

TFT-DISPLAY DATASHEET

ONation
Model: OT150AXWDLV-00

BRIEF SPEC.:

Main Feature

Landscape Type

White LED Backlight

Wide Viewing Angle

Active Screen Area

304.12 x 228.09 (mm)

Diagonal | Format

15" | 4:3

Resolution

1024 x 768

Colors

R.G.B Stripe

Backlight

LED, White

Brightness

300 cd/m²

LED Life Time

30,000h (Typ.)

Interface

LVDS

Viewing Angle

-70~80(H), -70~80 (V)

Touchscreen

No

Power Supply

3,3V (Typ.)

Module Outline

326,5 x 253.5 x 11.8 (mm)

Operation Temperature

-20... +70 °C

Storage Temperature

-30... +80 °C

Surface Treatment

Anti-Glare



ONation Corporation

TFT COLOR LCD MODULE

MODEL: OT150AXWDLV-00
(Complied with RoHS)

XGA
LVDS interface (1port)

Version: P0.1

Customer : _____
Approved By : _____
Date: _____

ONATION		
APPROVAL	CHECKER	PREPARE

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

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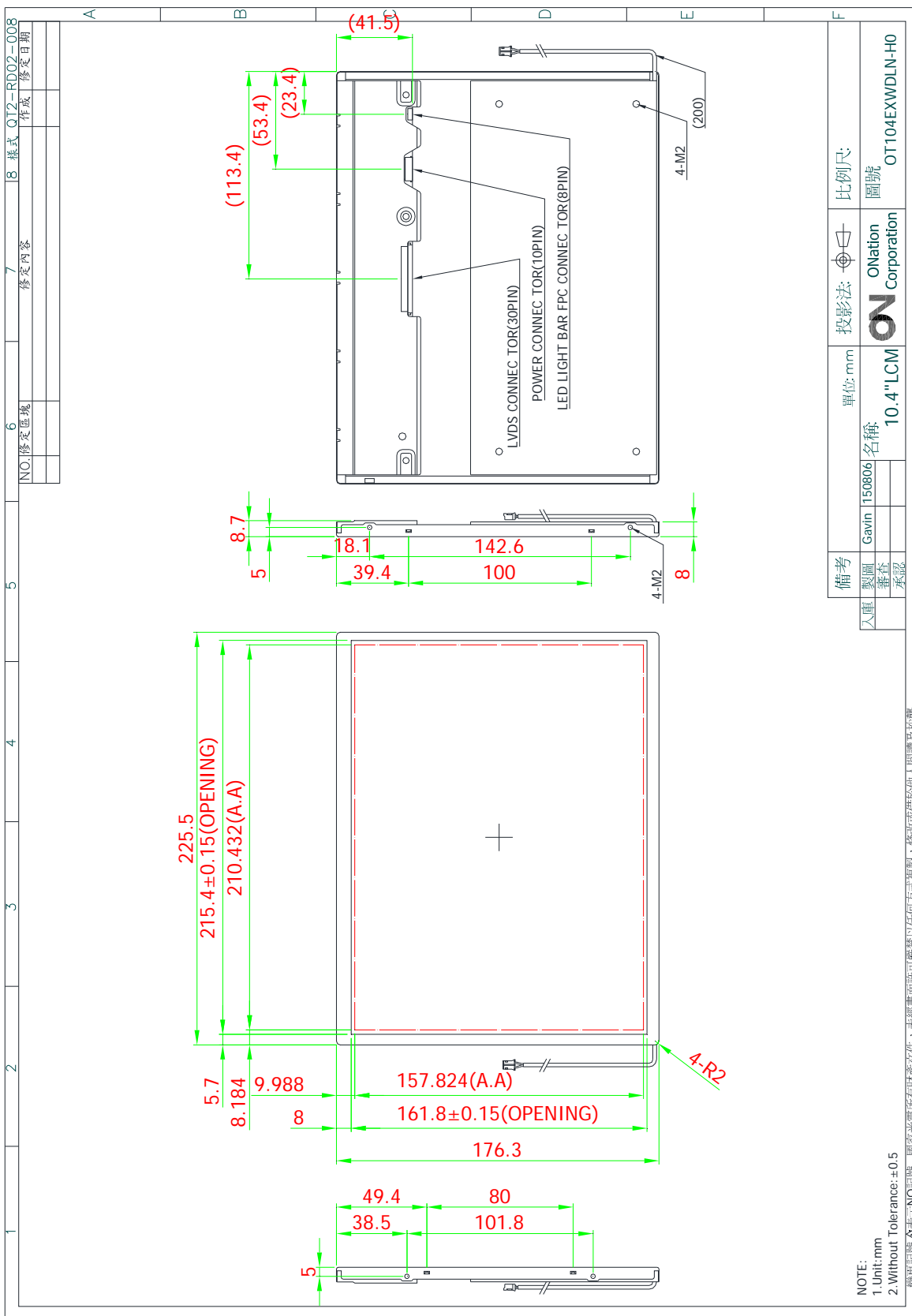
1.RECORD OF REVISION

REV	DATE	PAGE	SUMMARY
0.1	2015.10.29	ALL	Preliminary specification was first issued.

2.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	1024(R.G.B) X 768
(2)	Module Size(mm)	326.5(H) X 253.5(V) X 11.8(D)
(3)	Active Area(mm)	304.128(H) X 228.096(V)
(4)	Pixel Pitch(mm)	0.297 (H) X 0.297(V)
(5)	LCD / Polarizer Model	TM, Normally/ White, Anti-Glare
(6)	Backlight Color	White, LED
(7)	Viewing Direction	Wide Viewing Angle Horizontal : Right side 80°(typ.), Left side 80°(typ.) Vertical : Up side 80°(typ.), Down side 80°(typ.)
(8)	Gray Scale Inversion Direction	No GSI
(9)	Electrical Interface	LVDS Interface
(10)	Color Configuration	R.G.B Stripe
(11)	Module Weight(g)	TBD±5%

3. OUTLINE DIMENSIONS



4. INTERFACE PIN CONNECTION

4.1 LCM PANEL DRIVING SECTION

CN1 Connector : P-TWO 185083-20121 or Equivalen

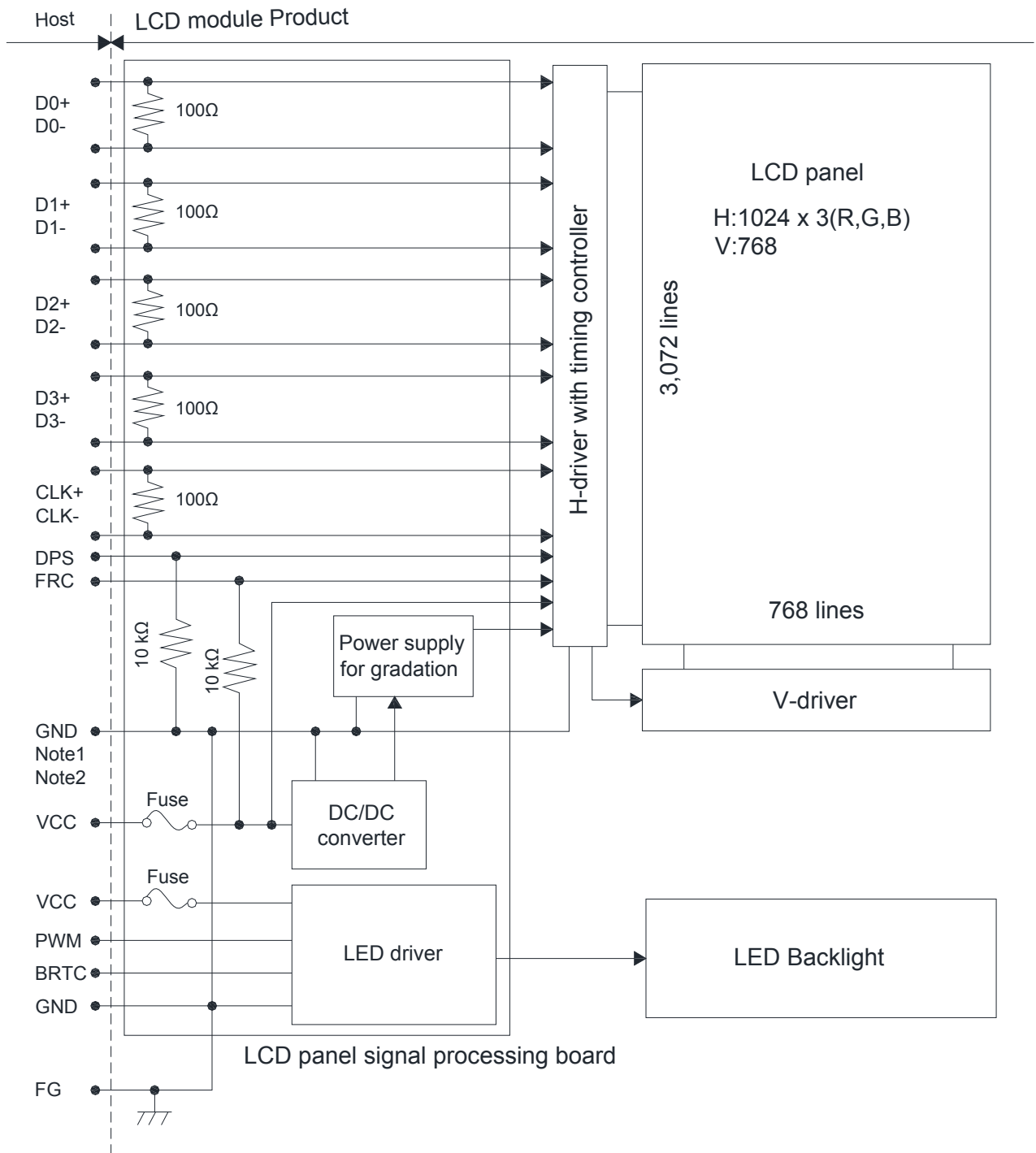
PIN NO.	SIGNAL	FUNCTION
1	VCC	Power Supply For Digital Circuit
2	VCC	Power Supply For Digital Circuit
3	GND	Ground
4	REV	H:Reverse scan ; Low or Open: Normal scan
5	D0-	R0-R5,G0
6	D0+	
7	GND	Ground
8	D1-	G1-G5,B0-B1
9	D1+	
10	GND	Ground
11	D2-	B2-B5,DE
12	D2+	
13	GND	Ground
14	CLK-	Pixel Clock
15	CLK+	
16	GND	Ground
17	D3-	6bit: Ground;8 bit:R6-R7,G6-G7,B6-B7
18	D3+	
19	NC	No Connection
20	SEL6/8	6/8 bits LVDS data input selection [H: 6bits ; L/NC: 8bits]

4.2 BACKLIGHT DRIVING SECTION

Connector : STM MSB24038P5 or Equivalen

PIN NO.	SIGNAL	FUNCTION	WIRE COLOR
1	NC	NC	
2	PWM	PWm Luminance	
3	BRTC	Back light ON/OFF control:5V-On/0V-Off	
4	GND	Ground	
5	VDD	12V	

5. BLOCK DIAGRAM



6. ABSOLUTE MAXIMUM RATINGS

6.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
Power Supply Voltage	VCC	-0.3	3.96	V	
	Vin	-0.5	3.96	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)	-20	70	-30	80	Note 1,2
Humidity(% RH)	Note 3		Note 3		Note 3

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=50°C & RH=80% ≤ 240Hrs.

7. ELECTRICAL CHARACTERISTICS

7.1 ELECTRICAL CHARACTERISTICS OF LCD

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Power Voltage For LCD	VCC	3.0	3.3	3.6	V	
	ICC	-	550	-	mA	Note 1
Differential input voltage	Vid	250	-	450	mV	
Differential input threshold voltage for LVDS receiver	VTH	-	-	100	mV	
	VTL	-100	-	-	mV	
Input voltage width for LVDS receiver	Vi	0	-	1.90	V	
Rush current	Irush	-	-	1.5	A	
Input voltage for MSL signals	VFH	0.7VCC	-	VCC	V	
	VFL	0	-	0.3VCC	V	

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

7.2 BACKLIGHT UNITS

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
LED Driving Voltage	VLED	10.8	12.0	12.6	V
	ILED	-	630	-	mA
LED Life Time		30000	-	-	Hrs
Input voltage for PWM signal	VDFH1	2.0	-	5.0	V
	VDFL1	0	-	0.4	V
Input voltage for BRTC signal	VDFH2	2.0	-	5.0	V
	VDFL2	0	-	0.4	V
PWM frequency	fpwm	200	-	(20K)	Hz
PWM pulse width	tPWH	10	-	-	µs

Note 1: The lifetime of LED is defined as the time when it continues to operate under the conditions at Ta= 25 ±2°C and ILED = 630mA DC (LED forward current) until the brightness becomes ≤ 50% of its original value.

8. OPTICAL CHARACTERISTICS

Ta=25°C

ITEM	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT	REMARK
Contrast Ratio	CR	Viewing Normal Angle $\Theta_x=\Theta_y=0^\circ$	600	800	-	-	Note 1
Response Time	TR		-	8	12	ms	Note 2
	TF						
Chromaticity	White		x	0.263	0.313	0.363	-
		y	0.279	0.329	0.379	-	
Viewing Angle	Hor.	θ_{x+}	70	80	-	Deg.	Note 3
		θ_{x-}	70	80	-		
	Ver.	θ_{y+}	70	80	-		
		θ_{y-}	70	80	-		
Luminance	L	PWM=100%	250	300	-	cd/m ²	-
Uniformity	YU	PWM=100%	TBD	TBD	-	%	Note 5

Note 1 : Definition of Contrast Ratio (CR) :

The contrast ratio can be calculated by the following expression.

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

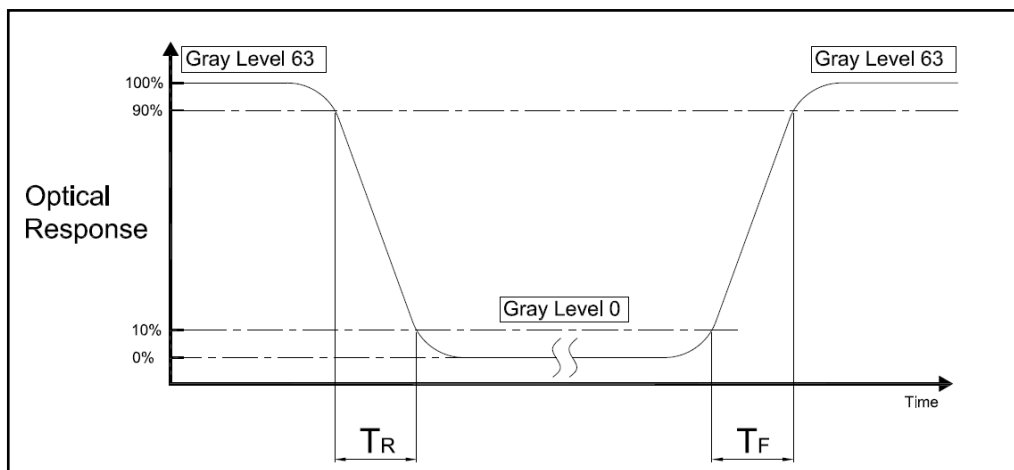
L63 : Luminance of gray level 63

L0 : Luminance of gray level 0

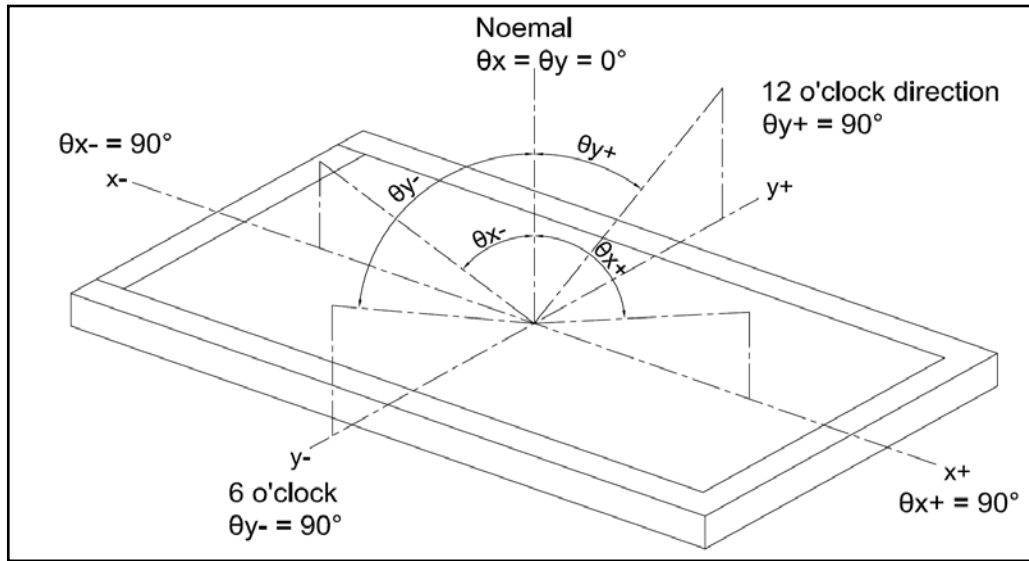
$$CR = CR(5)$$

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)

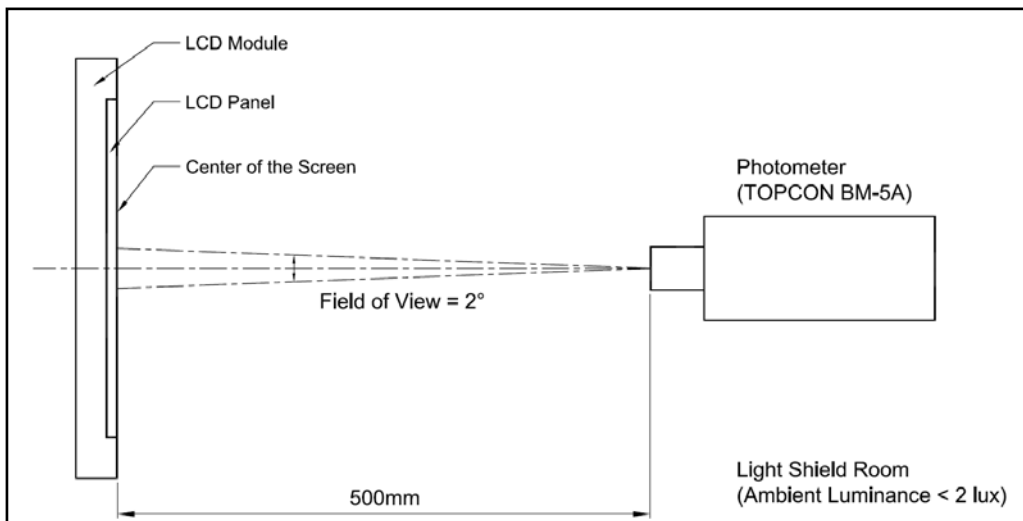


Note 3 : Definition of Viewing Angle

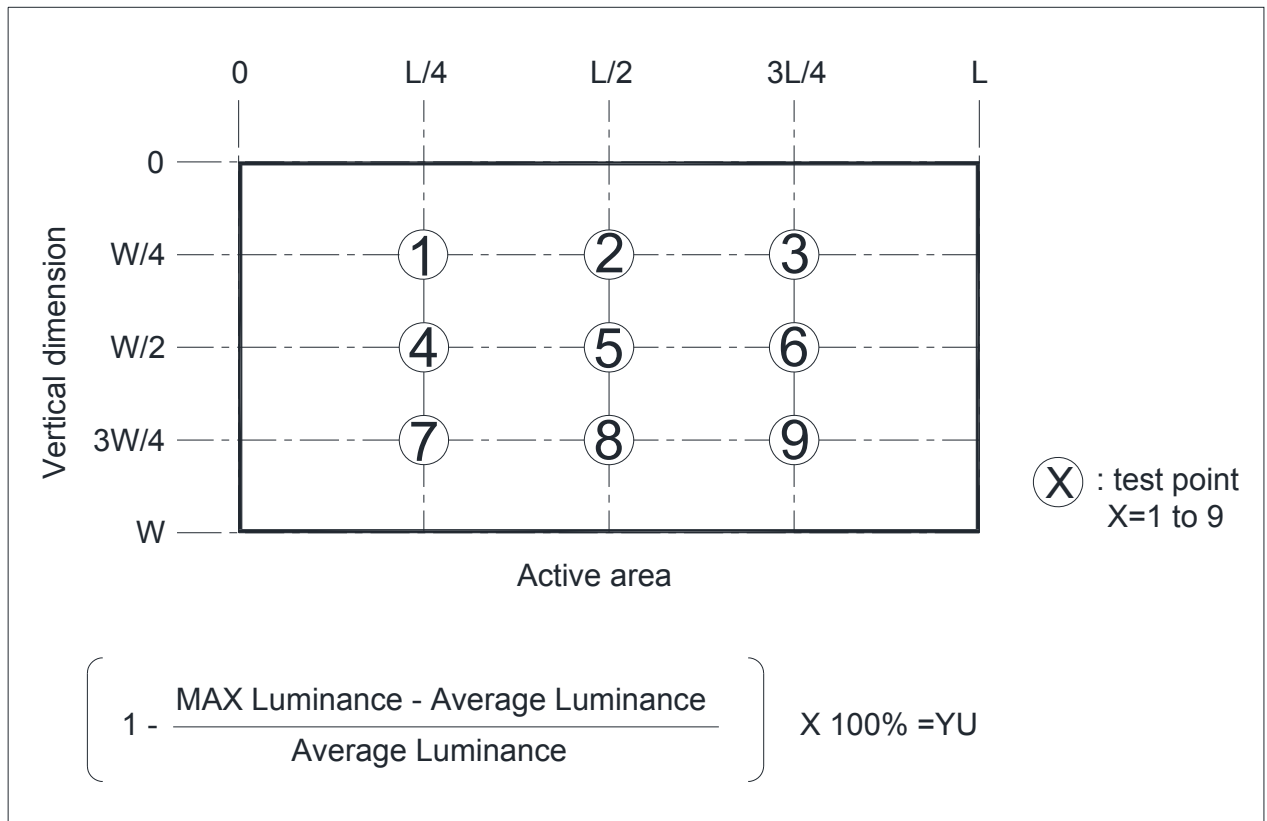


Note 4 : Measurement Set-Up:

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.

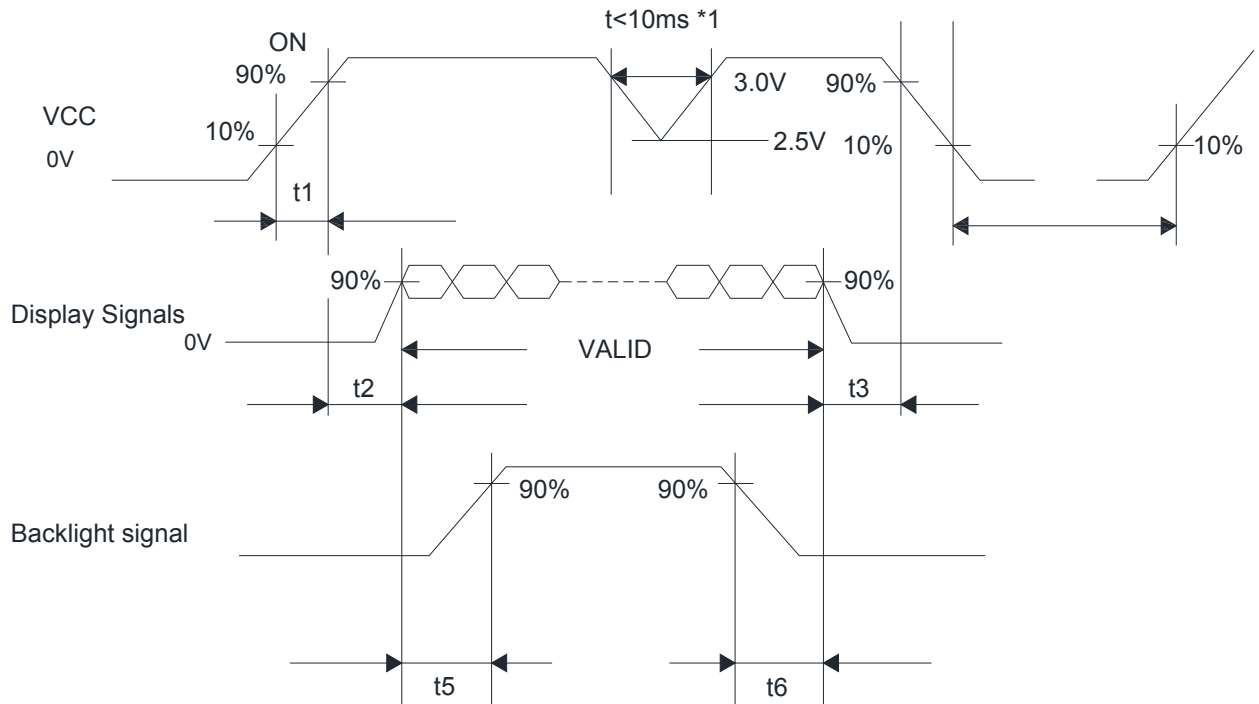


Note 5 :



9. TIMING SPECIFICATIONS

9.1 POWER SIGNAL SEQUENCE



Timing Specifications:

t1: 0.5ms < t1 < 10ms;

t2: 0.5ms < t2 < 50ms;

t3: 0ms < t3 < 50ms;

t4: t4 > 1000ms;

t5: t5 > 200ms;

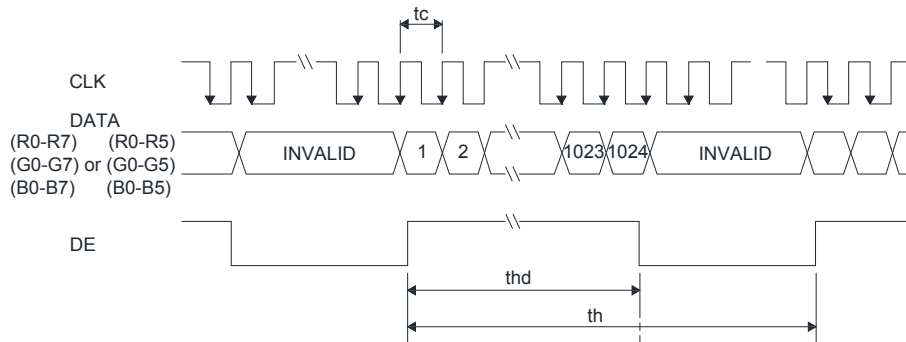
t6: t6 > 200ms;

9.2 INPUT SIGNAL TIMING SPECIFICATIONS

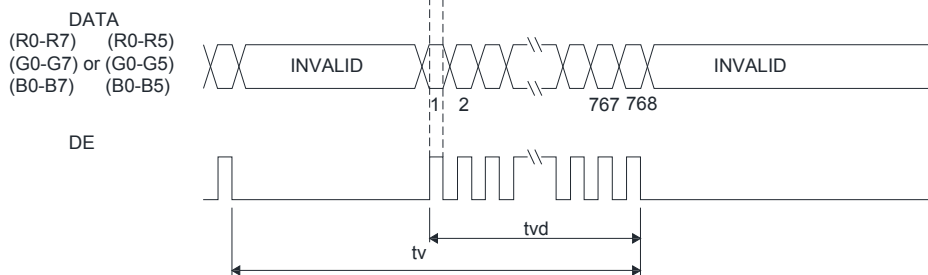
SIGNAL	ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Clock	Frequency	1/tc	52	56.88	71	MHz	17.58ns(Typ)
		tc	19.23	17.58	14.08	ns	
Vertical signals	Cycle	tv	778	790	845	H	60.0Hz(Typ)
	Display	tvd	768			-	-
Horizontal signals	Cycle	th	1114	1200	1400	CLK	-
	Display	thd	1024			-	-

INPUT SIGNAL TIMING DIAGRAM

Horizontal timing

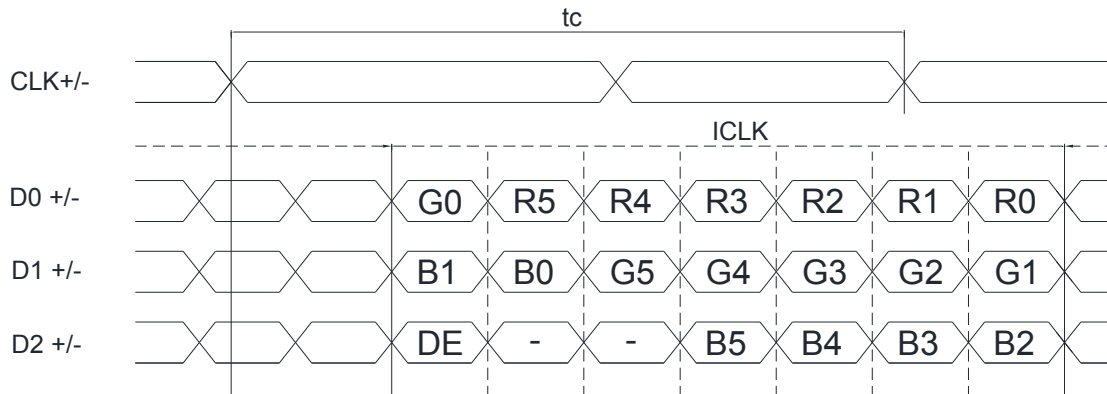


Vertical timing

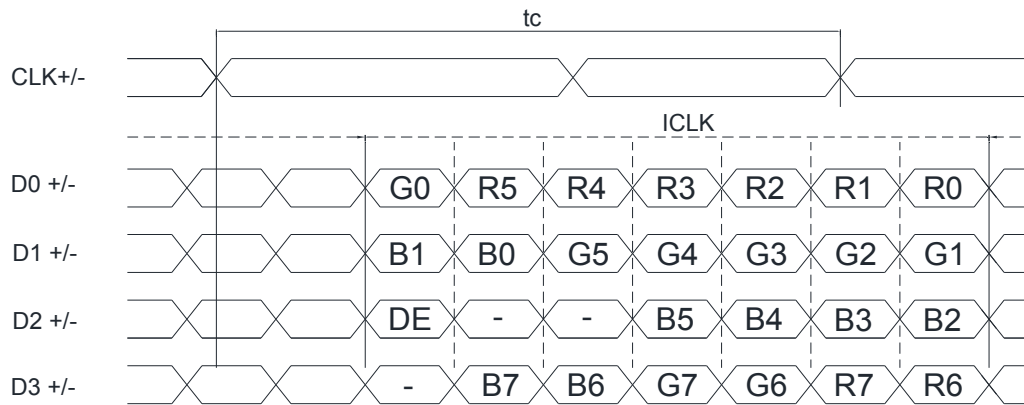


9.3 THE INPUT DATA FORMAT

LVDS Input data signal: 6 bit



LVDS Input data signal: 8bit



10. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	80°C	240HRS	
2	Low Temperature Storage	-30°C	240HRS	
3	High Temperature Operation	70°C	240HRS	
4	Low Temperature Operation	-20°C	240HRS	
5	Temperature Cycle	-20°C → 60°C (30min) (30min)	20CYCLE	
6	High Temperature & High Humidity Storage Test	50°C 80%RH (No condensation)	240HRS	

Note 1: a. The module should work properly.
 b. Before and after function test, The difference of consumptive current. Should be within 10%

Note 2: a. The module should work properly.
 b. The module won't be deformative, Color changeable or broken.
 c. The modules can't be apart.

Note 3: a. Before cosmetic and function test, The product must have enough recovery time, At least 24 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
OT150AXWDLV-00	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.