深圳市勋瑞光电科技有限公司
Xunrui photoelectric technology（shenzhen）CO,.LTD.

Product Specification

Customer: _____

Model Name: H080TFH40I3510

Date: 2023.06.27

Version: A0

■ **Preliminary Specification**

☐ **Final Specification**

For Customer's Acceptance

Approved by	Comment

Approved by	Reviewed by	Prepared by

深圳市勋瑞光电科技有限公司
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Table of Contents

1. Record of Revision

Rev	Issued Date	Description	Editor
A0	2023/06/27	First Release	

2. General Specifications

Feature		Spec
Characteristics	Size	8.0 inch
	Resolution	1200(horizontal)*1920(Vertical)
	Glass Maker	TM
	Interface	MIPI
	Connect type	FH34SRJ-40S-0.5SH(Hirose)
	Color Depth	16.7M
	Technology type	a-Si
	Pixel pitch (mm)	0.0897*0.0897
	Pixel Configuration	R.G.B. Stripe
	Display Mode	Normally Black
	Driver IC	EK79208AC
	Viewing Direction	All
	Gray Scale Inversion Direction	FREE
Mechanical	LCM (W x H x D) (mm)	184.1*114.6*2.35
	Active Area(mm)	107.64*172.224
	With /Without TSP	Without
	Weight (g)	TBD
	LED Numbers	24LEDs

Note 1: Viewing direction is following the data which measured by optics equipment.
Note 2: Requirements on Environmental Protection: RoHS
Note 3: LCM weight tolerance: +/- 5%

3. Input/output Terminals

No	Symbol	Description
1	NC	Not connect
2	VOTP	
3	NC	Not connect
4	GND	System Ground
5	GND	System Ground
6	D0P	MIPI data positive signal
7	D0N	MIPI data positive signal
8	GND	System Ground
9	D1P	MIPI data positive signal
10	D1N	MIPI data positive signal
11	GND	System Ground
12	DCLKP	MIPI CLK positive signal
13	DCLKN	MIPI CLK positive signal
14	GND	System Ground
15	D2P	MIPI data positive signal
16	D2N	MIPI data positive signal
17	GND	System Ground
18	D3P	MIPI data positive signal
19	D3N	MIPI data positive signal
20	GND	System Ground
21	NC	Not connect
22	VDD	Power Voltage for digital circuit(3.3V)
23	VDD	Power Voltage for digital circuit(3.3V)
24	NC	Not connect
25	TP_SYNC	
26	STBYB	Standby mode, normally pull high STBYB=”1”,timing control ,source driver will turn off, all output are high-Z
27	RESET	Global reset pin Active low enter reset state Suggest to connecting with an RC reset Normally pull high(R=100K,C=1UF)
28	SDA_I2C	
29	SCL_I2C	
30	GND	System Ground

31	GND	System Ground
32	NC	Not connect
33	LEDK	Power for Cathode Circuit
34	LEDK	Power for Cathode Circuit
35	LEDK	Power for Cathode Circuit
36	NC	Not connect
37	LEDA	Power for Analog Circuit
38	LEDA	Power for Analog Circuit
39	LEDA	Power for Analog Circuit
40	NC	Not connect

4. Absolute Maximum Ratings

Item	Symbol	MIN	MAX	Unit	Remark
Power voltage	V_{CC}	-0.3	3.6	V	-
Operating Temperature	T_{OPR}	-10	60	℃	-
Storage Temperature	T_{STG}	-20	70	℃	-

Note 1: Be sure to apply VCC and VGL to the LCD first, and then apply VGH.

Note 2: VCC setting should match the signals output voltage (refer to Note 3) of customer's system board.

Note 3: Typical Vcom is only a reference value; it must be optimized according to each LCM, please use VR and base on below application circuit.

Note 4: Reset, stbyb, selb, L/R, U/D, cabcen0, cabcen 1.

5. Electrical Characteristics

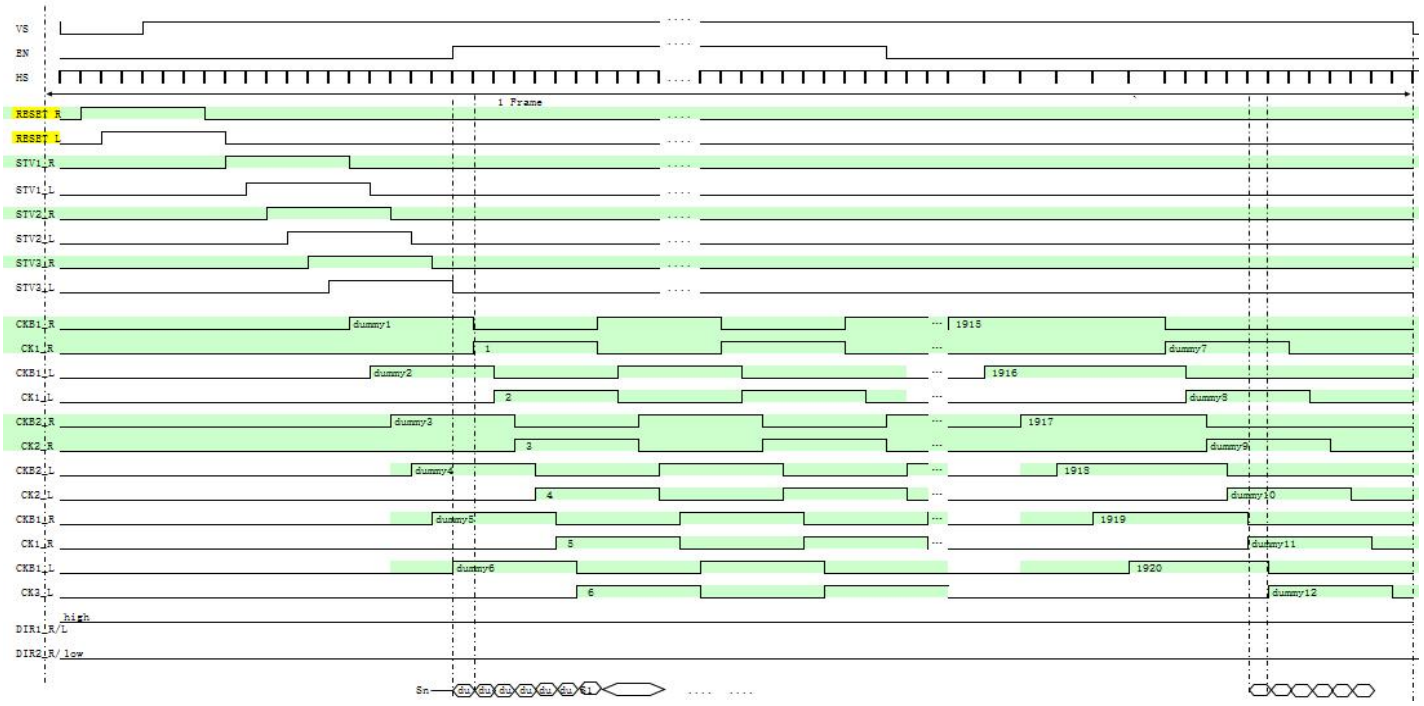
5.1 Driving TFT LCD Panel

Typical Operation Conditions

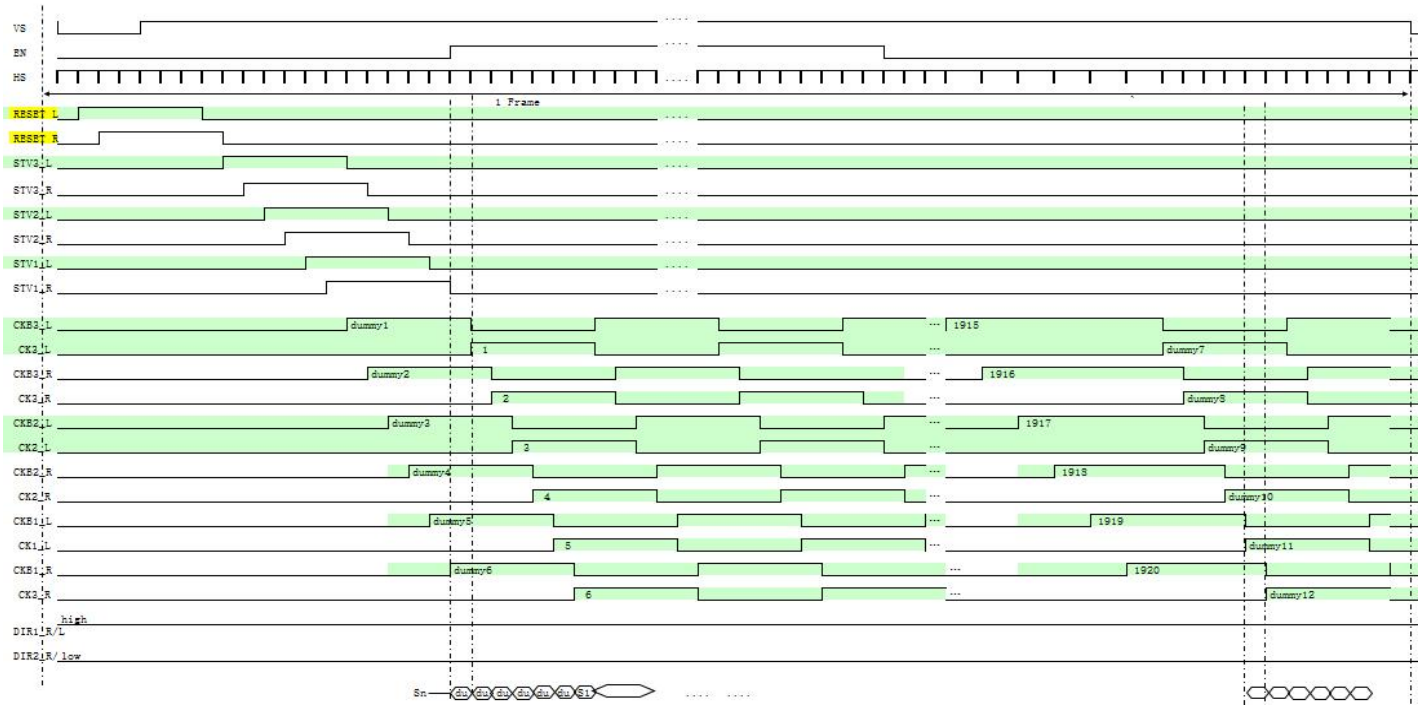
Item	Symbol	MIN	TYP	MAX	Unit	Remark
Power voltage	V_{CC}	3.0	3.3	3.6	V	-
	AV_{DD}	-	-	-	V	-
	V_{GH}	-	15	-	V	-
	V_{GL}	-	-10	-	V	-
Input signal voltage	V_{COM}	-0.3	3.3	3.6	V	-
Input logic high voltage	V_{IH}	-	-	-	V	-
Input logic low voltage	V_{IL}	-	-	-	V	

Note:
(1) Vcom must be adjusted to optimize display quality: cross talk, contrast ratio and etc.
(2) VGH is TFT gate on voltage
(3) VGL is TFT gate off voltage
The storage capacitance structure of this product is Cst (Storage on Common).
The low voltage level of VGL signal must be fluctuated with same phase as Vcom, in case of Storage on Gate
structure.
(4) Environmental condition: 25℃

5.2 Forward scan timing

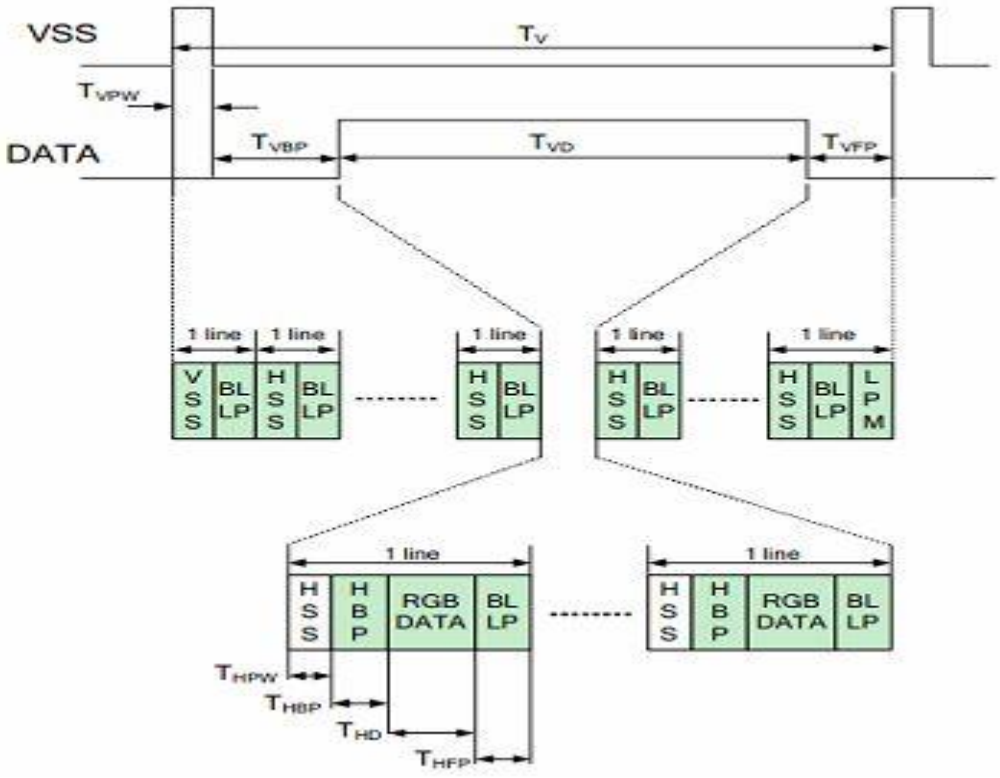


5.3 Backward scan timing

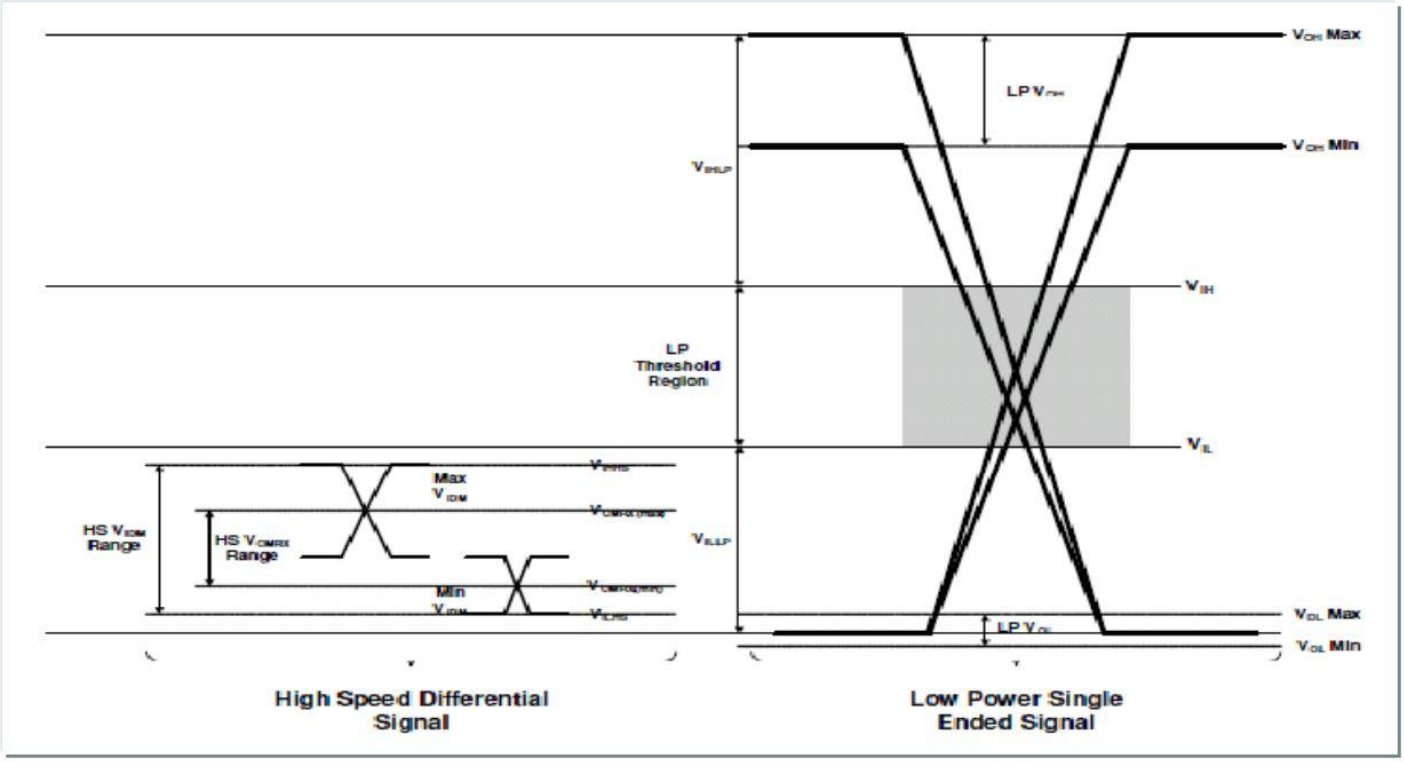


5.4 Signal timing

Parameter	Symbol	Min.	Typ.	Max.	Unit
MIPI data frequency	F_{DATA}	955	999	1000	Mbps
Horizontal display area	T_{HD}		1200		pixel
Hsync period time	T_H	1275	1341	1342	pixel
Hsync pulse width	T_{HPW}	1	1	1	pixel
Hsync back porch	T_{HBP}	32	60	60	pixel
Hsync front porch	T_{HFP}	42	80	81	pixel
Vertical display area	T_{VD}		1920		H
Vsync period time	T_V	1981	1981	1982	H
Vsync pulse width	T_{VPW}	1	1	1	H
Vsync back porch	T_{VBP}		25		H
Vsync front porch	T_{VFP}	35	35	36	H



5.5 MIPI Rx Interface Timing Parameter The specification of the LVDS Rx interface timing parameter is shown in Table 8.

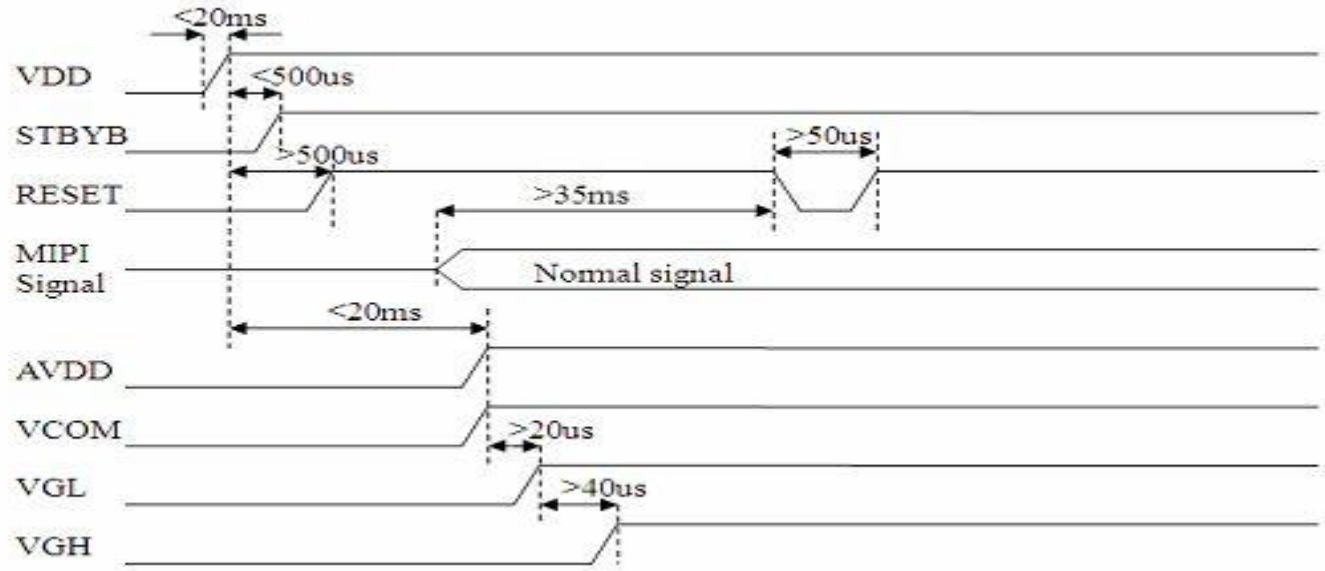


Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
MIPI digital operation current	I_{VCCIF}	-	TBD	TBD	mA	VCC=VCC_IF=1.5V, Data Rate=500Mbps, Input pattern: 55h→AAh→55h→AAh
MIPI digital stand-by current	$I_{VCCIFST}$	-	200	-	uA	VCC_IF input current. All input signal are stopped.
MIPI Characteristics for High Speed Receiver						
Single-endedl input low voltage	V_{ILHS}	-40	-	-	mV	
Single-endedl input high voltage	V_{IHHS}	-	-	460	mV	
Common-mode voltage	V_{CMRXDC}	155	-	330	mV	
Differential input impedance	Z_{ID}	80	100	125	ohm	
Differential input high threshold	V_{IDTH}	-	-	70	mV	
Differential input low threshold	V_{IDTL}	70	-	-	mV	
MIPI Characteristics for Low Power Mode						
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	

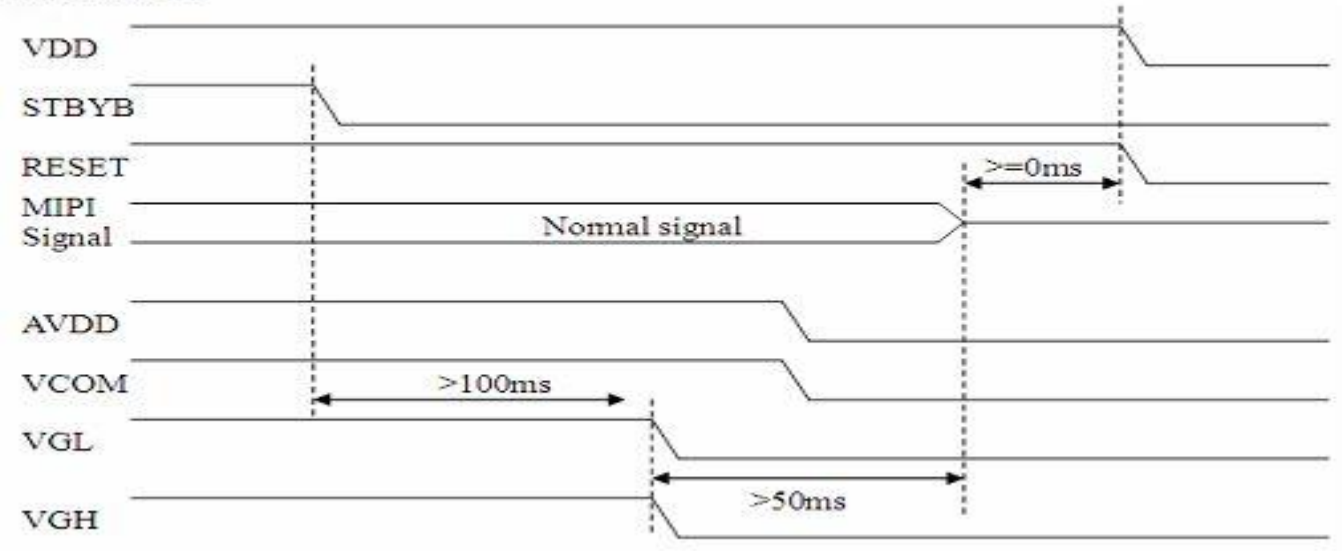
6. SIGNAL TIMING WAVEFORMS OF INTERFACE SIGNAL

6.1 Input Clock and Data Timing Diagram

a. Power on:

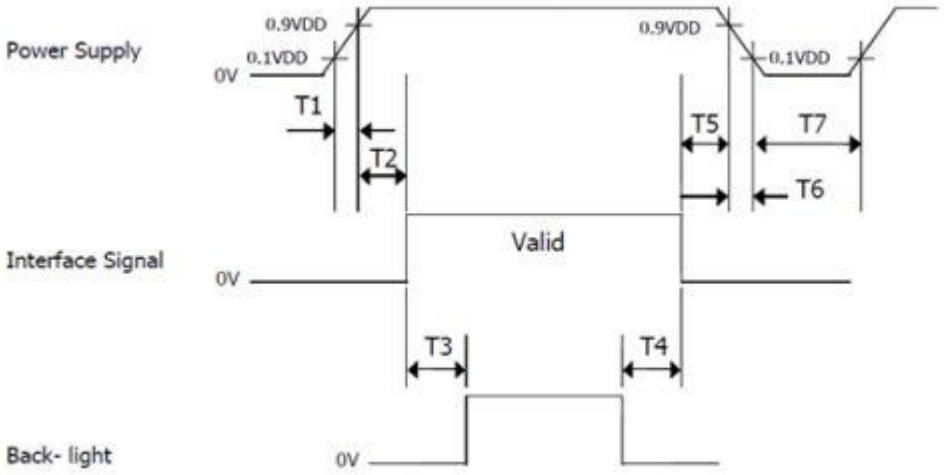


b. Power off:



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.

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 on after power for logic and interface signal are valid.**

6.2 Driving Backlight

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Forward Current	I_F	-	75	-	mA	-
Forward Voltage	V_F	21.6	24	27.2	V	
Backlight Power consumption	W_{BL}	-			W	
BL Life time	-	25000	-	-	Hrs	-

Note 1: Each LED: IF =25mA, VF =3.0V.

Note 2: Optical performance should be evaluated at Ta=25℃ only.

Note 3: If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness.

Typical operating life time is estimated data.

7. Optical Characteristics

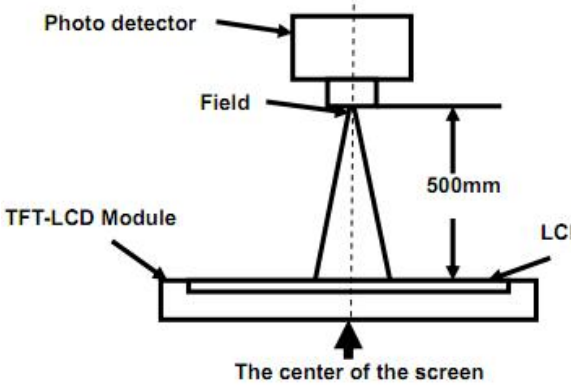
Items		Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing angles		θ_T	Center CR≥10	80	85	-	Degree	Note2
		θ_B		80	85	-		
		θ_L		80	85	-		
		θ_R		80	85	-		
Contrast Ratio		CR	Θ =0	-	1000		-	Note1, Note3
Response Time		T_{ON}	25°C	-	35	45	ms	Note1, Note4
		T_{OFF}						
Chromaticity	White	X_W	-	0.28	0.33	0.38	-	Note1,Note5
		Y_W		0.29	0.34	0.39	-	
Uniformity		U	-	75	80	-	%	Note1, Note6
NTSC Ratio		-		70	85	-	%	
Luminance		L		350	400	-	Cd/m2	Note1, Note7

Test Conditions:

1. IF= 25mA (one channel), the ambient temperature is 25°C.
2. The test systems refer to Note 1 and Note 2.

Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo detector	Field
Contrast Ratio	SR-3A	1°
Luminance		
Chromaticity		
Lum Uniformity		
Response Time	BM-7A	2°

Note 2: Definition of viewing angle range and measurement system.
Viewing angle is measured at the center point of the LCD by iconoscope (ergo-80).

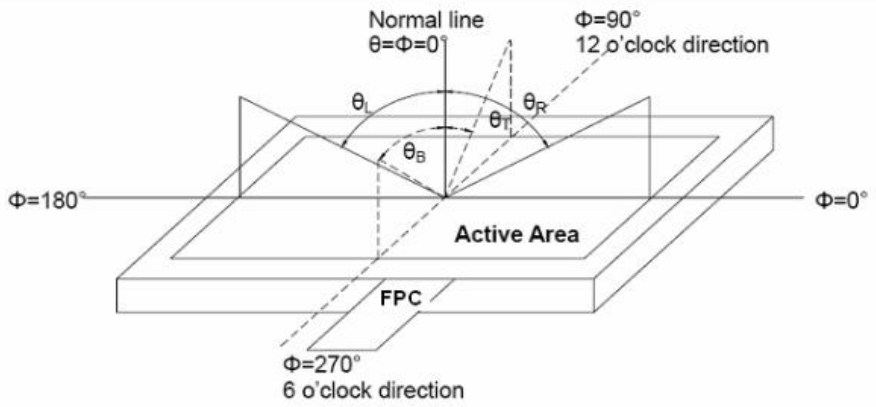


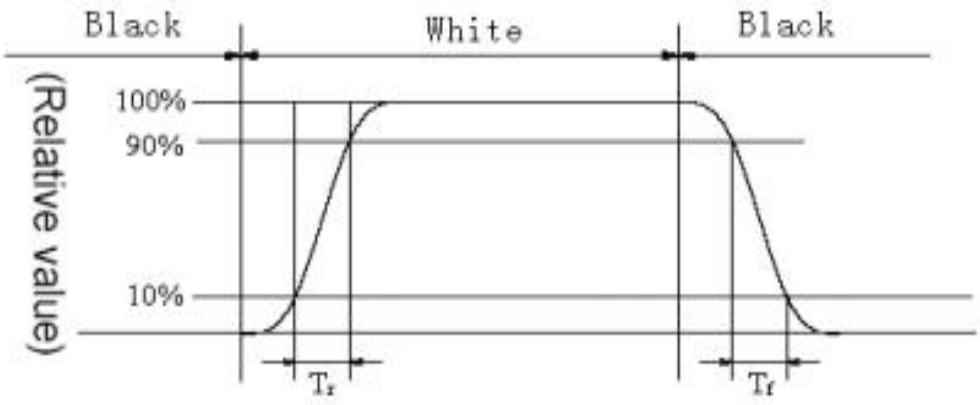
Fig. 1 Definition of viewing angle

Note 3: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (TON) is the time between photo detector output intensity changed from 10% to 90%. And fall time (TOFF) is the time between photo detector output intensity changed from 90% to 10%.



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity (U) = Lmin/ Lmax X100%

L-------Active area length W----- Active area width

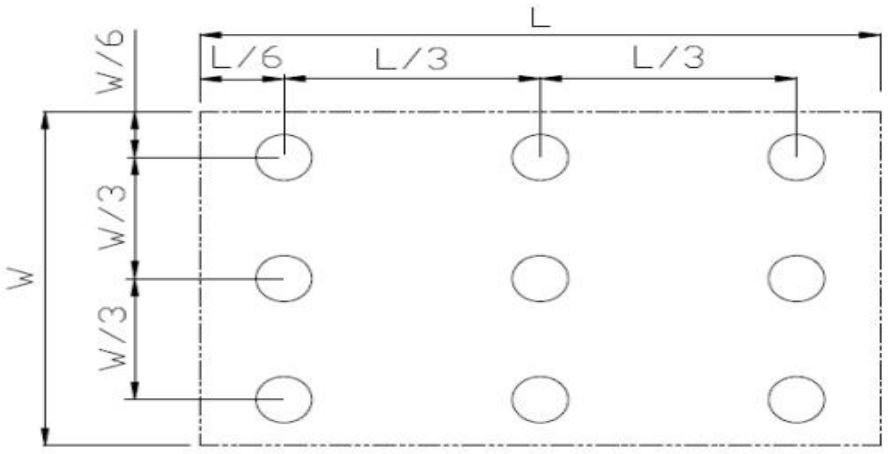


Fig. 2 Definition of uniformity

Lmax: The measured maximum luminance of all measurement position.

Lmin: The measured minimum luminance of all measurement position.

Note 7: Definition of Luminance:

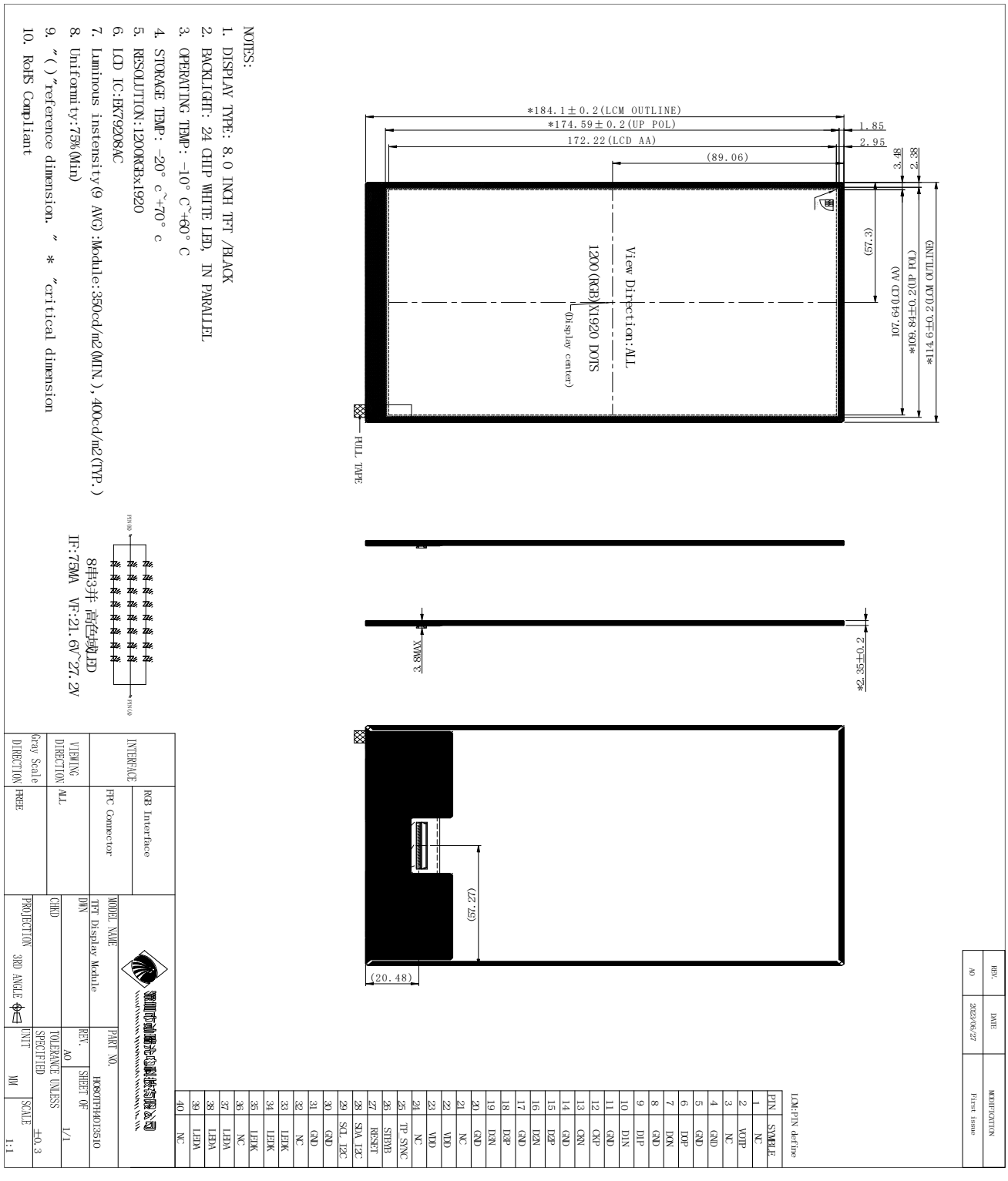
Measure the luminance of white state at center point.

8. Environmental / Reliability Tests

No	Test Item	Condition	Remarks
1	High Temperature Operation	Ta= +60℃, 96hrs	Note 1 IEC60068-2-2, GB2423. 2-89
2	Low Temperature Operation	Ta= -10℃, 96hrs	Note 2 IEC60068-2-1 GB2423.1-89
3	High Temperature Storage	Ta= +70℃, 96hrs	IEC60068-2-2 GB2423. 2-89
4	Low Temperature Storage	Ta= -20℃, 96hrs	IEC60068-2-1 GB/T2423.1-89
5	High Temperature & Humidity Storage	Ta= +40℃, 90% RH max, 96 hours	IEC60068-2-3 GB/T2423.3-2006
6	Thermal Shock (Non-operation)	-20℃ 30 min ~ +70℃ 30 min Change time: 5min, 20 Cycle	Start with cold temperature, end with high temperature IEC60068-2-14, GB2423.22-87
7	Electro Static Discharge (Operations)	C=150pF, R=330 Ω, 5 points/panel Air:±8KV, 5 times; Contact: ±4KV, 5 times; (Environment: 15℃ ~ 35℃, 30% ~ 60%, 86Kpa ~ 106Kpa)	IEC61000-4-2 GB/T17626.2-1998
8	Vibration (Non-operation)	Frequency range: 10~55Hz, Stroke: 1.mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X .Y. Z. (package condition)	IEC60068-2-6 GB/T2423.5-1995
9	Shock (Non-operation)	60G 6ms, ± X, ±Y , ± Z 3 times for each direction	IEC60068-2-27 GB/T2423.5-1995
10	Package Drop Test	Height: 80 cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32 GB/T2423.8-1995

Note: 1. TS is the temperature of panel’s surface.
Note: 2. Ta is the ambient temperature of sample.

9. Mechanical Drawing



10. Packing

Packing Method

TBD

11. Precautions For Use of LCD modules

11.1 Handling Precautions

11.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

11.1.2 If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

11.1.3 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

11.1.4 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

11.1.5 If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

- Isopropyl alcohol - Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

- Water - Ketone
- Aromatic solvents

11.1.6 Do not attempt to disassemble the LCD Module.

11.1.7 If the logic circuit power is off, do not apply the input signals.

11.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

11.1.8.1 Be sure to ground the body when handling the LCD Modules.

11.1.8.2 Tools required for assembly, such as soldering irons, must be properly ground.

11.1.8.3 To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

11.1.8.4 The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

11.2 Storage Precautions

11.2.1 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

11.2.2 The LCD modules should be stored under the storage temperature range if the LCD modules will be stored for a long time, the recommend condition is: Temperature : 0℃ ～ 40℃ Relatively humidity: ≤80%

11.2.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

11.3 Transportation Precautions

The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.