厦门炬垄森科技有限公司

Xiamen Toroson Technology Co., Ltd

TFT-LCD Module

SPECIFICATION

Customer:	
Model Name:	**VI080VI730**
SPEC NO.:	
Date:	**2021/06/28**
Version:	**V01**

■ **Preliminary Specification**

□ **Final Specification**

For Customer's Acceptance

Approved by	Comment

Approved by	Reviewed by	Prepared by
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Record of Revision

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1.General Specifications

No.	Item	Specification	Remark
1	LCD size	8.0 inch(Diagonal)	
2	Driver element	a-Si TFT active matrix	
3	Resolution	1024X3(RGB)X768	
4	Display mode	Normally Black, Transmissive	
5	Dot pitch	0.05275(W)x0.15825(H) mm	
6	Active area	162.05(W)x121.54(H) mm	
7	Panel size	183.0(W)x141.0(H)x3.4(D)mm	Note 1
8	Surface treatment	HC	
9	Color arrangement	RGB-stripe	
11	Interface	Digital	
12	Backlight power consumption	3.8W (Typ.)	
13	Panel power consumption	0.383W (Typ.)	Note 2
14	Weight	0.13KG	

Note 1: Refer to Mechanical Drawing.

2.Pin Assignment

2.1.TFT LCD Panel Driving Section

Pin No.	Symbol	I/O	Function	Remark
1	VCOM	P	Common Voltage	
2	VDD	P	Power Voltage for digital circuit	
3	VDD	P	Power Voltage for digital circuit	
4	NC	-	No connection	
5	Reset	I	Global reset pin	
6	STBYB	I	Standby mode,Normally pulled high STBYB=″1″, normal operation STBYB=″0″, timing controller, source driver will turn off, all output are High-Z	
7	GND	P	Ground	
8	Rxin0-	I	-LVDS Differential Data Input	
9	Rxin0+	I	+LVDS Differential Data Input	
10	GND	P	Ground	
11	Rxin1-	I	-LVDS Differential Data Input	
12	Rxin1+	I	+LVDS Differential Data Input	
13	GND	P	Ground	
14	Rxin2-	I	-LVDS Differential Data Input	
15	Rxin2+	I	+LVDS Differential Data Input	
16	GND	P	Ground	
17	RxCLKIN-	I	-LVDS Differential Clock Input	
18	RxCLKIN+	I	+LVDS Differential Clock Input	
19	GND	P	Ground	
20	Rxin3-	I	-LVDS Differential Data Input	
21	Rxin3+	I	+LVDS Differential Data Input	
22	GND	P	Ground	
23	NC	-	No connection	

24	NC	-	No connection	
25	GND	P	Ground	
26	NC	-	No connection	
27	DIMO	O	Backlight CABC controller signal output	
28	SELB	I	6bit/8bit mode select	Note 1
29	AVDD	P	Power for Analog Circuit	
30	GND	P	Ground	
31	LED-	P	LED Cathode	
32	LED-	P	LED Cathode	
33	L/R	I	Horizontal inversion	Note 3
34	U/D	I	Vertical inversion	Note 3
35	VGL	P	Gate OFF Voltage	
36	CABCEN1	I	CABC H/W enable	Note 2
37	CABCEN0	I	CABC H/W enable	Note 2
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

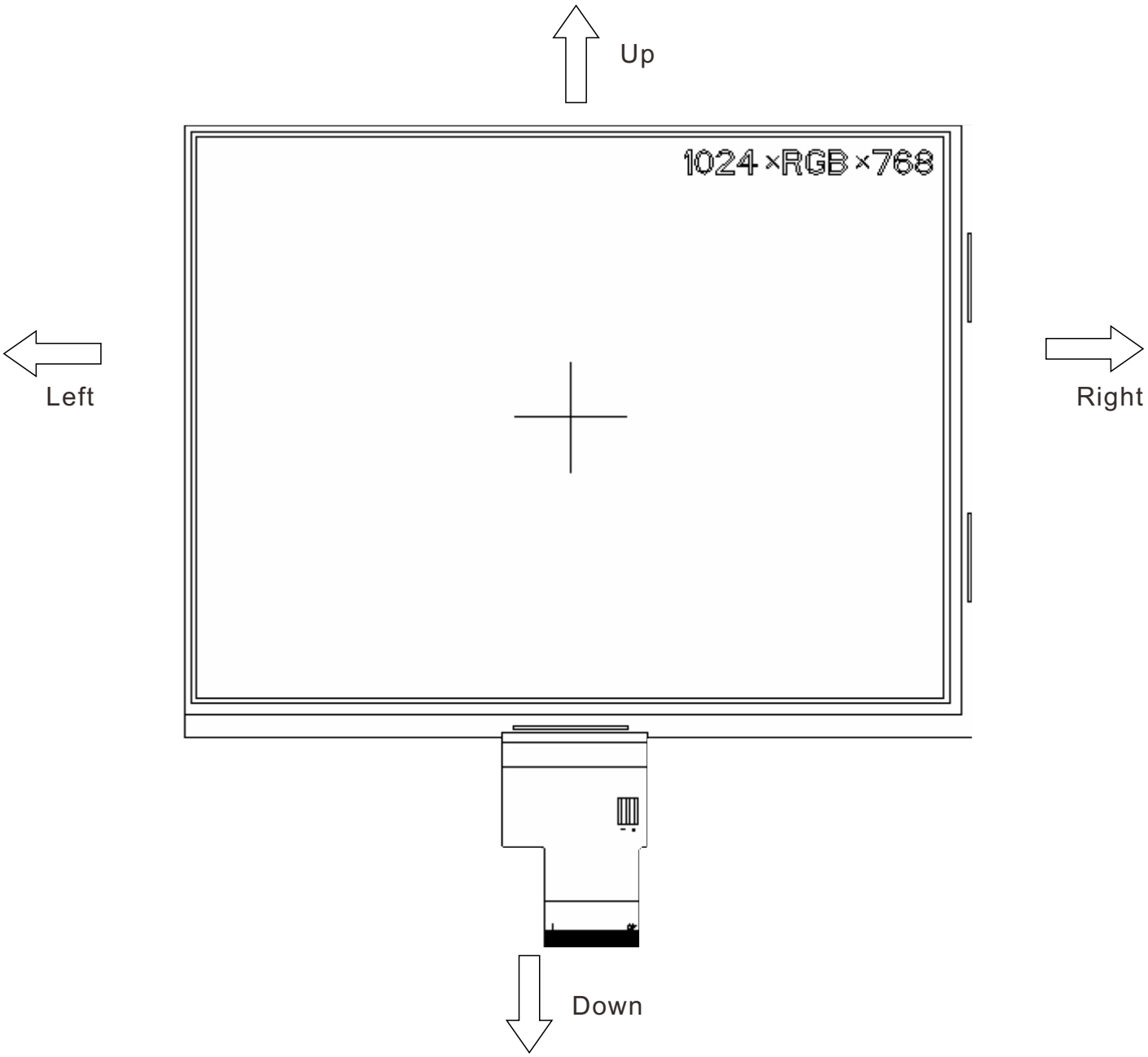
I: input, O: output, P: Power

Note1：If LVDS input data is 6 bits, SELB must be set to High
If LVDS input data is 8 bits, SELB must be set to Low

Note2：When CABC_EN=”00”, CABC OFF.
When CABC_EN=”01” ,user interface image.
When CABC_EN=”10”,still picture.
When CABC_EN=”11”,moving image.
When CABC off,don't connect DIMO,else connect it to backlight.

Note3：When L/R=”0”, set right to left scan direction.
When L/R=”1”, set left to right scan direction.
When U/D=”0”, set top to bottom scan direction.
When U/D=”1”, set bottom to top scan direction.

Note：Definition of scanning direction.
Refer to the figure as below:



3.Operation Specifications

3.1. Absolute Maximum Ratings

(GND=AVss=0V,Note 1)

Item	Symbol	Values		Unit	Remark
		Min.	Max.		
Power voltage	VDD	-0.3	5.0	V	
	AVDD	6.5	13.5	V	
	VGH	-0.3	40.0	V	
	VGL	-20	0.3	V	
	VGH-VGL	-	40.0	V	
Operation Temperature	TOP	-10	60	℃	
Storage Temperature	TST	-20	60	℃	
LED Reverse Voltage	VR	-	15	V	
LED Forward Current	IF	300	350	mA	

Note 1: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

3.1.1.Typical Operation Conditions

(GND=AVss=0V,Note 1)

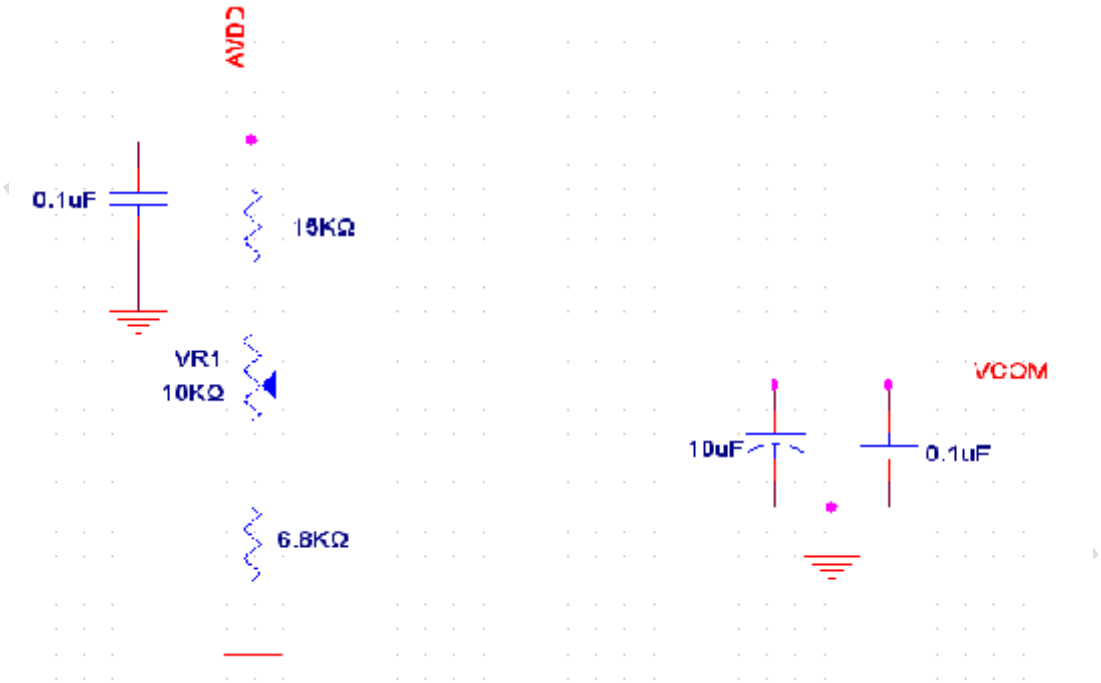
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	VDD	3.0	3.3	3.6	V	Note 2
	AVDD	9.8	10.0	10.2	V	
	VGH	18.6	18.9	19.2	V	
	VGL	-8.1	-7.8	-7.5	V	
Input logic high voltage	VCOM	2.6	3.6	4.6	V	Note 3
Input signal voltage	VIH	0.7Vcc	-	Vcc	V	Note 4
Input logic low voltage	VIL	0	-	0.3Vcc	V	

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. Be sure to use VR.

Note 4: RESET,STBYB,SELB,L/R,U/D,CABCEN0,CABCEN1.



3.1.2. Current Consumption

(GND=AVSS=0V)

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	IGH	-	650	1000	uA	VGH=18.9V
	IGL	-	650	1000	uA	VGL=-7.8V
	ICC	-	35	60	mA	VCC=3.3V
	IAVDD	-	25	40	mA	AVDD=10.0V

3.1.3. Backlight Driving Conditions

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED backlight	VL	11.2	12.6	13.6	V	Note 1
Current for LED backlight	IL	295	300	350	mA	
LED life time	-	20,000	-	-	Hr	Note 2

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25℃ and IL=300mA

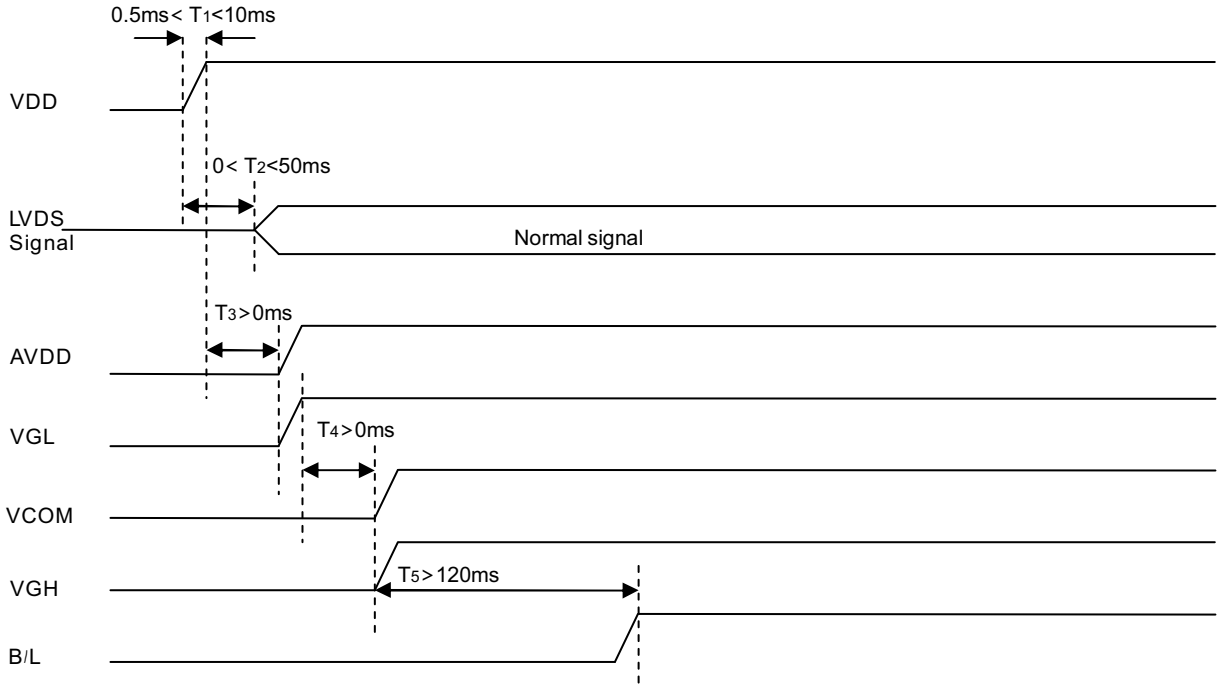
Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and IL=300mA.The LED lifetime could be decreased if operating IL is lager than 300mA.

3.1.4. Backlight Absolute Maximun Ratings

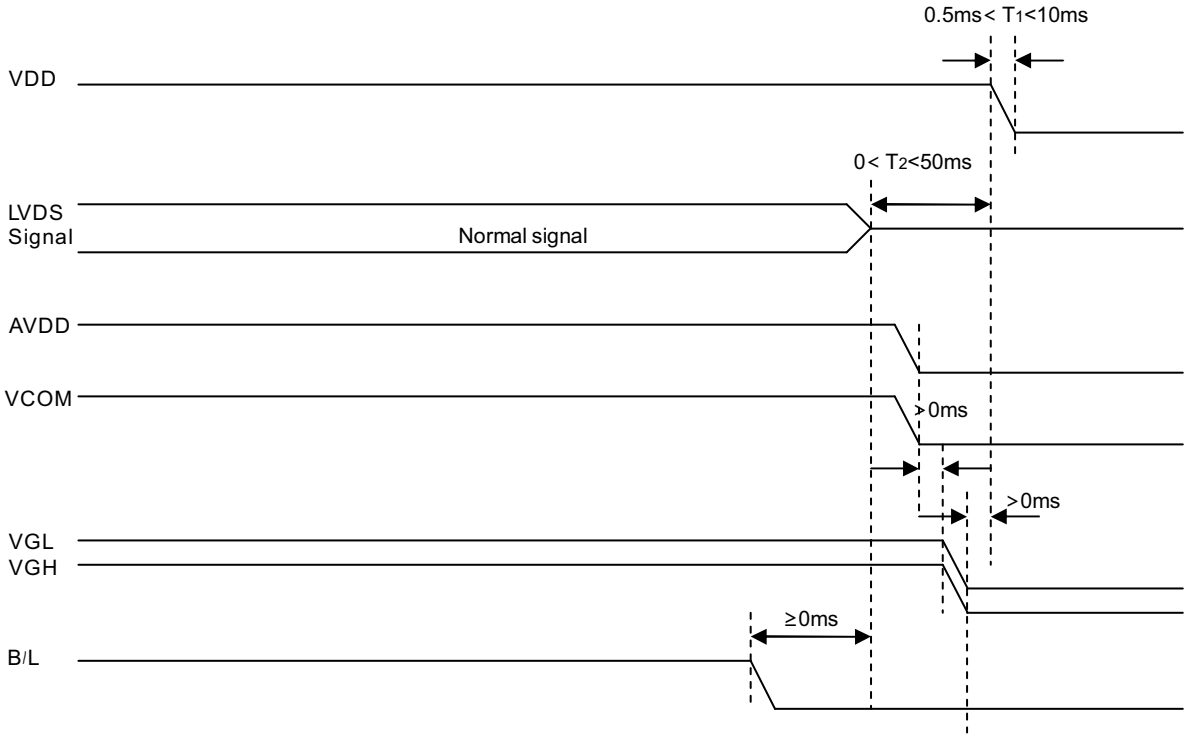
Parameter	Symbol	Specification	Unit	Remark
Power Dissipation	Pd	6720	mW	Ta=25℃
Peak Forward Current	IFP	3600	mA	Ta=25℃

3.2. Power Sequence

a. Power on:



b. Power off:

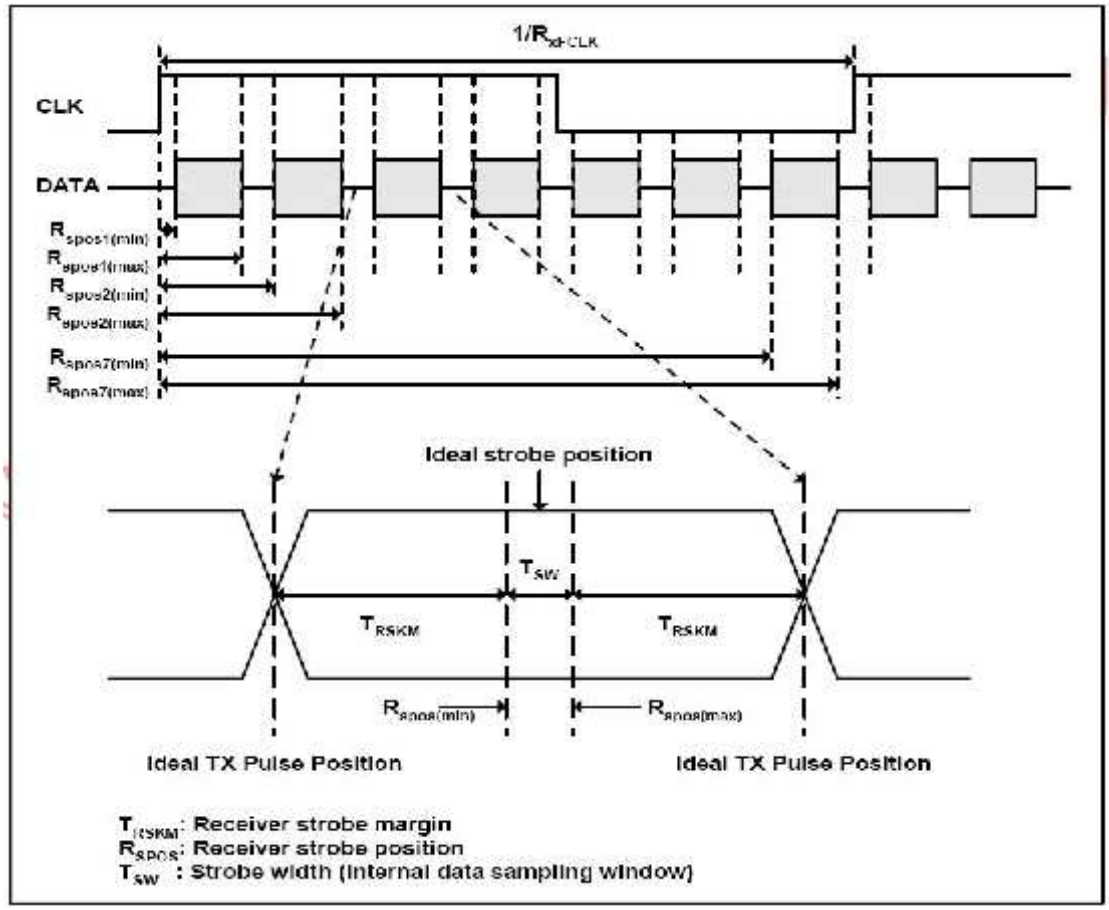


3.3.Timing Characteristics

3.3.1. AC Electrical Characteristics

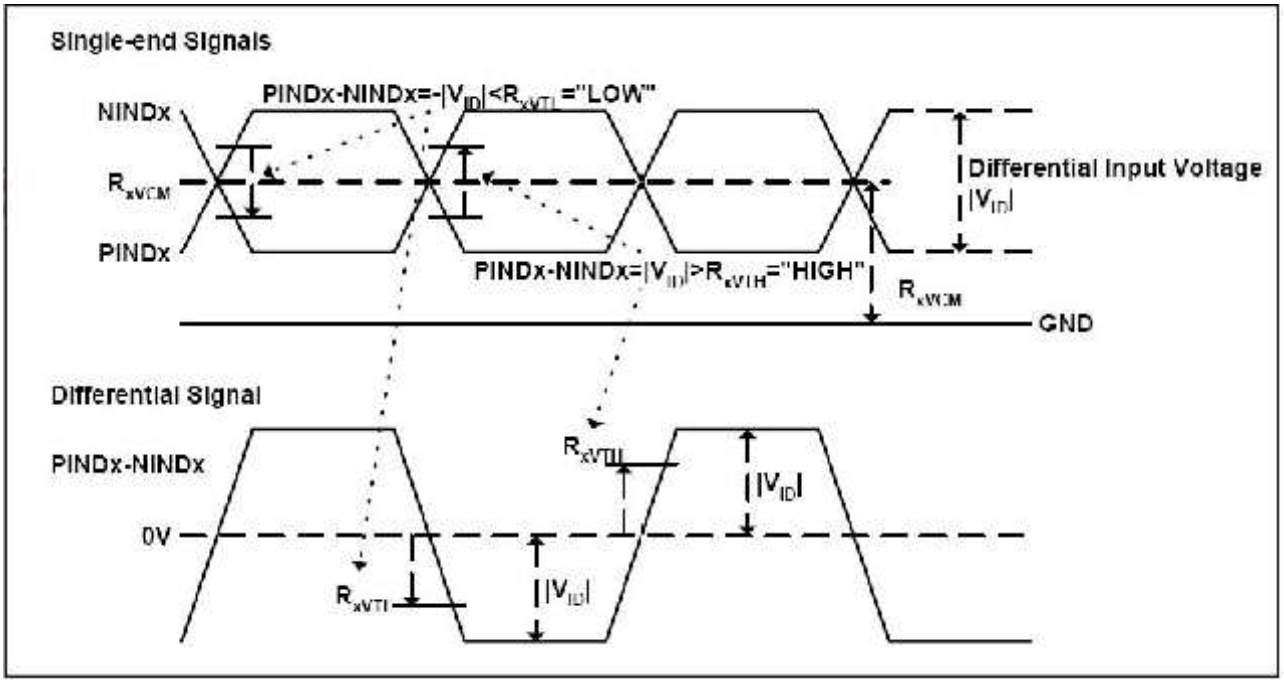
Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock frequency	R_{xFCLK}	20	-	71	MHZ	
Input data skew margin	T_{RSKM}	500	-	-	ps	
Clock high time	T_{LVCH}	-	4/(7*R_{xFCLK})	-	ns	
Clock low time	T_{LVCL}	-	3/(7*R_{xFCLK})	-	ns	

3.3.2. Input Clock and Data Timing Diagram



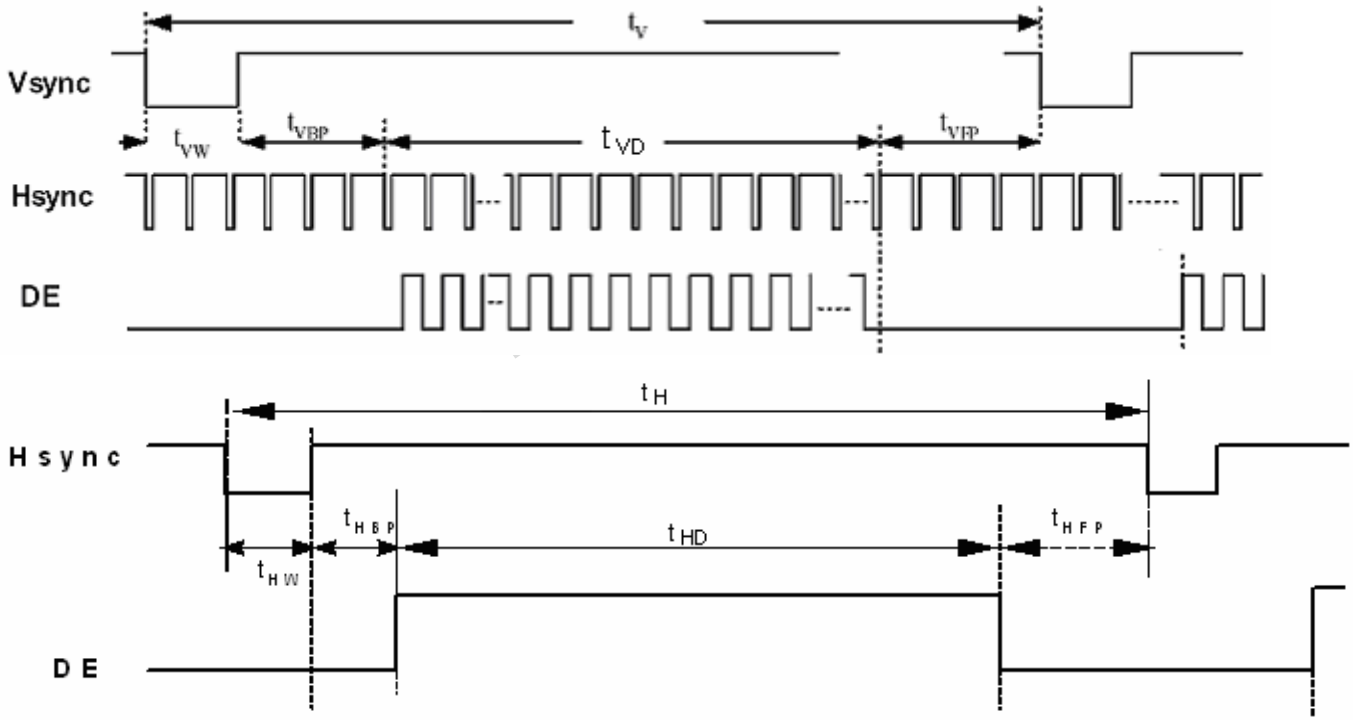
3.3.3. DC Electrical Characteristics

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Differential input high Threshold voltage	R_{xVTH}	-	-	+0.1	V	
Differential input low Threshold voltage	R_{xVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{xVIN}	0	-	2.4	V	
Differential input common mode voltage	R_{xVCM}	|VID|/2	-	2.4-|VID|/2	V	
Differential voltage	|VID|	0.2	-	0.6	V	
Differential input leakage current	RV_{xliz}	-10	-	+10	uA	



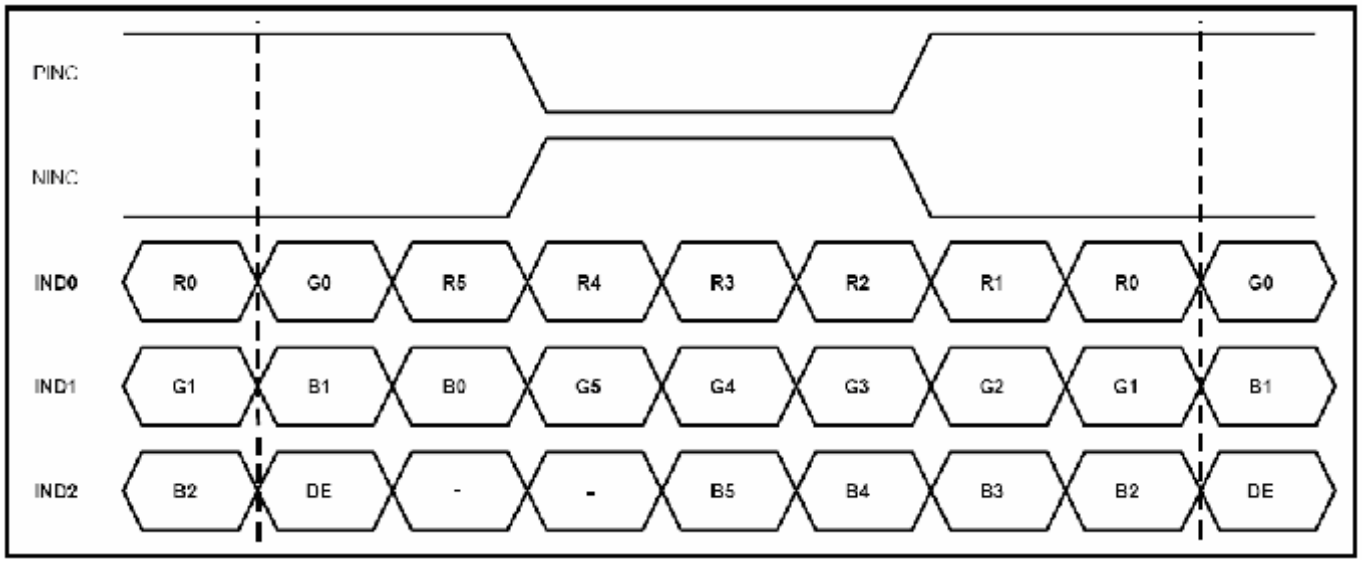
3.3.4. Timing

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	fclk	52	65	71	MHz	Frame rate =TBD
Horizontal display area	thd		1024			
HS period time	th	1114	1344	1400	DCLK	
HS Blanking	thb+thfp	90	320	376	DCLK	
Vertical display area	tvd		768			
VS period time	tv	778	806	845	tH	
VS Blanking	tvb+tvfp	10	38	77	tH	

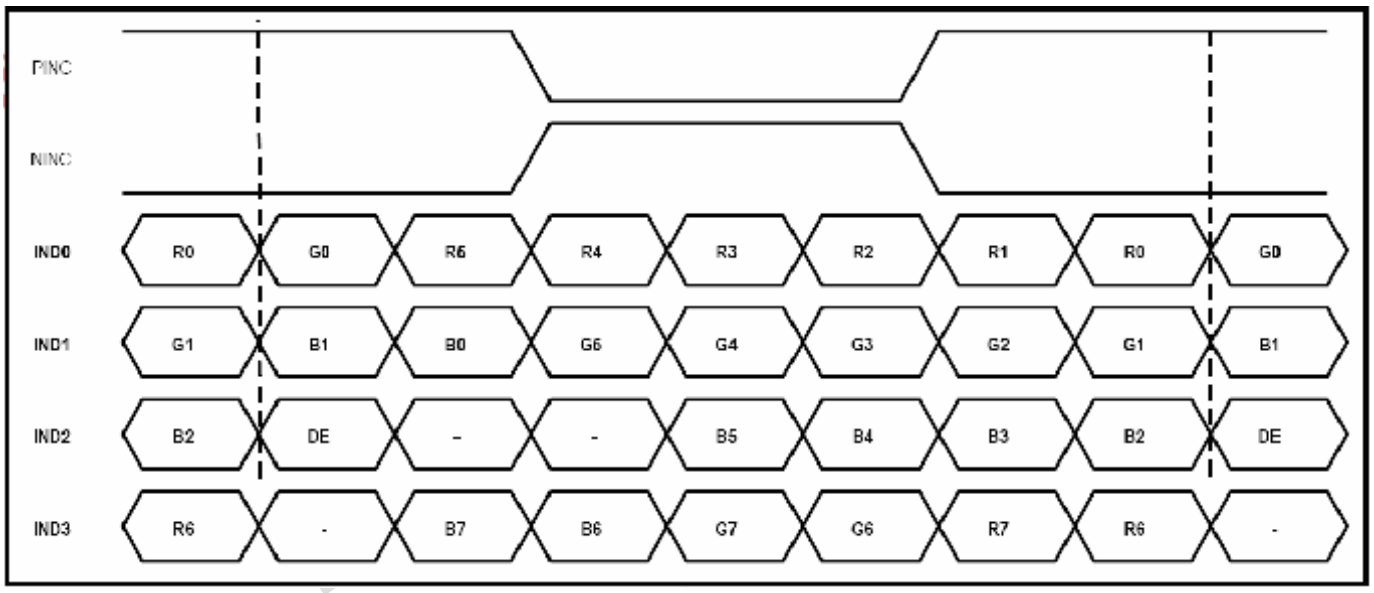


3.3.5. LVDS Data Input

6 bit LVDS Input



8 bit LVDS Input



4. Optical Specifications

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (Cr≥ 10)	θ_L	Φ=180°(9 o'clock)	75	85	-	degree	Note 1
	θ_R	Φ=0°(3 o'clock)	75	85	-		
	θ_T	Φ=90°(12 o'clock)	75	85	-		
	θ_B	Φ=270°(6 o'clock)	75	85	-		
Response time	$T_{ON}+T_{OFF}$	Normal θ=Φ=0°	-	25	50	msec	Note 2 Note 3
Contrast ratio	C_R		600	800	-	-	Note 4
Color chromaticity	W_X		0.27	0.325	0.365	-	Note 5
	W_Y		0.28	0.335	0.375	-	
Luminance	L		600	700	-	cd/m2	Note 6
Luminance uniformity	Y_U		70	75	-	%	Note 7

Test Conditions:

1. VDD=3.3V, the ambient temperature is 25℃.
2. The test systems refer to Note 2.

Note 1: Definition of viewing angle range

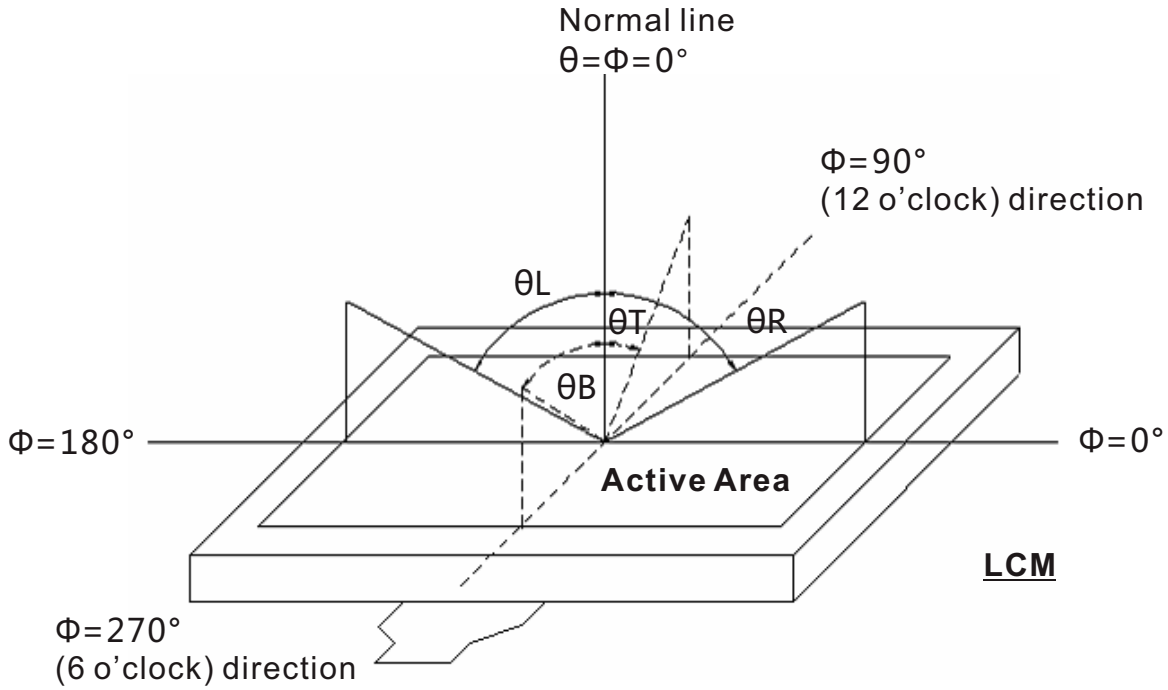


Fig. 4-1 Definition of viewing angle

Note 2: Definition of optical measurement system
The optical characteristics should be measured in dark room. After 30 minutes operation, the optical properties are measured at the center point of the LCD screen. (Response time is measured by Photo detector TOPCON BM-7, other items are measured by BM-5A/Field of view: 1°/Height: 500mm.)

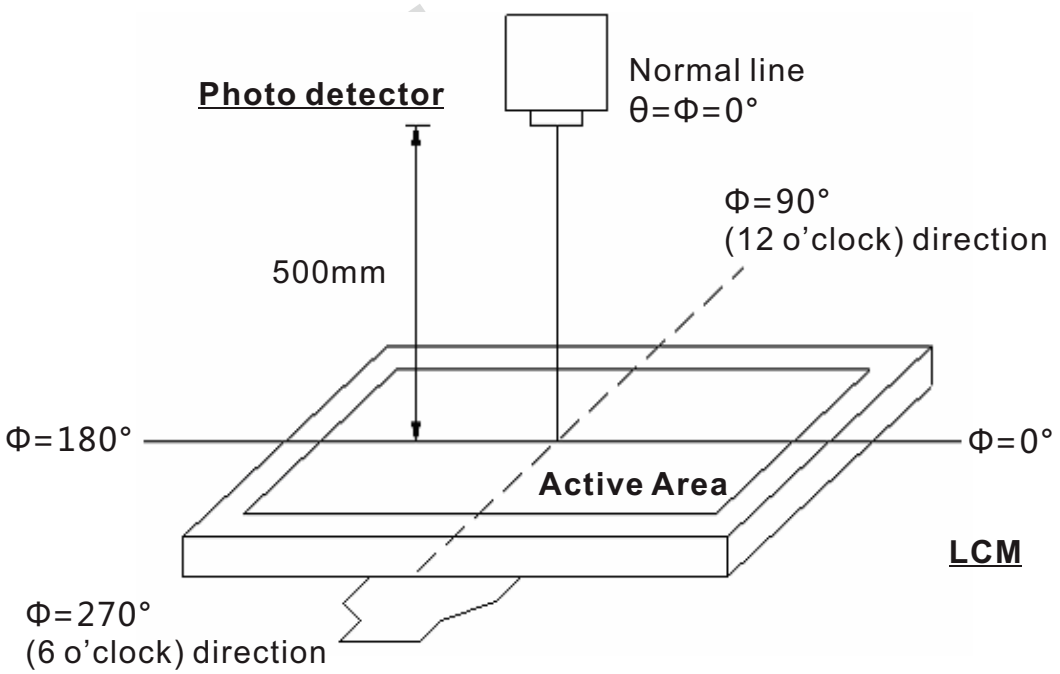


Fig. 4-2 Optical measurement system setup

Note 3: 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 90% to 10%. And fall time(toff) is the time between photo detector output intensity changed from 10% to 90%.

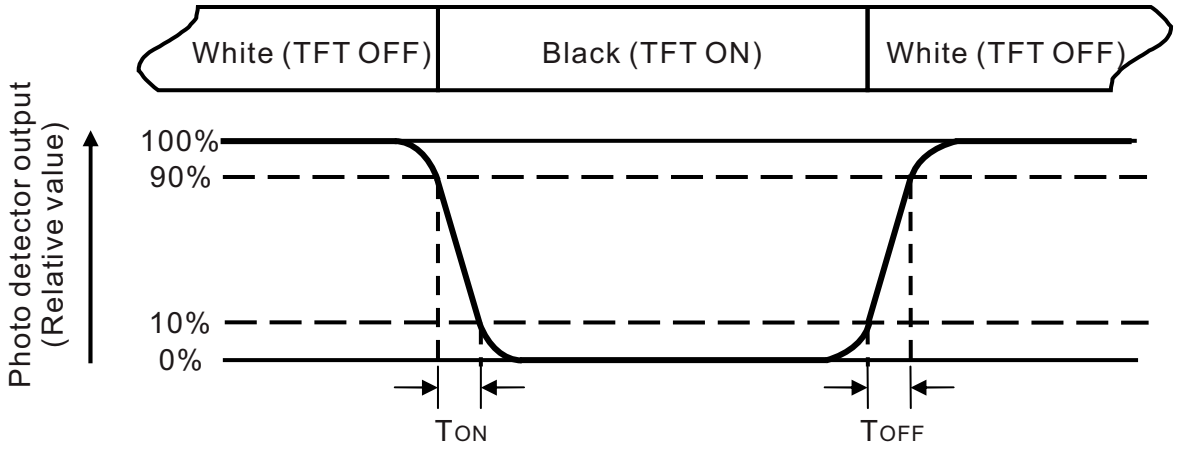


Fig. 4-3 Definition of response time

Note 4: Definition of contrast ratio

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

Note 5: Definition of color chromaticity (CIE1931)
Color coordinates measured at center point of LCD.

Note 6: All input terminals LCD panel must be ground while measuring the center area of the panel.The LED driving condition is IL=300mA.

Note 7:Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer to Fig. 4-4).Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity(Yu)} = \frac{\text{Bmin}}{\text{Bmax}}$$

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

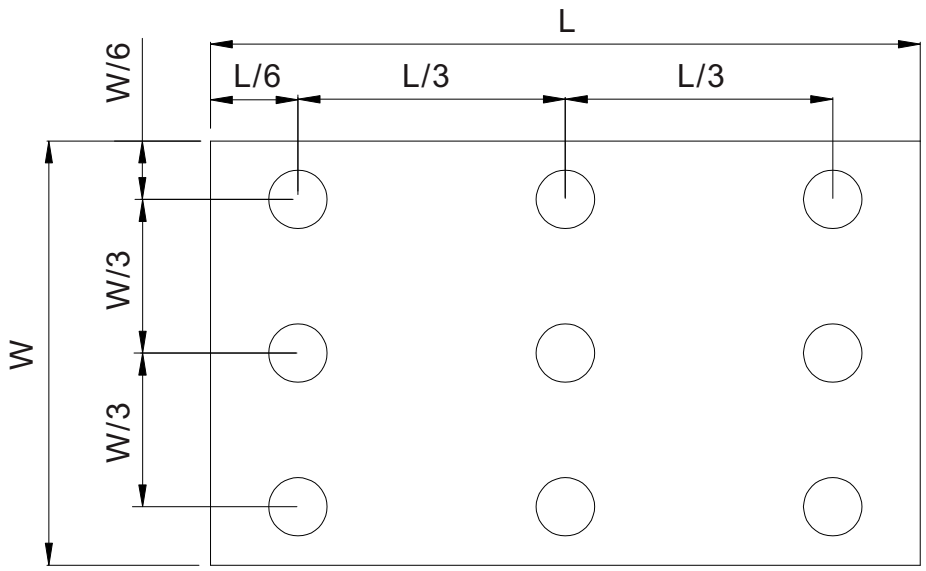


Fig. 4-4 Definition of measuring points

Bmax: The measured maximum luminance of all measurement poition.
Bmin: The measured minimum luminance of all measurement poition.

5. Reliability Test Items

(Note3)

Item	Test Conditions	Remark
High Temperature Storage	Ta = 60℃ 240hrs	Note 1,Note 4
Low Temperature Storage	Ta = -20℃ 240hrs	Note 1,Note 4
High Temperature Operation	Ta = 60℃ 240hrs	Note 2,Note 4
Low Temperature Operation	Ta = -10℃ 240hrs	Note 1,Note 4
Operate at High Temperature and Humidity	+40℃,90%RH 240hrs	Note 4
Thermal Shock	-0℃/30 min~+50℃/30 min for a total 100 cycles, Start with cold temperature and end with high temperature.	Note 4
Vibration Test	Frequency range:10~55Hz Stroke:1.5mm Sweep:10Hz~55Hz~10Hz 2 hours for each direction of X. Y. Z.(6 hours for total)	
Mechanical Shock	100G 6ms,±X, ±Y, ±Z 3 times for each direction	
Package Vibration Test	Random Vibration: ISTA-3A 1HZ-200HZ Grms=0.53 (Half hours for direction of Z)	
Package Drop Test	Height:60 cm 1 corner, 3 edges, 6 surfaces	
Electro Static Discharge	±2KV, Human Body Mode, 100pF/1500Ω	

Note 1: Ta is the ambient temperature of samples.

Note 2: Ts is the temperature of panel's surface.

Note 3: In the standard condition, there shall be no practical problem that may affect thedisplay function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

Note 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

6. General Precautions

6.1. Safety

Liquid crystal is poisonous. Do not put it in your mouth. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

6.2. Handling

1. The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
2. The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.
3. To avoid contamination on the display surface, do not touch the module surface with bare hands.
4. Keep a space so that the LCD panels do not touch other components.
5. Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.
6. Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.
7. Do not leave module in direct sunlight to avoid malfunction of the Ics.

6.3. Static Electricity

1. Be sure to ground module before turning on power or operating module.
2. Do not apply voltage which exceeds the absolute maximum rating value.

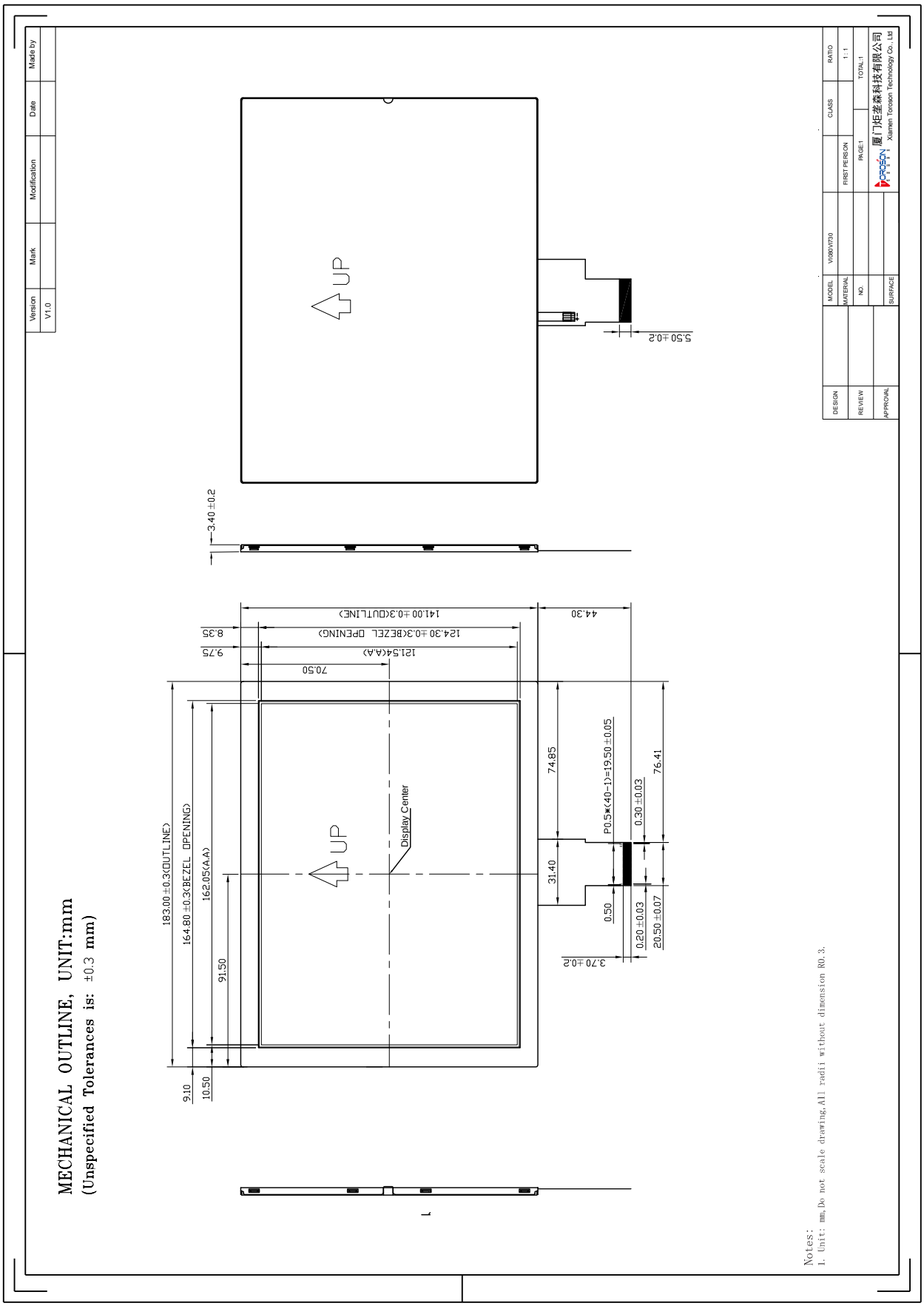
6.4. Storage

1. Store the module in a dark room where must keep at 25±10℃ and 65%RH or less.
2. Do not store the module in surroundings containing organic solvent or corrosive gas
3. Store the module in an anti-electrostatic container or bag.

6.5. Cleaning

1. Do not wipe the polarizer with dry cloth. It might cause scratch.
2. Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.

7. Mechanical Drawing



8. Package Drawing