

Version :3.0**TECHNICAL SPECIFICATION****MODEL NO : PD080SL1**

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Revision History

| Rev. | Eng. | Issued Date | Revised Content |
|------|------|---------------|--|
| V0.1 | 黃秀晶 | July 25,2006 | Preliminary |
| V0.2 | 黃秀晶 | Oct 16,2006 | Modify Page6 5-1) TFT-LCD Panel Driving |
| V0.3 | 黃秀晶 | Dec 15,2006 | Modify Page4 4. Mechanical Drawing of TFT-LCD Module Add Page26 16.Packing |
| 1.0 | 黃秀晶 | Jan 11, 2006 | New |
| 2.0 | 黃秀晶 | May 28, 2007 | Modify Page25 14. Reliability Test: LTOT/LTST from-20°C to-25°C |
| 3.0 | 黃秀晶 | July 23, 2007 | Modify Page6 Modify connect pin |

TECHNICAL SPECIFICATION

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1. Application

This data sheet applies to a color TFT LCD module, PD080SL1. The module applies to notebook PC, sub-note-book PC and other OA product, which require high quality flat panel display.

Prime View assume no responsibility for any damage resulting from the use of the device which dose not comply with the instructions and the precautions in these specification sheet.

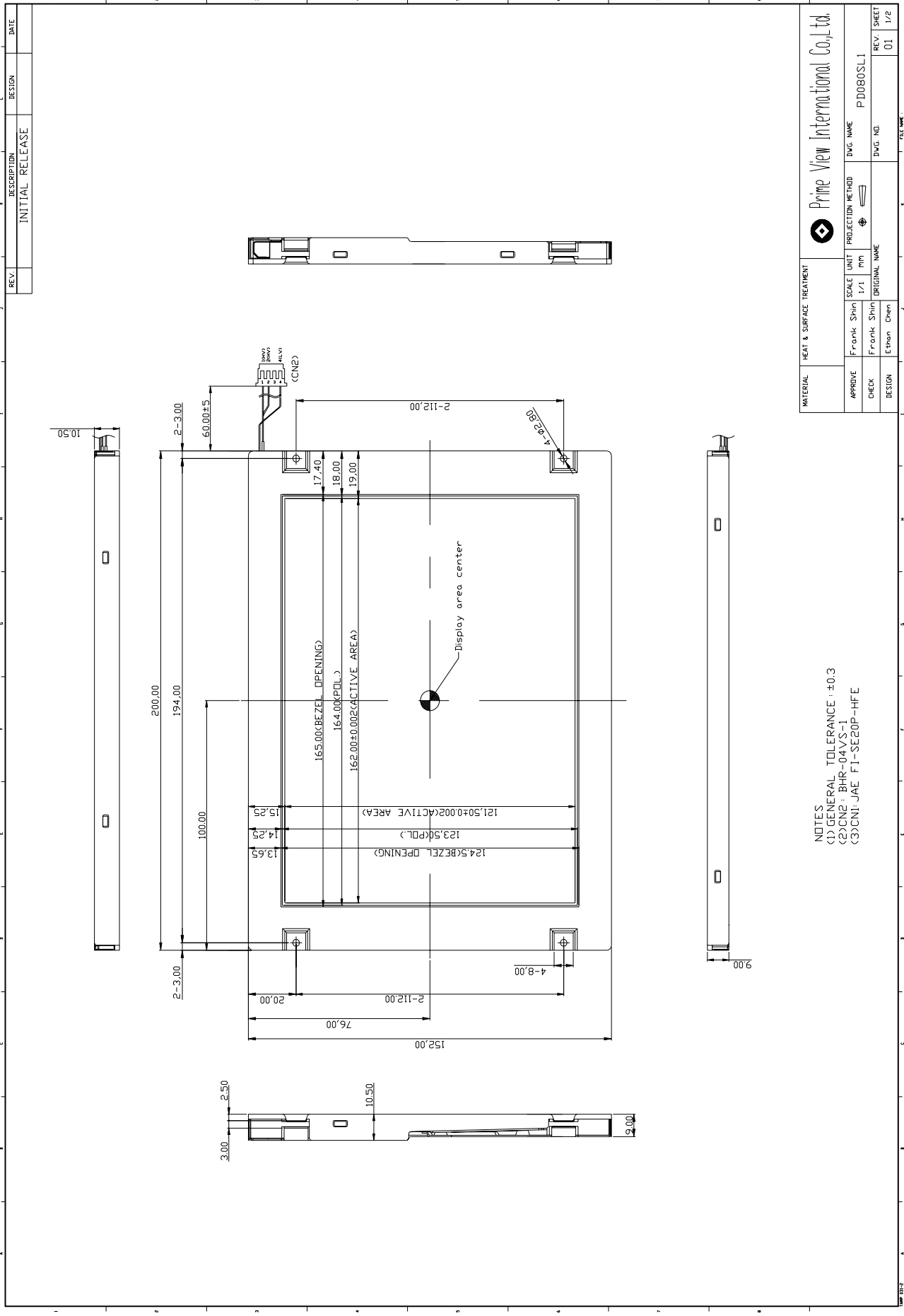
2. Features

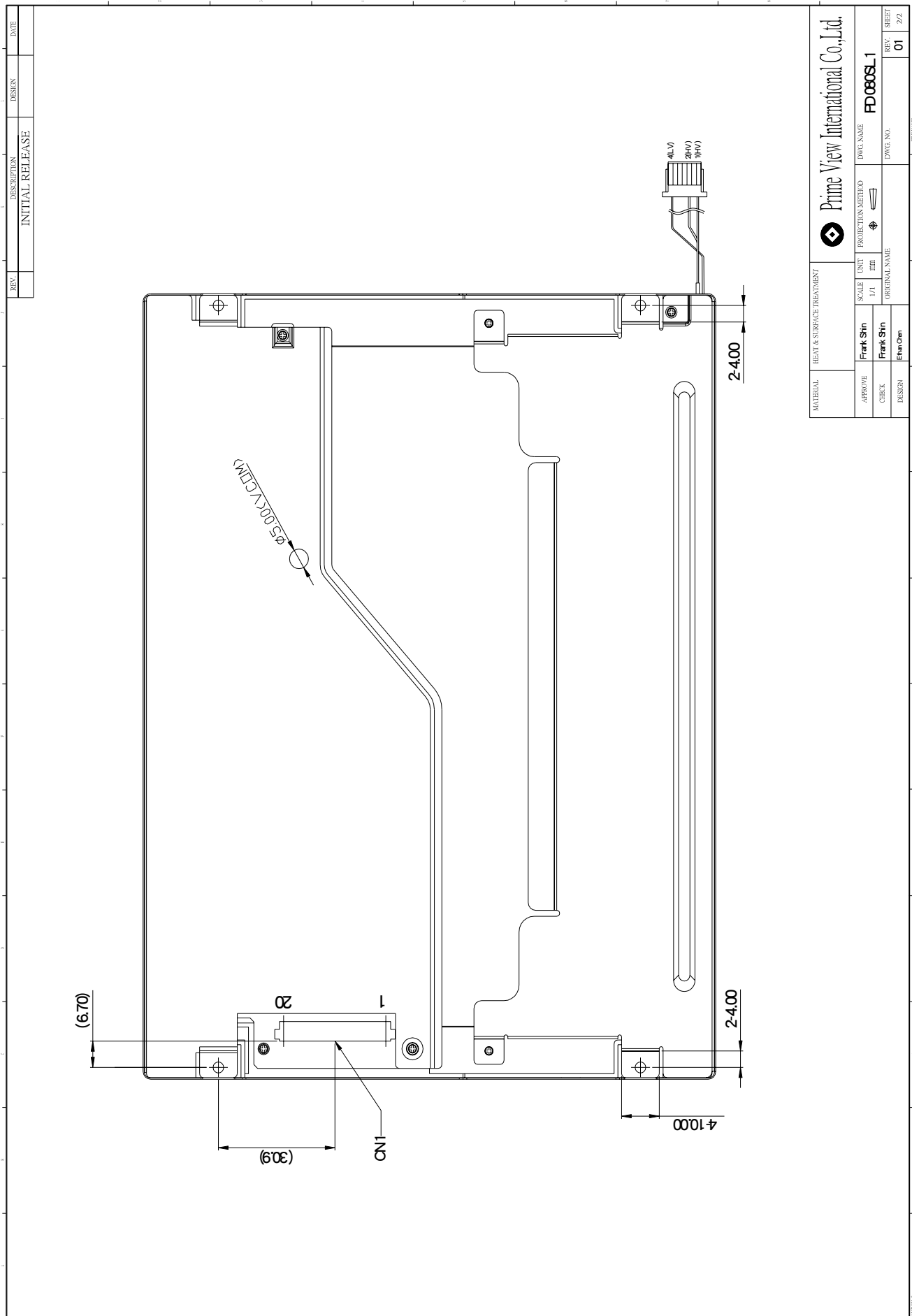
- . Amorphous silicon TFT LCD panel with back-light unit
- . Pixel in stripe configuration
- . Slim and compact, designed for O/A application
- . Display Colors : 262,144 colors or 16,777,216 colors
- . Backlight driving DC/AC inverter not included in this module
- . Long Life Lamp

3. Mechanical Specifications

| Parameter | Specifications | Unit |
|--------------------------------|--------------------------------------|---------|
| Screen Size | 8 (diagonal) | inch |
| Display Format | 800 XRGB) X600 | dot |
| Display Colors | 262,144 | |
| Active Area | 162(H) X21.5 (V) | mm |
| Pixel Pitch | 0.2025 (H) X0.2025 (V) | mm |
| Pixel Configuration | Stripe | |
| Outline Dimension | 200(W) X52(H) X0.5(D) (typ.) | mm |
| Weight | 343±15 | g |
| Back-light | CCFL, 2 tubes | |
| Surface treatment | Anti-Glare | |
| Display mode | Normally white | |
| Gray scale inversion direction | 6 (ref to Page 20 viewing angle) | o'clock |

4. Mechanical Drawing of TFT-LCD Module





5. CONNECTIONS AND FUNCTIONS FOR INTERFACE PINS

5-1) LCD panel signal processing board

CN1 socket (LCD module side): FI-SE20P-HFE(Japan Aviation Electronics Industry Limited(JAE))

| Pin No. | Symbol | Signal | Remarks |
|---------|--------|-----------------------------------|--|
| 1 | A | D3+ | Pixel data Note 5 - 1, 5 - 3 |
| | B | GND | Ground Note 5 - 4 |
| 2 | A | D3- | Pixel data Note 5 - 1, 5 - 3 |
| | B | GND | Ground Note 5 - 4 |
| 3 | DPS | Selection of scan direction | High: Reverse scan Low or Open: Normal scan Note 5 - 2 |
| 4 | FRC | Selection of the number of colors | High: 16,777,216 colors Low or Open: 262,144 colors Note 5 - 1 |
| 5 | GND | Ground | Note 5 - 4 |
| 6 | CK+ | Pixel clock | Note 5 - 3 |
| 7 | CK- | | |
| 8 | GND | Ground | Note 5 - 4 |
| 9 | D2+ | Pixel data | Note 5 - 3 |
| 10 | D2- | | |
| 11 | GND | Ground | Note 5 - 4 |
| 12 | D1+ | Pixel data | Note 5 - 3 |
| 13 | D1- | | |
| 14 | GND | Ground | Note 5 - 4 |
| 15 | D0+ | Pixel data | Note 5 - 3 |
| 16 | D0- | | |
| 17 | GND | Ground | Note 5 - 4 |
| 18 | GND | | |
| 19 | VDD | Power supply | Note 5 - 4 |
| 20 | VDD | | |

Note 5 - 1 : See **DISPLAY COLORS AND INPUT DATA SIGNALS** .

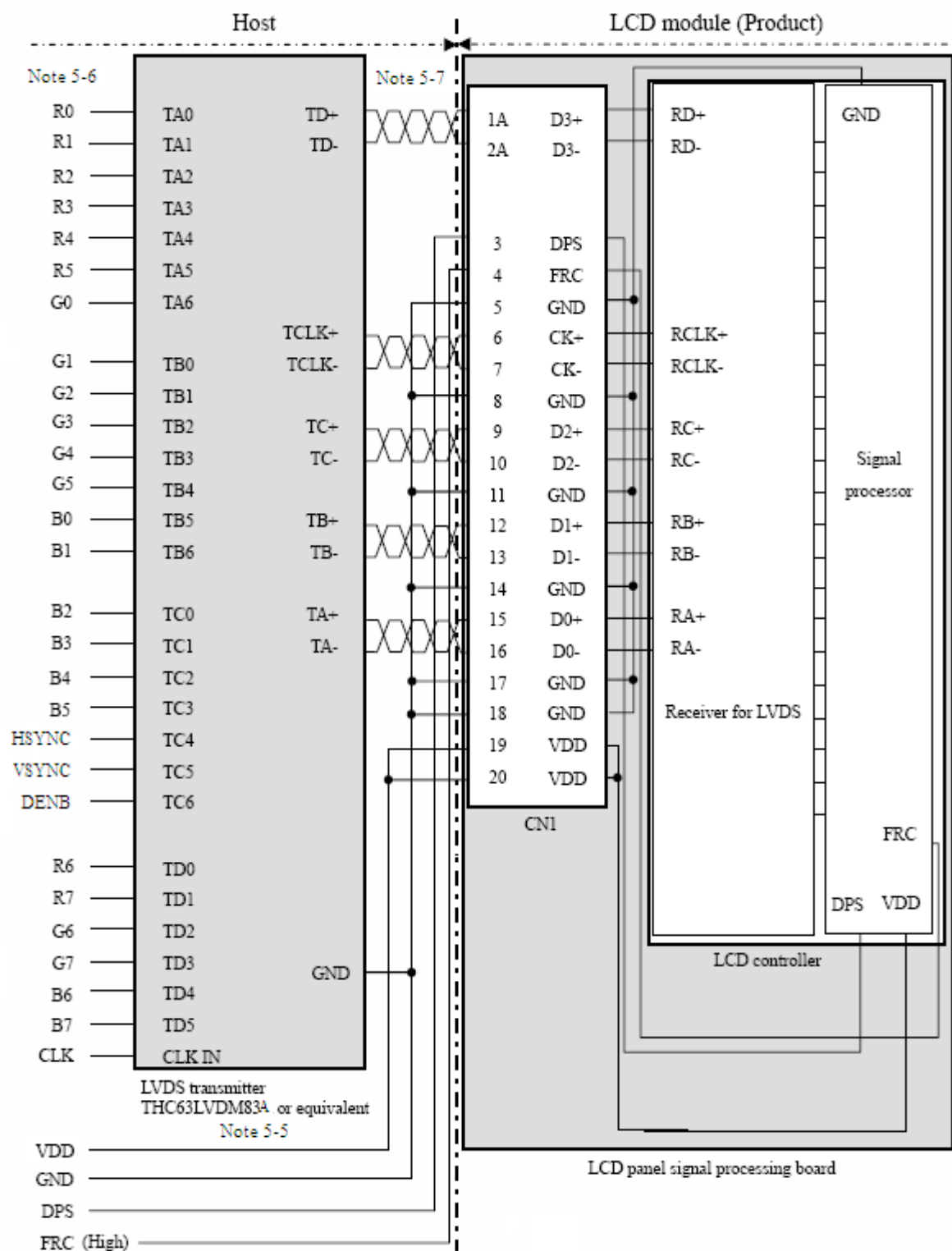
Note 5 - 2 : See **SCANNING DIRECTIONS** .

Note 5 - 3 : Twist pair wires with 100Ω (Characteristic impedance) should be connected between LCD panel signal processing board and LVDS transmitter.

Note 5 - 4 : All GND and VDD terminals should be used without any non-connected lines.

5-2) Connection between receiver and transmitter for LVDS

(1) Input data signal: 8bit

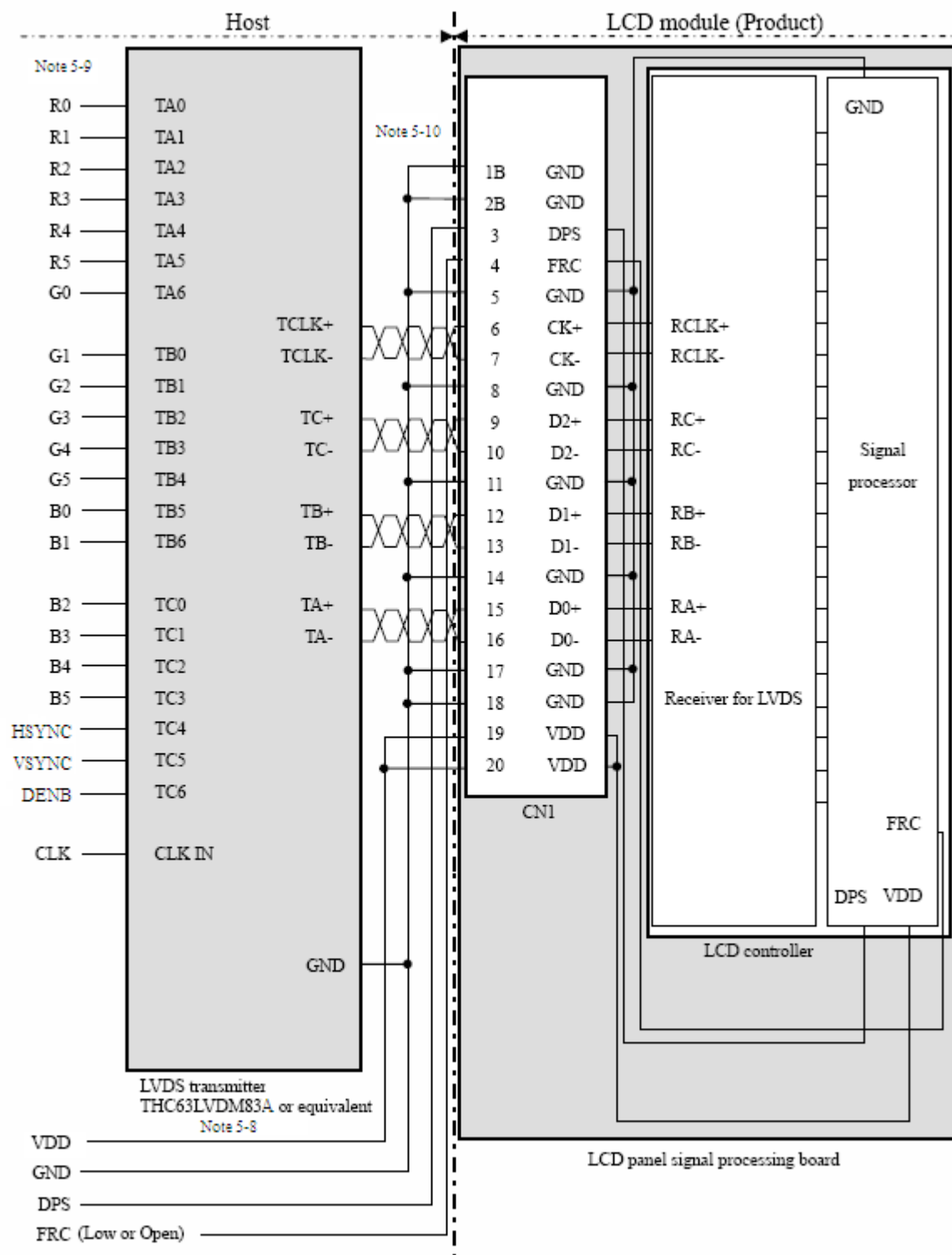


Note 5-5 : Recommended transmitter THC63LVDM83A (THine Electronics Inc.) or equivalent

Note 5-6 : LSB (Least Significant Bit) - R0, G0, B0 MSB (Most Significant Bit) - R7, G7, B7

Note 5-7 : Twist pair wires with 100Ω (Characteristic impedance) should be connected between LCD panel signal processing board and LVDS transmitter.

(2) Input data signal: 6bit



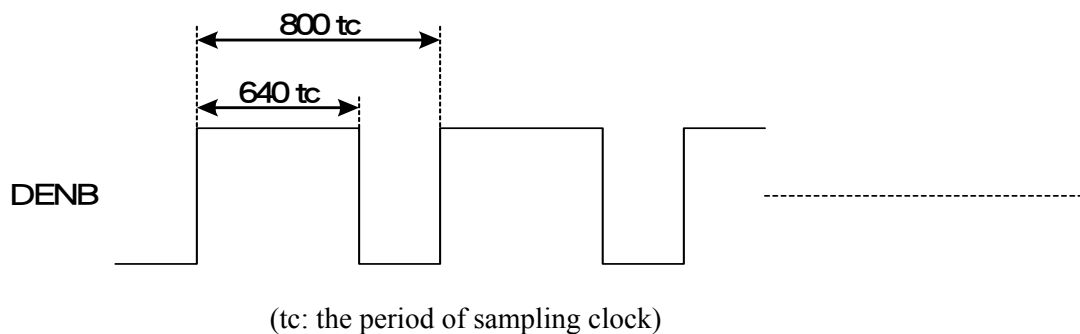
Note 5-8 : Recommended transmitter THC63LVDM83A (THine Electronics Inc.) or equivalent

Note 5-9 : LSB (Least Significant Bit) – R0, G0, B0 MSB (Most Significant Bit) – R5, G5, B5

Note 5-10: Twist pair wires with 100Ω (Characteristic impedance) should be connected between LCD panel signal processing board and LVDS transmitter.

DENB input signal.

If customer wanted to off the DENB mode , you must keep the DENB always High or Low.



6. Absolute Maximum Ratings:

GND=0V, Ta=25°C

| Parameters | Symbol | MIN. | MAX. | Unit | Remark |
|-----------------------------|----------|------|--------------|------|----------|
| Supply Voltage | V_{DD} | -0.3 | +4.0 | V | |
| Input Signals Voltage | V_{IN} | -0.3 | $V_{DD}+0.3$ | V | Note 6-1 |
| Backlight Driving Voltage | V_L | - | 2000 | V | |
| Backlight Driving Frequency | F_L | 25 | 80 | KHz | |

Note 6-1: LVDS signal.

7. Electrical Characteristics

7-1) Recommended Operating Conditions:

GND = 0V , Ta = 25°C

| Item | Symbol | Min. | Typ. | Max. | Unit | Remark |
|--|----------|----------|--------|------|--------|----------|
| Supply Voltage | V_{DD} | 3.0 | 3.3 | 3.6 | V | |
| Current Dissipation | I_{DD} | - | 153 | - | mA | Note 7-1 |
| Total power consumption | P_{DD} | 0.46 | 0.51 | 0.56 | W | |
| LVDS Differential input high threshold | V_{TH} | - | - | 100 | mV | Note 7-2 |
| LVDS Differential input low threshold | V_{TL} | -100 | - | - | - | |
| Input voltage for DPS & FPC signal | High | V_{IH} | 0.7VCC | - | VCC | V |
| | Low | V_{IL} | 0 | - | 0.2VCC | V |

Note 7-1 : To test the current dissipation of V_{DD} , using the “color bars” testing pattern shown as below.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|

1. White
2. Yellow
3. Cyan
4. Green
5. Magenta
6. Red
7. Blue
8. Black

I_{DD} current dissipation testing pattern

Note7-2 : Please refers to THC63LVDM83A specification by Thin Corporation. This LCD module conforms to LVDS standard.

7-2) Recommended Driving Condition for Back Light

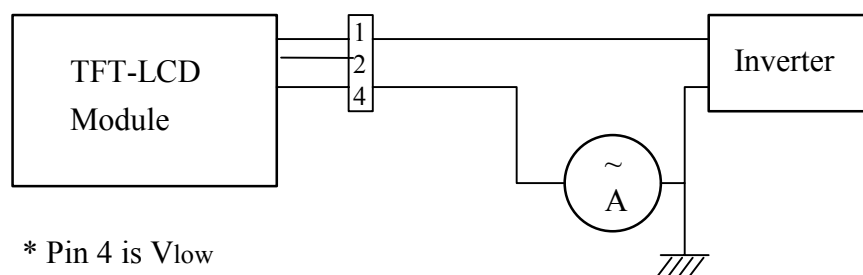
| Item | Symbol | Min. | Typ. | Max. | Unit | Remark |
|--|----------|------|------|------|------|--|
| Lamp Current | I_{FL} | 3 | 5 | 8 | mA | 5mA : 420 cd/m ² Note 7-3 、 Note 7-5 |
| Lamp Driving Frequency | F_L | 25 | 40 | 80 | KHz | |
| Lamp Voltage | V_L | - | 510 | - | Vrms | $I_{FL}=5mA$, Note 7-3 |
| Starting Voltage (25°C) (Reference Value) | V_s | - | - | 960 | Vrms | Note 7-4 |
| Starting Voltage (0°C) (Reference Value) | V_s | - | - | 1030 | Vrms | |
| Starting Voltage (-25°C) (Reference Value) | V_s | - | - | 1120 | Vrms | |
| Total power consumption (at $I_{FL}=5mA$) | - | - | 5.1 | 8 | W | Note 7-6 |

Note 7-3 : The back-light driving waveform should be as closed to sine-wave as possible.

In order to satisfy the quality of B/L , no matter use what kind of inverter , the each output lamp current must between Min. and Max. to avoid the abnormal display image caused by B/L.

Note 7-4 : The “Starting voltage ” means the minimum voltage of inverter to turn on the CCFL. and it should be applied to the lamp for more than 1 second to start up. Otherwise the lamp may not be turned on.

Note 7-5: Lamp current is measured with current meter for high frequency as shown below



* Pin 4 is Vlow

** Current meter :

Yokogawa 2016-01

Lamp current dissipation testing configuration

Note 7-6 : Not including the efficiency of backlight DC/AC inverter

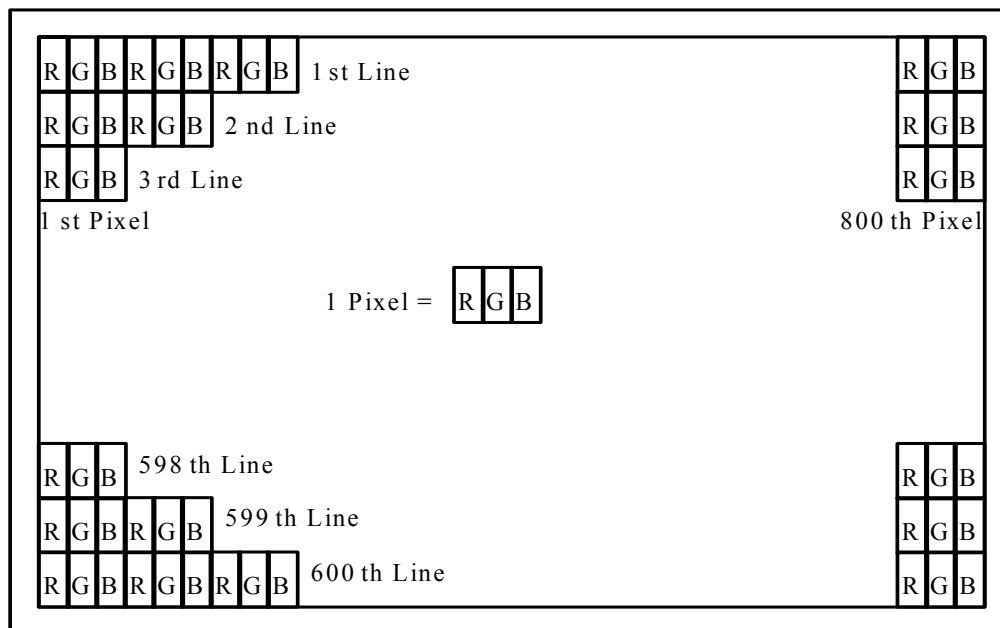
7-3) Backlight driving

Connector type : “BHR-04VS-1” of Japan Solder less Terminal MFG Co. LTD

| PIN NO. | Symbol | Description | Remark |
|---------|--------|---------------------|--------|
| 1 | VL1 | Input Voltage(High) | |
| 2 | VL2 | Input Voltage(High) | |
| 3 | NC | | |
| 4 | VL4 | Input Voltage(Low) | |

8. Pixel Arrangement

The LCD module pixel arrangement is the stripe.



9. Display Colors and Input Data Signals

9-1) Combinations between input data signals and FRC signal

This product can display in equivalent to 16,777,216 colors in 256 gray scales and 262,144 colors in 64 gray scales by combination between input data signals and FRC signal. See following table.

| Combination | Input data signals | CN1-Pin No.1 and 2 | FRC terminal | Display colors | Remarks |
|-------------|--------------------|--------------------|--------------|----------------|----------|
| ① | 8-bit | D3+/- | High | 16,777,216 | Note 9-1 |
| ② | 6-bit | GND | Low or Open | 262,144 | Note 9-2 |

Note 9-1 : See " 9-2) 16,777,216 colors".

Note 9-2 : See " 9-3) 262,144 colors".

9-2) 16,777,216 colors

This product can display equivalent of 16,777,216 colors in 256 gray scales by combination ①

| Display colors | | Data signal (0: Low level, 1: High level) | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | R7 | R6 | R5 | R4 | R3 | R2 | R1 | R0 | G7 | G6 | G5 | G4 | G3 | G2 | G1 | G0 | B7 | B6 | B5 | B4 | B3 | B2 | B1 | B0 |
| Basic Colors | 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 |
| | Blue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Red | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Magenta | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | Green | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Cyan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | Yellow | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 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 gray scale | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | dark | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | ↑ | | | | | : | | | | | | | | : | | | | | | | : | | | | |
| | ↓ | | | | | : | | | | | | | | : | | | | | | | : | | | | |
| | bright | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Green gray scale | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | dark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | ↑ | | | | | : | | | | | | | | : | | | | | | | : | | | | |
| | ↓ | | | | | : | | | | | | | | : | | | | | | | : | | | | |
| | bright | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Blue gray scale | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| | dark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| | ↑ | | | | | : | | | | | | | | : | | | | | | | : | | | | |
| | ↓ | | | | | : | | | | | | | | : | | | | | | | : | | | | |
| | bright | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| Blue | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | Blue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |

9-3) 262,144 colors

This product can display equivalent of 262,144 colors in 64 gray scales by combination ②

| Display colors | | Data signal (0: Low level, 1: High level) | | | | | | | | | | | | | | | | | |
|------------------|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | R5 | R4 | R3 | R2 | R1 | R0 | G5 | G4 | G3 | G2 | G1 | G0 | B5 | B4 | B3 | B2 | B1 | B0 |
| Basic colors | Black | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Blue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Red | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Magenta | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Green | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Cyan | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Yellow | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 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 |
| Red gray scale | Black | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | dark | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | ↑ | | | | : | | | | | : | | | | | | : | | | |
| | ↓ | | | | : | | | | | : | | | | | | : | | | |
| | bright | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Green gray scale | | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Red | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 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 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | dark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Blue gray scale | ↑ | | | | : | | | | | : | | | | | | : | | | |
| | ↓ | | | | : | | | | | : | | | | | | : | | | |
| | bright | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Green | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Blue gray scale | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | dark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | ↑ | | | | : | | | | | : | | | | | | : | | | |
| | ↓ | | | | : | | | | | : | | | | | | : | | | |
| | bright | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| Blue | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| | Blue | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |

9-4) DISPLAY POSITIONS

The following table is the coordinates per pixel (See " 9-5) SCANNING DIRECTIONS").

| | | | | | | |
|------------|------------|-----|------------|-----|-------------|-------------|
| C (0, 0) | | | | | | |
| R | G | B | | | | |
| C(0, 0) | C(1, 0) | ... | C(X, 0) | ... | C(798, 0) | C(799, 0) |
| C(0, 1) | C(1, 1) | ... | C(X, 1) | ... | C(798, 1) | C(799, 1) |
| . | . | . | . | . | . | . |
| . | . | . | . | . | . | . |
| . | . | . | . | . | . | . |
| C(0, Y) | C(1, Y) | ... | C(X, Y) | ... | C(798, Y) | C(799, Y) |
| . | . | . | . | . | . | . |
| . | . | . | . | . | . | . |
| . | . | . | . | . | . | . |
| C(0, 598) | C(1, 598) | ... | C(X, 598) | ... | C(798, 598) | C(799, 598) |
| C(0, 599) | C(1, 599) | ... | C(X, 599) | ... | C(798, 599) | C(799, 599) |

9-5) SCANNING DIRECTIONS

The following figures are seen from a front view. Also the arrow shows the direction of scan.

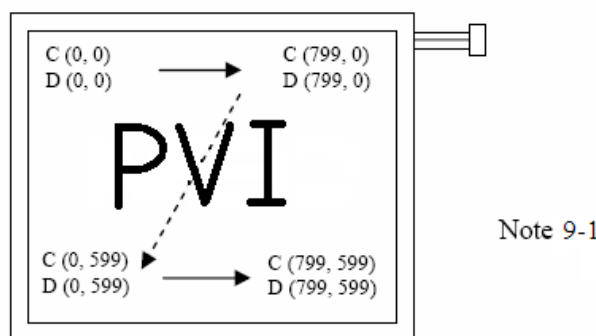


Figure1. Normal scan (DPS: Low or Open)

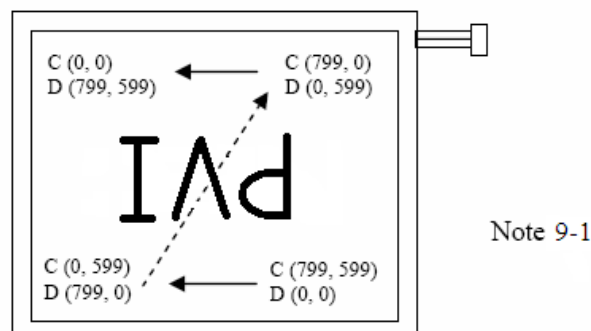


Figure2. Reverse scan (DPS: High)

Note1: Meaning of C (X, Y) and D (X, Y)

C (X, Y): The coordinates of the display position (See " 9-4) DISPLAY POSITIONS").

D (X, Y): The data number of input signal for LCD panel signal processing board

10. Input signal timing:

DENB pin have high priority than SYNC mode(HSVC+VSYNC). When IC only use SYNC pin, DENB pin have to connect to ground.

(A) Timing Specifications (DENB Mode):

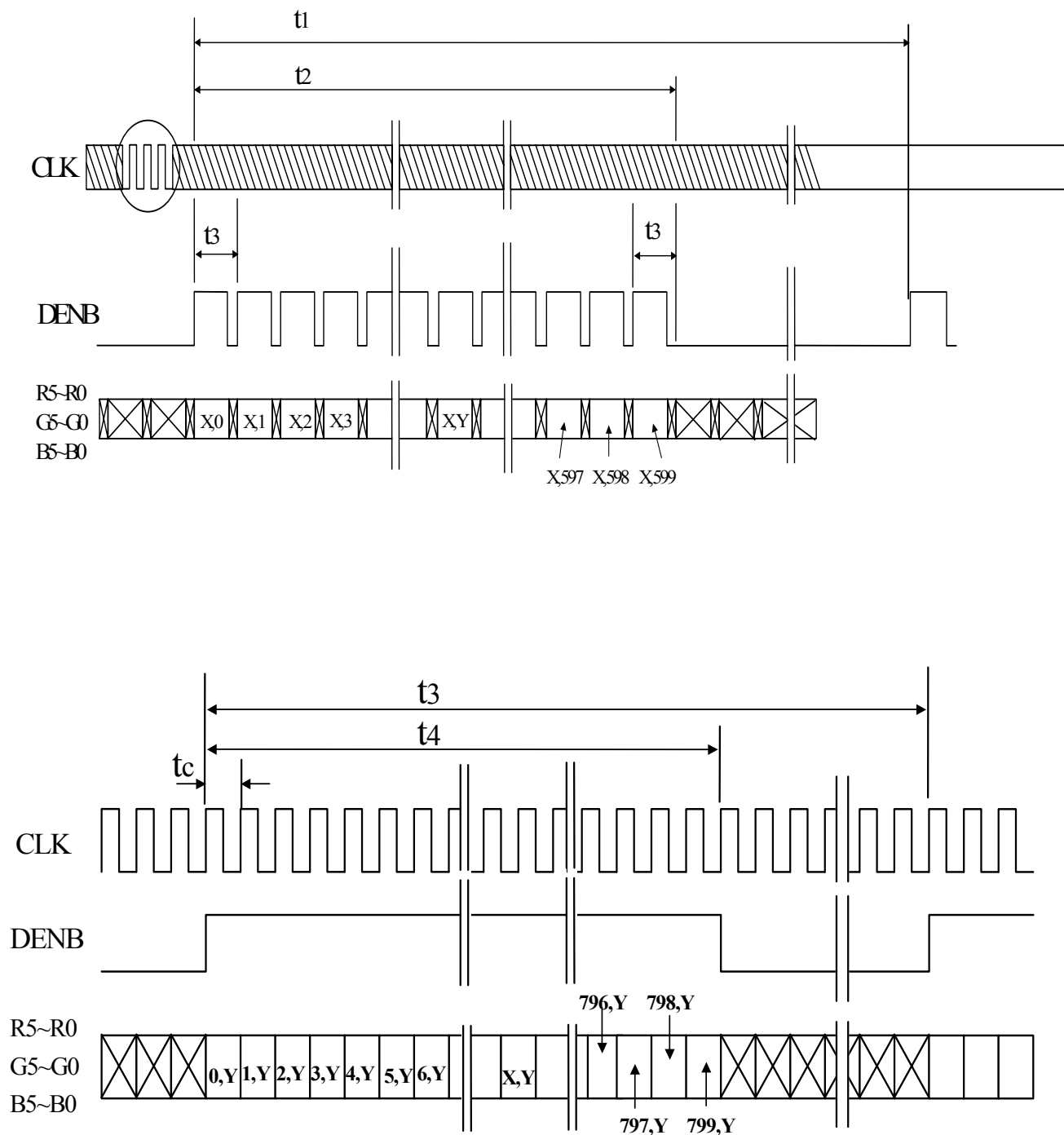
| Item | Symbol | Min. | Typ. | Max. | Unit | Remark |
|---------------------------|--------|----------|-----------|-----------|------|--------|
| Frame Cycling Period | t1 | 604 X t3 | 628X t3 | 800 X t3 | - | |
| | | 14 | 16.58 | 20 | ms | |
| Vertical Display Period | t2 | 600 X t3 | 600 X t3 | 600 X t3 | - | |
| Horizontal Scanning Time | t3 | 920 X t5 | 1056 X t5 | 1064 X t5 | - | |
| | | 24 | 26.4 | 33 | μs | |
| Horizontal Display Period | t4 | 800 X t5 | 800 X t5 | 800 X t5 | - | |
| Clock Cycle | t5 | 20 | 25.0 | 31.25 | ns | |
| Clock High Level Time | t6 | 9.0 | - | - | ns | |
| Clock Low Level Time | t7 | 9.0 | - | - | ns | |
| Hold time | t8 | 4.0 | - | - | ns | |
| Set-up time | t9 | 5.0 | - | - | ns | |

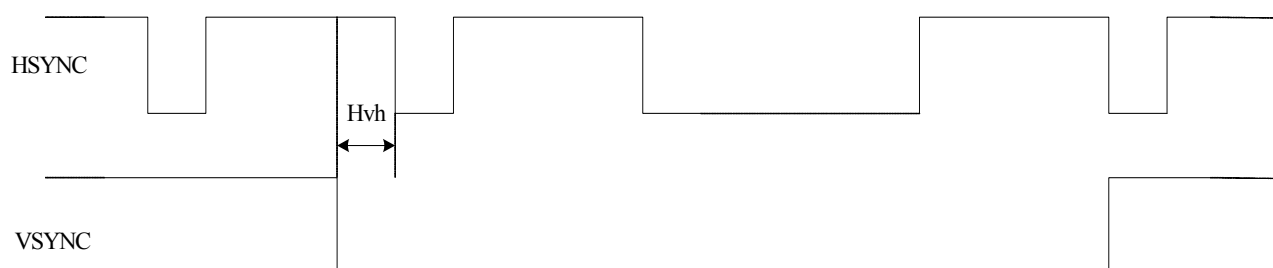
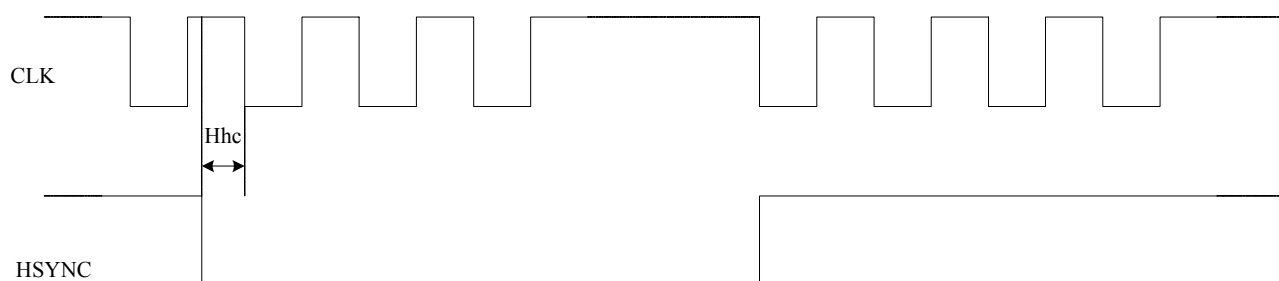
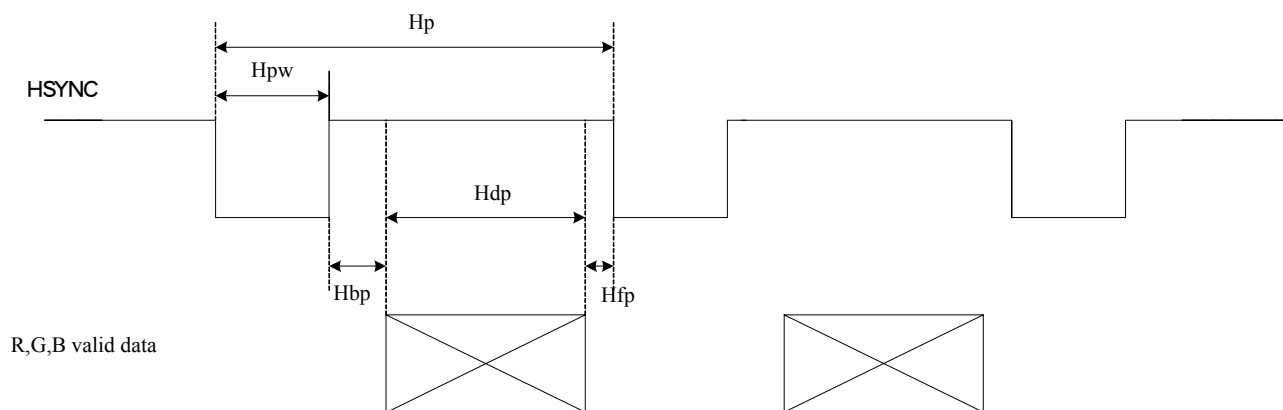
(B) Timing Specifications (SYNC Mode)

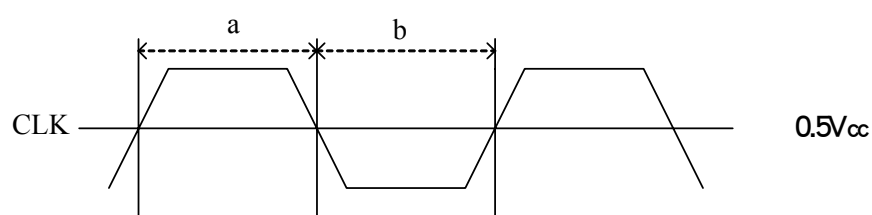
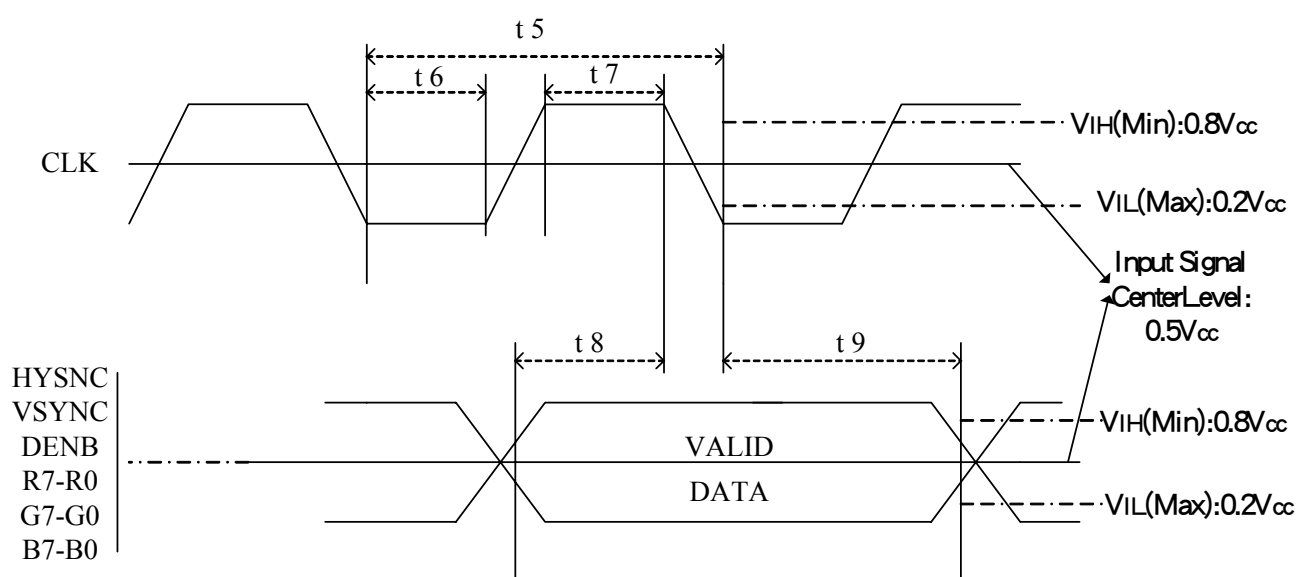
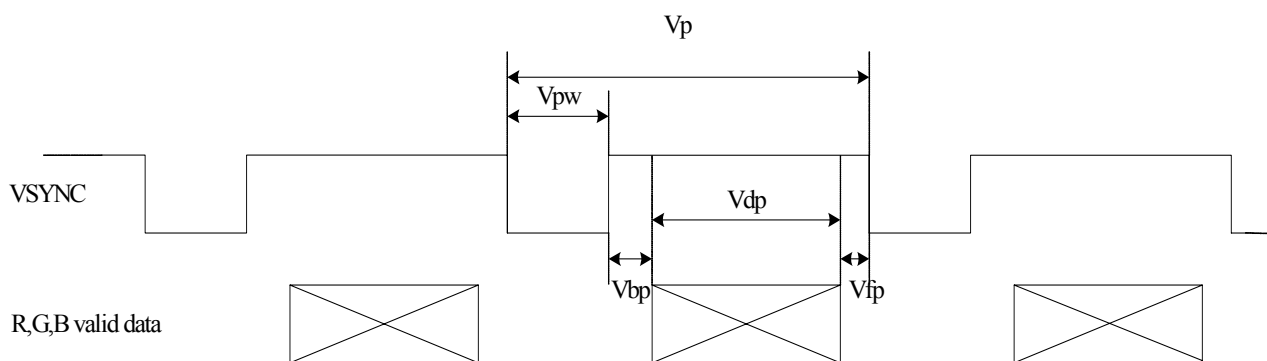
| Item | | Symbol | Min. | Typ. | Max. | Unit | Remark |
|-------|----------------------------------|-----------------|------|-------|-------|------|--------|
| HSYNC | Period | Hp | 24 | 26.4 | 33 | us | |
| | | | 920 | 1056 | 1064 | tc | |
| | Display period | Hdp | 800 | 800 | 800 | tc | |
| | Pulse width | Hp _w | 12 | 128 | 202 | tc | |
| | Back-porch | Hb _p | 12 | 86 | 202 | tc | |
| | Front-porch | Hf _p | 42 | 42 | 42 | tc | |
| | Hp _w +Hb _p | | 214 | 214 | 214 | tc | |
| | Hsync-CLK | Hhc | 10 | - | Tc-10 | ns | |
| | Vsync-Hsync | Hvh | 0 | 0 | 200 | tc | |
| VSYNC | Period (Frame cycling period) | Vp | 14 | 16.58 | 20 | ms | Note 1 |
| | | | 604 | 628 | 800 | Hp | |
| | Display period | Vdp | 600 | 600 | 600 | Hp | |
| | Pulse width | Vp _w | 2 | 4 | 27 | Hp | |
| | Back-porch | Vb _p | 0 | 23 | 25 | Hp | |
| | Front-porch | Vf _p | 1 | 1 | 1 | Hp | |
| | Vp _w +Vb _p | | 27 | 27 | 27 | Hp | |

Note 1: Frame cycling period is optimum in 16.58ms.(60HZ)

(C)Timing Chart:

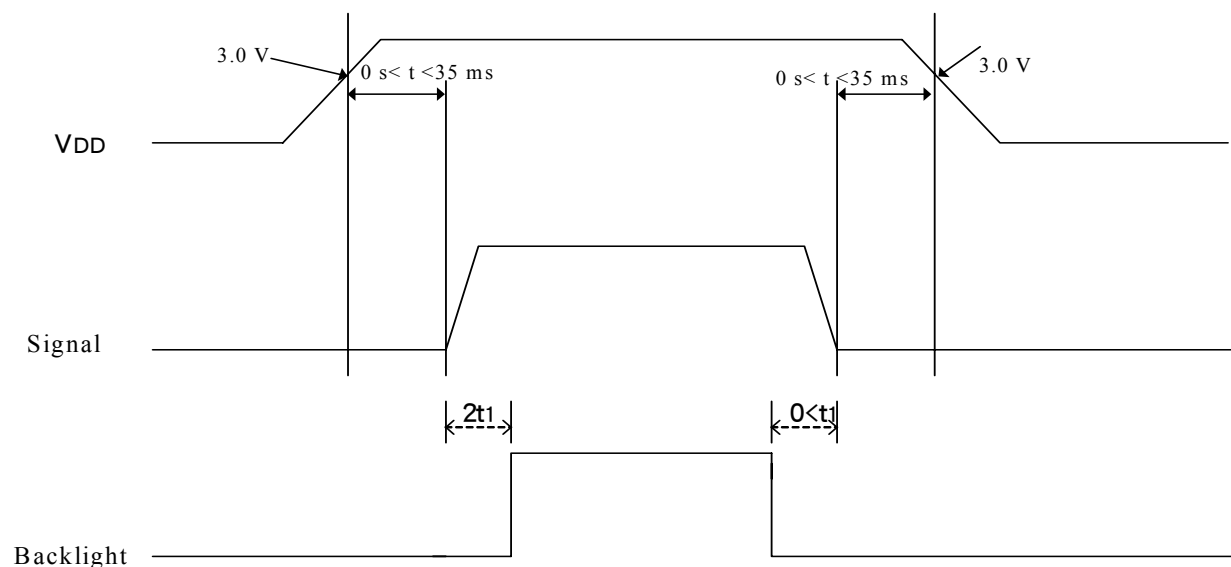






Duty (a , b) : $50 \pm 10\%$

11. Power On Sequence



1. The supply voltage for input signals should be same as V_{DD} .
2. When the power is off, please keep whole signals (Hsync, Vsync, DENB, CLK, Data) low level or high impedance.

12. Optical Characteristics

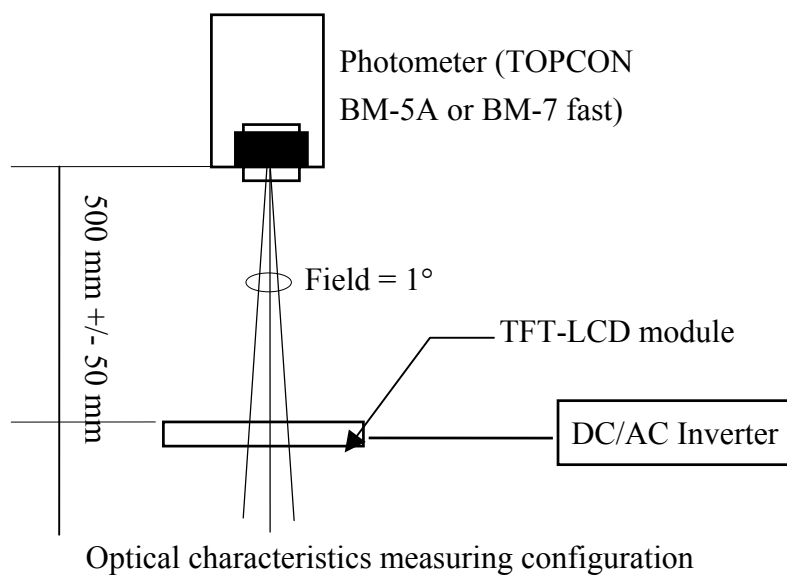
12-1) Specification:

$T_a = 25^\circ\text{C}$

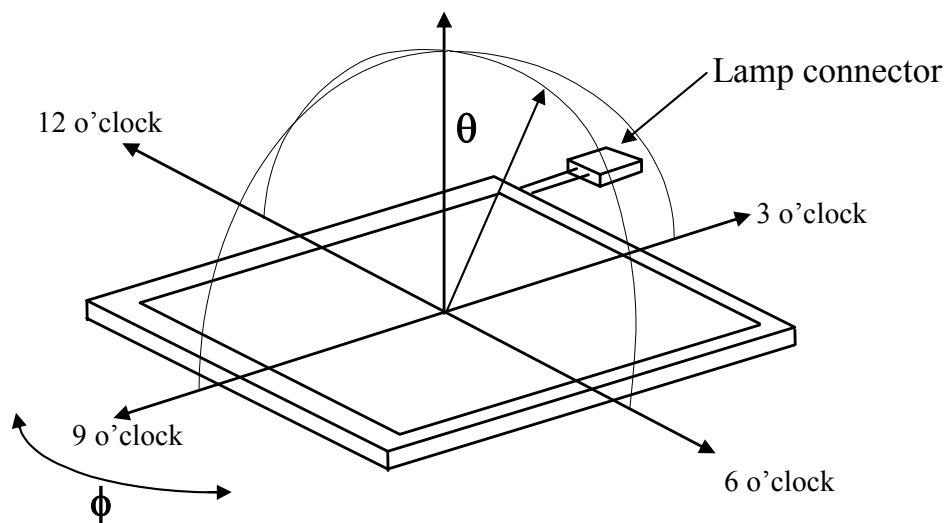
| Parameter | | Symbol | Condition | MIN. | TYP. | MAX. | Unit | Remarks |
|----------------------|------------|--------------------------|-----------------------------------|-------|------|------|-------------------|-----------------------------------|
| Viewing Angle | Horizontal | θ | CR≥10 | 55 | 60 | - | deg | |
| | Vertical | θ (to 6 'clock) | | 45 | 50 | - | deg | Note 12-1 |
| | | θ (to 12 o'clock) | | 30 | 35 | - | deg | |
| Contrast Ratio | | CR | Optimum direction | 200 | 400 | - | - | Note 12-2 |
| Response time | Rise | Tr | $\theta=0^{\circ}$ | - | 15 | 30 | ms | Note 12-4 |
| | Fall | Tf | $\phi=0^{\circ}$ | - | 25 | 50 | ms | |
| Luminance | | L | $\theta=0^{\circ}/\phi=0^{\circ}$ | 390 | 420 | - | cd/m ² | I _{FL} =5mA Note 12-3 |
| Luminance Uniformity | | U | - | 75 | 80 | - | % | Note 12-5 |
| White Chromaticity | | x | $\theta=0^{\circ}/\phi=0^{\circ}$ | 0.29 | 0.32 | 0.35 | - | |
| | | y | $\theta=0^{\circ}/\phi=0^{\circ}$ | 0.32 | 0.35 | 0.38 | - | |
| Lamp Life Time | | - | 25℃ | 50000 | - | - | hrs | I _{FL} =5mA |
| Cross Talk Ratio | | CTK | - | - | - | 3.5 | % | Note 12-6 |

All the optical measurement shall be executed 30 minutes after backlight being turn-on.

The optical characteristics shall be measured in dark room (ambient illumination on panel surface less than 1 Lux). The measuring configuration shows as following figure.



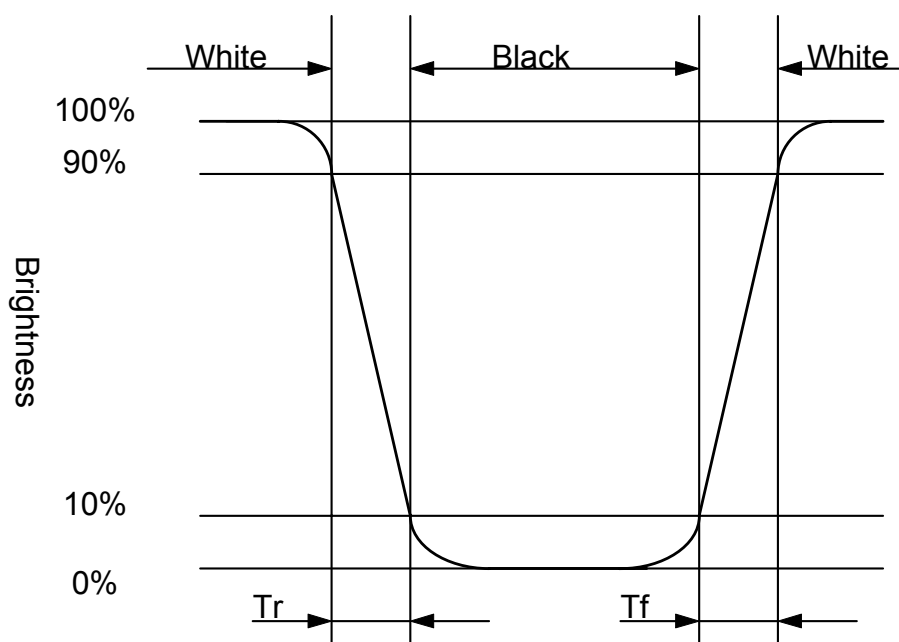
Note 12-1 : The definitions of viewing angles are as follows.



Note 12-2 : The definition of contrast ratio $CR = \frac{\text{Luminance at gray level 63}}{\text{Luminance at gray level 0}}$

Note 12-3 : The typical luminance value is measured at lamp current 5 mA. The max luminance value is measured at lamp current 8 mA.

Note 12-4: Definition of Response Time Tr and Tf:



Note 12-5: The uniformity of LCD is defined as

$$U = \frac{\text{The Minimum Brightness of the 9 testing Points}}{\text{The Maximum Brightness of the 9 testing Points}}$$

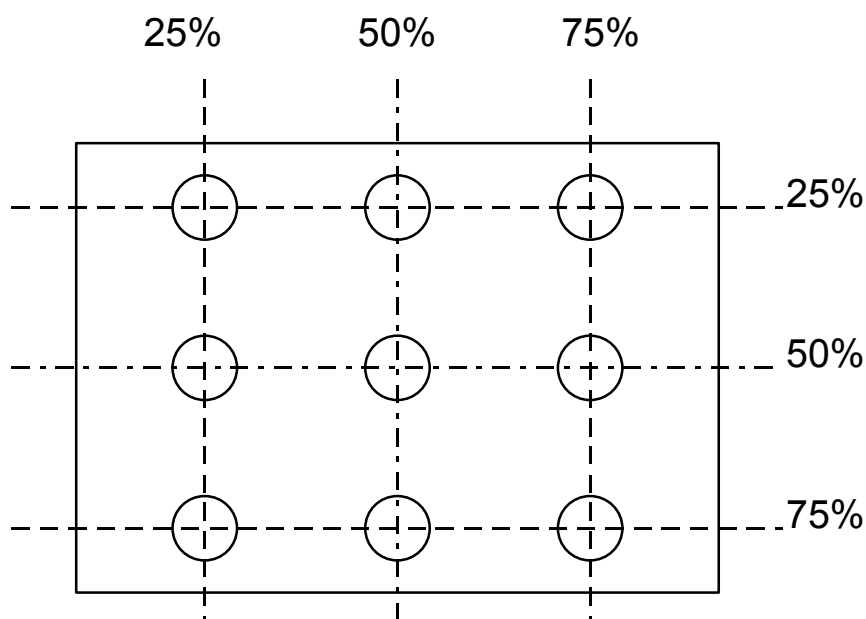
Luminance meter : BM-5A or BM-7 fast(TOPCON)

Measurement distance : 500 mm +/- 50 mm

Ambient illumination : < 1 Lux

Measuring direction : Perpendicular to the surface of module

The test pattern is white (Gray Level 63).



Note 12-6: Cross Talk (CTK) = $\frac{|YA-YB|}{YA} \times 100\%$

YA: Brightness of Pattern A

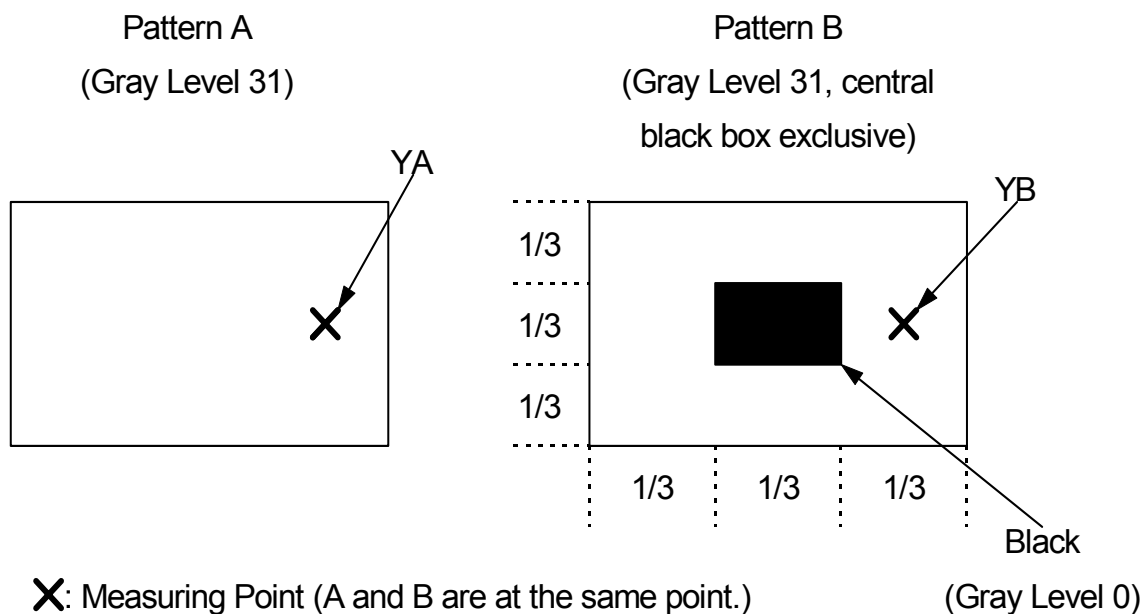
YB: Brightness of Pattern B

Luminance meter : BM 5A (TOPCON)

Measurement distance : 500 mm +/- 50 mm

Ambient illumination : < 1 Lux

Measuring direction : Perpendicular to the surface of module



(Gray Level 0)

13. Handling Cautions

13-1) Mounting of module

4. Please power off the module when you connect the input/output connector.
- b) Please connect the ground pattern of the inverter circuit surely. If the connection is not perfect, some following problems may happen possibly.
 1. The noise from the backlight unit will increase.
4. The output from inverter circuit will be unstable.
4. In some cases a part of module will heat.
- c) Polarizer which is made of soft material and susceptible to flaw must be handled carefully.
- d) Protective film (Laminator) is applied on surface to protect it against scratches and diets. It is recommended to peel off the laminator before use and taking care of static electricity.

13-2) Precautions in mounting

- a) When metal part of the TFT-LCD module (shielding lid and rear case) is soiled, wipe it with soft dry cloth.
- b) Wipe off water drops or finger grease immediately. Long contact with water may cause discoloration or spots.
- c) TFT-LCD module uses glass which breaks or cracks easily if dropped or bumped on hard surface. Please handle with care.
- d) Since CMOS LSI is used in the module. So take care of static electricity and earth yourself when handling.

13-3) Adjusting module

- a) Adjusting volumes on the rear face of the module have been set optimally before shipment.
- b) Therefore, do not change any adjusted values. If adjusted values are changed, the specifications described may not be satisfied.

13-4) Others

- a) Do not expose the module to direct sunlight or intensive ultraviolet rays for many hours.
- b) Store the module at a room temperature place.
- c) The voltage of beginning electric discharge may over the normal voltage because of leakage current from approach conductor by to draw lump read lead line around.
- d) If LCD panel breaks, it is possibly that the liquid crystal escapes from the panel.
Avoid putting it into eyes or mouth. When liquid crystal sticks on hands, clothes or feet. Wash it out immediately with soap.
- e) Observe all other precautionary requirements in handling general electronic components.
- f) Please adjust the voltage of common electrode as material of attachment by 1 module.

14. Reliability Test

| No | Test Item | Test Condition |
|----|---|--|
| 1 | High Temperature Storage Test | Ta = +80°C, 240 hrs |
| 2 | Low Temperature Storage Test | Ta = -25°C, 240 hrs |
| 3 | High Temperature Operation Test | Ta = +80°C, 240 hrs |
| 4 | Low Temperature Operation Test | Ta = -25°C, 240 hrs |
| 5 | High Temperature & High Humidity Operation Test | Ta = +60°C, 90%RH, 240 hrs (No Condensation) |
| 6 | Thermal Cycling Test (non-operating) | -20°C ← → +80°C, 100 Cycles 30 min 30 min |
| 7 | Vibration Test (non-operating) | Frequency : 10 ~ 57 Hz, Amplitude : 0.15 mm 58~500Hz, 1G Sweep time : 11 min ; Test Period : 3 hrs (1 hr for each direction of X, Y, Z) |
| 8 | Shock Test (non-operating) | 80G, 6ms, X,Y, Z 1 times for each direction |
| 9 | Electron Static Discharge | C=150pF,R=330Ω Contact=±8KV , Air=±15KV 10 times/terminal |

Ta: ambient temperature

Note: The protective film must be removed before temperature test

[Criteria]

In the standard conditions, there is not display function NG issue occurred. (Including: line defect, no image). All the cosmetic specification is judged before the reliability stress.

15.Packing


| ZONE | REV. | DOCUMENT NO. | DESCRIPTION | DATE | REV.BY |
|------|------|--------------|-------------|------|--------|
|------|------|--------------|-------------|------|--------|

NOTE:

- 1.Q'TY: 20 pcs panel/carton.
- 2.Dimension: 530*295*230mm
- 3.Weight: 10.00 Kg

| ITEM | PART NO. | DESCRIPTION | QTY | REMARK |
|------|------------|-------------|-----|--------|
| 4 | 50-0100111 | CARTON | 1 | |
| 3 | 50-0500281 | 抗靜電袋 | 20 | 抗靜電 |
| 2 | | PD080SL1 | 20 | |
| 1 | 50-0301691 | 瓦楞隔板緩衝材 | 1 | 上蓋+底座 |

| MTL.SPEC. | | UNSPECIFIED TOL'S | | REMARK | |
|-----------|--------|-------------------|---------|--------|-----------|
| | | ANGLE | | | |
| | | ROUGHNESS | | | |
| APPROVE | Franks | '06.12.12 | SCALE | UNIT | SHEET |
| CHECK | Franks | '06.12.12 | | | 1 OF 1 |
| DRAWN | Ethanc | '06.12.12 | MTL.NO. | | DWG FILE: |

 元太科技工業股份有限公司
Prime View International Co., Ltd.

DWG.TITLE
PD080SL1 Packing Draw

REV. 01

A₄ SIZE