HY-LINE®
COMPUTER COMPONENTS

TFT-Display Datasheet

ONation
Model: OT070BGDDLV-H0

Brief spec.:

Main Feature	LandscapeType
	Transmissive

Active Screen Area	154.08 x 85.92 (mm)
Diagonal | Format	7 " | 15:9
Resolution	800 X 480
Colors	(6 Bit)
Backlight	LED
Brightness	1000 cd/m²
LED Life Time	
Interface	LVDS
Viewing Angle	70/70 L/R 50/70 up/down
Touchscreen	no
Power Supply	3.3 V (Typ.)
Module Outline	165. x 100 x 9.9 (mm)
Operation Temperature	-20... +60 °C
Storage Temperature	-30... +70 °C
Surface Treatment	

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ONation Corporation

TFT COLOR LCD MODULE

MODEL: OT070BGDDLV-H0

(Complied with RoHS)

WVGA
LVDS interface (1port)

Version: P0.1

Customer : _____

Approved By : _____

Date: _____

ONATION		
APPROVAL	**CHECKER**	**PREPARE**
Jun	Josh	Roger

All information is subject to change without notice.
Please confirm the sales representative before starting to design your system

C O N T E N T S

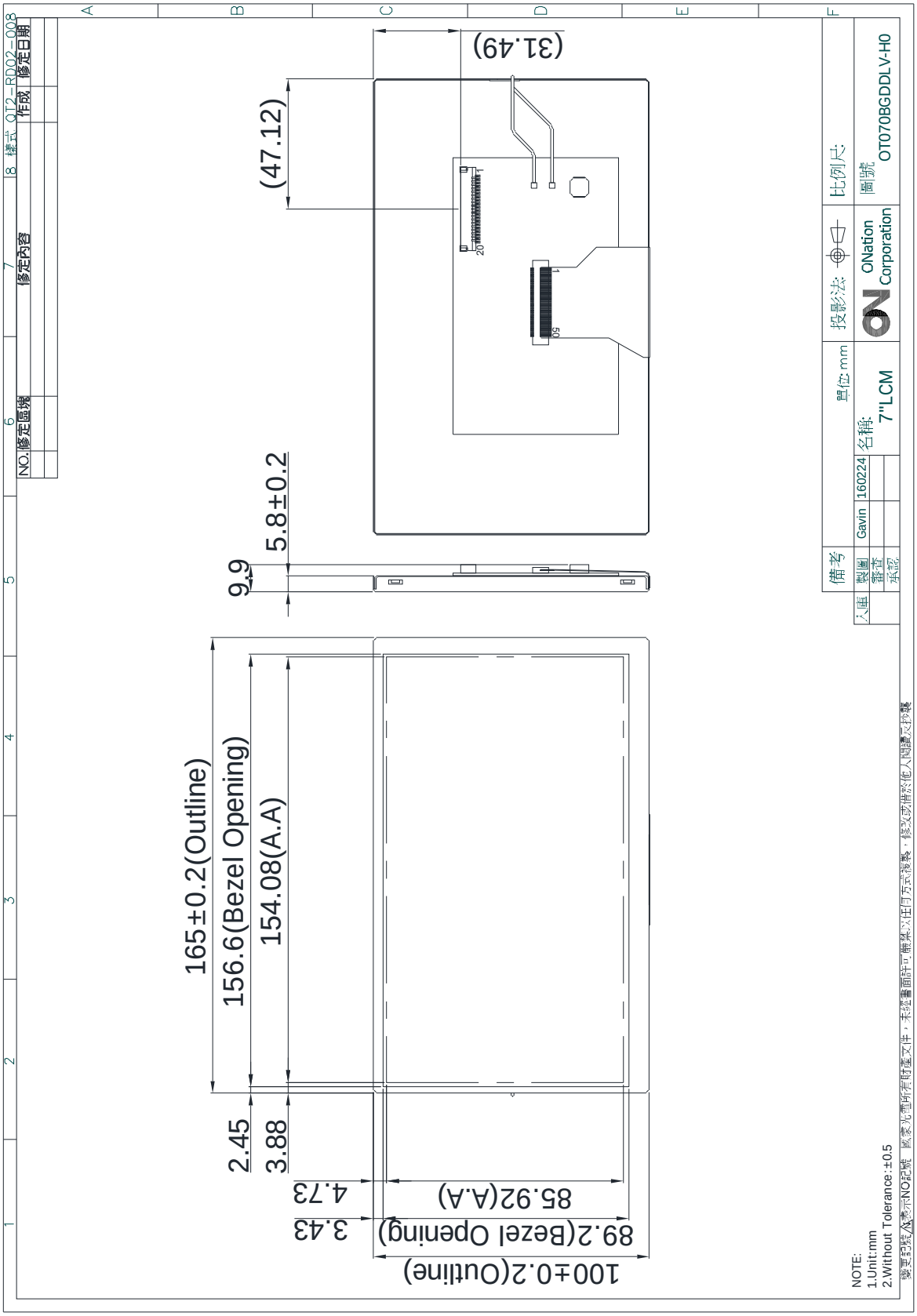
1.RECORD OF REVISION

Rev	DATE	PAGE	SUMMARY
0.1	2016.02.26	ALL	Preliminary specification was first issued.

2.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	800R.G.B X 480
(2)	Module Size(mm)	165(W) X100(H) X9.9 (D)
(3)	Active Area(mm)	154.08(W) X85.92(H)
(4)	Pixel Pitch(mm)	0.1926(W) X0.1790(H)
(5)	LCD Model	TFT , Transmissive
(6)	LED Backlight Color	White
(7)	Viewing Direction	6 o'clock Horizontal :Right side(70°)(Typ),Left side(70°)(Typ) Vertical: Up side (50°)(Typ),Down side(70°)(Typ)
(8)	Gray Scale Inversion Direction	12 o'clock
(9)	Color Configuration	R.G.B Vertical Stripe
(10)	Module Weight(g)	TBD
(11)	Interface	LVDS

3. OUTLINE DIMENSIONS



4. INTERFACE PIN CONNECTION

4.1 LCM PANEL DRIVING SECTION

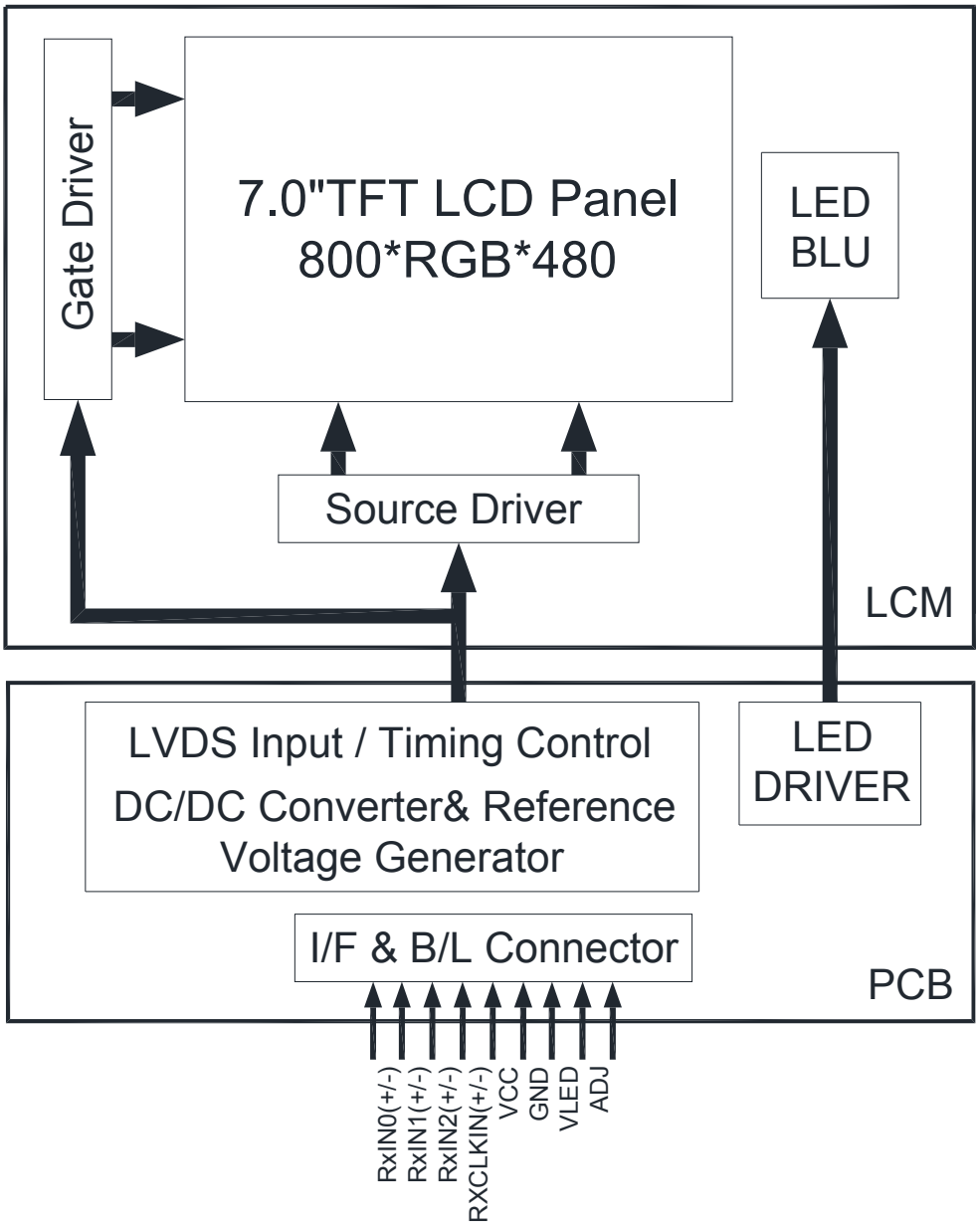
Connector：Hirose DF14A-20P-1.25H or Equivalen

Mating Connector：Hirose DF14-20S-1.25C or Equivalen

PIN NO.	SIGNAL	FUNCTION	REMARK
1	VCC	Power supply for digital circuit	
2	VCC	Power supply for digital circuit	
3	GND	Ground	
4	GND	Ground	
5	RxIN0-	Differential data input,CH0(Negative)	
6	RxIN0+	Differential data input,CH0(Positive)	
7	GND	Ground	
8	RxIN1-	Differential data input,CH1(Negative)	
9	RxIN1+	Differential data input,CH1(Positive)	
10	GND	Ground	
11	RxIN2-	Differential data input,CH2(Negative)	
12	RxIN2+	Differential data input,CH2(Positive)	
13	GND	Ground	
14	RxCLKIN-	Differential clock input (Negative)	
15	RxCLKIN+	Differential clock input (Positive)	
16	GND	Ground	
17	VLED	Power supply for LED circuit	
18	VLED	Power supply for LED circuit	
19	GND	Ground	
20	ADJ	Brightness control for LED B/L	

I: input, O: output, P: Power

5. BLOCK DIAGRAM



6.ABSOLUTE MAXIMUM RATINGS

6.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
Power voltage	VCC	-0.3	4.0	V	
	VLED	-0.3	50	V	

Note1: The absolute maximum rating values of this product not allowed to be exceeded at any times. Should be module be used with any of absolute maximum ratings exceeded. The characteristics of the module may not be recovered, or in an extreme case, the module m ay be permanently destroyed.

6.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		REMARK
	MIN	MAX	MIN	MAX	
Ambient Temperature(℃)	-20	(60)	-30	70	Note 1 , 2
Humidity(% RH)	Note 3		Note 3		Without condensation

Note 1 : The response time will become lower when operated at low temperature.

Note 2 : Background color changes slightly depending on ambient temperature.

Note 3 : Storage Ta=60℃ & RH=90% ≦ 96Hrs

7.ELECTRICAL CHARACTERISTICS

7.1 ELECTRICAL CHARACTERISTICS OF LCD

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Power voltage	VCC	3.0	3.3	3.6	V	-
Current for Driver	ICC	-	TBD	TBD	mA	VCC=3.3V

Note 1：Test condition：VCC=3.3V；Test Pattern：All Black

7.2 BACKLIGHT UNIT

Ta=25℃

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Operating Voltage	VLED	11	12	13	V	
Operating Current	ILED	-	TBD	TBD	mA	VLED=12V
ADJ Input Voltage	VIH	0.6	-	-	V	
	VIL	-	-	0.4		
ADJ Frequency	-	100	-	2K	HZ	
LED life time	-	-	TBD	-	Hr	

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25℃ and PWM=100%

Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and PWM=100%.The LED lifetime could be decreased if operation ILED is lager than PWM=100%

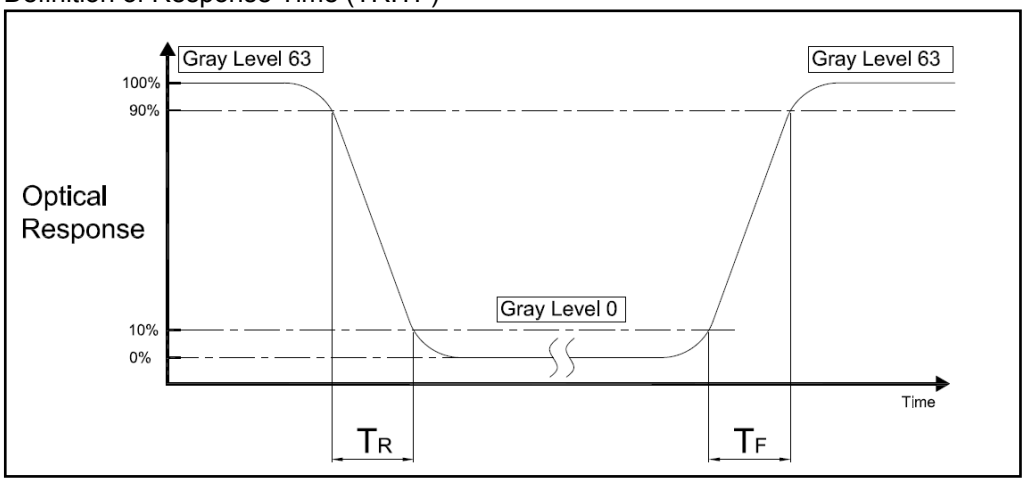
8.OPTICAL CHARACTERISTICS

Ta=25℃

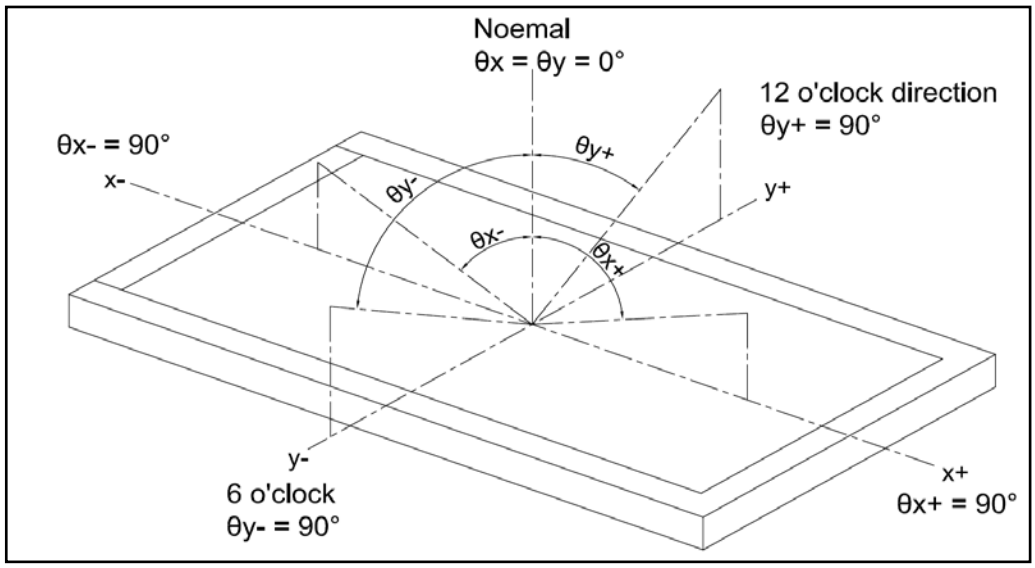
ITEM		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT	REMARK
Contrast Ratio		CR	Viewing Normal Angle Θx=Θy=0°	-	500	-	-	Note 1
Response Time		TR+TF		-	25	-	ms	Note 2
Color chromaticity	White	x		TBD	TBD	TBD	-	
		y		TBD	TBD	TBD	-	
Viewing Angle	Hor.	θL	Viewing Angle Θx=Θy=0° CR≧10	-	(70)	-	Deg.	Note 3
		θR		-	(70)	-		
	Ver.	θT		-	(50)	-		
		θB		-	(70)	-		
Luminance		L	PWM=100%	-	(1000)	-	cd/m2	
Luminance Uniformity		YU		-	75	-	%	Note 5

Note 1：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
CR = CR(5)
CR(X) is corresponding to the Contrast Ratio of the point X at Figure in Note 5

Note 2：Definition of Response Time (TR.TF)



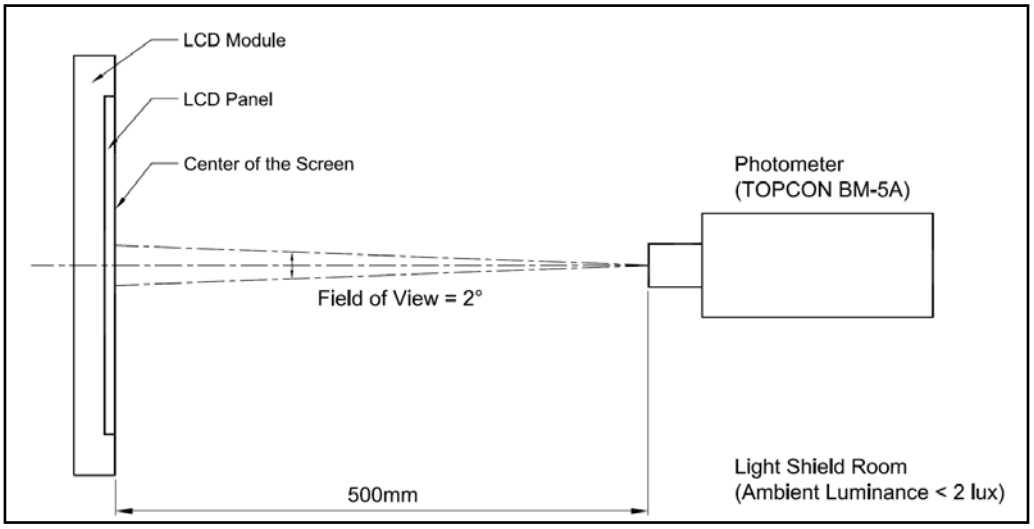
Note 3：Definition of Viewing Angle



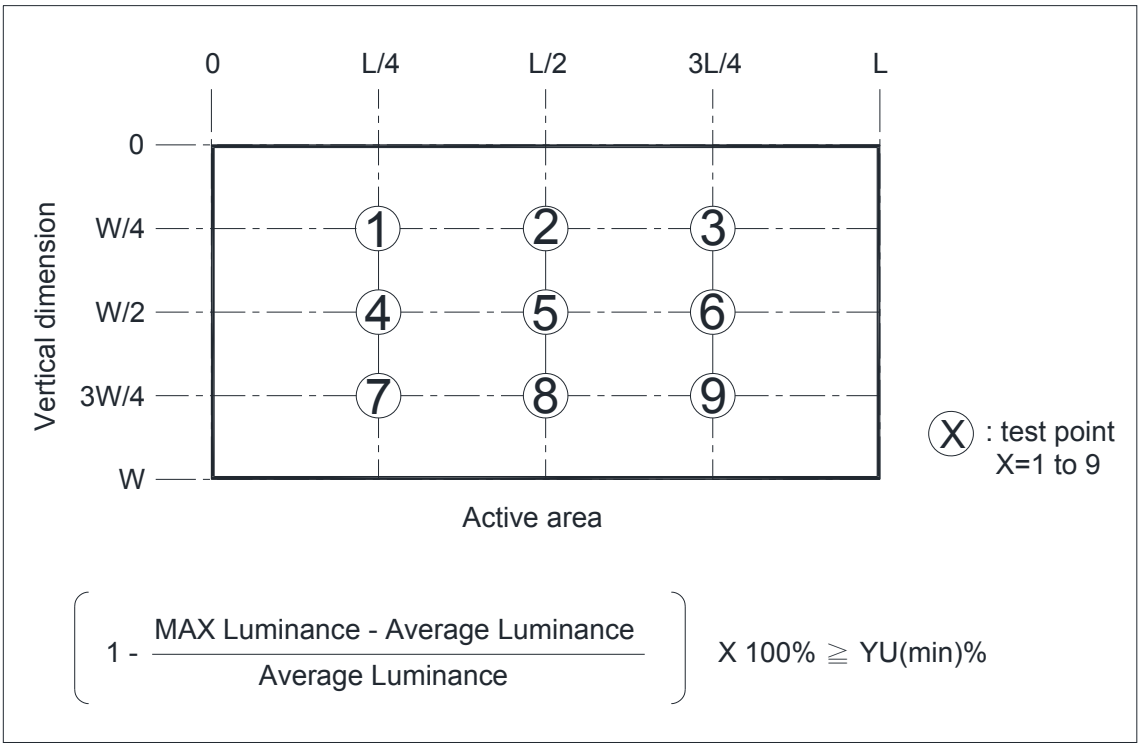
Note 4：

Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.

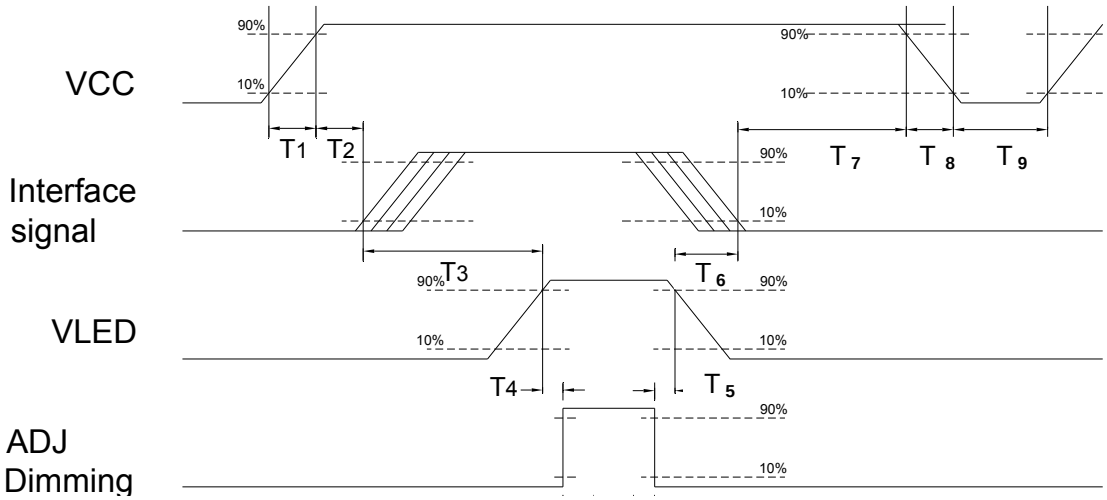


Note 5：


0
L/4
L/2
3L/4
L
0
W/4
W/2
3W/4
W
Vertical dimension
1
2
3
4
5
6
7
8
9
Active area
X : test point
X=1 to 9
1 - MAX Luminance - Average Luminance / Average Luminance X 100% ≧ YU(min)%

9. TIMING SPECIFICATIONS

9.1 POWER SIGNAL SEQUENCE

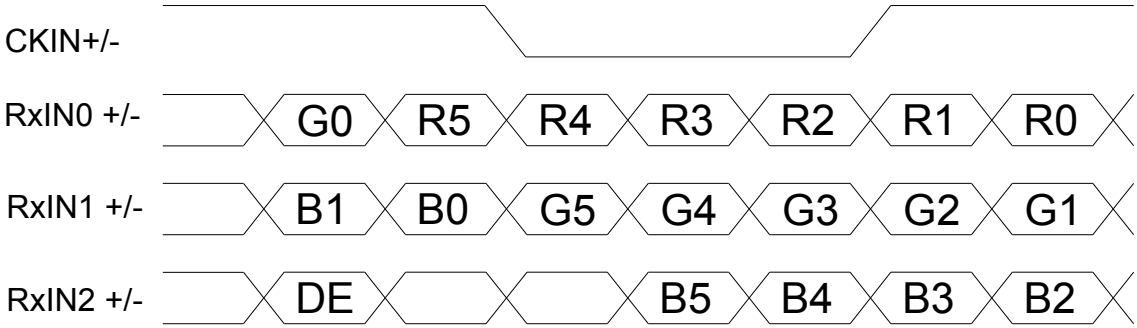


Power ON/OFF sequence timing

ITEM	MIN.	TYP.	MAX.	UNIT
T1	0.5	-	10	ms
T2	0	-	50	ms
T3	200	-	-	ms
T4	10	-	-	ms
T5	10	-	-	ms
T6	100	-	-	ms
T7	0	16	50	ms
T8	-	-	10	ms
T9	1000	-	-	ms

The above on/off sequence should be applied to avoid abnormal function in the display. Please make sure to turn off the power when you plug the cable into the input connector or pull the cable out of the connector.

9.2 THE INPUT DATA FORMAT

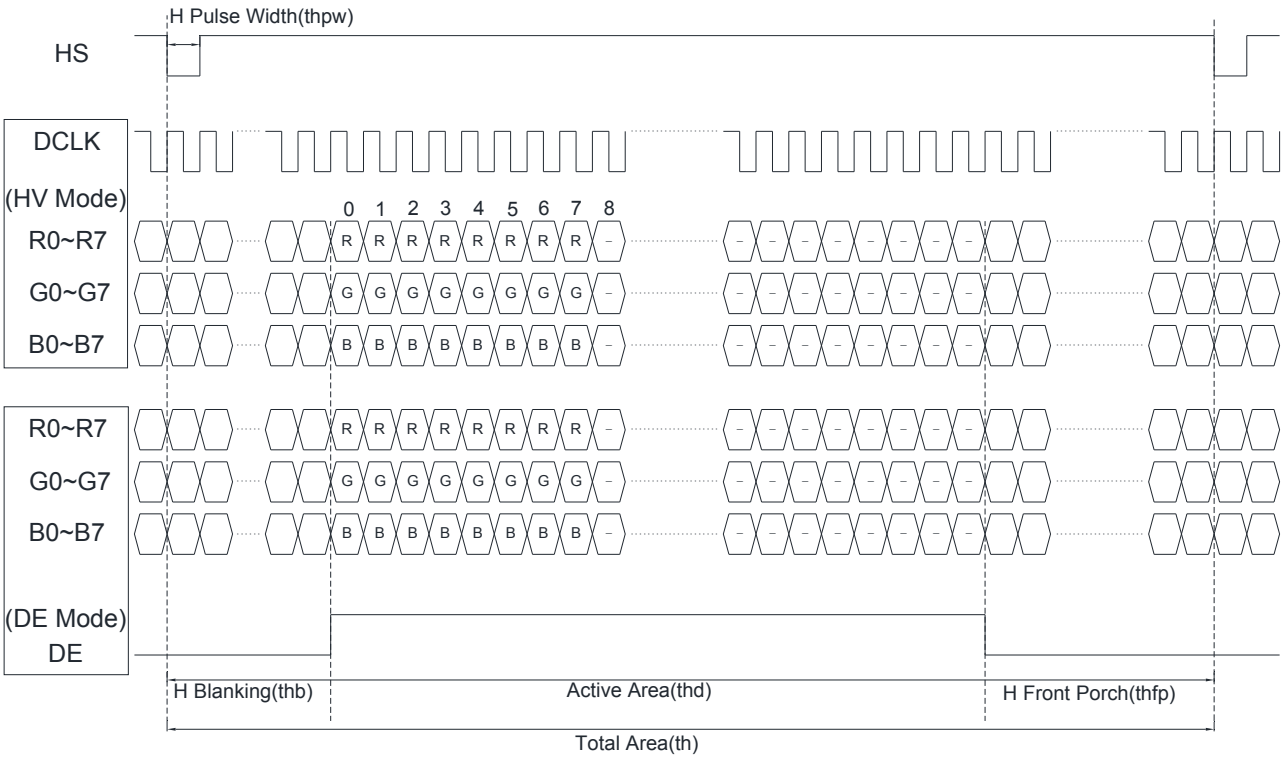


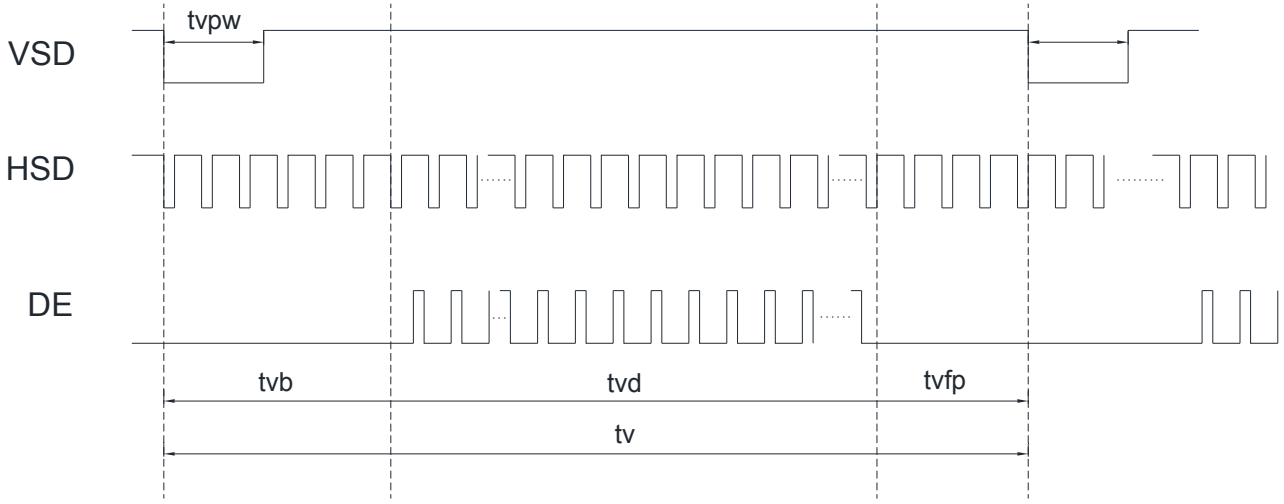
SIGNAL NAME	DESCRIPTION	REMARK
R5 R4 R3 R2 R1 R0	Red Data 5 Red Data 4 Red Data 3 Red Data 2 Red Data 1 Red Data 0	Red-pixel Data 6Bits LVDS input MSB：R5 ； LSB：R0
G5 G4 G3 G2 G1 G0	Green Data 5 Green Data 4 Green Data 3 Green Data 2 Green Data 1 Green Data 0	Green-pixel Data 6Bits LVDS input MSB：G5 ； LSB：G0
B5 B4 B3 B2 B1 B0	Blue Data 5 Blue Data 4 Blue Data 3 Blue Data 2 Blue Data 1 Blue Data 0	Blue-pixel Data 6Bits LVDS input MSB：B5 ； LSB：B0
CKIN	LVDS Data Clock	
DE	Data Enable Signal	When the signal is high, the pixel data shall be valid to be displayed.

9.3 AC TIMING CHARATERISTICS

ITEM	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Horizontal Display Area	thd	-	800	-	DCLK	
DCLK Frequency	fclk	26.4	33.3	46.8	MHz	
One Horizontal Line	th	862	1056	1200	DCLK	
HS pulse width	thpw	1	-	40	DCLK	
HS Blanking	thb	46	46	46	DCLK	
HS Front Porch	thfp	16	210	354	DCLK	

ITEM	SYMBOL	MIN	TYP	MAX	UNIT	REMARK
Vertical Display Area	tvd	-	480	-	TH	
VS period time	tv	510	525	650	TH	
VS pulse width	tvpw	1	-	20	TH	
VS Blanking	tvb	23	23	23	TH	
VS Front Porch	tvfp	7	22	147	TH	




tvpw
VSD
HSD
DE
tvb
tvd
tvfp
tv

10. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	70℃	96Hours	Note 1,4
2	Low Temperature Storage	-30℃	96Hours	Note 1,4
3	High Temperature Humidity Storage	60℃,90%RH	96Hours	Note 4
4	High Temperature Operation	(60℃)	TBDHours	Note 2,4
5	Low Temperature Operation	-20℃	96Hours	Note1,4
6	Temperature Cycle	(-20℃) ~ (60℃) (30min) (30min)	50CYCLE	Note 4

Note1 : Ta is the ambient temperature of samples.

Note2 : Ts is the temperature of panel's surface.

Note3 : 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.

Note4 : Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

11. LCM INSPECTION STANDARD

Inspection specifications refer ONation Corporation LCM INSPECTION STANDARD Document.
Document Number ：TBD

12. PACKAGE INFORMATION

LCM Model	LCM Qty. in the box	Inner Box Size (mm)	Weight	REMARK
OT070BGDDLV-H0	TBD	TBD	TBD	

13.PRECAUTIONS FOR USE

13.1 SAFETY

(1) Do not swallow any liquid crystal, even if there is no proof that liquid crystal is poisonous.
(2) If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
(3) If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

13.2 STORAGE CONDITIONS

(1) Store the panel or module in a dark place where the temperature is 23±5°C and the humidity is below 50±20%RH.
(2) Store in anti-static electricity container.
(3) Store in clean environment, free from dust, active gas, and solvent.
(4) Do not place the module near organics solvents or corrosive gases.
(5) Do not crush, shake, or jolt the module.

13.3 HANDLING PRECAUTIONS

(1) Avoid static electricity which can damage the CMOS LSI.
(2) The polarizing plate of the display is very fragile. So, please handle it very carefully.
(3) Do not give external shock.
(4) Do not apply excessive force on the surface.
(5) Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the Surface of plate.
(6) Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
(7) Do not operate it above the absolute maximum rating.
(8) Do not remove the panel or frame from the module.
(9) When the module is assembled, it should be attached to the system firmly, Be careful not to twist and bend the module.
(10) Wipe off water droplets or oil immediately . If you leave the droplets for a long time, staining and discoloration may occur.
(11) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.

13.4 WARRANTY

(1) Acceptance inspection period
The period is within one month after the arrival of contracted commodity at the buyer's factory site.
(2) Applicable warrant period
The period is within 12 months since the date of shipping out under normal using and storage conditions.