

**Version : 1.9**

## TECHNICAL SPECIFICATION

### MODEL NO. : PD104SL5

☐ Customer's Confirmation

Customer \_\_\_\_\_

Date \_\_\_\_\_

By \_\_\_\_\_

☐ PVI's Confirmation

| Dep  | FAE      | Panel Design | Electronic Design | Mechanical Design       | Product Verification | Prepared by |
|------|----------|--------------|-------------------|-------------------------|----------------------|-------------|
| Sign | 劉豐發 4/11 | 劉金華 4/10/1   | 施建嘉 4/11/5<br>金聖坤 | 申峰 4/11/5<br>林育義 4/11/6 | 林東之 4/11/6           | 楊逸欣 4/10/6  |

# TECHNICAL SPECIFICATION

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### 1. Application

This data sheet applies to a color TFT LCD module, PD104SL5.

PD104SL5 module applies to OA product, car TV(must use Analog to Digital drive board), which require high quality flat panel display. If you must use in high reliability environment can't over reliability test condition

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.

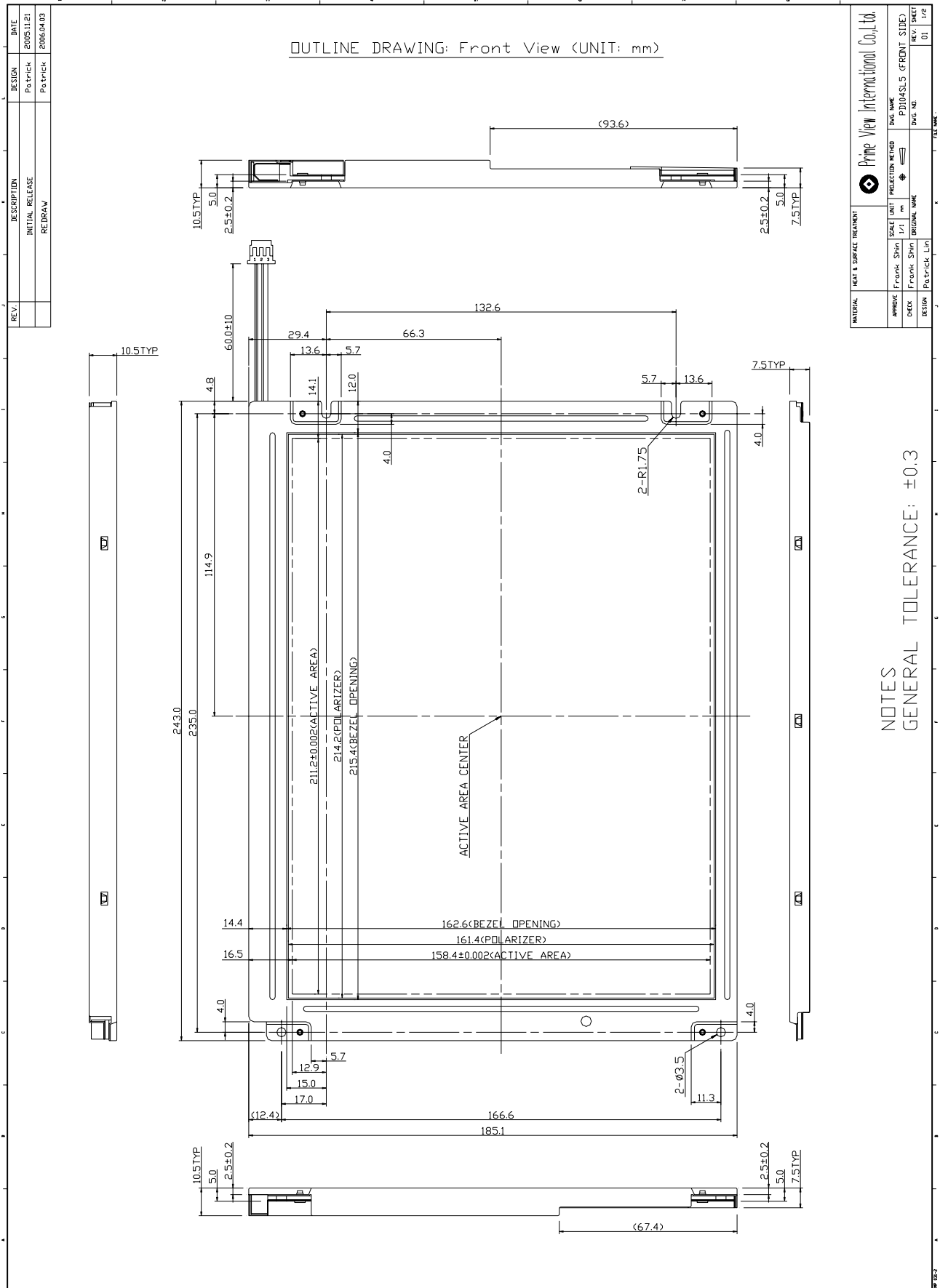
### 2. Features

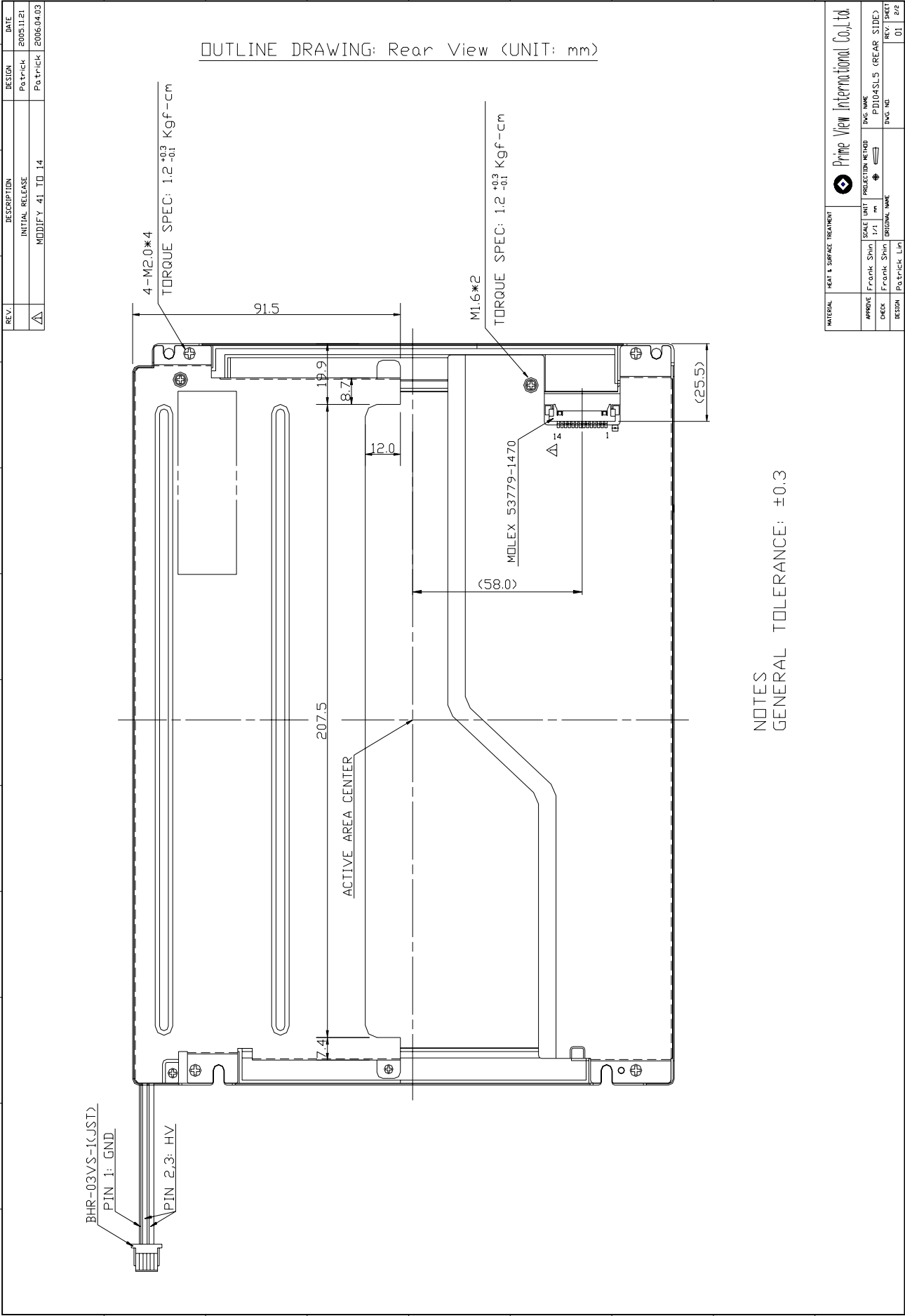
- . Amorphous silicon TFT LCD panel with back-light unit
- . Pixel in stripe configuration
- . Slim and compact, designed for O/A application
- . Display Colors : 262,144 colors
- . Optimum Viewing Direction : 12 o'clock
- . 3.3V LVDS interface standard: THC63LVDF64A as receiver
- . +3.3V DC supply voltage for TFT LCD panel driving
- . Backlight driving DC/AC inverter not included in this module
- . Wide Viewing Angle

### 3. Mechanical Specifications

| Parameter           | Specifications                   | Unit |
|---------------------|----------------------------------|------|
| Screen Size         | 26.4(diagonal)                   | cm   |
|                     | 10.4 (diagonal)                  | inch |
| Display Format      | 800×(R, G, B)×600                | dot  |
| Display Colors      | 262,144                          |      |
| Active Area         | 211.2(H)×158.4 (V)               | mm   |
| Pixel Pitch         | 0.264 (H)×0.264 (V)              | mm   |
| Pixel Configuration | Stripe                           |      |
| Outline Dimension   | 243 (w)×185.1(H)×10.5 (D) (typ.) | mm   |
| Weight              | 480±20,                          | g    |
| Back-light          | CCFL, 2 tubes                    |      |
| Surface treatment   | Anti-glare and WV film           |      |
| Display mode        | Normally white                   |      |

## 4. Mechanical Drawing of TFT-LCD Module





**5.Input Terminals**
**5-1) TFT-LCD Panel Driving**

Connector type: Molex 53779-1470

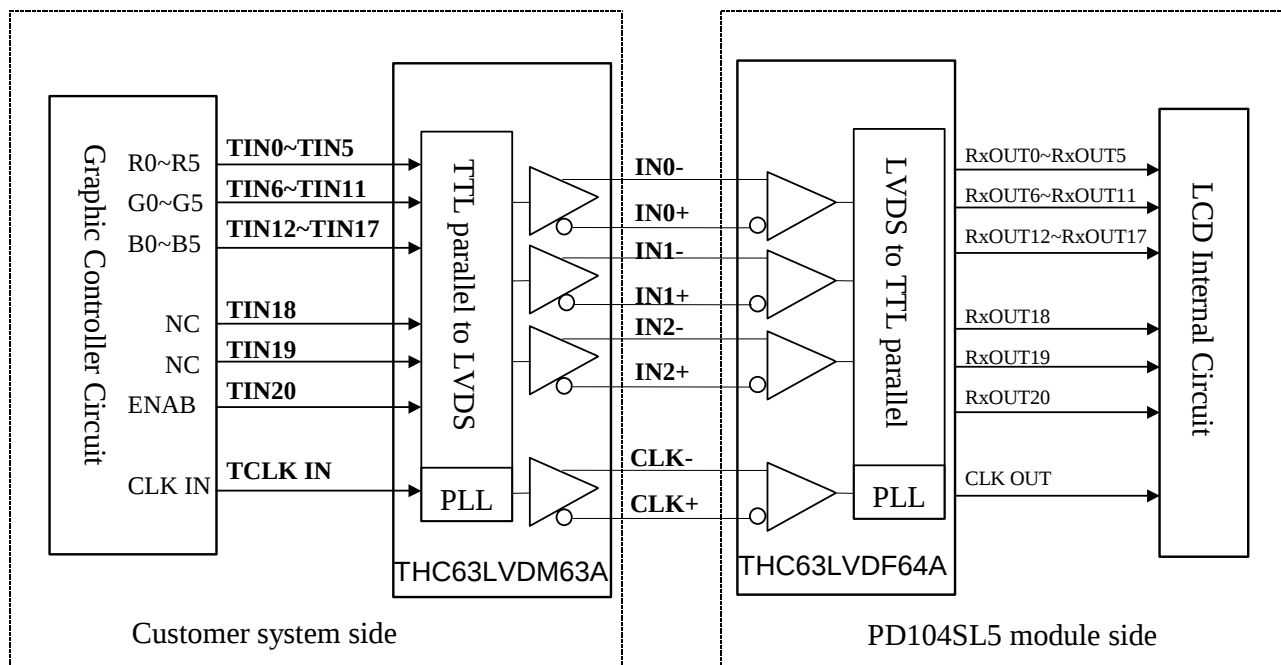
| Pin No. | Symbol | Function                                    | Remark |
|---------|--------|---------------------------------------------|--------|
| 1       | VDD    | Power supply : +3.3V                        |        |
| 2       | VDD    | Power supply : +3.3V                        |        |
| 3       | GND    |                                             |        |
| 4       | GND    |                                             |        |
| 5       | IN0-   | Pixel data Transmission pair 0 (negative -) |        |
| 6       | IN0+   | Pixel data Transmission pair 0 (positive +) |        |
| 7       | IN1-   | Pixel data Transmission pair 1 (negative -) |        |
| 8       | IN1+   | Pixel data Transmission pair 1 (positive +) |        |
| 9       | IN2-   | Pixel data Transmission pair 2 (negative -) |        |
| 10      | IN2+   | Pixel data Transmission pair 2 (positive +) |        |
| 11      | CLK-   | Sampling Clock (negative -)                 |        |
| 12      | CLK+   | Sampling Clock (positive +)                 |        |
| 13      | GND    |                                             |        |
| 14      | GND    |                                             |        |

Recommended Transmitter (THC63LVDM63A Thine) to PD104SL5 interface Assignment:

| Input Terminal of THC63LVDM63A Thine |     | Graphic controller output signal |                                 | Output signal symbol   | To PD104SL5 interface terminal(Symbol) |
|--------------------------------------|-----|----------------------------------|---------------------------------|------------------------|----------------------------------------|
| Symbol                               | No. | Symbol                           | Function                        |                        |                                        |
| TIN0                                 | 44  | R0                               | Red pixel data (LSB)            | Tout0-<br>Tout0+       | No.5 : IN0-<br>No.6 : IN0+             |
| TIN1                                 | 45  | R1                               | Red pixel data                  |                        |                                        |
| TIN2                                 | 47  | R2                               | Red pixel data                  |                        |                                        |
| TIN3                                 | 48  | R3                               | Red pixel data                  |                        |                                        |
| TIN4                                 | 1   | R4                               | Red pixel data                  |                        |                                        |
| TIN5                                 | 3   | R5                               | Red pixel data(MSB)             |                        |                                        |
| TIN6                                 | 4   | G0                               | Green pixel data (LSB)          | Tout1-<br>Tout1+       | No.7 : IN1-<br>No.8 : IN1+             |
| TIN7                                 | 6   | G1                               | Green pixel data                |                        |                                        |
| TIN8                                 | 7   | G2                               | Green pixel data                |                        |                                        |
| TIN9                                 | 9   | G3                               | Green pixel data                |                        |                                        |
| TIN10                                | 10  | G4                               | Green pixel data                |                        |                                        |
| TIN11                                | 12  | G5                               | Green pixel data(MSB)           |                        |                                        |
| TIN12                                | 13  | B0                               | Blue pixel data(LSB)            | Tout2-<br>Tout2+       | No.9 : IN2-<br>No.10 : IN2+            |
| TIN13                                | 15  | B1                               | Blue pixel data                 |                        |                                        |
| TIN14                                | 16  | B2                               | Blue pixel data                 |                        |                                        |
| TIN15                                | 18  | B3                               | Blue pixel data                 |                        |                                        |
| TIN16                                | 19  | B4                               | Blue pixel data                 |                        |                                        |
| TIN17                                | 20  | B5                               | Blue pixel data(MSB)            |                        |                                        |
| TIN18                                | 22  | NC                               | No connection                   | TCLK out-<br>TCLK out+ | No.11 : CLK IN-<br>No.12 : CLK IN+     |
| TIN19                                | 23  | NC                               | No connection                   |                        |                                        |
| TIN20                                | 25  | ENAB                             | Compound Synchronization signal |                        |                                        |
| CLK in                               | 26  | CLK                              | Data sampling clock             |                        |                                        |

Data stream of IN0-/+, IN1-/+, and IN2-/+, for PD104SL5

LVDS Interface Block Diagram



## 5-2) Backlight driving

Connector type : "BHR-03VS-1" of Japan Solderless Terminal MFG Co. LTD

| PIN NO. | Symbol | Description      | Remark         |
|---------|--------|------------------|----------------|
| 1       | LV     | Ground           | White          |
| 2       | HV     | Lamp power input | Pink (or Gray) |
| 3       | HV     | Lamp power input | Pink (or Gray) |

## 6. Absolute Maximum Ratings:

GND=0V, Ta=25

| Parameters                  | Symbol          | MIN. | MAX. | Unit | Remark |
|-----------------------------|-----------------|------|------|------|--------|
| Supply Voltage              | V <sub>DD</sub> | -0.3 | +4.0 | V    |        |
| Backlight Driving Voltage   | V <sub>L</sub>  | -    | 2000 | V    |        |
| Backlight Driving Frequency | F <sub>L</sub>  | 0    | 100  | KHz  |        |

## 7. Electrical Characteristics

### 7-1) Recommended Operating Conditions:

GND = 0V , Ta = 25

| Item                                        | Symbol          | Min.  | Typ.  | Max. | Unit | Remark               |
|---------------------------------------------|-----------------|-------|-------|------|------|----------------------|
| Supply Voltage                              | V <sub>DD</sub> | 3.0   | 3.3   | 3.6  | V    |                      |
| Current Dissipation                         | I <sub>DD</sub> | -     | 350   | 450  | mA   | Note 7-1             |
| LVDS Differential input high threshold      | V <sub>TH</sub> | -     | -     | 100  | mV   | Note 7-2             |
| LVDS Differential input low threshold       | V <sub>TL</sub> | -100  | -     | -    |      |                      |
| Lamp Current                                | I <sub>FL</sub> | 6.0   | 14.0  | 16.0 | mA   | Note 7-3<br>Note 7-5 |
| Lamp Voltage                                | V <sub>L</sub>  | 400   | 550   | 600  | Vrms | Note 7-3             |
| Starting Voltage (25 )<br>(Reference Value) | V <sub>S</sub>  | -     | -     | 875  | Vrms | Note 7-4             |
| Starting Voltage (0 )<br>(Reference Value)  | V <sub>S</sub>  | -     | -     | 1300 | Vrms |                      |
| Lamp Driving Frequency                      | F <sub>L</sub>  | 30    | 55    | 60   | KHz  |                      |
| Lamp power consumption                      |                 | 4     | 8     | 11   | W    | Note 7-5             |
| Lamp Life Time                              |                 | 10000 | 15000 |      | Hrs  | Note 7-6             |
| LCD Panel Life Time(MTBF)                   |                 |       | 50000 |      | Hrs  |                      |

Note 7-1 : To test the current dissipation of VDD, 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

Idd current dissipation testing pattern

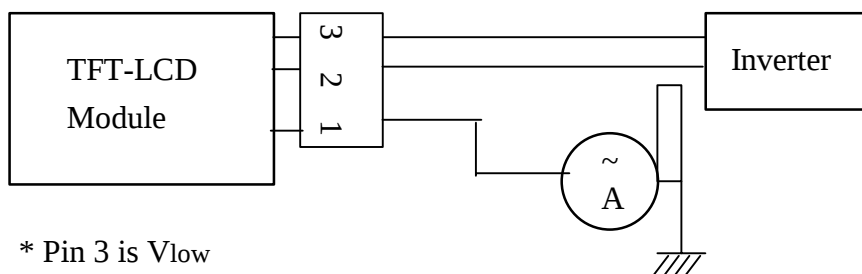
Note 7-2 : Please refers to THC63LVDF64A specification by THINE Corporation. This LCD module conforms to LVDS standard.

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 output lamp current must between Min. and Max. to avoid the abnormal display image caused by B/L.

Note 7-4 : The "Max of 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 3 is V<sub>low</sub>

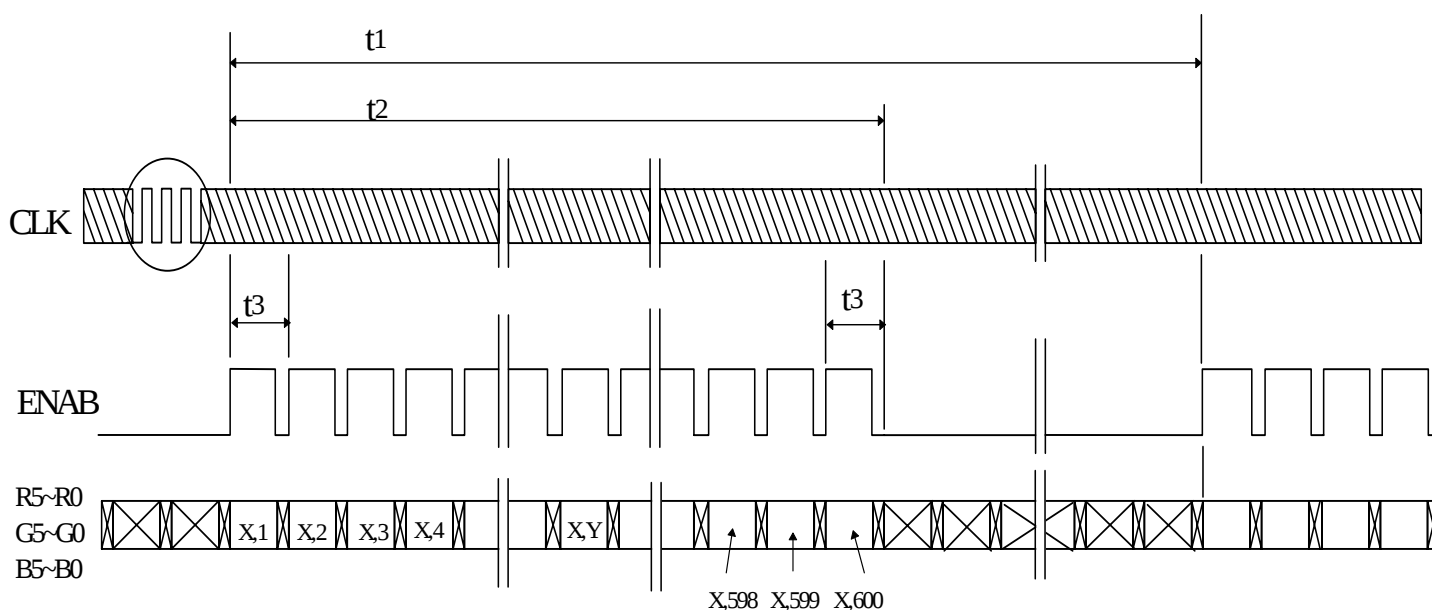
\*\* Current meter :  
Yokogawa 2016-01

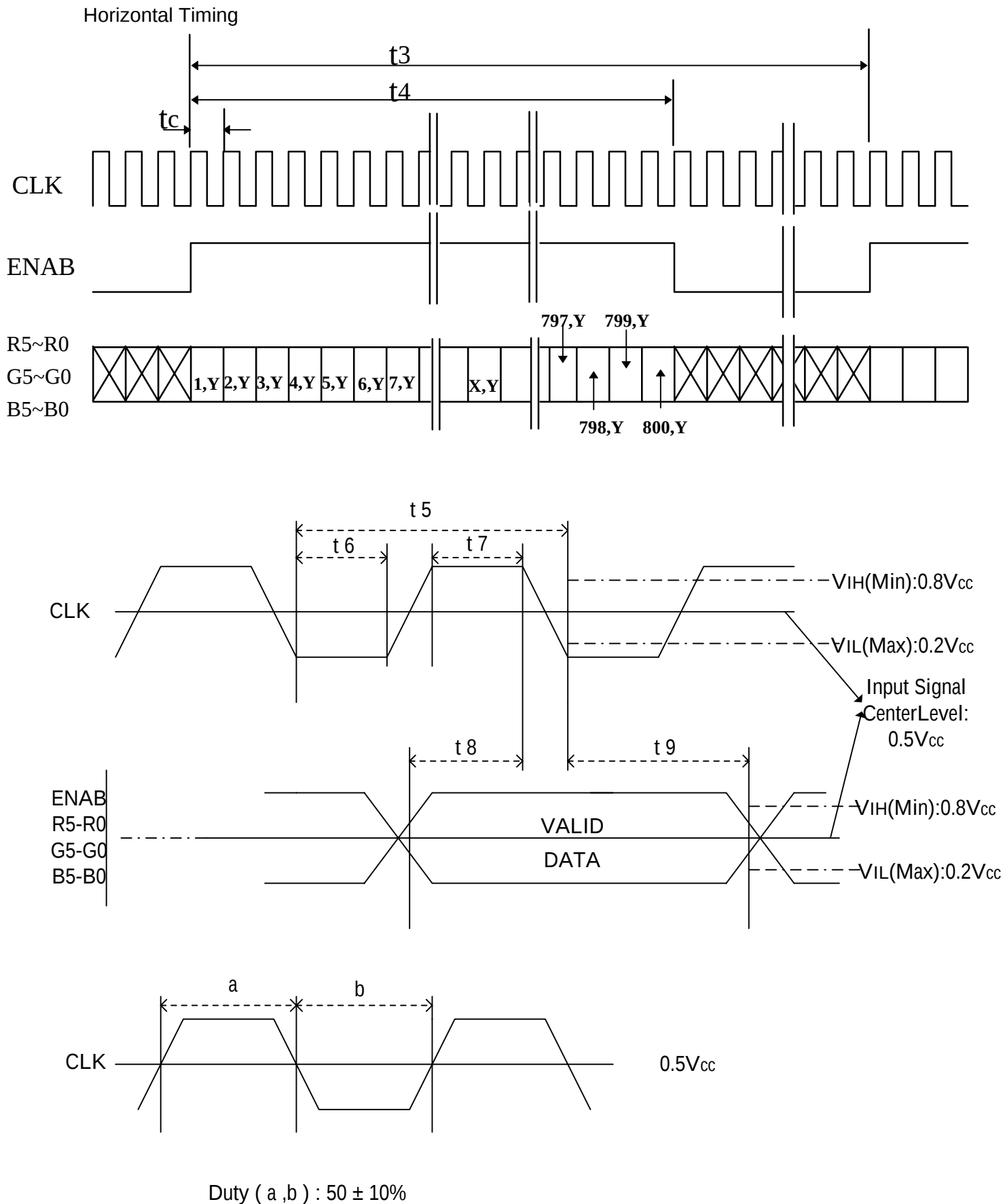
#### Lamp current dissipation testing configuration

Note 7-6: The life time is determined as the time at which brightness of lamp is 50% compare to that of initial value at the typical lamp current.

#### 7-2) Input / Output signal timing chart

##### (A) Vertical Timing





## D) Timing Specifications

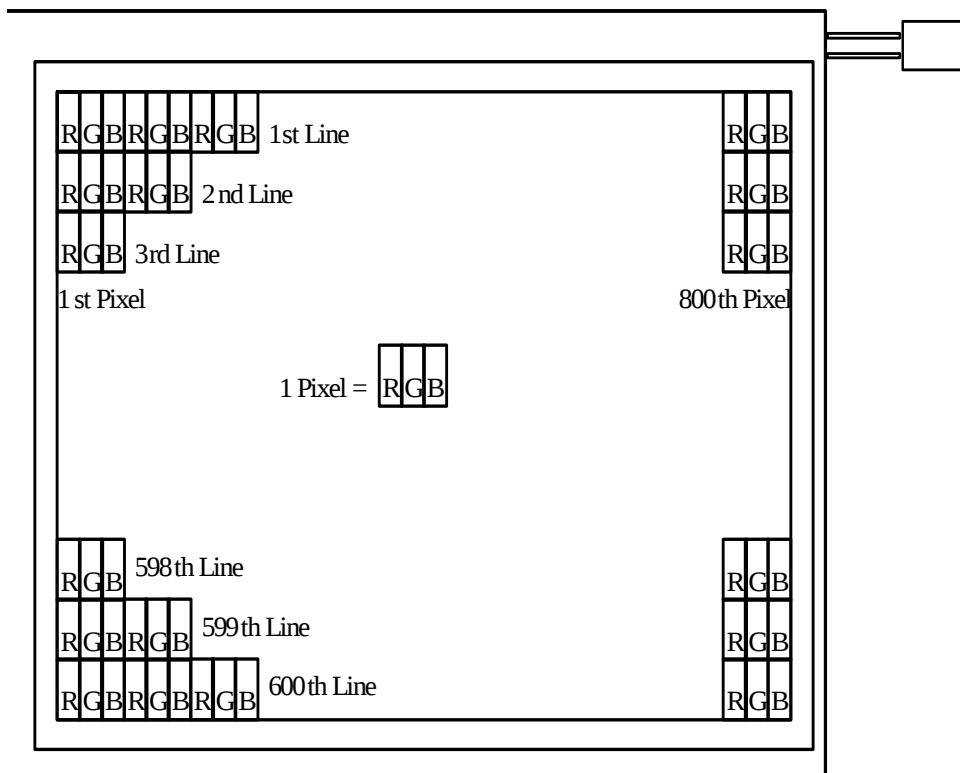
| Item                      | symbol | Min.     | Typ.      | Max.      | Unit | Remark |
|---------------------------|--------|----------|-----------|-----------|------|--------|
| Frame Cycling             | t1     | 604 X t3 | 628 X t3  | 800 X t3  | -    |        |
|                           | 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

## 7-3) Display Color and Gray Scale Reference

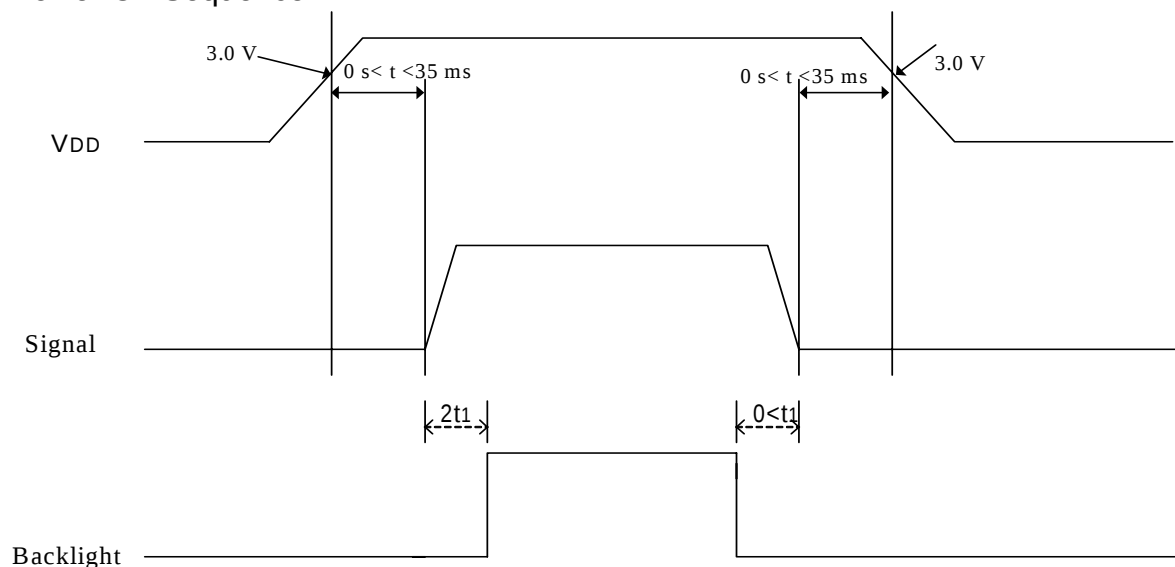
| Color        |            | Input Color Data |    |    |    |    |    |       |    |    |    |    |    |      |    |    |    |    |    |
|--------------|------------|------------------|----|----|----|----|----|-------|----|----|----|----|----|------|----|----|----|----|----|
|              |            | Red              |    |    |    |    |    | Green |    |    |    |    |    | Blue |    |    |    |    |    |
|              |            | 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  |
|              | Red (63)   | 1                | 1  | 1  | 1  | 1  | 1  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Green (63) | 0                | 0  | 0  | 0  | 0  | 0  | 1     | 1  | 1  | 1  | 1  | 1  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Blue (63)  | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 1    | 1  | 1  | 1  | 1  | 1  |
|              | Cyan       | 0                | 0  | 0  | 0  | 0  | 0  | 1     | 1  | 1  | 1  | 1  | 1  | 1    | 1  | 1  | 1  | 1  | 1  |
|              | Magenta    | 1                | 1  | 1  | 1  | 1  | 1  | 0     | 0  | 0  | 0  | 0  | 0  | 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          | Red (00)   | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Red (01)   | 0                | 0  | 0  | 0  | 0  | 1  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Red (02)   | 0                | 0  | 0  | 0  | 1  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Darker     |                  |    |    |    |    |    |       |    |    |    |    |    |      |    |    |    |    |    |
|              | ↓          | ↓                | ↓  | ↓  | ↓  | ↓  | ↓  | ↓     | ↓  | ↓  | ↓  | ↓  | ↓  | ↓    | ↓  | ↓  | ↓  | ↓  | ↓  |
|              | Brighter   |                  |    |    |    |    |    |       |    |    |    |    |    |      |    |    |    |    |    |
|              | Red (61)   | 1                | 1  | 1  | 1  | 0  | 1  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Red (62)   | 1                | 1  | 1  | 1  | 1  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
| Red (63)     | 1          | 1                | 1  | 1  | 1  | 1  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  |    |
| Green        | Green (00) | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Green (01) | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 1  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Green (02) | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 1  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Darker     |                  |    |    |    |    |    |       |    |    |    |    |    |      |    |    |    |    |    |
|              | ↓          | ↓                | ↓  | ↓  | ↓  | ↓  | ↓  | ↓     | ↓  | ↓  | ↓  | ↓  | ↓  | ↓    | ↓  | ↓  | ↓  | ↓  | ↓  |
|              | Brighter   |                  |    |    |    |    |    |       |    |    |    |    |    |      |    |    |    |    |    |
|              | Green (61) | 0                | 0  | 0  | 0  | 0  | 0  | 1     | 1  | 1  | 1  | 0  | 1  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Green (62) | 0                | 0  | 0  | 0  | 0  | 0  | 1     | 1  | 1  | 1  | 1  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Green (63) | 0                | 0  | 0  | 0  | 0  | 0  | 1     | 1  | 1  | 1  | 1  | 1  | 0    | 0  | 0  | 0  | 0  | 0  |
| Blue         | Blue (00)  | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 0  |
|              | Blue (01)  | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 0  | 0  | 1  |
|              | Blue (02)  | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 0    | 0  | 0  | 1  | 0  | 0  |
|              | Darker     |                  |    |    |    |    |    |       |    |    |    |    |    |      |    |    |    |    |    |
|              | ↓          | ↓                | ↓  | ↓  | ↓  | ↓  | ↓  | ↓     | ↓  | ↓  | ↓  | ↓  | ↓  | ↓    | ↓  | ↓  | ↓  | ↓  | ↓  |
|              | Brighter   |                  |    |    |    |    |    |       |    |    |    |    |    |      |    |    |    |    |    |
|              | Blue (61)  | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 1    | 1  | 1  | 1  | 0  | 1  |
|              | Blue (62)  | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 1    | 1  | 1  | 1  | 1  | 0  |
|              | Blue (63)  | 0                | 0  | 0  | 0  | 0  | 0  | 0     | 0  | 0  | 0  | 0  | 0  | 1    | 1  | 1  | 1  | 1  | 1  |

#### 7-4) Pixel Arrangement

The LCD module pixel arrangement is the stripe.



## 8. 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 (ENAB,CLK, Data) low level or high impedance

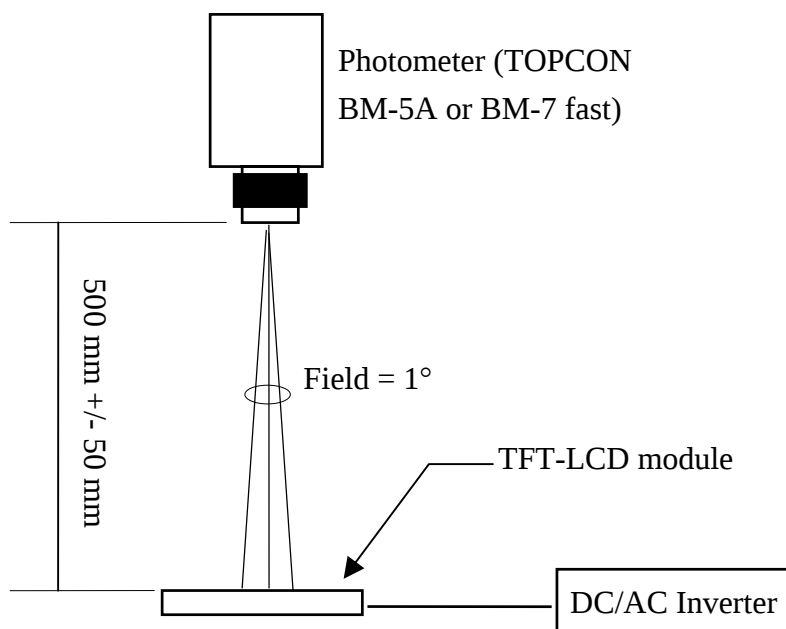
## 9.) Optical Characteristics

### 9-1) Specification:

Ta = 25

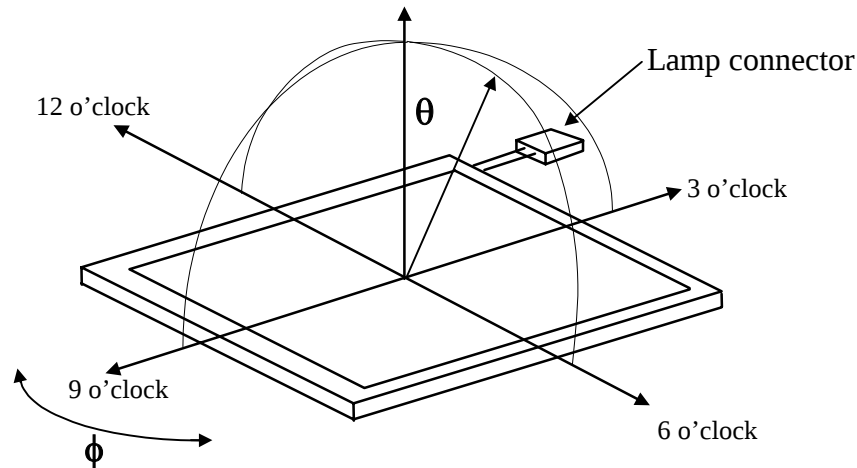
| Parameter            |            | Symbol            | Condition         | MIN. | TYP. | MAX. | Unit              | Remarks  |
|----------------------|------------|-------------------|-------------------|------|------|------|-------------------|----------|
| Viewing Angle        | Horizontal | θ                 | CR≥10             | ±55  | ±60  | -    | deg               | Note 9-1 |
|                      | Vertical   | θ (to 12 o'clock) |                   | 50   | 55   | -    | deg               |          |
|                      |            | θ (to 6 o'clock)  |                   | 35   | 40   | -    | deg               |          |
| Contrast Ratio       |            | CR                | Optimum direction | 200  | 400  | -    | -                 | Note 9-2 |
| Response time        | Rise       | Tr                | θ =0°             | -    | 15   | 50   | ms                | Note 9-4 |
|                      | Fall       | Tf                | φ =0°             | -    | 25   | 50   | ms                |          |
| Luminance            |            | L                 | θ =0°/ φ =0°      | 300  | 350  | -    | cd/m <sup>2</sup> | Note 9-3 |
| Luminance Uniformity |            | U                 |                   | 55   | 80   | -    | %                 | Note 9-5 |
| White Chromaticity   |            | x                 |                   | 0.29 | 0.32 | 0.35 | -                 |          |
|                      |            | y                 |                   | 0.32 | 0.35 | 0.38 | -                 |          |
| Cross Talk Ratio     |            | CTK               |                   | -    | -    | 3.5  | %                 | Note 9-6 |

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.



Optical characteristics measuring configuration

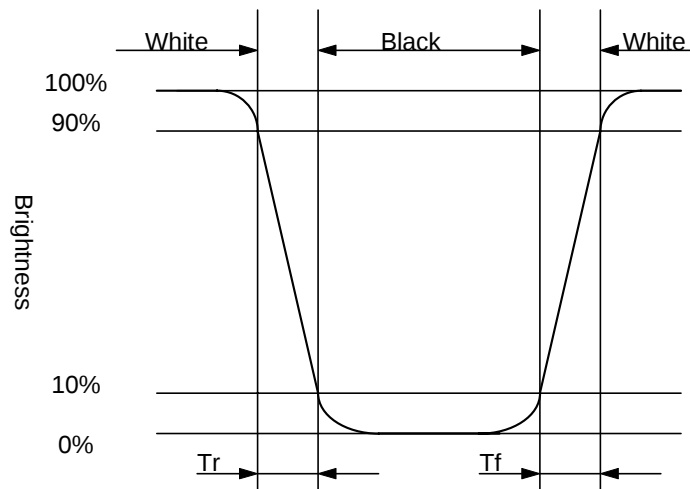
Note 9-1 : The definitions of viewing angles are as follows.



Note 9-2 : The definition of contrast ratio  $CR = \frac{\text{Luminance at gray level 63}}{\text{Luminance at gray level 0}}$

Note 9-3 : Topcon BM-5A or BM-7 fast luminance meter 1°field of view is used in the testing (after 30 minutes' operation). The typical luminance value is measured at lamp current 14.0 mA.

Note 9-4: Definition of Response Time  $T_r$  and  $T_f$ :



Note 9-5: The uniformity of LCD is defined as

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

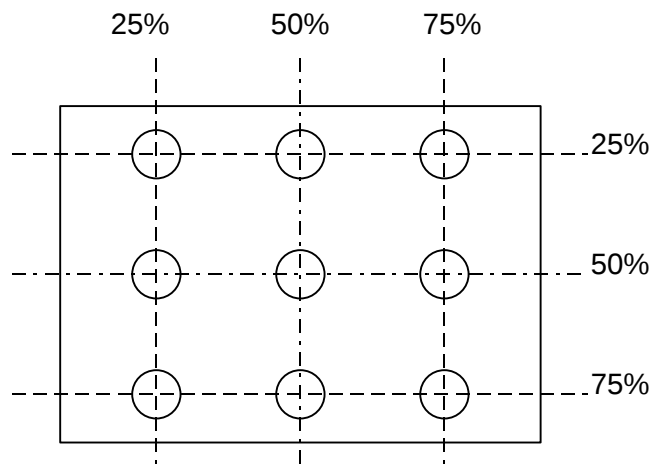
Luminance meter : BM-5A or BM-7 fast(TOPCON)

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 9-6: Cross Talk (CTK) =  $\frac{|YA-YB|}{YA} \times 100\%$

YA: Brightness of Pattern A

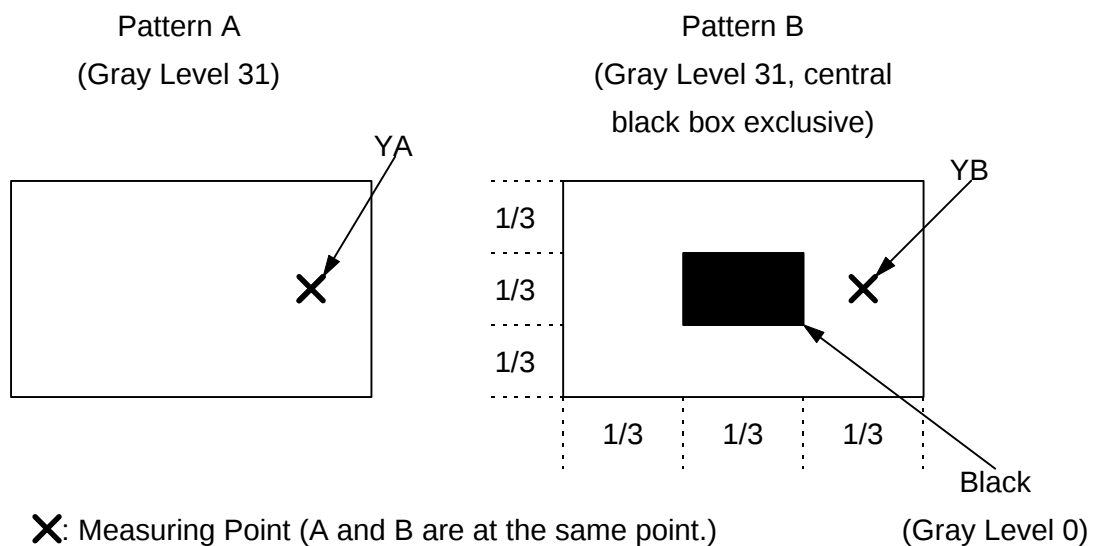
YB: Brightness of Pattern B

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



## 10. Handling Cautions

### 10-1) Mounting of module

- a) 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.
  - 2. The output from inverter circuit will be unstable.
  - 3. 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 dirt. It is recommended to peel off the laminator before use and taking care of static electricity.

### 10-2) 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.

### 10-3) 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.

### 10-4) 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.

### 10-5) Polarizer mark

The polarizer mark is to describe the direction of wide view angle film how to match up with the rubbing direction.

**11. Reliability Test**

| No | Test Item                                       | Test Condition                                                                                                                               | Remark |
|----|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | High Temperature Storage Test                   | Ta = +70 , 240 hrs                                                                                                                           |        |
| 2  | Low Temperature Storage Test                    | Ta = -20 , 240 hrs                                                                                                                           |        |
| 3  | High Temperature Operation Test                 | Ta = +70 , 240 hrs                                                                                                                           |        |
| 4  | Low Temperature Operation Test                  | Ta = -20 , 240 hrs                                                                                                                           |        |
| 5  | High Temperature & High Humidity Operation Test | Ta = +50 , 80%RH, 240 hrs<br>(No Condensation)                                                                                               |        |
| 6  | Thermal Cycling Test<br>(non-operating)         | 0 $\leftrightarrow$ +60 , 100 Cycles<br>1Hr 1Hr                                                                                              |        |
| 7  | Vibration Test<br>(non-operating)               | Frequency : 10 ~ 57 Hz, Amplitude : 0.15 mm<br>58~500Hz, 1G<br>Sweep time: 11 min<br>Test Period: 3 hrs (1 hr for each direction of X, Y, Z) |        |
| 8  | Shock Test<br>(non-operating)                   | 80G, 6ms, X,Y, Z<br>1 times for each direction                                                                                               |        |
| 9  | Electron Static Discharge                       | C=150Pf,R=330 $\Omega$<br>Contact= $\pm$ 8KV<br>Air= $\pm$ 15KV<br>10 times/terminal                                                         |        |

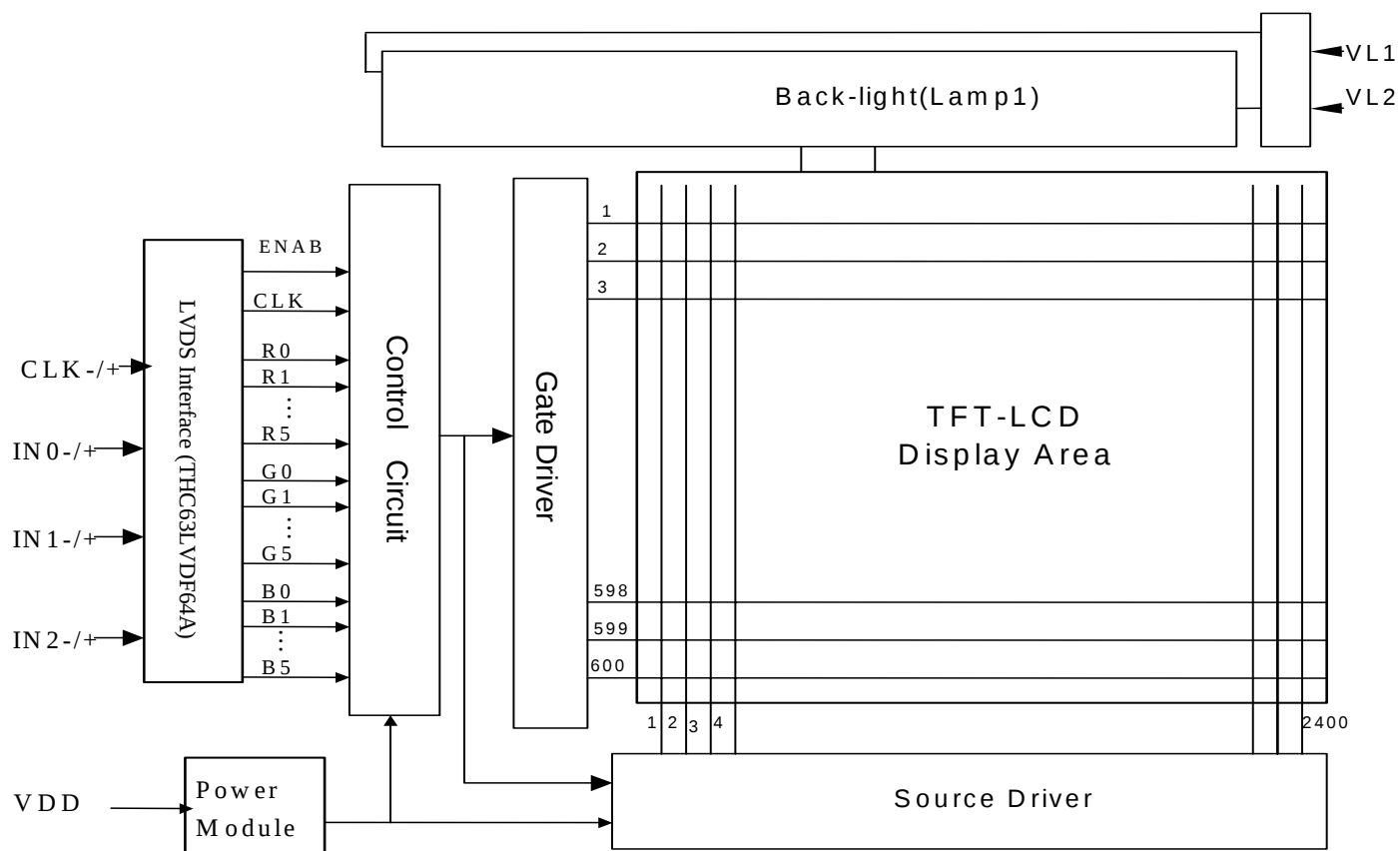
Ta: ambient temperature

Note : The protective film must be removed before temperature test.

[Criteria]

1. Main LCD should normally work under the normally condition no defect of function,screen quality and appearance (including : mura ,line defect ,no image)
2. After the temperature and humidity test, the luminance and CR (Contrast ratio) ,should not be lower than minimum of specification.
3. After the vibration and shock test , can't be found chip broken.

## 12.)Block Diagram



### 13.)Packing

| ZONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | REV.       | DOCUMENT NO.      | DESCRIPTION                                                                   | DATE   | REV.BY       |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------|-------------------------------------------------------------------------------|--------|--------------|------|----------|-------------|-----|--------|---|------------|--------|---|--|---|------------|-----|----|-----|---|--|----------------|----|--|---|------------|---------|---|--------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                   |                                                                               |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| <p><b>NOTE:</b></p> <p>1.Q'TY: 10 pcs module /carton.<br/>                 2.Dimension: 530*295*230mm<br/>                 3.Weight: 7.0 Kg</p>                                                                                                                                                                                                                                                                                                                                                                                              |            |                   |                                                                               |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>ITEM</th> <th>PART NO.</th> <th>DESCRIPTION</th> <th>QTY</th> <th>REMARK</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>50-0100111</td> <td>CARTON</td> <td>1</td> <td></td> </tr> <tr> <td>3</td> <td>50-0500081</td> <td>金屬袋</td> <td>10</td> <td>抗靜電</td> </tr> <tr> <td>2</td> <td></td> <td>10.4"HB Module</td> <td>10</td> <td></td> </tr> <tr> <td>1</td> <td>50-0301121</td> <td>瓦楞隔板緩衝材</td> <td>1</td> <td>上蓋+ 底座</td> </tr> </tbody> </table> |            |                   |                                                                               |        |              | ITEM | PART NO. | DESCRIPTION | QTY | REMARK | 4 | 50-0100111 | CARTON | 1 |  | 3 | 50-0500081 | 金屬袋 | 10 | 抗靜電 | 2 |  | 10.4"HB Module | 10 |  | 1 | 50-0301121 | 瓦楞隔板緩衝材 | 1 | 上蓋+ 底座 |
| ITEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PART NO.   | DESCRIPTION       | QTY                                                                           | REMARK |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50-0100111 | CARTON            | 1                                                                             |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50-0500081 | 金屬袋               | 10                                                                            | 抗靜電    |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            | 10.4"HB Module    | 10                                                                            |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50-0301121 | 瓦楞隔板緩衝材           | 1                                                                             | 上蓋+ 底座 |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| MTL.SPEC.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            | UNSPECIFIED TOL'S |                                                                               | REMARK |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            | ANGLE             |                                                                               |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            | ROUGHNESS         |                                                                               |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| APPROVE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Frank      | '05.11.22         | SCALE                                                                         | UNIT   | SHEET 1 OF 1 |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| CHECK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Frank      | '05.11.22         | DWG.TITLE<br><div style="text-align: center; font-size: 24px;">PD104SL5</div> |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| DRAWN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Patrick    | '05.11.22         |                                                                               |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
| MTL.NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                   | DWG FILE:                                                                     |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                   | REV. 02 <span style="float: right;">A4 SIZE</span>                            |        |              |      |          |             |     |        |   |            |        |   |  |   |            |     |    |     |   |  |                |    |  |   |            |         |   |        |

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

## Revision History

| Rev. | Issued Date   | Revised Content                                                                                                                                                                                                                                                                                                                                                          |
|------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.0  | Mar.27, 2002  | New                                                                                                                                                                                                                                                                                                                                                                      |
| 1.1  | Mar.10, 2003  | Modify :<br>2. page 03 : Mechanical Specifications Weight from 470g to 480g .<br>3. page 05 : Rear View .<br>4. page 08 : Lamp Life Time to 15000 hrs .<br>5. page 10 : D)Timing specifications . Frame cycling from 660×t3 to 800×t3 , Horizontal Scanning Time from 844×t5 to 920×t5 .<br>5.page 15 : White Chromaticity ( x from 0.33 to 0.31 , y 0.39 to 0.34) .     |
| 1.2  | May,20,2003   | Modify page 05 : Rear view – Connector Drawing.                                                                                                                                                                                                                                                                                                                          |
| 1.3  | May,30.2003   | Modify page 05 : Rear view – Add Dimension Lines and Length Notes.                                                                                                                                                                                                                                                                                                       |
| 1.4  | Nov,27.2003   | Modify P15:1.White Chromaticity (X from 0.31 to 0.32 ; Y from 0.34 to 0.35)<br>6. Contrast Ratio Typ from 180 to 400 ; Min from 100 to 200 .<br>7. TC spec delete .<br>P19:Thermal Cycling test condtion :<br>0 ↔+25 ↔+60 , 50 Cycles to 0 ↔+60 , 100 Cycles<br>1Hr   0.5Hr   1Hr                                   1Hr   1Hr<br>Add P19: Indication of Lot Number Label |
| 1.5  | Aug ,20.2004  | Modify P05 : Rear View                                                                                                                                                                                                                                                                                                                                                   |
| 1.6  | Oct. 04 ,2004 | Modify<br>Page 08 : Rename Lamp initial voltage to Kick-off voltage<br>add Note 7-4 : The kick-off times   1sec.<br>Page 21 : Packing                                                                                                                                                                                                                                    |
| 1.7  | Jan.10,2005   | Add<br>Page 19: Note : The protective film must be removed before temperature test.<br>Delete<br>Page 19: Indication of Lot Number Label(Oracle system induction)                                                                                                                                                                                                        |
| 1.8  | Nov.18,2005   | Add<br>Page 19: 11. Reliability Test<br>High Temperature Operation Test Ta=70 ,240hrs<br>Modify<br>Page 19: 11. Reliability Test<br>High Temperature Storage Test from Ta=+60 ,240hrs change to Ta=+70 ,240hrs<br>Low Temperature Operation Test from Ta=0 ,240hrs change to Ta=-20 ,240hrs                                                                              |
| 1.9  | Apr.3,2006    | Modify<br>Page4: 4.Mechanical Drawing of TFT-LCD Module                                                                                                                                                                                                                                                                                                                  |