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SPECIFICATION

VXT620HWI-01

☐ Preliminary Specification

☐ Final Specification



CUSTOMER:

Made By:

Checked By:

Approved By:

Quality:

Date:

Note:

Approved By:

Date:

Note:

Records of Revision

[illegible]

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1. General Specification

Item	Contents	Unit
LCD TYPE	TFT/TRANSMISSIVE	
MODULE SIZE (W*H*T)	155.2*88.2*5.00	MM
ACTIVE SIZE (W*H)	137.52*77.23	MM
PIXEL PITCH (W*H)	0.1926*0.1790	MM
NUMBER OF DOTS	800*480	
DIVER IC	ILI6123H+ILI5480	
INTERFACE TYPE	RGB	
TOP POLARIZER TYPE	ANTI-GLARE	
RECOMMEND VIEWING DIRECTION	6	O'CLOCK
GRAY SCALE INVERSION DIRECTION	12	O'CLOCK
BACKLIGHT TYPE	18-CHIP WHITE LED	
TOUCH PANEL TYPE	WITHOUT	

2. Mechanical Drawing

The drawing includes a top view showing a rectangular module with dimensions: 155.20(LCM O.D.), 140.70(BZ OPEN), 137.52±0.2(LCD A.A.), and 78.40. It also shows mounting hole positions: (6.05), (7.64), and (1.36). A side view shows a height of 5.00MAX and a width of 65.79±1. Detail A shows a cross-section of the module with dimensions: 0.50±0.07, 0.30±0.03, and 0.50±0.07. Detail B shows a cross-section of the module with dimensions: 0.50±0.07, 0.30±0.03, and 0.50±0.07. Detail C shows a cross-section of the module with dimensions: 0.50±0.07, 0.30±0.03, and 0.50±0.07. The drawing also includes a table of specifications and a list of notes.

NO	SYMBOL	NO	SYMBOL
1	AGND	31	VSD
2	AVDD	32	MODE
3	DVDD	33	RSTB
4	RO	34	STBYB
5	R1	35	SHLR
6	R2	36	DVDD
7	R3	37	UPFN
8	R4	38	GND
9	R5	39	AGND
10	R6	40	AVDD
11	R7	41	VCOM
12	G0	42	DITH
13	G1	43	NC
14	G2	44	NC
15	G3	45	V10
16	G4	46	V9
17	G5	47	V8
18	G6	48	V7
19	G7	49	V6
20	B0	50	V5
21	B1	51	V4
22	B2	52	V3
23	B3	53	V2
24	B4	54	V1
25	B5	55	NC
26	B6	56	VDDG
27	B7	57	DVDD
28	DCLK	58	VERG
29	DE	59	GND
30	HSD	60	NC

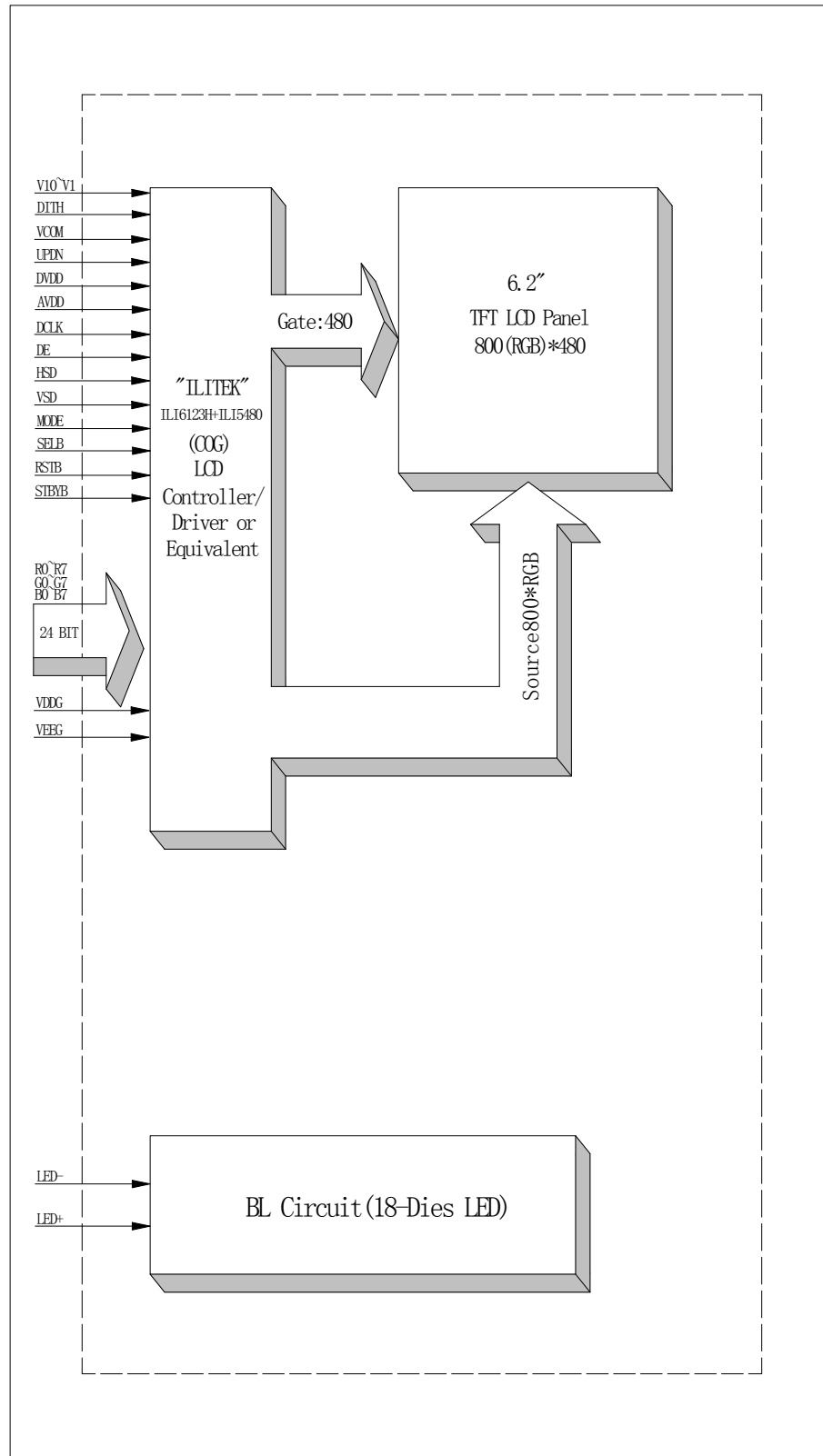
Display Type: TFT
Transmissive_Positive
Optimum Viewing Direction: 6 O'CLOCK
Upper Polarizer Type: Anti-Glare
LCD Driver IC: ILI6123H+LI5480
Operating Voltage: VDD=3.3V
Operation Temperature: -20°C TO 70°C
Storage Temperature: -30°C TO 80°C
Interface: RGB
Backlight: 18-CHIP WHITE LED
Surface Luminance: ---
White X/Y: ---

DRAWING NO. VXT620HW1-01
MODULE SPEC.
UNIT: mm
3rd Angle
SCALE: 1 OF 1
SHEET 1 OF 1

TITLE: DRAWN: ME.CHECKED: EE.CHECKED: APPROVED: CUSTOMER'S APPROVAL: 2017.03.29A
SIGN: DATE: V00
First issue
AMENDMENT
SYMBOL
APP

NOTES:
1. General Tolerance: ±0.2
2. () reference dimension.
3. Recommended Case Open Area Should Be Less Than Module V.A
4. ROHS MUST BE COMPLIANT

3. Block Diagram



4. Interface Pin Function

Pin No.	Symbol	Description
1	AGND	Analog Ground
2	AVDD	Analog Power
3	DVDD	Digital Power
4~11	R0~R7	Data Input
12~19	G0~G7	Data Input
20~27	B0~B7	Data Input
28	DCLK	Clock input
29	DE	Data Enable signal
30	HSD	Horizontal sync input.Negative polarity
31	VSD	Vertical sync input.Negative polarity
32	MODE	DE/SYNC mode select .normally pull high H:DE mode.L:HSD/VSD mode
33	RSTB	Global reset pin.Active low to enter reset state.suggest to connecting with an RC reset circuit for stability .normally pull high.
34	STBYB	Standby mode,normally pull high STBYB="1",normal operation STBYB="0",timming control ,sorce driver will turn off,all output are high-Z
35	SHLR	Source right or left sequence control.SHLR="L",shift left:last data=S1<-S2...S1200=first data SHLR="H",shift right:first data=S1->SS2...S1200=last data
36	DVDD	Digital Power
37	UPDN	Gate up or down scan control. UPDN="L" , DOWN shift :G1->G2...->G480 ; UPDN="H", up shift: G1<-G2...<-G480
38	GND	Digital Ground
39	AGND	Analog Ground
40	AVDD	Analog Power
41	VCOM	For external VCOM DC input (Adjustable)
42	DITH	Dithering setting: DITH="H" 6bit resolution (last 2 bits of input data truncated) (default setting) DITH="L" 8bit resolution
43	NC	No connection
44	NC	No connection
45~54	V10~V1	Gamma correction voltage reference
55	NC	No connection
56	VDDG	Ground Power for TFT
57	DVDD	Digital Power
58	VEEG	Negative Power for TFT
59	GND	Digital Ground
60	NC	No connection

5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply voltage for logic	DVDD	-0.3	5	V
Supply voltage for analog	AVDD	6.5	13.5	V
Power supply	VDDG	-0.3	40	V
Power supply	VEEG	-20	0.3	V
Supply current (One LED)	I _{LED}		30	mA
Operating temperature	T _{OP}	-20	+70	°C
Storage temperature	T _{ST}	-30	+80	°C

Note: 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.

6. Electrical Characteristics

6.1 Input Power

Item	Symbol	Min	Typ.	Max	Unit	Applicable terminal
Supply voltage for logic	DVDD	3.0	3.3	3.6	V	
Supply voltage for analog	AVDD	9.9	10	10.1	V	
Power supply	VDDG	12	15	23	V	
Power supply	VEEG	-12	-7	-5	V	
Input Voltage	V _{IL}	0	-	0.3DVDD	V	
	V _{IH}	0.7 DVDD	-	DVDD		
Input leakage Current	I _{LKG}	-		-	μA	
Input Current	IVDD	55	80	120	mA	

6.2 Backlight Driving Conditions

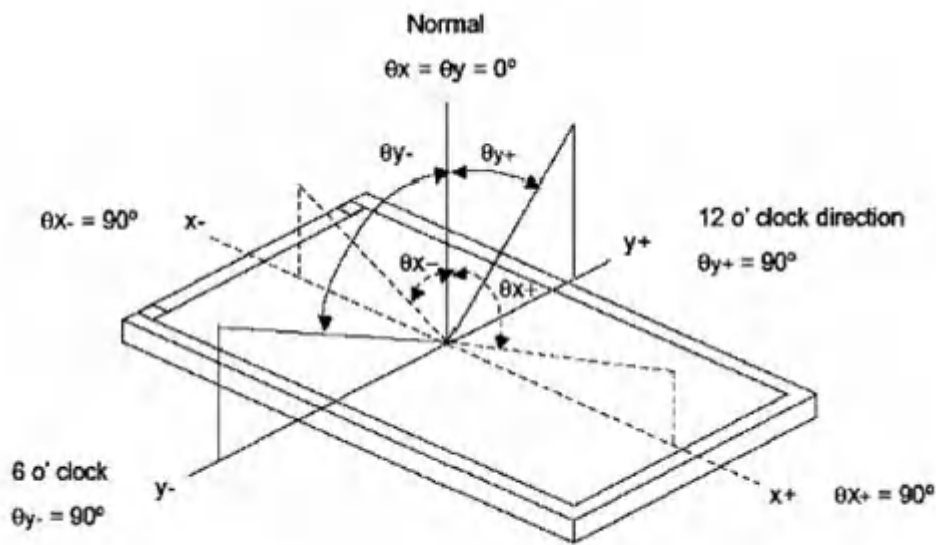
Item	Symbol	Value			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED Backlight	V _F	8.4	9.6	10.2	V	I _L =120mA
Current for LED Backlight	I _L		120		mA	
Power Consumption	P		1.152		W	
LED Life Time		30,000	50,000		Hr	Note

Note: Brightness to be decreased to 50% of the initial value at ambient temperature TA=25℃

7. Optical Characteristics

ITEM		SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
				MIN	TYP.	MAX		
Luminance		L	$I_L = 120\text{mA}$	400	500	600	Cd/m^2	
Contrast Ratio		CR	$\theta = 0^\circ$	480	600			
Response Time		T_{ON}	25°C	-	2	4	ms	
		T_{OFF}		-	6	12		
CIE Color Coordinate	Red	X_R	Viewing normal angle	0.573	0.593	0.613		
		Y_R		0.341	0.361	0.381		
	Green	X_G		0.306	0.326	0.346		
		Y_G		0.535	0.555	0.575		
	Blue	X_B		0.131	0.151	0.171		
		Y_B		0.103	0.123	0.143		
	White	X_W		0.284	0.304	0.324		
		Y_W		0.319	0.339	0.359		
Viewing Angle	Hor.	θ_{X+}	$CR \geq 10$	65	75		Degree	
		θ_{X-}		65	75			
	Ver.	θ_{Y+}		60	70			
		θ_{Y-}		60	70			
Uniformity	Un			70	75		%	

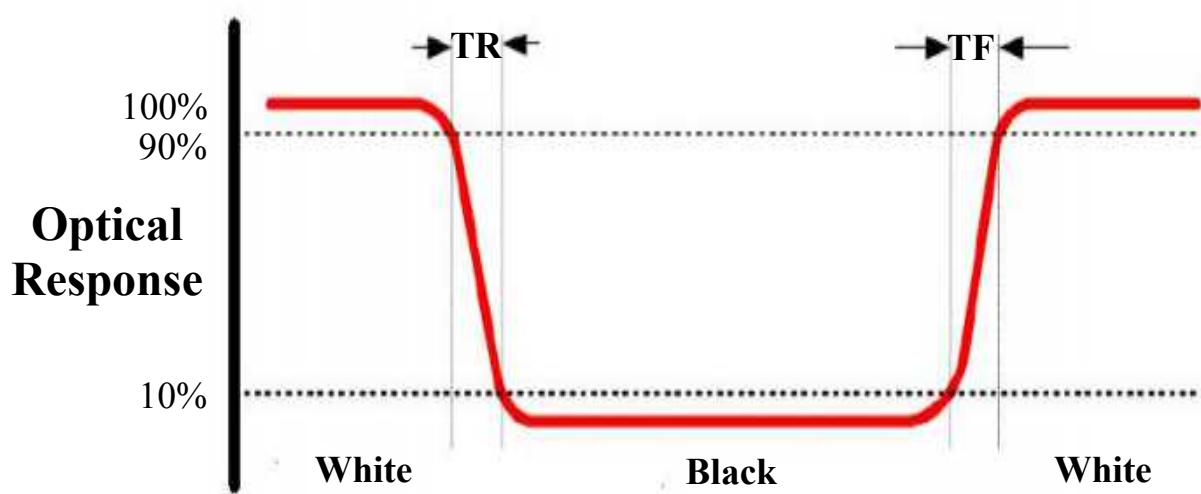
Note 1: Definition of Viewing Angle θ_x and θ_y :



Note 2: Definition of contrast ratio CR:

$$CR = \frac{\text{Luminance of white state}}{\text{Luminance of black state}}$$

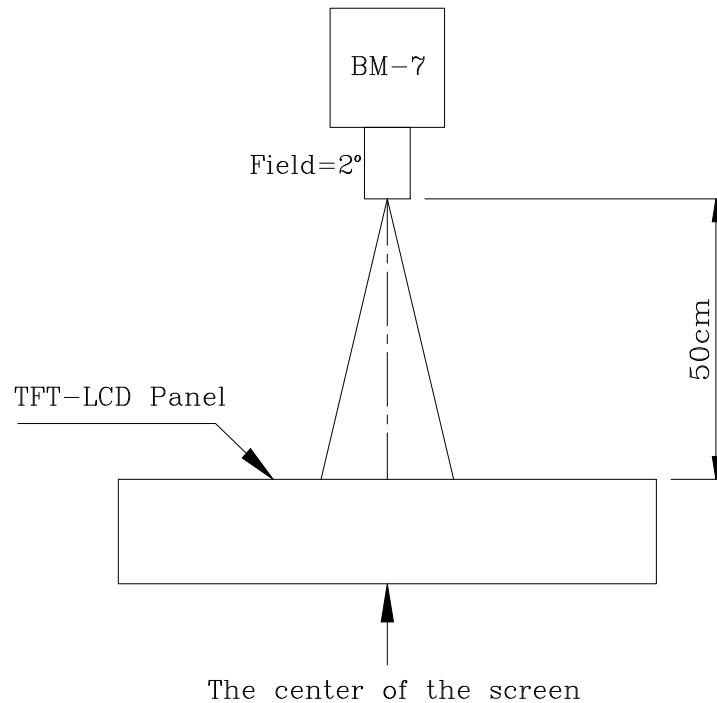
Note 3: Definition of Response Time(T_r , T_f)



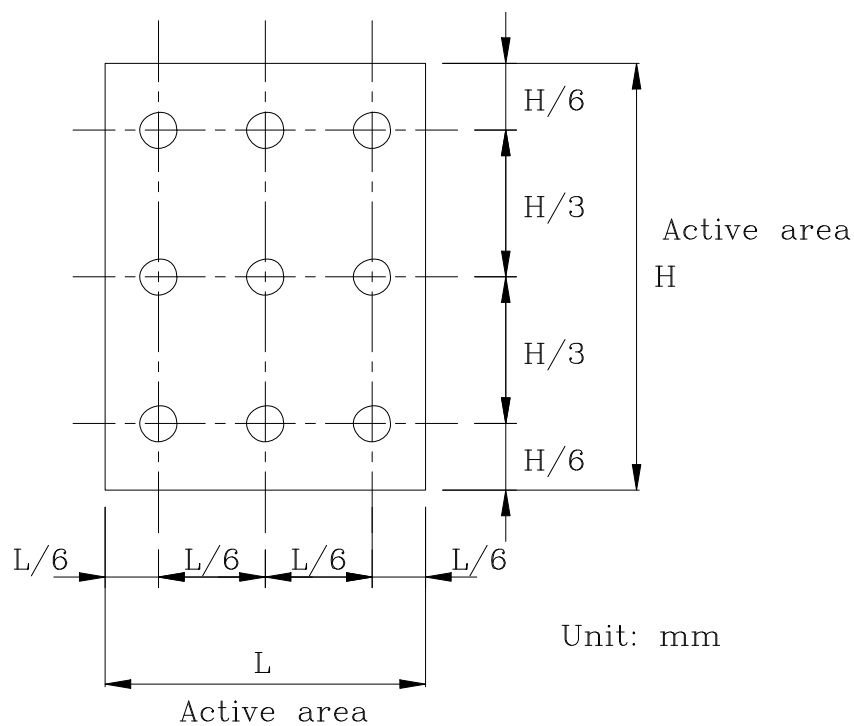
Note 4: Definition of Luminance

①The Brightness Test Equipment Setup

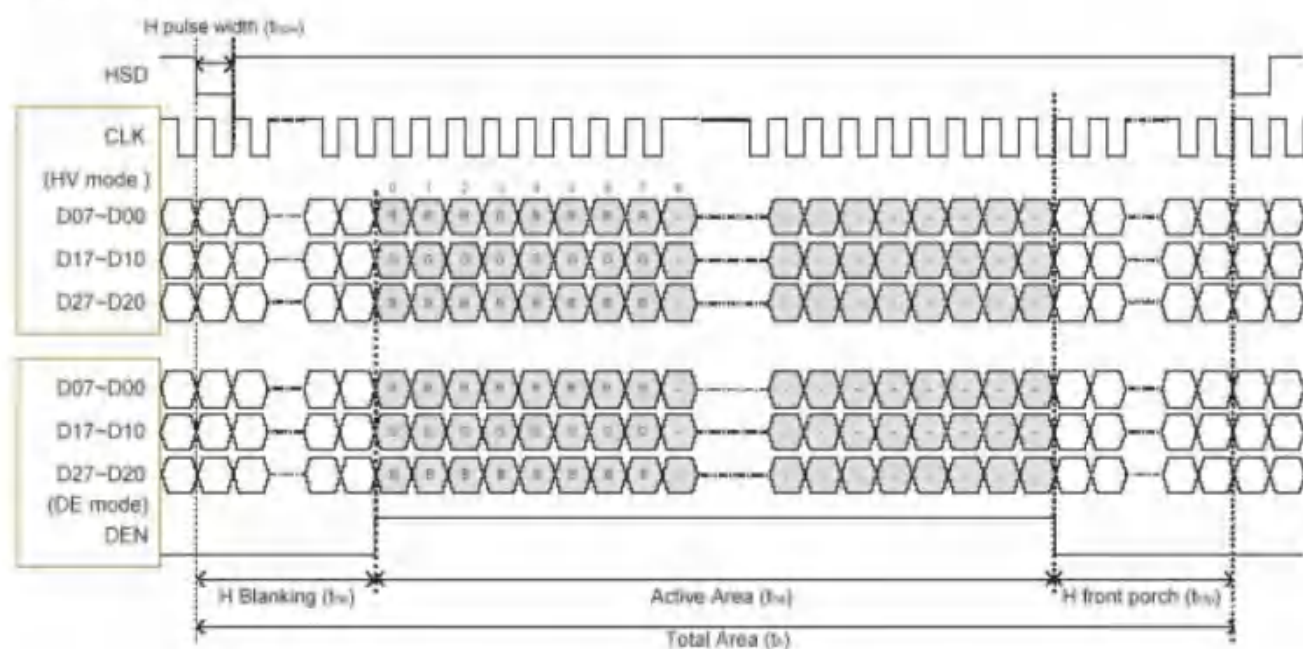
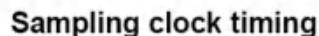
Field=2° (As measuring “black” image, field=2° is the best testing condition)



②The Brightness Test Point Setup

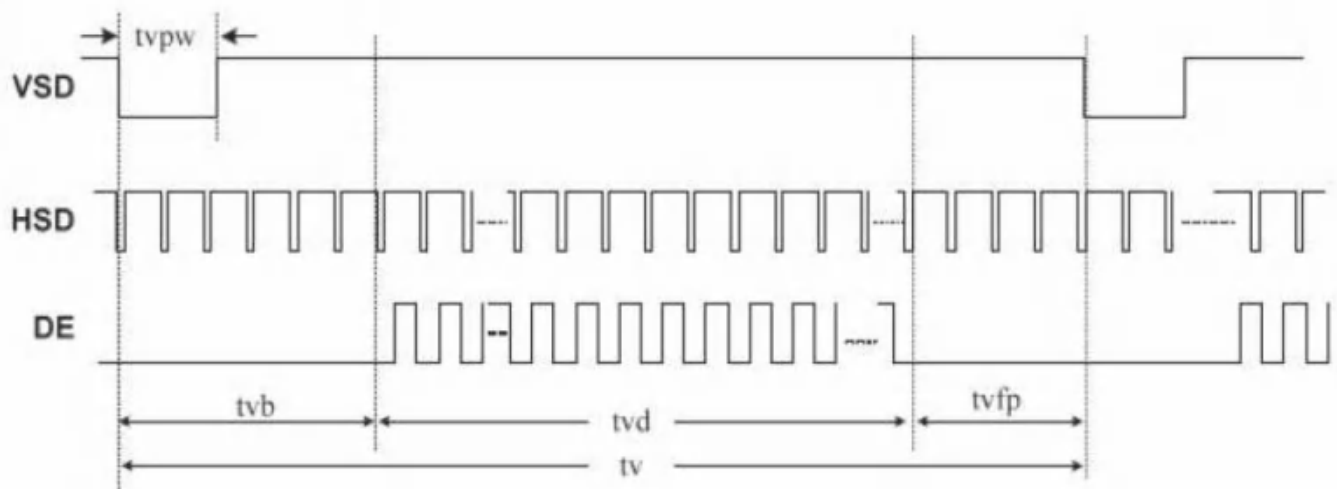


8.1 Timing Diagram of Interface Signal



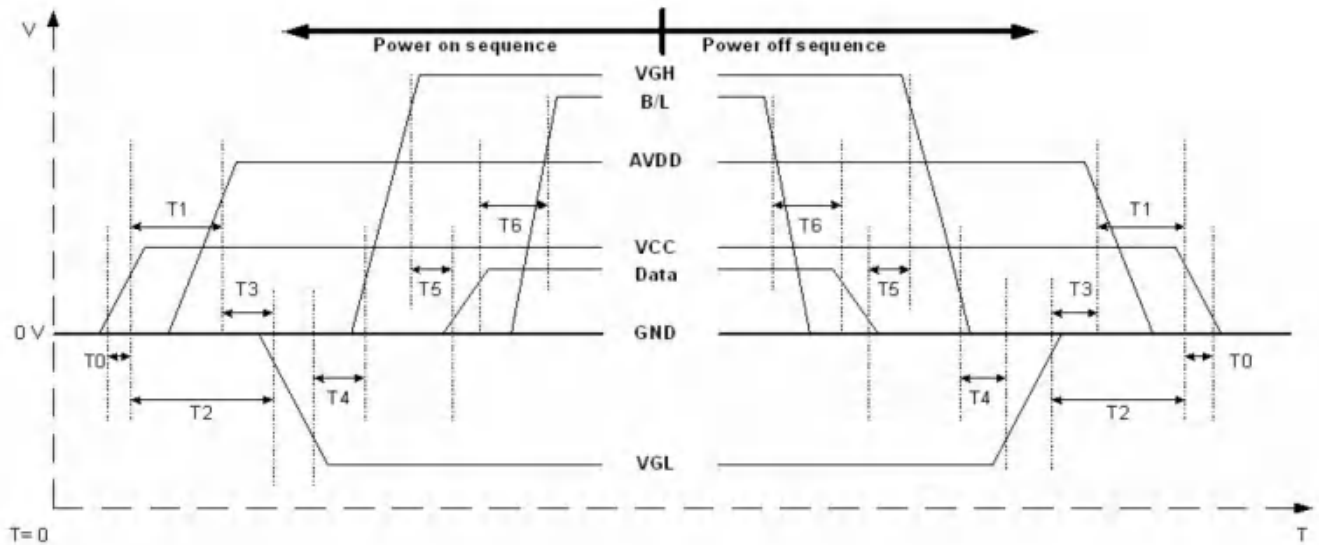
Horizontal display timing range

Vertical input timing

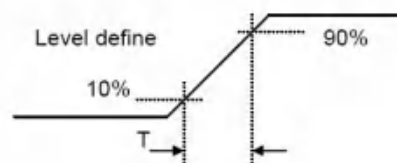


Vertical timing

8.2 Power Sequence



Item	Min.	Typ.	Max.	Unit
T0	0.5	--	20	msec
T1	16			msec
T2	20			msec
T3	0			msec
T4	20		--	msec
T5	20			msec
T6	50			msec



Power On Sequence: VCC-> AVDD -> VGL -> VGH -> Data -> B/L

Power Off Sequence: B/L-> Data -> VGH -> VGL -> AVDD -> VCC

Notes: Data include R0~R7, G0~G7, B0~B7, HSD, VSD, DCLK, SHLR, UPDN, DE MODE, RSTB, STBYB, SHLR, UPDN, DITH

9. Standard Specification for Reliability

9.1 Standard Specification for Reliability of LCD Module

Item	Test Conditions		Remark
High temperature storage	Ta=80℃	240hrs	NOTE1 , NOTE4
Low temperature storage	Ta=-30℃	240hrs	NOTE1 , NOTE4
High temperature operation	Ta=70℃	240hrs	NOTE2 , NOTE4
Low temperature operation	Ta=-20℃	240hrs	NOTE2 , NOTE4
Operate at high temperature and humidity	+60℃, 90%RH	240hrs	NOTE4
Thermal Shock	-30℃/30min~+80℃/30min for a total 100 cycles, start with cold temperature and end with high temperature.		NOTE4
Vibration Test	Frequency range:10~55HZ Stroke:1.5mm Swap:10HZ~55HZ~10HZ 2 hours of each direction of X.Y. Z (6 hours for total)		
Mechanical shock	100G 6ms, $\pm X$, $\pm Y$, $\pm Z$ 3 times for each direction		
Package vibration test	Random vibration :0.15G*G/HZ from 5-200 HZ,-6dB/Octave from 200-500HZ of each direction of X.Y. Z (6 hours for total)		
Low temperature storage	Height:60cm 1 corner ,3 edges ,6 surfaces		
Low temperature storage	$\pm 2KV$,Human Body Mode, 100pF/1500 Ω		

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 the display 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.

10. General Precautions

10.1. 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.

10.2. Handling

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

10.3. Static Electricity

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

10.4. Storage

- Store the module in a dark room where must keep at $25\pm 10^{\circ}\text{C}$ and 65%RH or less.
- Do not store the module in surroundings containing organic solvent or corrosive gas.
- Store the module in an anti-electrostatic container or bag.

10.5. Cleaning

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

11. Packing Method

----TBD