ground for logic.
4	VDD	Power supply for voltage
5	IOVCC	Power supply for voltage(1.8)
6	GND	Ground for logic.
7	IM1	NC
8	IM0	NC
9	SDO	NC
10	SDI	Serial input signal in SPI I/F.
11	SCL	This pin is used serial interface clock in SPI
12	RS	Serves as command or parameter select.
13	CS	Chip select input pin (“Low” enable).
14	RESET	Reset input pin, Active “L”.
15-22	R7-R0	Red Data.
23-30	G7-G0	Green Data.
31-38	B7-B0	Blue Data.
39	TE	Display on/off.
40	PCLK	Dot clock signal input. Latching input data at its rising edge.
41	HSYNC	Horizontal sync input. Negative polarity.
42	VSYNC	Vertical sync input. Negative polarity.
43	GND	Ground for logic.
44	CTP-VDD	CTP_Power supply for voltage
45	GND	Ground for logic.
46	CTP_SCL	CTP_This pin is used serial interface clock in SPI
47	CTP_SDA	CTP_Serial input signal in SPI I/F..
48	CTP_INT	CTP int signal

49	CTP_RESET	CTP_.Reset input pin, Active “L”
50	GND	Ground for logic.

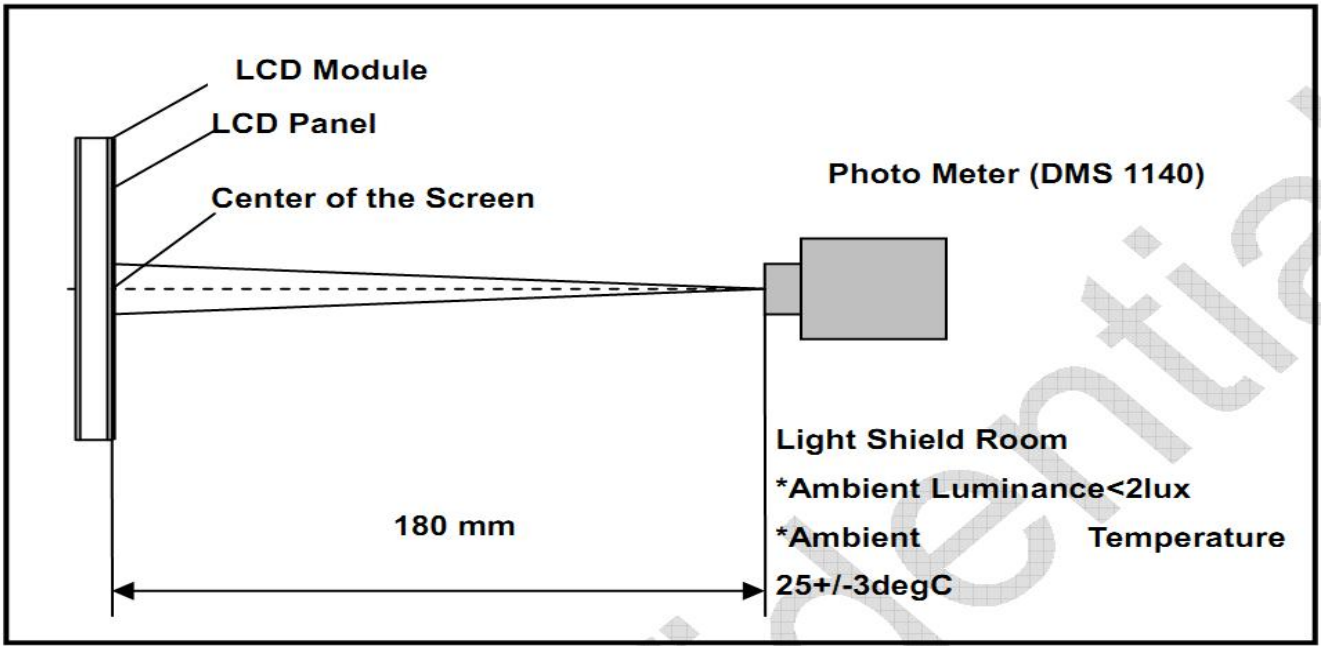
4.2 TP Pin Description

TBD

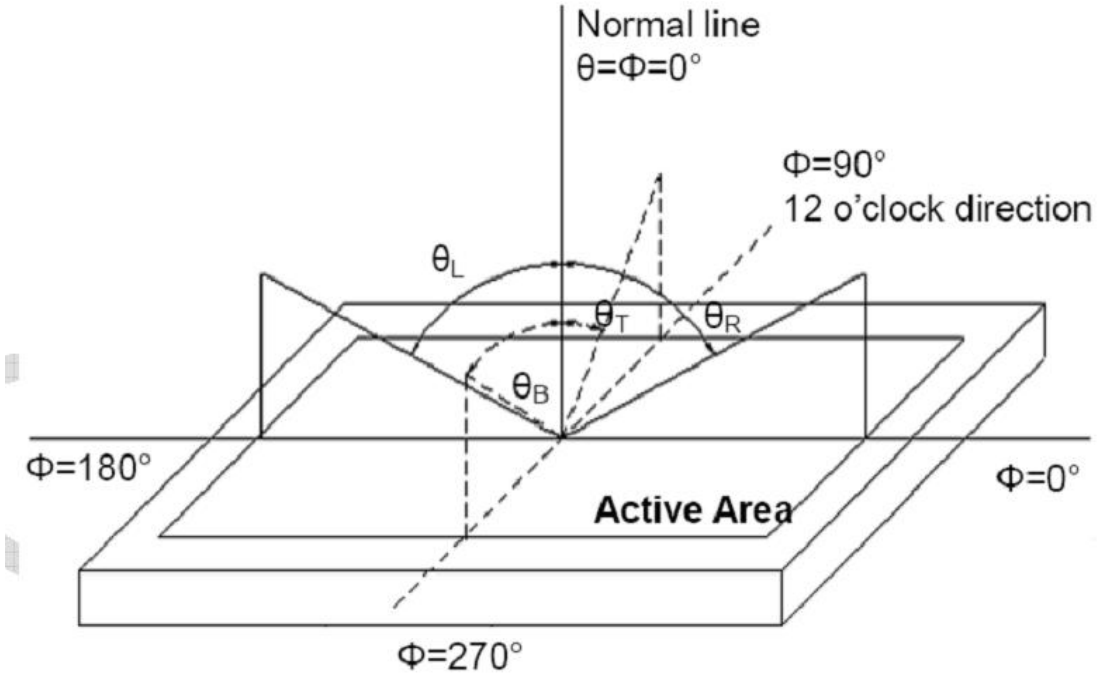
5. LCD Optical Characteristics

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Threshold Voltage		Vsat		4.1	4.3	4.5	V	Fig.1
		Vth		1.6	1.8	2.0	V	
Viewing Angle	Horizontal	Θ3	CR>10		80		°	Note 1
		Θ9			80		°	
	Vertical	Θ12			80		°	
		Θ6			80		°	
Contrast Ratio		CR	Θ= 0°		900			Note 2
Transmittance		T(%)	Θ= 0°		6.4			Note 3
NTSC		%	Θ= 0°		50			
Reproduction Of color	Red	Rx	Θ= 0°		TBD			Note 4 *CF glass
		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°		35	50	ms	Note 5

Note (1) Measurement Setup: The LCD module should be stabilized at given temp. 25°C for 15 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.



Note (2) Definition of Viewing Angle



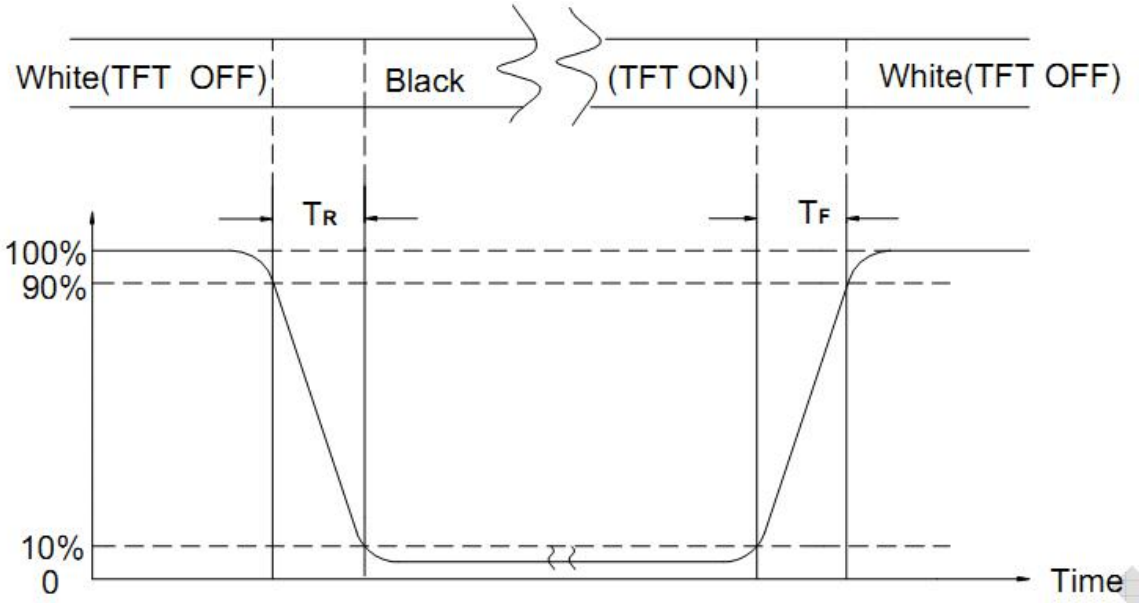
Note (3) Definition of Contrast Ratio (CR)

The contrast ratio can be calculated by the following expression

Contrast Ratio (CR) = L63 / L0

L63: Luminance of gray level 63, L0: Luminance of gray level 0

Note (4) Definition of response time



Note (5) Definition of Transmittance (Module is without signal input)

Transmittance = Center Luminance of LCD / Center Luminance of Back Light x 100%

Note (6) Definition of color chromaticity (CIE1931)

Color coordinates measured at the center point of LCD

6. TFT Electrical Characteristics

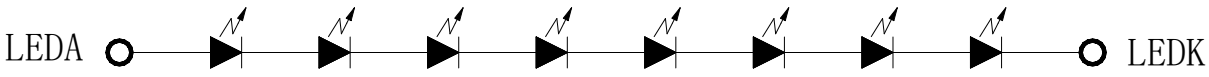
6.1 Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit
Logic Supply Voltage	VDD	-0.3	4.0	V
Input Voltage	Vin	-0.3	VDD+0.3	V
Operating Temperature	TOP	-20	70	℃
Storage Temperature	TST	-30	80	℃
Storage Humidity	HD	20	90	%RH

6.2 DC Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Logic Supply Voltage	VDD	2.5	2.8	3.6	V	-
Input High Voltage	V_{IH}	0.7VDD	-	VDD	V	-
Input Low Voltage	V_{IL}	GND	-	0.3 VDD	V	-
Output High Voltage	V_{OH}	0.8 VDD	-	VDD	V	-
Output Low Voltage	V_{OL}	GND	-	0.2 VDD	V	-
I/O Leak Current	I_{LI}	-1	-	1	uA	-
Supply Current	IDD	-	TBD	-	mA	-

6.3 LED Backlight Characteristics



BL CIRCUIT DIAGRAM

VF=25.6V IF=20mA

300nits(Typ)

Item	Symbol	MIN	TYP	MAX	UNIT	Test Condition
Supply Voltage	Vf	-	25.6	-	V	If=20mA
Supply Current	If	-	20	-	mA	-
Luminous Intensity for LCM	-	250	300	-	cd/m^2	If=20mA
Uniformity for LCM	-	-	60	-	%	If=20mA

Life Time	-	-	50000	-	Hr	If=20mA
Backlight Color	White					

7. Timing Characteristics

7.1 TFT Timing Characteristics

7.1.1 Display Serial Interface Timing Characteristics (RGB 8080 system

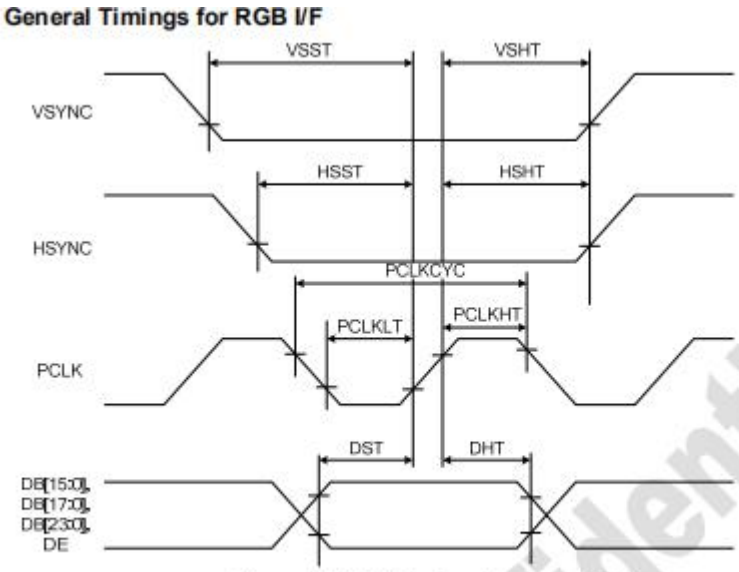


Figure 11.4: DPI interface AC characteristics

Signal	Symbol	Parameter	Min	Max	Unit	Description
DB[17:0]	TDST	Data Setup Time	20	--	ns	TRAT, TRATFM: 3K ohm Pull up or Down and 30pF Parallel Cap. To GND. TODH: 3K ohm Pull up or Down.
	TDHT	Data Hold Time	10	--	ns	
	TRAT	Read Access Time (ID)	--	150	ns	
	TODH	Output Disable Time	10	--	ns	

Table 3 8080 Parallel Interface Characteristics

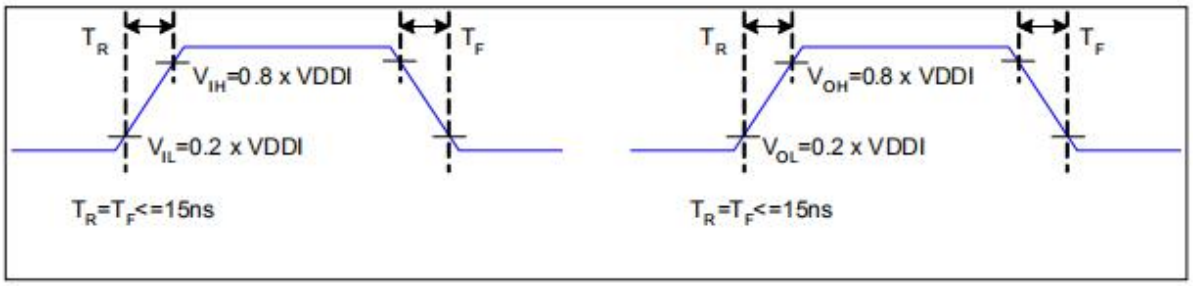
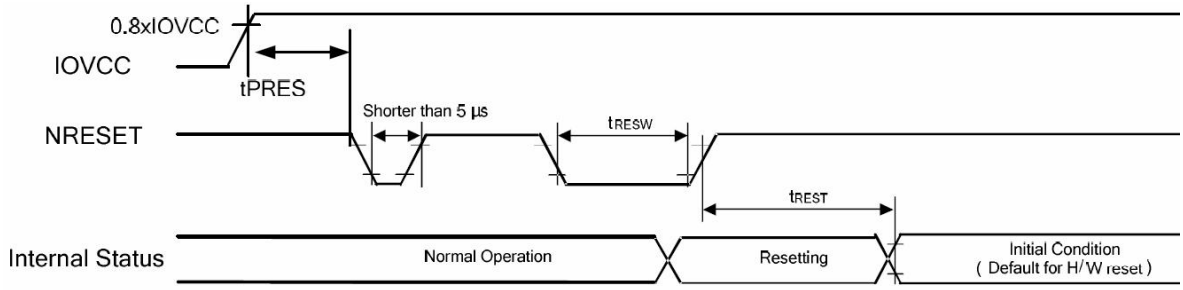


Figure 3 Rising and Falling Timing for I/O Signal

Note: The rising time and falling time (Tr, Tf) of input signal and fall time are specified at 15 ns or less. Logic high and low levels are specified as 20% and 80% of VDDI for Input signals.

7.1.2 Reset Timing Characteristics



7.1.3 Power on/off timing sequence
check the IC datasheet!

7.2 TP Timing Characteristics

TBD

8. Inspection Standard

8.1 Incoming Inspection and Standard:

The below incoming inspection are applied to the TFT LCM Modules supplied by ShenZhen Yes-Display International Technology CO.,LTD. The customers should inspect the LCM within 14 days after receiving the goods. The result of inspection should be notified to the Seller in the writing copy promptly, if the customer do not send them within 14 days, the seller has the right to judge as acceptance of goods. The inspection lot size is treated as the quantity per shipment and per model. The sampling plan shall be inspected under MIL-STD015E in Level II by single sampling. The acceptable quality level (AQL) are categorized as below grades:

CRITICAL= 0.4%, MAJOR= 0.65%, MINOR= 1.5%

8.2 Inspection condition and Warranty policy:

The delivered LCM should be stored properly, ideally under climate-controlled environment at 25 (±5) degree Celsius as well as 60% (±10) Relative Humidity. The LCM shall be inspected in the viewing angle of 45 degree from the four major angles (U/D/L/R) under the single fluorescent lamp of 20W (equal to 300 to 500 lux). For warranty, ShenZhen Yes-Display International Technology CO.,LTD. will provide 12 months of

warranty period as standard, and provide the new replacement for the defective products which belong to the Seller's responsibility verified by the quality department.

8.3 Inspection Criteria:

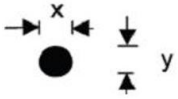
8.3.1 Critical defect

Item No.	Inspection content	Judgement
8.3.1.1	Functional defects	No display, abnormal display, short circuit, missing line, off-contrast and chromaticity, Touch Panel non-function
8.3.1.2	Model mixed	Other model mixed

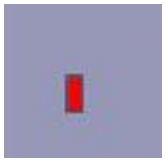
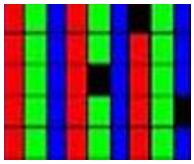
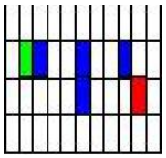
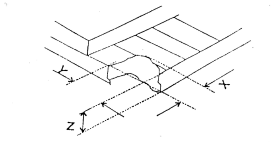
8.3.2 Major defect:

Item No.	Inspection content	Judgement
8.3.2.1	Product indication	Missing model no. and wrong model no. is indicated on the LCM.
8.3.2.2	Glass cracking	The LCD and touch panel glass crack or breakage
8.3.2.3	Missing component	The function component missing such as connector, cable, etc.

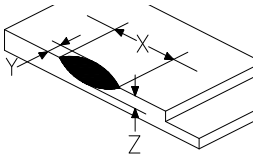
8.3.3 Minor defect (LCD) :

Item No.	Inspection content	Judgement
8.3.3.1	Black/White spot Foreign particles Dust in the cell	$\varphi = (x+y)/2$ 

Diameter (mm)	Acceptable Q'ty
Φ ≦ 0.1	Ignore
0.1 < Φ ≦ 0.25	3 (Distance>5mm)
0.25 < Φ	Not allowed

<table>
<tr><td>8.3.3.2</td><td>Linear defect
Black/white line
Black/white scratch</td><td>
<table>
<tr><th>Length(mm)</th><th>Width (mm)</th><th>Acceptable Q’ty</th></tr>
<tr><td></td><td>W ≦0.03</td><td>Ignore</td></tr>
<tr><td>L≦ 5.0</td><td>0.03 <W≦0.07</td><td>3</td></tr>
<tr><td></td><td>0.07 <W</td><td>Follow 8.3.3.1</td></tr>
</table>
</td></tr>
<tr><td>8.3.3.3</td><td>Polarizer Bubbles
Dent on polarizer</td><td>
<table>
<tr><th>Diameter (mm)</th><th>Acceptable Q’ty</th></tr>
<tr><td>Φ ≦ 0.2</td><td>Ignore</td></tr>
<tr><td>0.2 < Φ ≦ 0.5</td><td>2 (Distance>5mm)</td></tr>
<tr><td>0.5 < Φ</td><td>Not allowed</td></tr>
</table>
</td></tr>
<tr><td>8.3.3.4</td><td>Electrical Dot defect</td><td>Bright dot and Dark dot definition:
  or 
  (Two adjacent dot)
Inspection pattern: black, white, red, green, and blue screen.
<table>
<tr><th>Items</th><th>Acceptable Q’ty</th></tr>
<tr><td>Bright dot</td><td>N ≦ 4 (Distance >5mm)</td></tr>
<tr><td>Dark dot</td><td>N ≦ 4 (Distance >5mm)</td></tr>
</table>
</td></tr>
<tr><td>8.3.3.5</td><td>Glass Defect-Corner chipping</td><td> 

<table>
<tr><th>Size(mm)</th><th>Judgement</th></tr>
<tr><td>X≦3mm, Y≦S ,
Z≦ T
(S= ITO length, T=Single glass thickness)</td><td>Accept</td></tr>
</table>
</td></tr>
</table>

8.3.3.6	Glass Defect-Side fragment	

Size(mm)	Judgement
X≦2 mm, Y≦ border edge Z≦T (T= single glass thickness)	Accept

8.3.4 Minor defect (Touch Panel)

Item No.	Inspection content	Judgement
8.3.4.1	Scratch, dust, particles, foreign materials in “linear type”	

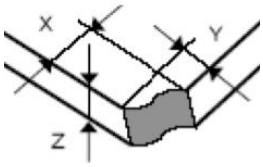
Size (mm)	Acceptable Q’ty
W≦0.05mm, L≦10mm	Ignore
0.05mm<W ≦ 0.07mm, L ≦ 10mm	3
W>0.07mm	Reject

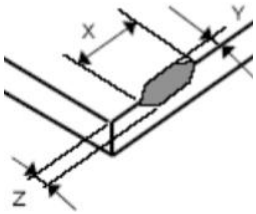
8.3.4.2	Scratch, dust, particles, foreign materials in “round type”	

Diameter (mm)	Acceptable Q’ty
Φ≦ 0.25mm	Ignore
0.25mm<Φ≦ 0.35mm	5
Φ > 0.35mm	Reject

8.3.4.3	Air bubbles	

Diameter (mm)	Acceptable Q’ty
Φ≦ 0.2mm	Ignore
0.2mm<Φ≦ 0.5mm	3
Φ > 0.5mm	Reject

<table>
<tr><td>8.3.4.5</td><td>Scratch on printing area</td><td>
<table>
<tr><th>Size (mm)</th><th>Acceptable Q'ty</th></tr>
<tr><td>W≦0.03mm, L≦5 mm</td><td>Ignore</td></tr>
<tr><td>0.03mm<W≦0.05mm, L≦5mm</td><td>3</td></tr>
<tr><td>W>0.05mm or L> 5mm</td><td>Reject</td></tr>
</table>
</td></tr>
<tr><td>8.3.4.6</td><td>Corner chipping</td><td>


<table>
<tr><th>Size(mm)</th><th>Judgement</th></tr>
<tr><td>X≦2mm, Y≦2mm
Z<1/2T
(T= single glass thickness)</td><td>Accept</td></tr>
</table>
</td></tr>
<tr><td>8.3.4.7</td><td>Edge chipping</td><td>


<table>
<tr><th>Size(mm)</th><th>Judgement</th></tr>
<tr><td>X≦3 mm, Y≦3 mm
Z≦1/2 T
(T= single glass thickness)</td><td>Accept</td></tr>
</table>
</td></tr>
</table>

9. Reliability Test Conditions and Methods

9.1 Reliability Test Conditions and Methods:

NO.	TEST ITEMS	TEST CONDITION	INSPECTION AFTER TEST

①	High Temperature Storage	80°C±2°C×96Hours	Inspection after 2~4hours storage at room temperature, the samples should be free from defects: 1, Air bubble in the LCD. 2, Seal leak. 3, Non-display. 4, Missing segments. 5, Glass crack. 6, Current IDD is twice higher than initial value. 7, The surface shall be free from damage. 8, The electric characteristic requirements shall be satisfied.
②	Low Temperature Storage	-30°C±2°C×96Hours	
③	High Temperature Operating	70°C±2°C×96Hours	
④	Low Temperature Operating	-20°C±2°C×96Hours	
⑤	Temperature Cycle(Storage)	-20°C ⟺ 25°C ⟺ 70°C (30min) (5min) (30min) 1cycle Total 10cycle	
⑥	Damp Proof Test (Storage)	50°C±5°C×90%RH×96Hours	
⑦	Vibration Test	Frequency:10Hz~55Hz~10Hz Amplitude:1.5MM X,Y,Z direction for total 3hours (packing condition test will be tested by a carton)	
⑧	Drooping Test	Drop to the ground from 1M height one time every side of carton. (packing condition test will be tested by a carton)	
⑨	ESD Test	Voltage:±8KV,R:330Ω,C:150PF,Air Mode,10times	

REMARK:

1, The Test samples should be applied to only one test item.

2, Sample side for each test item is 5~10pcs.

3,For Damp Proof Test, Pure water(Resistance＞10MΩ)should be used.

4,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.

5, EL evaluation should be accepted from reliability test with humidity and temperature: Some defects such as black spot/blemish can happen by natural chemical reaction with humidity and Fluorescence EL has.

6, Failure Judgment Criterion: Basic Specification Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

10. Cautions and Handling Precautions

10.1 Mounting method

The LCD panel of TFT module consists of two thin glass plates with polarizes which easily be damaged. And since the module in so constructed as to be fixed by utilizing fitting holes in the printed circuit board.

Extreme care should be needed when handling the LCD modules.

10.2 Caution of LCD handling and cleaning

When cleaning the display surface, Use soft cloth with solvent

[Recommended below] and wipe lightly

- Isopropyl alcohol

- Ethyl alcohol

Do not wipe the display surface with dry or hard materials that will damage the polarizer surface.

Do not use the following solvent:

- Water
- Aromatics

Do not wipe ITO pad area with the dry or hard materials that will damage the ITO patterns

Do not use the following solvent on the pad or prevent it from being contaminated:

- Soldering flux
- Chlorine (Cl) , Sulfur (S)

If goods were sent without being silicon coated on the pad, ITO patterns could be damaged due to the corrosion as time goes on.

If ITO corrosion happen by miss-handling or using some materials such as Chlorine (Cl), Sulfur (S) from customer, Responsibility is on customer.

10.3 Caution against static charge

The LCD module use C-MOS LSI drivers, so we recommended that you:

Connect any unused input terminal to power or ground, do not input any signals before power is turned on, and ground your body, work/assembly areas, and assembly equipment to protect against static electricity.

10.4 packing

- Module employs LCD elements 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 direct to sunshine or high temperature/humidity

10.5 Caution for operation

- It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage then the limit cause the shorter LCD life.
- An electrochemical reaction due to direct current causes LCD's undesirable deterioration, so that the use of direct current drive should be avoided.
- Response time will be extremely delayed at lower temperature then the operating temperature range and on the other hand at higher temperature LCD's how dark color

in them. However those phenomena do not mean malfunction or out of order with LCD's, which will come back in the specified operation temperature.

- If the display area is pushed hard during operation, some font will be abnormally displayed but it resumes normal condition after turning off once.

- Slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit.

Usage under the maximum operating temperature, 50%Rh or less is required.

10.6 storing

In the case of storing for a long period of time for instance, for years for the purpose or replacement use, the following ways are recommended.

- Storage in a polyethylene bag with the opening sealed so as not to enter fresh air outside in it. And with no desiccant.

- Placing in a dark place where neither exposure to direct sunlight nor light's keeping the storage temperature range.

- Storing with no touch on polarizer surface by the anything else.

[It is recommended to store them as they have been contained in the inner container at the time of delivery from us

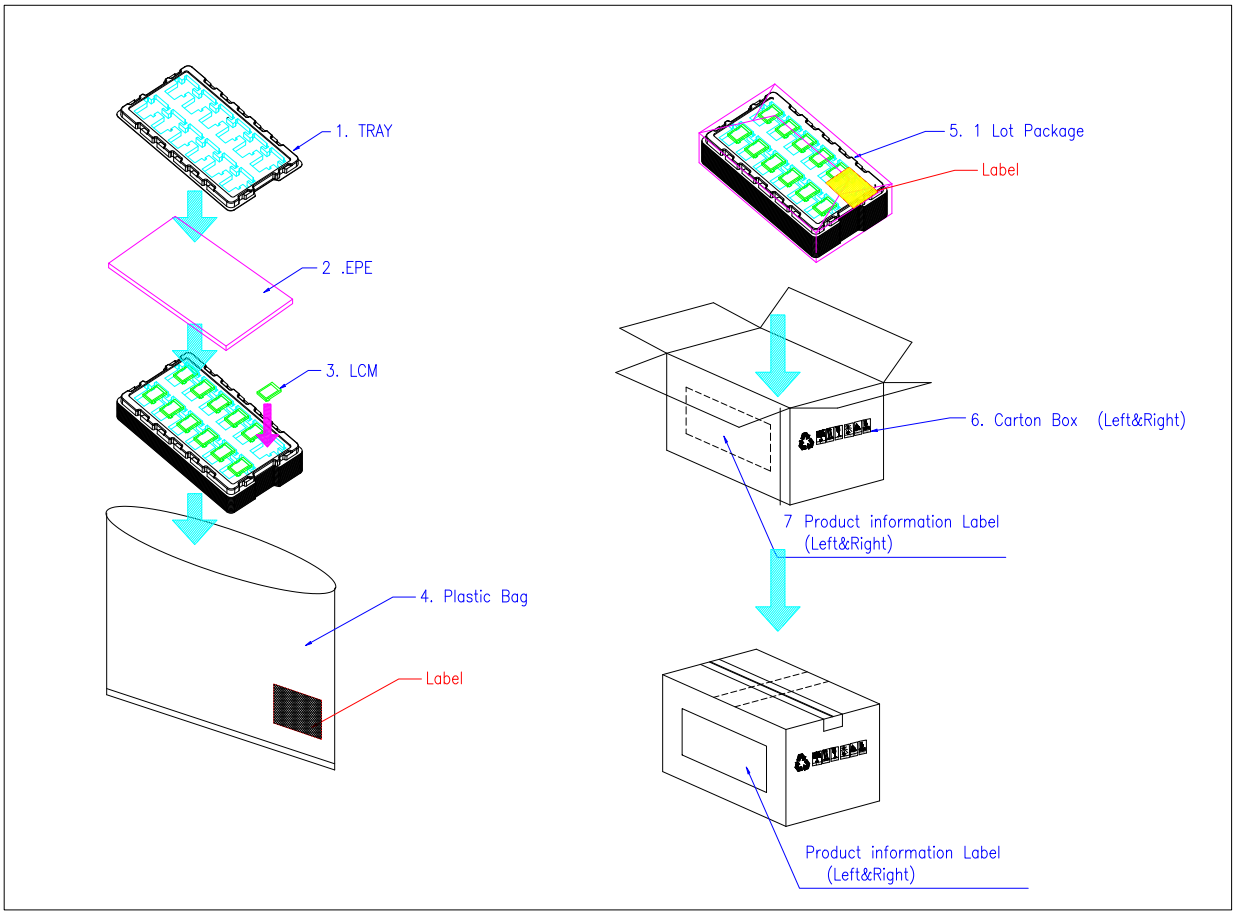
10.7 Safety

- It is recommendable to crash damaged or unnecessary LCD's into pieces and wash off liquid crystal by either of solvents such as acetone and ethanol, which should be burned up later.

- When any liquid leaked out of a damaged glass cell comes in contact with your hands, please wash it off well with soap and water

11. Packing Method

11.1 Method



11.2 Packing Label

TBD