

# TFT-DISPLAY DATASHEET

ONation  
Model: OT104JXWDLV-H0

## BRIEF SPEC.:

Main Feature	Landscape Type White LED Backlight Wide Viewing Angle
Active Screen Area	210.4 x 157.8 [mm]
Diagonal   Format	10,4"   4:3
Resolution	1024 x 768
Colors	R.G.B Vertical Stripe
Backlight	LED, White
Brightness	1000 cd/m <sup>2</sup>
LED Life Time	N/A
Interface	LVDS
Viewing Angle	-89~89(H), -89~89(V)
Touchscreen	no
Power Supply	3,3V (Typ.)
Module Outline	238.6 x 175.8 x 13.16 [mm]
Operation Temperature	-30... +80 °C
Storage Temperature	-30... +80 °C
Surface Treatment	N/A



# ONation Corporation

## TFT COLOR LCD MODULE

**MODEL: OT104JXWDLV-H0**  
(Complied with RoHS)

**XGA**  
**LVDS interface**

**Version: P0.1**

<b>Customer :</b> _____
<b>Approved By :</b> _____
<b>Date:</b> _____

ONATION		
APPROVAL	CHECKER	PREPARE

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

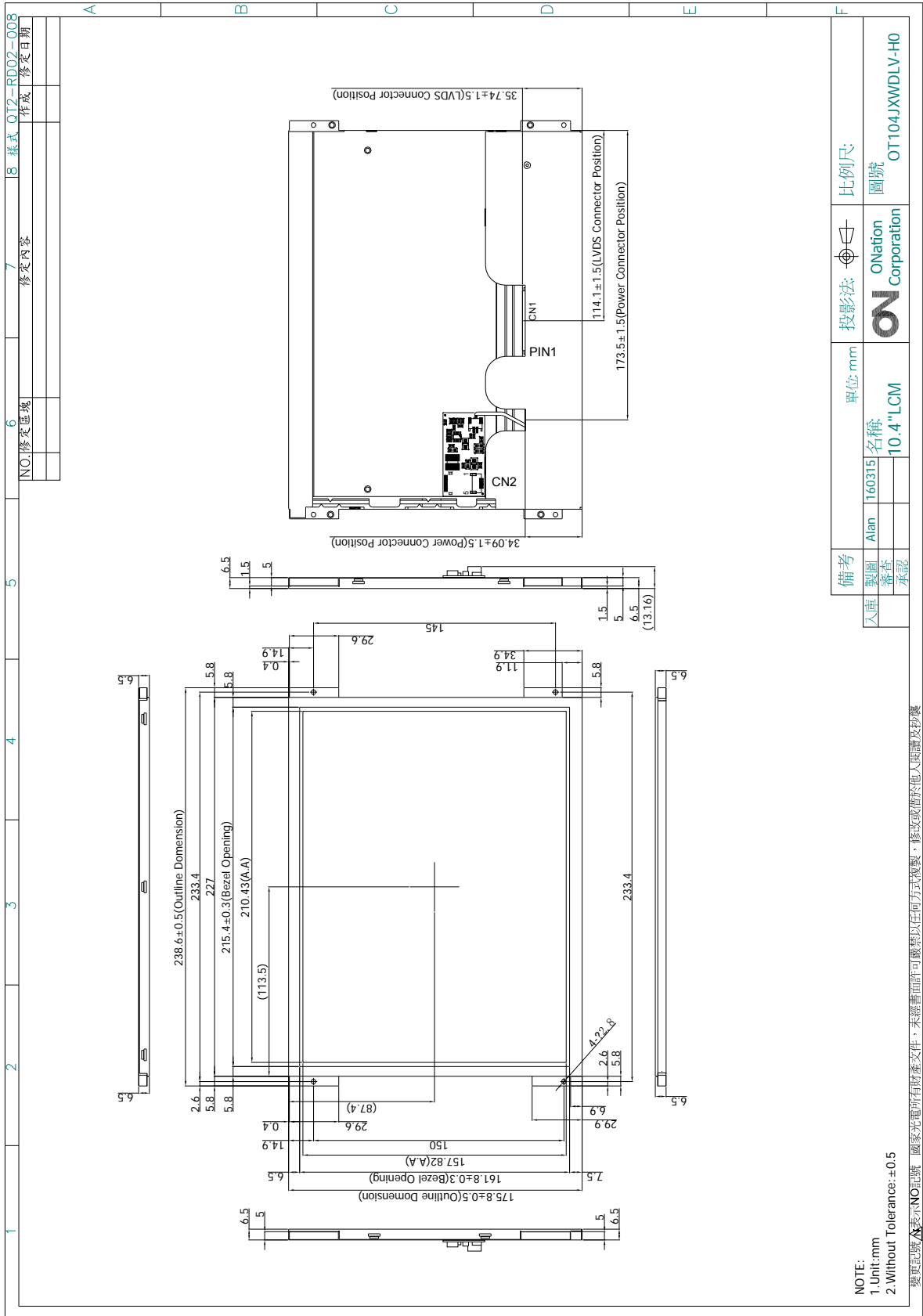
<b>NO.</b>	<b>ITEM</b>	<b>PAGE</b>
1	RECORD OF REVISION	0-1
2	MECHANICAL SPECIFICATIONS	1
3	OUTLINE DIMENSIONS	2
4	INTERFACE PIN CONNECTION	3~4
5	BLOCK DIAGRAM	5
6	ABSOLUTE MAXIMUM RATINGS	6
7	ELECTRICAL CHARACTERISTICS	7~8
8	OPTICAL CHARACTERISTICS	9~11
9	TIMING SPECIFICATIONS	12~14
10	RELIABILITY TEST	15
11	LCM INSPECTION STANDARD	16
12	PACKAGE INFORMATION	16
13	PRECAUTIONS FOR USE	17



## 2.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	1024(R.G.B) X 768
(2)	Module Size(mm)	238.6(W) X 175.8(H) X 13.16 (D)
(3)	Active Area(mm)	210.4(H) X157.8(V)
(4)	Dot Pitch(mm)	0.2055(H) X 0.2055(V)
(5)	LCD / Polarizer Model	TFT , Transmissive, Normally Black
(6)	LED Backlight Color	White
(7)	Viewing Direction	Wide View Angle Horizontal :Right side 89°(Typ),Left side 89°(Typ) Vertical: Up side 89°(Typ),Down side 89°(Typ)
(8)	Gray Scale Inversion Direction	NO GSI
(9)	Color Configuration	R.G.B Vertical Stripe
(10)	Module Weight(g)	TBD

### 3. OUTLINE DIMENSIONS



## 4. INTERFACE PIN CONNECTION

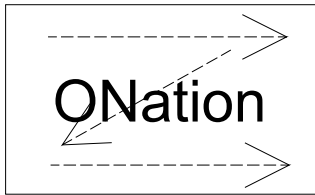
### 4.1 LCM PANEL DRIVING SECTION

CN1 Connector : JAE FI-XPB30SRLAHF 11 or Equivalen

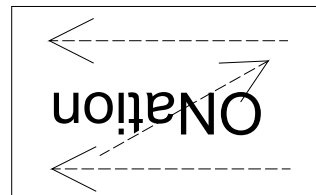
Mating Connector : JAE FI-X30HL or Equivalen

PIN NO.	SYMBOL	FUNCTION	REMARKS
1	NC	No Connection	
2	GND	Ground	
3	RxIN3+	Differential Data Input, CH3(Positive)	
4	RxIN3-	Differential Data Input, CH3(Negative)	
5	GND	Ground	
6	RxCLK+	Differential Clock Input(Positive)	
7	RxCLK-	Differential Clock Input(Negative)	
8	GND	Ground	
9	RxIN2+	Differential Data Input, CH2(Positive)	
10	RxIN2-	Differential Data Input, CH2(Negative)	
11	GND	Ground	
12	RxIN1+	Differential Data Input, CH1(Positive)	
13	RxIN1-	Differential Data Input, CH1(Negative)	
14	GND	Ground	
15	RxIN0+	Differential Data Input, CH0(Positive)	
16	RxIN0-	Differential Data Input, CH0(Negative)	
17	GND	Ground	
18	NC	No Connection	
19	GND	Ground	
20	SEL6/8	6/8 bits LVDS data input selection [H: 6bits ; L/NC: 8bits]	
21	NC	No Connection	
22	NC	No Connection	
23	NC	No Connection	
24	REV	Reverse Panel Function(Display Rotation)	Note1
25	GND	Ground	
26	GND	Ground	
27	GND	Ground	
28	VCC	Power Supply For Digital Circuit	
29	VCC	Power Supply For Digital Circuit	
30	VCC	Power Supply For Digital Circuit	

Note1



**Normal scan**  
(Pin24 REV =Low or NC)



**Reverse scan**  
(Pin24 REV =High)

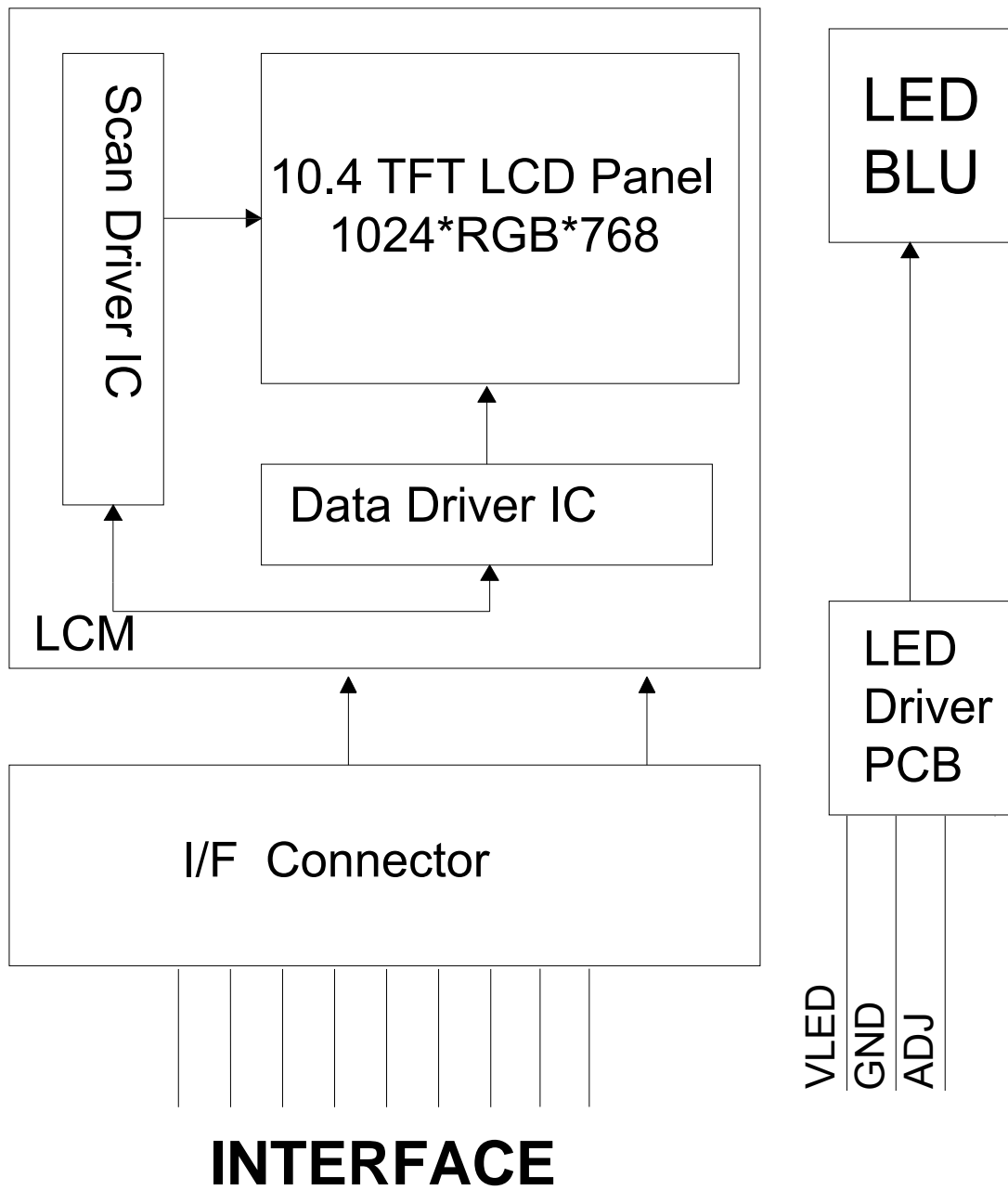
## 4.2 BACKLIGHT UNIT

Connector : 3808K-Q05N-03R or Equivalen

PIN NO.	SYMBOL	FUNCTION	REMARKS
1	VLED	Power Supply for LED Circuit	
2	VLED	Power Supply for LED Circuit	
3	GND	Ground	
4	GND	Ground	
5	ADJ	Adjust Brightness Control For LED B/L	



### 5. BLOCK DIAGRAM



## 6.ABSOLUTE MAXIMUM RATINGS

### 6.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
Logic/ LCD drive voltage	VCC	-0.3	6	V	
LED Current	VLED	-0.3	50	V	

Note: 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 may be permanently destroyed.

### 6.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		REMARK
	MIN	MAX	MIN	MAX	
Ambient Temperature(°C)	-30	80	-30	80	
Humidity(% RH)	5	90	5	90	

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=40°C & RH=90% ≤ 240Hrs

## 7.ELECTRICAL CHARACTERISTICS

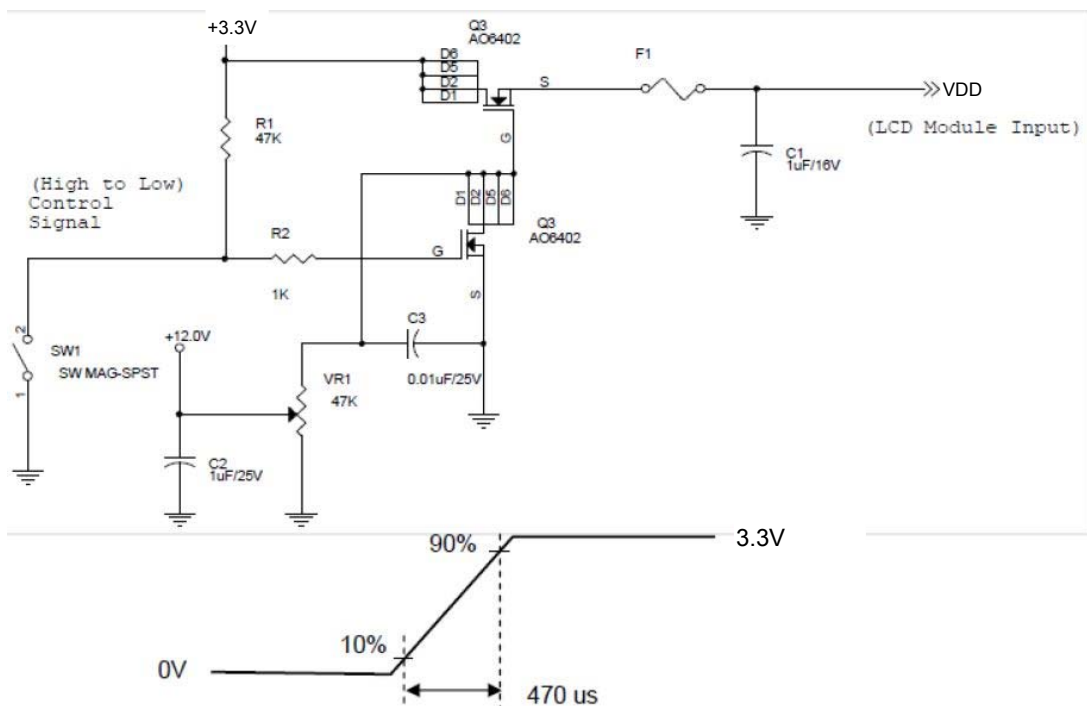
### 7.1 ELECTRICAL CHARACTERISTICS OF LCD

Ta=25°C

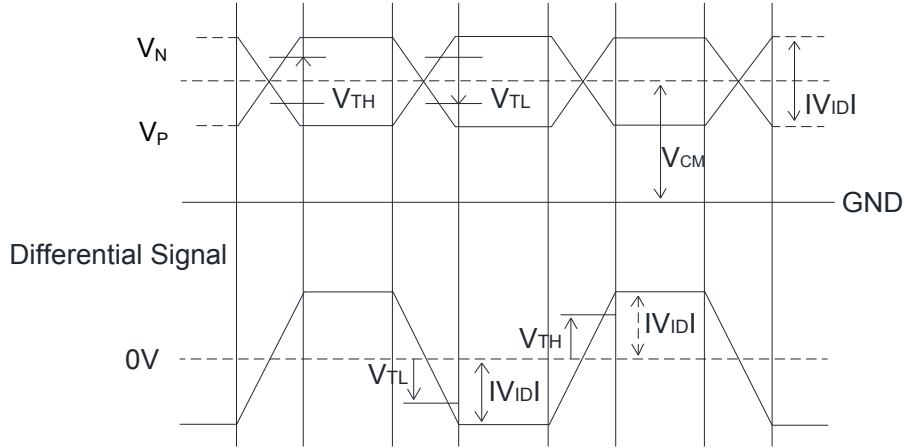
ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
LCD Drive Voltage	VCC	3.0	3.3	3.6	v	
Input current	ICC	-	300	-	mA	VCC=3.3V,all Black Pattern
LCD Power consumption	P <sub>VCC</sub>	-	0.99	-	Watt	VCC=3.3V,all Black Pattern
LCD Inrush Current	I <sub>rushLCD</sub>	-	-	1.5	A	VCC=3.3V,all Black Pattern
Allowable logic/LCD Drive Ripple Voltage	VCCrp	-	-	100	mV p-p	VCC=3.3V,all Black Pattern
Differential Input Common Mode Voltage	V <sub>ICM</sub>	1.1	-	1.45	V	V <sub>TH</sub> -V <sub>TL</sub> =+-100mV
Differential Input High Threshold	V <sub>TH</sub>	-	-	+100	mV	V <sub>CM</sub> =+1.2V
Differential Input Low Threshold	V <sub>TL</sub>	-100	-	-	mV	V <sub>CM</sub> =+1.2V
Magnitude Differential Input Voltage	V <sub>ID</sub>	100	400	600	mV	-

Note1.Input signals shall be low or Hi-resistance state when VCC is off

Note2.Allelectrical characteristics for LVDS signal and shall be measured at the interface connector of LCD



**Single-End Signal**



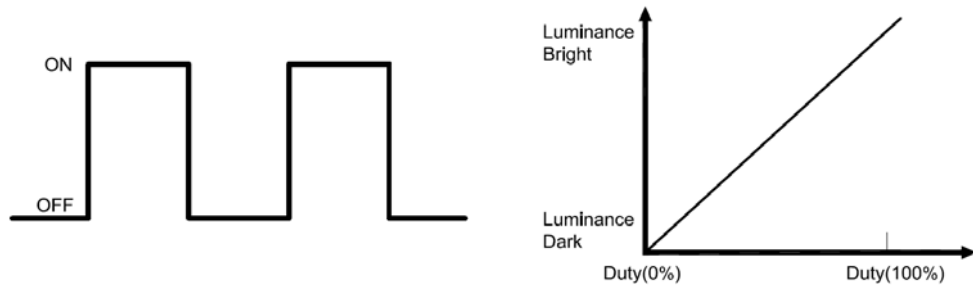
**7.2 BACKLIGHT UNIT**

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
LED Driving Voltage	VLED	8	12	16	V	
	ILED	-	TBD	TBD	mA	
PWM Control Level	PWM High Level	-	3.0	3.3	3.6	V
	PWM Low Level	-	0	-	1.0	V
PWM Control Duty Ratio	-	0	-	100	%	
PWM Control Frequency	f <sub>PWM</sub>	100	-	2000	Hz	

Note 1: ADJ signal Vp-p =3.0 ~ 3.6 V, operation frequency: 100Hz ~ 2000Hz:

**PWM DIMMING DUTY**



## 8. OPTICAL CHARACTERISTICS

Ta=25°C

ITEM	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT	REMARK
Contrast Ratio	CR	Viewing Normal Angle $\Theta_x = \Theta_y = 0^\circ$	(2000)	(2500)	-	-	Note (1)
Response Time	TR+TF		-	30	50	ms	Note (2)
Chromaticity	White	Wx	(0.250)	(0.300)	(0.350)	-	Note (4)
		Wy	(0.250)	(0.300)	(0.350)	-	
Viewing Angle	Hor.	$\Theta_{x+}$	-	89	-	Deg.	Note (3)
		$\Theta_{x-}$	-	89	-		
	Ver.	$\Theta_{y+}$	-	89	-		
		$\Theta_{y-}$	-	89	-		
Luminance	L	PWM=100%	(800)	(1000)	-	cd/m <sup>2</sup>	-
Luminance uniformity	YU		75	80	-	%	Note (5)

\*Note (1) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

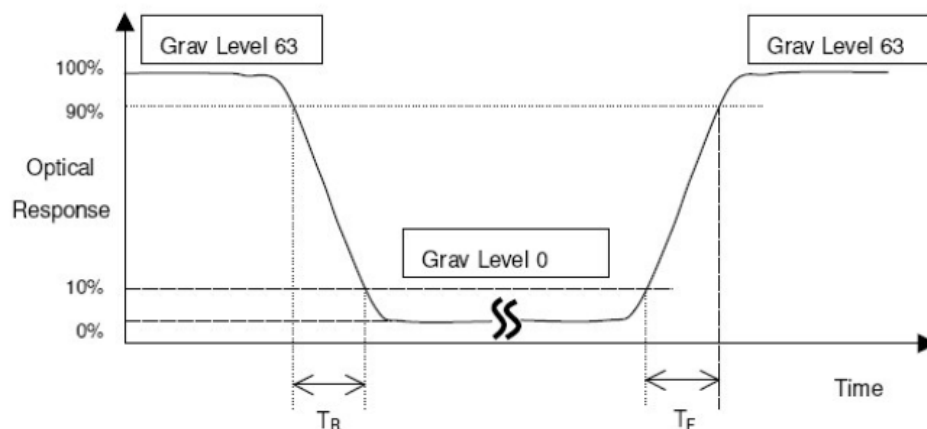
L63: Luminance of gray level 63

L 0: Luminance of gray level 0

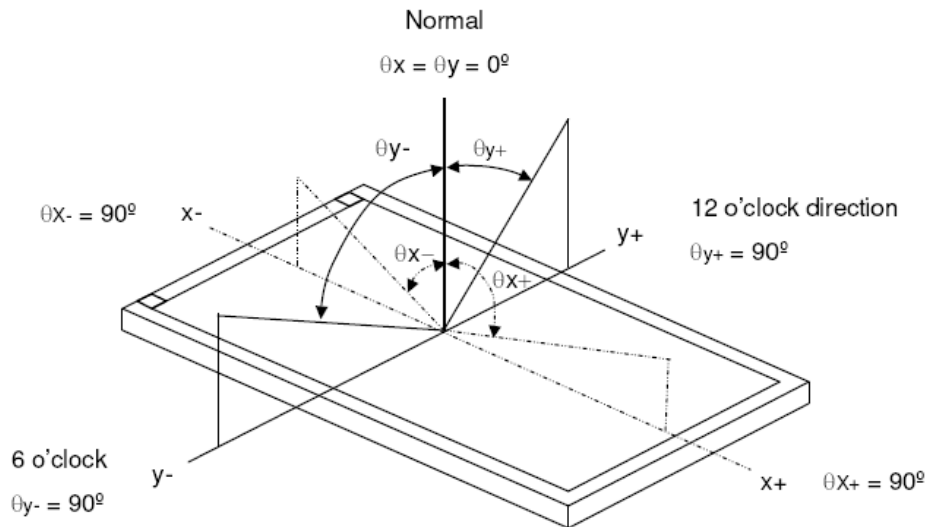
$$CR = CR (5)$$

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):

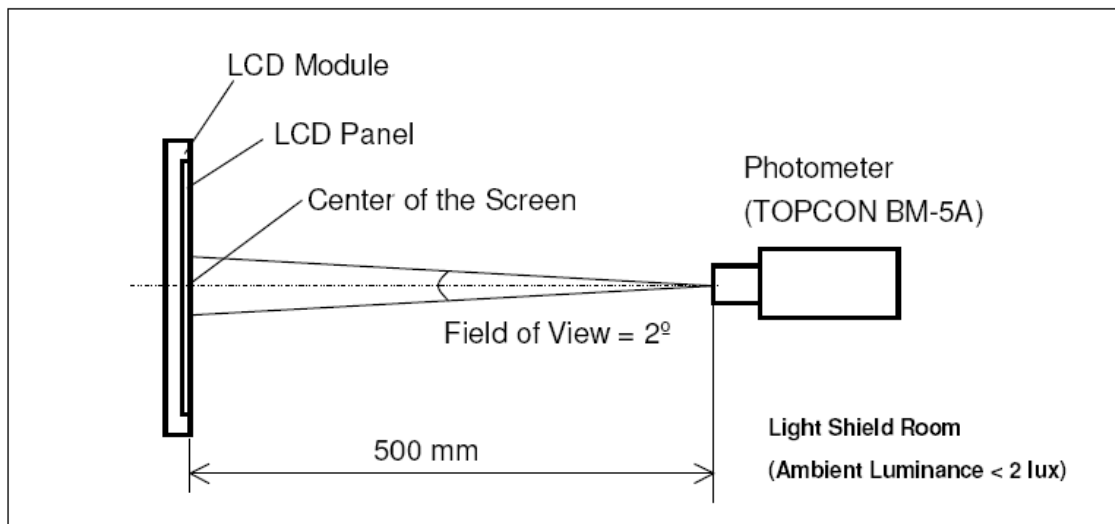


\*Note(3) Definition of Viewing Angle

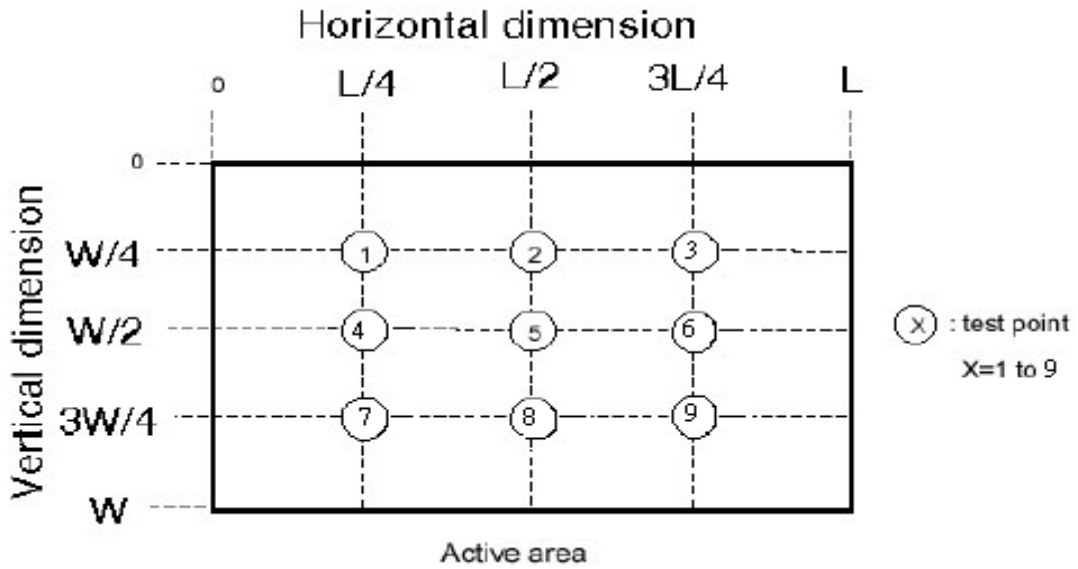


\*|

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



\*Note (5)

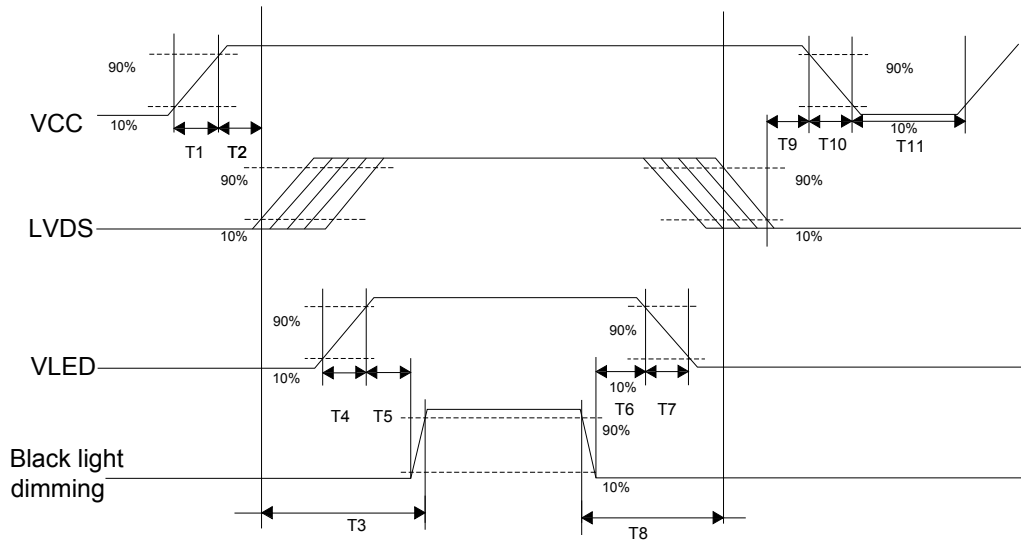


$$\left( 1 - \frac{\text{MAX Luminance} - \text{Average Luminance}}{\text{Average Luminance}} \right) \times 100\% = YU$$

## 9. TIMING SPECIFICATIONS

### 9.1 Power ON/OFF Sequence

VCC power and lamp on/off sequence is as below. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VCC is off.



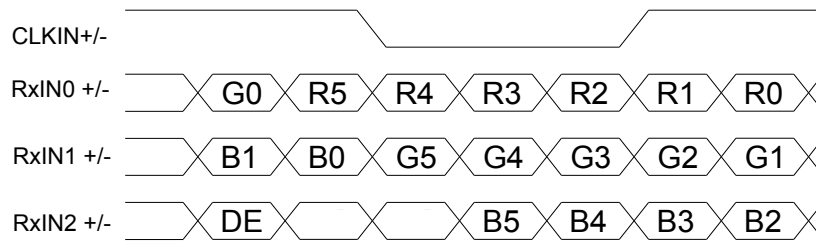
PARAMETER	MIN.	TYP.	MAX.	UNIT
T1	0.5	-	10	ms
T2	30	40	50	ms
T3	200	-	-	ms
T4	0.5	-	10	ms
T5	10	-	-	ms
T6	10	-	-	ms
T7	0	-	-	ms
T8	10	-	-	ms
T9	-	-	10	ms
T10	110	-	-	ms
T11	0	16	50	ms
T12	-	-	10	ms
T13	1000	-	-	ms

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

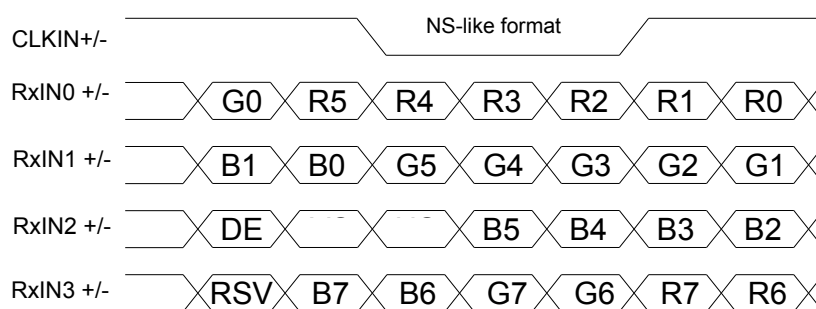


## 9.2 The Input Data

SEL68="High" for 6 bits LVDS Input



SEL68="Low" or "NC" for 8 bits LVDS Input



Note 1 : Please follow PSWG

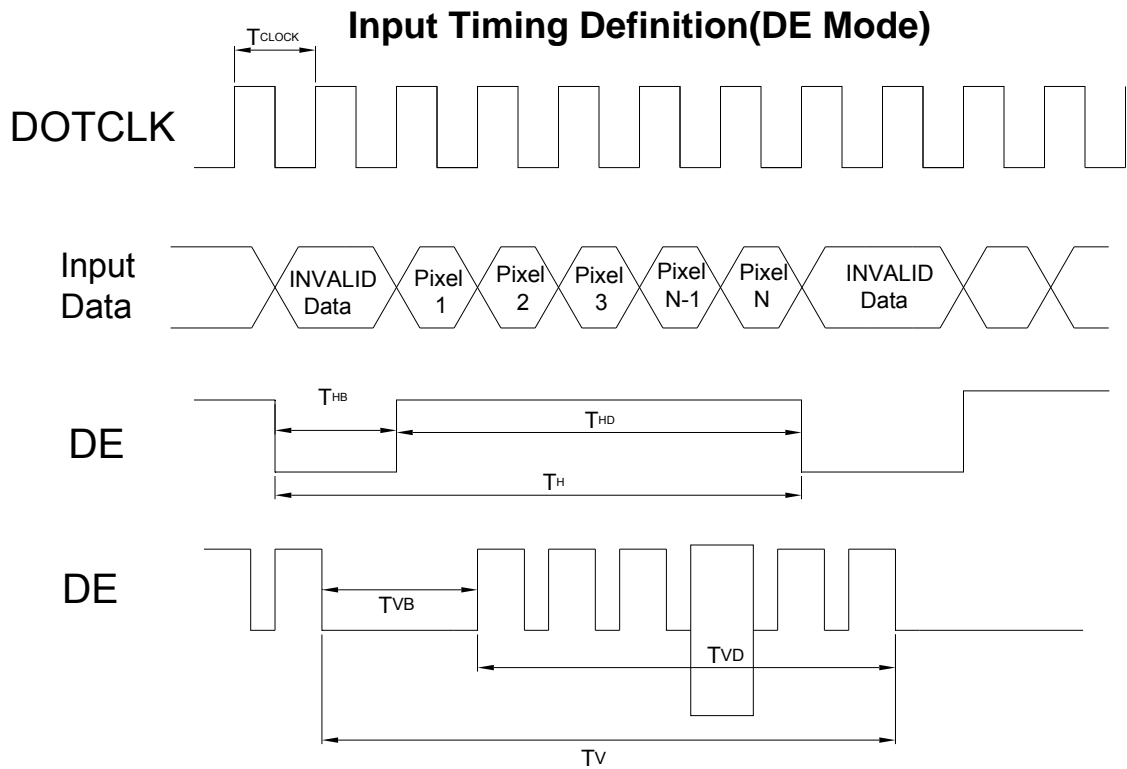
Note 2 : R/G/B data 7 : MSB, R/G/B data 0:LSB

SIGNAL NAME	DESCRIPTION	REMARK
R7	Red Data 7	Red-pixel Data  For 8Bits LVDS input MSB : R7 ; LSB : R0
R6	Red Data 6	
R5	Red Data 5	
R4	Red Data 4	
R3	Red Data 3	
R2	Red Data 2	
R1	Red Data 1	
R0	Red Data 0	
G7	Green Data 7	Green-pixel Data  For 8Bits LVDS input MSB : G7 ; LSB : G0
G6	Green Data 6	
G5	Green Data 5	
G4	Green Data 4	
G3	Green Data 3	
G2	Green Data 2	
G1	Green Data 1	
G0	Green Data 0	
B7	Blue Data 7	Blue-pixel Data  For 8Bits LVDS input MSB : B7 ; LSB : B0
B6	Blue Data 6	
B5	Blue Data 5	
B4	Blue Data 4	
B3	Blue Data 3	
B2	Blue Data 2	
B1	Blue Data 1	
B0	Blue Data 0	
RxCLK	LVDS Data Clock	
DE	Data Enable Signal	When the signal is high ,the pixel data Shall be valid to be displayed.

### 9.3 Interface Timings

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT
Clock Frequency		$1/T_{Clock}$	50	65	81	MHz
Vertical Section	Period	$T_V$	776	806	1023	$T_{Line}$
	Active	$T_{VD}$	768	768	768	
	Blanking	$T_{VB}$	8	38	256	
Horizontal Section	Period	$T_H$	1054	1344	2047	$T_{Clock}$
	Active	$T_{HD}$	1024	1024	1024	
	Blanking	$T_{HB}$	30	320	1023	
Frame Rate		F	50	60	75	Hz

Note : DE mode



## 10. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	80°C	240HRS	Note1,4
2	Low Temperature Storage	-30°C	240HRS	Note1,4
3	High Temperature Humidity Storage	40°C,90%RH	240HRS	Note4
4	High Temperature Operation	(80°C)	TBD HRS	Note2,4
5	Low Temperature Operation	-30°C	240HRS	Note1,4
6	Temperature Cycle	-20°C ← 25°C → 60°C (30min) (5min) (30min)	100CYCLE	

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
OT104JXWDLV-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  $23\pm 5^{\circ}\text{C}$  and the humidity is below  $50\pm 20\% \text{RH}$ .
- (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.