

TFT-DISPLAY DATASHEET

ONation
Model: OT101ZBVDLV-03

BRIEF SPEC.:

Main Feature	Landscape Type White LED Backlight Wide Viewing Angle
Active Screen Area	216.96 x 135.6 (mm)
Diagonal Format	10,1" 16:10
Resolution	1280 x 800
Colors	R.G.B Stripe
Backlight	LED, White
Brightness	350 cd/m ²
LED Life Time	15,000h (Typ.)
Interface	LVDS
Viewing Angle	-75~85(H), -75~85(V)
Touchscreen	no
Power Supply	3,3V (Typ.)
Module Outline	229.46 x 149.1 x 4.56 (mm)
Operation Temperature	-20... +70 °C
Storage Temperature	-30... +80 °C
Surface Treatment	N/A



ONation Corporation

TFT COLOR LCD MODULE

MODEL: OT101ZBWDLV-03

WXGA
LVDS interface

Version: P0.1

Customer : _____
Approved By : _____
Date: _____

ONATION		
APPROVAL	CHECKER	PREPARE
<i>Ian</i>	<i>Josh</i>	<i>Aiden</i>

[All information is subject to change without notice.](#)
[Please confirm the sales representative before starting to design your system](#)

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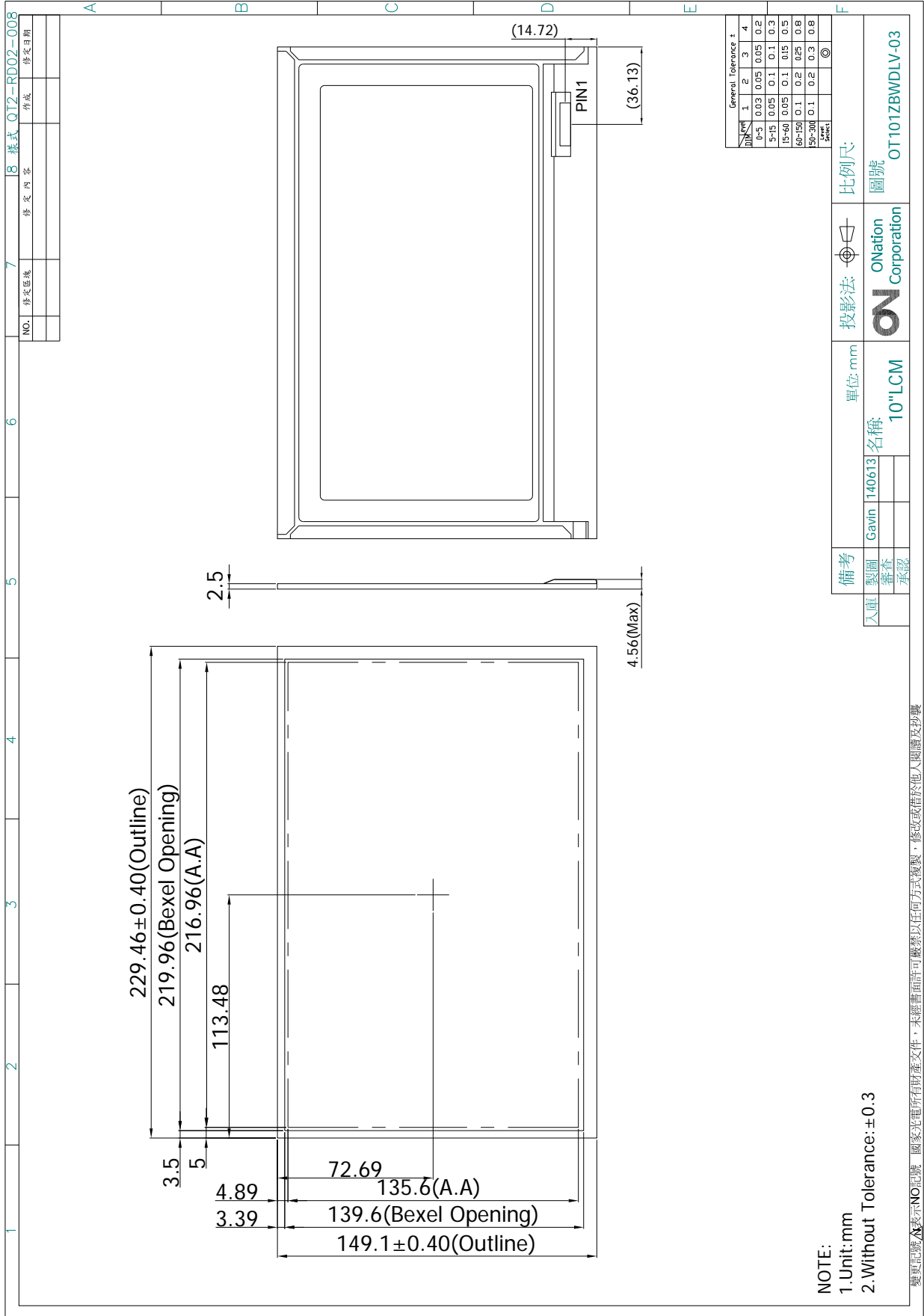
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2.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	1280(R.G.B) X 800
(2)	Module Size(mm)	229.46(H) X 149.1(V) X 4.56(D) (**)
(3)	Active Area(mm)	216.96(H) X 135.6(V)
(4)	Pixel Pitch(mm)	0.1695 (H) X 0.1695(V)
(5)	LCD / Polarizer Model	TFT , Transmissive, Normally/Black
(6)	Backlight Color	White, LED
(7)	Viewing Direction	Wide View Angle Horizontal : Right side 85°(typ.), Left side 85°(typ.) Vertical : Up side 85°(typ.), Down side 85°(typ.)
(8)	Gray Scale Inversion Direction	NO GSI
(9)	Electrical Interface	LVDS Interface
(10)	Color Configuration	R.G.B Stripe
(11)	Module Weight(g)	(190±5%)

(**)Module include PCB and component.

3. OUTLINE DIMENSIONS



4. INTERFACE PIN CONNECTION

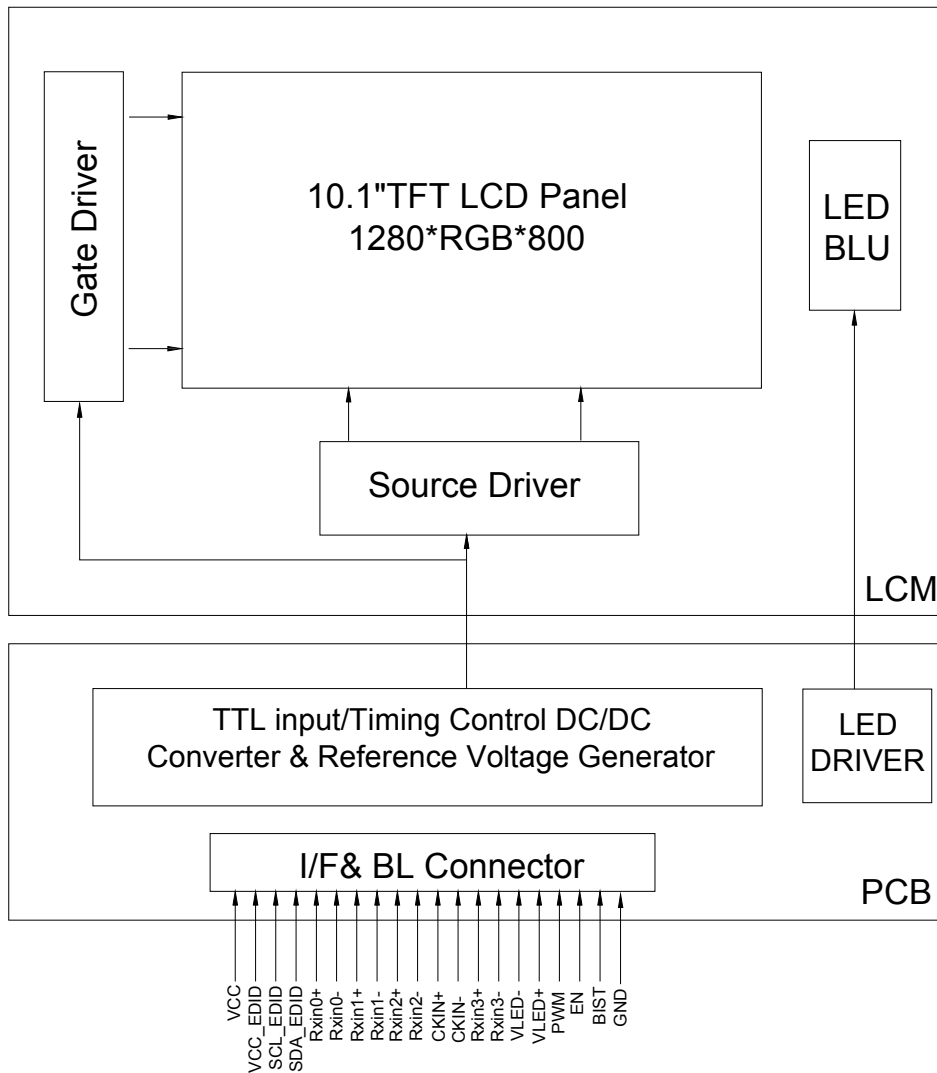
4.1 LCM PANEL DRIVING SECTION

CN1: STARCONN 300E40-0010RA-G3 or equivalent

Mating Connector : 111B40-1210TA-G3 or equivalent

PIN NO.	SIGNAL	FUNCTION
1	NC	No Connection
2	VCC	Power Supply
3	VCC	Power Supply
4	VCC_EDID	VDD_EDID
5	SCL_EDID	SCL_EDID
6	SDA_EDID	SDA_EDID
7	NC	No Connection
8	Rxin0-	-LVDS Differential Data Input
9	Rxin0+	+LVDS Differential Data Input
10	GND	Ground
11	Rxin1-	-LVDS Differential Data Input
12	Rxin1+	+LVDS Differential Data Input
13	GND	Ground
14	Rxin2-	-LVDS Differential Data Input
15	Rxin2+	+LVDS Differential Data Input
16	GND	Ground
17	CKIN-	-LVDS Differential Data Input
18	CKIN+	+LVDS Differential Data Input
19	GND	Ground
20	Rxin3-	-LVDS Differential Data Input
21	Rxin3+	+LVDS Differential Data Input
22	GND	Ground
23	VLED-	Ground for LED Driving
24	VLED-	Ground for LED Driving
25	VLED-	Ground for LED Driving
26	NC	No Connection
27	PWM	PWM Input Signal for LED Driver
28	EN	LED Enable Pin
29	NC	Reserved For CABC
30	NC	No Connection
31	VLED+	Power Supply for LED Driver
32	VLED+	Power Supply for LED Driver
33	VLED+	Power Supply for LED Driver
34	NC	No Connection
35	BIST	BIST pin
36	NC	No Connection
37	NC	No Connection
38	NC	No Connection
39	NC	No Connection
40	NC	No Connection

5. BLOCK DIAGRAM



6. ABSOLUTE MAXIMUM RATINGS

6.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

TA=25°C

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
Logic Supply Voltage	VCC	-0.3	7	V	
Supply VLED Voltage	VLED	-0.3	24	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 extremecase 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)	10~90		10~90		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=40°C & RH=90% ≤ 96Hrs.

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	-	(270)	(320)	mA	Note 1
Differential Input	VTH	-	-	+100	mV	
	VTL	-100	-	-	mV	

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

7.2 BACKLIGHT UNITS

Ta=25°C

ITEM	SYMBOL		MIN.	TYP.	MAX.	UNIT	REMARK
LED Input Voltage	VLED		6	12	21	V	Note 2
	ILED			TBD	TBD	mA	
LED Forward Voltage	VF		(2.9)	-	(3.2)	V	
LED Forward Current	IF		-	(20)	-	mA	
PWM Signal Voltage	V _{PWM-EN}	High	(3.0)	-	(3.6)	V	
		Low	(0)	-	(0.4)		
LED Enable Voltage	V _{LED-EN}	High	(3.0)	-	(3.6)	V	
		Low	(0)	-	(0.4)		
Input PWM Frequency	FPWM		(1)	-	(2)	KHz	DDIM≥1% Note 2
			(2)	-	(5)		DDIM≥2.5% Note 2
			(5)	-	(10)		DDIM≥5% Note 2
			(10)	-	(20)		DDIM≥10% Note 2
LED Life Time	LT		(15.000)	-	-	Hours	Note 1.2

Note 1: The LED life time define as the estimated time to 50% degradation of initial luminous.

Note 2: Operating temperature 25°C, humidity 55%

8. OPTICAL CHARACTERISTICS

Ta=25°C

ITEM		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT	REMARK
Contrast Ratio		CR		(600)	(800)	-	-	Note 1
Response Time		TR+TF		-	(25)	(50)	ms	Note 2
Chromaticity	Red	x	Viewing Normal Angle $\Theta_x=\Theta_y=0^\circ$	(0.511)	(0.561)	(0.611)	-	Note 4
		y		(0.284)	(0.334)	(0.384)	-	
	Green	x		(0.291)	(0.341)	(0.391)	-	
		y		(0.518)	(0.568)	(0.618)	-	
	Blue	x		(0.111)	(0.161)	(0.211)	-	
		y		(0.079)	(0.129)	(0.179)	-	
	White	x		(0.263)	(0.313)	(0.363)	-	
		y		(0.279)	(0.329)	(0.379)	-	
Viewing Angle	Hor.	θ_{x+}	Viewing Angle $\Theta_x=\Theta_y=0^\circ$ $CR \geq 10$	(75)	(85)	-	Deg.	Note 3
		θ_{x-}		(75)	(85)	-		
	Ver.	θ_{y+}		(75)	(85)	-		
		θ_{y-}		(75)	(85)	-		
Luminance		L	PWM=100%	(300)	(350)	-	cd/m ²	Center
Luminance Uniformity		YU	PWM=100%	(70)	(75)	-	%	Note 5

Note 1 : Definition of Contrast Ratio (CR) :

The contrast ratio can be calculated by the following expression.

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

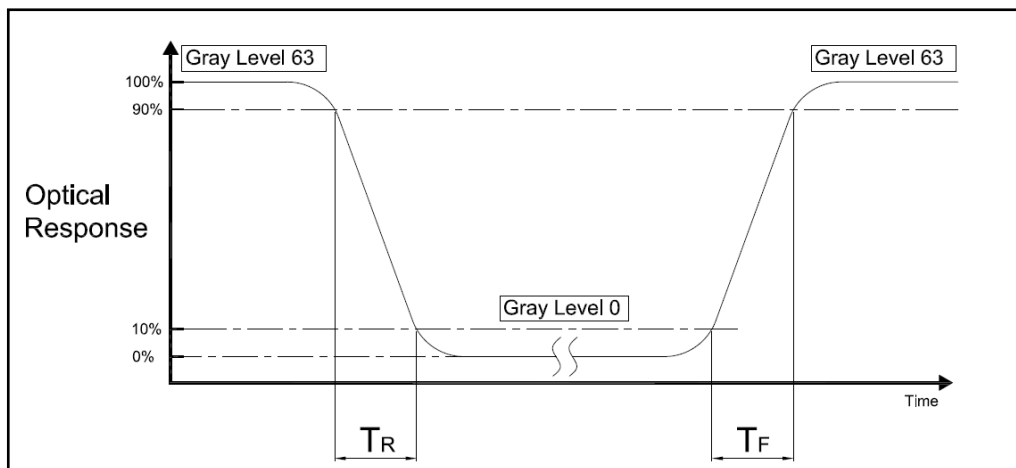
L63 : Luminance of gray level 63

L0 : Luminance of gray level 0

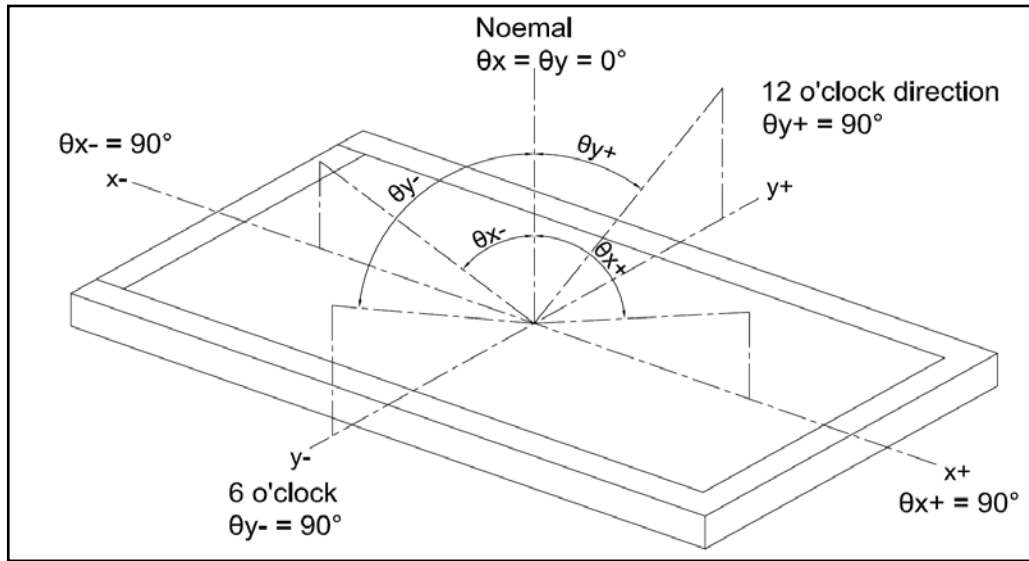
$$CR = CR(5)$$

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)

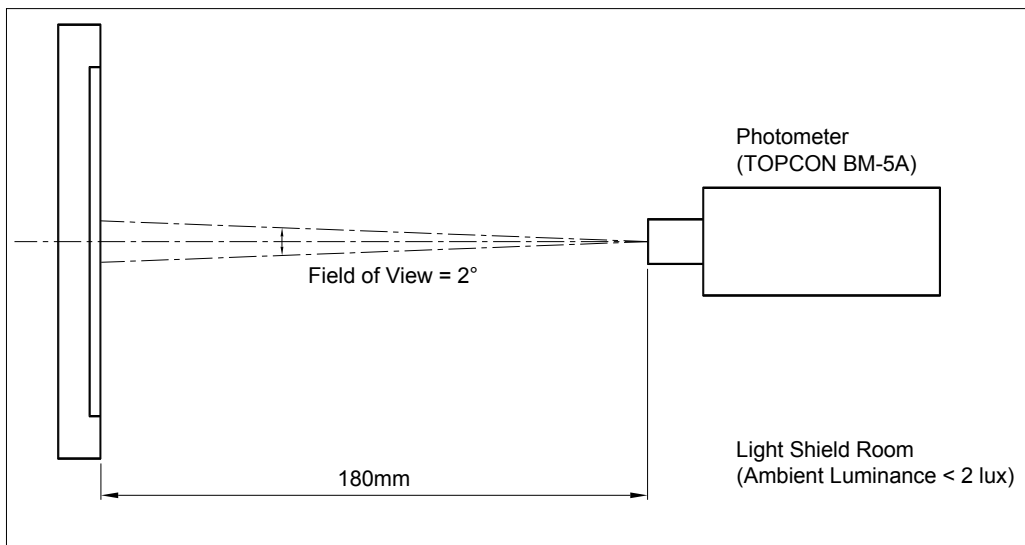


Note 3 : Definition of Viewing Angle

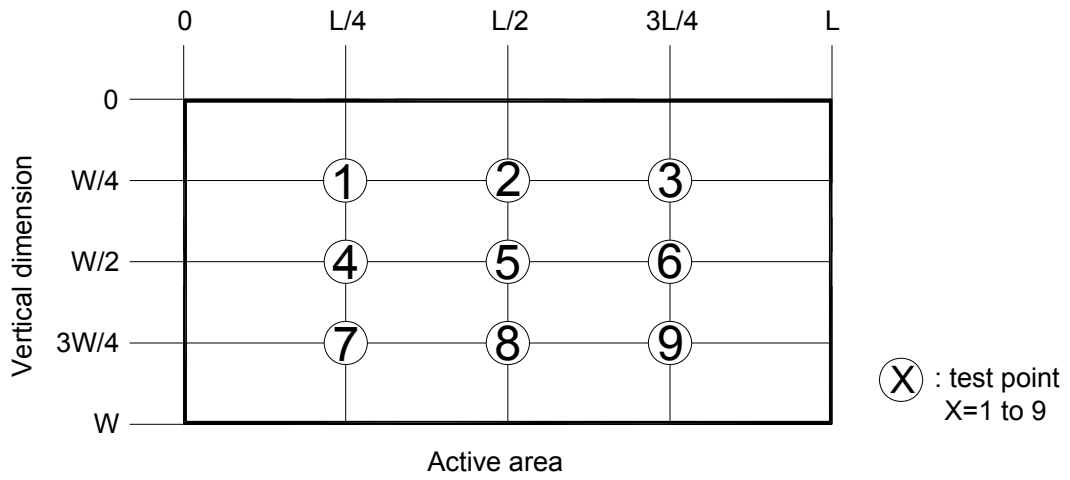


Note 4 : Measurement Set-Up:

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 :

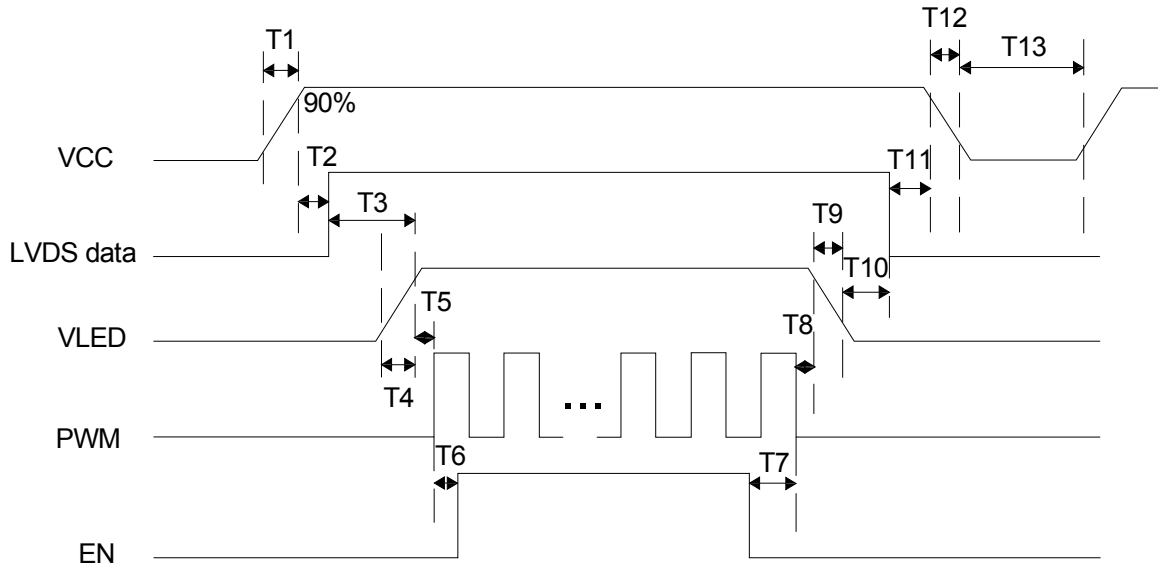


$$\left[1 - \frac{\text{MAX Luminance} - \text{Average Luminance}}{\text{Average Luminance}} \right] \times 100\% \geq 70\%$$

9. TIMING SPECIFICATIONS

9.1 POWER ON/OFF SEQUENCE

Power on/off sequence is as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.

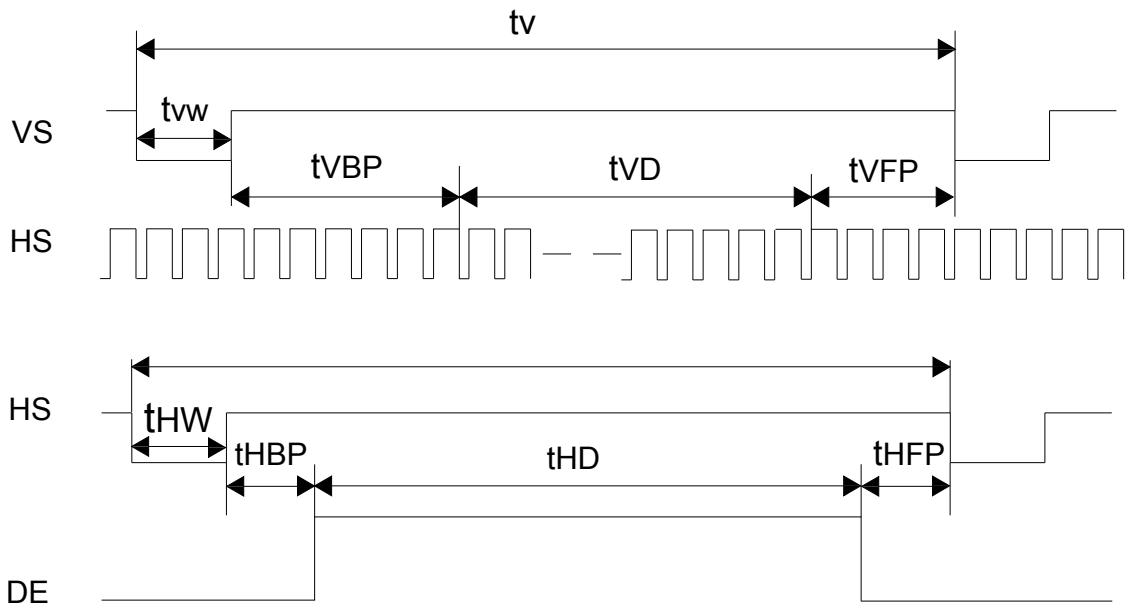


PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
VIN Rise Time	T1	0.5	--	10	ms
VIN Good to Signal Valid	T2	30	--	90	ms
Signal Valid to Backlight On	T3	200	--	--	ms
Backlight Power On Time	T4	0.5	--	--	ms
Backlight VDD Good to System PWM	T5	10	--	--	ms
System PWM ON to Backlight Enable ON	T6	10	--	--	ms
Backlight Enable Off to System PWM Off	T7	0	--	--	ms
System PWM Off to B/L Power Disable	T8	10	--	--	ms
Backlight Power Off Time	T9	0.5	10	30	ms
Backlight Off to Signal Disable	T10	200	--	--	ms
Signal Disable to Power Down	T11	0	--	50	ms
VIN fall Time	T12	0.5	10	30	ms
Power Off	T13	500	--	--	ms

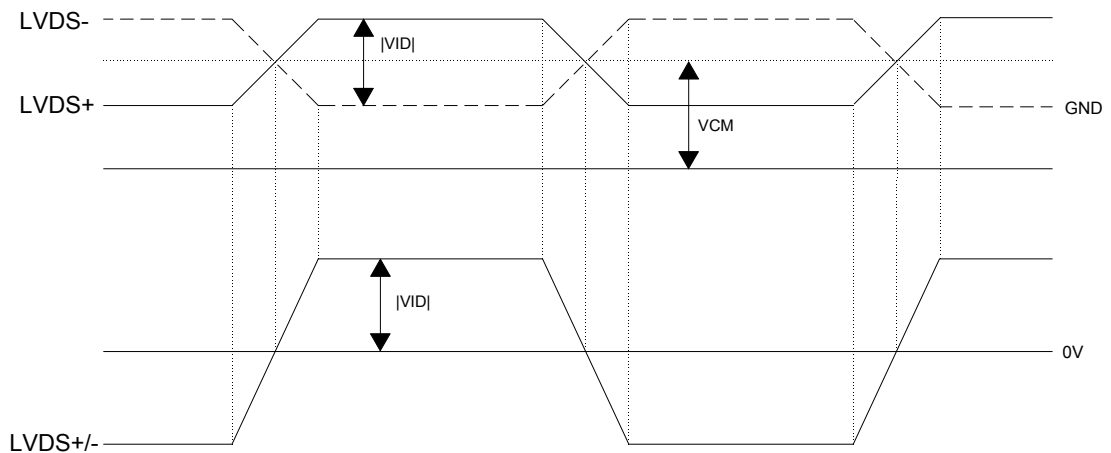
9.2 TIMING CHARACTERISTICS

TIMING CHARACTERISTICS

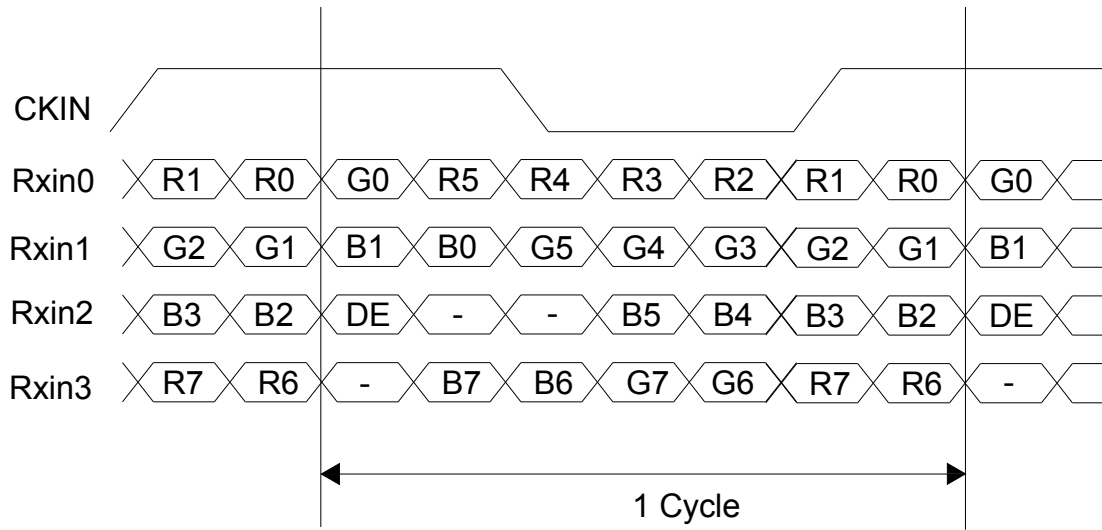
PARAMETER	SYMBOL	MIN	TYP..	MAX	UNIT.
Frame Rate	--	-	60		Hz
Frame Period	t_v	(815)	(823)	(1023)	line
Vertical Display Time	t_{VD}	800			line
Vertical Blanking Time	$t_{VW}+t_{VBP}+t_{VFP}$	(15)	(23)	(33)	line
1 Line Scanning Time	t_H	(1410)	(1440)	(1470)	clock
Horizontal Display Time	t_{HD}	1280			clock
Horizontal Blanking Time	$t_{HW}+t_{HBP}+t_{HFP}$	(60)	(160)	(190)	clock
Clock Rate	$1/TC$	(68.9)	(71.1)	(73.4)	MHz



Voltage Definitions



LVDS Data Mapping



10. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	(80°C)	(96HRS)	
2	Low Temperature Storage	(-30°C)	(96HRS)	
3	High Temperature Operation	(70°C)	(96HRS)	
4	Low Temperature Operation	(-20°C)	(96HRS)	
5	Temperature Cycle	(-30°C~80°C)	0.5HRS/ 10CYCLE	
6	High Temperature Humidity Storage	(40°C 90%RH)	(96HRS)	

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 2 hours at room temperature.

10.1 VIBRATION TEST :

10.1.1 STATE LABORATORY ENVIRONMENT :

Room temperature : $25\pm 3^{\circ}\text{C}$
Relative humidity : $55\pm 20\% \text{RH}$

10.1.2 TEST METHOD / SPECIFICATION :

Sample Status : Non-packaged single state
Waveform : Sine
Frequency : 10~55~10Hz
Full amplitude : 1.5mm
Vibration direction : X,Y,Z Axis (3 Axial)
Test time : Each 2Hour / X,Y,Z Axis , Altogether 6 Hour

10.2 MECHANICAL SHOCK TEST :

10.2.1 STATE LABORATORY ENVIRONMENT :

Room temperature : $24\pm 3^{\circ}\text{C}$
Relative humidity : $55\pm 20\% \text{RH}$

10.2.2 TEST METHOD / SPECIFICATION :

Sample Status : Non-packaged single state
Waveform : Half-sine
Acceleration : 100G
Shock Time : 6ms
Impact direction : 6 Directions ($\pm X, \pm Y, \pm Z$ axes)
Number of shocks : Each direction 3 Secondary , Altogether 18 Secondary

11. LCM INSPECTION STANDARD

Inspection specifications refer ONation Corporation LCM INSPECTION STANDARD Document.
Document Number : QT3-QC-A-I003

12 PACKAGE INFORMATION

LCM MODEL	LCM QTY. IN THE BOX	INNER BOX SIZE(mm)	WEIGHT	REMARK
OT101ZBWDLV-03	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.