



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司



Winstar Display Co., LTD

華凌光電股份有限公司



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SPECIFICATION

CUSTOMER : _____

MODULE NO.: WF70RTIAGDNN0#

| | |
|---|--|
| <p>APPROVED BY:</p> <p>(FOR CUSTOMER USE ONLY)</p> | <p>PCB VERSION: _____</p> <p>DATA: _____</p> |
|---|--|

| SALES BY | APPROVED BY | CHECKED BY | PREPARED BY |
|--------------------------------|-------------|------------|-------------|
| | | | 葉虹蘭 |
| ISSUED DATE: 2016/10/05 | | | |



RECORDS OF REVISION

DOC. FIRST ISSUE

| VERSION | DATE | REVISED PAGE NO. | SUMMARY |
|---------|------------|------------------|--|
| 0 | 2013/10/17 | | First issue |
| A | 2015/05/12 | | Add size & Surface. Modify Block Diagram & Reliability. |
| B | 2015/08/27 | | Modify AC CHARATERISTICS. |
| C | 2016/01/21 | | Modify Static electricity test |
| D | 2016/08/10 | | Modify Vibration test. |
| E | 2016/10/05 | | Modify Summary Add Aspect Ratio |

Contents

1.Module Classification Information

2.Summary

3.General Specification

4.Absolute Maximum Ratings

5.Electrical Characteristics

6.DC Characteristics

7.AC Characteristics

8.Optical Characteristics

9.Interface

10.Block Diagram

11.Reliability

12.Contour Drawing

13.Other

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1.Module Classification Information

W F 70 R T I A G D N N 0 #
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

| | | | | | | | | | | | | |
|---|---|---|--|---------|---|--|----|------------------------------------|---------------|--------------------------------|---|---------|
| ① | Brand : WINSTAR DISPLAY CORPORATION | | | | | | | | | | | |
| ② | Display Type : F→TFT Type, J→Custom TFT | | | | | | | | | | | |
| ③ | Display Size : 7.0" TFT | | | | | | | | | | | |
| ④ | Model serials no. | | | | | | | | | | | |
| ⑤ | Backlight Type : | F→CCFL, White S→LED, High Light White | | | | T→LED, White Z→Nichia LED, White | | | | | | |
| ⑥ | LCD Polarize Type/ Temperature range/ Gray Scale Inversion Direction | A→Transmissive, N.T, IPS TFT C→Transmissive, N. T, 6:00 ; F→Transmissive, N.T,12:00 ; I→Transmissive, W. T, 6:00 K→Transflective, W.T,12:00 L→Transmissive, W.T,12:00 N→Transmissive, Super W.T, 6:00 | | | | Q→Transmissive, Super W.T, 12:00 R→Transmissive, Super W.T, O-TFT V→Transmissive, Super W.T, VA TFT W→Transmissive, Super W.T, IPS TFT X→Transmissive, W.T, VA TFT Y→Transmissive, W.T, IPS TFT Z→Transmissive, W.T, O-TFT | | | | | | |
| ⑦ | A : TFT LCD B : TFT+SCREW HOLES+CONTROL BOARD C : TFT+ SCREW HOLES +A/D BOARD D : TFT+ SCREW HOLES +A/D BOARD+CONTROL BOARD E : TFT+ SCREW HOLES +POWER BOARD | | | | | F : TFT+CONTROL BOARD G : TFT+ SCREW HOLES H : TFT+D/V BOARD I : TFT+ SCREW HOLES +D/V BOARD J : TFT+POWER BD | | | | | | |
| ⑧ | Resolution: | | | | | | | | | | | |
| | A | 128160 | B | 320234 | C | 320240 | D | 480234 | E | 480272 | F | 640480 |
| | G | 800480 | H | 1024600 | I | 320480 | J | 240320 | K | 800600 | L | 240400 |
| | M | 1024768 | N | 128128 | P | 1280800 | Q | 480800 | R | 640320 | S | 480128 |
| | T | 800320 | U | 8001280 | V | 176220 | W | 1280398 | X | 1024250 | Y | 1920720 |
| | Z | 800200 | 2 | 1024324 | 3 | 7201280 | 4 | 19201200 | 5 | 1366768 | 6 | 1280320 |
| ⑨ | D: Digital L : LVDS M:MIPI | | | | | | | | | | | |
| ⑩ | Interface: | | | | | | | | | | | |
| | N | Without control board | | | A | 8Bit | | B | 16Bit | | H | HDMI |
| | I | I2C Interface | | | R | RS232 | | S | SPI Interface | | U | USB |
| ⑪ | TS: | | | | | | | | | | | |
| | N | Without TS | | | T | Resistive touch panel | | | C | Capacitive touch panel (G-F-F) | | |
| | G | Capacitive touch panel (G-G) | | | | | C1 | Capacitive touch panel (G-F-F)+OCA | | | | |
| | C2 | Capacitive touch panel (G-F-F)+OCR | | | | | G1 | Capacitive touch panel (G-G)+OCA | | | | |
| | G2 | Capacitive touch panel (G-G)+OCR | | | | | B | CTP+GG+USB | | | | |
| ⑫ | Version: X:Raspberry pi | | | | | | | | | | | |
| ⑬ | Special Code | | #:Fit in with ROHS directive regulations | | | | | | | | | |

| | | |
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| | | |
|--|--|--|

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2.Summary

TFT 7.0”is a TN transmissive type color active matrix TFT liquid crystal display that use amorphous silicon TFT as switching devices. This module is a composed of a TFT_LCD module, It is usually designed for industrial application and this module follows RoHs.

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3. General Specifications

| Item | Dimension | Unit |
|--------------------------------|-----------------------------------|------|
| Size | 7.0 | inch |
| Dot Matrix | 800 × 3(RGB) × 480 | dots |
| Module dimension | 164.9(W) × 100.0(H) × 5.7(D) | mm |
| Active area | 154.08(W) × 85.92(H) | mm |
| Dot pitch | 0.0642(W) × 0.1790(H) | mm |
| LCD type | TFT, Normally White, Transmissive | |
| View Direction | 12 o'clock | |
| Gray Scale Inversion Direction | 6 o'clock | |
| Aspect Ratio | 16:9 | |
| Backlight Type | LED, Normally White | |
| With /Without TP | Without TP | |
| Surface | Anti-Glare | |

*Color tone slight changed by temperature and driving voltage.

4. Absolute Maximum Ratings

| Item | Symbol | Values | | Unit | Remark |
|-----------------------|---------|--------|------|------|--------------------|
| | | Min. | Max. | | |
| Power voltage | VCC | -0.3 | 5.0 | V | |
| | AVDD | 6.5 | 13.5 | V | |
| | VGH | -0.3 | 40.0 | V | |
| | VGL | -20.0 | 0.3 | V | |
| | VGH-VGL | — | 40.0 | V | |
| Operation Temperature | TOP | -30 | 85 | °C | |
| Storage Temperature | TST | -30 | 85 | °C | |
| LED Reverse Voltage | VR | — | 1.2 | V | Each LED Note 2 |
| LED Forward Current | IF | — | 25 | mA | Each LED |

Note 1: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

Note 2: VR Conditions: Zener Diode 20mA

5. Electrical Characteristics

5.1. Typical Operation Conditions

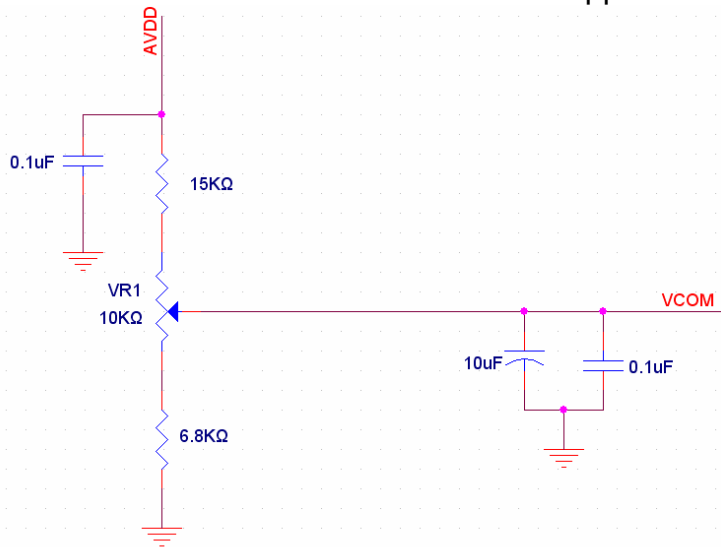
| Item | Symbol | Values | | | Unit | Remark |
|----------------------|--------|--------|------|------|------|--------|
| | | Min. | Typ | Max | | |
| Power voltage | VCC | 3.0 | 3.3 | 3.6 | V | Note 2 |
| | AVDD | 10.2 | 10.4 | 10.6 | V | |
| | VGH | 15.3 | 16.0 | 16.7 | V | |
| | VGL | -7.7 | -7.0 | -6.3 | V | |
| Input signal voltage | VCOM | 2.6 | 3.6 | 4.6 | V | |

Note 1: Be sure to apply VCC and VGL to the LCD first, and then apply VGH.

Note 2: VCC setting should match the signals output voltage (refer to Note 3) of customer's system board.

Note 3: DCLK, HS, VS, RESET, U/D, L/R, DE, R0~R7, G0~G7, B0~B7, MODE, DITHB.

Note 4: Typical VCOM is only a reference value. It must be optimized according to each LCM. Please use VR and base on below application circuit



5.2. Current Consumption

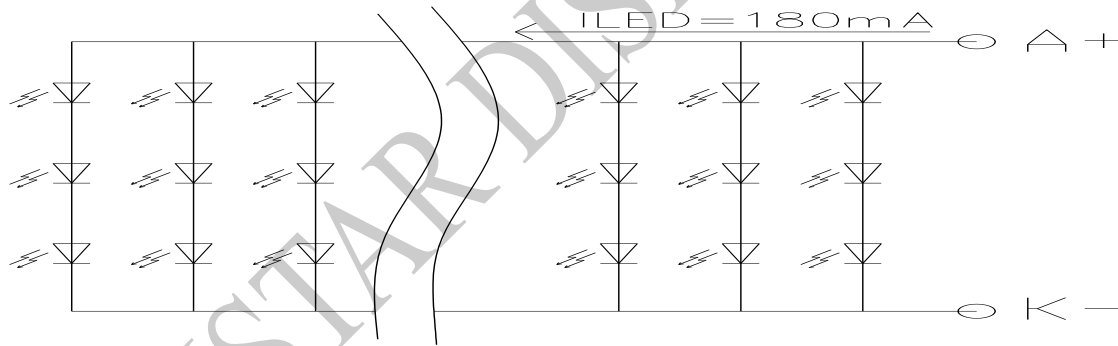
| Item | Symbol | Values | | | Unit | Remark |
|--------------------|--------|--------|-----|-----|------|-------------|
| | | Min. | Typ | Max | | |
| Current for Driver | IGH | - | 0.2 | 1.0 | mA | VGH =16V |
| | IGL | - | 0.2 | 1.0 | mA | VGL = -7V |
| | ICC | - | 4.0 | 10 | mA | VCC =3.3V |
| | IAVDD | - | 20 | 50 | mA | AVDD =10.4V |

5.3. Backlight Driving Conditions

| Item | Symbol | Values | | | Unit | Remark |
|---------------------|--------|--------|-----|------|------|--------|
| | | Min. | Typ | Max | | |
| LED forward voltage | VL | 8.4 | 9.3 | 10.2 | V | Note 1 |
| LED forward current | IL | 170 | 180 | 200 | mA | |
| LED life time | - | 20,000 | - | - | Hr | Note 2 |

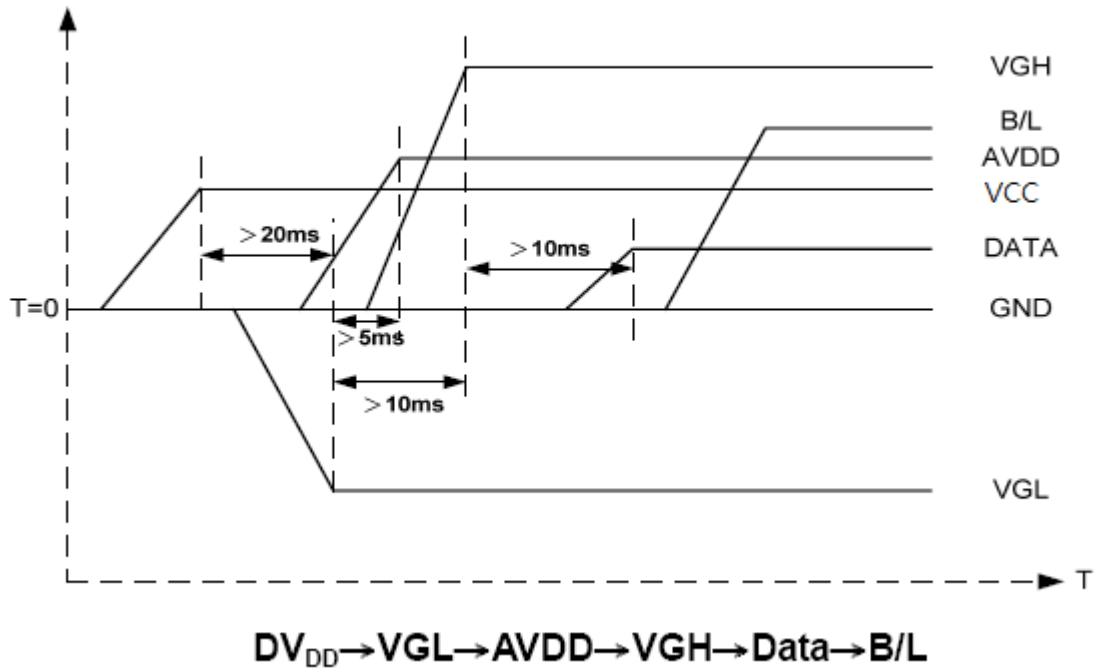
Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25°C and IL =180mA.

Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25°C and IL =180mA. The LED lifetime could be decreased if operating IL is larger than 180mA.

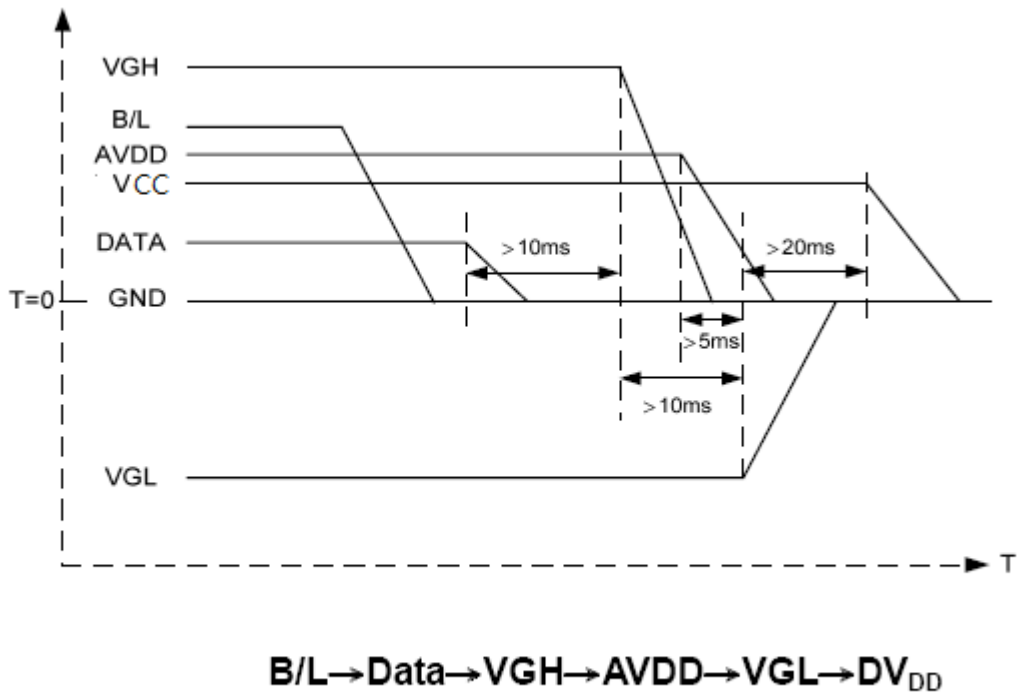


5.4. Power Sequence

a. Power on:



b. Power off:



Note: Data include R0~R7, B0~B7, GO~G7, U/D, L/R, DCLK, HS, VS, DE.

6.DC CHARATERISTICS

| Parameter | Symbol | Rating | | | Unit | Condition |
|--------------------------|--------|---------|-----|---------|------|-----------|
| | | Min | Typ | Max | | |
| Low level input voltage | VIH | 0.7 VCC | - | VCC | V | |
| High level input voltage | VIL | 0 | - | 0.3 VCC | V | |

Note : DCLK,HS,VS,RESET,U/D, L/R,DE,R0~R7,G0~G7,B0~B7,MODE,DITHB.

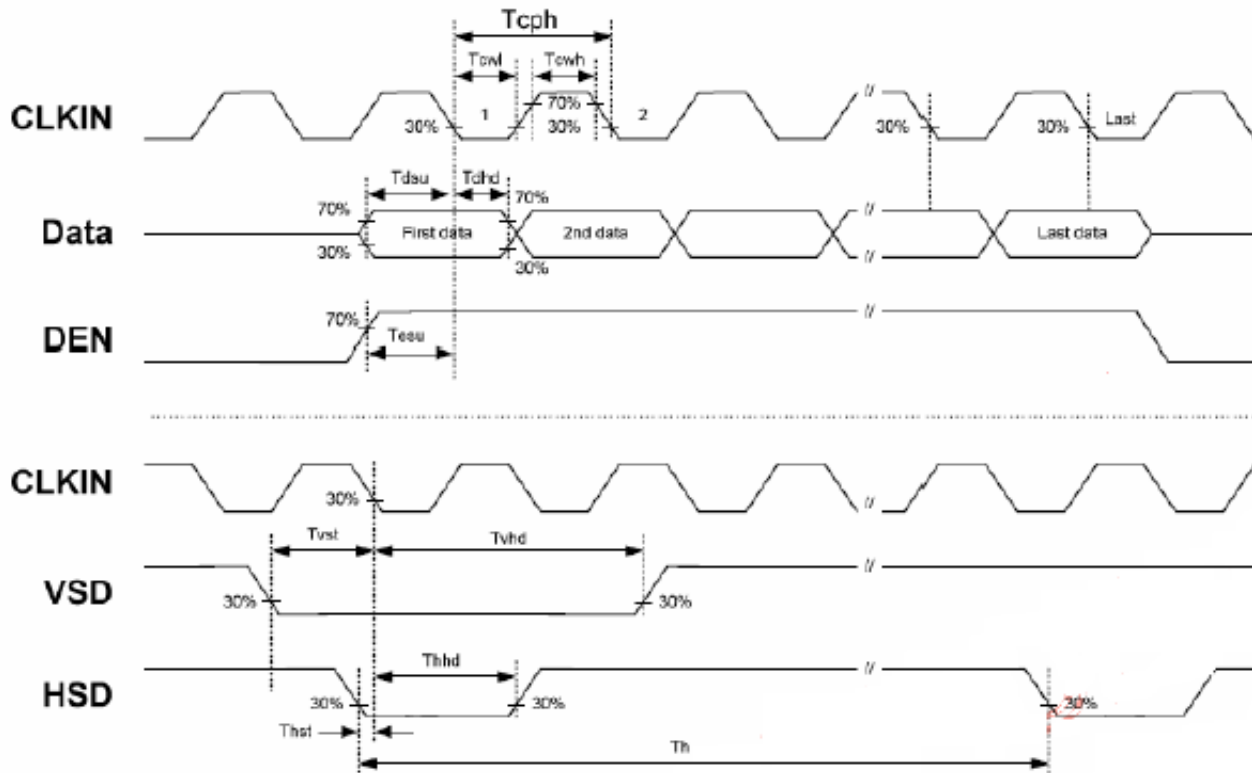
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7.AC CHARATERISTICS

7.1.

| Item | Symbol | Values | | | Unit | Remark |
|------------------------|--------|--------|-----|-----|------|-------------------|
| | | Min. | Typ | Max | | |
| HS setup time | Thst | 8 | — | — | ns | |
| HS hold time | Thhd | 8 | — | — | ns | |
| VS setup time | Tvst | 8 | — | — | ns | |
| VS hold time | Tvhd | 8 | — | — | ns | |
| Data setup time | Tdsu | 8 | — | — | ns | |
| Data hole time | Tdhd | 8 | — | — | ns | |
| DE setup time | Tesu | 8 | — | — | ns | |
| DE hole time | Teh | 8 | — | — | ns | |
| VCC Power On Slew rate | TPOR | — | — | 20 | ms | From 0 to 90% VCC |
| RESET pulse width | TRst | 1 | — | — | ms | |
| DCLK cycle time | Tcoh | 20 | — | — | ns | |
| DCLK pulse duty | Tcwh | 40 | 50 | 60 | % | |

7.2. Input Clock and Data Timing Diagram



7.3. Timing

| Item | Symbol | Values | | | Unit | Remark |
|-------------------------|--------|--------|------|------|------|--------|
| | | Min. | Typ | Max | | |
| Horizontal Display Area | thd | — | 800 | — | DCLK | |
| DCLK Frequency | fclk | 26.4 | 33.3 | 46.8 | MHz | |
| One Horizontal Line | th | 862 | 1056 | 1200 | DCLK | |
| HS pulse width | thpw | 1 | — | 40 | DCLK | |
| HS Blanking | thb | 46 | 46 | 46 | DCLK | |
| HS Front Porch | thfp | 16 | 210 | 354 | DCLK | |

| Item | Symbol | Values | | | Unit | Remark |
|-----------------------|--------|--------|-----|-----|------|--------|
| | | Min. | Typ | Max | | |
| Vertical Display Area | tvd | — | 480 | — | TH | |
| VS period time | tv | 510 | 525 | 650 | TH | |
| VS pulse width | tvpw | 1 | — | 20 | TH | |
| VS Blanking | tvb | 23 | 23 | 23 | TH | |
| VS Front Porch tvfp 7 | tvfp | 7 | 22 | 147 | TH | |

7.4. Data Input Format



Figure 1 Horizontal input timing diagram.

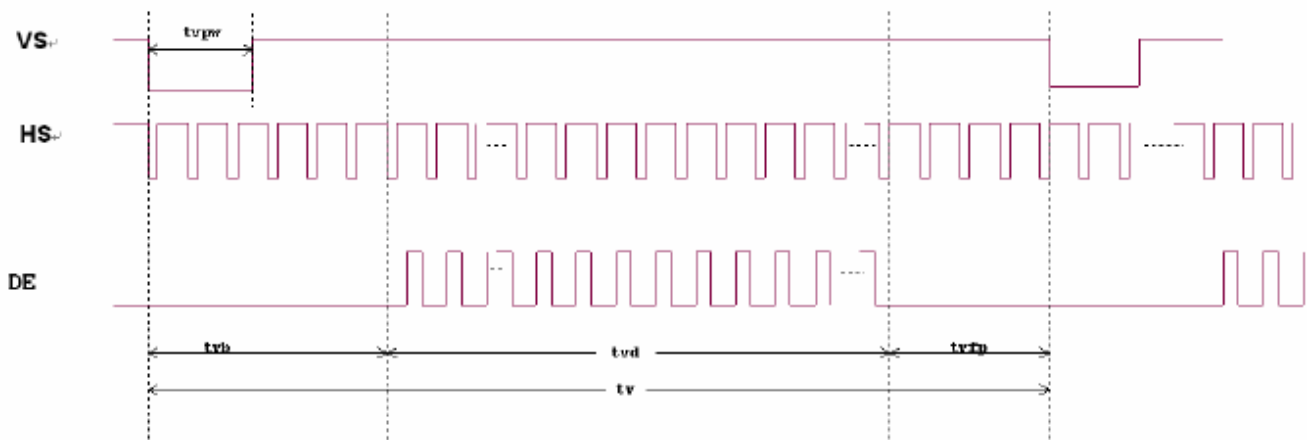


Figure 2 Vertical input timing diagram.

8. Optical Characteristics

| Item | Symbol | Condition. | Min | Typ. | Max. | Unit | Remark | |
|---|--------|---------------------------------------|------------|------|------|-------------------|-------------------|------------|
| Response time | Tr | $\theta = 0^\circ$ 、 $\Phi = 0^\circ$ | - | 10 | 20 | .ms | Note 3,5 | |
| | Tf | | - | 15 | 30 | .ms | | |
| Contrast ratio | CR | At optimized viewing angle | 400 | 500 | - | - | Note 4,5 | |
| Color Chromaticity | White | $\theta = 0^\circ$ 、 $\Phi = 0^\circ$ | Wx | 0.26 | 0.31 | 0.36 | | Note 2,6,7 |
| | | | Wy | 0.28 | 0.33 | 0.38 | | |
| Viewing angle (Gray Scale Inversion Direction) | Hor. | $CR \geq 10$ | Θ_R | 60 | 70 | - | Deg. | Note 1 |
| | | | Θ_L | 60 | 70 | - | | |
| | Ver. | | Φ_T | 40 | 50 | - | | |
| | | | Φ_B | 60 | 70 | - | | |
| Brightness | - | - | 320 | 400 | - | cd/m ² | Center of display | |

Ta=25±2°C, IL=180mA

Note 1: Definition of viewing angle range

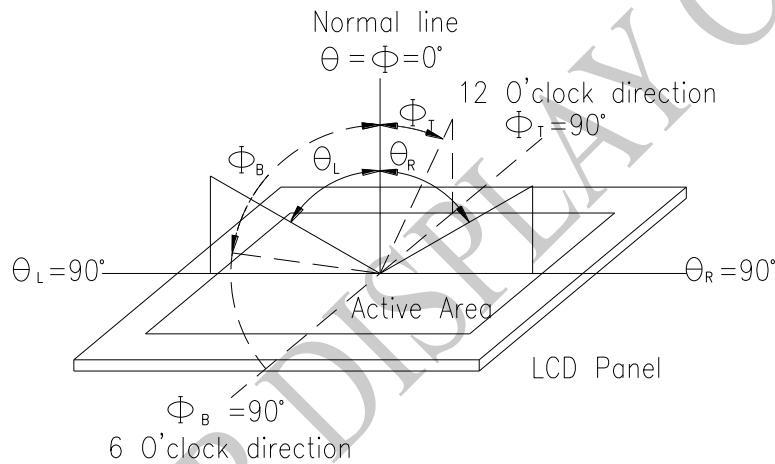


Fig. 8.1. Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7orBM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

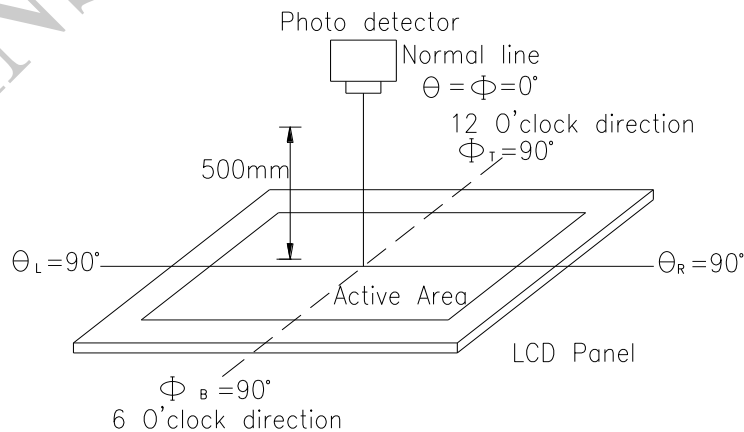
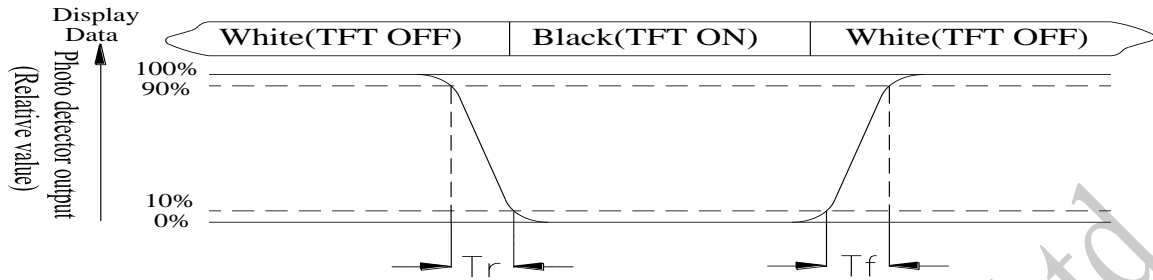


Fig. 8.2. Optical measurement system setup

Note 3: Definition of Response time:

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time, T_r , is the time between photo detector output intensity changed from 90% to 10%. And fall time, T_f , is the time between photo detector output intensity changed from 10% to 90%



Note 4: Definition of contrast ratio:

The contrast ratio is defined as the following expression.

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5: White $V_i = V_{i50} \pm 1.5V$

Black $V_i = V_{i50} \pm 2.0V$

“±” means that the analog input signal swings in phase with VCOM signal.

“±” means that the analog input signal swings out of phase with VCOM signal.

The 100% transmission is defined as the transmission of LCD panel when all the input terminals of module are electrically opened.

Note 6: Definition of color chromaticity (CIE 1931)

Color coordinates measured at the center point of LCD

Note 7: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

9.Interface

FPC Connector is used for the module electronics interface. The recommended model is FH12A-50S-0.5SH manufactured by Hirose.

| Pin No. | Symbol | I/O | Function | Remark |
|---------|--------|-----|-----------------------------------|-----------|
| 1 | VLED+ | P | Power for LED backlight (Anode) | |
| 2 | VLED+ | P | Power for LED backlight (Anode) | |
| 3 | VLED- | P | Power for LED backlight (Cathode) | |
| 4 | VLED- | P | Power for LED backlight (Cathode) | |
| 5 | GND | P | Power ground | |
| 6 | VCOM | I | Common voltage | |
| 7 | VCC | P | Power for Digital Circuit | |
| 8 | MODE | I | DE/SYNC mode select | Note 1 |
| 9 | DE | I | Data Input Enable | |
| 10 | VS | I | Vertical Sync Input | |
| 11 | HS | I | Horizontal Sync Input | |
| 12 | B7 | I | Blue data(MSB) | |
| 13 | B6 | I | Blue data | |
| 14 | B5 | I | Blue data | |
| 15 | B4 | I | Blue data | |
| 16 | B3 | I | Blue data | |
| 17 | B2 | I | Blue data | |
| 18 | B1 | I | Blue data | Note 2 |
| 19 | B0 | I | Blue data(LSB) | Note 2 |
| 20 | G7 | I | Green data(MSB) | |
| 21 | G6 | I | Green data | |
| 22 | G5 | I | Green data | |
| 23 | G4 | I | Green data | |
| 24 | G3 | I | Green data | |
| 25 | G2 | I | Green data | |
| 26 | G1 | I | Green data | Note 2 |
| 27 | G0 | I | Green | data(LSB) |
| 28 | R7 | I | Red data(MSB) | |
| 29 | R6 | I | Red data | |

| | | | | |
|----|-------|---|--------------------------|----------|
| 30 | R5 | I | Red data | |
| 31 | R4 | I | Red data | |
| 32 | R3 | I | Red data | |
| 33 | R2 | I | Red data | |
| 34 | R1 | I | Red data | |
| 35 | R0 | I | Red data(LSB) | Note 2 |
| 36 | GND | P | Power Ground | |
| 37 | DCLK | I | Sample clock | Note 3 |
| 38 | GND | P | Power Ground | |
| 39 | L/R | I | Left / right selection | Note 4,5 |
| 40 | U/D | I | Up/down selection | Note 4,5 |
| 41 | VGH | P | Gate ON Voltage | |
| 42 | VGL | P | Gate OFF Voltage | |
| 43 | AVDD | P | Power for Analog Circuit | |
| 44 | RESET | I | Global reset pin. | Note 6 |
| 45 | NC | - | No connection | |
| 46 | VCOM | I | Common Voltage | |
| 47 | DITHB | I | Dithering function | Note 7 |
| 48 | GND | P | GND | |
| 49 | NC | - | No connection | |
| 50 | NC | - | No connection | |

I: input, O: output, P: Power

Note 1: DE/SYNC mode select. Normally pull high.

When select DE mode, MODE="1", VS and HS must pull high.

When select SYNC mode, MODE="0", DE must be grounded.

Note 2: When input 18 bits RGB data, the two low bits of R,G and B data must be grounded.

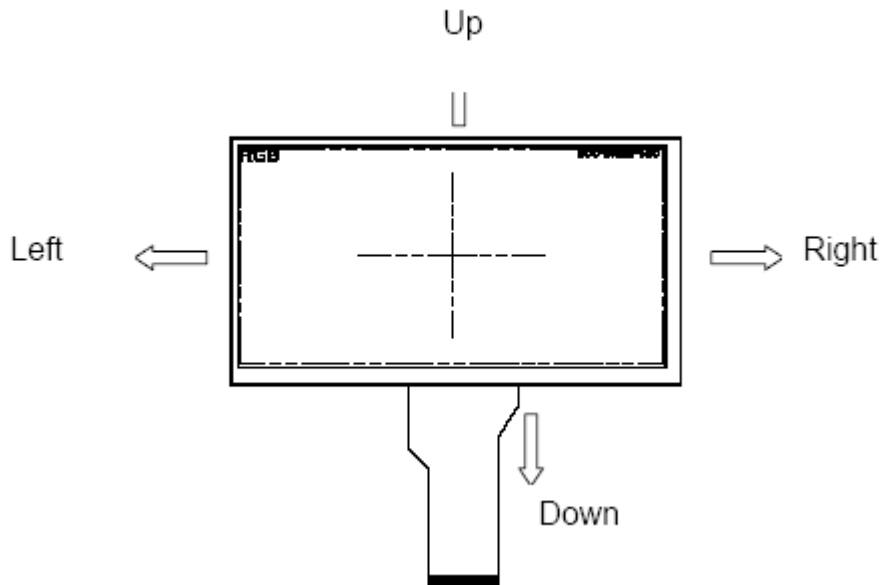
Note 3: Data shall be latched at the falling edge of DCLK.

Note 4: Selection of scanning mode

| Setting of scan control input | | Scanning direction |
|-------------------------------|-----|---------------------------|
| U/D | L/R | |
| GND | VCC | Up to down, left to right |
| VCC | GND | Down to up, right to left |
| GND | GND | Up to down, right to left |
| VCC | VCC | Down to up, left to right |

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Note 5: Definition of scanning direction.
Refer to the figure as below:



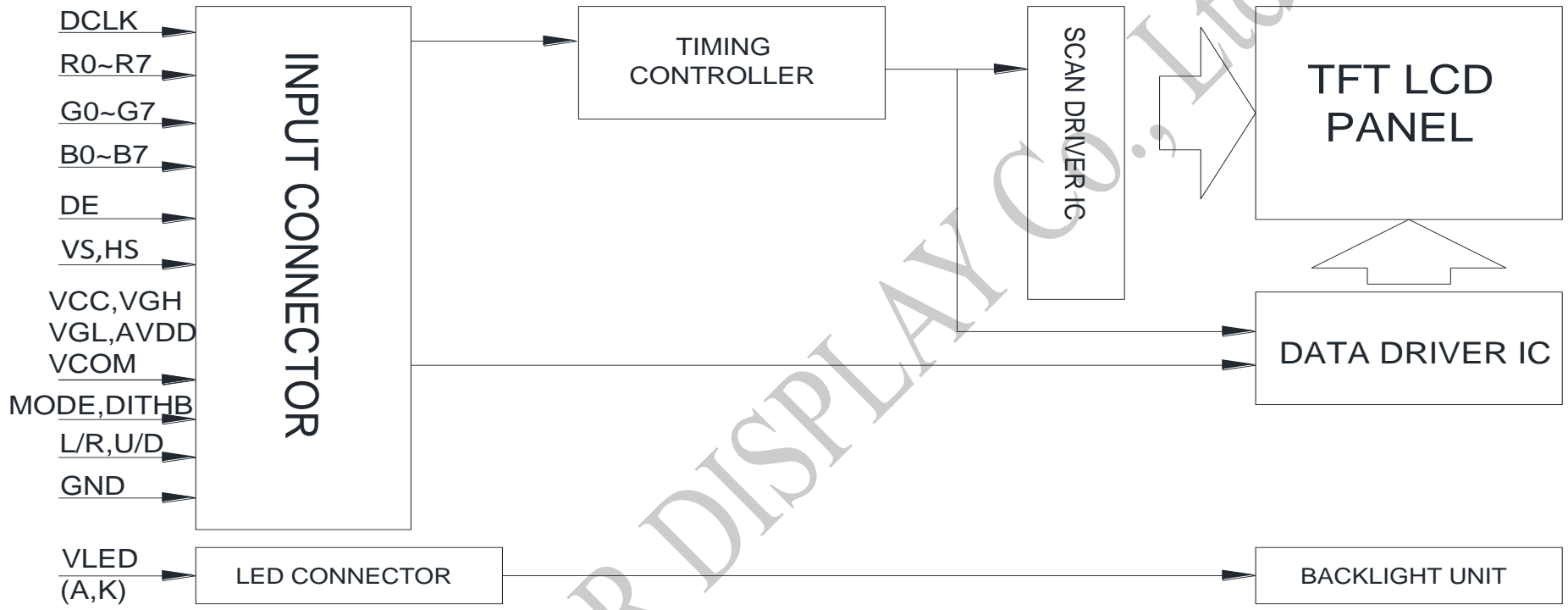
Note 6: Global reset pin. Active low to enter reset state. Suggest to connect with an RC reset circuit for stability. Normally pull high.

Note 7: Dithering function enable control, normally pull high.

When DITHB="1", Disable internal dithering function,

When DITHB="0", Enable internal dithering function,

10. Block Diagram



11. Reliability

Content of Reliability Test (Super Wide temperature, -30°C~85°C)

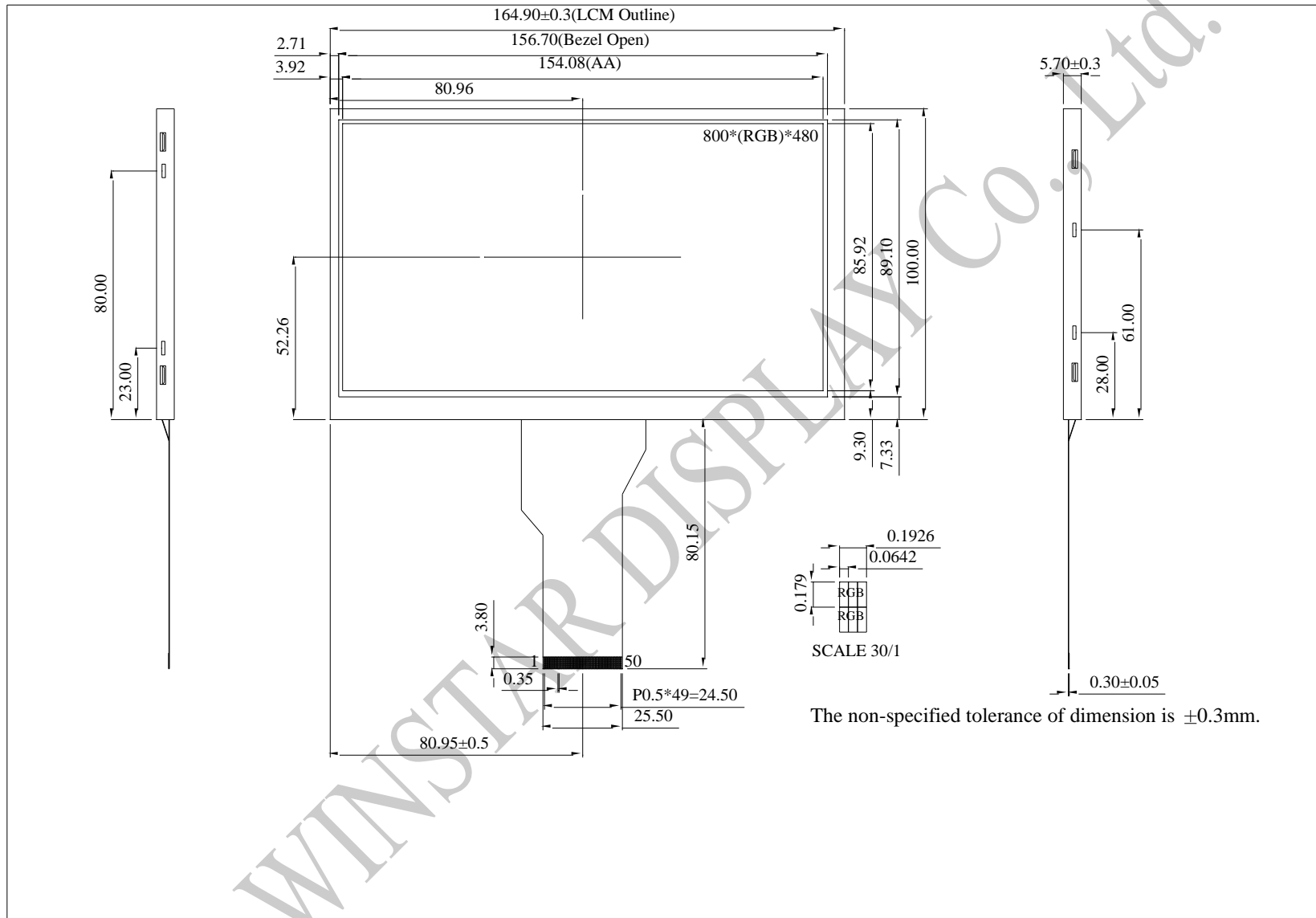
| Environmental Test | | | |
|-----------------------------------|--|---|------|
| Test Item | Content of Test | Test Condition | Note |
| High Temperature storage | Endurance test applying the high storage temperature for a long time. | 85°C 200hrs | 2 |
| Low Temperature storage | Endurance test applying the low storage temperature for a long time. | -30°C 200hrs | 1,2 |
| High Temperature Operation | Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time. | 85°C 200hrs | — |
| Low Temperature Operation | Endurance test applying the electric stress under low temperature for a long time. | -30°C 200hrs | 1 |
| High Temperature/Humidity storage | The module should be allowed to stand at 60°C, 90%RH max | 60°C, 90%RH 96hrs | 1,2 |
| Thermal shock resistance | The sample should be allowed stand the following 10 cycles of operation <div style="text-align: center;"> <p style="margin: 0;">-30°C 25°C 85°C</p> <p style="margin: 0;">←—————→</p> <p style="margin: 0;">30min 5min 30min</p> <p style="margin: 0;">1 cycle</p> </div> | -30°C/85°C 10 cycles | — |
| Vibration test | Endurance test applying the vibration during transportation and using. | Total fixed amplitude : 1.5mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X, Y, Z for Each 15 minutes | 3 |
| Static electricity test | Endurance test applying the electric stress to the terminal. | VS=±600V(contact), ±800v(air), RS=330Ω CS=150pF 10 times | — |

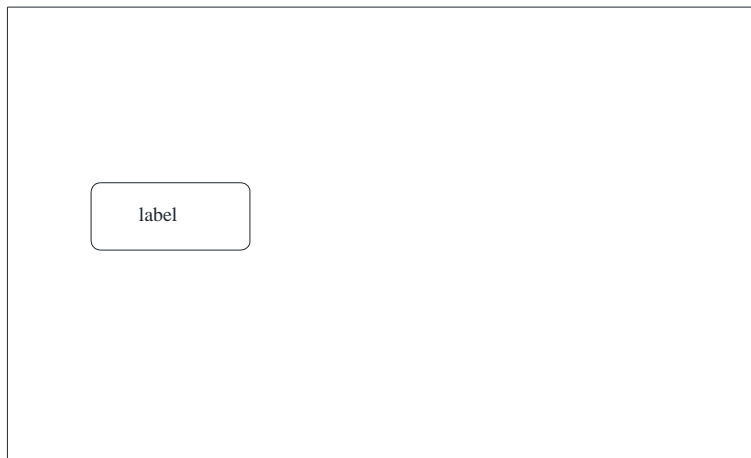
Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

Note3: The packing have to including into the vibration testing.

12. Contour Drawing





| PIN NO. | SYMBOL |
|---------|--------|
| 1 | VLED+ |
| 2 | VLED+ |
| 3 | VLED- |
| 4 | VLED- |
| 5 | GND |
| 6 | VCOM |
| 7 | VCC |
| 8 | MODE |
| 9 | DE |
| 10 | VS |
| 11 | HS |
| 12 | B7 |
| 13 | B6 |
| 14 | B5 |
| 15 | B4 |
| 16 | B3 |
| 17 | B2 |
| 18 | B1 |
| 19 | B0 |
| 20 | G7 |
| 21 | G6 |
| 22 | G5 |
| 23 | G4 |
| 24 | G3 |
| 25 | G2 |

| PIN NO. | SYMBOL |
|---------|--------|
| 26 | G1 |
| 27 | G0 |
| 28 | R7 |
| 29 | R6 |
| 30 | R5 |
| 31 | R4 |
| 32 | R3 |
| 33 | R2 |
| 34 | R1 |
| 35 | R0 |
| 36 | GND |
| 37 | DCLK |
| 38 | GND |
| 39 | L/R |
| 40 | U/D |
| 41 | VGH |
| 42 | VGL |
| 43 | AVDD |
| 44 | RESET |
| 45 | NC |
| 46 | VCOM |
| 47 | DITHB |
| 48 | GND |
| 49 | NC |
| 50 | NC |

The non-specified tolerance of dimension is $\pm 0.3\text{mm}$.



1、Panel Specification :

- 1. Panel Type : Pass NG , _____
- 2. View Direction : Pass NG , _____
- 3. Numbers of Dots : Pass NG , _____
- 4. View Area : Pass NG , _____
- 5. Active Area : Pass NG , _____
- 6. Operating : Pass NG , _____
- 7. Storage Temperature : Pass NG , _____
- 8. Others : _____

2、Mechanical

- 1. PCB Size : Pass NG , _____
- 2. Frame Size : Pass NG , _____
- 3. Material of Frame : Pass NG , _____
- 4. Connector Position : Pass NG , _____
- 5. Fix Hole Position : Pass NG , _____
- 6. Backlight Position : Pass NG , _____
- 7. Thickness of PCB : Pass NG , _____
- 8. Height of Frame to PCB : Pass NG , _____
- 9. Height of Module : Pass NG , _____
- 10. Others : Pass NG , _____

3、Relative Hole Size :

- 1. Pitch of Connector : Pass NG , _____
- 2. Hole size of Connector : Pass NG , _____
- 3. Mounting Hole size : Pass NG , _____
- 4. Mounting Hole Type : Pass NG , _____
- 5. Others : Pass NG , _____

4、Backlight Specification :

- 1. B/L Type : Pass NG , _____
- 2. B/L Color : Pass NG , _____
- 3. B/L Driving Voltage (Reference for LED) : Pass NG , _____
- 4. B/L Driving Current : Pass NG , _____
- 5. Brightness of B/L : Pass NG , _____
- 6. B/L Solder Method : Pass NG , _____
- 7. Others : Pass NG , _____



Winstar Module Number : _____

Page: 2

5、Electronic Characteristics of Module :

- | | | |
|------------------------------|-------------------------------|-------------------------------------|
| 1. Input Voltage : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. Supply Current : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Driving Voltage for LCD : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. Contrast for LCD : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. B/L Driving Method : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. Negative Voltage Output : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Interface Function : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 8. LCD Uniformity : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 9. ESD test : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 10. Others : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

6、Summary :

Sales signature : _____

Customer Signature : _____

Date : / / _____

