VICTRONIX	Add:	Room 1405A, Building 1B, Hua qiang Idea Park, GuangMing District, Shenzhen, China		
	Tel:	+86-755-33265935	Fax:	+86-755-33265935

SPECIFICATION

VXT700WRA-01

☐ Preliminary Specification

☐ Final Specification

Approved By:

Date:

2. Revision Record

Date	Rev.No.	Page	Revision Items	Prepared
2024.11.04	V00		The first release	Solon

3. General Specifications

VXT700WRA-01 is a TFT-LCD module. It is composed of a TFT-LCD panel, driver IC, FPC,a back light unit . The 7.0″ display area contains 800x480 pixels and can display up to 16.7M colors. This product accords with RoHS environmental criterion.

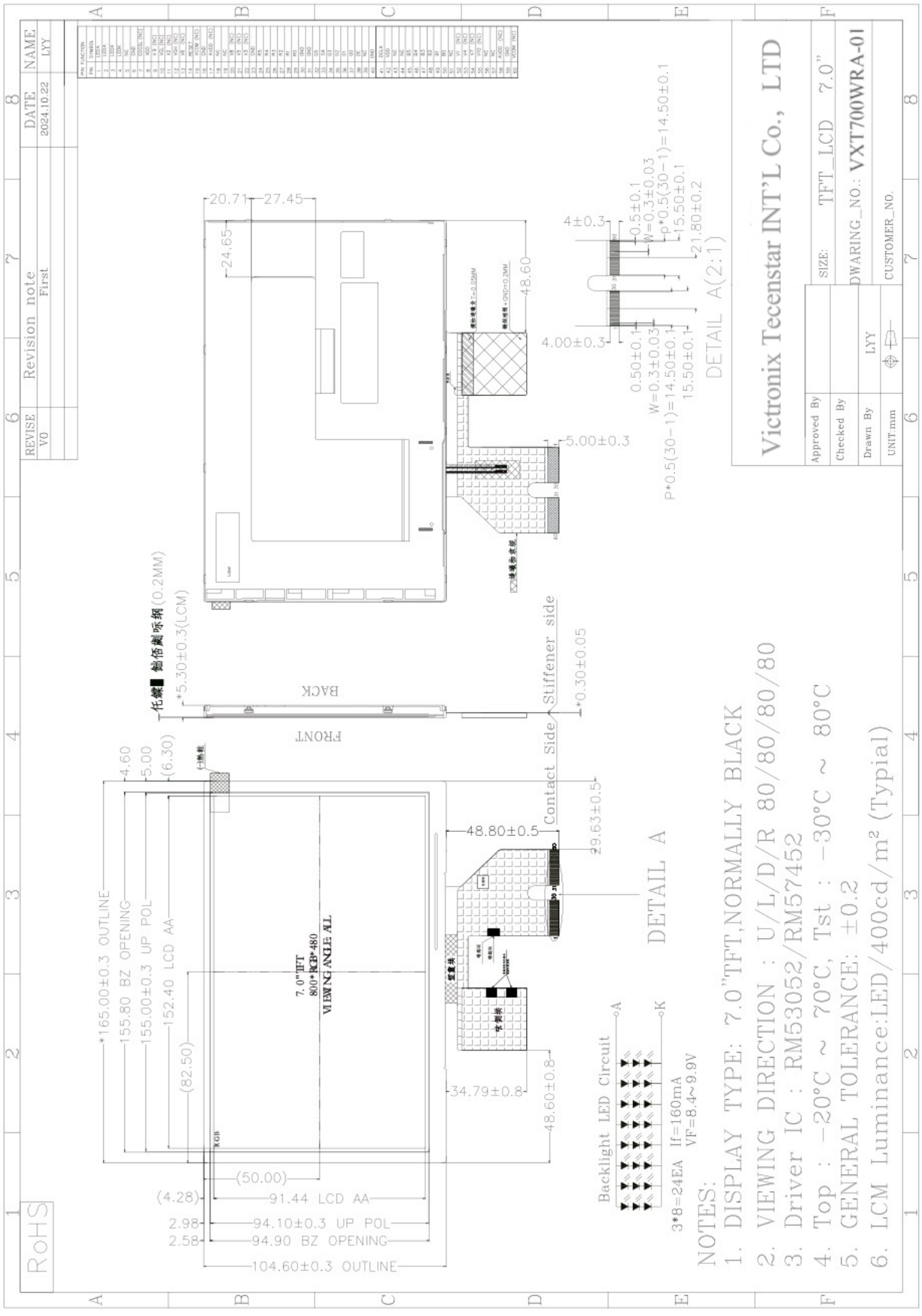
3.1 LCD Parameter

Item	Contents	Unit	Note
LCD Type	TFT	-	
Display color	16.7M		1
Viewing Direction	ALL	O'Clock	
Operating temperature	-20~+70	℃	
Storage temperature	-30~+80	℃	
Active Area(W×H)	152.40X91.44	mm	
Number of Dots	800*480	dots	
Driver IC	RM53052/RM57452	-	
Power Supply Voltage	3.3	V	
Outline Dimensions	Refer to outline drawing	mm	2
Backlight	3S8P-LEDs (white)	pcs	
Interface	RGB	-	

Note 1: Color tune is slightly changed by temperature and driving voltage.

Note 2: Without FPC and Solder.

4.Outline.Drawing



5. Absolute Maximum Ratings(Ta=25℃)

5.1 Electrical Absolute Maximum Ratings.(Vss=0V ,Ta=25℃)

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	VDD	-0.5	5.0	V	1，2
	AVDD	-0.5	15		

Notes:

1. If the module is above these absolute maximum ratings. It may become permanently damaged. Using the module within the following electrical characteristic conditions are also exceeded, the module will malfunction and cause poor reliability.
2. V_{DD} >V_{SS} must be maintained.
3. Please be sure users are grounded when handing LCD Module.

5.2 Environmental Absolute Maximum Ratings.

Item	Storage		Operating	
	MIN.	MAX.	MIN.	MAX.
Ambient Temperature	-30℃	+80℃	-20℃	+70℃
Humidity	-	-	-	-

1. The response time will become lower when operated at low temperature.
2. Background color changes slightly depending on ambient temperature.

   The phenomenon is reversible.
3. Ta<=40℃:85%RH MAX.

   Ta>=40℃:Absolute humidity must be lower than the humidity of 85%RH at 40℃.

6. Electrical Specifications

6.1 Electrical characteristics(Vss=0V ,Ta=25℃)

Parameter		Symbol	Condition	Min	Typ	Max	Unit
Power supply		VDD	Ta=25℃	2.9	3.3	3.6	V
Power supply		AVDD	Ta=25℃	8	-	13.5	V
Input voltage	‘H’	V_{IH}	DVDD=3.3V	0.7VDD	-	VDD	V
	‘L’	V_{IL}	DVDD=3.3V	0	-	0.3VDD	V

Note: If one of the above items is exceeded its maximum limitation momentarily, the quality of the product may be degraded. Absolute maximum limitation, therefore, specify the values exceeding which the product may be physically damaged. Be sure to use the product within the recommend range.

6.2 LED backlight specification(VSS=0V ,Ta=25℃)

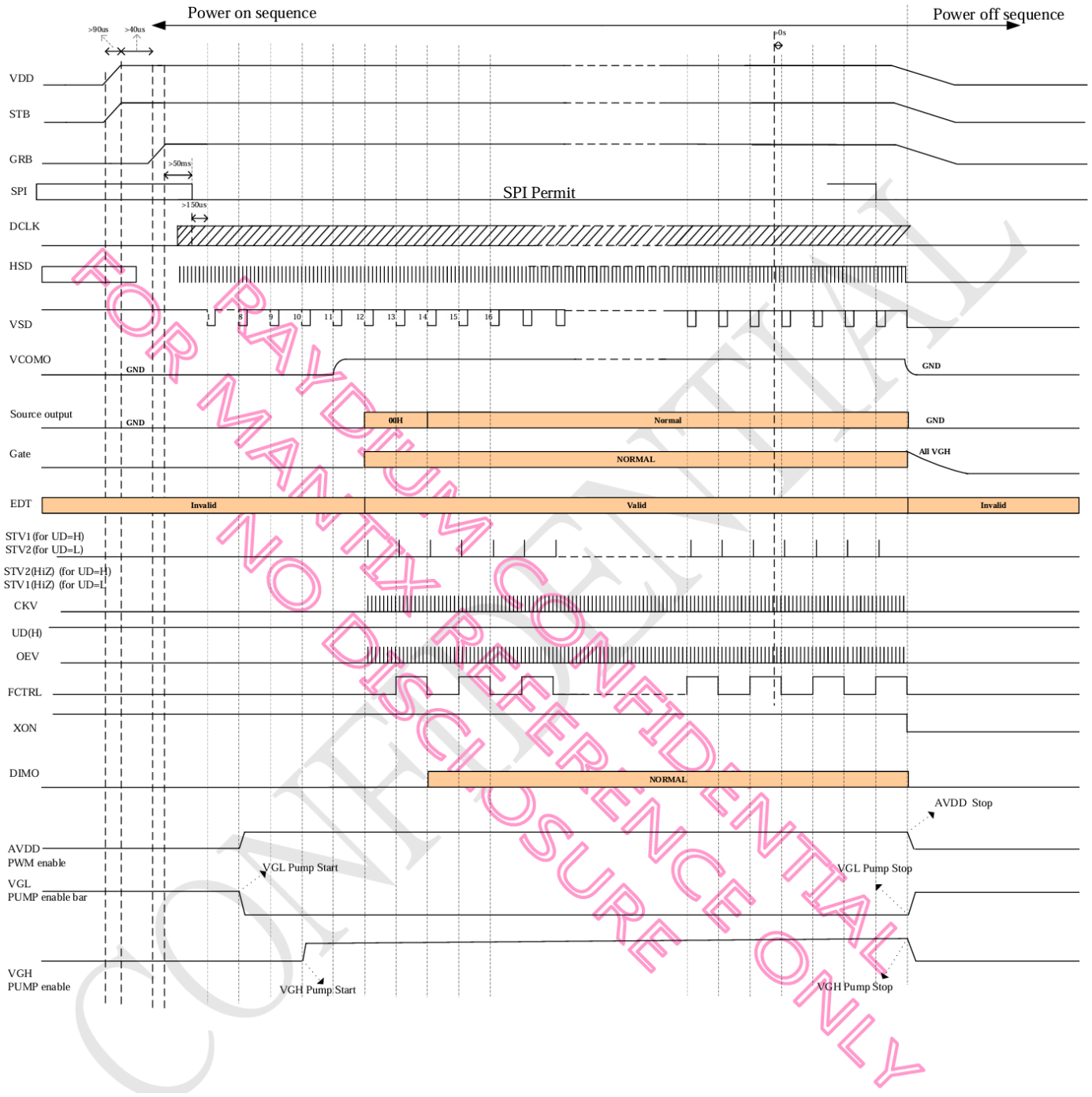
Item	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply voltage VLED	V_f	If=160mA	8.4	9	9.9	V	
Uniformity	ΔBp	If=160mA	75	-	-	%	
LED Life Time	-	-	30K	-	-	hr	1

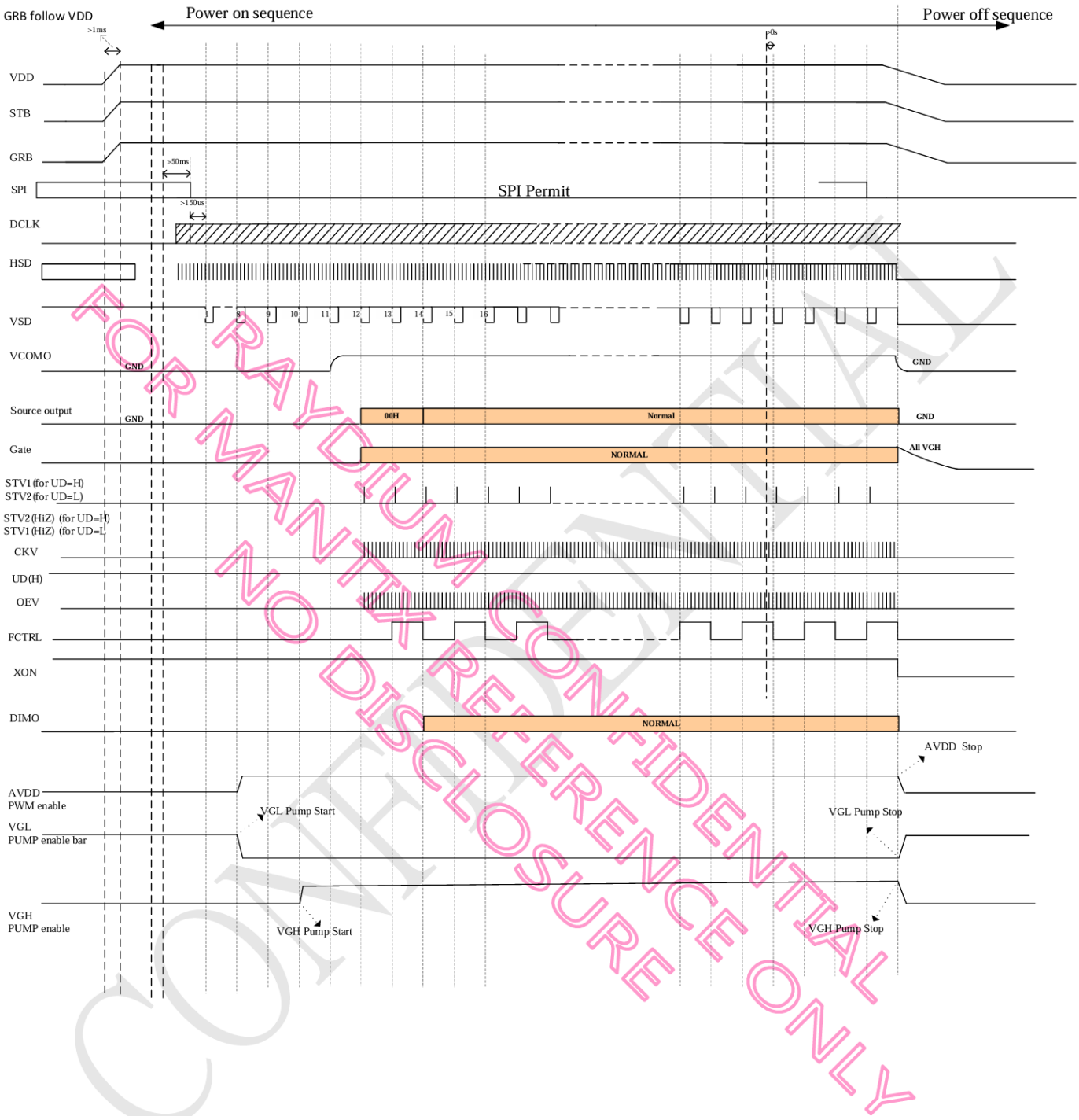
Note 1: Brightness to be decreased to 50% of the initial value at ambient temperature TA=25℃

6.3 Interface signals

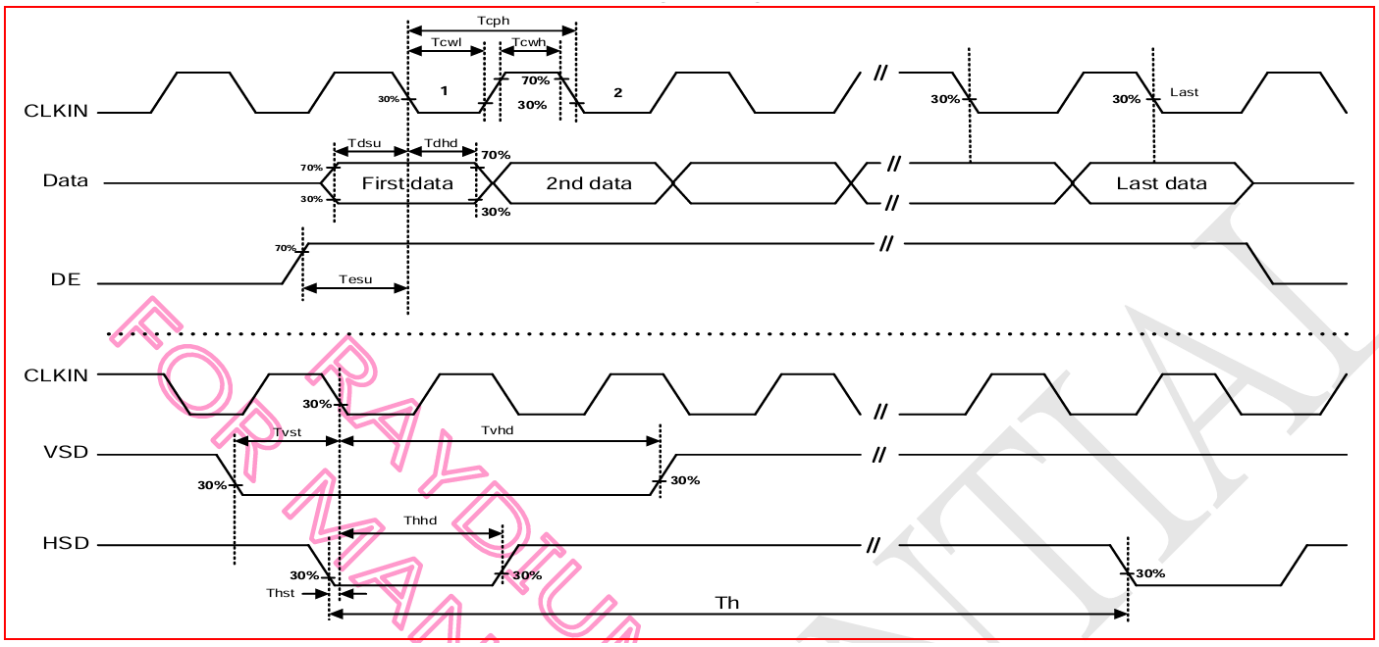
Pin No.	Symbol	I/O	Function
1-2	LEDA	P	LED back light(Anode)
3-4	LEDK	P	LED back light(Cathode)
5	NC	-	No connection
6	GND	P	Ground
7	EDGSL(NC)	-	No connection
8	VDD	P	Power supply
9	V9(NC)	-	No connection
10	VGL(NC)	-	No connection
11	V2(NC)	-	No connection
12	VGH(NC)	-	No connection
13	V6(NC)	-	No connection
14	RESET	I	Reset signal input
15	VCOM(NC)	-	No connection
16	GND	P	Ground
17	AVDD(NC)	-	No connection
18	NC	-	No connection
19	NC	-	No connection
20	V8(NC)	-	No connection
21	V5(NC)	-	No connection
22	V3(NC)	-	No connection
23	GND	P	Ground
24-29	R5-R0	I	Red data bus
30-31	GND	P	Ground
32-37	G5-G0	I	Green data bus
38	DE	I	Data enable signal
39	NC	-	No connection
40	GND	P	Ground
41	DCLK	I	Clock signal input
42	VDD	P	Power supply
43-44	NC	-	No connection
45-50	B5-B0	I	Blue data bus
51	NC	-	No connection
52	V1(NC)	-	No connection
53	V4(NC)	-	No connection
54	V7(NC)	-	No connection
55	V10(NC)	-	No connection
56-57	NC	-	No connection
58	AVDD(NC)	-	No connection
59	GND	P	Ground
60	VCOM(NC)	-	No connection

6.4 Power ON/OFF Timing Sequence (STBYB Fixed to VDD)





6.5 Input Clock and Data Timing Diagram



For IC with TTL input interface

Vertical timing table

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLKIN Frequency	Fclk	-	40	50	MHz	
CLKIN Cycle Time	Tclk	20	25	-	ns	
CLKIN Pulse Duty	Tcwh	40	50	60	%	Tclk
Time from HSD to Source Output	Thso	-	118	-	CLKIN	
Time from HSD to LD	Thld	-	38	-	CLKIN	
Time from HSD to STV	Thstv	-	Hdisp*3/4	-	CLKIN	
Time from HSD to CKV	Thckv	-	32	-	CLKIN	
Time from HSD to OEV	Thoev	-	4	-	CLKIN	
LD Pulse Width	Twld	-	80	-	CLKIN	
CKV Pulse Width	Twckv	-	Htotal-32-112	-	CLKIN	
OEV Pulse Width	Twoev	-	128	-	CLKIN	

6.6 Timing characteristic

For 800*480 panel:

Horizontal Input Timing Table

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
DCLK frequency	fclk	20	33.3	42.8	MHz	
Horizontal display area	thd		800		DCLK	
1 Horizontal Line	th	908	928	1178	DCLK	
HSD pulse width	thpw	1	28	47	DCLK	thb+thpw=48 DCLK is fixed.
HSD Back Porch (Blanking)	thb	47	20	1	DCLK	
HSD Front Porch	thfp	60	80	330	DCLK	

Vertical Input Timing Table

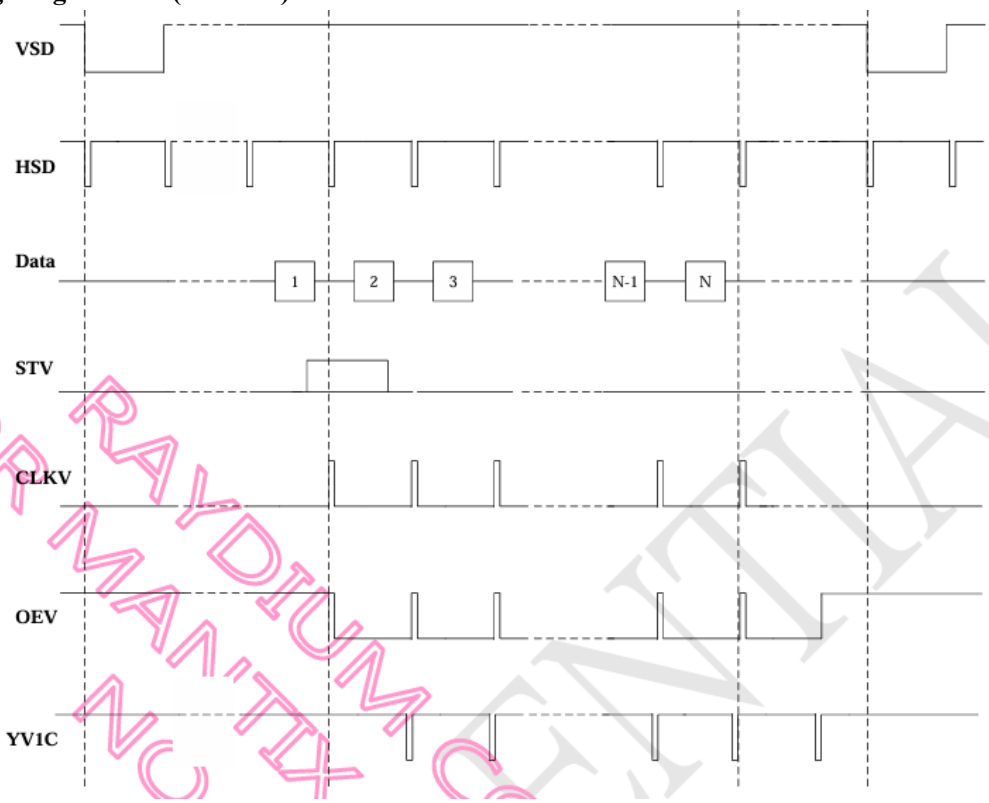
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Vertical display area	tvd		480		H	
VSD period time	tv	517	525	606	H	
VSD pulse width	tvpw	1	1	3	H	Tvpw+tvb=5 H is fixed
VSD Back Porch (Blanking)	tvb	4	4	2	H	
VSD Front Porch	tvfp	32	40	121	H	

DE mode Input timing Table

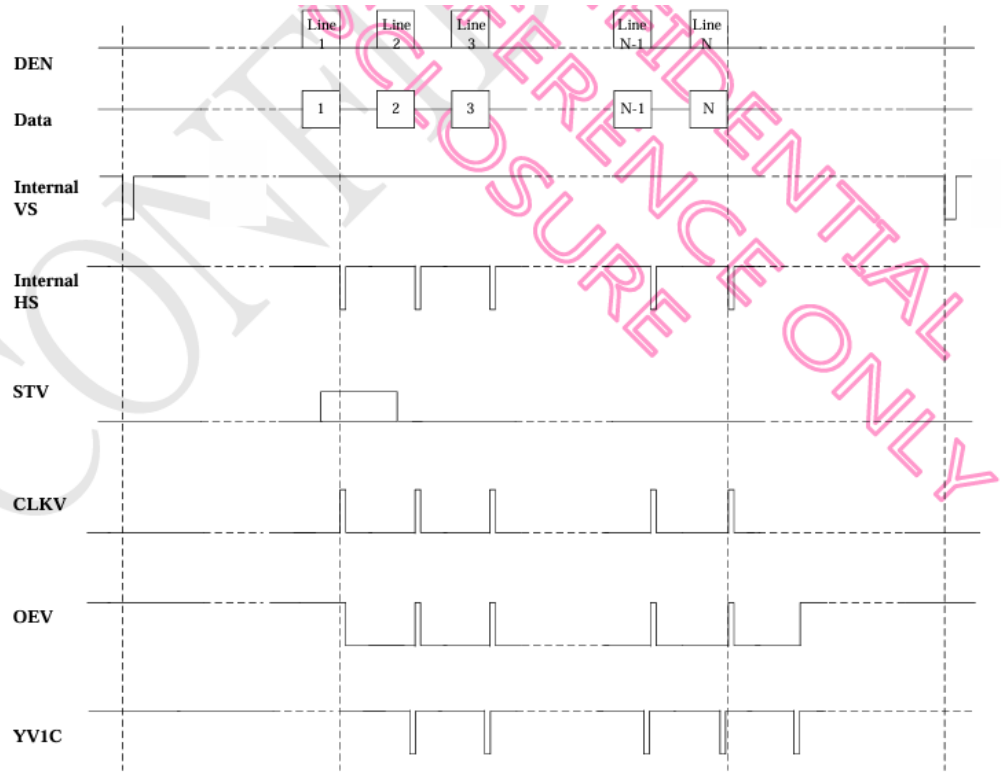
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
DCLK frequency	fclk	21.17	27.62	41.93	MHz	
Horizontal display area	thd		800		DCLK	
1 Horizontal Line	th	864	872	1120	DCLK	
Horizontal blanking	Thb + Thfp	64	72	320	DCLK	

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Vertical display area	tvd		480		H	
Vertical period time	tv	490	528	576	H	
Vertical Blanking	Tvb	10	48	96	H	
Frame rate		50	60	65	Hz	

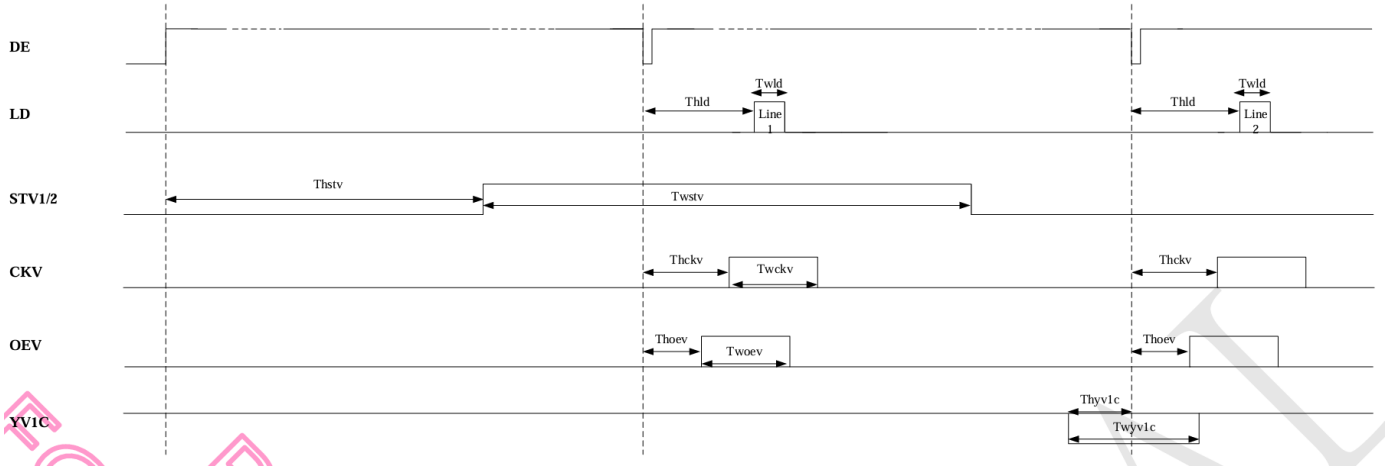
Vertical Timing Diagram HV (Cascade)



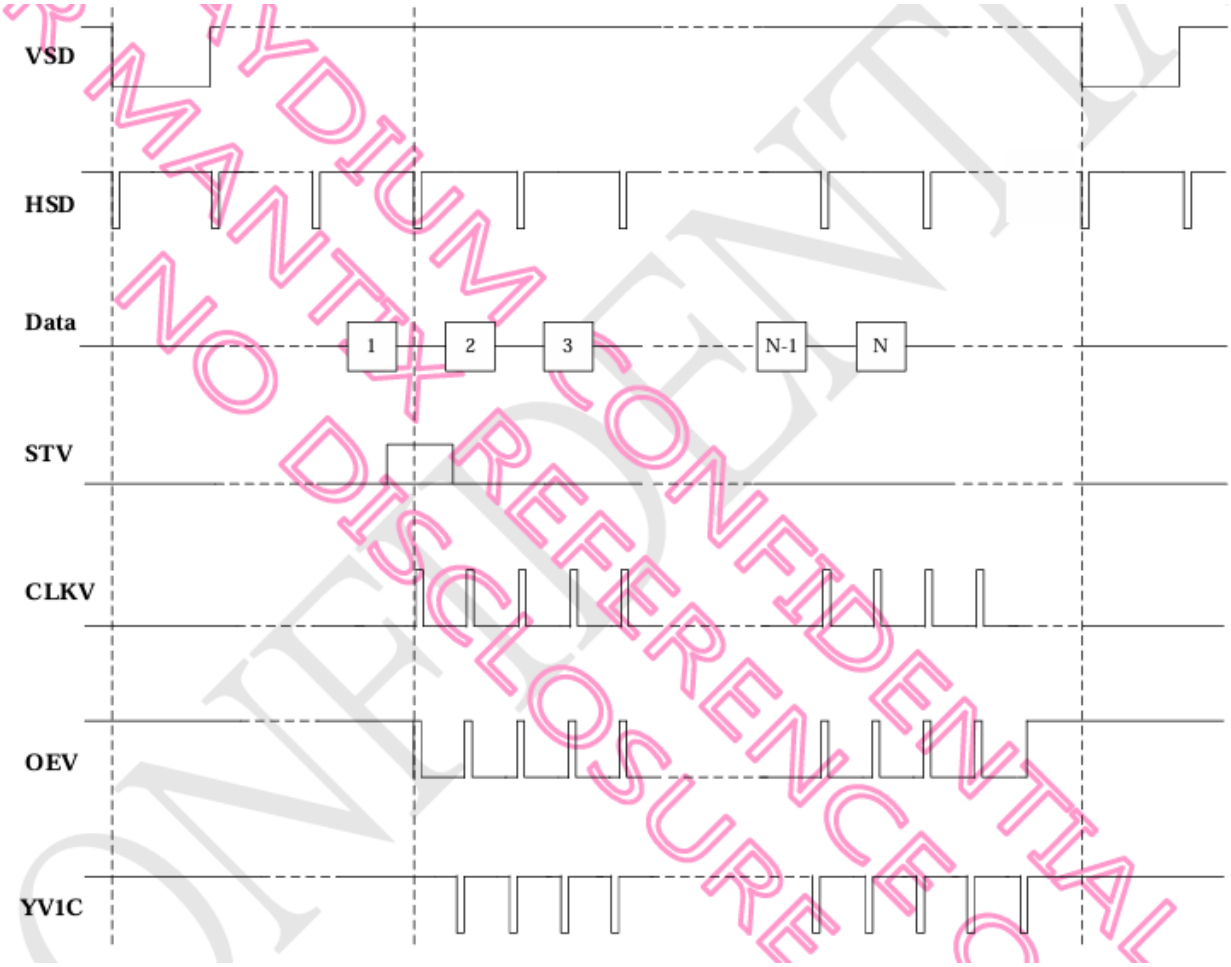
Vertical timing diagram DE (Cascade)



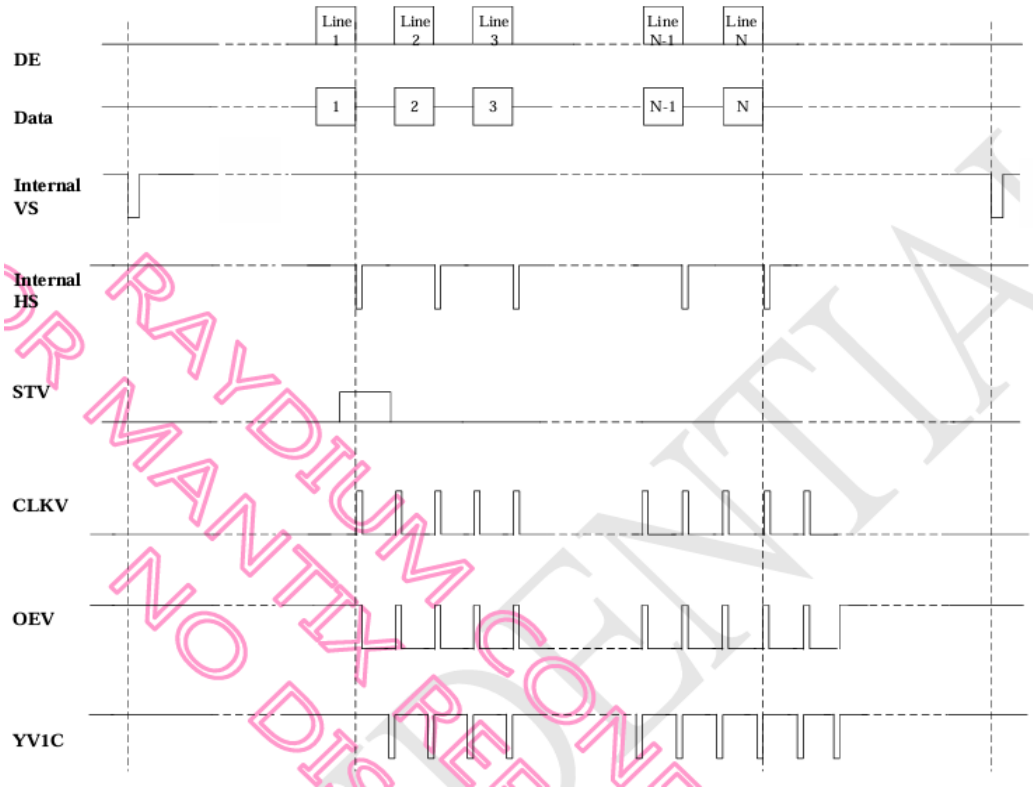
Gate output diagram (Cascade)



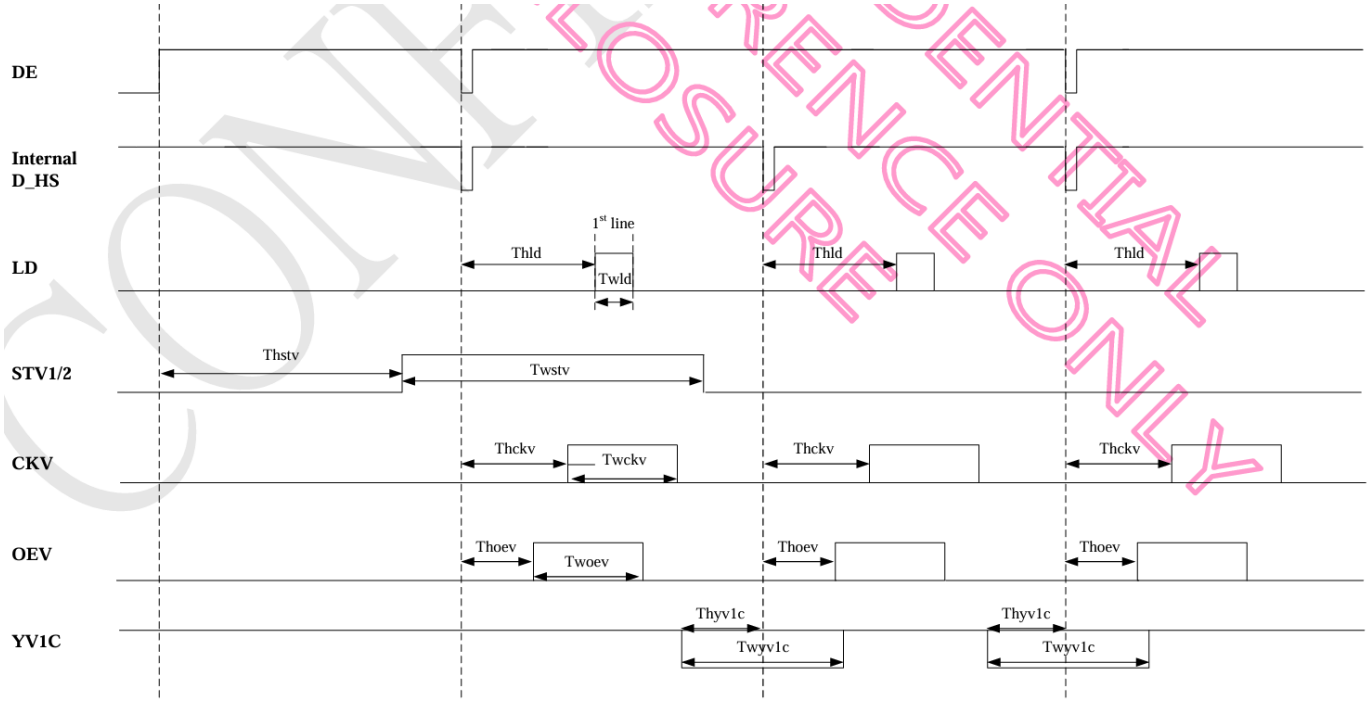
Vertical timing diagram HV (Dual gate)



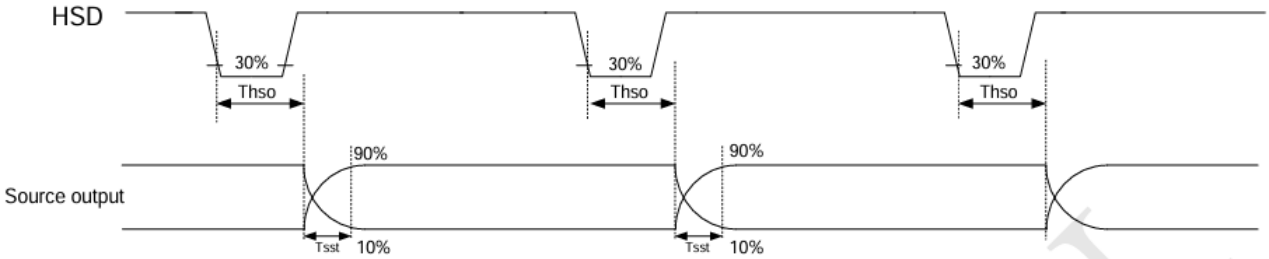
Vertical timing diagram DE (Dual gate)



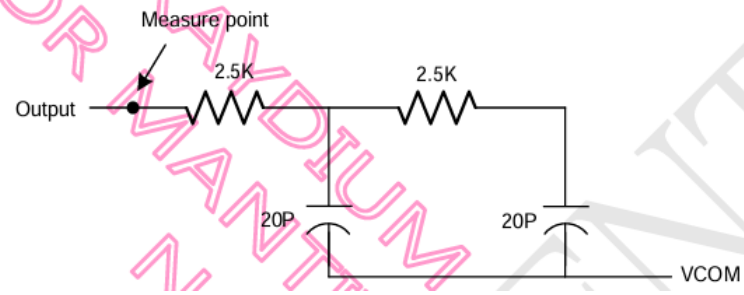
Gate output timing diagram (Dual gate)



Source Output Timing Diagram



Output load condition:



7. Optical Characteristics

Item	Symbol		**Condition**	Min.	Typ.	Max.	Unit	Note
Brightness	Bp		θ=0° Φ=0°	-	400	-	Cd/m^2	1
Uniformity	⊿Bp			75	-	-	%	1,2
Viewing Angle	3:00		Cr≥10	-	80	-	Deg	3
	6:00			-	80	-		
	9:00			-	80	-		
	12:00			-	80	-		
Contrast Ratio	Cr		θ=0° Φ=0°	-	800	-	-	4
Response Time	$T_{r+}T_f$			-	30	40	ms	5
Color of CIE Coordinate	W	x	θ=0° Φ=0°	Typ-0.05	TBD	Typ+0.05	-	1,6
		y			TBD		-	
	R	x			TBD		-	
		y			TBD		-	
	G	x			TBD		-	
		y			TBD		-	
	B	x			TBD		-	
		y			TBD		-	
NTSC Ratio	S			-	50	-	%	

Note：The parameter is slightly changed by temperature, driving voltage and materiel

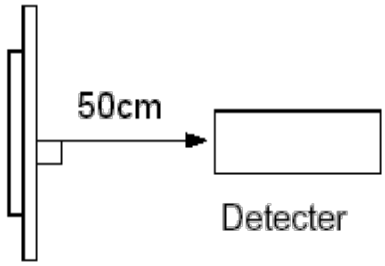
Note 1: The data are measured after LEDs are turned on for 5 minutes. LCM displays full white. The brightness is the average value of 9 measured spots. Measurement equipment BM-7 (Φ5mm)

Measuring condition:

- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25°C.
- Adjust operating voltage to get optimum contrast at the center of the display.

Measured value at the center point of LCD panel after more than 5 minutes while backlight

turning on.

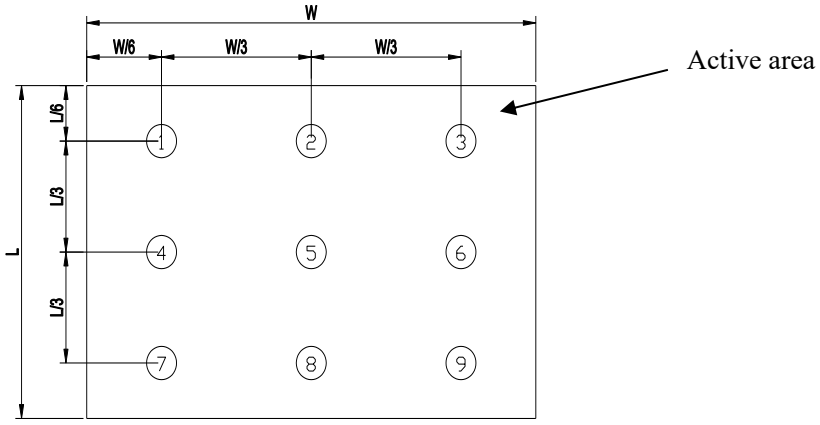


Note 2: The luminance uniformity is calculated by using following formula.

⊿Bp = Bp (Min.) / Bp (Max.)×100 (%)

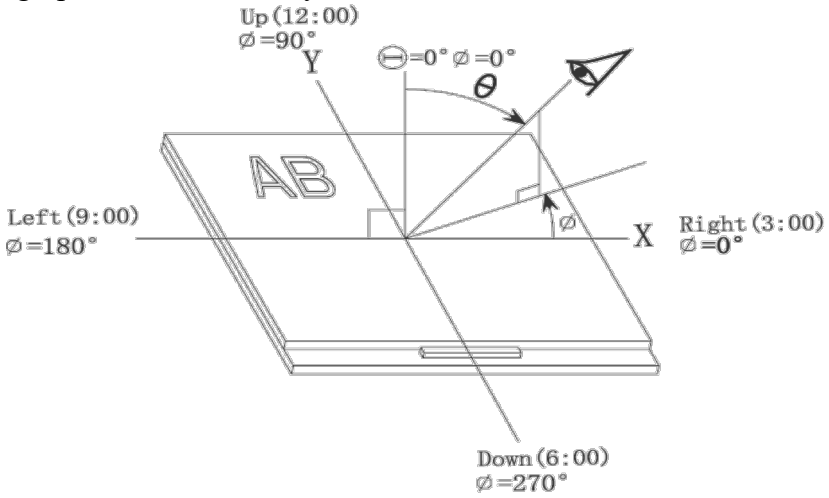
Bp (Max.) = Maximum brightness in 9 measured spots

Bp (Min.) = Minimum brightness in 9 measured spots.

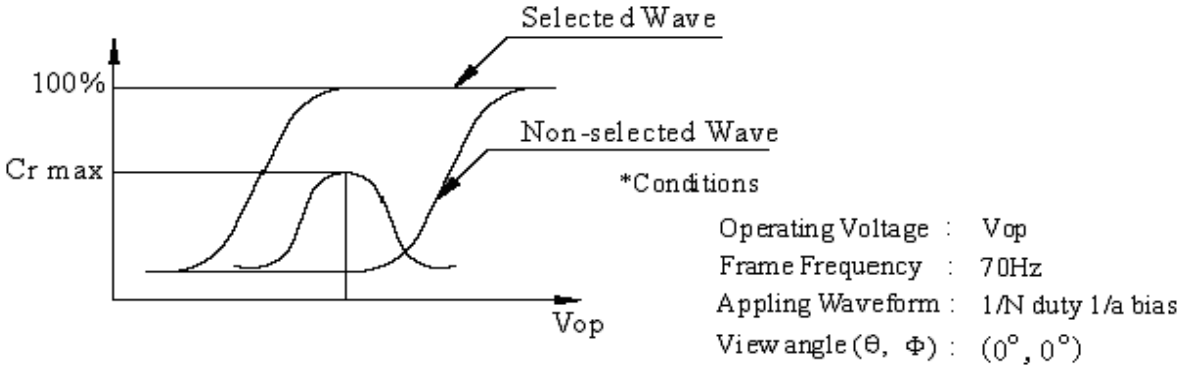


Note 3: The definition of viewing angle:

Refer to the graph below marked by θ and Φ



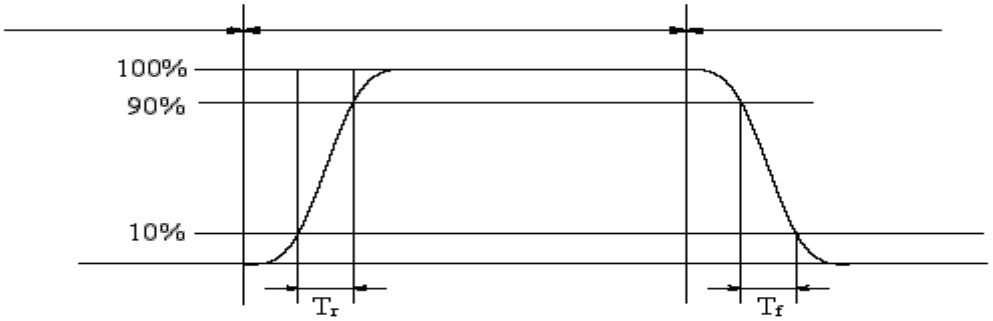
Note 4: Definition of contrast ratio.(Test LCD using DMS501)



$$Contrast\ ratio(Cr) = \frac{Brightness\ of\ selected\ dots}{Brightness\ of\ non-selected\ dots}$$

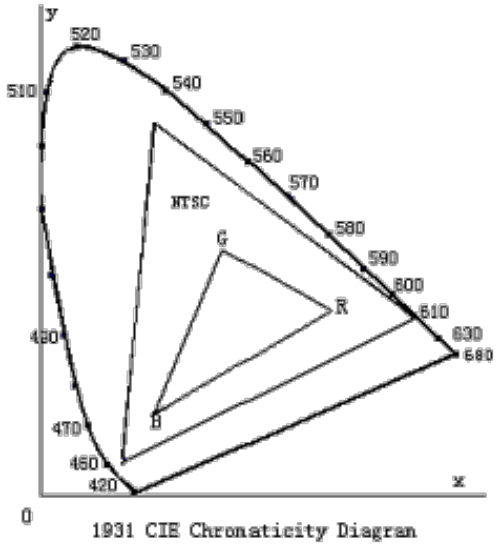
Note 5: Definition of Response time. (Test LCD using DMS501):

The output signals of photo detector are measured when the input signals are changed from “black” to “white”(falling time) and from “white” to “black”(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of amplitudes.Refer to figure as below.



The definition of response time

Note 6: Definition of Color of CIE Coordinate and NTSC Ratio.

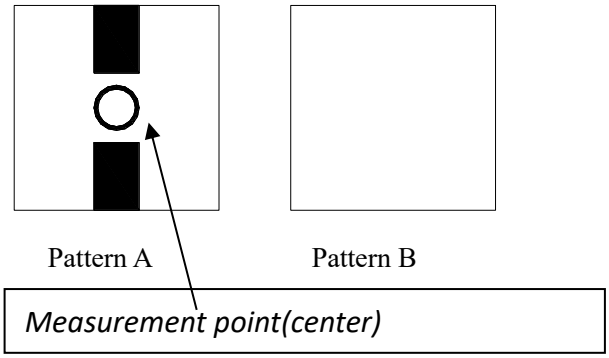


Color gamut:

$$\mathbf{S = \frac{area\ of\ RGB\ triangle}{area\ of\ NTSC\ triangle} \times 100\%}$$

Note 7: Definition of cross talk.

Cross talk ratio(%)=|pattern A Brightness-pattern B Brightness|/pattern A Brightness*100



Electric volume value=3F+/-3Hex

8. Reliability Test Items and Criteria

No	Test Item	Test condition	Criterion
1	High Temperature Storage	80℃±2℃ 96H Restore 2H at 25℃ Power off	1. After the reliability test,the product only guarantees operation,but not guarantee all of the cosmetic specification. 2. Total current consumption should not be more than twice of initial value.
2	Low Temperature Storage	-30℃±2℃ 96H Restore 2H at 25℃ Power off	
3	High Temperature Operation	70℃±2℃ 96H Restore 2H at 25℃ Power on	
4	Low Temperature Operation	-20℃±2℃ 96H Restore 4H at 25℃ Power on	
5	High Temperature/Humidity Operation	60℃±2℃ 90%RH 96H Power on	
6	Temperature Cycle	–30℃←——→80℃ 30min 5min 30min after 5 cycle, Restore 2H at 25℃ Power off	

Note: Operation: Supply 3.3V for logic system.

The inspection terms after reliability test, as below

ITEM	Inspection
Contrast	CR>50%
IDD	IDD<200%
Brightness	Brightness>60%
Color Tone	Color Tone+/-0,05

9. Precautions for Use of LCD Modules

9.1 Handling Precautions

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

9.1.2 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.

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

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

9.1.5 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

9.1.6 Do not attempt to disassemble the LCD Module.

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

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

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

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

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

d. 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.

9.2 Storage precautions

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

9.2.2 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%

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

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

END