

TFT-DISPLAY DATASHEET

ONation
Model:OT185ZOWDLN-00

BRIEF SPEC.:

Main Feature	LandscapeType Wide Viewing Angle
Active Screen Area	409.8 x 230.4 (mm)
Diagonal Format	18.5 " 16:9
Resolution	1366 X 768
Colors	[8 Bit]
Backlight	LED White
Brightness	1000 cd/m ²
LED Life Time	
Interface	LVDS
Viewing Angle	85/85 L/R 80/80 up/down
Touchscreen	no
Power Supply	5 V (Typ.)
Module Outline	430.0 x 254.6 x 16.4 (mm)
Operation Temperature	-0... +50 °C
Storage Temperature	-20... +60 °C
Surface Treatment	



ONation Corporation

TFT COLOR LCD MODULE

MODEL: OT185ZOWDLN-00
(Complied with RoHS)

WSVGA
LVDS interface

Version: P0.1

Customer : _____
Approved By : _____
Date: _____

ONATION		
APPROVAL	CHECKER	PREPARE
<i>Jan</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](#)

C O N T E N T S

NO.	ITEM	PAGE
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	5
7	ELECTRICAL CHARACTERISTICS	6
8	OPTICAL CHARACTERISTICS	7~9
9	TIMING SPECIFICATIONS	10~11
10	RELIABILITY TEST	12~13
11	MODEL NUMBER SYSTEM	14
12	LCM INSPECTION STANDARD	15
13	PACKAGE INFORMATION	15
14	PRECAUTIONS FOR USE	16

1.RECORD OF REVISION

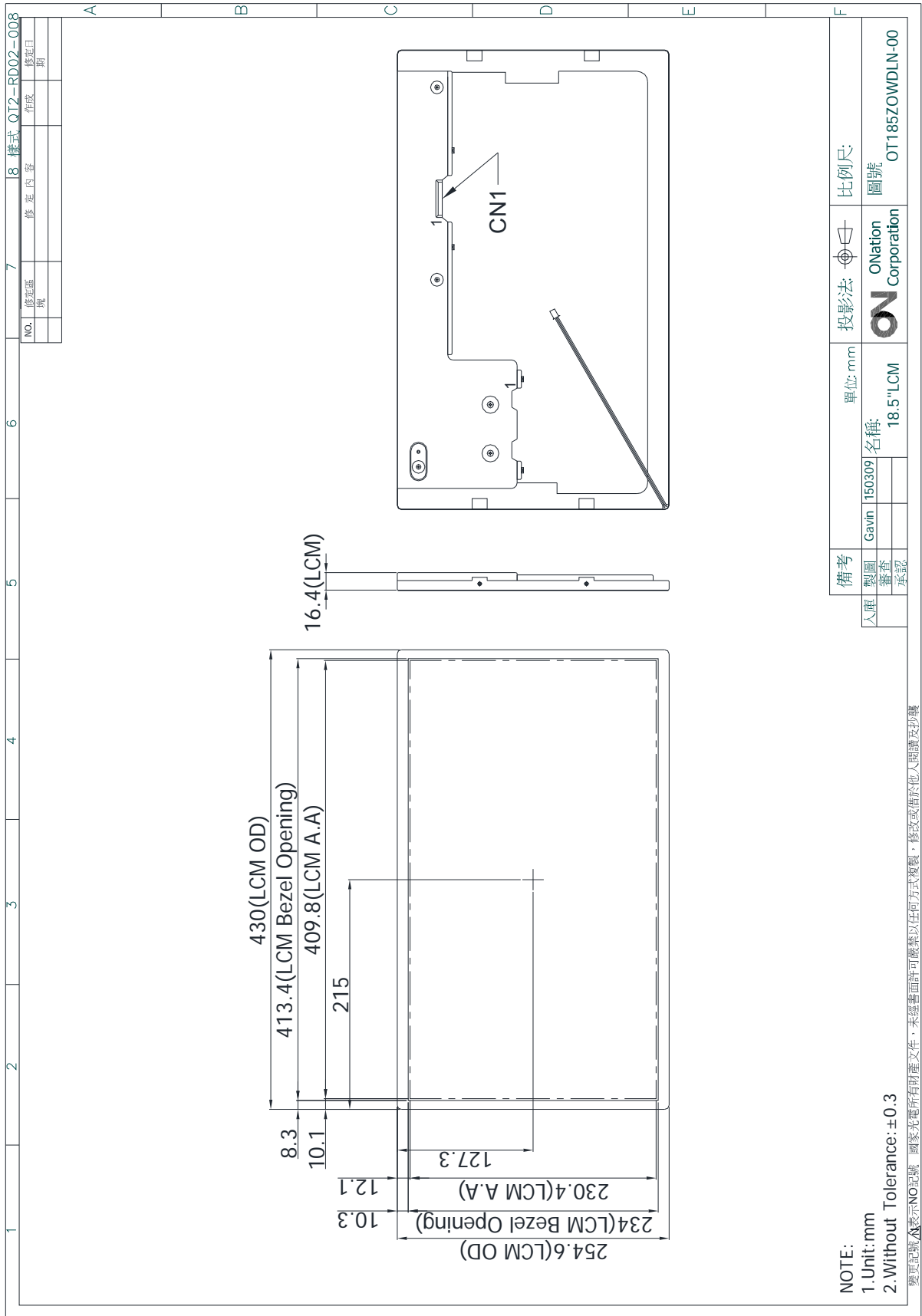
REV	DATE	PAGE	SUMMARY
0.1	2015.03.12	ALL	Preliminary specification was first issued.

2.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	1366(R.G.B) X 768
(2)	Module Size(mm)	430(H) X 254.6(V) X 164(D) (**)
(3)	Active Area(mm)	409.8(H) X 230.4(V)
(4)	Pixel Pitch(mm)	0.3 (H) X 0.3(V)
(5)	LCD / Polarizer Model	TN mode, Normally/White
(6)	Backlight Color	White, LED
(7)	Viewing Direction	Wide View Angle Horizontal : Right side 85°(typ.), Left side 85°(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

(**)Module include PCB and component.

3. OUTLINE DIMENSIONS



4. INTERFACE PIN CONNECTION

4.1 LCM PANEL DRIVING SECTION

CN1 Connector:FI-XB30SRL-HF11(JAE) or 093F30-B0T01A(CHIEF LAND)

Mating Connector: FI-X30HL

PIN NO.	SIGNAL	FUNCTION	REMARK
1	NC	No connection	
2	NC	No connection	
3	NC	No connection	
4	GND	Ground	
5	RxIN0-	Differential Clock Input,CH0(Negative)	
6	RxIN0+	Differential Clock Input,CH0(Positive)	
7	GND	Ground	
8	RxIN1-	Differential Clock Input,CH1(Negative)	
9	RxIN1+	Differential Clock Input,CH1(Positive)	
10	GND	Ground	
11	RxIN2-	Differential Clock Input,CH2(Negative)	
12	RxIN2+	Differential Clock Input,CH2(Positive)	
13	GND	Ground	
14	RxCLKIN-	Differential Clock Input (Negative)	
15	RxCLKIN+	Differential Clock Input (Positive)	
16	GND	Ground	
17	RxIN3-	Differential Clock Input,CH3(Negative)	
18	RxIN3+	Differential Clock Input,CH3(Positive)	
19	GND	Ground	
20	NC	No connection	
21	NC	No connection	
22	NC	No connection	
23	GND	Ground	
24	GND	Ground	
25	GND	Ground	
26	VCC	+5V Power Supply	
27	VCC	+5V Power Supply	
28	VCC	+5V Power Supply	
29	VCC	+5V Power Supply	
30	VCC	+5V Power Supply	

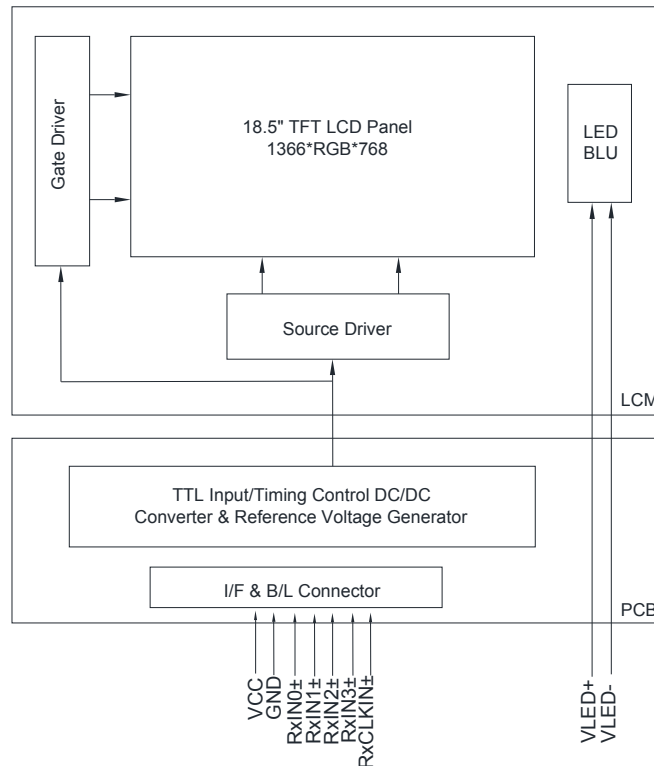
4.2 BACKLIGHT PANEL DRIVING SECTION

CN2 Connector:PHR-2(JST)

Mating Connector: S2B-PH-KL

PIN NO.	SIGNAL	FUNCTION
1	VLED-	LED Low Voltage
2	VLED+	LED High Voltage

5. BLOCK DIAGRAM



6. ABSOLUTE MAXIMUM RATINGS

6.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
Supply Voltage	VCC	4.5	5.5	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)	0	50	-20	60	Note 1,2
Humidity(% RH)	5	90	5	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.

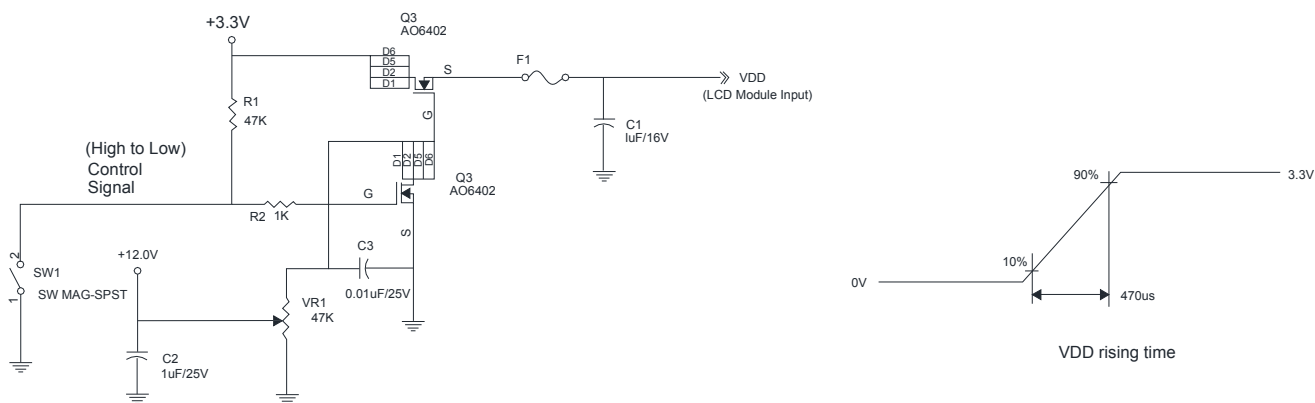
Note 3 : Storage Ta=50°C & RH=80% ≤ 240Hrs.

7. ELECTRICAL CHARACTERISTICS

7.1 ELECTRICAL CHARACTERISTICS OF LCD

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Power Voltage For LCD	VCC	4.5	5.0	5.5	V	
	ICC	-	900	1100	mA	VCC=5.0V, All Black Pattern at 60Hz
	ICC	-	900	1100	mA	VCC=5.0V, H-Stripe Pattern at 60Hz
	PDD	-	4.5	5.5	W	VCC=5.0V, All Black Pattern at 60Hz
	PDD	-	-	-	W	VCC=5.0V, H-Stripe Pattern at 75Hz
Inrush Current	IRush	-	-	3	A	
VDD Power	VDDrp	-	-	200	mV	VCC=5.0V, All Black Pattern at 75Hz



7.2 BACKLIGHT UNITS

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
LED Driving Voltage	VLED	9.8	-	63.7	V	
	ILED	-	TBD	-	mA	

Note1: Backlight LED power consumption is calculated by $PL=VL \times IL$.

Note2: The life time of a LED is defined as when the brightness is larger than 50% of its original value and the effective discharge length is longer than 80% of its original length (Effective discharge length is defined as an area that has equal to or more than 70% brightness compared to the brightness at the center point of LED.) as the time in which it continues to operate under the condition at $Ta = 25 \pm 2$.

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)	(1000)	-	-	Note 1
Response Time	TR+TF		-	5	7.5	ms	Note 2
Chromaticity	White	Wx	(0.263)	(0.313)	(0.363)	-	Note 4
		Wy	(0.279)	(0.329)	(0.379)	-	
Viewing Angle	Hor.	θ_{x+}	75	85	-	Deg.	Note 3
		θ_{x-}	75	85	-		
	Ver.	θ_{y+}	70	80	-		
		θ_{y-}	70	80	-		
Luminance	L	PWM=100%	-	(1000)	-	cd/m ²	
Luminance Uniformity	YU	PWM=100%	65	70	-	%	Note 5

Note 1 : Definition of Contrast Ratio (CR) :

The contrast ratio can be calculated by the following expression.

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

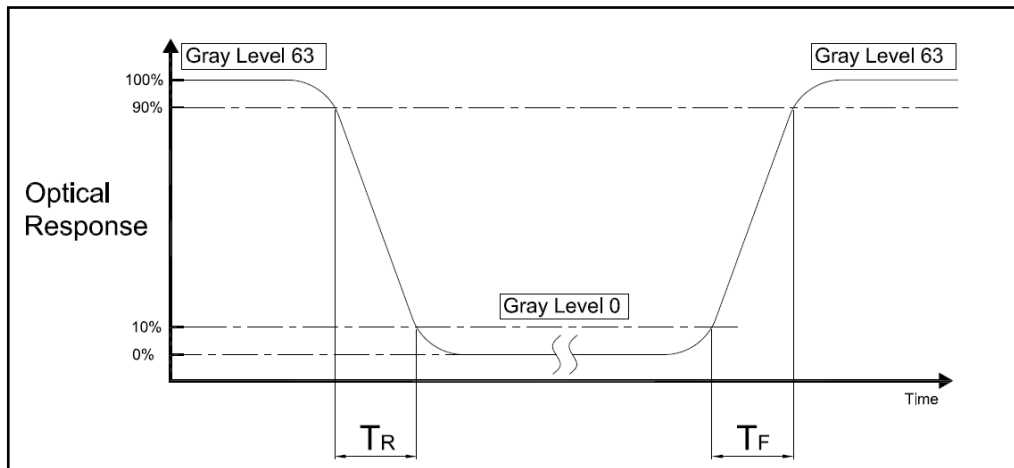
L63 : Luminance of gray level 63

L0 : Luminance of gray level 0

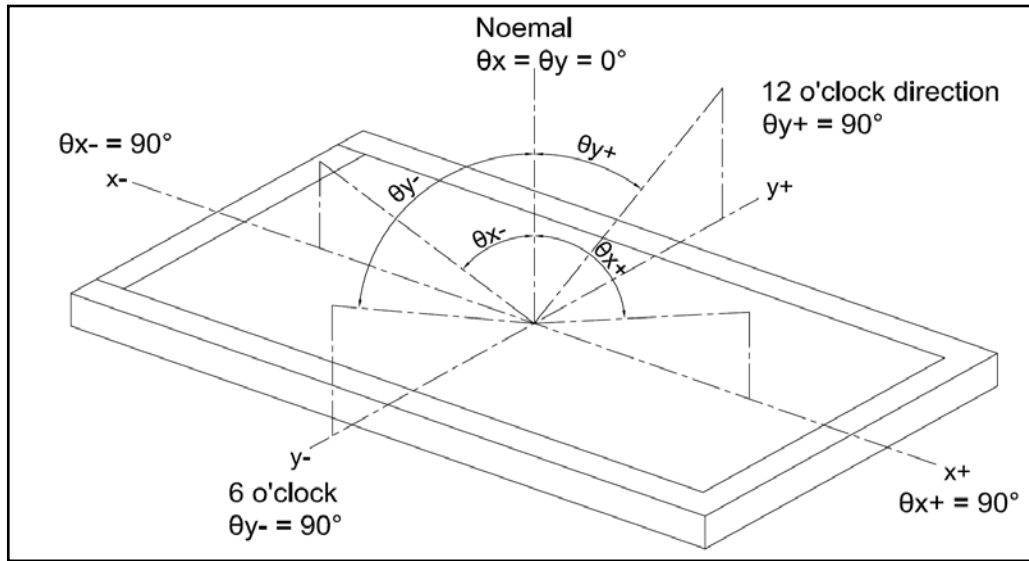
$$\text{CR} = \text{CR}(5)$$

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)

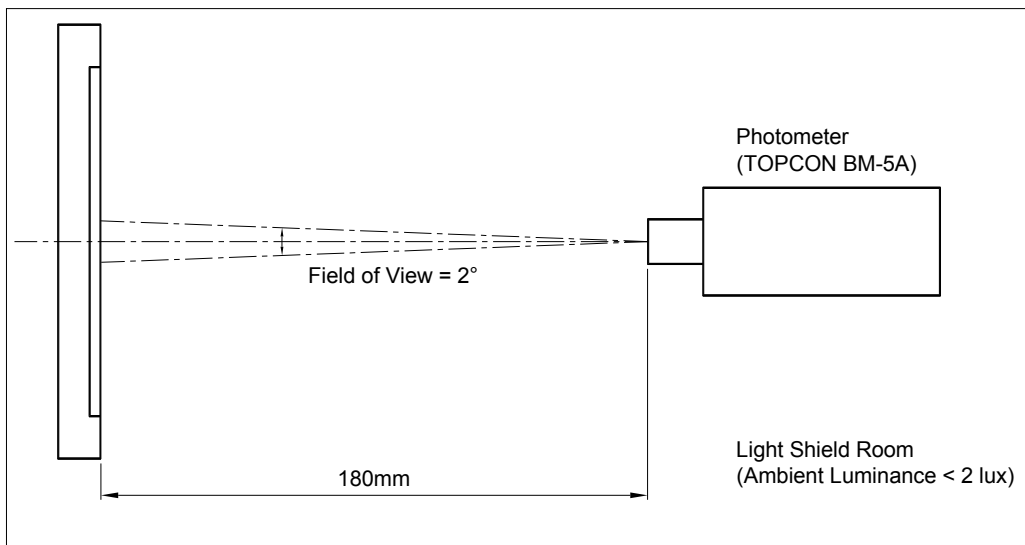


Note 3 : Definition of Viewing Angle

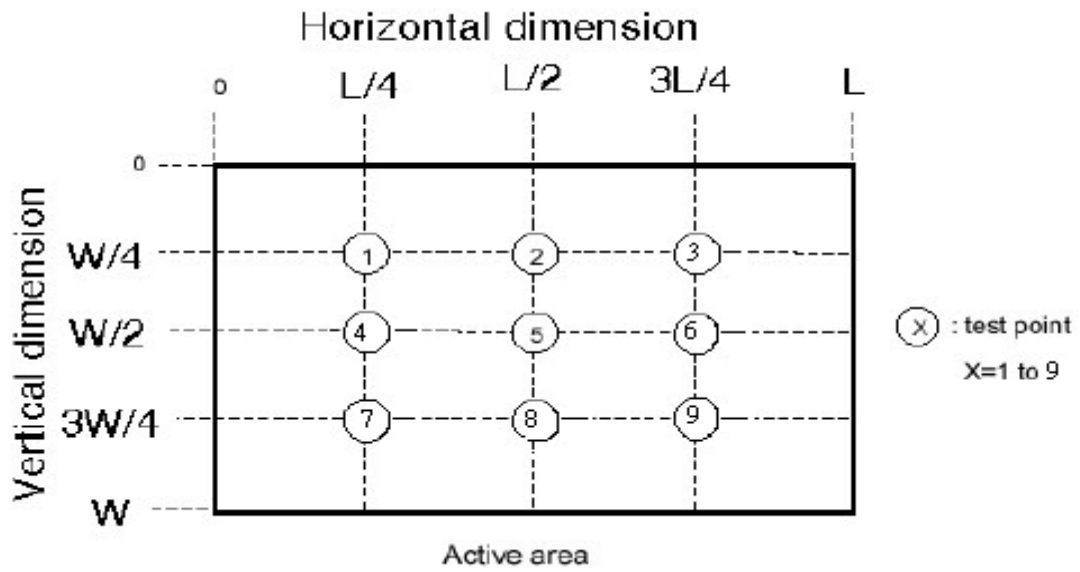


Note 4 : Measurement Set-Up:

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 :



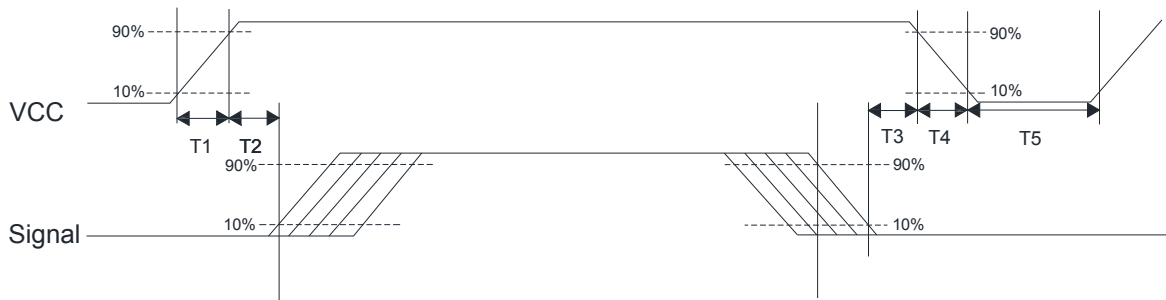
$$\left(1 - \frac{\text{MAX Luminance} - \text{Average Luminance}}{\text{Average Luminance}} \right) \times 100\% \geq 65\%$$

9. TIMING SPECIFICATIONS

9.1 POWER ON/OFF SEQUENCE

VCC power and lamp 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 VCC is off.

PARAMETER	MIN.	TYP.	MAX.	UNIT
T1	0.5	-	10	ms
T2	0	40	50	ms
T3	0.5	16	50	ms
T4	-	-	100	ms
T5	1000	-	-	ms



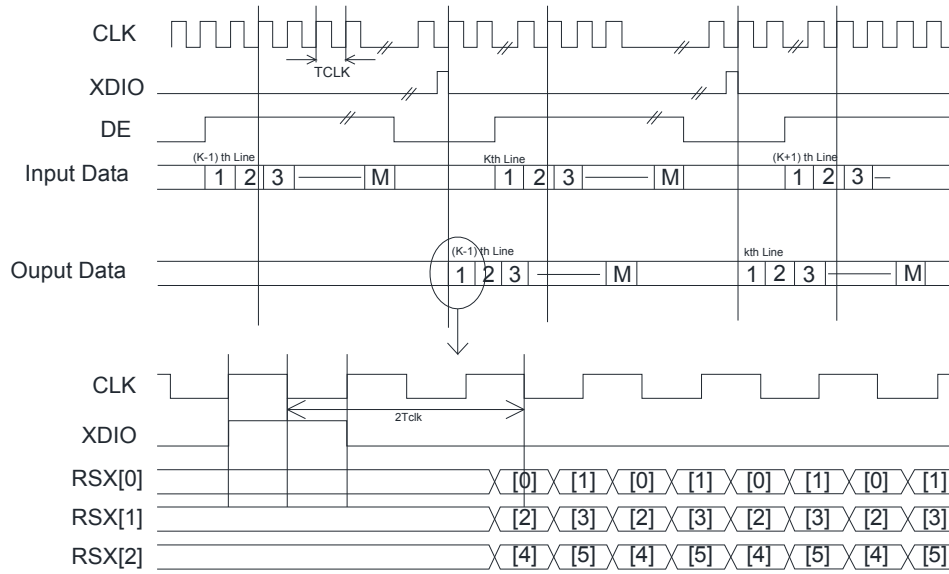
9.2 TIMING CHARACTERISTICS

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Vertical Period	Tv	776	808	1023	Th	
Vertical Active	Tdisp(v)	768	768	768	Th	
Vertical Blanking	Tbp(v)+Tfp(v)+PWvs	8	40	255	Th	
Horizontal Period	Th	1416	1606	2047	Tclk	
Horizontal Active	Tdisp(h)	1366	1366	1366	Tclk	
Horizontal Blanking	Tbp(h)+Tfp(h)+PWhs	50	240	681	Tclk	
Clock Period	Tclk	-	12.8	-	ns	
Clock Frequency	Freq	-	78	90	MHz	
Frame Rate Frequency	1/Tv	50	60	75	Hz	

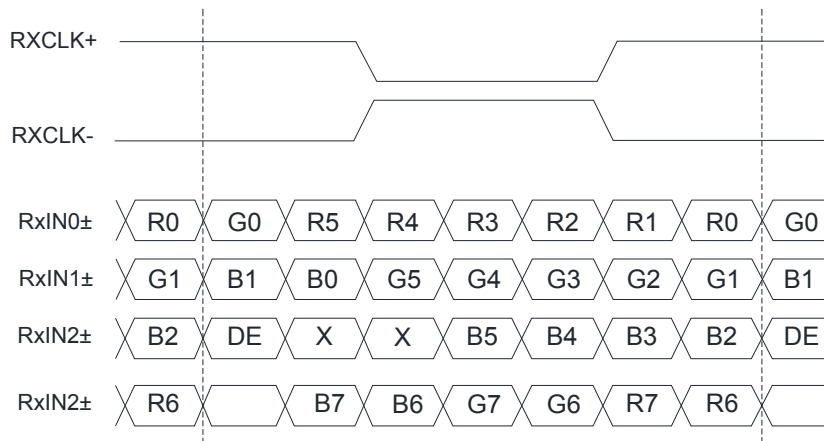
Note1: DE mode only.

Note 2: Clock Frequency 90MHz(max)=1416(H)*847(V)*75Hz

9.3 TIMING DIAGRAM



9.4 THE INPUT DATA FORMAT



10. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	60°C	240HRS	
2	Low Temperature Storage	-20°C	240HRS	
3	High Temperature Operation	50°C	240HRS	
4	Low Temperature Operation	0°C	240HRS	
5	High Temperature Humidity Storage	50°C , 80%RH	240HRS	
6	Temperature Cycle	(-20°C) ←→ (60°C) (30min) (30min)	1HRS/ 50CYCLE	

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 :

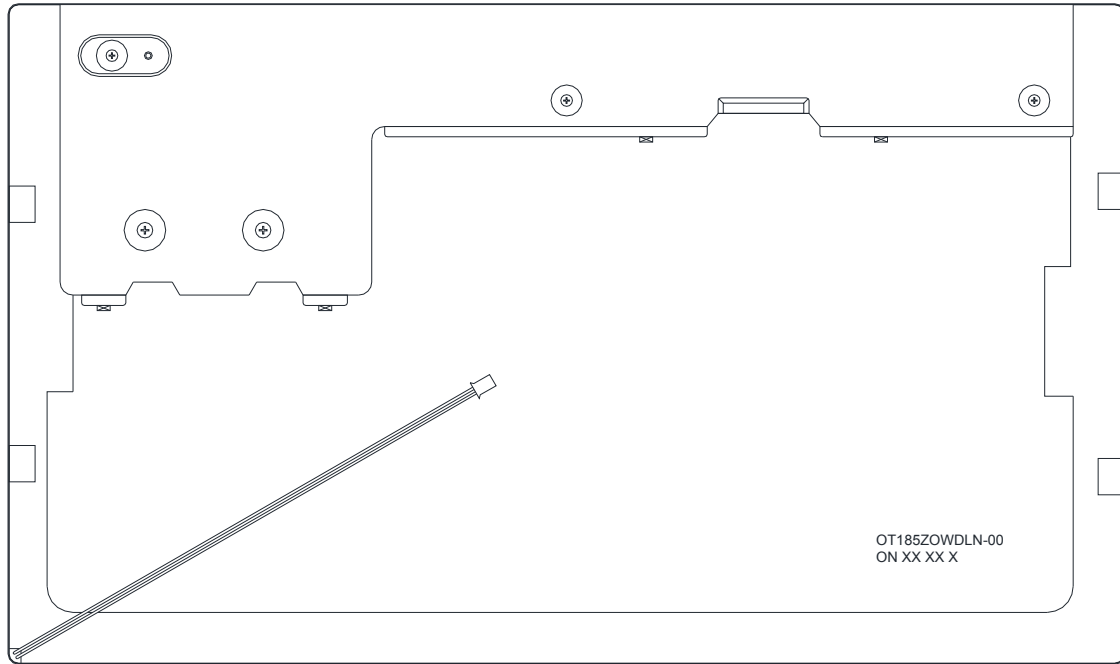
10.2.1 STATE LABORATORY ENVIRONMENT :

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 : 1G
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.MODEL NUMBER SYSTEM



(a) MODEL NAME : OT185ZOWDLN-00

(b) LOT NO : XX XX X

CODE	MEANING	DESCRIPTION
<u>XX</u>	Year	2013=13, 2014=14, 2015=15,
<u>XX</u>	Month	01,02,03,04,05,06,07,08,09,10,11,12
<u>X</u>	Week	1,2,3,4,5,6

12. LCM INSPECTION STANDARD

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

13. PACKAGE INFORMATION

LCM MODEL	LCM QTY. IN THE BOX	INNER BOX SIZE(mm)	WEIGHT	REMARK
OT185ZOWDLN-00	TBD	TBD	TBD	

14. PRECAUTIONS FOR USE

14.1 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.

14.2 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.

14.3 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.

14.4 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.