深圳市一众显示科技有限公司

SHENZHEN TEAM SOURCE DISPLAY TECH. CO, LTD.

TFT-LCD Module Specification

Module NO.: TST070WXBJ-25

Version: V1.0

☐ APPROVAL FOR SPECIFICATION ☐ APPROVAL FOR SAMPLE

For Customer's Acceptance:	
Approved by	**Comment**

Team Source Display:		
Presented by	**Reviewed by**	**Organized by**

Version No.	Date	Content	Remark
V1.0	2018-11-27	Initial Release	

Contents

1. LCM Specification……..….2

2. Mechanical Specification…….……3

3. Pin Assignment..... ……..……4

4.Electrical Characteristics.....….....…….……..……5

5.Electrical Specification.....…….……..……6

6.Optical Specifications…….…….…10

7.Reliability Test Items…….…….…..12

8.Handling Precautions…….…….….13

1. LCM Specification

1.1 Description

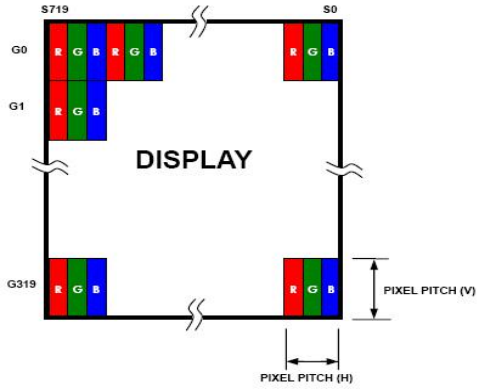
TST070WXBJ-25 is a transmissive type color active matrix liquid crystal display (LCD) which uses amorphous thin film transistor (TFT) as switching devices. This product is composed of a TFT LCD panel, a drive IC, a FPC, and a WLED-backlight unit.The active display area is 7.0 inches diagonally measured and the native resolution is 800*RGB*1280. Features of this product are listed in the following table.

1.2 Functions & Features

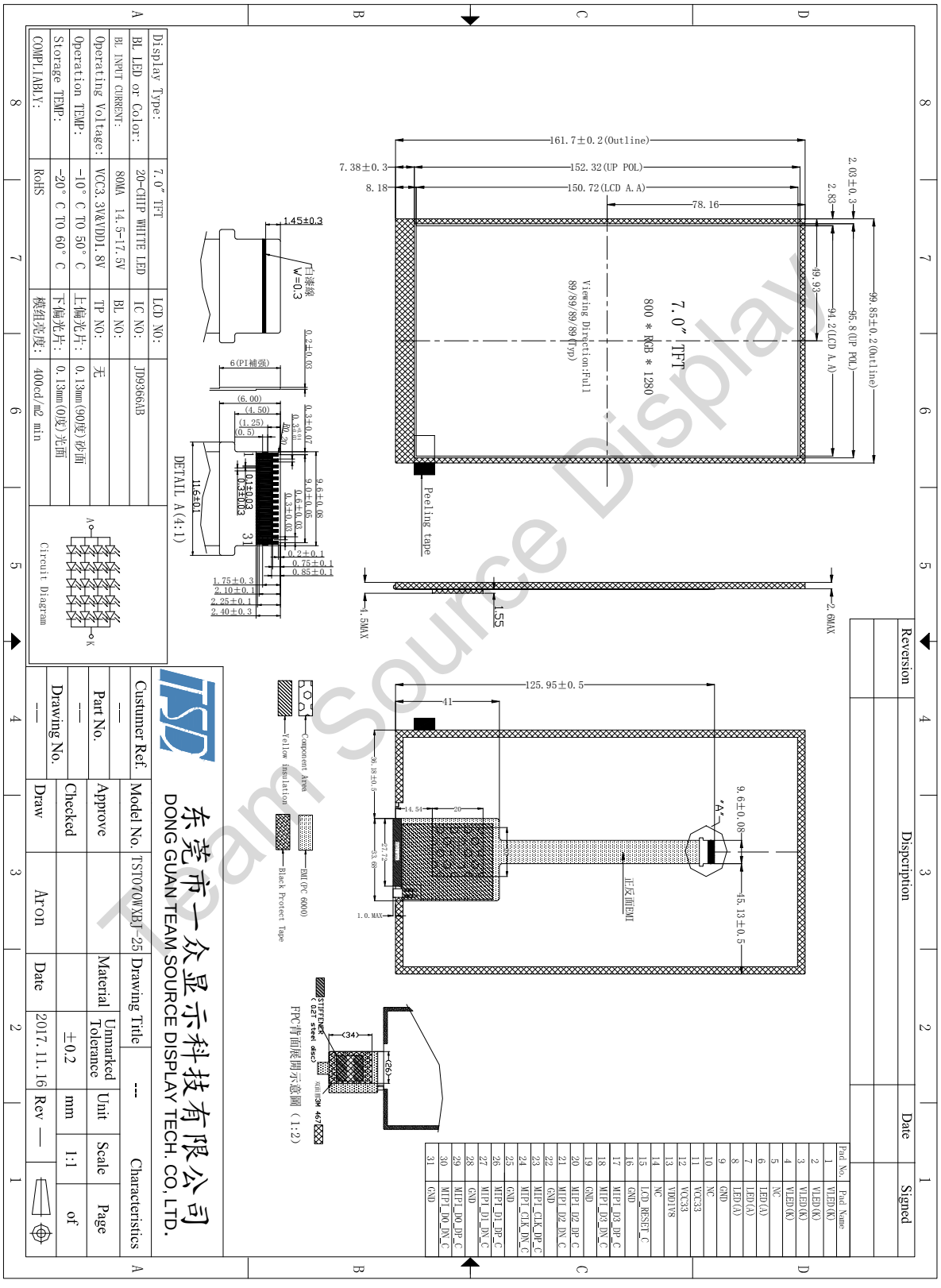
Table1.1 Module Functions & Features

Parameter	Value	Unit
LCD Mode	a-Si TFT/transmissive	-
Color	16.2M	-
Display Resolution	800*3(RGB)*1280	pixels
Outline Dimension	99.85(H) *161.7(V) * 2.6MAX(T)	mm
Active Area(A.A)	94.20(H) * 150.72(V)	mm
Pixel pitch	0.03925(H) * 0.11775(V)	mm
Pixel Arrangement	RGB-stripe	-
Viewing Direction	Free	
Display Mode	Normally Black	
IC Package Type	COG	-
Surface Treatment	Anti-Glare,Hardness:3H	
Back-light	White LED*20CHIP	pcs
Operation Temperature	-10~50	℃
Storage Temperature	-20~60	℃

Pixel Arrangement



2. Mechanical Specification



Pad No.	Pad Name
1	VLED(K)
2	VLED(K)
3	VLED(K)
4	VLED(K)
5	NC
6	LED(A)
7	LED(A)
8	LED(A)
9	GND
10	NC
11	VCC33
12	VCC33
13	VDD1V8
14	NC
15	LCD_RESET_C
16	GND
17	MIPI_D3_DP_C
18	MIPI_D3_DN_C
19	GND
20	MIPI_D2_DP_C
21	MIPI_D2_DN_C
22	GND
23	MIPI_CLK_DP_C
24	MIPI_CLK_DN_C
25	GND
26	MIPI_D1_DP_C
27	MIPI_D1_DN_C
28	GND
29	MIPI_D0_DP_C
30	MIPI_D0_DN_C
31	GND

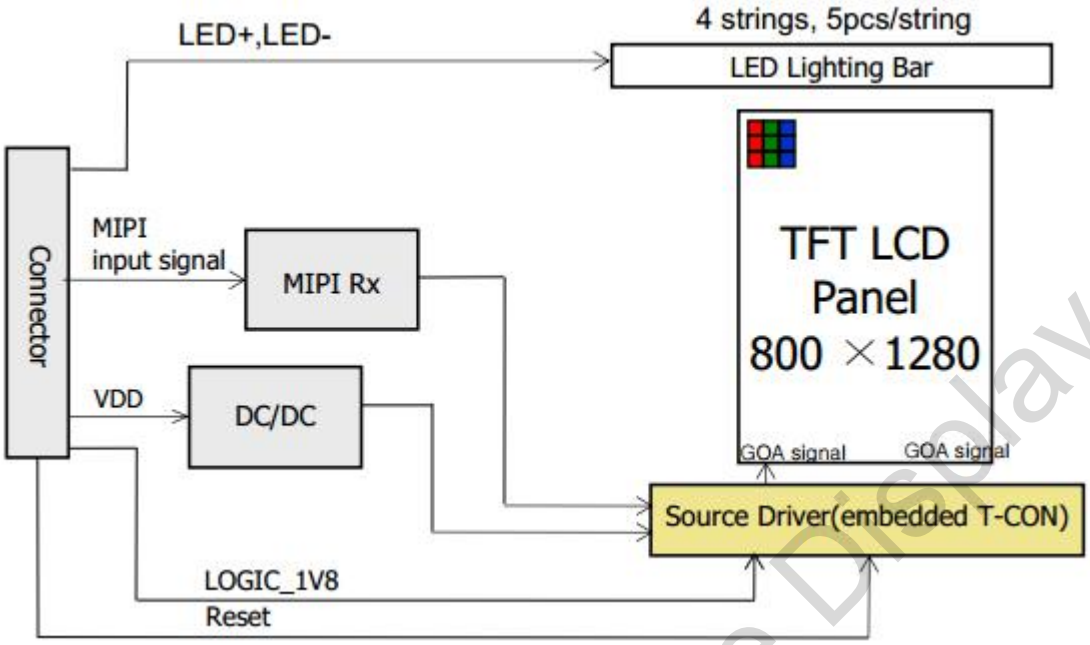
3. Pin Assignment

The electronics interface connector is BL143-31R-TAGF**(05).The connector interface pin assignments are listed in T able 6.**

Pin NO.	Function Descriptions	Symbol
1-4	LED Cathode	VLEDK
5	Not connect	NC
6-8	LED Anode	LEDA
9	Ground	GND
10	Not connect	NC
11-12	Power supply	VCC3V3
13	I/O power supply	VDD1V8
14	Not connect	NC
15	Reset signal	LCD_RESET
16	Ground	GND
17	MIPI-DSI data Lane 3 positive-end input/output pin	MIPI_D3_DP
18	MIPI-DSI data Lane 3 negative-end input/output pin	MIPI_D3_DN
19	Ground	GND
20	MIPI-DSI data Lane 2 positive-end input/output pin	MIPI_D2_DP
21	MIPI-DSI data Lane 2 negative-end input/output pin	MIPI_D2_DN
22	Ground	GND
23	MIPI-DSI clock Lane positive-end input pin	MIPI_CLK_DP
24	MIPI-DSI clock Lane negative-end input pin	MIPI_CLK_DN
25	Not connect	GND
26	MIPI-DSI data Lane 1 positive-end input/output pin	MIPI_D1_DP
27	MIPI-DSI data Lane 1 negative-end input/output pin	MIPI_D1_DN
28	Ground	GND
29	MIPI-DSI data Lane 0 positive-end input/output pin	MIPI_D0_DP
30	MIPI-DSI data Lane 0 negative-end input/output pin	MIPI_D0_DN
31	Ground	GND

4.ELECTRICAL CHARACTERISTICS

4.1 Introduction



4.2 Electrical Specifications

Parameter		Symbol	Values			Unit	Notes
			Min	Typ	Max		
Power Supply1 Input Voltage		VDD3V3	3	3.3	3.6	Vdc	1
Power Supply1 Ripple Voltage		VRP	0	300	360	mV	
Power Supply1 Current		IVDD3V3	90	125	137	mA	
Power Supply2 Input Voltage		LOGIC1V8	1.7	1.8	1.9	Vdc	
Power Supply2 Current		I_LOGIC1V8	14	15	16	mA	
Power Consumption	@VDD3V3	P_VDD3V3	300.0	415.0	450.0	mWatt	
	@LOGIC1V8	P_LOGIC1V8	25.2	27.0	28.8	mWatt	
	LOGIC TOTAL	P_TOTAL	325.2	442.0	478.8	mWatt	
Rush current		IRUSH	-	0.7	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. and Max. @Red Pattern
2. The duration of rush current is about 2ms and rising time of Power input is 1ms(min)

4.3 Recommended Driving Condition for Backlight

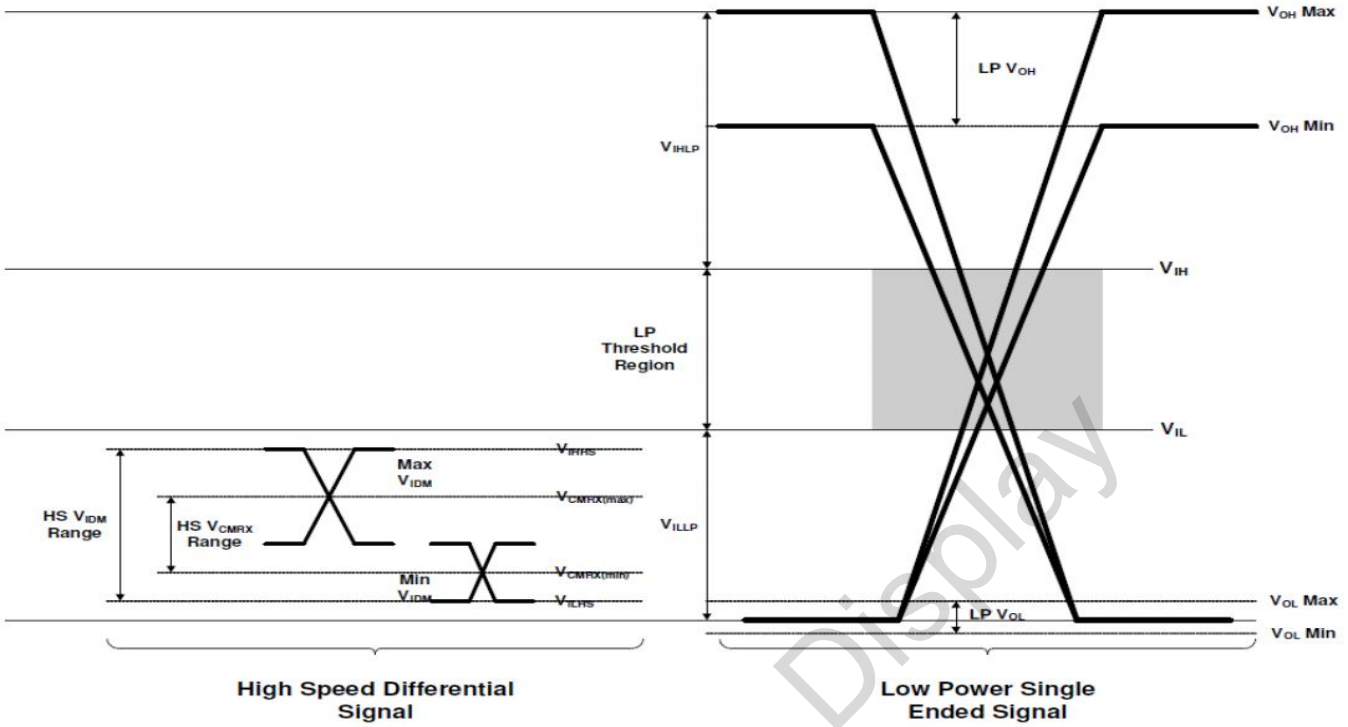
Table 3.3 Back-light Specification

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	VF	Only Backlight	14.5	15.5	17.5	V
Supply Current	IF		68	80	90	mA
Average Brightness	IV	IF=80mA		--		Cd/m2
Uniformity	B	IF=80mA	80	-	-S	(%)
CIE Color Coordinate(BL+LCD)	X	Backlight Current IF=80mA	0.247	0.298	0.348	
	Y		0.289	0.322	0.389	
Backlight Power Consumption			986	1240	1575	mW
Backlight lifetime	T	IF=80mA	20000			hrs
Color	White					

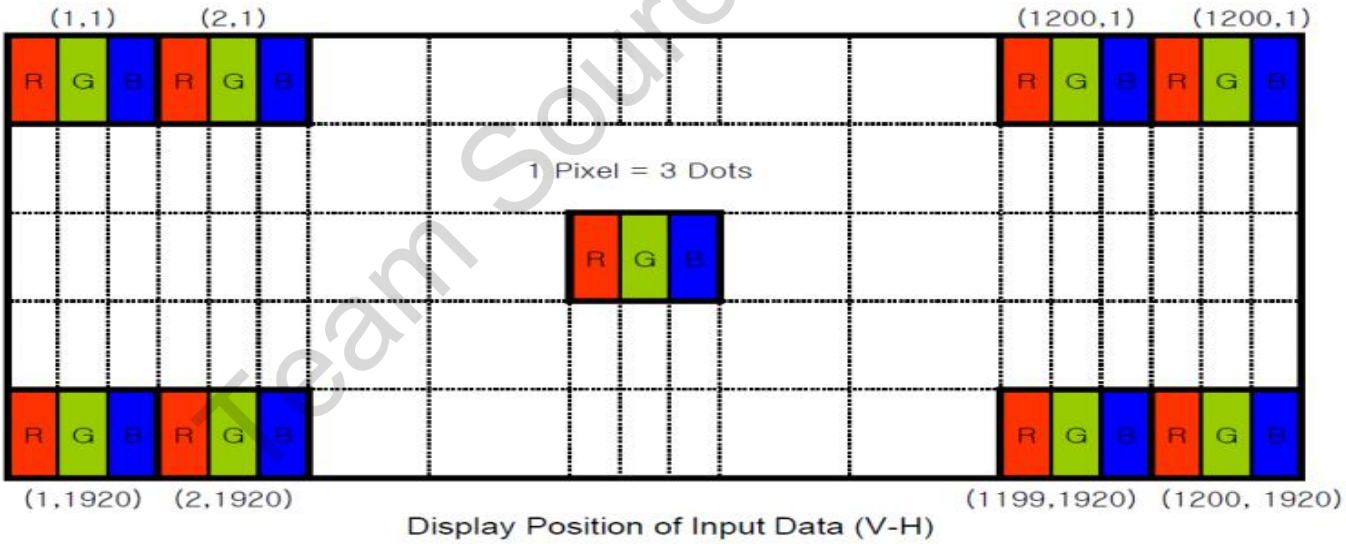
5.0 Electrical Specification

5.1 .1Timing Parameters

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	-	-	mV	
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	

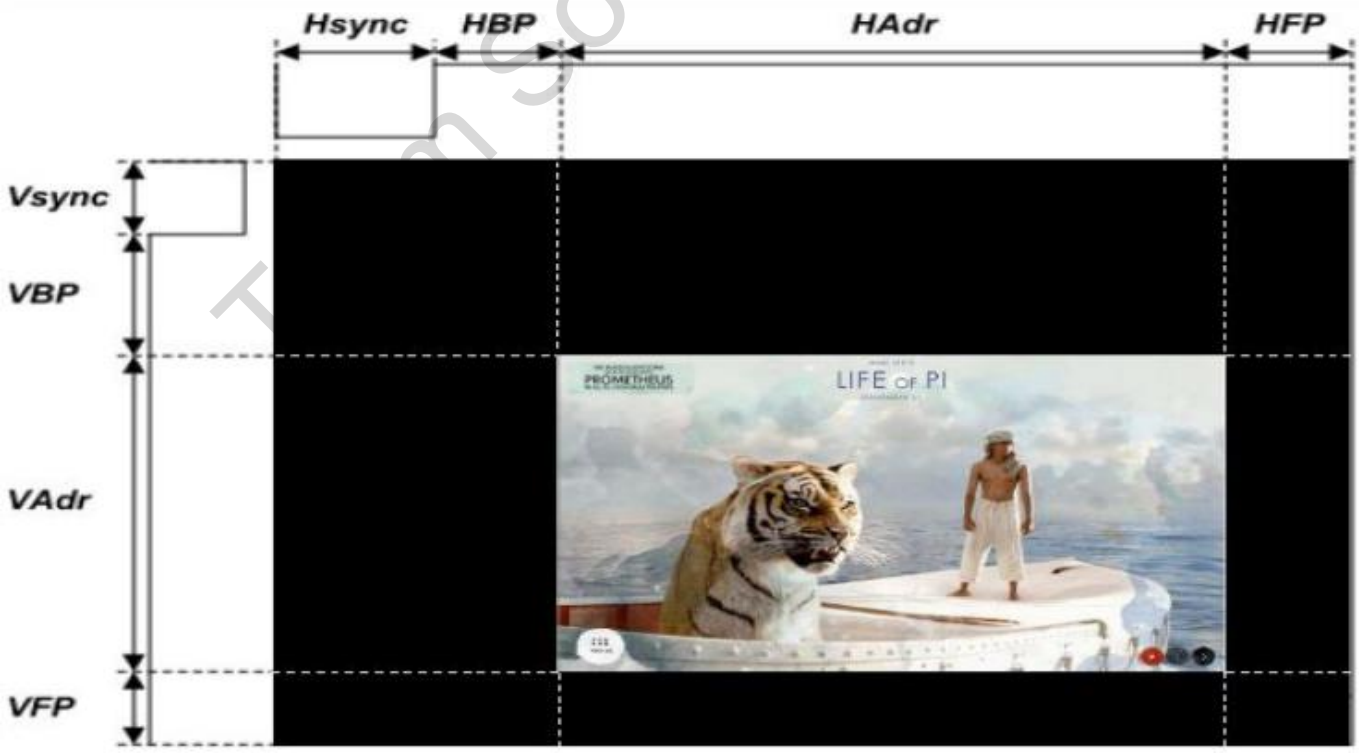


5.1.2 MIPI INPUTSIGNAL SPEC



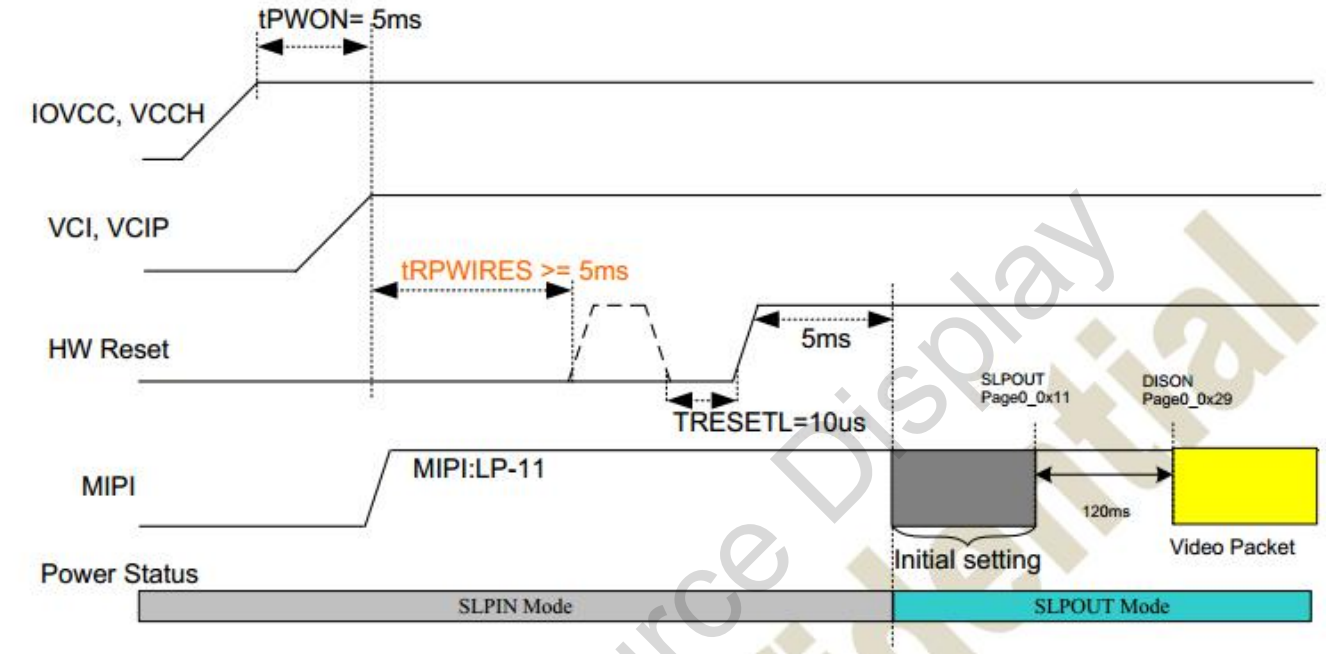
5.2 MIPI Timing Parameter

Item	Symbol	Min	Typ	Max	Unit	Remarks
Pixel CLK	Tpixclk		68.43		MHz	-
MIPI CLK	Period	4	4.44	4.8	ns	-
	Frequency	208	225	250	MHz	-
Hsync	Period	16			Tpixclk	-
	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	-	Tpixclk	-
	HBP	48			Tpixclk	-
	HFP	16			Tpixclk	-
	Total		880		Tpixclk	-
Vertical Active Display Term	Vadr		1280	-	Line	-
	VBP	4			Line	-
	VFP	8			Line	-
	Total		1296		Line	-

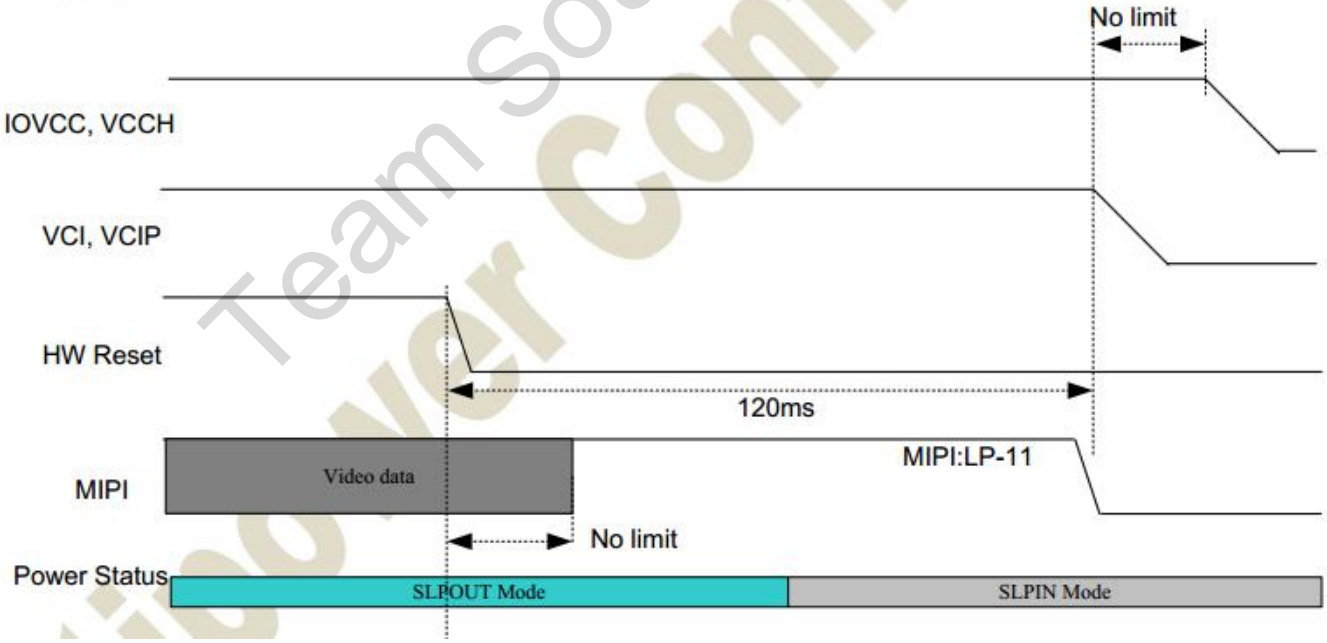


5.3 Power Sequence

BOOSTM[2:1]=01 (Internal DC/DC power mode : PFM, Charge Pump, JD5001)
IOVCC=VCCH=1.65V ~ 3.6V, VCI=VCIP=2.5V ~ 4.8V.
Power on:



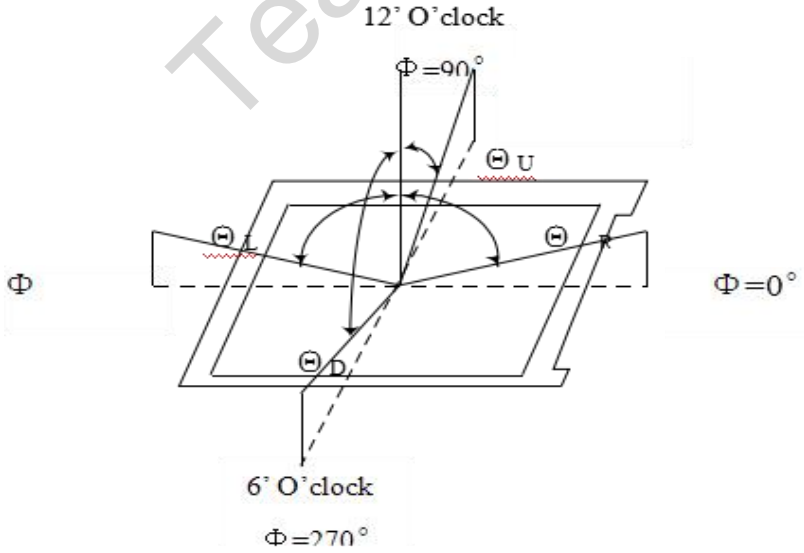
Power off:



6 Optical Specifications

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Transmittance (With PZ)		T		4.0	4.75	—	%	
Contrast		CR	Θ=0 Normal viewing angle	700	900	1100		(1)(2)
Response time (Rising+Falling)		TRT			30	50	msec	(1)(3)
White luminance(center)		YL		400		-	cd/m²	I=80mA
Color gamut		S		45	50		%	C light
Color chromaticity (CIE1931)	White	Wx		-0.05	0.29	+0.05		(1)(4) CF Glass C light
		Wy			0.31			
	Red	Rx						
		Ry						
	Green	Gx						
		Gy						
	Blue	Bx						
		By						
Viewing angle	Hor.	Θ L	CR>10	80	89	—		
		Θ R		80	89	—		
	Ver.	Θ U		80	89			
		Θ D		80	89			
Optima View Direction		Free						(5)

Note (1) Definition of Viewing Angle:

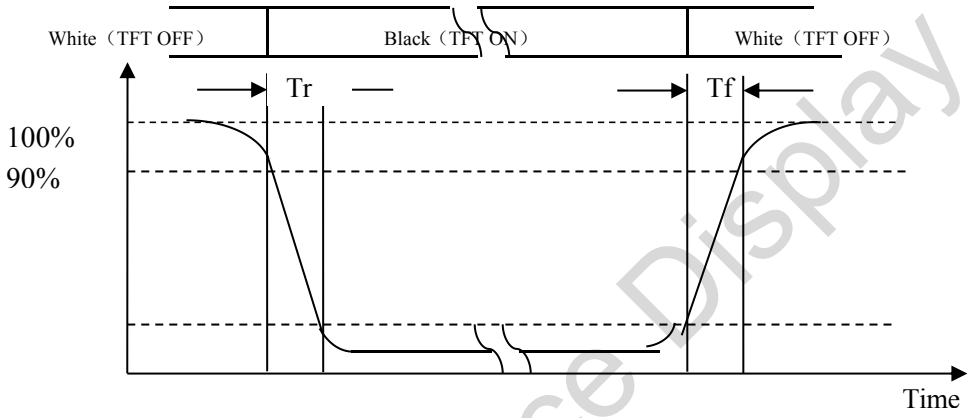


Note (2) Definition of Contrast Ratio (CR): measured at the center point of pane

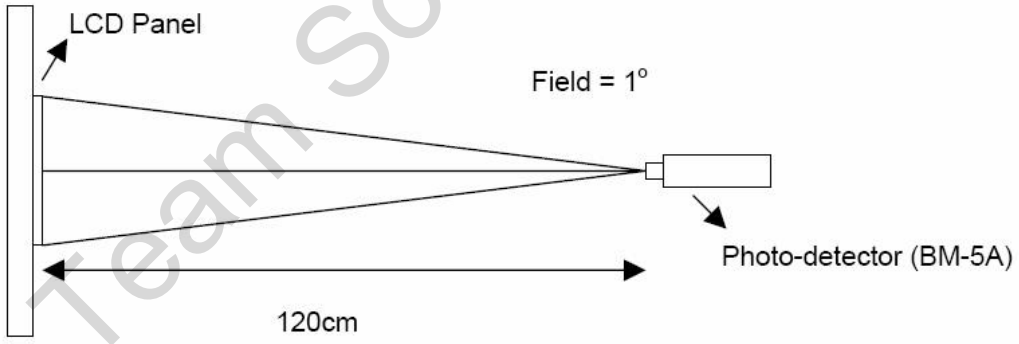
$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

Note (3) Definition of Response Time: Sum of T_R and T_F

Optical response



Note (4) Definition of optical measurement setup



Note (5) Rubbing Direction (The different Rubbing Direction will cause the different optimal view direction.

7.Reliability Test Items

No.	Item	Conditions	Remark
1	High Temperature Storage	Ta=+60oC, 240hrs	
2	Low Temperature Storage	Ta=-20oC, 240hrs	
3	High Temperature Operation	Ta=+50oC, 240hrs	
4	Low Temperature Operation	Ta=-10oC, 240hrs	
5	High Temperature and High Humidity (operation)	Ta=+40oC, 90%RH, 240hrs	
6	Thermal Cycling Test (non operation)	-20oC(30min) → +60oC(30min), 100cycles	
7	Electrostatic Discharge	Contact:150pF,330Ω,±15KV, class B Air:150pF,330Ω,±8KV, class B	
8	Vibration	1.Random: 1.04Grms, 5~500Hz, X/Y/Z, 30min/each direction 2. Sine: Freq. Range: 8~33.3Hz Stoke: 1.3mm Sweep: 2.9G, 33.3~400Hz X/Z: 2hr, Y: 4hr, cyc: 15min	
9	Shock	100G, 6ms, ±X, ±Y, ±Z 3 time for each direction	JIS C7021, A-10 (Condition A)
10	Vibration (with carton)	Random: 0.015G^2/Hz, 5~200Hz -6dB/Octave, 200~400Hz XYZ each direction: 2hr	
11	Drop (with carton)	Height: 60cm 1 corner, 3 edges, 6 surfaces	JIS Z0202

Note: There is no display function NG issue occurred, all the cosmetic specification is judged before the reliability stress.

8. Handling Precautions

8.1 Safety

The liquid crystal in the LCD is poisonous. Keep away from your mouth and eyes. If the liquid crystal contacts with your skin, mouse or clothes, use soap to wash it off immediately.

8.2 Handling

i. The LCD panel is made by thin glass. Prevent the panel from mechanical shock or putting excessive force on its surface.
ii. The polarizer attached on the display is very easy to be damaged, handle it with special attention.
iii. To avoid contamination on the display surface, do not touch the display surface with bare hands.
iv. The transparent electrodes may be disconnected if you use the LCD panel under dew-condensing environment.
v. The characteristics of the semiconductor devices may be affected when they are exposed to light, possibly resulting in malfunctioning of the ICs. To prevent such malfunctioning of the ICs, make sure the application and the mounting of the panel are designed so that the IC is not exposed to light.

8.3 Static Electricity

Ground soldering iron tips, tools and testers when you operate. Also ground your body when handling the products and store the products in an anti-electrostatic container.

8.4 Storage

Store the products in a dark place where the temperature is within the range of 25±10 and with low humidity (65%RH or less). Do not store the LCD product in an atmosphere containing organic solvents or corrosive gases.

8.5 Cleaning

Do not wipe the polarizer with dry cloth, as it might cause scratching. Wipe the polarizer with a soft cloth soaked with petroleum IPA. Other chemical might damage the panel.