HY-LINE®
COMPUTER COMPONENTS

# TFT-Display Datasheet

## ONation
## Model: OT063AODDLV-00

## Brief spec.:

| | |
|---|---|
| Main Feature | Landscape Type |
| | White LED Backlight |

| | |
|---|---|
| Active Screen Area | 152,4 x 48.76 (mm) |
| Diagonal \| Format | 6,3" \| 8:3 |
| Resolution | 800 x 256 |
| Colors | 16,7M (8-bit) |
| Backlight | LED, Edge-Light |
| Brightness | 500 cd/m² |
| LED Life Time | N/A |
| Interface | LVDS |
| Viewing Angle | -60~70(H), -40~50(V) |
| Touchscreen | no |
| Power Supply | 3,3V (Typ.) |
| Module Outline | 165 x 66.96 x 9.2 (mm) |
| Operation Temperature | -10... +70 °C |
| Storage Temperature | -30... +80 °C |
| Surface Treatment | |

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# ONation Corporation

# TFT COLOR LCD MODULE

## MODEL: OT063AODDLV-00

**800(RGB)*256**

**LVDS interface (1port)**

## Version: P0.1

**Customer :** _____

**Approved By :** _____

**Date:** _____

| ONATION | | |
|---|---|---|
| **APPROVAL** | **CHECKER** | **PREPARE** |
| | Josh | |

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

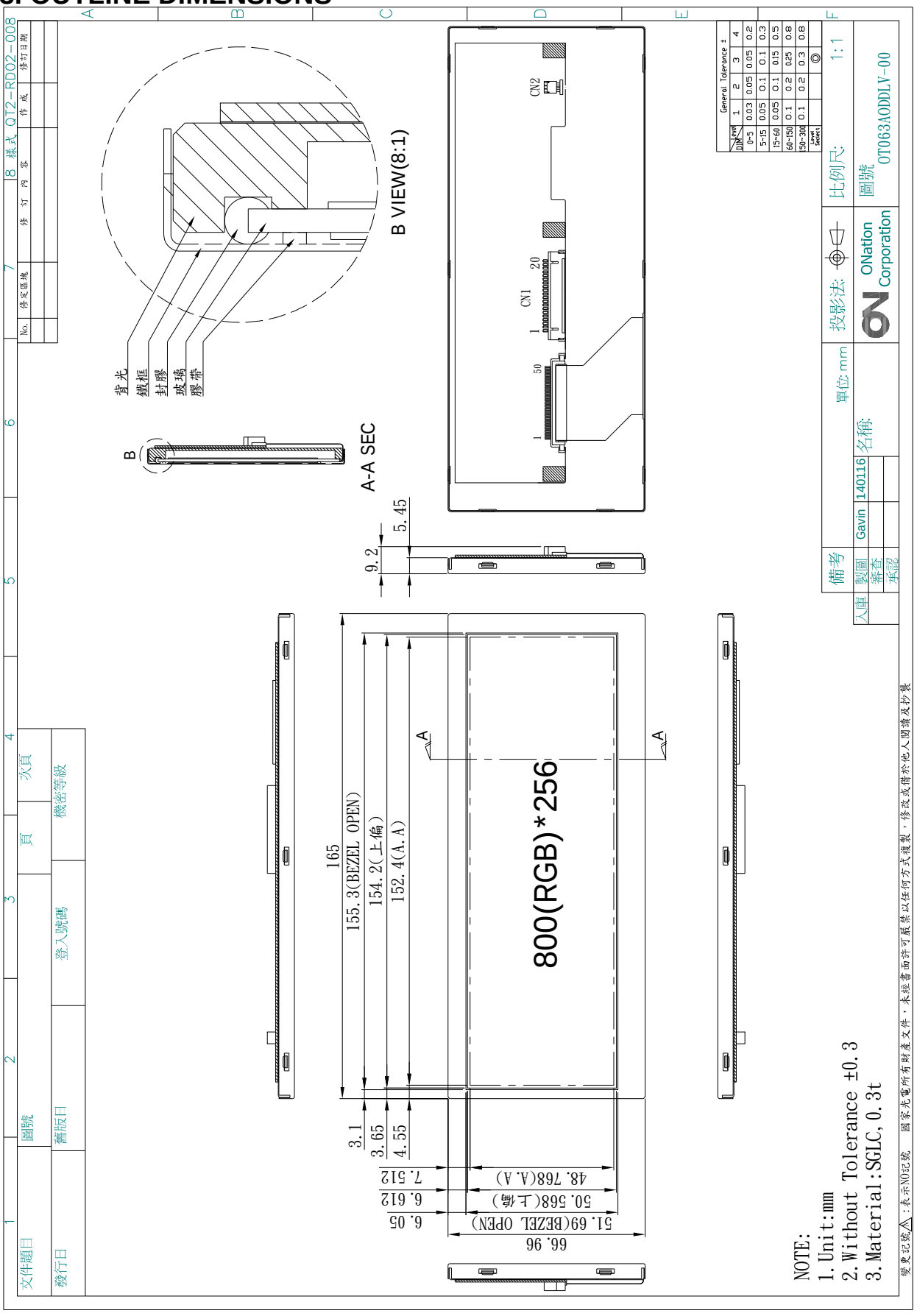
# 1.RECORD OF REVISION

| REV | DATE | PAGE | SUMMARY |
|---|---|---|---|
| 0.1 | 2014.02.17 | ALL | Preliminary specification was first issued. |

## 2.MECHANICAL SPECIFICATIONS

| | | |
|---|---|---|
| (1) | Number Of Dots (Dots) | 800(R.G.B) X 256 |
| (2) | Module Size(mm) | 165.0(H) X 66.96(V) X 9.2(D) |
| (3) | Active Area(mm) | 152.4(H) X 48.768(V) |
| (4) | Pixel Pitch(mm) | 0.1905 (H) X 0.1905(V) |
| (5) | LCD / Polarizer Model | TFT , Transmissive, Normally/ White, Anti-Glare |
| (6) | Backlight Color | White, LED |
| (7) | Viewing Direction | 12 O'clock<br>Horizontal：Right side 70°(typ.), Left side 70°(typ.)<br>Vertical：Up side 50°(typ.), Down side 60°(typ.) |
| (8) | Gray Scale Inversion Direction | 6 O'clock |
| (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

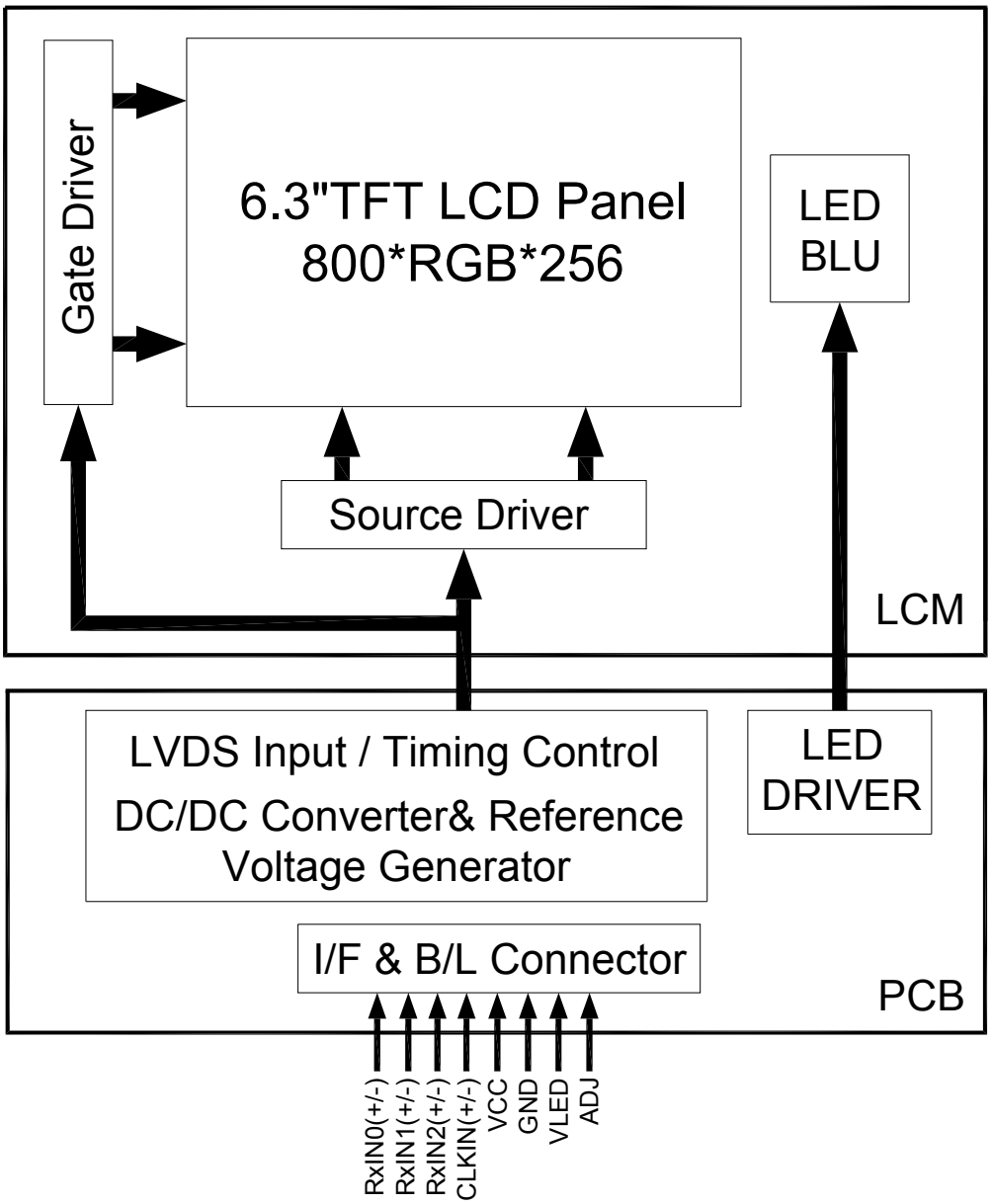
## 4.1 LCM PANEL DRIVING SECTION

CN1 Connector：Hirose DF14A-20P-1.25H(25) or Equivalen

Mating Connector：Hirose DF14-20S-1.25C or Equivalen

| PIN NO. | SIGNAL | FUNCTION |
|---|---|---|
| 1 | VCC | Power Supply For Digital Circuit |
| 2 | VCC | Power Supply For Digital Circuit |
| 3 | GND | Ground |
| 4 | GND | Ground |
| 5 | RxIN0- | Differential Data Input, CH0(Negative) |
| 6 | RxIN0+ | Differential Data Input, CH0(Positive) |
| 7 | GND | Ground |
| 8 | RxIN1- | Differential Data Input, CH1(Negative) |
| 9 | RxIN1+ | Differential Data Input, CH1(Positive) |
| 10 | GND | Ground |
| 11 | RxIN2- | Differential Data Input, CH2(Negative) |
| 12 | RxIN2+ | Differential Data Input, CH2(Positive) |
| 13 | GND | Ground |
| 14 | CLKIN- | Differential Clock Input(Negative) |
| 15 | CLKIN+ | Differential Clock Input(Positive) |
| 16 | GND | Ground |
| 17 | VLED | Power Supply For LED Driver Circuit |
| 18 | VLED | Power Supply For LED Driver Circuit |
| 19 | GND | Ground |
| 20 | ADJ | 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 |
|---|---|---|---|---|---|
| Power Supply Voltage | VCC | -0.3 | 4.0 | V | |
| | VLED | -0.3 | 36.0 | V | |
| | ADJ | -0.3 | 6.0 | 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(℃) | -10 | 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=60℃ & RH=90% ≦ 240Hrs.

# 7. ELECTRICAL CHARACTERISTICS

## 7.1 ELECTRICAL CHARACTERISTICS OF LCD

Ta=25℃

| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT | REMARK |
|---|---|---|---|---|---|---|
| Power Voltage For LCD | VCC | 3.0 | 3.3 | 3.6 | V | |
| | ICC | - | TBD | TBD | mA | Note 1 |

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

## 7.2 BACKLIGHT UNITS

Ta=25℃

| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|
| LED Driving Voltage | VLED | 4.6 | 5.0 | 12.0 | V |
| | ILED (VLED=5V) | - | TBD | TBD | A |
| ADJ Input Analog Dimming Voltage | VIH | 0.7 | - | - | V |
| ADJ Input PWM Dimming Voltage | VIL | - | - | 0.4 | V |
| ADJ frequency | - | 100 | - | 1000 | Hz |

## 8. OPTICAL CHARACTERISTICS

Ta=25℃

| ITEM | | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNIT | REMARK |
|---|---|---|---|---|---|---|---|---|
| Contrast Ratio | | CR | Viewing Normal Angle Θx=Θy=0° | (300) | (400) | - | - | Note 1 |
| Response Time | | TR | | - | 5 | 10 | ms | Note 2 |
| | | TF | | - | 15 | 20 | ms | |
| Chromaticity | White | x | | (0.26) | (0.31) | (0.36) | - | Note 4 |
| | | y | | (0.28) | (0.33) | (0.38) | - | |
| Viewing Angle | Hor. | θx+ | Viewing Angle Θx=Θy=0° CR≧10 | 60 | 70 | - | Deg. | Note 3 |
| | | θx - | | 60 | 70 | - | | |
| | Ver. | θy+ | | 40 | 50 | - | | |
| | | θy - | | 50 | 60 | - | | |
| Luminance | | L | PWM=100% | (400) | (500) | - | cd/m2 | - |
| Uniformity | | - | - | 70 | - | - | % | Note 5 |

Note 1：Definition of Contrast Ratio (CR)：

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L63/L0

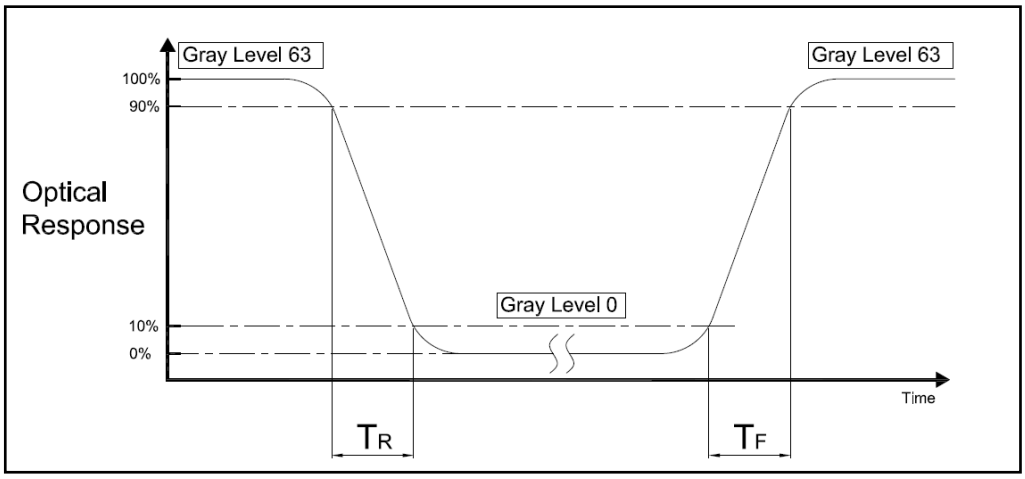
L63：Luminance of gray level 63

L0：Luminance of gray level 0

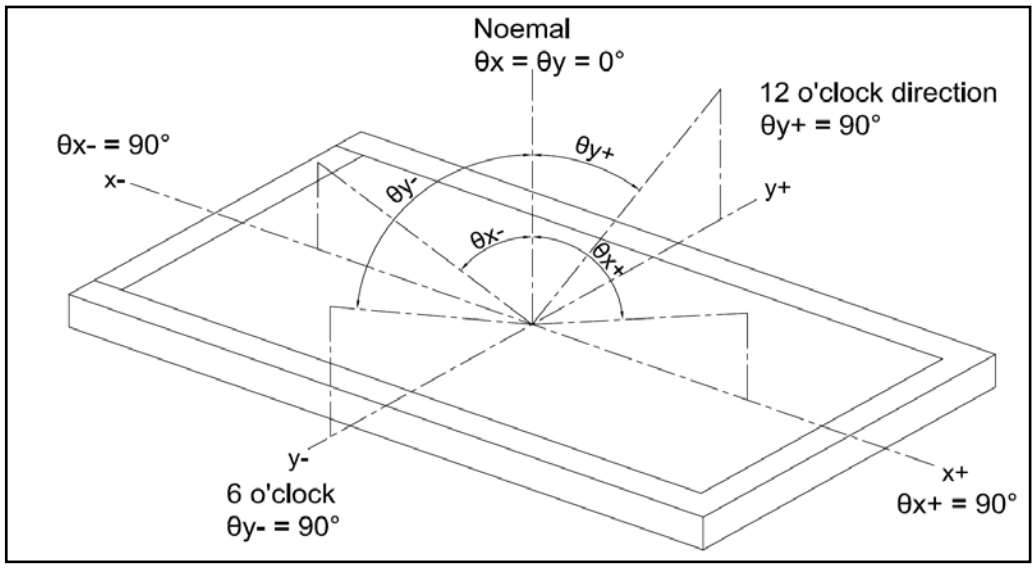
CR = CR(5)

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)

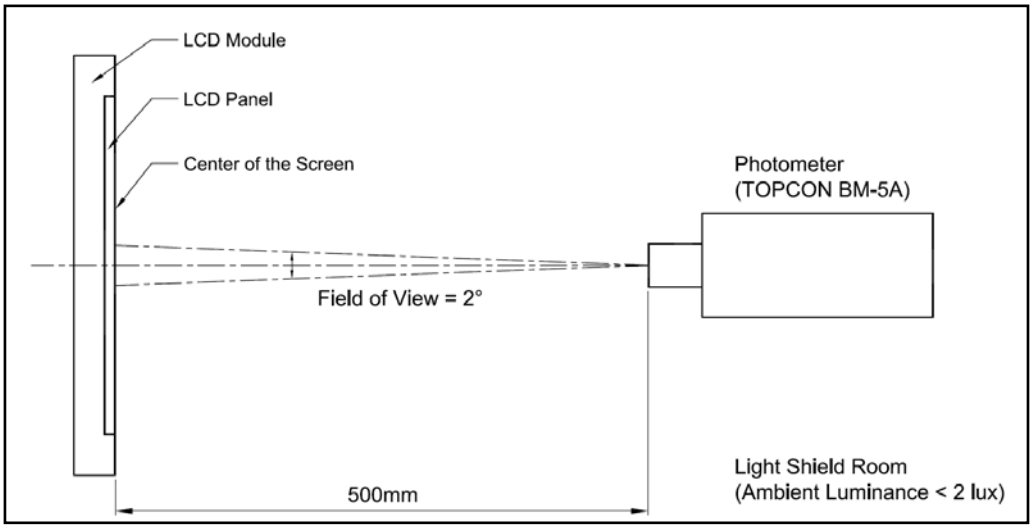


Note 3：Definition of Viewing Angle

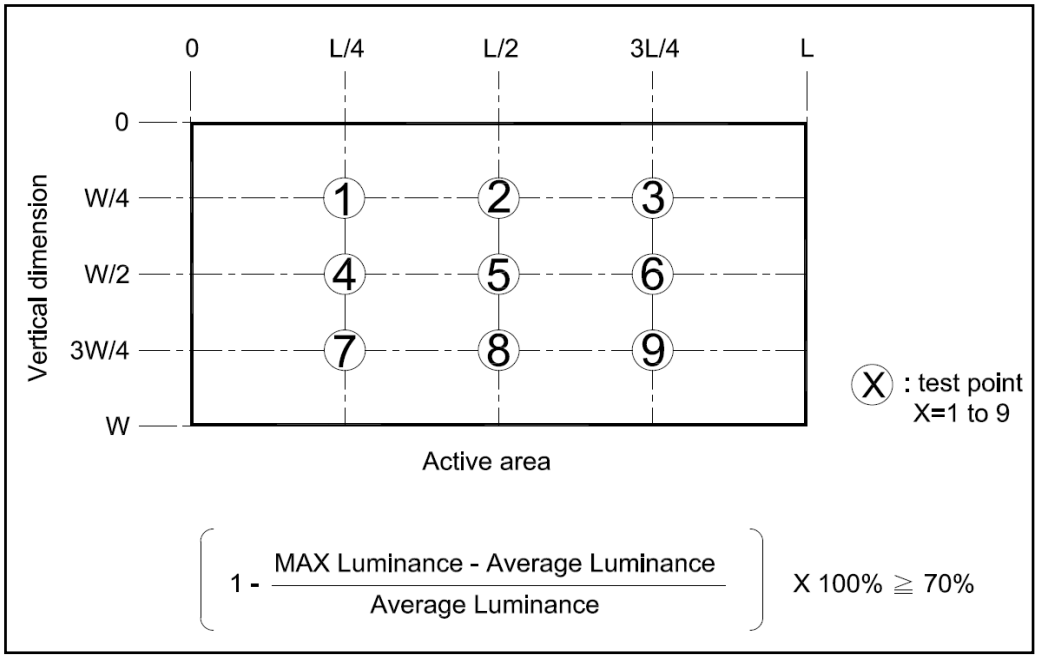



Note 4：Measurement Set-Up:

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.

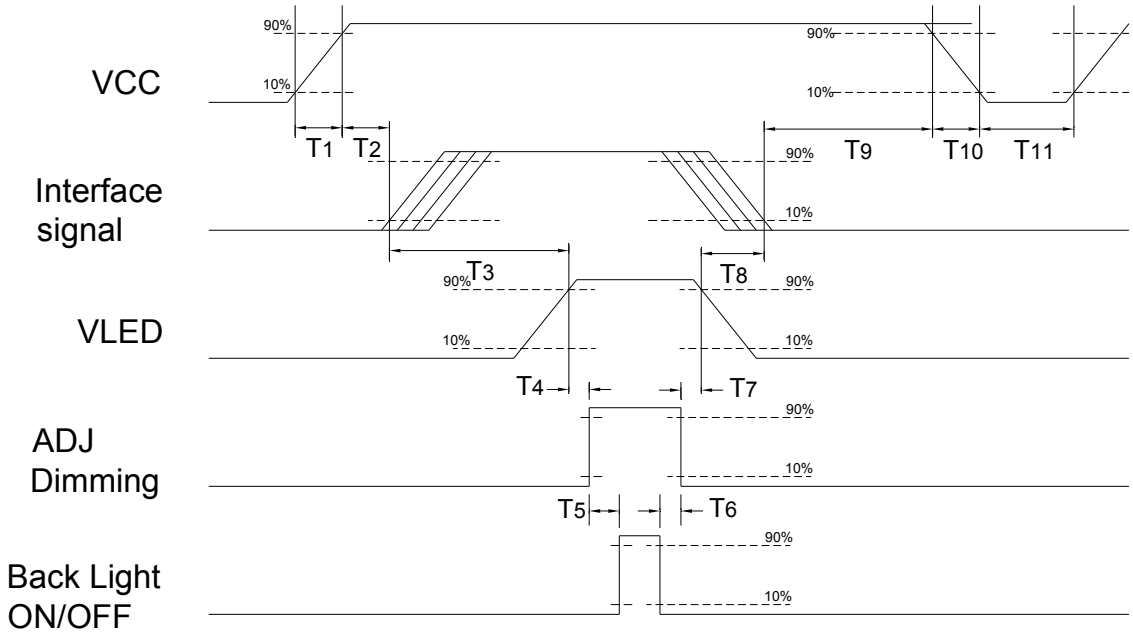


Note 5：


0
L/4
L/2
3L/4
L
0
W/4
W/2
3W/4
W
Vertical dimension
1
2
3
4
5
6
7
8
9
Active area
X : test point
X=1 to 9
1 - MAX Luminance - Average Luminance / Average Luminance
X 100% ≧ 70%

# 9. TIMING SPECIFICATIONS

## 9.1 POWER SIGNAL SEQUENCE

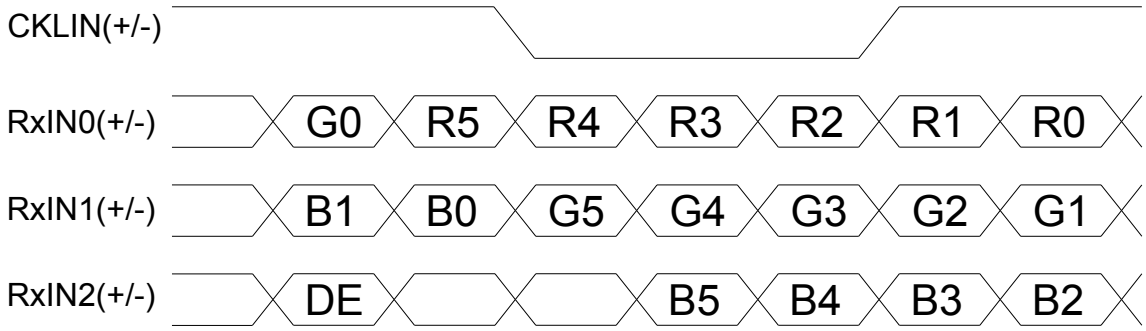



Power ON/OFF sequence timing

| ITEM | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|
| T1 | 0.5 | - | 10 | ms |
| T2 | 0 | - | 50 | ms |
| T3 | 200 | - | - | ms |
| T4 | 10 | - | - | ms |
| T5 | 10 | - | - | ms |
| T6 | 0 | - | - | ms |
| T7 | 10 | - | - | ms |
| T8 | 100 | - | - | ms |
| T9 | 0 | 16 | 50 | ms |
| T10 | - | - | 10 | ms |
| T11 | 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 FORMAT



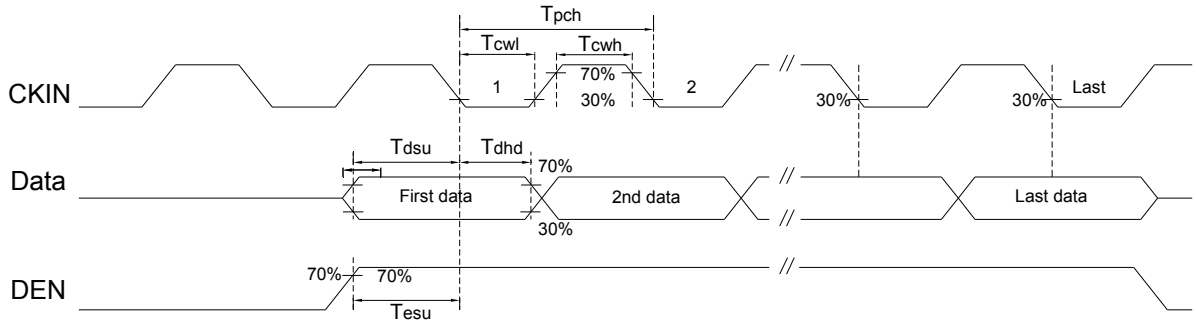

| SIGNAL NAME | DESCRIPTION | REMARK |
|---|---|---|
| R5 | Red Data 5 | Red-pixel Data |
| R4 | Red Data 4 | |
| R3 | Red Data 3 | 6Bits LVDS input |
| R2 | Red Data 2 | MSB：R5 ； LSB：R0 |
| R1 | Red Data 1 | |
| R0 | Red Data 0 | |
| G5 | Green Data 5 | Green-pixel Data |
| G4 | Green Data 4 | |
| G3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

## 9.3 AC TIMING CHARATERISTICS

| ITEM | | SYMBOL | MIN. | TYP. | MAX. | UNIT | REMARK |
|---|---|---|---|---|---|---|---|
| Clock | Frequency | 1/Tc | - | 33.26 | - | MHz | Note1 |
| | Clk pulse duty | Tcwh | 40 | 50 | 60 | % | Note1 |
| | Clk cycle time | Tcph | 25 | - | - | ns | Note1 |
| Data | Setup time | Tdsu | 6 | - | - | ns | Note1 |
| | Hold time | Tdhd | 6 | - | - | ns | Note1 |
| ENAB signal | Setup time | Tesu | 6 | - | - | ns | Note1 |

Note 1: Frame rate is 60 Hz at 3.3V VCC

Clock and Data Timing Diagram



## 10. RELIABILITY TEST

| ENVIRONMENTAL TEST | | | | |
|---|---|---|---|---|
| NO. | ITEM | CONDITIONS | TIME PERIOD | REMARK |
| 1 | High Temperature Storage | 80℃ | 240HRS | |
| 2 | Low Temperature Storage | -30℃ | 240HRS | |
| 3 | High Temperature Operation | 70℃ | 240HRS | |
| 4 | Low Temperature Operation | -10℃ | 240HRS | |
| 5 | Temperature Cycle | -10℃←25℃→70℃ (30min) (5min) (30min) | 30CYCLE | |
| 6 | High Temperature Humidity Storage | 60℃ 90%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 modlue 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 ：QT3-QC-A-I002

## 12. PACKAGE INFORMATION

| LCM MODEL | LCM QTY. IN THE BOX | INNER BOX SIZE (mm) | WEIGHT | REMARK |
|---|---|---|---|---|
| OT063AODDLV-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±5°C and the humidity is below 50±20%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.