YB 億都集團
YEEBO GROUP

SPECIFICATION
FOR
LCD MODULE

MODULE NO: YB-YG7201280C12A-N-A0

Doc.Version:02

Customer Approval:

□ Accept	□ Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer	张影彩	2020-09-10
Check	Mechanical Engineer		2020-09-10
Verify			2020-09-11
Approval			2020-09-11

■ APPROVAL FOR SPECIFICATIONS ONLY

□ APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D

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DOCUMENT REVISION HISTORYed

Version	DATE	DESCRIPTION	CHANGED BY
VA	2020.8.05	NEW design	Wangxin
01	2020.09.09	Update Limited Warranty & Dimensional Outline……P2 & P22	Wangxin
02	2020.09.10	Update AC Characteristics……P8-P11	Wangxin

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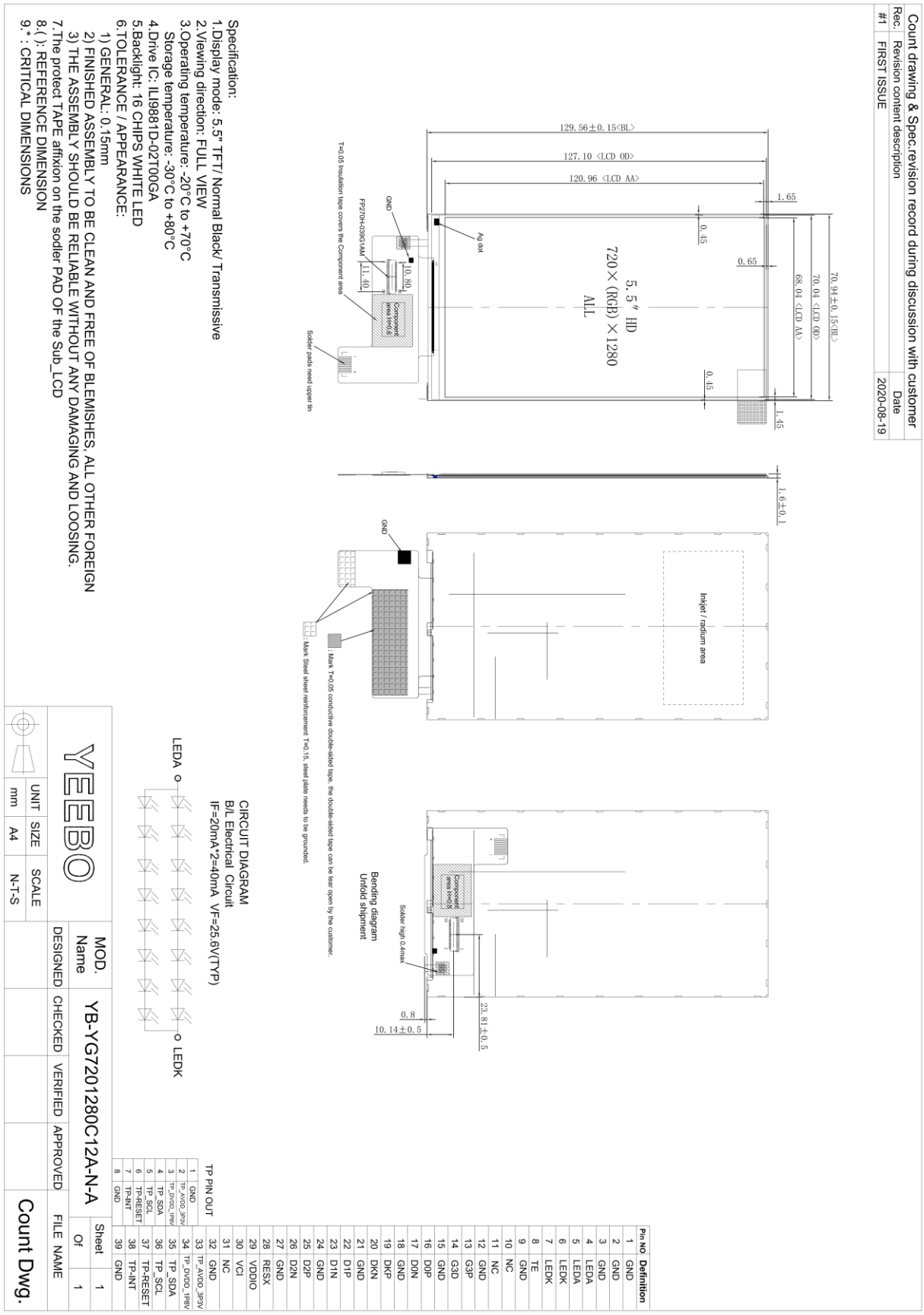
CONTENTS PAGE

1. Features & Mechanical Specifications

Item	Contents	Unit
	LCD	
LCD Type	TFT Transmissive Normal Black	--
Viewing direction	ALL	--
Backlight	White LED x16 in series	--
Interface	MIPI DSI 4 Passageway	--
Driver IC	ILI9881D-02T00GA	--
Outline Dimension	70.94（W) x129.56(H) x1.70MAX(T)	mm
Glass area (W×H×T)	70.04×127.10×0.4	mm
Active area (W×H)	68.04(W) x120.96(H)	mm
Number of Dots	720 x RGB x 1280	--
Pixel pitch (W×H)	31.5 x 94.5	um
Operating Temperature	-20～ +70	℃
Storage temperature	-30～ +80	℃

2. Dimensional Outline



4. Pin Description

PIN No.	SYMBOL	Function
1	GND	Ground
2	GND	Ground
3	GND	Ground
4	LEDA	Backlight LED Anode
5	LEDA	Backlight LED Anode
6	LEDK	Backlight LED Cathode.
7	LEDK	Backlight LED Cathode.
8	TE	The FMARK signal is used when writing RAM data in synchronization with frame. Leave the pin open when not in use.
9	GND	Ground
10	NC	NC
11	NC	NC
12	NC	NC
13	D3P	Mipi data signal
14	D3N	Mipi data signal
15	GND	Ground
16	D0P	Mipi data signal
17	D0N	Mipi data signal
18	GND	Ground
19	DKP	Mipi clock signal
20	DKN	Mipi clock signal
21	GND	Ground
22	D1P	Mipi data signal
23	D1N	Mipi data signal
24	GND	Ground
25	D2P	Mipi data signal
26	D2N	Mipi data signal
27	GND	Ground
28	RESX	Reset pin. Setting either pin low initializes the LSI. Must be reset after power is supplied
29	VDDIO	power supply 1.8V
30	VCI	power supply 2.8V
31	VCI	power supply 2.8V
32	GND	Ground
33	TP_AVDD_3P3V	TP_AVDD_3P3V
34	TP_DVDD_1P8V	TP_DVDD_1P8V
35	TP_SDA	TP_SDA
36	TP_SCL	TP_SCL

37	TP-RESET	TP-RESET
38	TP-INT	TP-INT
39	GND	Ground

5. Absolute Maximum Ratings

Parameter	Symbol	Value		Unit	Remarks
		Min	Max		
TFT Gate ON Voltage	VGH	12	18	V	Note 1
TFT Gate OFF Voltage	VGL	-12	-7	V	Note 2
TFT Common Electrode Voltage	VCom	-2	5	V	Note 3
TFT Kick-Back Voltage	ΔV_p	1.464	1.616	V	

6. Electrical Characteristics

DC Characteristics

Item	Symbol	Min.	Type.	Max.	Unit
Logic Supply Voltage	VCC	2.8	-	3.3	V
I/O Supply Voltage	IOVCC	1.65	-	3.0	V

7. Backlight Characteristics

White LED ×16 in Series

(Ta = 25°C)

PARAMETER	Sym	Min	Typ	Max	Unit	Test Condition	Note
Supply Current	IBL	-	40	-	mA	-	-
Voltage of the Backlight	VBL	-	25.6	-	V	-	-
Luminous Intensity for LCM	IV	490	550	-	Cd/m^2		-
Uniformity for LCM	-	70	-	-	%		-
LED Life Time	-	-	50000	-	Hr		-
Color	White						

Color coordinates

Note: Test in White

Item		Symbol	Condition	Min.	Typ.	Max.
Chromaticity Coordinates (Transmissive)	Red	x	θ = φ = 0° LED Backlight	0.5578	0.5878	0.6178
		y		0.3536	0.3836	0.4136
	Green	x		0.2443	0.2743	0.3043
		y		0.6268	0.6568	0.6868
	Blue	x		0.1068	0.1368	0.1668
		y		0.0203	0.0503	0.0803
	White	x		0.2481	0.2781	0.3081
		y		0.3205	0.3505	0.3805

Measuring Condition
1. Measuring surrounding: dark room
2. Ambient temperature: 25±2℃
3. 30 min. Warm-up time.

8. Electro-Optical Characteristics

UsingCMO LCD+ Normal Polarizer+Corresponding Backlight, reference only (Note 1,Note 2)

Item		Symbol	Conditions	Specifications			Unit	Note
				Min	Typ	Max		
Transmittance		T(%)	–	-	3.5	-	-	-
Contrast Ratio		CR	θ=1± Normal Viewing Angle	600	1000	-	–	(1) (2)
Response time		TR+TF		-	25	35	ms	(1) (3)
Viewing Angle	Hor.	θx+	CR≧10	-	80	-	deg.	(1)
		θx-		-	80	-		
	Ver.	θy+		-	80	-		
		θy-		-	80	-		

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 FIGURE 2 shown in Appendix).
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 2 shown in Appendix). Luminance measured with Polarizer. Luminance Contrast Ratio (CR) is defined mathematically

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

3. Transmittance is the value with Polarizer.
4. The color chromaticity coordinates specified in Table 4 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 C/F without Polarizer. Measurement condition is C - light source & Halogen Lamp.
5. The electro-optical response time measurements shall be made as FIGURE 3 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 Tr, and 90% to 10% is Td.

9. Instruction Description

Please refer to ILI9881D-02T00GA **datasheet**

10. AC Characteristics

High Speed Mode-Clock Channel Timing

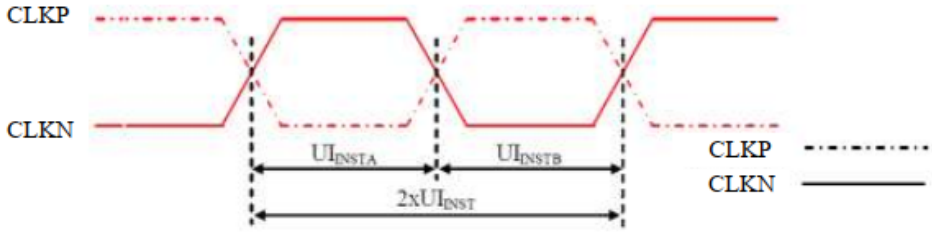


Figure 113: DSI Clock Channel Timing

Table 38: DSI Clock Channel Timing

Signal	Symbol	Parameter	Min	Max	Unit
CLKP/N	$2xUI_{INST}$	Double UI instantaneous	*Note 2*	25	ns
CLKP/N	UI_{INSTA}, UI_{INSTB} (Note 1)	UI instantaneous Half	*Note 2*	12.5	ns

Notes:

1. UI = UIINSTA = UIINSTB

2. Define the minimum value of 24 UI per Pixel, see Table 39.

Table 39: Limited Clock Channel Speed

Data type	Two Lanes speed	Three Lanes speed	Four Lanes speed
Data Type = 00 1110 (0Eh), RGB 565, 16 UI per Pixel	566 Mbps	466 Mbps	366 Mbps
Data Type = 01 1110 (1Eh), RGB 666, 18 UI per Pixel	637 Mbps	525 Mbps	412 Mbps
Data Type = 10 1110 (2Eh), RGB 666 Loosely, 24 UI per Pixel	850 Mbps	700 Mbps	550 Mbps
Data Type = 11 1110 (3Eh), RGB 888, 24 UI per Pixel	850 Mbps	700 Mbps	550 Mbps

High Speed Mode-Date Clock Channel Timing

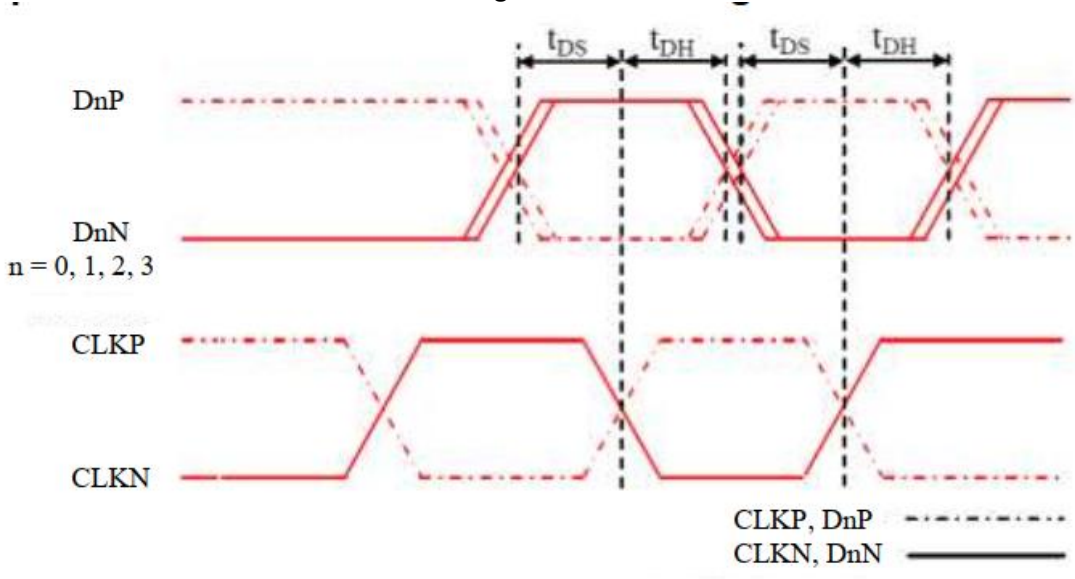


Figure 114: DSI Data to Clock Channel Timings

Table 40: DSI Data to Clock Channel Timings

Signal	Symbol	Parameter	Min	Max
DnP/N , n=0,1,2,3	t_{DS}	Data to Clock Setup time	0.15xUI	-
	t_{DH}	Clock to Data Hold Time	0.15xUI	-

Low Speed Mode Bus Turn Around

Lower Power Mode and its State Periods on the Bus Turnaround (BTA) from the MCU to the Display Module
(ILI9881D) are illustrated for reference purposes below.

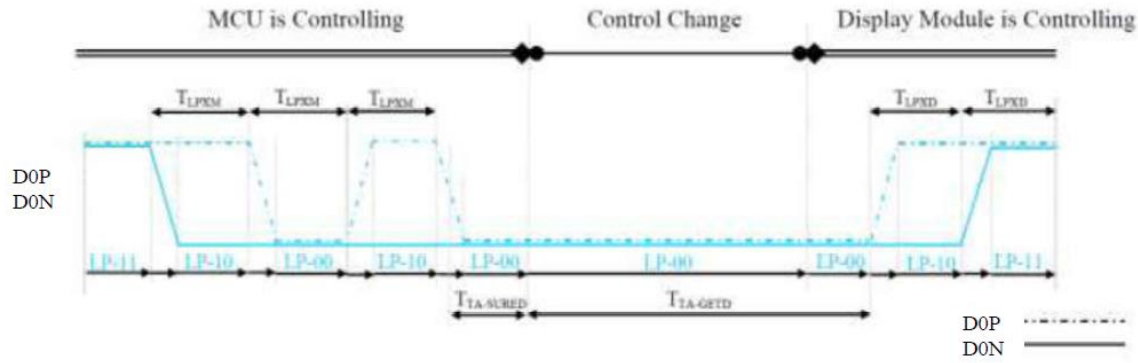


Figure 116: BTA from the MCU to the Display Module

Lower Power Mode and its State Periods on the Bus Turnaround (BTA) from the Display Module (ILI9881D) to the
MCU are illustrated for reference purposes below.

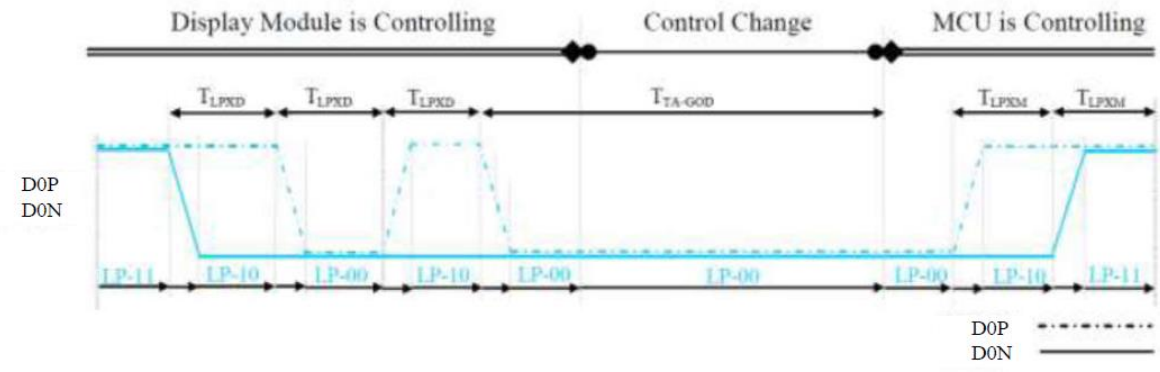


Figure 117: BTA from the Display Module to the MCU

Table 42: Low Power State Period Timings – A

Signal	Symbol	Description	Min	Max	Unit
D0P/N	T_{LPXM}	Length of LP-00, LP-01, LP-10 or LP-11 periods MCU ➔ Display Module (ILI9881D)	50	75	ns
D0P/N	T_{LPXD}	Length of LP-00, LP-01, LP-10 or LP-11 periods Display Module (ILI9881D) ➔ MCU	50	75	ns
D0P/N	$T_{TA-SURED}$	Time-out before the Display Module (ILI9881D) starts driving	T_{LPXD}	$2xT_{LPXD}$	ns

Table 43: Low Power State Period Timings – B

Signal	Symbol	Description	Time	Unit
D0P/N	$T_{TA-GETD}$	Time to drive LP-00 by Display Module (ILI9881D)	$5xT_{LPXD}$	ns
D0P/N	T_{TA-GOD}	Time to drive LP-00 after turnaround request - MCU	$4xT_{LPXD}$	ns

Data Lanes from Low Power Mode to High Speed Mode

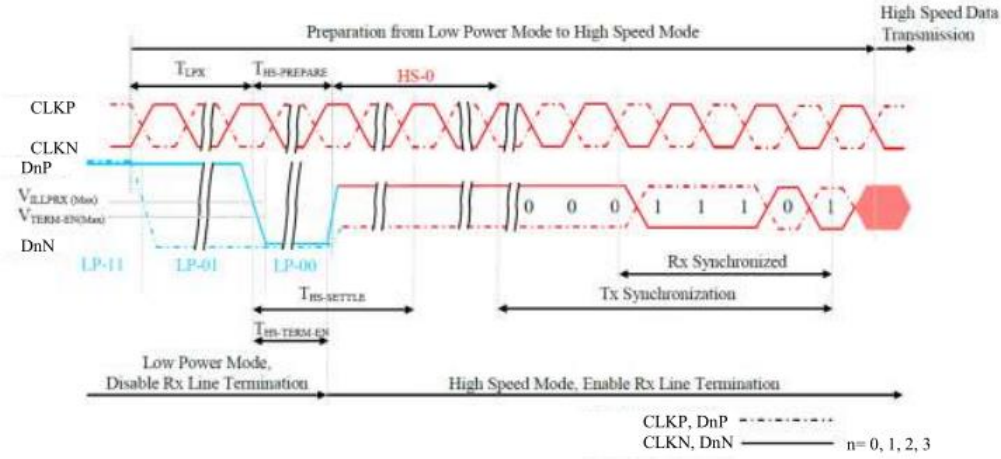


Figure 118: Data Lanes - Low Power Mode to High Speed Mode Timings

Table 44: Data Lanes - Low Power Mode to High Speed Mode Timings

Signal	Symbol	Description	Min	Max	Unit
DnP/N, n = 0,1,2,3	T_{LPX}	Length of any Low Power State Period	50	-	ns
DnP/N, n = 0,1,2,3	$T_{HS-PREPARE}$	Time to drive LP-00 to prepare for HS Transmission	40+4xUI	85+6xUI	ns
DnP/N, n = 0,1,2,3	$T_{HS-TERM-EN}$	Time to enable Data Lane Receiver line termination measured from when Dn crosses VILMAX	-	35+4xUI	ns

Data Lanes from Low Power Mode to High Speed Mode

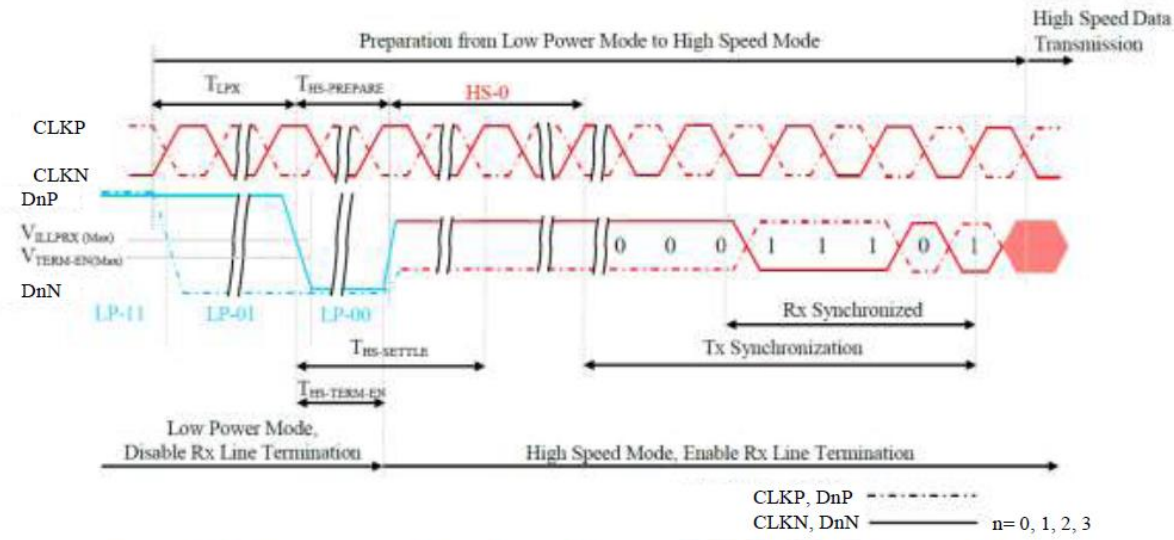


Figure 118: Data Lanes - Low Power Mode to High Speed Mode Timings

Table 44: Data Lanes - Low Power Mode to High Speed Mode Timings

Signal	Symbol	Description	Min	Max	Unit
DnP/N, n = 0,1,2,3	T_{LPX}	Length of any Low Power State Period	50	-	ns
DnP/N, n = 0,1,2,3	$T_{HS-PREPARE}$	Time to drive LP-00 to prepare for HS Transmission	40+4xUI	85+6xUI	ns
DnP/N, n = 0,1,2,3	$T_{HS-TERM-EN}$	Time to enable Data Lane Receiver line termination measured from when Dn crosses VILMAX	-	35+4xUI	ns

DSI Clock Burst High Speed Mode to/from Low Power Mode

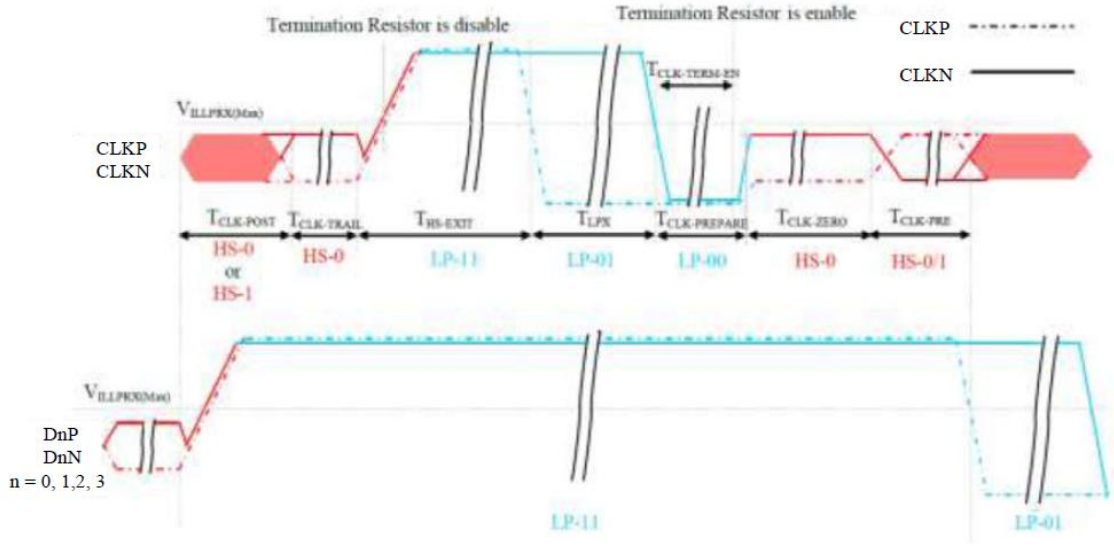


Figure 120: Clock Lanes - High Speed Mode to/from Low Power Mode Timings

Table 46: Clock Lanes - High Speed Mode to/from Low Power Mode Timings

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

Reset Timing

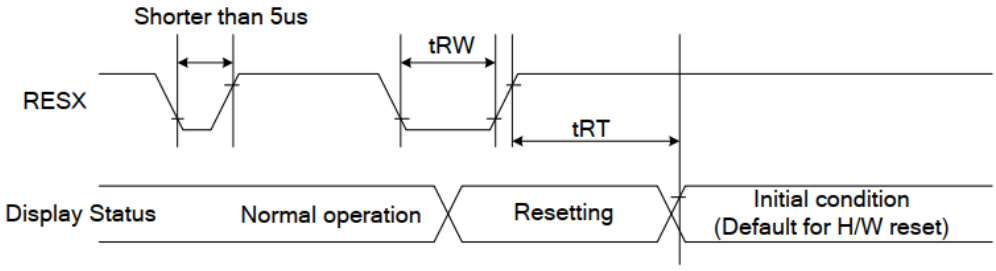


Figure 121: Reset Timing

Table 47: Reset Timing

Signal	Symbol	Parameter	Min	Max	Unit
RESX	tRW	Reset pulse duration	10		uS
	tRT	Reset cancel		5 (note 1,5)	mS
				120 (note 1,6,7)	mS

Notes:

1. *The reset cancel also includes required time for loading ID bytes, VCOM setting and other settings from EEPROM to registers. This loading is done every time when there is H/W reset cancel time (tRT) within 5 ms after a rising edge of RESX.*
2. *Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the Table 48.*

Table 48: Reset Descript

RESX 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 enters the blanking sequence, which maximum time is 120 ms, when Reset Starts in the Sleep Out mode. The display remains the blank state in the Sleep In mode.) and then return to Default condition for Hardware Reset.
4. Spike Rejection can also be applied during a valid reset pulse, as shown below:

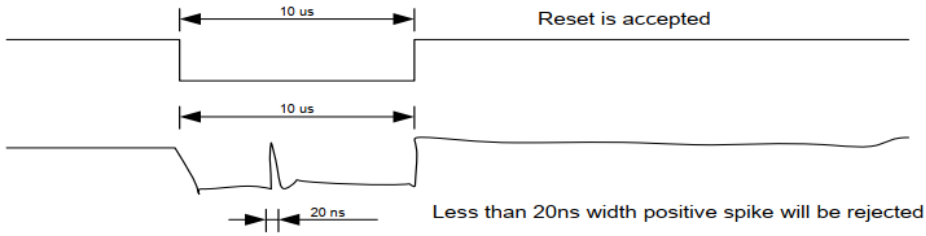


Figure 122: Positive Noise Pulse during Reset Low

5. When Reset applied during Sleep In Mode.
6. When Reset applied during Sleep Out Mode.
7. It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

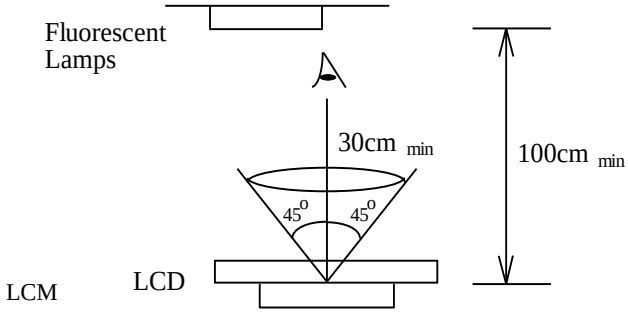
11.Quality Specifications

All The raw material are Rohs complicant.

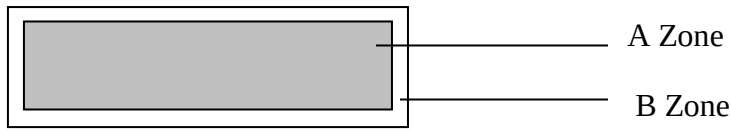
11.1 Standard of the product appearance test

Manner of appearance test: The inspection should be performed in using 20W x 2 fluorescent lamps. Distance between LCM and fluorescent lamps should be 100 cm or more. Distance between LCM and inspector eyes should be 30 cm or more.

Viewing direction for inspection is 45° from vertical against LCM.



Definition of zone:



A Zone: viewing area
B Zone: outside viewing area

11.2 Specification of quality assurance

AQL inspection standard

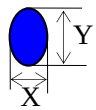
Sampling method: MIL-STD-105E, Level II, single sampling

Defect classification (Note: * is not including)

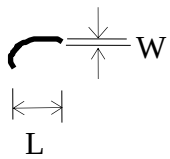
Classify	Item		Note	AQL
Major	Display state	Short or open circuit	1	0.65
		LC leakage		
		Flickering		
		No display		
		Wrong viewing direction		
		Contrast defect (dim, ghost)	2	
		Back-light	1,8	
	Non-display	Flat cable or pin reverse	10	
		Wrong or missing component	11	
Minor	Display state	Background color deviation	2	1.0
		Black spot and dust	3	
		Line defect, Scratch	4	
		Rainbow	5	
		Chip	6	
		Pin hole	7	
	Polarizer	Protruded	12	
		Bubble and foreign material	3	
	Soldering	Poor connection	9	
	Wire	Poor connection	10	
	TAB	Position, Bonding strength	13	

Note on defect classification

<table>
<tr><th>No.</th><th>Item</th><th>Criterion</th></tr>
<tr><td rowspan="6">1</td><td>Short or open circuit</td><td rowspan="6">Not allow</td></tr>
<tr><td>LC leakage</td></tr>
<tr><td>Flickering</td></tr>
<tr><td>No display</td></tr>
<tr><td>Wrong viewing direction</td></tr>
<tr><td>Wrong Back-light</td></tr>
<tr><td rowspan="2">2</td><td>Contrast defect</td><td rowspan="2">Refer to approval sample</td></tr>
<tr><td>Background color deviation</td></tr>
<tr><td>3</td><td>Point defect,
Black spot, dust
(including Polarizer)

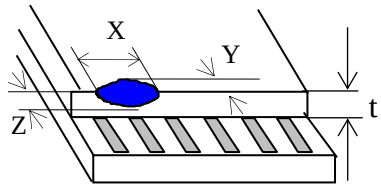
ϕ = (X+Y)/2</td><td> 

<table>
<tr><th>Point
Size</th><th>Acceptable Qty.</th></tr>
<tr><td>ϕ≤0.10</td><td>Disregard</td></tr>
<tr><td>0.10<ϕ≤0.20</td><td>2（距离大于5mm）</td></tr>
<tr><td>0.20<ϕ≤0.25</td><td>1</td></tr>
<tr><td>ϕ>0.25</td><td>0</td></tr>
</table>
Unit： mm</td></tr>
<tr><td>4</td><td>Line defect,

Scratch</td><td> 

<table>
<tr><th colspan="2">Line</th><th>Acceptable Qty.</th></tr>
<tr><td>L</td><td>W</td><td></td></tr>
<tr><td>---</td><td>0.015≥W</td><td>Disregard</td></tr>
<tr><td>3.0≥L</td><td>0.03≥W</td><td rowspan="2">2</td></tr>
<tr><td>2.0≥L</td><td>0.05≥W</td></tr>
<tr><td>1.0≥L</td><td>0.1＞W</td><td>1</td></tr>
<tr><td>---</td><td>0.05<W</td><td>Applied as point defect</td></tr>
</table>
Unit: mm</td></tr>
<tr><td>5</td><td>Rainbow</td><td>Not more than two color changes across the viewing area.</td></tr>
<tr><td>6</td><td>All black, grey scale screen: dark spots, dark blocks, Mura(uneven display), etc</td><td>Cover the test with ND8 filter. If it is not visible, it will be judged as OK.</td></tr>
</table>

<table>
<tr><th>No</th><th>Item</th><th>Criterion</th></tr>
<tr><td>7</td><td>Chip

Remark:
X: Length direction
Y: Short direction
Z: Thickness direction
t: Glass thickness
W: Terminal Width</td><td>


Acceptable criterion
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≤2</td><td>0.5mm</td><td>≤t/2</td></tr>
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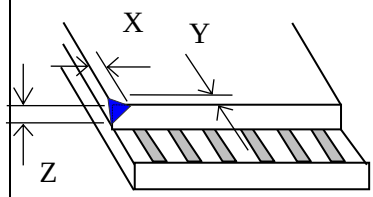

Acceptable criterion
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≤2</td><td>0.5mm</td><td>≤t</td></tr>
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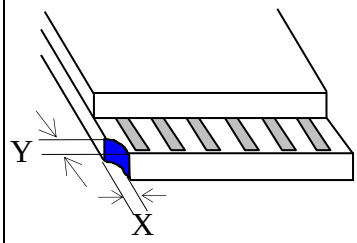

Acceptable criterion
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≤3</td><td>≤2</td><td rowspan="2">≤t</td></tr>
<tr><td colspan="2">shall not reach to ITO</td></tr>
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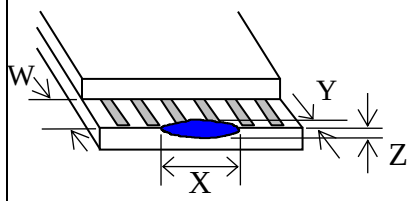
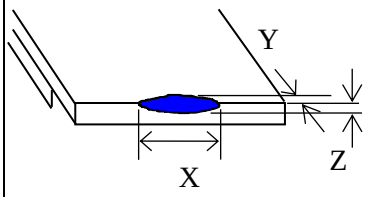
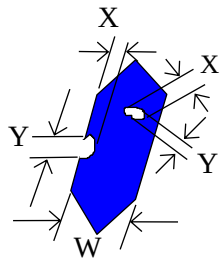
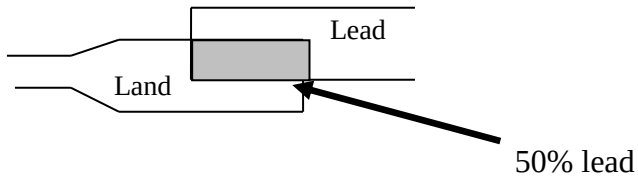
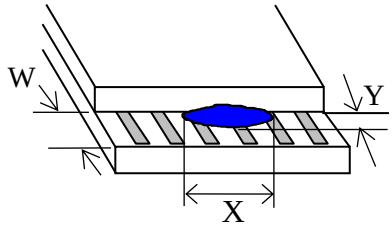
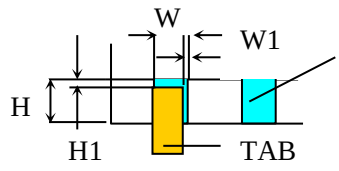
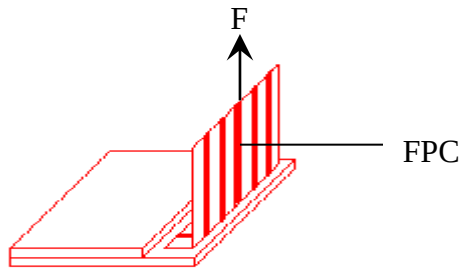


Acceptable criterion
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>Disregard</td><td>≤0.2</td><td>≤t</td></tr>
</table>


Acceptable criterion
<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≤5</td><td>≤2</td><td>≤t/3</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th>Criterion</th></tr>
<tr><td>8</td><td>Segment
pattern
W = Segment width
ϕ = (X+Y)/2</td><td>(1) Pin hole
ϕ < 0.10mm is acceptable.
 

<table>
<tr><th>Point Size</th><th>Acceptable Qty</th></tr>
<tr><td>ϕ≤1/4W</td><td>Disregard</td></tr>
<tr><td>1/4W< ϕ≤1/2W</td><td>1</td></tr>
<tr><td>ϕ>1/2W</td><td>0</td></tr>
</table>
Unit: mm</td></tr>
<tr><td>9</td><td>Back-light</td><td>(1) The color of backlight should correspond its specification.
(2) Not allow flickering</td></tr>
<tr><td>10</td><td>Soldering</td><td>(1) Not allow heavy dirty and solder ball on PCB.
(The size of dirty refer to point and dust defect)
(2) Over 50% of lead should be soldered on Land.
 
</td></tr>
<tr><td>11</td><td>Wire</td><td>(1) Copper wire should not be rusted
(2) Not allow crack on copper wire connection.
(3) Not allow reversing the position of the flat cable.
(4) Not allow exposed copper wire inside the flat cable.</td></tr>
<tr><td>12</td><td>PCB</td><td>(1) Not allow screw rust or damage.
(2) Not allow missing or wrong putting of component.</td></tr>
</table>

No	Item	Criterion
13	Protruded W: Terminal Width	 Acceptable criteria: Y ≤ 0.4
14	TAB	1. Position  W1≤1/3W H1≤1/3H 2 FPC bonding strength test  P (=F/FPC bonding width) ≥650gf/cm ,(speed rate: 1mm/min) 5pcs per SOA (shipment)
15	Total no. of acceptable Defect	A. Zone Maximum 2 minor non-conformities per one unit. Defect distance: each point to be separated over 10mm B. Zone It is acceptable when it is no trouble for quality and assembly in customer's end product.

11.3 Reliability of LCM

Reliability test condition:

Item	Condition	Time (hrs)	Assessment
High temp. Storage	80°C	120H	No abnormalities in functions and appearance
High temp. Operating	70°C	120H	
Low temp. Storage	-30°C	120H	
Low temp. Operating	-20°C	120H	
Humidity	60°C/ 90%RH	240H	
Temp. Cycle	-20°C ← 25°C →70°C (60 min ← 5 min → 60min)	10cycles	

Recovery time should be 24 hours minimum. Moreover, functions, performance and appearance shall be free from remarkable deterioration within 50,000 hours under ordinary operating and storage conditions room temperature (20±8°C), normal humidity (below 60% RH), and in the area not exposed to direct sun light.

11.4 Precaution for using LCD/LCM

LCD/LCM is assembled and adjusted with a high degree of precision. Do not attempt to make any alteration or modification. The followings should be noted.

General Precautions:

1. LCD panel is made of glass. Avoid excessive mechanical shock or applying strong pressure onto the surface of display area.
2. The polarizer used on the display surface is easily scratched and damaged. Extreme care should be taken when handling. To clean dust or dirt off the display surface, wipe gently with cotton, or other soft material soaked with isoproply alcohol, ethyl alcohol or trichlorotriflorothane, do not use water, ketone or aromatics and never scrub hard.
3. Do not tamper in any way with the tabs on the metal frame.
4. Do not made any modification on the PCB without consulting YEEBO.
5. When mounting a LCM, make sure that the PCB is not under any stress such as bending or twisting. Elastomer contacts are very delicate and missing pixels could result from slight dislocation of any of the elements.
6. Avoid pressing on the metal bezel, otherwise the elastomer connector could be deformed and lose contact, resulting in missing pixels and also cause rainbow on the display.
7. Be careful not to touch or swallow liquid crystal that might leak from a damaged cell. Any liquid crystal adheres to skin or clothes, wash it off immediately with soap and water.

Static Electricity Precautions:

1. CMOS-LSI is used for the module circuit; therefore operators should be grounded whenever he/she comes into contact with the module.
2. Do not touch any of the conductive parts such as the LSI pads; the copper leads on the PCB and the interface terminals with any parts of the human body.
3. Do not touch the connection terminals of the display with bare hand; it will cause disconnection or defective insulation of terminals.
4. The modules should be kept in anti-static bags or other containers resistant to static for storage.
5. Only properly grounded soldering irons should be used.
6. If an electric screwdriver is used, it should be grounded and shielded to prevent sparks.
7. The normal static prevention measures should be observed for work clothes and working benches.
8. Since dry air is inductive to static, a relative humidity of 50-60% is recommended.

Soldering Precautions:

1. Soldering should be performed only on the I/O terminals.
2. Use soldering irons with proper grounding and no leakage.
3. Soldering temperature: 280°C±10°C
4. Soldering time: 3 to 4 second.
5. Use eutectic solder with resin flux filling.
6. If flux is used, the LCD surface should be protected to avoid spattering flux.
7. Flux residue should be removed.

Operation Precautions:

1. The viewing angle can be adjusted by varying the LCD driving voltage Vo.
2. Since applied DC voltage causes electro-chemical reactions, which deteriorate the display, the applied pulse waveform should be a symmetric waveform such that no DC component remains. Be sure to use the specified operating voltage.
3. Driving voltage should be kept within specified range; excess voltage will shorten display life.
4. Response time increases with decrease in temperature.
5. Display color may be affected at temperatures above its operational range.
6. Keep the temperature within the specified range usage and storage. Excessive temperature and humidity could cause polarization degradation, polarizer peel-off or generate bubbles.
7. For long-term storage over 40°C is required, the relative humidity should be kept below 60%, and avoid direct sunlight.

Limited Warranty:

YEEBO LCDs and modules are not consumer products, but may be incorporated by YEEBO's customers into consumer products or components thereof, YEEBO does not warrant that its LCDs and components are fit for any such particular purpose.

1. The liability of YEEBO is limited to repair or replacement on the terms set forth below. YEEBO will not be responsible for any subsequent or consequential events or injury or damage to any personnel or user including third party personnel and/or user. Unless otherwise agreed in writing between YEEBO and the customer, YEEBO will only replace or repair any of its LCD which is found defective electrically or visually when inspected in accordance with YEEBO general LCD inspection standard. (Copies available on request)
2. No warranty can be granted if any of the precautions state in handling liquid crystal display above has been disregarded. Broken glass, scratches on polarizer mechanical damages as well as defects that are caused accelerated environment tests are excluded from warranty.
3. In returning the LCD/LCM, they must be properly packaged; there should be detailed description of the failures or defect.