

TFT-DISPLAY DATASHEET

ONation
Model: OT101MEWDLN-00

BRIEF SPEC.:

Main Feature	Landscape Normally Black Display Mode
Active Screen Area	216.58 x 135.36 (mm)
Diagonal Format	10,1 " 16:10
Resolution	1920 X 1200
Colors	RGB Vertical Stripe
Backlight	LED
Brightness	650 cd/m ²
LED Life Time	15K (h)
Interface	LVDS
Viewing Angle	85/85 L/R 85/85
Touchscreen	No
Power Supply	3.3 V (Typ.)
Module Outline	229.08 x 153.73 x 4.45 (mm)
Operation Temperature	0... +50 °C
Storage Temperature	-20... +60 °C
Surface Treatment	Hard Coating



ONation Corporation

TFT COLOR LCD MODULE

MODEL: OT101MEWDLN-00

(Complied with RoHS)

WUXGA

LVDS interface(2 Port)

Version: P0.4

Customer : _____
Approved By : _____
Date: _____

ONATION		
APPROVAL	CHECKER	PREPARE
Ian	Josh	Ian

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

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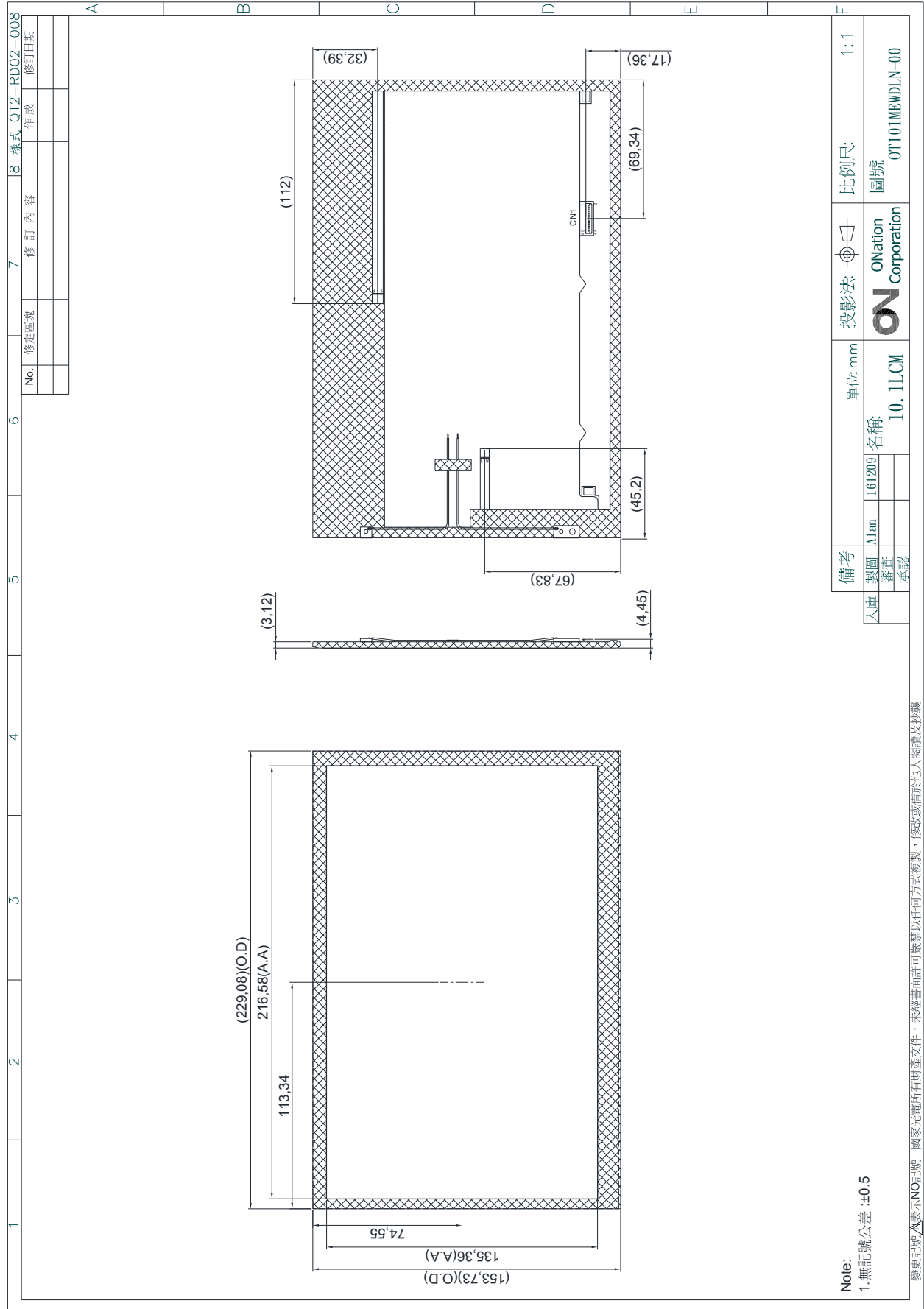
1.RECORD OF REVISION

Rev	DATE	PAGE	SUMMARY
0.1	2016.12.12	ALL	Preliminary specification was first issued.
0.2	2016.12.20	16	Document Number : TBD → QT3-QC-A-OT101MEWDLN-00
0.3	2017.02.08	8	Luminance=(350)min. (500)typ → Luminance=(500)min. (700)typ
0.4	2017.08.10	8	Luminance=(500)min. (700)typ → Luminance=(650)min.

2.MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	1920R.G.B X 1200
(2)	Module Size(mm)	229.08(W) X153.73(H) X 4.45 (D)
(3)	Active Area(mm)	216.58(W) X135.36(H)
(4)	Pixel Pitch(mm)	0.1128(W) X0.1128(H)
(5)	LCD / Polarizer Model	HFFS , Normally Black,Hard coating
(6)	LED Backlight Color	White
(7)	Viewing Direction	Wide viewing angle Horizontal :Right side 85°(Typ),Left side85°(Typ) Vertical: Up side 85°(Typ),Down side 85°(Typ)
(8)	Color Configuration	R.G.B Vertical Stripe
(9)	Interface	LVDS(2 Port)
(10)	Module Weight(g)	TBD

3. OUTLINE DIMENSIONS



4. INTERFACE PIN CONNECTION

CN1 Connector : PANASONIC AYF334535 or Equivalen

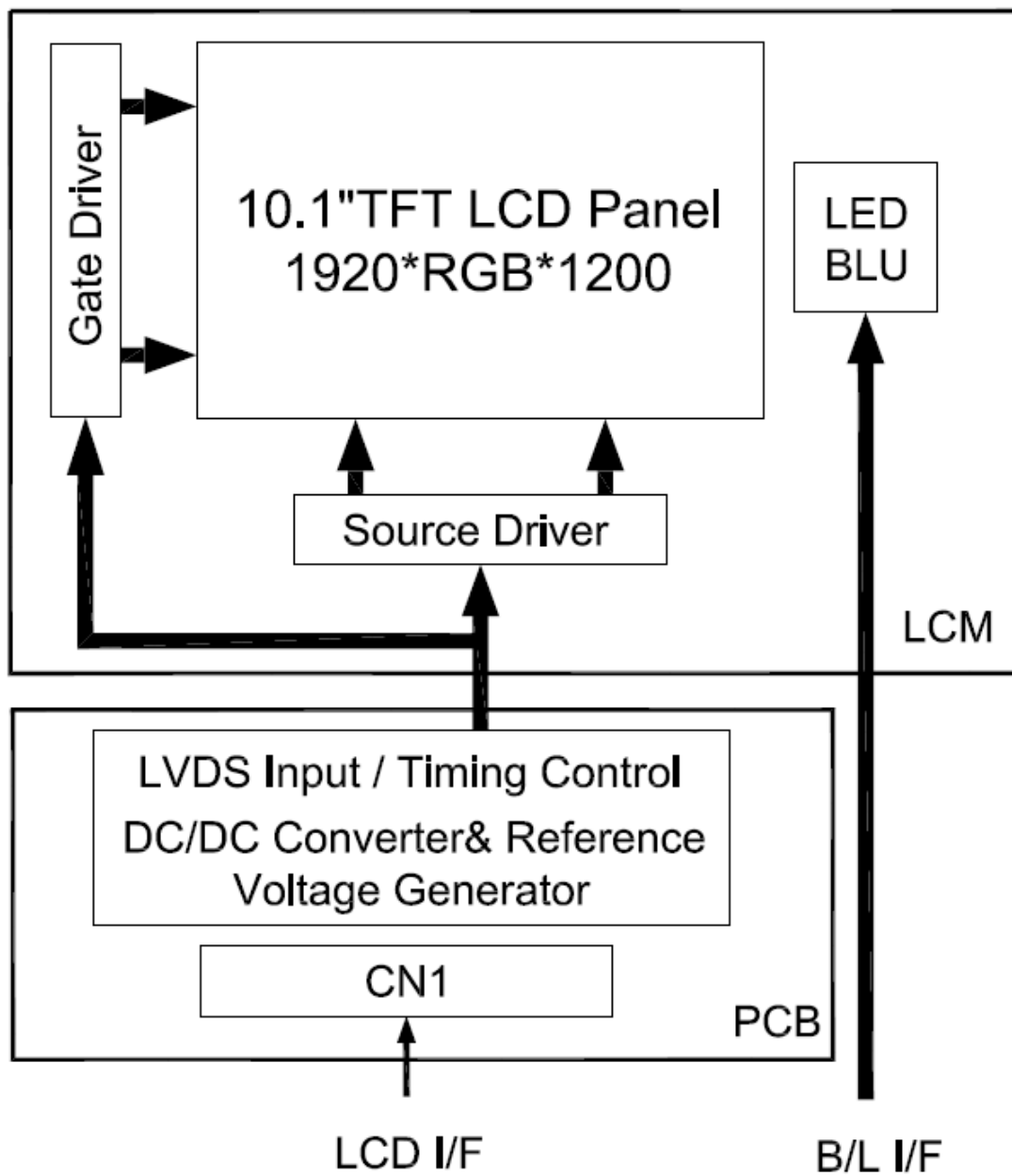
PIN NO.	SIGNAL	FUNCTION
1	VDD	Power Supply, 3.3V(Typical)
2	VDD	Power Supply, 3.3V(Typical)
3	VDD	Power Supply, 3.3V(Typical)
4	VDD	Power Supply, 3.3V(Typical)
5	NC(BIST)	BIST testing
6	2-L3P	LVDS 2 data 3 (positive)
7	GND	Ground
8	2-L3N	LVDS 2 data 3 (negative)
9	GND	Ground
10	GND	Ground
11	1-L3P	LVDS 1 data 3 (positive)
12	2-LCNKP	LVDS 2 Clock (positive)
13	1-L3N	LVDS 1 data 3 (negative)
14	2-LCNKN	LVDS 2 Clock (negative)
15	GND	Ground
16	GND	Ground
17	1-LCNKP	LVDS 1 Clock (positive)
18	2-L2P	LVDS 2 data 2 (positive)
19	1-LCNKN	LVDS 1 Clock (negative)
20	2-L2N	LVDS 2 data 2 (negative)
21	GND	Ground
22	GND	Ground
23	1-L2P	LVDS 1 data 2 (positive)
24	2-L1P	LVDS 2 data 1 (positive)
25	1-L2N	LVDS 1 data 2 (negative)
26	2-L1N	LVDS 2 data 1 (negative)
27	GND	Ground
28	GND	Ground
29	1-L1P	LVDS 1 data 1 (positive)
30	2-L0P	LVDS 2 data 0 (positive)
31	1-L1N	LVDS 1 data 1 (negative)
32	2-L0N	LVDS 2 data 0 (negative)
33	GND	Ground

PIN NO.	SIGNAL	FUNCTION
34	GND	Ground
35	1-L0P	LVDS 1 data 0 (positive)
36	NC	NC
37	1-L0N	LVDS 1 data 0 (negative)
38	NC	NC
39	NC	NC
40	CABC_EN	CABC Function Enable Pin
41	NC	NC
42	NC	NC
43	NC	NC
44	NC	NC
45	NC	NC

FPC 8Pin Pitch=0.5mm

PIN NO.	SIGNAL	FUNCTION
1	Vout	LED Output
2	NC	NC
3	ILED1	LED Feedback 1
4	ILED2	LED Feedback 2
5	ILED3	LED Feedback 3
6	ILED4	LED Feedback 4
7	ILED5	LED Feedback 5
8	ILED6	LED Feedback 6

5. BLOCK DIAGRAM



6.ABSOLUTE MAXIMUM RATINGS

6.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
Supply Voltage	VDD	0	+4.0	V	
Reversr Voltage	VR	-	5	V	Single LED
Forward Current	IF	-	20	mA	Single LED

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	65	Note 1,2
Humidity(% RH)	5 ~ 90		5 ~ 90		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=40°C & RH=90% ≤ 240Hrs.

7.ELECTRICAL CHARACTERISTICS

7.1 ELECTRICAL CHARACTERISTICS OF LCD

Ta=25°C

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Power Voltage For LCD		VDD	3.0	3.3	3.6	V	
		IDD	-	290	303	mA	Note 1
Logic Input Voltage (LVDS: IN+,IN-)	Common Voltage	VCM	$\frac{ VID }{2}$	-	$2.4 \cdot \frac{ VID }{2}$	V	
	Differential Input Voltage	VID	200	-	600	mV	
	Threshold Voltage (HIGH)	VTH	-	-	100	mV	
	Threshold Voltage (LOW)	VTL	-100	-	-	mV	When VCM = +1.2V

Note 1 : Test condition : VDD=3.3V ; Test Pattern : Black

7.2 BACKLIGHT UNITS

Ta=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
LED Driving Voltage	VLED (ILED=120mA)	18.2	19.6	21	V
	ILED	-	120	-	mA
LED Life Time (For Reference Only)	Ta=25°C 60-70%RH (Note 1)	15,000	-	-	Hr

Note 1: The LED of B/L is drive by current only, drive voltage is for reference only. drive voltage can make driving current under safety area(current between minimum and maximum). 15,000 hours is only an estimate for reference.

Note 2: The lifetime of LED is defined as the time when it continues to operate under the conditions at Ta= 25 ±2°C and ILED = 120mA (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+TF		-	30	40	ms	Note 2
Color chromaticity	White	x		(0.243)	(0.293)	(0.343)	-	
		y	(0.279)	(0.329)	(0.379)	-		
Viewing Angle	Hor.	θ_L	Viewing Angle $\Theta_x=\Theta_y=0^\circ$ $CR \geq 10$	80	85	-	Deg.	Note 3
		θ_R		80	85	-		
	Ver.	θ_T		80	85	-		
		θ_B		80	85	-		
Luminance		L	PWM=100%	(650)	-	-	cd/m2	center
Luminance Uniformity		YU		75	80	-	%	Note 5

Note 1 : Definition of Contrast Ratio (CR) :

The contrast ratio can be calculated by the following expression.

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

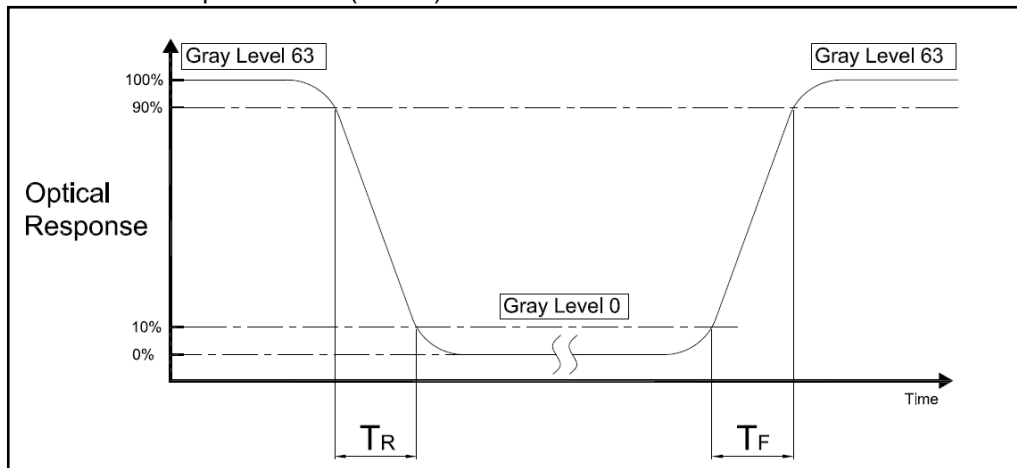
L63 : Luminance of gray level 63

L0 : Luminance of gray level 0

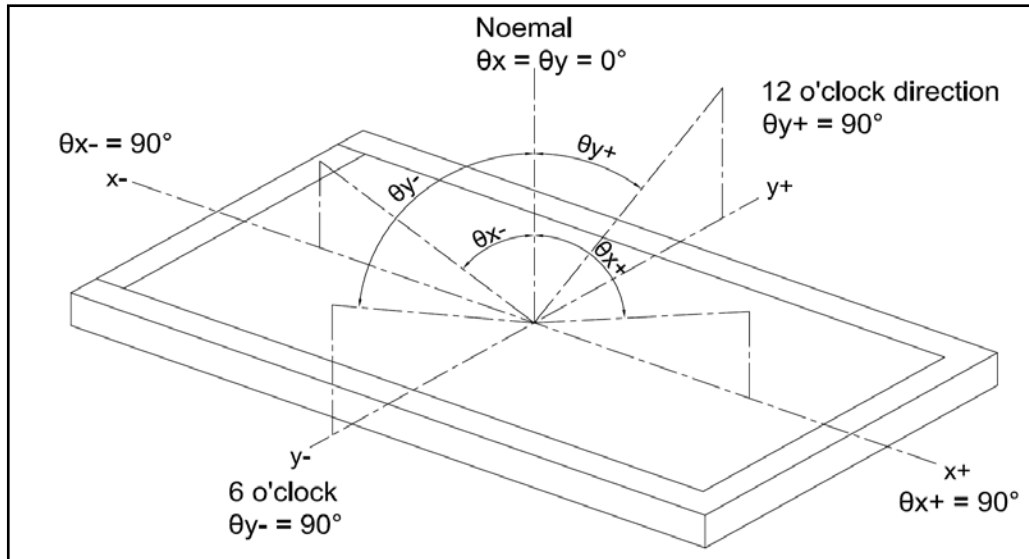
$$CR = CR(5)$$

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)

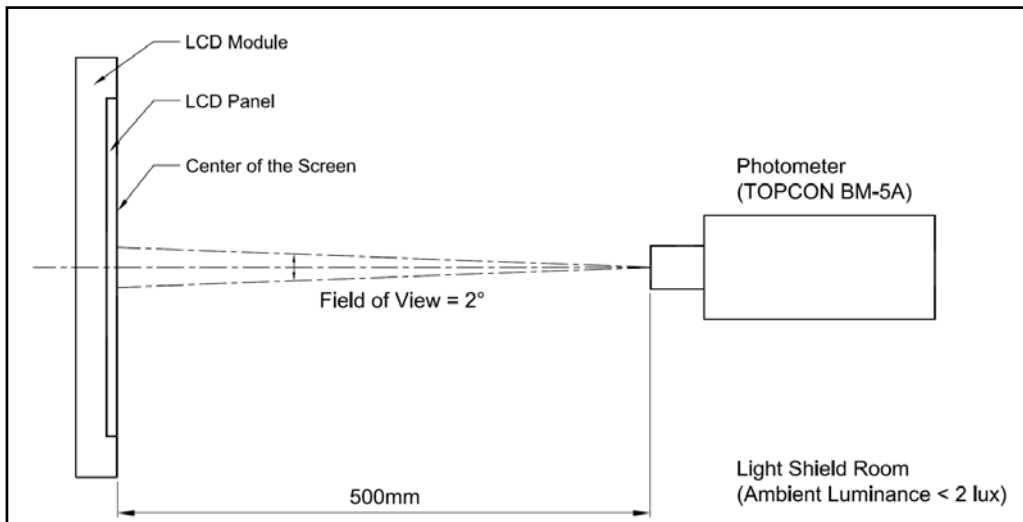


Note 3 : Definition of Viewing Angle

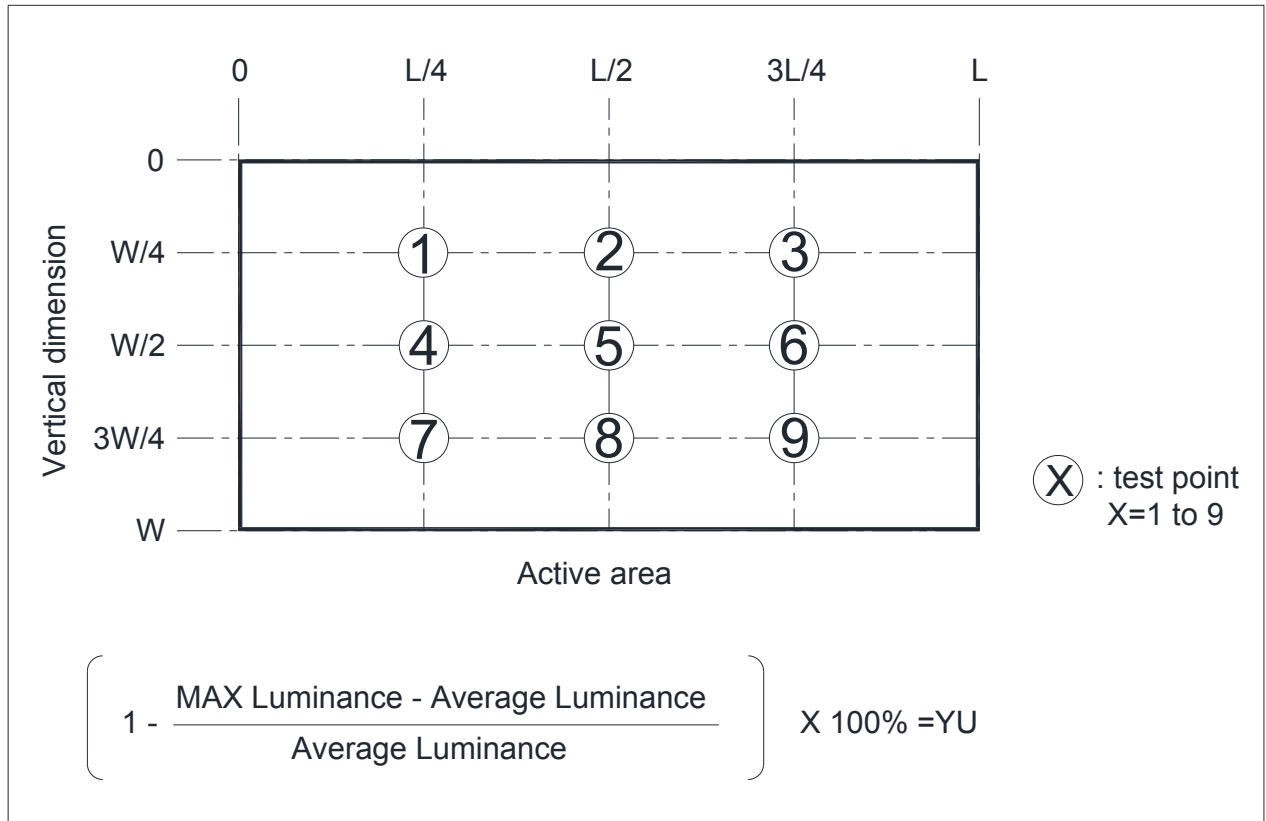


Note 4 : Measurement Set-Up:

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.



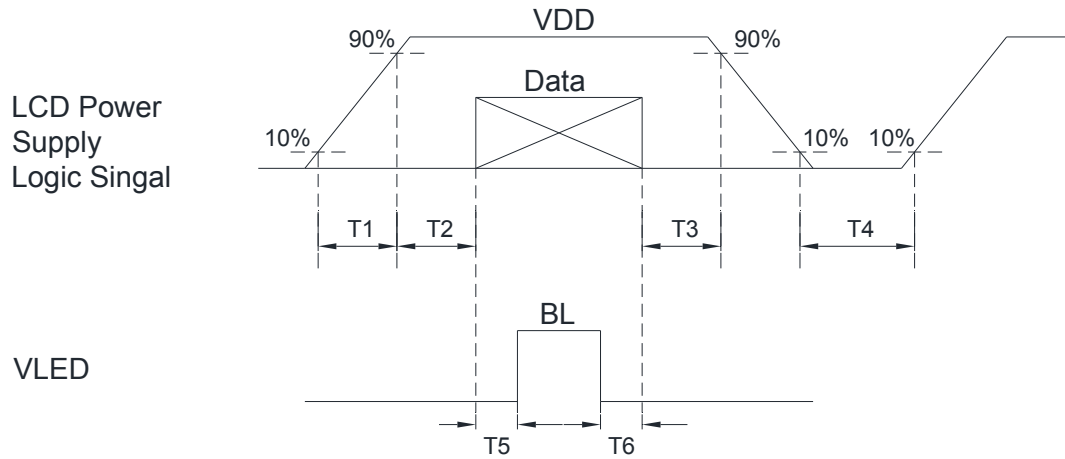
Note 5 :



9. TIMING SPECIFICATIONS

9.1.1 POWER SEQUENCE

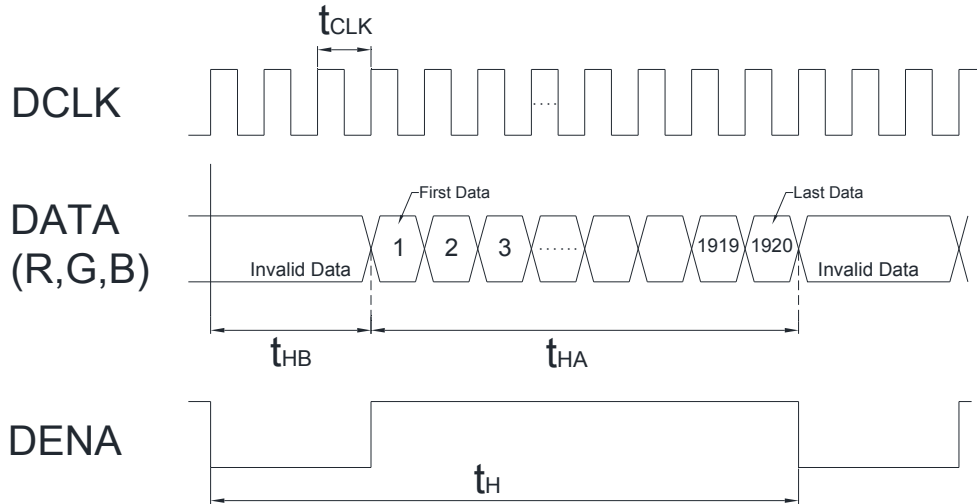
$0.01\text{ms} < T1 \leq 50\text{ms}$; $500\text{ms} \leq T4$
 $100\text{ms} \leq T2 \leq 150\text{ms}$; $200\text{ms} \leq T5$
 $0.01\text{ms} \leq T3 \leq 50\text{ms}$; $200\text{ms} \leq T6$



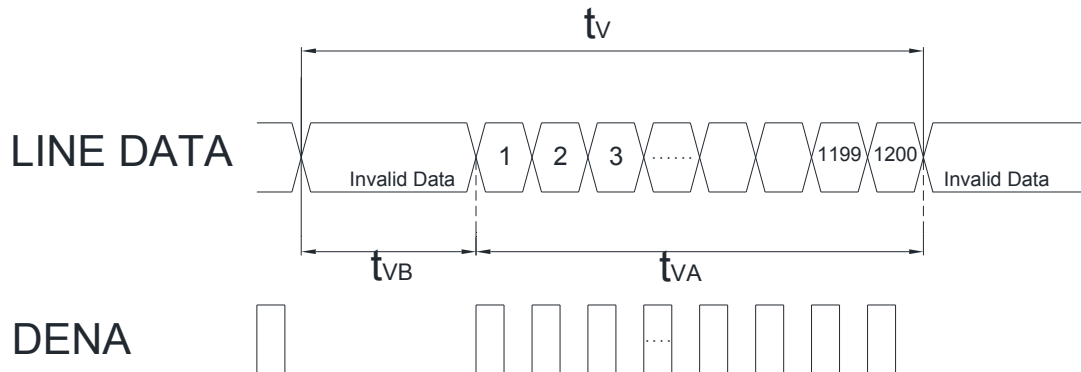
9.2 INTERFACE TIMING CHART

9.2.1 Time sequence

- (a). LVDS input time sequence
Horizontal sequence



- (b). LCD input time sequence
Vertical sequence



(c) Data mapping

COLOR	INPUT DATA	R DATA								G DATA								B DATA							
		R7 MSB	R6	R5	R4	R3	R2	R1	R0 LSB	G7 MSB	G6	G5	G4	G3	G2	G1	G0 LSB	B7 MSB	B6	B5	B4	B3	B2	B1	B0 LSB
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	
	CYAN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	MAGENTA	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	
WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
RED	RED(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	RED(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	RED(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	RED(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
GREEN	GREEN(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	GREEN(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0		
	GREEN(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0		
	GREEN(254)	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0		
GREEN(255)	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0			
BLUE	BLUE(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	BLUE(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	BLUE(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		
	BLUE(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0		
BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1			

Note 1 Gray level:
Color(n) : n is level order; higher n means brighter level.

Note 2 DATA:
1: high , 0: low

9.2.2 Timing Chart

ITEM			SYMBOL	MIN	TYP	M	UNIT	
LCD Timing	Frame Rate		-	60			H	
	DCLK		Frequency	fCLK	147.38	150.67	154	MHz
	DENA	Horizontal	Horizontal total time	tH	2020	2050	2080	tCLK
			Horizontal Active time	tHA	1920			tCLK
			Horizontal Blank time	tHB	100	130	160	tCLK
	Vertical	Vertical	Vertical total time	tV	1216	1225	1235	tH
			Vertical Active time	tVA	1200			tH
			Vertical Blank time	tVB	16	25	35	tH

Note 1 DENA (DATA ENABLE) usually is positive.

Note 2 During the whole blank period, DCLK should keep input.

10. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	60°C	240Hours	Note 1,4
2	Low Temperature Storage	-20°C	240Hours	Note 1,4
3	High Temperature Humidity Storage	40°C,90%RH	240Hours	Note 4
4	High Temperature Operation	50°C	240Hours	Note 2,4
5	Low Temperature Operation	0°C	240Hours	Note1,4
6	Temperature Cycle	-20°C ~ 60°C (30min) (30min)	20CYCLE	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 : QT3-QC-A-OT101MEWDLN-00

12. PACKAGE INFORMATION

LCM Model	LCM Qty. in the box	Inner Box Size (mm)	Weight	REMARK
OT101MEWDLN-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.