



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司



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華凌光電股份有限公司



WEB: <https://www.winstar.com.tw> E-mail: sales@winstar.com.tw

SPECIFICATION

CUSTOMER : _____

MODULE NO.: WF57XTIACDNT0#

| | |
|---|--|
| <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 |
|--------------------------------|-------------|------------|-------------|
| | | | 周园园 |
| ISSUED DATE: 2023/02/06 | | | |

TFT Display Inspection Specification: <https://www.winstar.com.tw/technology/download.html>

Precaution in use of TFT module: <https://www.winstar.com.tw/technology/download/declaration.html>



RECORDS OF REVISION

DOC. FIRST ISSUE

| VERSION | DATE | REVISED PAGE NO. | SUMMARY |
|---------|------------|------------------|--------------------------------|
| 0 | 2022/12/13 | | First issue |
| A | 2022/12/15 | | Modify Optical Characteristics |
| B | 2023/02/06 | | Correct LED voltage |

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Contents

1.Module Classification Information

2.Summary

3.General Specifications

4.Absolute Maximum Ratings

5.Electrical Characteristics

6.DC Characteristics

7.AC Characteristics

8.Waveform

9.Optical Characteristics

10.Interface

11.Block Diagram

12.Reliability

13.Touch Panel Information

14.Contour Drawing

15.Other

1.Module Classification Information

W F 57 X T I A C D N T 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 : 5.7" 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 5.7” 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 | 5.7 | inch |
| Dot Matrix | 320 x RGBx240(TFT) | dots |
| Module dimension | 126.00(W) x 101.55(H) x 7.55(D) | mm |
| Active area | 115.2 x 86.40 | mm |
| Dot pitch | 0.12 x 0.36 | mm |
| LCD type | TFT, Normally White, Transmissive | |
| View Direction | 12 o'clock | |
| Gray Scale Inversion Direction | 6 o'clock | |
| Aspect Ratio | 4:3 | |
| TFT Drive IC | HX8218+HX8615 or Equivalent | |
| Interface | 24-bit RGB | |
| Backlight Type | LED, Normally White | |
| With /Without TP | With RTP | |
| Surface | Anti-Glare | |

*Color tone slight changed by temperature and driving voltage.

4. Absolute Maximum Ratings

| Item | Symbol | Min | Typ | Max | Unit |
|-----------------------|--------|-----|-----|-----|------|
| Operating Temperature | TOP | -20 | — | +70 | °C |
| Storage Temperature | TST | -30 | — | +80 | °C |

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. $\leq 60^{\circ}\text{C}$, 90% RH MAX. Temp. $> 60^{\circ}\text{C}$, Absolute humidity shall be less than 90% RH at 60°C

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5. Electrical Characteristics

5.1. Operating conditions:

| Item | Symbol | Condition | Min | Typ | Max | Unit |
|----------------------------|--------|-----------|---------|------|---------|------|
| Supply Voltage For LCM | VCC | — | 3.2 | 3.3 | 3.4 | V |
| | AVDD | | 4.5 | 5.0 | 5.5 | |
| Input High Volt. | VIH | — | 0.7 VCC | — | VCC | V |
| Input Low Volt. | VIL | — | 0 | — | 0.3 VCC | V |
| LCD Driving Supply Voltage | VGH | Ta=25°C | 15 | 16 | 17 | V |
| | VGL | | -6 | -5 | -4 | |
| | VcomH | | — | 4.5 | — | |
| | VcomL | | — | -0.5 | — | |
| Supply Current For LCM | IVCC | VCC=3.3V | — | 30 | 45 | mA |

Notes:

*1) VGH is TFT Gate on operating voltage.

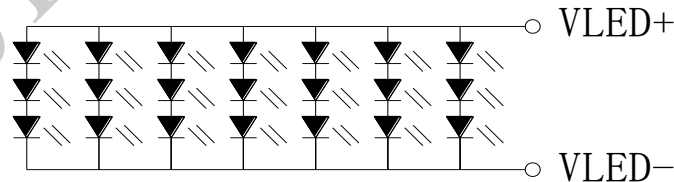
*2) VGL is TFT Gate off operating voltage, VGL signal must be fluctuates with same phase as Vcom when Storage on Gate structure.

*3) Vcom must be adjusted to optimize display quality_Crosstalk Contrast Ratio and etc.

5.2. LED driving conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Remark |
|-------------------|--------|------|--------|------|------|------------|
| LED current | | - | 140 | - | mA | |
| Power Consumption | | 1204 | - | 1470 | mW | |
| LED voltage | VBL+ | 8.6 | 9.5 | 10.5 | V | Note 1 |
| LED Life Time | | - | 50,000 | - | Hr | Note 2,3,4 |

Note 1 : There are 1 Groups LED



Backlight 21Dice LED Circuit

Note 2 : Ta = 25 °C

Note 3 : Brightness to be decreased to 50% of the initial value

Note 4 : The single LED lamp case

6.DC CHARATERISTICS

| Parameter | Symbol | Rating | | | Unit | Condition |
|--------------------------|----------|--------|-----|--------|------|-----------|
| | | Min | Typ | Max | | |
| Low level input voltage | V_{IL} | 0 | - | 0.3VCC | V | |
| High level input voltage | V_{IH} | 0.7VCC | - | VCC | V | |

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7.AC CHARACTERISTICS

7.1. CCIR601/656 Interface

Input signal characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|-----------------|--------|------|------|------|------|
| CLK period | Tosc | - | 37 | - | ns |
| Data setup time | Tsu | 12 | - | - | ns |
| Data hold time | THo | 12 | - | - | ns |

Hardware reset timing

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|-----------------------|--------|------|------|------|---------|
| Reset low pulse width | TRSB | 10 | - | - | μ s |

Output signal characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | |
|--------------------------|--------|------|------|------|---------|----|
| Rising time | Tr | - | - | 10 | ns | |
| Falling time | Tf | - | - | 10 | ns | |
| Internal STH setup time | Tsus | 12 | - | - | ns | |
| Internal STH hold time | THDS | 12 | - | - | ns | |
| Internal data setup time | TSUD | 60 | - | - | ns | |
| Internal data hold time | THDD | 40 | - | - | ns | |
| OEH pulse width | TOEH | - | 1248 | - | ns | |
| OEV pulse width | TOEV | - | 4992 | - | ns | |
| CKV pulse width | TCKV | - | 3744 | - | ns | |
| Hsync-DEH time | T1 | - | 4368 | - | ns | |
| Hsync-CKV time | T2 | - | 2496 | - | ns | |
| Hsync-OEV time | T3 | - | 624 | - | ns | |
| Vsync-setup time | TSUV | - | 1872 | - | ns | |
| Vsync-pulse time | TSTV | - | 1 | - | TH | |
| Vsync-STV time | NTSC | Tvs1 | - | 19 | - | TH |
| | PAL | Tvs1 | - | 27 | - | TH |
| OEH-STV time | THE | - | 2 | - | TH | |
| Output settling time | TOES | - | 12 | 20 | μ s | |

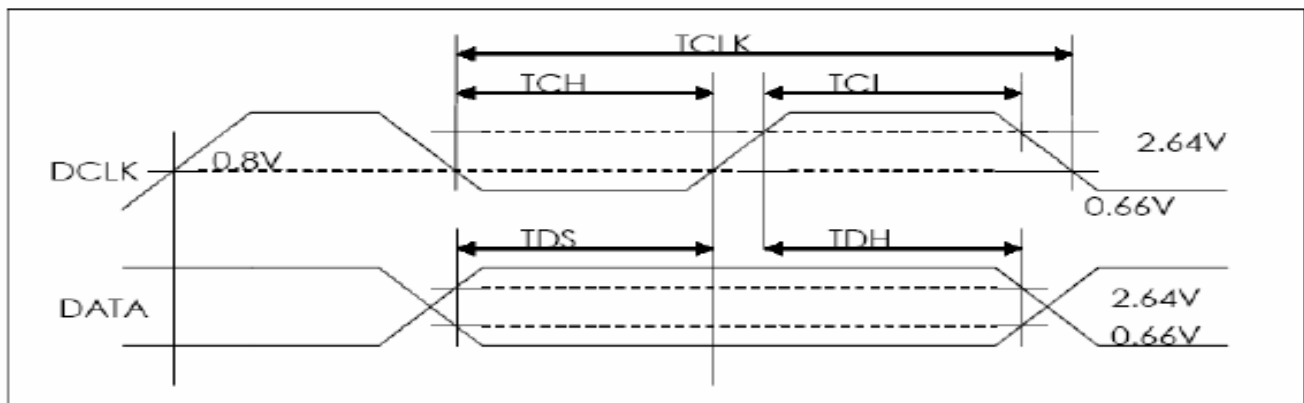
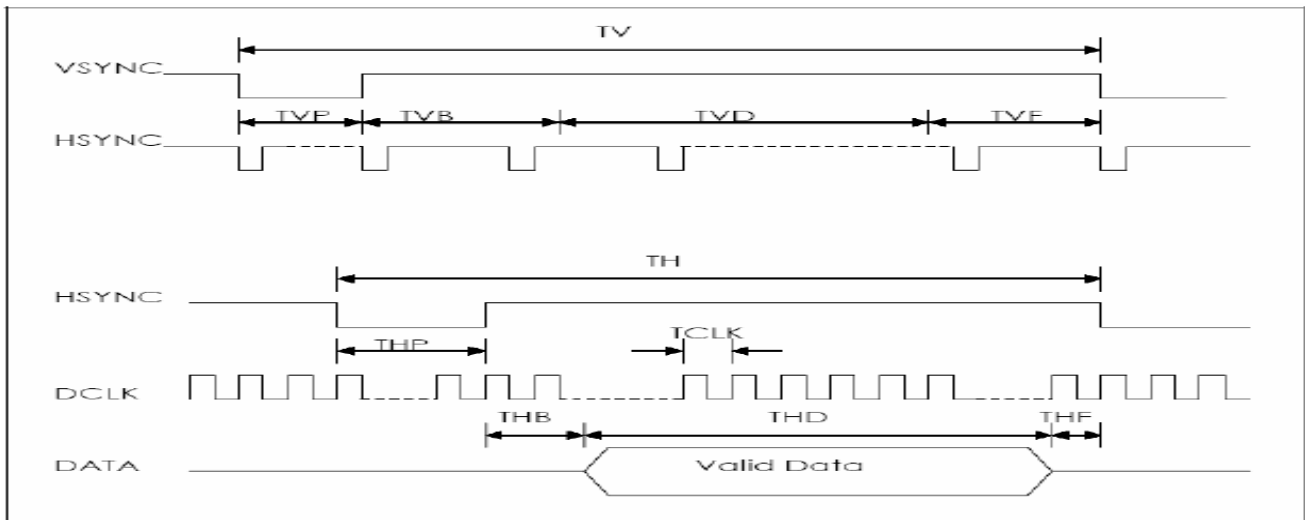
7.2. 24-bits parallel RGB Interface

AC Timing Characteristics

| Signal | Item | Symbol | Min. | Typ. | Max. | Unit |
|--------|-------------|--------|------|------|------|------|
| Dclk | Frequency | Dclk | - | 6.4 | - | MHZ |
| | High time | Tch | - | 78 | - | ns |
| | Low time | Tcl | - | 78 | - | ns |
| Data | Setup time | Tds | 12 | - | - | ns |
| | Hold time | Tdh | 12 | - | - | ns |
| Hsync | Period | TH | - | 408 | - | DCLK |
| | Pulse Width | Thp | - | 30 | - | DCLK |

| | | | | | | | |
|-------------|----------------|------|-----|------|-------|----|------|
| | Back-Porch | | Thb | - | 38 | - | DCLK |
| | Display Period | | Thd | - | 320 | - | DCLK |
| | Front-Porch | | Thf | - | 20 | - | DCLK |
| Vsync | Period | NTSC | TV | - | 262.5 | - | DCLK |
| | | PAL | | | 312.5 | | |
| | Pulse Width | | Tvp | 1 | 3 | 5 | TH |
| | Back-Porch | NTSC | Tvb | - | 15 | - | TH |
| | | PAL | | | 23 | | |
| | Display Period | | Tvd | - | 240 | - | TH |
| Front-Porch | NTSC | Tvf | - | 4.5 | - | TH | |
| | PAL | | | 46.5 | | | |

AC Timing Diagrams

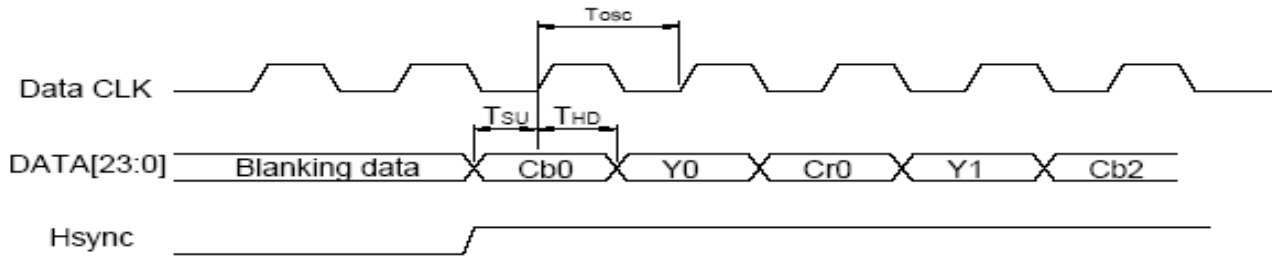


8. Waveform

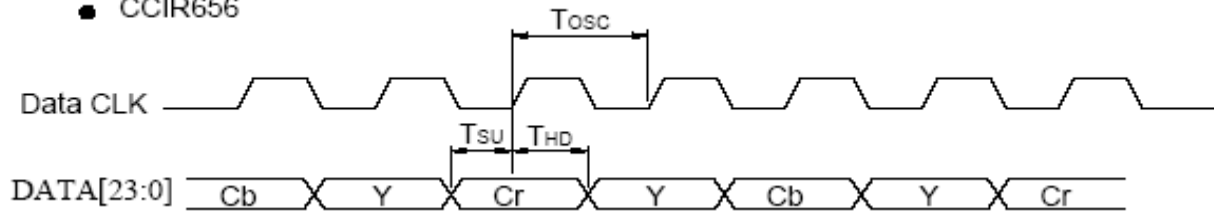
8.1. Timing Controller Timing Chart

Clock and Data waveform

- CCIR601(HS_POL="L" in Register R2)



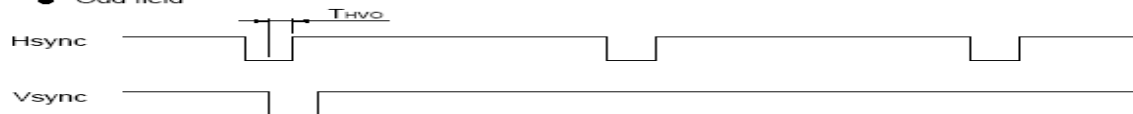
- CCIR656



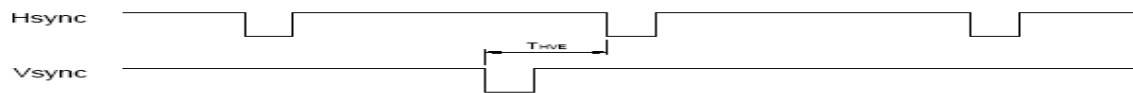
8.2. Digital / Analog RGB timing waveform

Hsync and Vsync timing

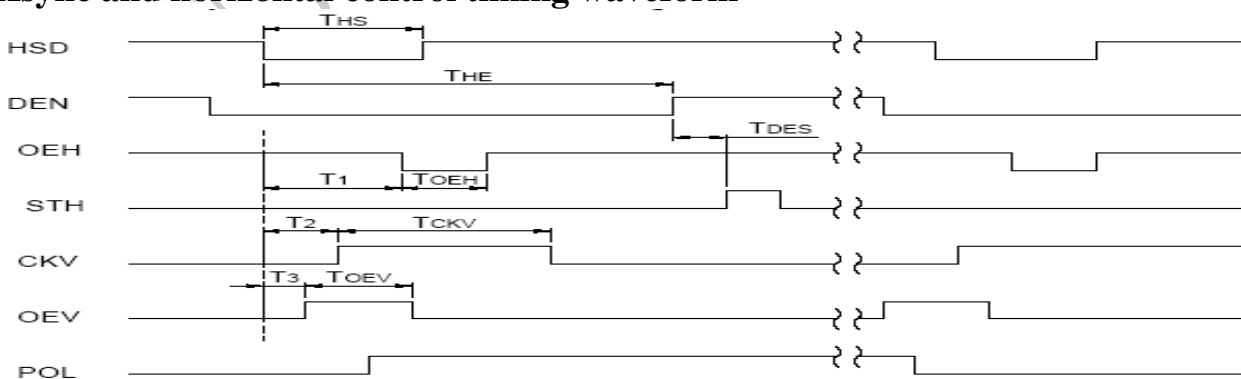
- Odd field



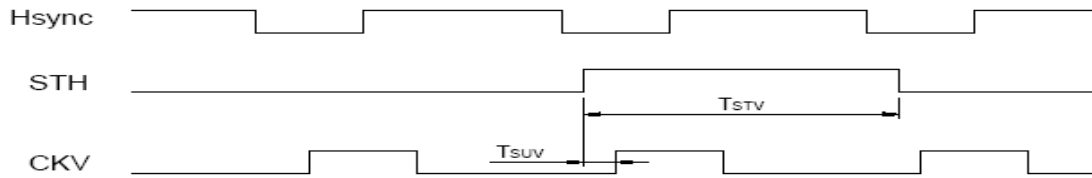
- Even field



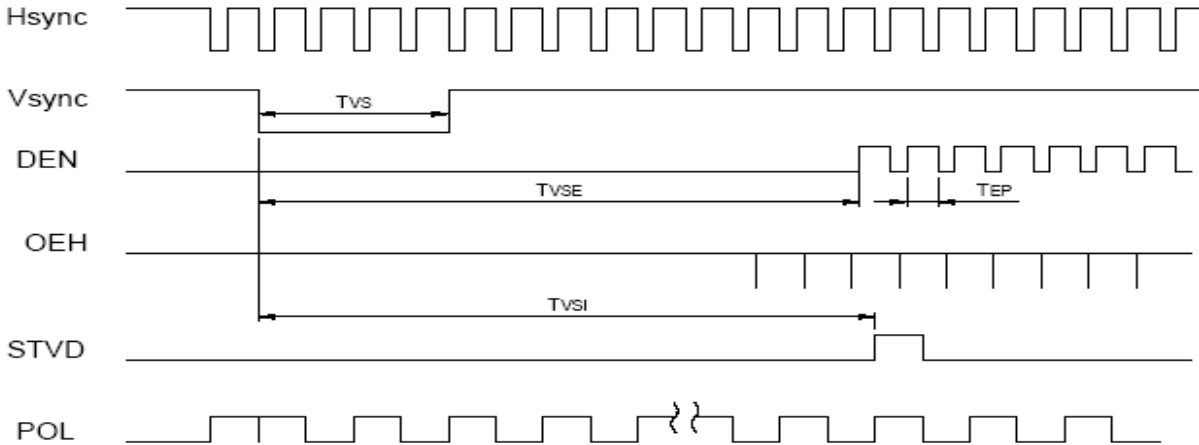
Hsync and horizontal control timing waveform



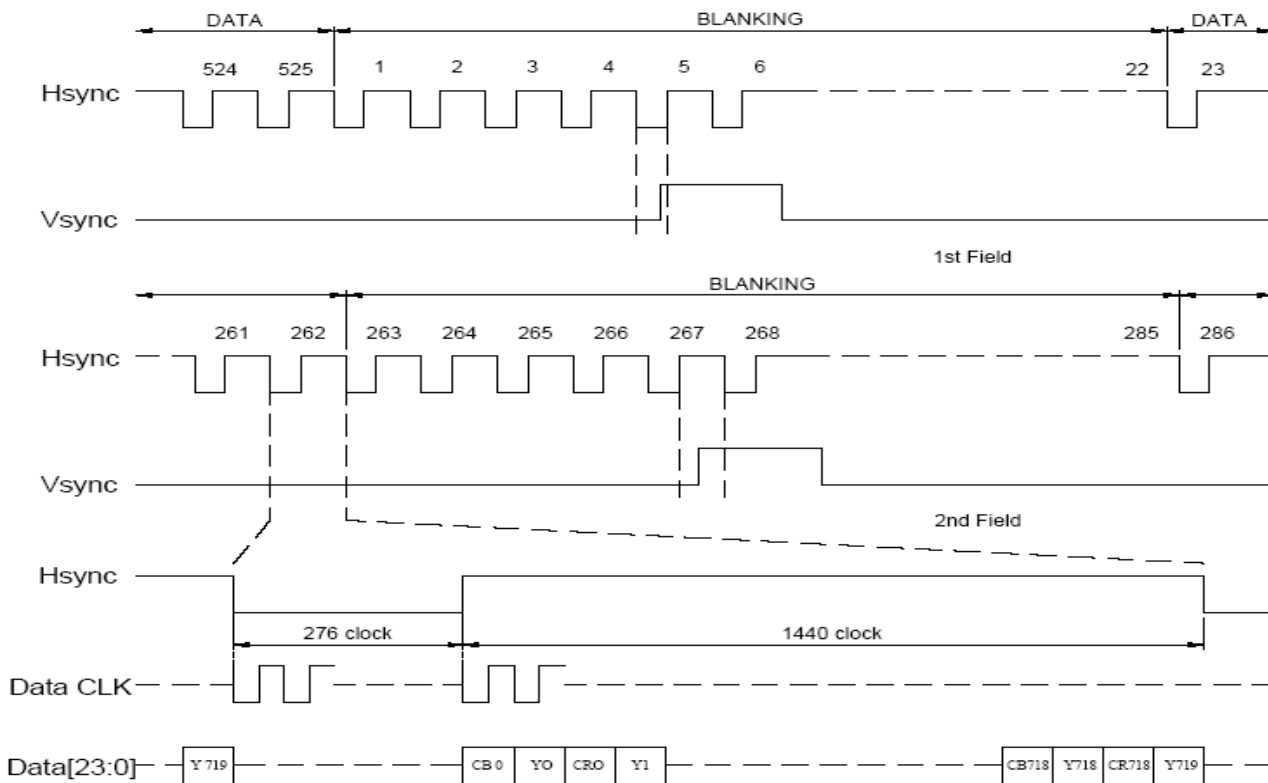
Hsync and vertical shift clock timing waveform



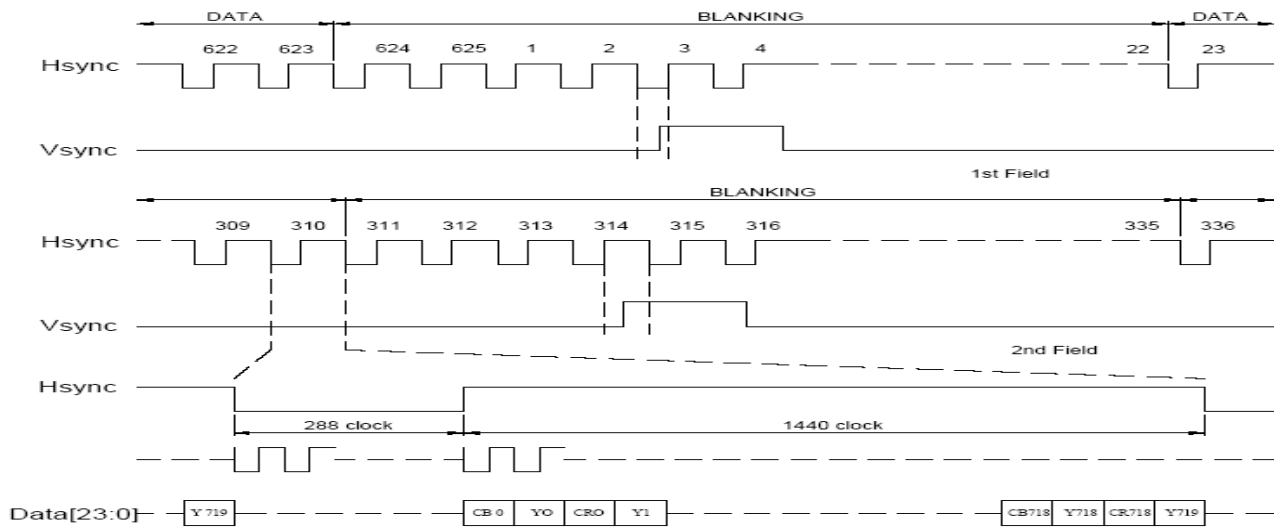
Hsync and vertical shift clock timing waveform



8.3. CCIR601 timing waveform (VS_POL="H" , HS_POL="L" in Register R2)



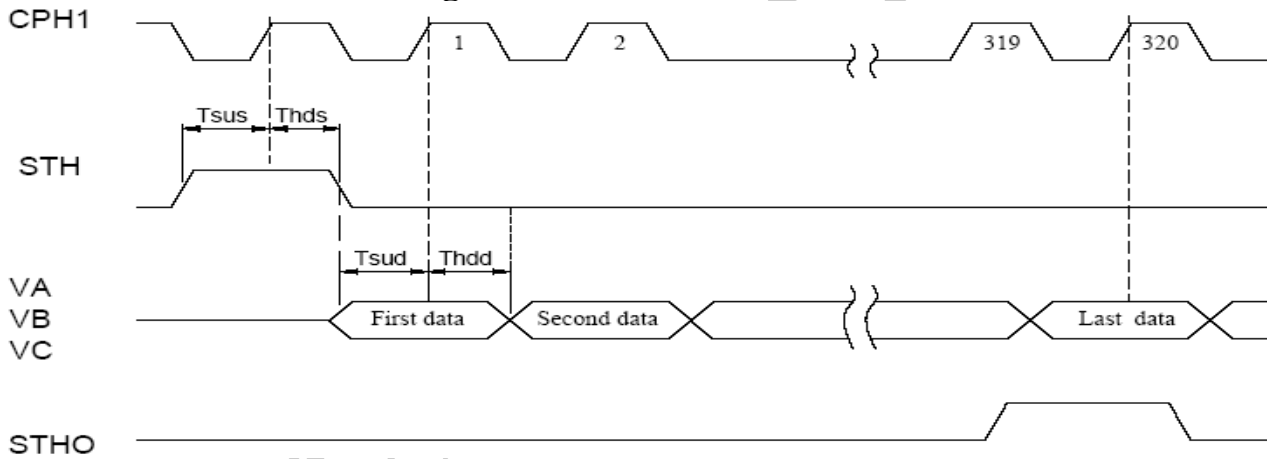
ITU-BT.601 NTSC Input Timing



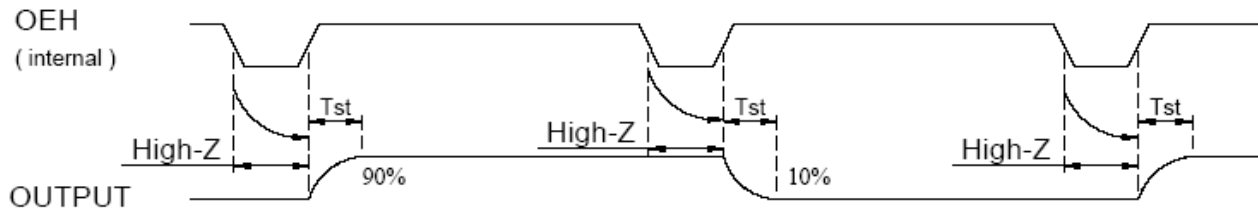
ITU-BT.601 PAL Input Timing

8.4. Source Driver Timing Chart

Clock and Start Pulse timing waveform



8.5. OEH and Data Output timing waveform



8.6. Analog video signal characteristics

| PARAMETER | Symbol | Min. | Typ. | Max. | Unit |
|-------------------------------------|-----------|------|-------|------|------|
| Video signal amplitude (VA, VB, VC) | V_{IAC} | - | 3.81 | - | V |
| | V_{IDC} | - | 2.385 | - | V |

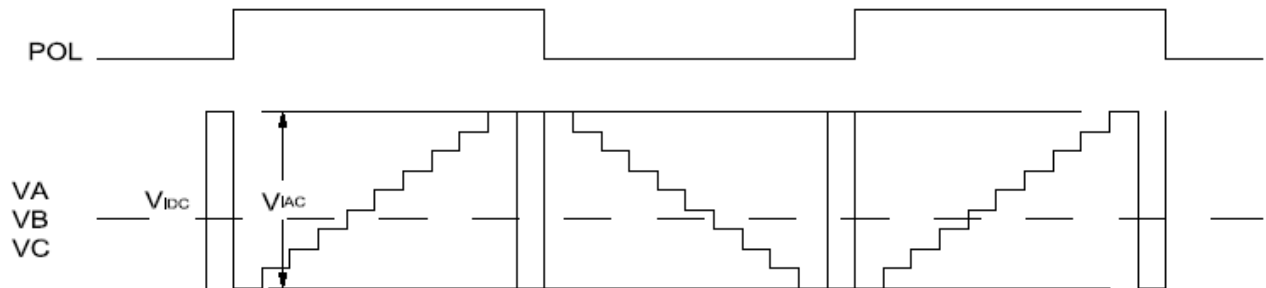
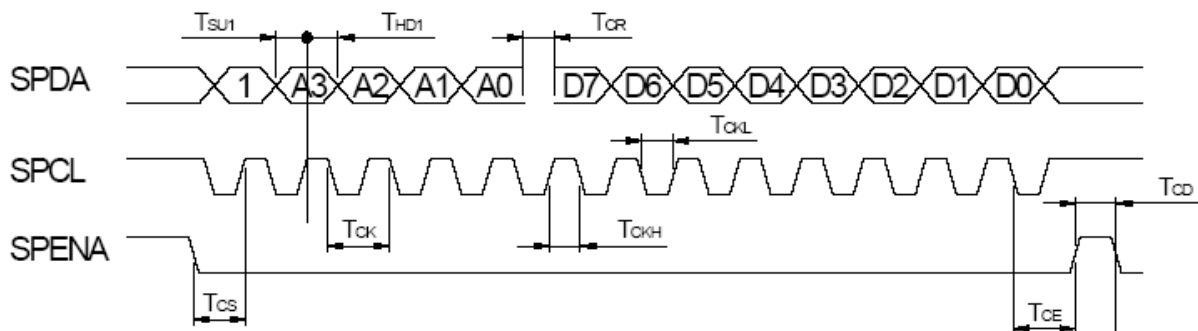


Fig. 4-(a) Horizontal timing

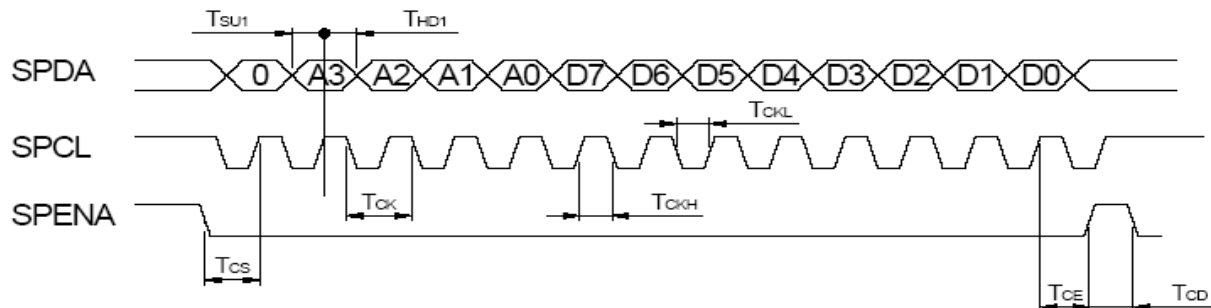
8.7. SPI timing characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|--------------------------|-----------|------|------|------|----------|
| SPCL period | T_{CK} | 60 | - | - | ns |
| SPCL high width | T_{CKH} | 30 | - | - | ns |
| SPCL low width | T_{CKL} | 30 | - | - | ns |
| Data setup time | T_{SU1} | 12 | - | - | ns |
| Data hold time | T_{HD1} | 12 | - | - | ns |
| SPENA to SPCK setup time | T_{CS} | 20 | - | - | ns |
| SPENA to SPDA hold time | T_{CE} | 20 | - | - | ns |
| SPENA high pulse width | T_{CD} | 50 | - | - | ns |
| SPDA output latency | T_{CR} | | 1/2 | - | T_{CK} |

● SPI "read" timing

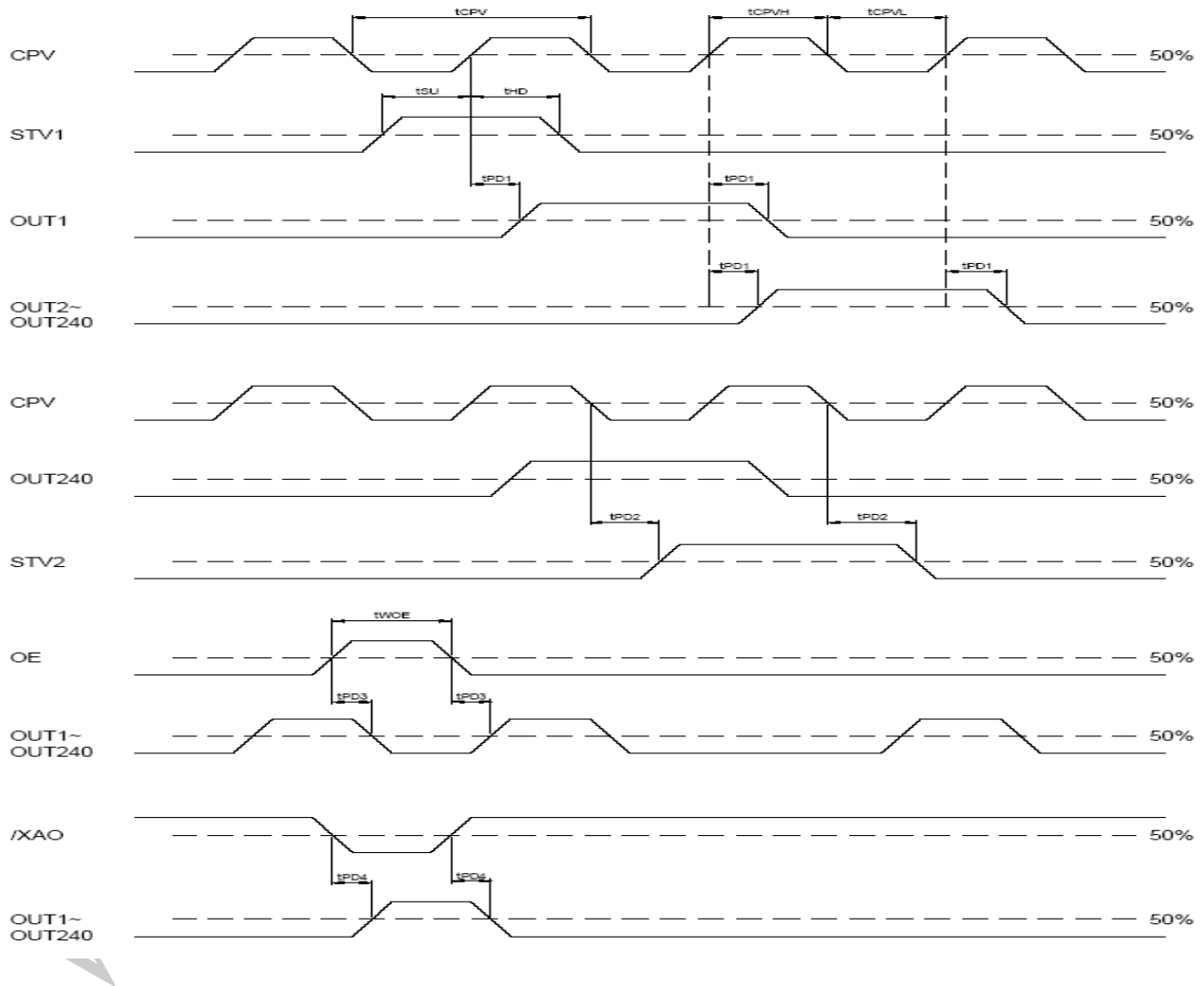


● SPI "write" timing



8.8. Gate Driver Timing Chart

| Parameter | Symbol | Condition | Spec | | Unit |
|---------------------|-------------|----------------|------|------|------|
| | | | Min. | Max. | |
| Operation frequency | tCPV | | 5 | - | μs |
| CPV pulse width | tCPVH,tCPVL | 50% duty cycle | 2.5 | - | |
| OE pulse width | twOE | | 1 | - | |
| Data setup time | tsu | | 0.4 | - | us |
| Data hold time | thd | | 0.7 | - | |
| Output delay time | tpd1 | CL=300pF | - | 1 | |
| Output delay time | tpd2 | CL=300pF | - | 0.8 | |
| Output delay time | tpd3 | CL=300pF | - | 0.8 | |
| Output delay time | tpd4 | CL=300pF | - | 10 | |



9. Optical Characteristics

| Item | Symbol | Condition. | Min | Typ. | Max. | Unit | Remark | |
|---|--------|-----------------------------------|-----------------------------|-------|-------|-------------------|-------------------|------------|
| Response time | Tr+ Tf | $\theta=0^\circ$ 、 $\phi=0^\circ$ | - | 25 | - | ms | Note 3,5 | |
| Contrast ratio | CR | At optimized viewing angle | - | 300 | - | - | Note 4,5 | |
| Color Chromaticity | White | Wx | $\theta=0^\circ$ 、 $\phi=0$ | 0.267 | 0.317 | 0.367 | - | Note 2,6,7 |
| | | Wy | | 0.303 | 0.353 | 0.403 | - | |
| Viewing angle (Gray Scale Inversion Direction) | Hor. | θ_R | $CR \geq 10$ | - | 60 | - | Deg. | Note 1 |
| | | θ_L | | - | 60 | - | | |
| | Ver. | ϕ_T | | - | 70 | - | | |
| | | ϕ_B | | - | 70 | - | | |
| Brightness | - | - | 550 | 600 | - | cd/m ² | Center of display | |
| Uniformity | (U) | - | 75 | - | - | % | Note 5 | |

Ta=25±2°C, IL=140mA

Note 1: Definition of viewing angle range

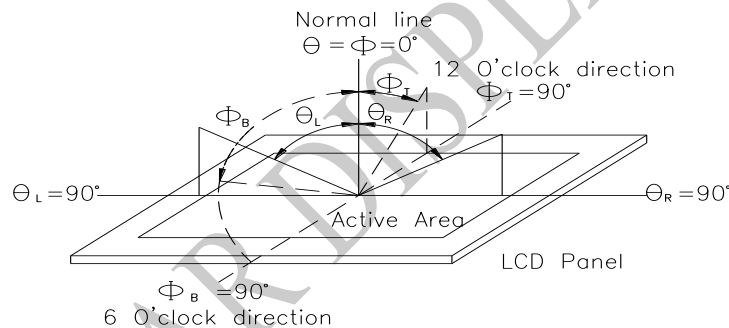


Fig.9.1. Definition of viewing angle

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.

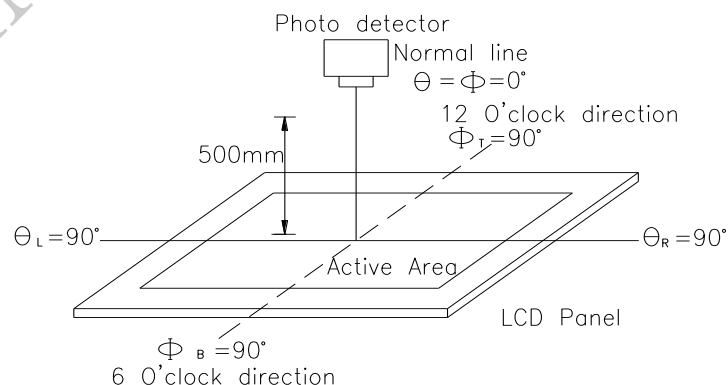
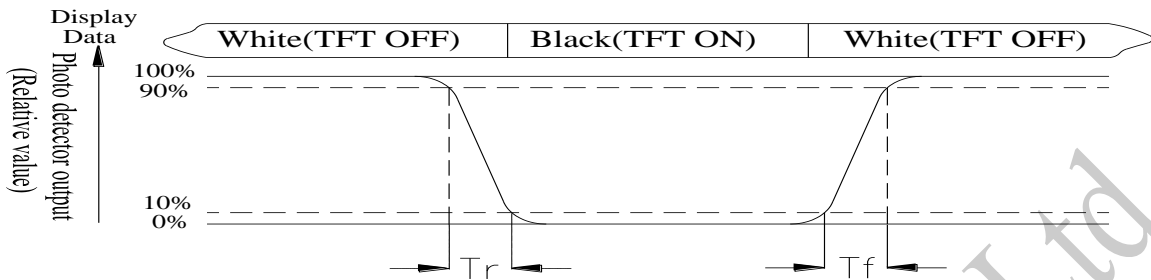


Fig. 9.2. Optical measurement system setup

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: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (reference the picture in below). Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity (U)} = \text{Lmin/Lmax} \times 100\%$$

L = Active area length

W = Active area width

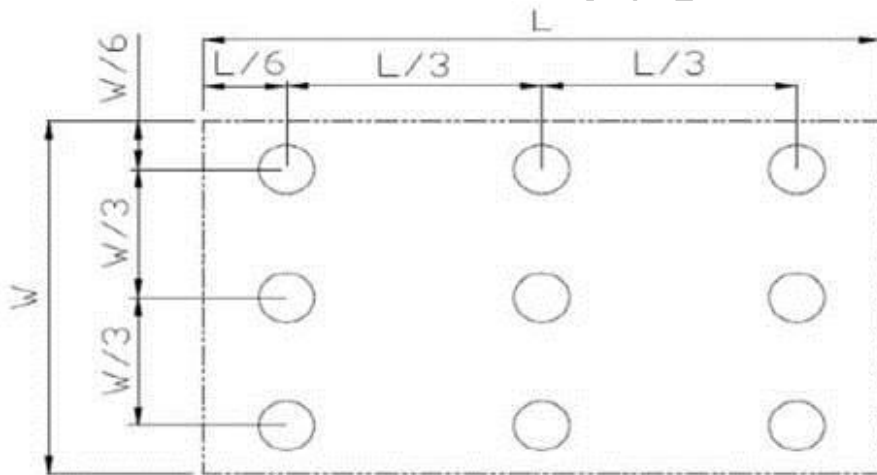


Fig Definition of uniformity

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.

10.Interface

10.1. LCM PIN Definition

| Pin No. | Symbol | I/O | Description | Remark |
|---------|--------|-----|--|--------|
| 1 | IF1 | I | Input data format control (Note1) | Note1 |
| 2 | IF2 | I | Input data format control (Note1) | Note1 |
| 3 | POL | O | Polarity Signal connect to VCOM driving circuit. | Note3 |
| 4 | RESET | I | Hardware reset. | |
| 5 | SPENA | I | Chip select | Note2 |
| 6 | SPCL | I | Serial Clock | Note2 |
| 7 | SPDA | I/O | Serial Data | |
| 8 | B0 | I | Blue Data bit (LSB) | |
| 9 | B1 | I | Blue Data bit | |
| 10 | B2 | I | Blue Data bit | |
| 11 | B3 | I | Blue Data bit | |
| 12 | B4 | I | Blue Data bit | |
| 13 | B5 | I | Blue Data bit | |
| 14 | B6 | I | Blue Data bit | |
| 15 | B7 | I | Blue Data bit(MSB) | |
| 16 | G0 | I | Green Data bit(LSB) | |
| 17 | G1 | I | Green Data bit | |
| 18 | G2 | I | Green Data bit | |
| 19 | G3 | I | Green Data bit | |
| 20 | G4 | I | Green Data bit | |
| 21 | G5 | I | Green Data bit | |
| 22 | G6 | I | Green Data bit | |
| 23 | G7 | I | Green Data bit(MSB) | |
| 24 | R0 | I | Red Data bit(LSB) | |
| 25 | R1 | I | Red Data bit | |
| 26 | R2 | I | Red Data bit | |
| 27 | R3 | I | Red Data bit | |
| 28 | R4 | I | Red Data bit | |
| 29 | R5 | I | Red Data bit | |
| 30 | R6 | I | Red Data bit | |

| | | | | |
|----|----------|---|---|-------|
| 31 | R7 | I | Red Data bit(MSB) | |
| 32 | Hsync | I | Horizontal synchronous signal | |
| 33 | Vsync | I | Vertical synchronous signal | |
| 34 | Data CLK | I | Dot data clock | |
| 35 | AVDD | I | 4.5V~5.5V | |
| 36 | AVDD | I | 4.5V~5.5V | |
| 37 | Vcc | I | 3.2V~3.4V | |
| 38 | Vcc | I | 3.2V~3.4V | |
| 39 | NPC | O | NTSC/PAL mode Auto detection result H:NTSC/L:PAL | |
| 40 | VGL | I | Gate off power | |
| 41 | VGL | I | Gate off power | |
| 42 | UD | I | Up/Down scan setting. H: Reverse scan / L: Normal scan | |
| 43 | VGH | I | Gate on power | |
| 44 | LRC | I | Shift direction of device internal shift register control. | |
| 45 | GND | I | GROUND | |
| 46 | VCOM | I | VCOM driving input | Note3 |
| 47 | VCOM | I | VCOM driving input | |
| 48 | ENB | I | Data enable input. Normally pull low. | Note4 |
| 49 | GND | I | GROUND | |
| 50 | GND | I | GROUND | |

Note: 1.Control the input data format.

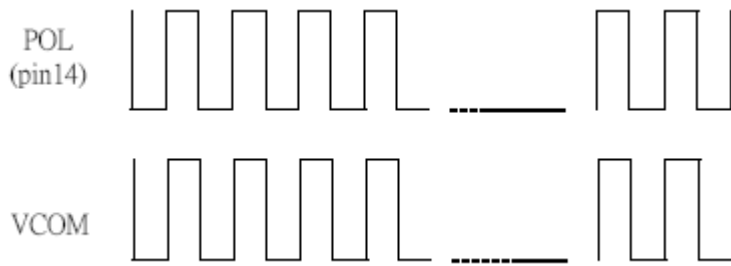
| IF2,IF1 | Input data format |
|--------------|-------------------|
| L,L(default) | Serial RGB |
| L,H | Parallel RGB |
| H,L | CCIR601 |
| H,H | CCIR656 |

2. Pin 5、Pin 6 usually pull high.

3. The polarity of VCOM (Pin 46,47) should be generated from POL (Pin 3).

4. For digital RGB input data format, both SYNC mode and DE+SYNC mode are supported. If ENB signal is fixed low, SYNC mode is used. Otherwise, DE+SYNC mode is used.

5. The phase of POL (pin 3):



10.2. Backlight PIN Definition

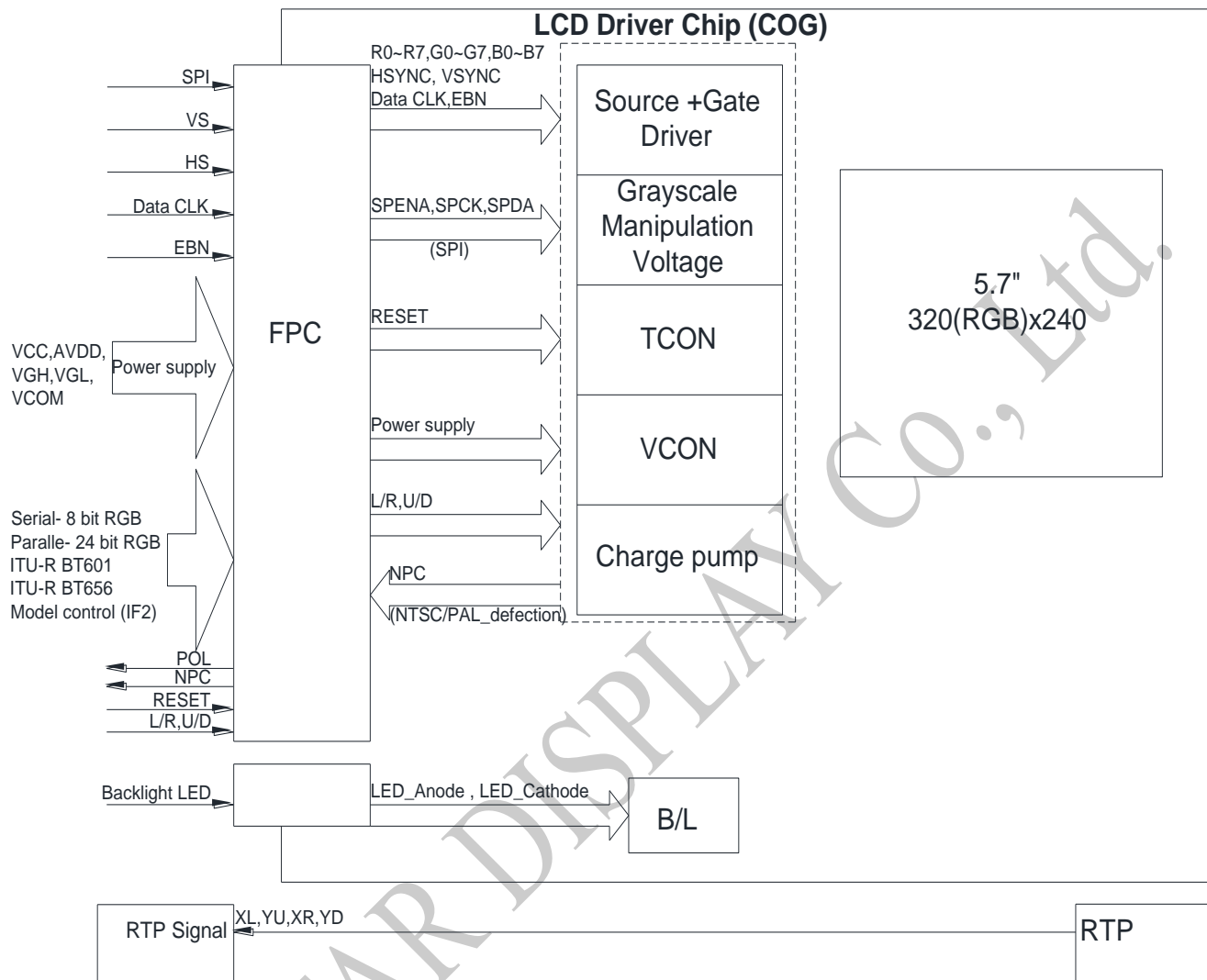
| Pin No. | Symbol | I/O | Description |
|---------|--------|-----|---------------------|
| 1 | VLED+ | I | Red, LED_ Anode |
| 2 | VLED- | I | Black, LED_ Cathode |

Note: The backlight interface connector is a model **PHR-2** manufactured by JST or equivalent.

The matching connector part number is **S 2B-PH-K-S** manufactured by JST or equivalent.

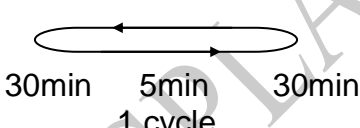
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11. Block Diagram



12. Reliability

Content of Reliability Test (Wide temperature, -20°C~70°C)

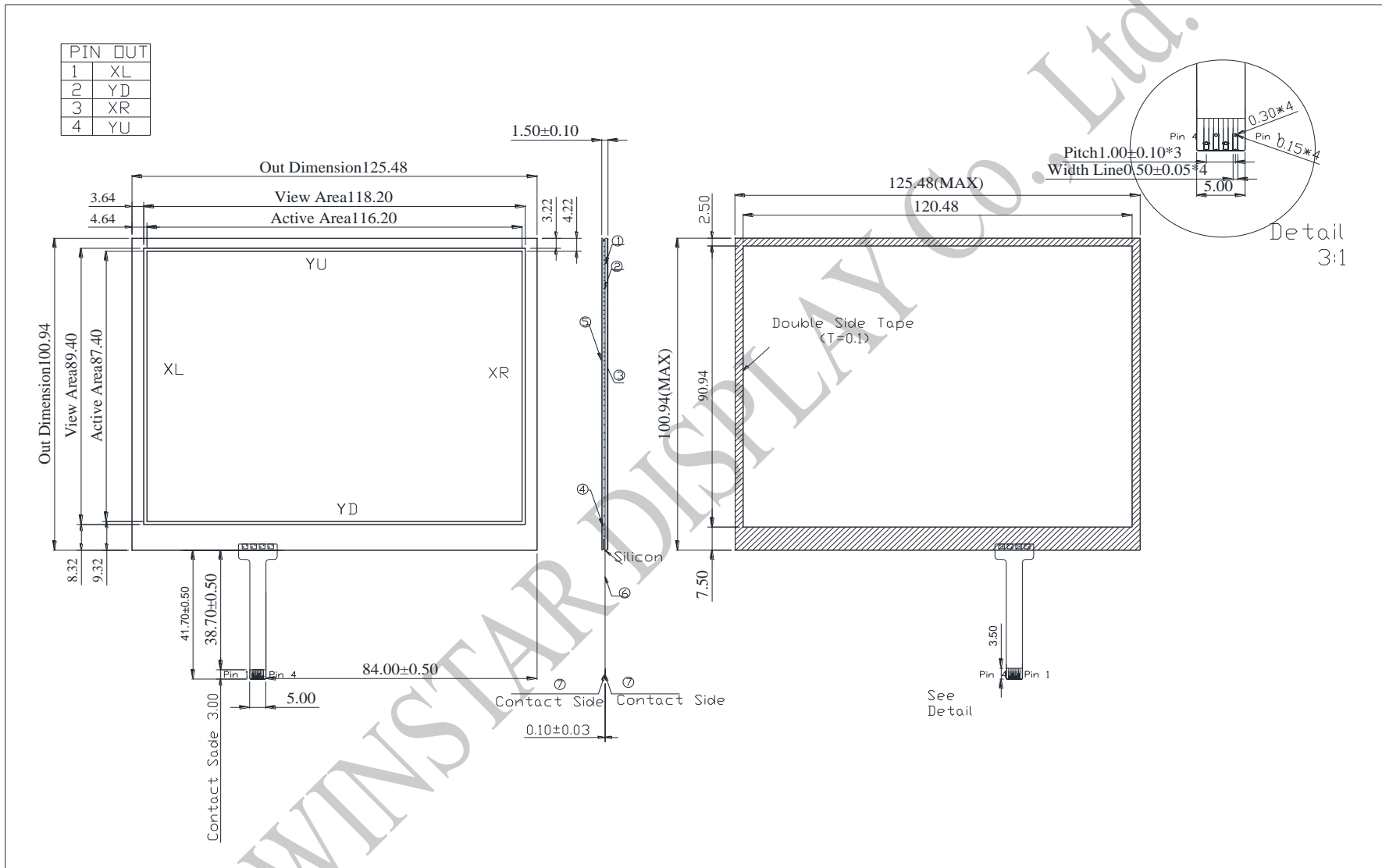
| Environmental Test | | | |
|--------------------------------------|--|--|------|
| Test Item | Content of Test | Test Condition | Note |
| High Temperature storage | Endurance test applying the high storage temperature for a long time. | 80°C 200hrs | 2 |
| Low Temperature storage | Endurance test 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. | 70°C 200hrs | — |
| Low Temperature Operation | Endurance test applying the electric stress under low temperature for a long time. | -20°C 200hrs | 1 |
| High Temperature/ Humidity Operation | The module should be allowed to stand at 60°C,90%RH max | 60°C,90%RH 96hrs | 1,2 |
| Thermal shock resistance | <p>The sample should be allowed stand the following 10 cycles of operation</p> <p style="text-align: center;"> -20°C 25°C 70°C  30min 5min 30min 1 cycle </p> | -20°C/70°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.

13.Touch Panel Information

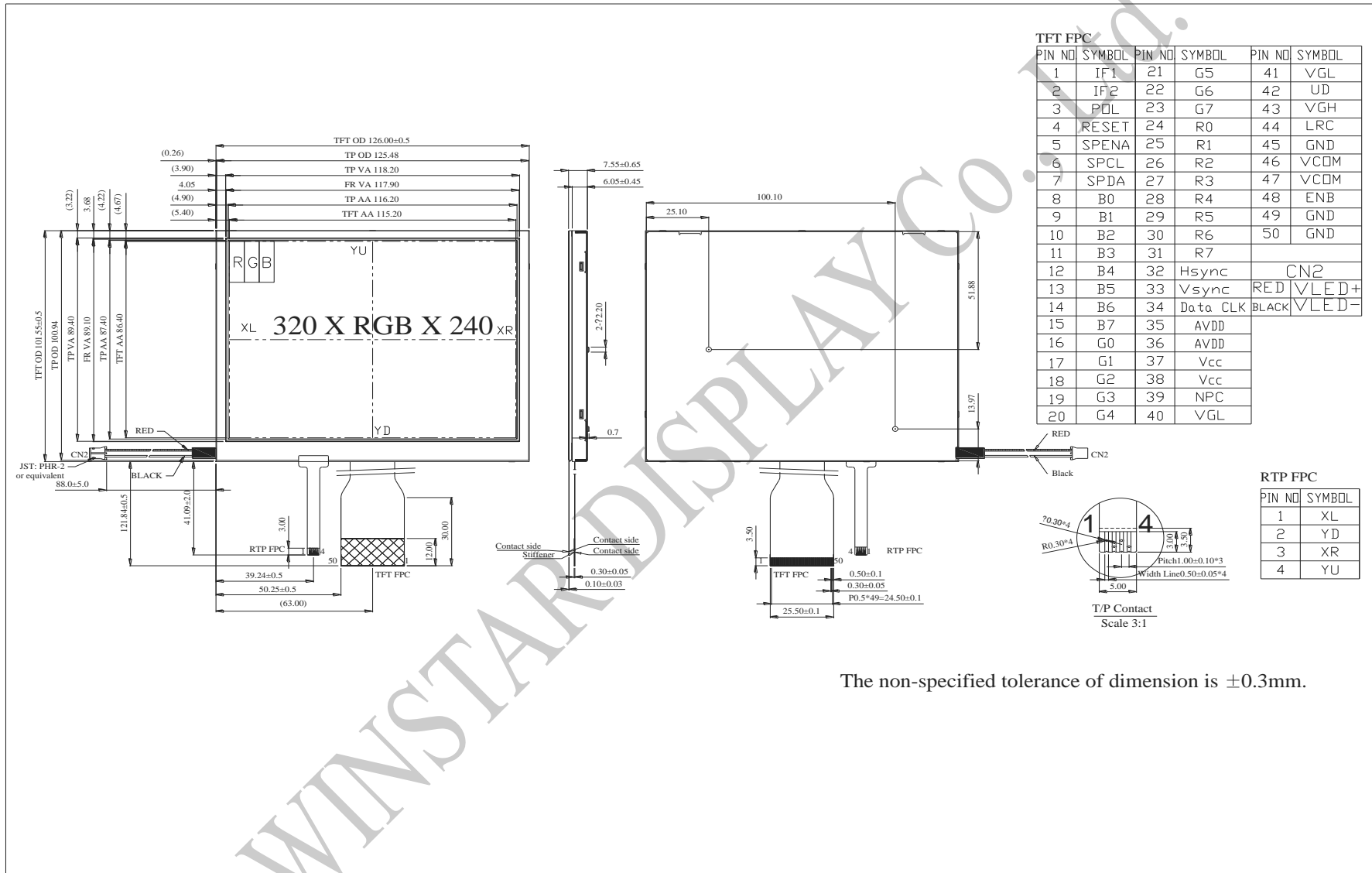


13.1. Resistance Touch Panel General Specifications

| Item | Description |
|---|-------------------------|
| Driving condition | DC5V |
| Operating force | 60~150g |
| Linearity max | $\leq \pm 1.5\%$ |
| Insulating resistance | $> 20M\Omega$, 25V(DC) |
| Light transporence | 70% |
| Structure type | ITO Film/ITO Glass(F/G) |
| Surface Hardness | 3H typ |
| Pen Hitting Durability (with the silicon rubber) | $> 1000,000$ times |
| X Axis resistance | 200~900 Ω |
| Y Axis resistance | 200~900 Ω |

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14. Contour Drawing



The non-specified tolerance of dimension is ±0.3mm.



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 : Pass NG , _____
- 2. Supply Current : Pass NG , _____
- 3. Driving Voltage for LCD : Pass NG , _____
- 4. Contrast for LCD : Pass NG , _____
- 5. B/L Driving Method : Pass NG , _____
- 6. Negative Voltage Output : Pass NG , _____
- 7. Interface Function : Pass NG , _____
- 8. LCD Uniformity : Pass NG , _____
- 9. ESD test : Pass NG , _____
- 10. Others : Pass NG , _____

6、Summary :

Sales signature : _____

Customer Signature : _____

Date : / / _____

