PRODUCT SPECIFICATION FOR LCD MODULE

Revision: 1.0

Model No: LSCI070001XGA-RV1.0

Module Type: COG+FPC+B/L+CTP

APPROVED SIGNATURE

■ Approved Product Specification only

□ Approved Product Specification and Samples

Prepared By	Checked By	Approved By

Contents

目录

1. General Description

LSCI070001XGA-RV1.0 is a transmissive type a-Si TFT-LCD (amorphous silicon thin film transistor liquid crystal display) module, which is composed of a TFT-LCD panel, a driver circuit and a backlight unit. The panel size is 7.0 inch and the resolution is 1024(RGB)*600.

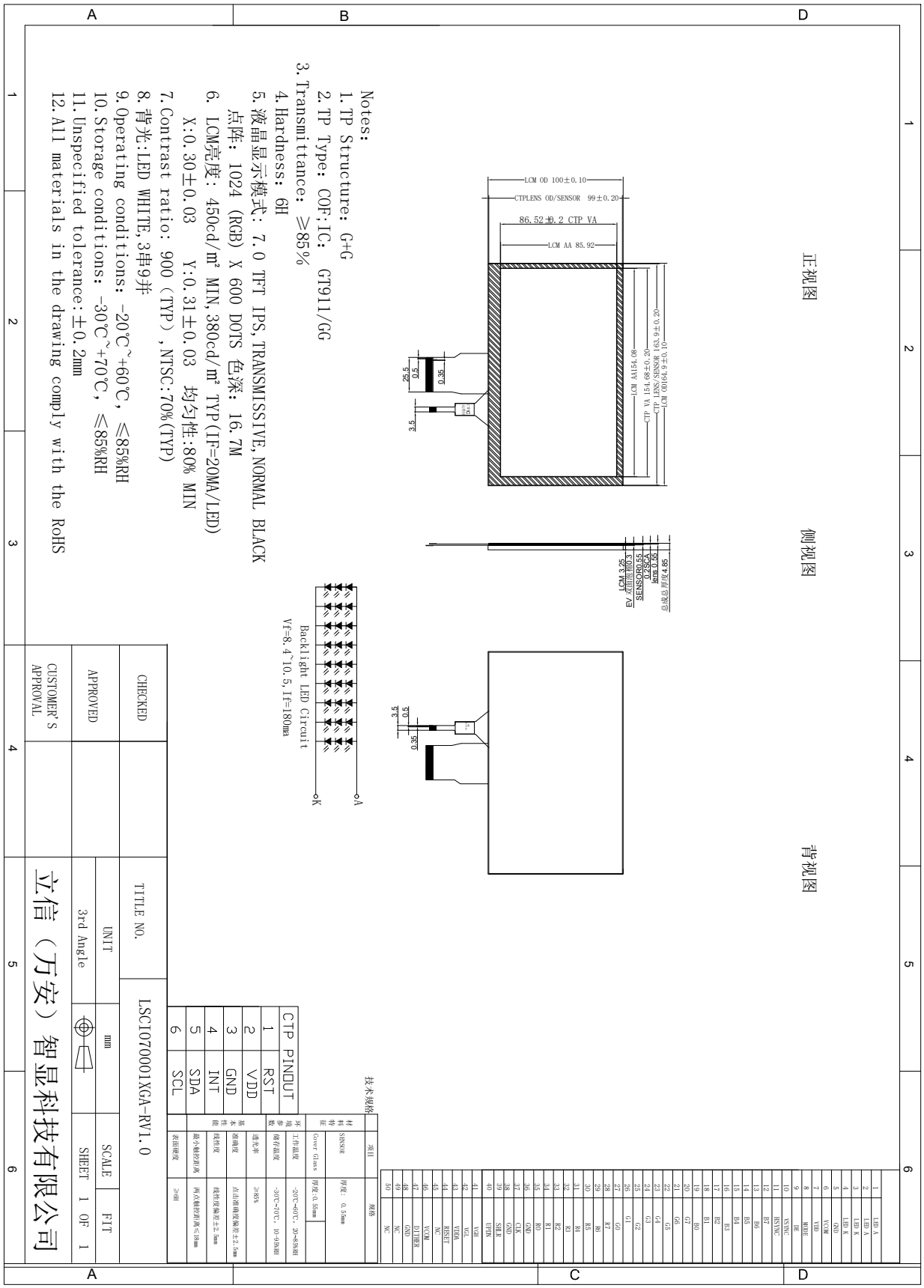
2. Physical Features

Display Mode	TFT-LCD Module
	Active matrix TFT, Transmissive type
Display Format	Graphic 1024(RGB)×600 Dot-matrix
Input Data	24 bit RGB
Viewing Direction （Grayscale Inversion）	IPS

3. Mechanical Specification

Item	Specification	Unit
Module size (H×V×D)	164.9 ×100 ×4.85	mm
Number of dots	1024(RGB) ×600	pixel
Active area (H×V)	154.08×85.92	mm

4. Outline Dimension



5. Absolute Maximum Ratings

Item	Symbol	Min	Max	Unit	Note
Digital Supply Voltage	VDD VDD-LVDS	-0.3	5	V	
Analog Supply Voltage	AVDD	-0.5	15	V	
Gate On Voltage	VGH	-0.3	40	V	
Gate Off Voltage	VGL	-20	0.3	V	
Gate On-Gate Off Voltage	VGH-VGL	-0.3	40	V	

6. Electrical Characteristics

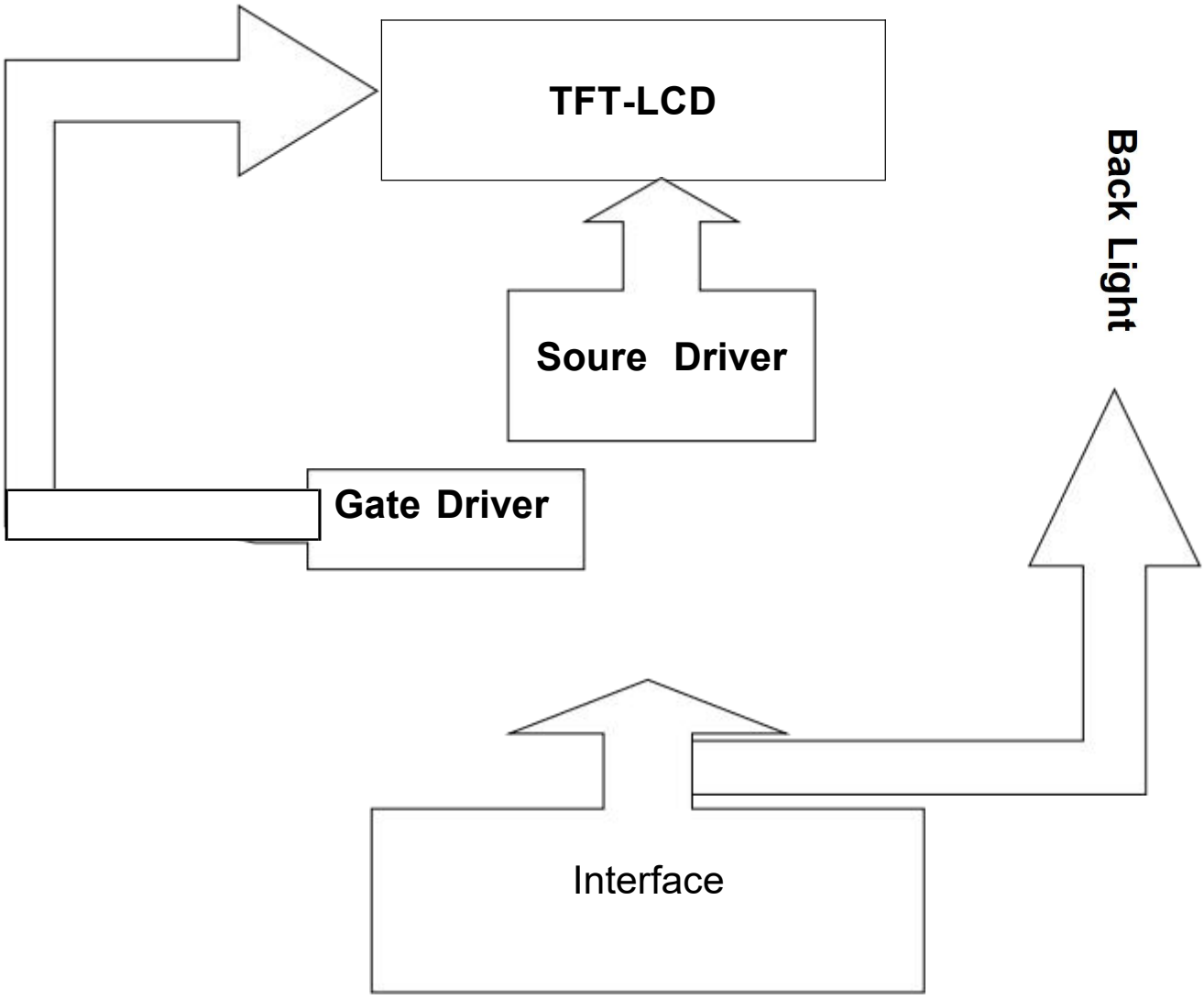
Item	Symbol	Min.	TYP	Max.	Unit	NOTE
Digital Power Supply Voltage For LCD	VDD	3.0	3.3	3.6	V	
Analog Power Supply Voltage	AVDD	8.5	8.7	8.9	V	-
TFT Gate on voltage	VGH	22	23	24	V	
TFT Gate off voltage	VGL	-7.4	-6.8	-6.2	V	
Common Voltage	VCOM	2.2	2.4	2.6	V	
Logic Input Voltage	VIH	0.7*DVDD		DVDD	V	
	VIL	GND		0.3*DVDD	V	

BACKLIGHT CHARACTERISTICS

Item	Symbol	Min	Typ	Max	Unit	Condition
Forward voltage	Vf	9.0	9.6	10.5	V	If=120mA
Luminance	Lv	380	450	-	cd/m2	If=120mA
Number of LED	--	18			Piece	--
Connection mode	P	3 chips serial *6			--	--

7. Module Function Description

7-1. Block Diagram Of LCM



7-2. Pin Description

Pin No.	Symbol	Function
1,2	VLED+	Power for LED backlight (Anode)
3,4	VLED-	Power for LED backlight (Cathode)
5	GND	Power ground
6	VCOM	Common Voltage
7	DVDD	Digital Power
8	MODE	DE/SYNC mode select. Normally pull high H: DE mode. L: HSD/VSD mode
9:	DE	Data Enable signal.
10	VSD	Vertical sync input. Negative polarity
11	HSD	Horizontal sync input. Negative polarity
12-19	B7-B0	Blue Data
20-27	G7-G0	Green Data
28-35	R7-R0	Red Data
36	GND	Ground
37	DCLK	Colock signal
38	GND	Display on/off
39	SHLR	Left or Right Display Control
40	UPDN	Up / Down Display Control
41	VDDG	Positive Power for TFT
42	VEEG	Negative Power for TFT
43	AVDD	Analog Power
44	RSTB	Global reset pin. Active low to enter reset state. Suggest to connecting with an RC reset circuit for stability. Normally pull high. (R=10KΩ, C=1μF)
45	NC	Not connect
46	VCOM	Common Voltage
47	DITH	Dithering setting DITH="H" 8bit resolution(last 2 bit of input data truncated) DITH="L" 6bit resolution(default setting)
48	GND	Power ground
49	NC	Not connect
50	NC	Not connect

CTP PINOUT	
1	RST
2	VDD
3	GND
4	INT
5	SDA
6	SCL

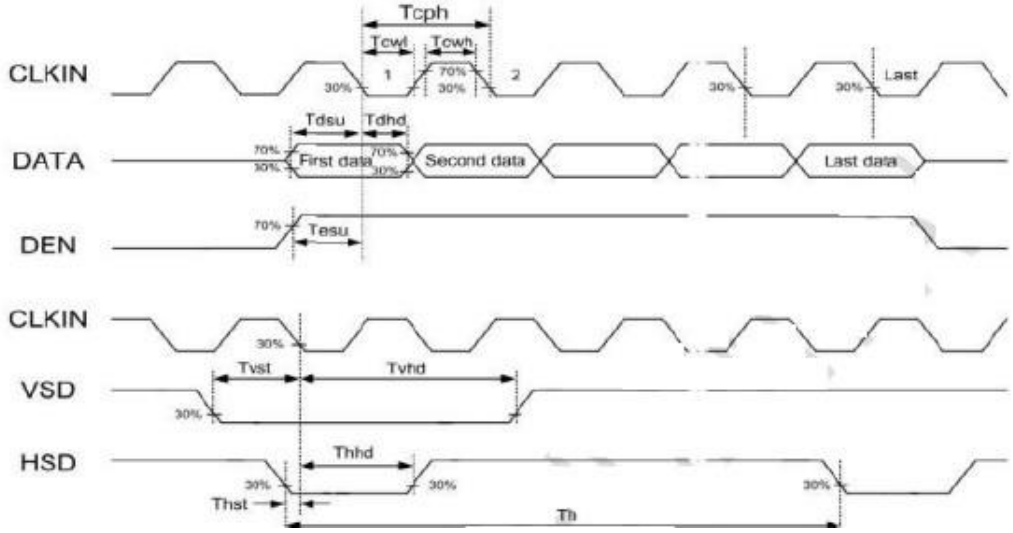
7-3 Timing Characteristic

Input Timing Table

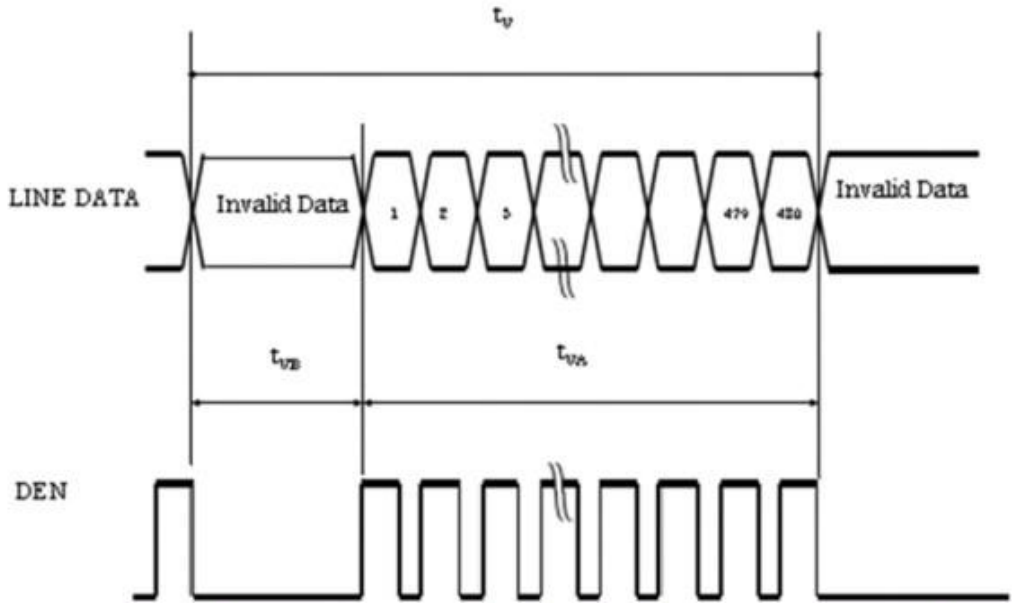
ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	Note
DE MODE	Dot Clock	1/tCLK	45	51.2	57	MHz	
	DCLK Pulse Duty	Tcwh	40	50	60	%	
	Horizontal Total Time	tH	1324	1344	1364	tCLK	
	Horizontal Effective Time	tHA		1024		tCLK	
	Horizontal Blank Time	tHB	300	320	340	tCLK	
	Vertical Total Time	tV	625	635	645	tH	
	Vertical Effective Time	tVA		600		tH	
	Vertical Blank Time	tVB	25	35	45	tH	
SYNC MODE	Horizontal Total Time	TH	1324	1344	1364	tCLK	
	Horizontal Pulse Width	Thpw		20	-	tCLK	thb + thpw =160DCLK is fixed
	Horizontal Back Porch	Thb		140	-	tCLK	
	Horizontal Front Porch	Thfp	140	160	180	tCLK	
	Horizontal Effective Time	THA		1024		tCLK	
	Vertical Total Time	TV	625	635	645	tH	
	Vertical Pulse Width	Tvpw		3	-	th	tvpw + tvb =23th is fixed
	Vertical Back Porch	Tvb	-	20	-	th	
	Vertical Front Porch	Tvfp	2	12	22	th	
	Vertical Valid	Tvd		600		th	

Clock and Data Timing Diagram

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
DVDD Power On Slew Rate	TPOR	-	-	20	ms	From 0V to 90% DVDD
RSTB Pulse Width	TRst	50	-	-	us	DCLK=65MHz
DCLK Cycle Time	Tcph	14	-	-	ns	
DCLK Pulse Duty	Tcwh	40	50	60	%	
VSD Setup Time	Tvst	5	-	-	ns	
VSD Hold Time	Tvhd	5	-	-	ns	
HSD Setup Time	Thst	5	-	-	ns	
HSD Hold Time	Thhd	5	-	-	ns	
Data Setup Time	Tdsu	5	-	-	ns	D0[7:0],D1[7:0],D2[7:0] to DCLK
Data Hold Time	Tdhd	5	-	-	ns	D0[7:0],D1[7:0],D2[7:0] to DCLK
DEN Setup Time	Tesu	5	-	-	ns	
DEN Hold Time	Tehd	5	-	-	ns	

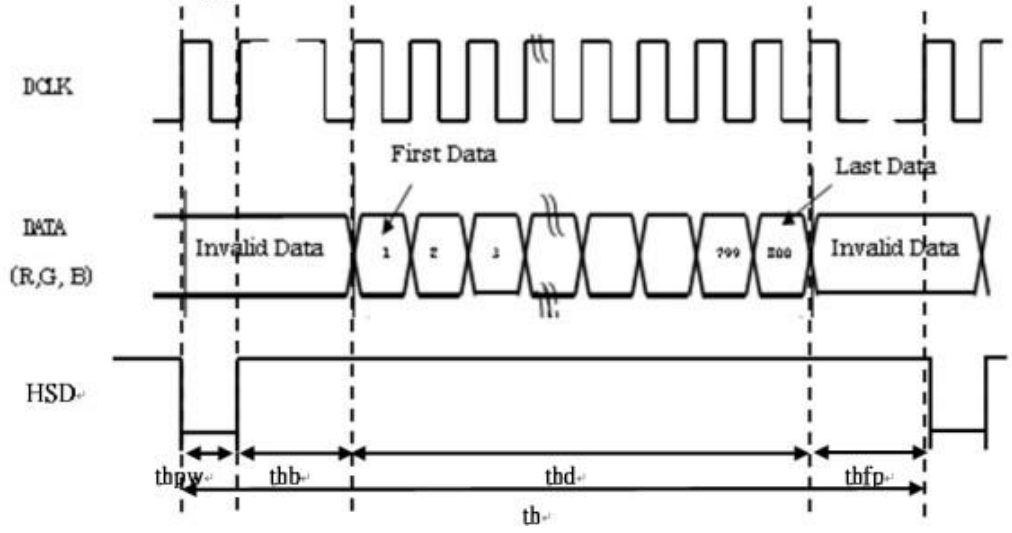


Vertical timing：



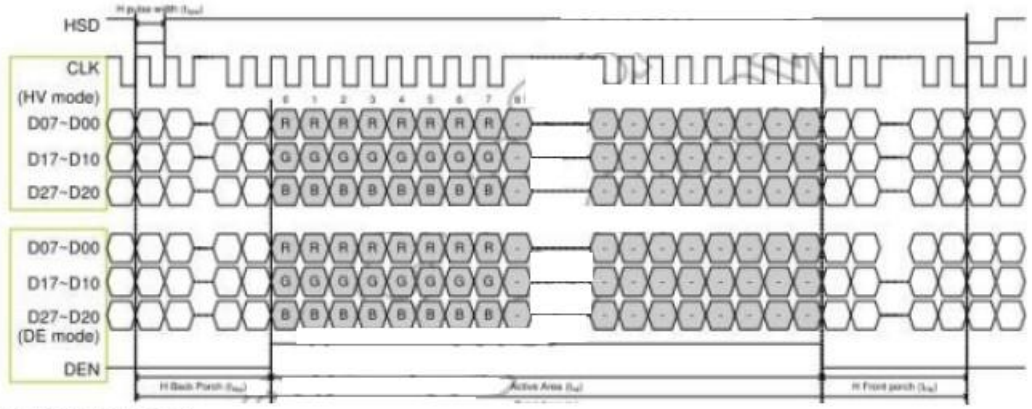
SYNC Mode

Horizontal timing：

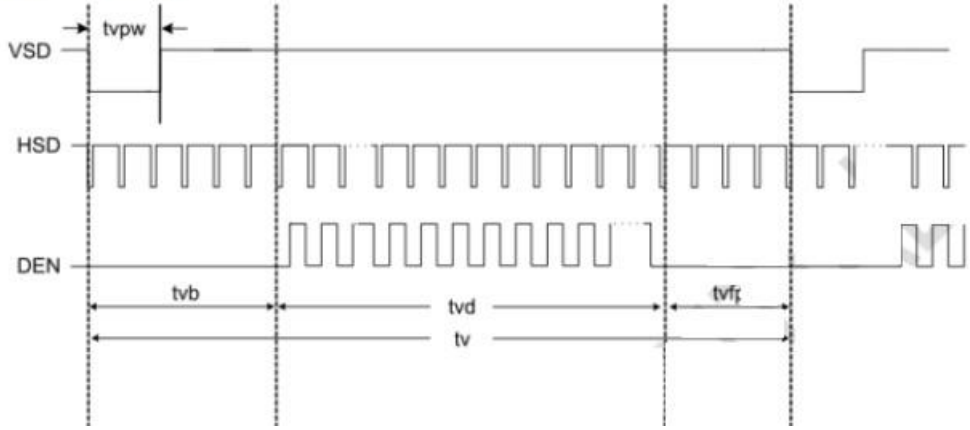


Data Input Format

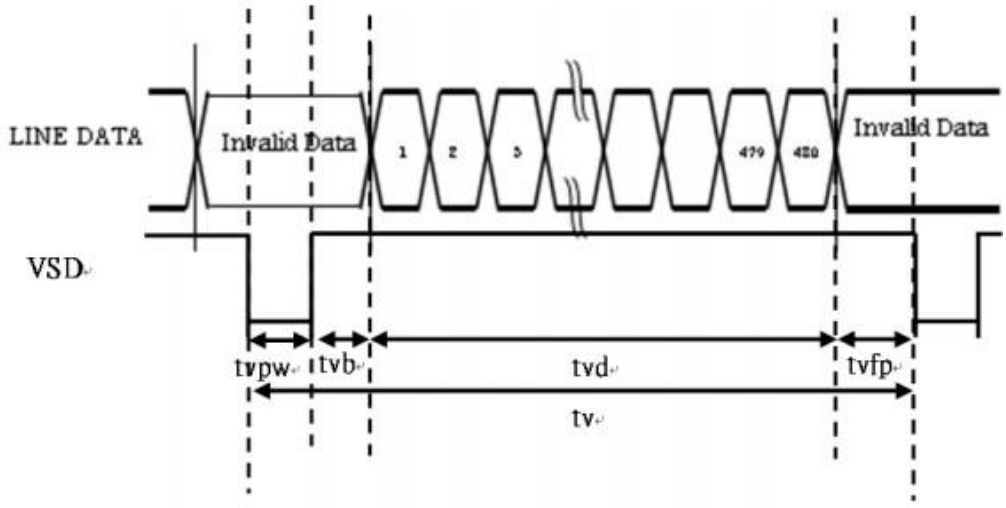
Horizontal timing：



Vertical timing：

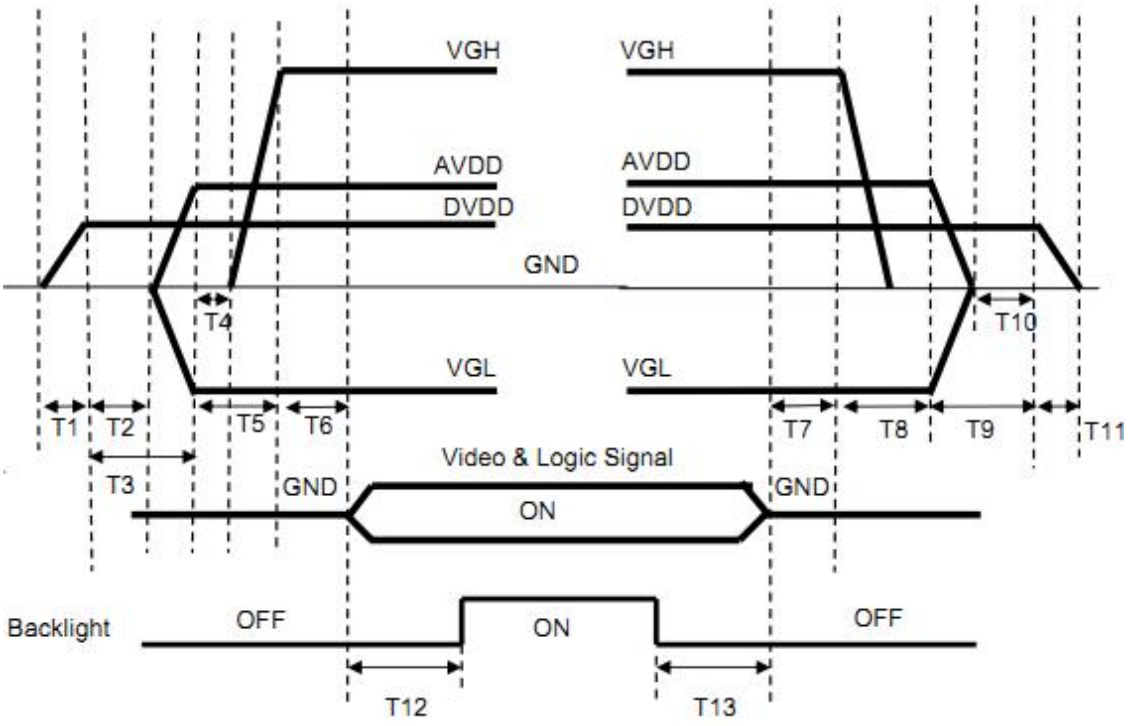


Vertical timing：



7-4 Power on/off sequence

Power On：DVDD→AVDD/VGL →VGH →Video &Logic Signal→Backlight
Power Off：Backlight→Video &Logic Signal→ VGH→AVDD/VGL→DVDD



0<T1≦10ms
T2>0ms
T3>20ms
T4>0ms
T5>10ms
0<T6≦10ms
T12≧200ms

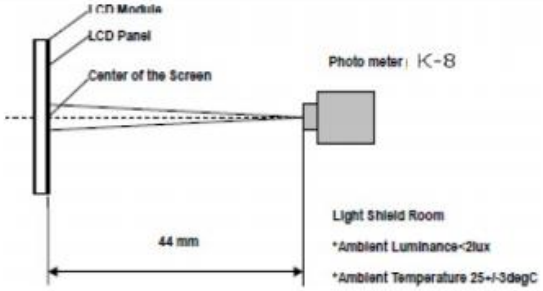
T7>0ms
T8>0ms
T9>0ms
T10>0ms
0<T11≦10ms
T13≧200ms

8. Electro-Optical Characteristics

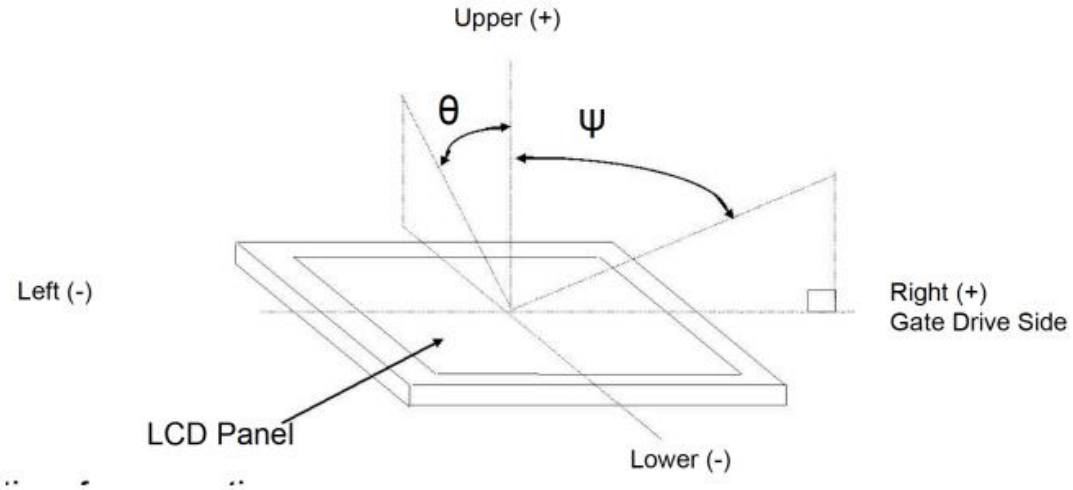
ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Panel Transmittance		T	θ = 0°	3.9	4.2	--	%	
Luminance		L	θ = 0°	380	450	--	cd/m2	Note1
Luminance Uniformity		YU	9points	75	80	--	%	Note5
Contrast Ratio		CR	Point-5	--	200	--	-	Note3
Response Time		Rr+Tf	Point-5	--	25	--	ms	Note4
Viewing Angle K=Contrast Ratio>10	Horizontal	Θ L	CR>10 θ = 0°	--	70	--		Note2
		Θ R		--	70	--		
	Vertical	Θ U		--	40	--		
		ΘD		--	60	--		
Color Filter Chromaticity	White	X	θ = 0°	0.273	0.313	0.353		Note1
		Y		0.289	0.329	0.369		
	Red	X	θ = 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
	Green	X	θ = 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
	Blue	X	θ = 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
Color gamut (NTSC ratio)			θ = 0°		TBD		%	

Note1: Measurement Setup

The LCD module should be stabilized at given temperature for 15 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.



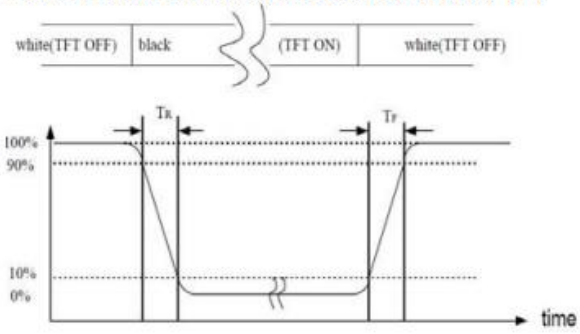
Note2: Definition of Viewing Angle



Note3: Definition of Contrast Ratio (CR)

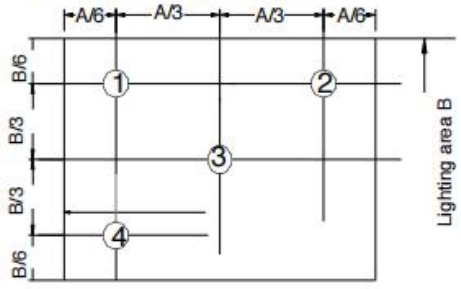
The contrast ratio can be calculated by the following expression
Contrast Ratio (CR) = L63 / L0
L63: Luminance of gray level 63, L0: Luminance of gray level 0

Note4: Definition of Response Time (TR, TF)

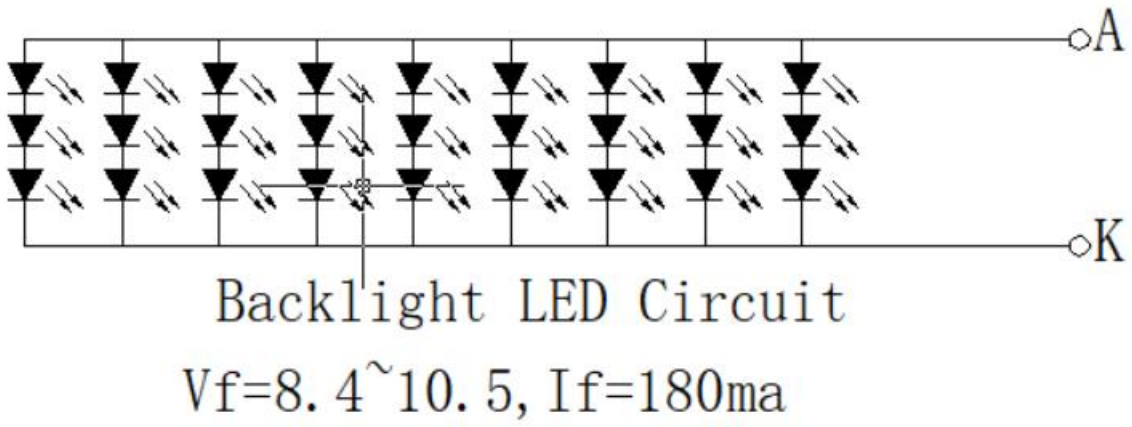


Note5: Definition of Luminance Uniformity(Variation) Measure the luminance of gray of gray level 63 at 1-9 points

▲ L=[L(MIN/L(MAX)]X100



Note(4) Backlight circuit



9.Records Of Version

Version	Revise Date	Page	Content
1.0	2024-3-4	ALL	New released