**Winstar Display Co., LTD**
**華凌光電股份有限公司**
*WEB: http://www.winstar.com.tw* *E-mail: winstar@winstar.com.tw*

# SPECIFICATION

**CUSTOMER :** _____

**MODULE NO.: WF50BTIAGDNGY#**

| | |
|---|---|
| **APPROVED BY:**<br>**( FOR CUSTOMER USE ONLY )** | **PCB VERSION:** **DATA:** |

| SALES BY | APPROVED BY | CHECKED BY | PREPARED BY |
|---|---|---|---|
| | | | 葉虹蘭 |
| **ISSUED DATE:** 2016/03/21 | | | |

TFT Display Inspection Specification: http://www.winstar.com.tw/service.php

MODLE NO：

**RECORDS OF REVISION**

**DOC. FIRST ISSUE**

| VERSION | DATE | REVISED PAGE NO. | **SUMMARY** |
|---|---|---|---|
| 0 | 2015/08/11 | | First issue |
| A | 2016/01/05 | | Modify FPC. |
| B | 2016/01/21 | | Modify Static electricity test |
| C | 2016/03/21 | | Modify Brightness. |

# Contents

# 1.Module Classification Information

| W | F | 50 | B | T | I | A | G | D | N | G | Y | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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：5.0” TFT | | |
| ④ | Model serials no. | | |
| ⑤ | Backlight Type： | F→CCFL, White<br>S→LED, High Light White | T→LED, White |
| ⑥ | LCD Polarize Type/ Temperature range/ Gray Scale Inversion Direction | C→Transmissive, N. T, 6:00 ; I→Transmissive, W. T, 6:00<br>F→Transmissive, N.T,12:00 ; L→Transmissive, W.T,12:00<br>N→Transmissive, Super W.T, 6:00<br>Q→Transmissive, Super W.T, 12:00<br>X→Transmissive, W.T, VA TFT<br>V→Transmissive, Super W.T, VA TFT<br>R→Transmissive, Super W.T, O-TFT<br>Z→Transmissive, W.T, O-TFT<br>A→Transmissive, N.T, IPS TFT<br>Y→Transmissive, W.T, IPS TFT | |
| ⑦ | A：TFT LCD<br>B：TFT+FR+CONTROL BOARD<br>C：TFT+FR+A/D BOARD<br>D：TFT+FR+A/D BOARD+CONTROL BOARD<br>E：TFT+FR+POWER BOARD<br>F：TFT+CONTROL BOARD | G：TFT+FR<br>H：TFT+D/V BOARD<br>I：TFT+FR+D/V BOARD<br>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 | P :1280800 |
| | S:480128 | T:800320 | | | | | |

| | |
|---|---|
| ⑨ | D: Digital L：LVDS |
| ⑩ | Interface： N：without control board A：8Bit B：16Bit |
| ⑪ | TS：N：Without TS T：resistive touch panel C：capacitive touch panel (G-F-F)<br>G：capacitive touch panel(G-G) |
| ⑫ | Version |
| ⑬ | Special Code #:Fit in with ROHS directive regulations |

# 2.Summary

This technical specification applies to 5.0’ color TFT-LCD panel. The 5.0’ color TFT-LCD panel is designed for camcorder, digital camera application and other electronic products which require high quality flat panel displays. This module follows RoHS.

# 3.General Specifications

| Item | Dimension | Unit |
|---|---|---|
| Size | 5.0 | inch |
| Dot Matrix | 800 × 3(RGB) × 480 | dots |
| Module dimension | 120.7(W) × 75.8(H) × 4.58 (D) | mm |
| Active area | 108 (W) × 64.8(H) | mm |
| Dot pitch | 0.045(W) × 0.135(H) | mm |
| LCD type | TFT, Normally White, Transmissive | |
| View Direction | 12 o'clock | |
| Gray Scale Inversion Direction | 6 o'clock | |
| Backlight Type | LED ,Normally White | |
| With /Without TP | With CTP | |
| Surface | Glare | |

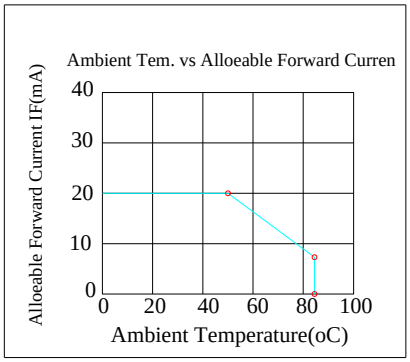
*Color tone slight changed by temperature and driving voltage.

# 4.Absolute Maximum Ratings

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

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

1. Temp. ≦60℃, 90% RH MAX. Temp.＞60℃, Absolute humidity shall be less than 90% RH at 60℃



# 5.Electrical Characteristics

### 5.1. Typical Operation Conditions

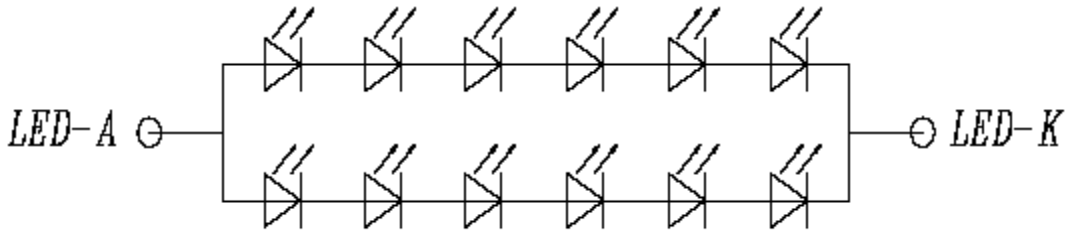
| Item | Symbol | Values | | | Unit | Remark |
|---|---|---|---|---|---|---|
| | | Min. | Typ | Max. | | |
| Power voltage | VDD | 3.0 | 3.3 | 3.6 | V | Note 2 |
| Current for Driver | IVDD | - | 17 | 25 | mA | |
| Input logic high voltage | VIH | 0.8 VDD | - | VDD | V | Note 3 |
| Input logic low voltage | VIL | 0 | - | 0.2 VDD | V | |

### 5.2. Backlight driving conditions (12 White Chips)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|---|---|---|---|---|---|---|
| Supply voltage of white LED backlight | VL | 17.4 | 19.8 | 21 | V | Note 1 |
| Curt for LED backlight | IL | 30 | 40 | 50 | 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℃ and L =40mA.
Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and IL =40mA. The LED lifetime could be decreased if operating IL is lager than 40mA.

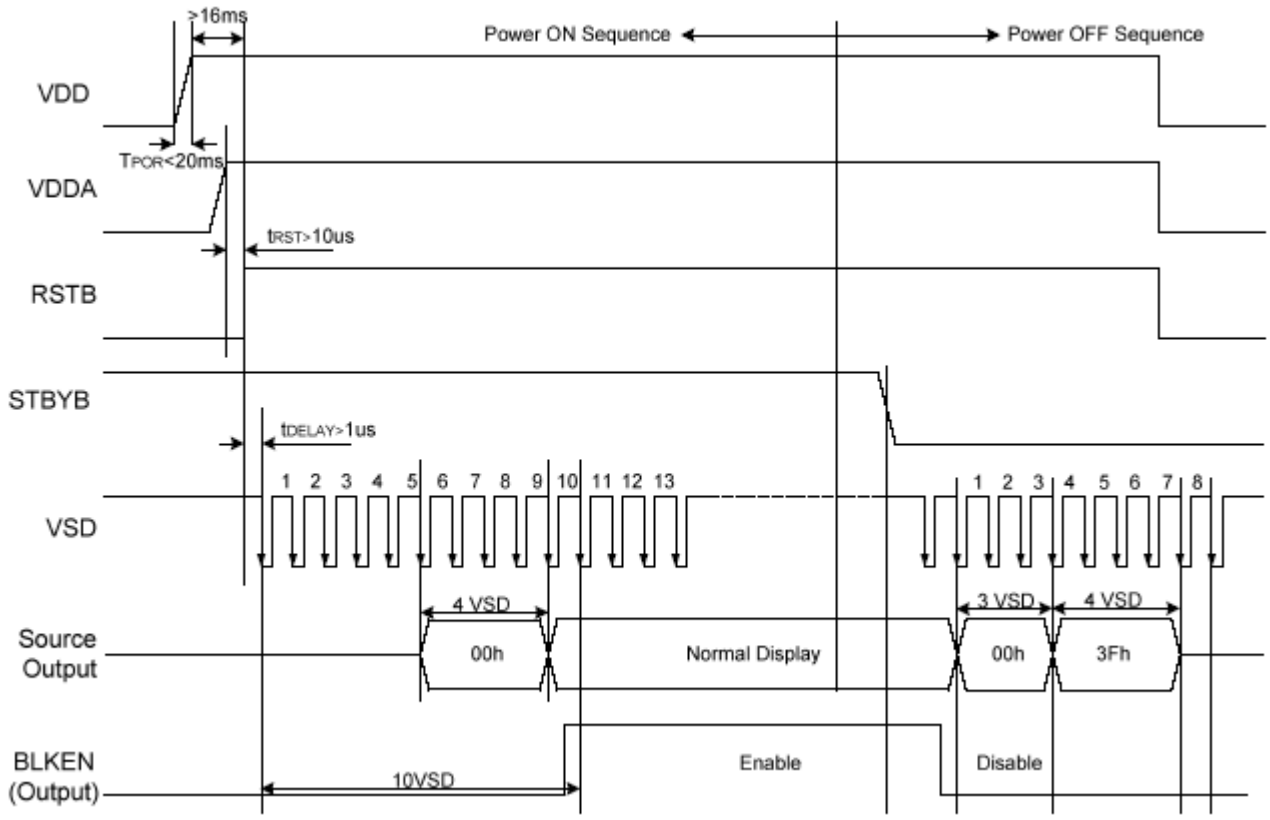
**LED CIRCUIT**




### 5.3. Power Sequence

To prevent the device damage from latch up, the power ON/OFF sequence shown below must be followed.
Power ON: VDD, DGND_ VDDA, AGND _ V1 to V14
Power OFF: V1 to V14 _ VDDA, AGND_ VDD, DGND

In order to prevent ILI6122 from power ON reset fail, the rising time (tPOR) of the digital power supply VDD should be maintained within given specifications. The power ON/OFF timing sequence is illustrated as below:



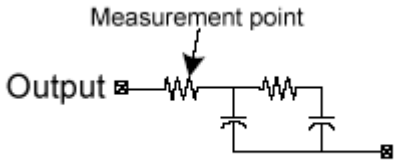

Note: For prevent anormal operation, tRST must be longer than 10us during Power ON sequence.

## 5.4. Timing Characteristic

AC Electrical Characteristics

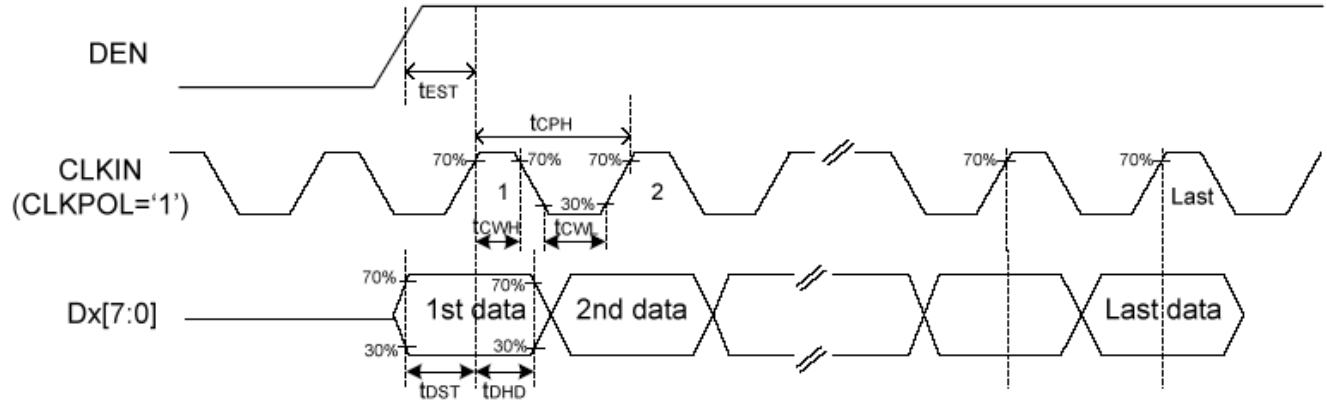
| Parameter | Symbol | Spec | | | Unit | Conditions |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| VDD Power ON slew rate | tPOR | -- | -- | 20 | ms | 0V ~ 0.9VDD |
| RSTB pulse width | tRST | 10 | -- | -- | us | CLKIN=50MHz |
| CLKIN cycle time | tCPH | 20 | -- | -- | ns | |
| CLKIN pulse duty | tCWH | 40 | 50 | 60 | % | |
| VSD setup time | tVST | 8 | -- | -- | ns | |
| VSD hold time | tVHD | 8 | -- | -- | ns | |
| HSD setup time | tHST | 8 | -- | -- | ns | |
| HSD hold time | tHHD | 8 | -- | -- | ns | |
| Data setup time | tDST | 8 | -- | -- | ns | D0[7:0], D1[7:0], D2[7:0] to CLKIN |
| Data hold time | tDHD | 8 | -- | -- | ns | D0[7:0], D1[7:0], D2[7:0] to CLKIN |
| DE setup time | tEST | 8 | -- | -- | ns | |
| DE hold time | tEHD | 8 | -- | -- | ns | |
| Output stable time | tSST | -- | -- | 6 | us | 10% to 90% target voltage. CL=120pF, R=10KW |
| CLKIN frequency | fCLK | -- | 40 | 50 | MHz | VDD=3.0 ~ 3.6V |
| CLKIN cycle time | tCLK | 20 | 25 | -- | ns | |
| CLKIN pulse duty | tCWH | 40 | 50 | 60 | % | TCLK |
| Time from HSD to Source output | tHSO | -- | 20 | -- | CLKIN | |
| Time from HSD to LD | tHLD | -- | 20 | -- | CLKIN | Note (2) |
| Time from HSD to STV | tHSTV | -- | 2 | -- | CLKIN | |
| Time from HSD to CKV | tHCKV | -- | 20 | -- | CLKIN | |
| Time from HSD to OEV | tHOEV | -- | 4 | -- | CLKIN | |
| LD pulse width | tWLD | -- | 10 | -- | CLKIN | Note (2) |
| CKV pulse width | tWCKV | -- | 66 | -- | CLKIN | |
| OEV pulse width | tWOEV | -- | 74 | -- | CLKIN | |

Note: (1) VDD=3.0 ~ 3.6V, VDDA=6.5~13.5V, DGND=AGND=0V, Ta=-20~+85℃
(2) The contents of the data register are transferred to the latch circuit at the rising edge of LD. Then the gray scale voltage is output from the device at the falling edge of LD.
(3) Output loading condition :

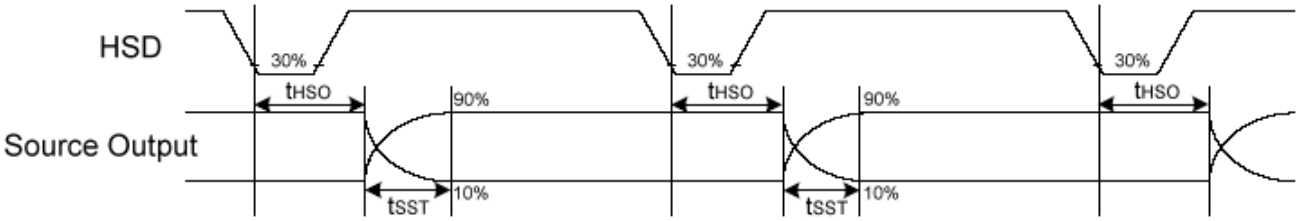


Input Clock and Data Timing Diagram

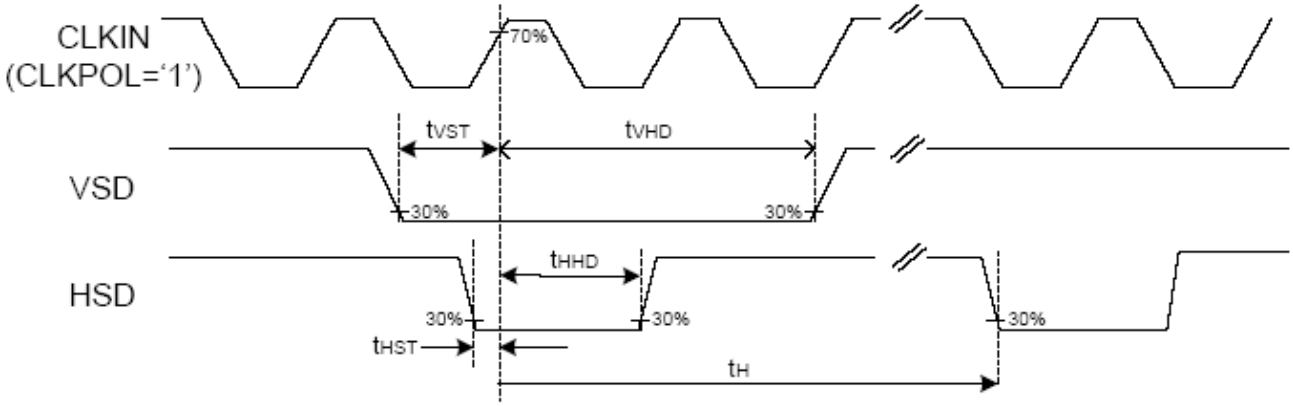
## DE Mode (MODE='1')




## Source Output timing Diagram (Cascade)




## SYNC Mode (MODE='0')



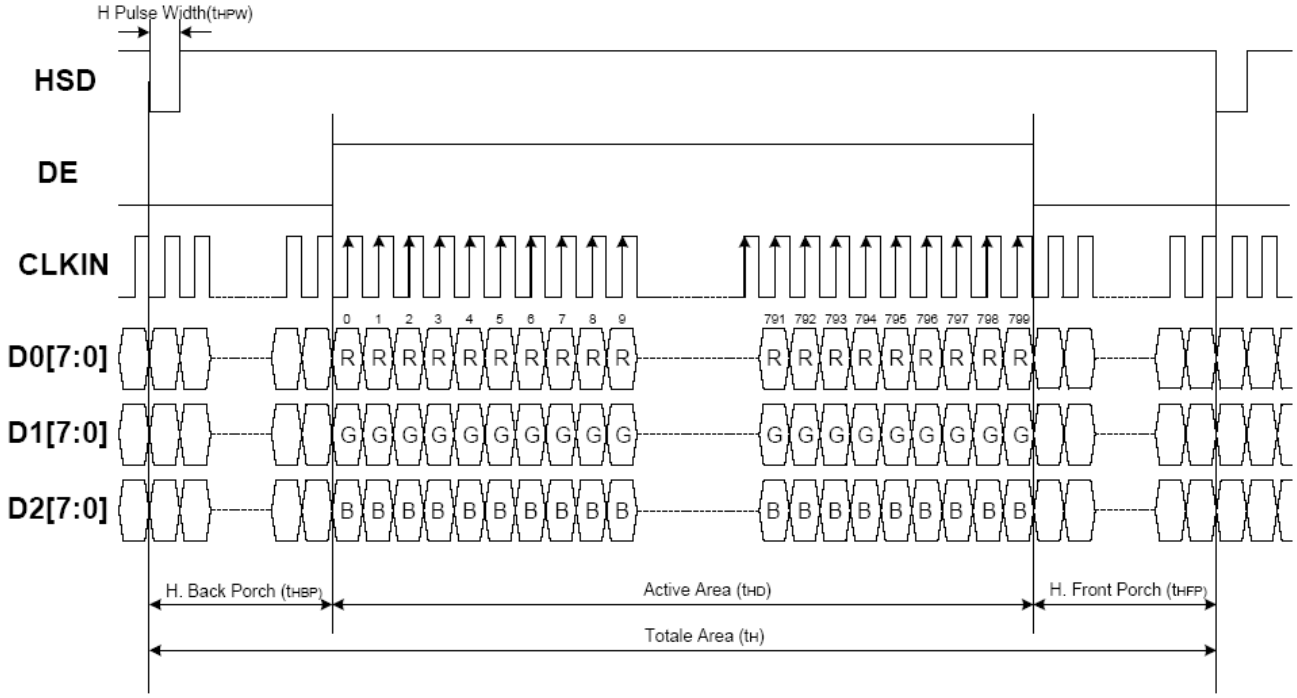
Timing

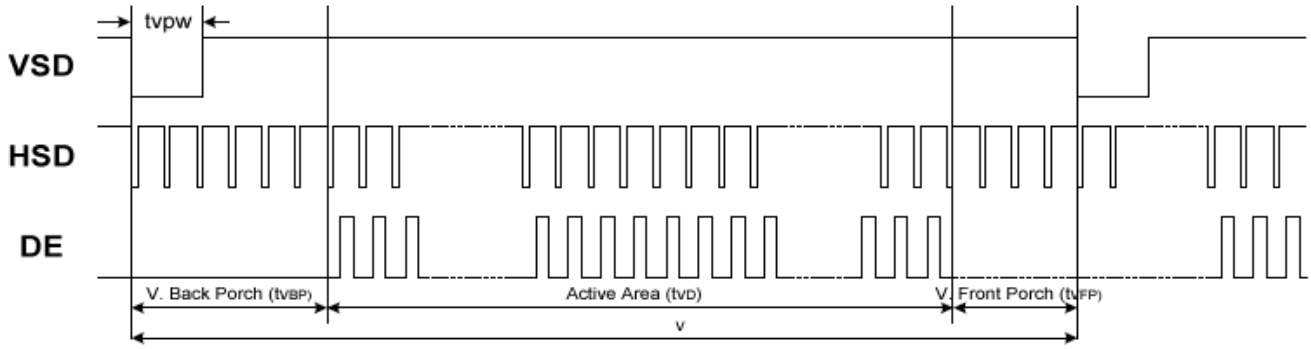
| **Horizontal Input Timing** | | | | | | |
|---|---|---|---|---|---|---|
| Parameter | | Symbol | Value | | | Unit |
| | | | Min. | Typ. | Max. | |
| Horizontal display area | | tHD | -- | 800 | -- | CLKIN |
| CLKIN frequency | | fCLK | -- | 33.3 | 50 | MHz |
| 1 Horizontal line period | | tH | 862 | 1056 | 1200 | CLKIN |
| HSD pulse width | Min. | tHPW | -- | 1 | -- | CLKIN |
| | Typ. | | -- | -- | -- | CLKIN |
| | Max. | | -- | 40 | -- | CLKIN |
| HSD back porch | SYNC | tHBP | 46 | 46 | 46 | CLKIN |
| HSD front porch | SYNC | tHFP | 16 | 210 | 354 | CLKIN |

| **Vertical Input Timing** | | | | | |
|---|---|---|---|---|---|
| Parameter | Symbol | Value | | | Unit |
| | | Min. | Typ. | Max. | |
| Vertical display area | tVD | -- | 480 | -- | HSD |
| VSD period time | tV | 510 | 525 | 650 | HSD |
| VSD pulse width | tVPW | 1 | -- | 20 | HSD |
| VSD back porch | tVBP | 23 | 23 | 23 | HSD |
| VSD front porch | tVFP | 7 | 22 | 147 | HSD |

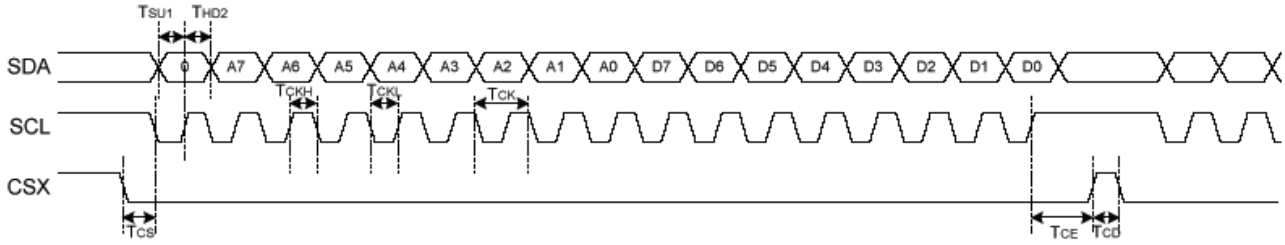
| Parameter | Symbol | Spec | | | Unit | Conditions |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| SCL period | TCK | 60 | -- | -- | ns | |
| SCL high width | TCKH | 30 | -- | -- | ns | |
| SCL low width | TCKL | 30 | -- | -- | ns | |
| Data setup time | TSU1 | 12 | -- | -- | ns | |
| Data hold time | THD1 | 12 | -- | -- | ns | |
| CSX to SCL setup time | TCS | 20 | -- | -- | ns | |
| CSX to SDA hold time | TCE | 20 | -- | -- | ns | |
| CSX high pulse width | TCD | 50 | -- | -- | ns | |

Data Input Format




**SPI Timing**



# 6.Optical Characteristics

| Item | | Symbol | Condition. | Min | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|---|---|
| Response time | | Tr | θ =0°、Φ=0° | - | 10 | 20 | .ms | Note 3,5 |
| | | Tf | | - | 10 | 20 | .ms | |
| Contrast ratio | | CR | At optimized viewing angle | 500 | 700 | - | - | Note 4,5 |
| Color Chromaticity | White | Wx | θ =0°、Φ=0 | 0.26 | 0.31 | 0.36 | | Note 2,6,7 |
| | | Wy | | 0.28 | 0.33 | 0.38 | | |
| Viewing angle (Gray Scale Inversion Direction) | Hor. | ΘR | CR≧10 | 60 | 70 | - | Deg. | Note 1 |
| | | ΘL | | 60 | 70 | - | | |
| | Ver. | ΦT | | 40 | 50 | - | | |
| | | ΦB | | 60 | 70 | - | | |
| Brightness | | - | - | 250 | 300 | - | cd/㎡ | Center of display |

Ta=25±2℃

Note 1: Definition of viewing angle range

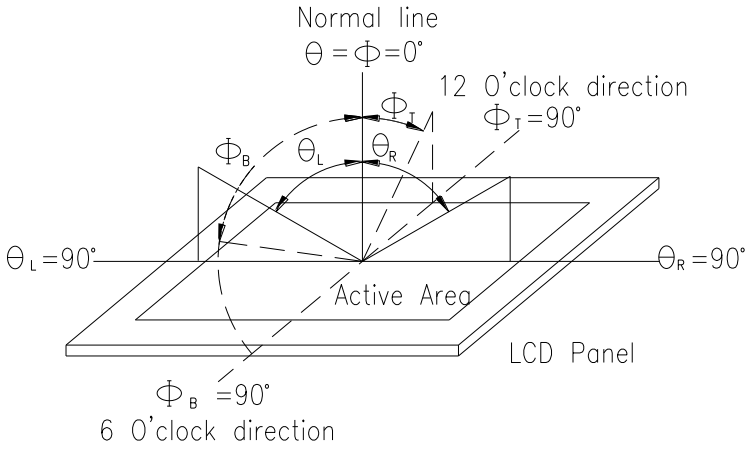



Fig. 6.1. Definition of viewing angle

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-7or BM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

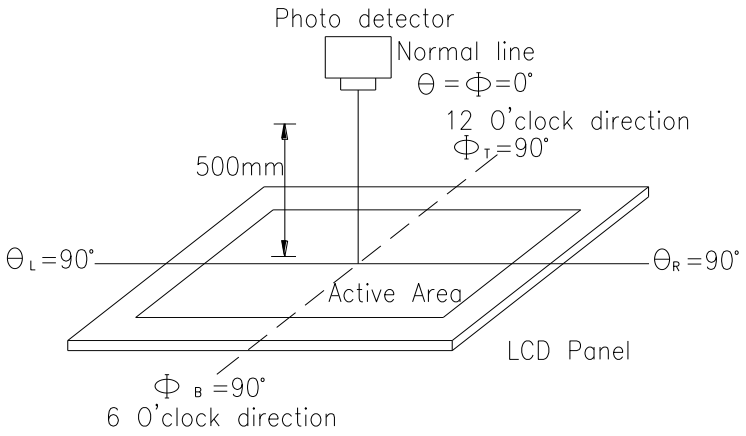
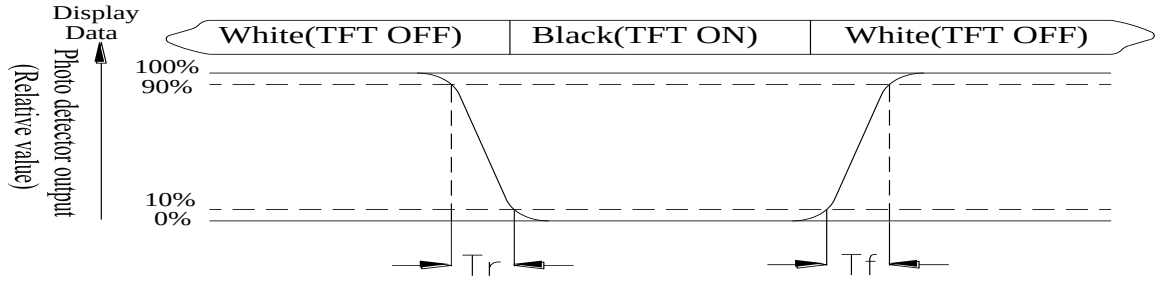



Fig. 6.2. Optical measurement system setup

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, Tr, is the time between photo detector output intensity changed from 90%to 10%. And fall time, Tf, 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 Vi = Vi50 ± 1.5V

Black Vi = Vi50 ± 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.

# 7.Interface

## 7.1. LCM PIN Definition

FPC connector is used for electronics interface. The recommended model is FH19SC-40S-0.5SH (05) manufactured by HIROSE.

| No. | Symbol | I/O | Function |
|---|---|---|---|
| 1 | VLED- | P | Power for LED backlight cathode |
| 2 | VLED+ | P | Power for LED backlight anode |
| 3 | GND | P | Power ground |
| 4 | VDD | P | Power voltage |
| 5 | R0 | I | Red data (LSB) |
| 6 | R1 | I | Red data |
| 7 | R2 | I | Red data |
| 8 | R3 | I | Red data |
| 9 | R4 | I | Red data |
| 10 | R5 | I | Red data |
| 11 | R6 | I | Red data |
| 12 | R7 | I | Red data (MSB) |
| 13 | G0 | I | Green data (LSB) |
| 14 | G1 | I | Green data |
| 15 | G2 | I | Green data |
| 16 | G3 | I | Green data |
| 17 | G4 | I | Green data |
| 18 | G5 | I | Green data |
| 19 | G6 | I | Green data |
| 20 | G7 | I | Green data (MSB) |
| 21 | B0 | I | Blue data (LSB) |
| 22 | B1 | I | Blue data |
| 23 | B2 | I | Blue data |
| 24 | B3 | I | Blue data |
| 25 | B4 | I | Blue data |
| 26 | B5 | I | Blue data |
| 27 | B6 | I | Blue data |
| 28 | B7 | I | Blue data (MSB) |
| 29 | GND | P | Power ground |
| 30 | DCLK | I | Pixel clock |
| 31 | DISP | I | Display on/ off |
| 32 | HSYNC | I | Horizontal sync signal |
| 33 | VSYNC | I | Vertical sync signal |
| 34 | DE | I | Data enable |
| 35 | NC | - | No connect |
| 36 | GND | P | Power ground |
| 37 | NC | - | No connect |

| | | | |
|---|---|---|---|
| 38 | NC | - | No connect |
| 39 | NC | - | No connect |
| 40 | NC | - | No connect |

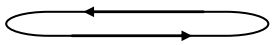
Note: I: input, O: output t, P: Power

## 7.2. CTP PIN Definition

| Pin | Symbol | Function | Remark |
|---|---|---|---|
| 1 | VSS | Ground for analog circuit | |
| 2 | VDDT | Power Supply : +3.0V | |
| 3 | SCL | I2C clock input | |
| 4 | NC | No connect | |
| 5 | SDA | I2C data input and output | |
| 6 | NC | No connect | |
| 7 | /RST | External Reset, Low is active | |
| 8 | /WAKE | External interrupt from the host | |
| 9 | /INT | External interrupt to the host | |
| 10 | VSS | Ground for analog circuit | |

# 8.Reliability

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

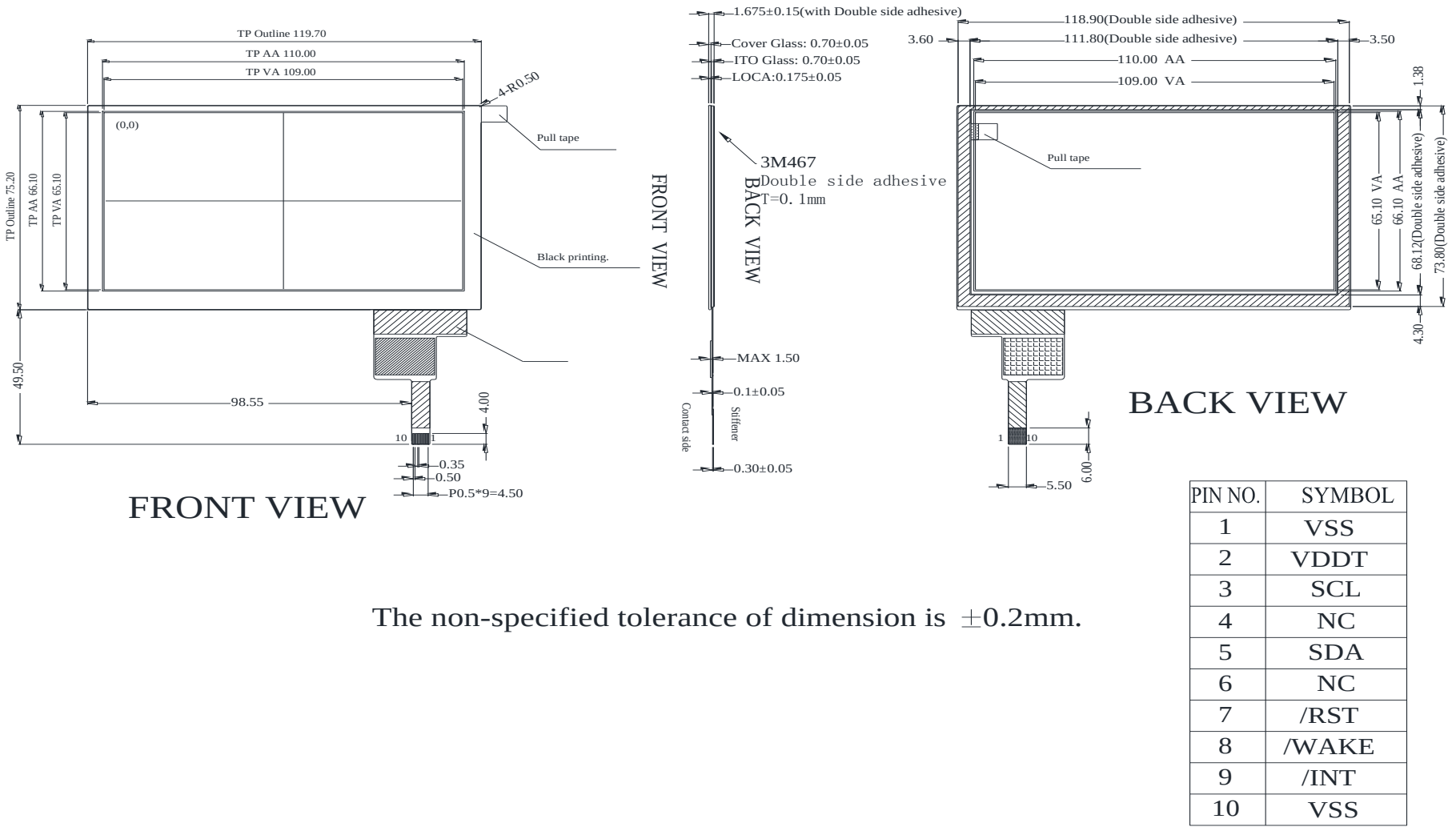
| **Environmental Test** | | | |
|---|---|---|---|
| **Test Item** | **Content of Test** | **Test Condition** | **Note** |
| High Temperature storage | Endurance test applying the high storage temperature for a long time. | 80℃<br>200hrs | 2 |
| Low Temperature storage | Endurance test applying the low storage temperature for a long time. | -30℃<br>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℃<br>200hrs | —— |
| Low Temperature Operation | Endurance test applying the electric stress under low temperature for a long time. | -20℃<br>200hrs | 1 |
| High Temperature/ Humidity Operation | The module should be allowed to stand at 60℃,90%RH max | 60℃,90%RH<br>96hrs | 1,2 |
| Thermal shock resistance | The sample should be allowed stand the following 10 cycles of operation<br>-20℃ 25℃ 70℃<br>  <br>30min 5min 30min<br>1 cycle | -20℃/70℃<br>10 cycles | —— |
| Vibration test | Endurance test applying the vibration during transportation and using. | Total fixed amplitude : 15mm<br>Vibration Frequency : 10~55Hz<br>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),<br>RS=330Ω<br>CS=150pF<br>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.

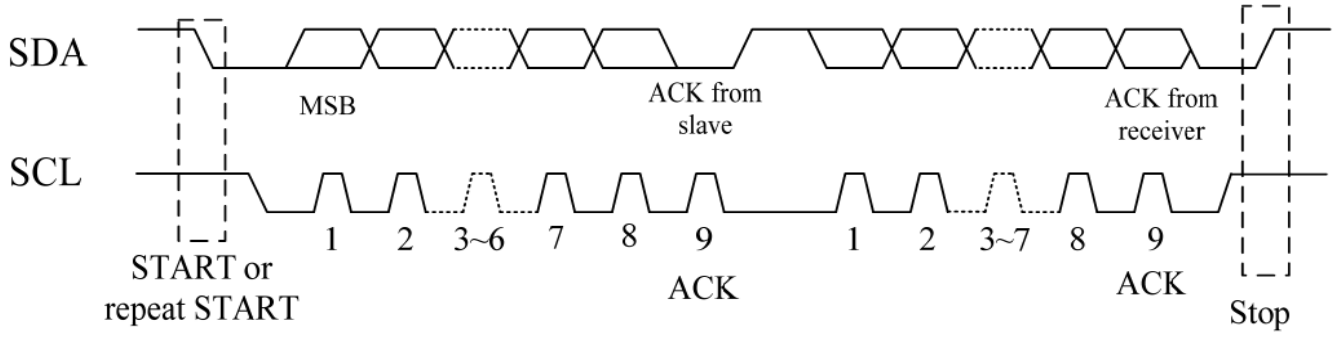
# 9.Touch Panel Information



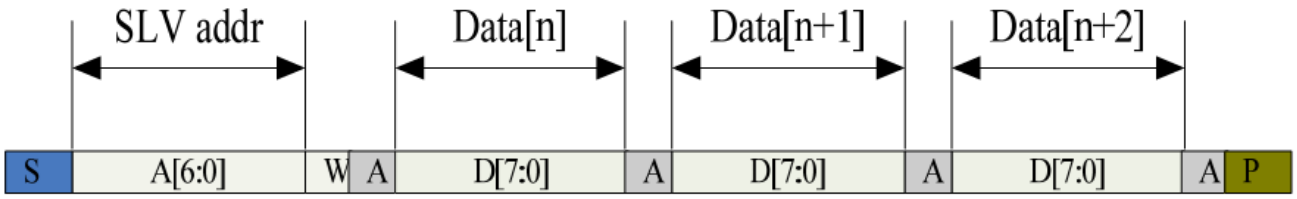

The non-specified tolerance of dimension is ±0.2mm.

| PIN NO. | SYMBOL |
|---|---|
| 1 | VSS |
| 2 | VDDT |
| 3 | SCL |
| 4 | NC |
| 5 | SDA |
| 6 | NC |
| 7 | /RST |
| 8 | /WAKE |
| 9 | /INT |
| 10 | VSS |

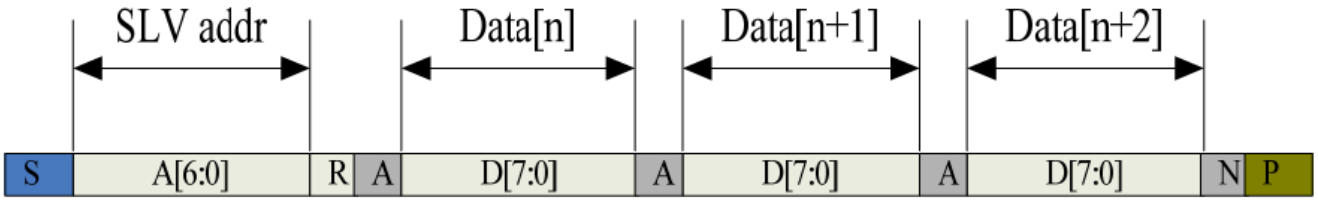
## 9.1. CTP I2C Timing:




I2C Serial Data Transfer Format




I2C master write, slave read




I2C master read, slave write

| Mnemonics | Description |
|---|---|
| S | 12C Start or 12C Restart |
| A[6:0] | Slave address<br>A[6:4]:3'b011<br>A[3:0]:data bits are identical to those of 12CCON[7:4]register |
| W | 1'b0:Write |
| R | 1'b1:Read |
| A(N) | ACK(NACK) |
| P | STOP :the indication of the end of a packet(if this bit is missing, S will indicate the end of the current packet and beginning of the next packet) |

Lists the meanings of the mnemonics used in the above figures

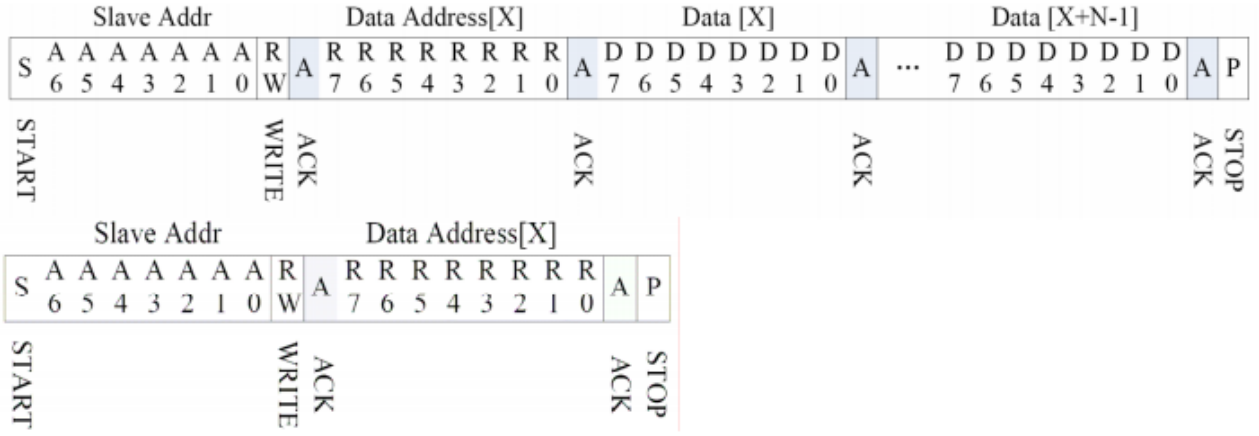
| Parameter | Unit | Min | Max |
|---|---|---|---|
| SCL frequency | KHz | 0 | 400 |
| Bus free time between a STOP and START condition | us | 4.7 | \ |
| Hold time (repeated) ST ART condition | us | 4.0 | \ |
| Data setup time | ns | 250 | \ |
| Setup time for a repeated START condition | us | 4.7 | \ |
| Setup time for STOP condition | us | 4.0 | \ |

Interface Timing Characteristics

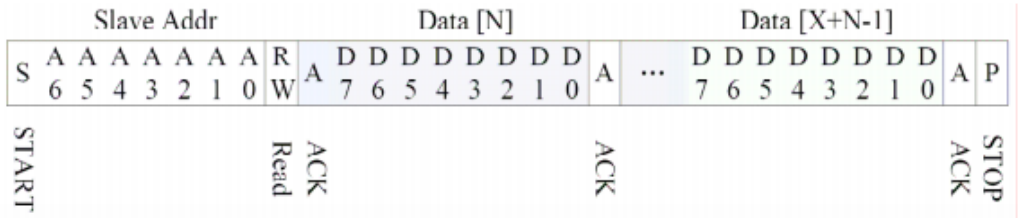
AS FOR STANDARD CTPM, HOST NEED TO USE BOTH INTERRUPT CONTROL SIGNAL AND SERIAL DATA INTERFACE TO GET THE TOUCH DATA.

HERE IS THE TIMING TO GET TOUCH DATA.

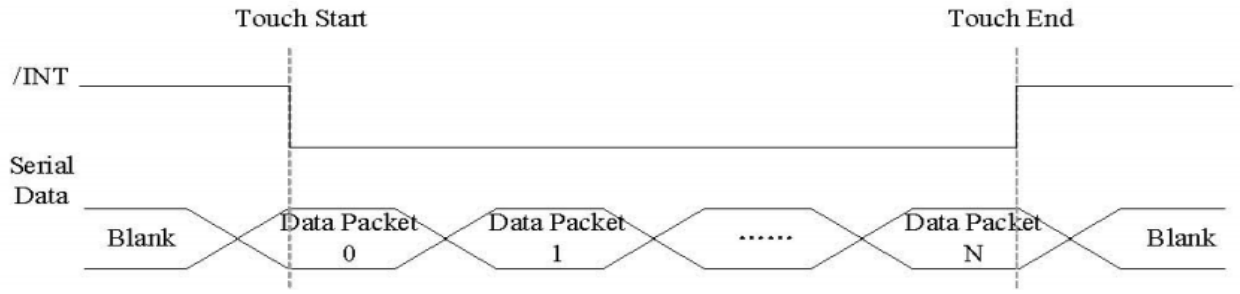
## 9.2. WRITE BYTES TO I2C SLAVE




READ X BYTES FROM I2C SLAVE




AS FOR STANDARD CTPM, HOST NEED TO USE BOTH INTERRUPT CONTROL SIGNAL AND SERIAL DATA INTERFACE TO GET THE TOUCH DATA, HERE IS THE TIMING TO GET TOUCH DATA.




Address: 0x38

TOUCH DATA READ PROTOCOL

| NAME | VALUE | DESCRIPTION |
|---|---|---|
| START CH | 0X00 | START COMMAND FOR CTPM TOUCH DATA PACKET,HOST MUST SEND CTPM A START CH COMMAND BEFORE READ TOUCH DATA |
| lst READ BYTE～ LAST READ BYTE | | TOUCH DATA PACKET<br>SENT BY CTPM,EACH BYTE HAS 8-BIT DATA ,A TOUCH DATA PACKET CONSISTS OF N BYTE |

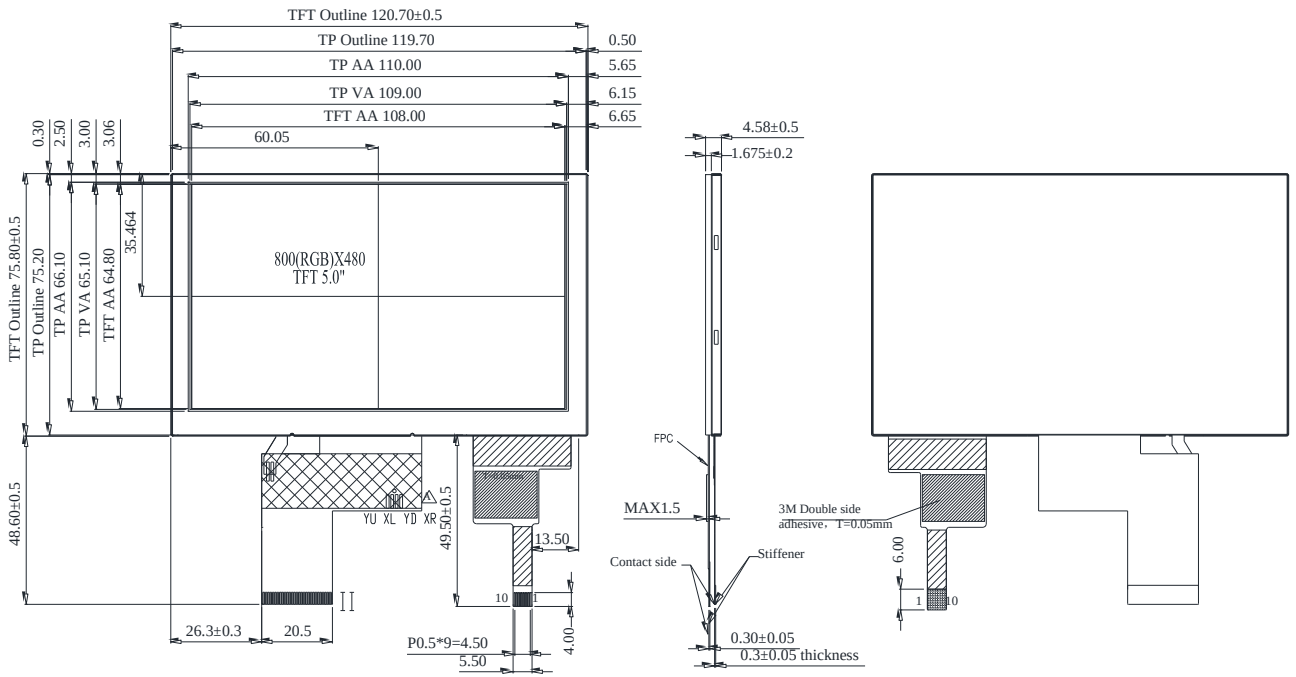
A DATA PACKET STARTS WITH A HEADER AND ENDS WITH CRC CODE,AS FOR 5 POINTS DATA PACKET,THE LENGTH OF THE PACKET IS ALWAYS 26 BYTES IN SPITE OF ACTUAL TOUCH POINTS.

| **Address** | **Name** | **Bit7** | **Bit6** | **Bit5** | **Bit4** | **Bit3** | **Bit2** | **Bit1** | **Bit0** | **Host Access** |
|---|---|---|---|---|---|---|---|---|---|---|
| 00h | Devide__Mode | | Device Model[2:0] | | | | | | | RW |
| 01h | Gest__ID | Gesture ID[7:0] | | | | | | | | R |
| 02h | TD__Status | | | | | Number of touch points[3:0] | | | | R |
| 03h | Touch1__XH | 1st Event Flag | | | | 1st Touch X Position[11:8] | | | | R |
| 04h | Touch1__XL | 1st Touch X Position[7:0] | | | | | | | | R |
| 05h | Touch1__YH | 1st Touch ID[3:0] | | | | 1st Touch Y Position[11:8] | | | | R |
| 06h | Touch1__YL | 1st Touch Y Position[7:0] | | | | | | | | R |
| 09h | Touch2__XH | 2nd Event Flag | | | | 2nd Touch X Position[11:8] | | | | R |
| 0Ah | Touch2__XL | 2nd Touch X Position[7:0] | | | | | | | | R |
| 0Bh | Touch2__YH | 2nd Touch ID[3:0] | | | | 2ndTouch Y Position[11:8] | | | | R |

| | | | |
|---|---|---|---|
| 0Ch | Touch2__YL | 2nd Touch Y Position[7:0] | R |

| | | | | | |
|---|---|---|---|---|---|
| 0Fh | Touch3__XH | 3rdEvent Flag | | 3rdTouch X Position[11:8] | R |
| 10h | Touch3__XL | 3rd Touch X Position[7:0] | | | R |
| 11h | Touch3__YH | 3rdTouch ID[3:0] | | 3rdTouch Y Position[11:8] | R |
| 12h | Touch3__YL | 3rd Touch Y Position[7:0] | | | R |
| 15h | Touch4__XH | 4thEvent Flag | | 4thTouch X Position[11:8] | R |
| 16h | Touch4__XL | 4th Touch X Position[7:0] | | | R |
| 17h | Touch4__YH | 4thTouch ID[3:0] | | 4thTouch Y Position[11:8] | R |
| 18h | Touch4__YL | 4th Touch Y Position[7:0] | | | R |
| 1Bh | Touch5__XH | 5thEvent Flag | | 5thTouch X Position[11:8] | R |
| 1Ch | Touch5__XL | 5th Touch X Position[7:0] | | | R |
| 1Dh | Touch5__YH | 5thTouch ID[3:0] | | 5thTouch Y Position[11:8] | R |
| 1Eh | Touch5__YL | 5th Touch Y Position[7:0] | | | R |

# 10.Contour Drawing



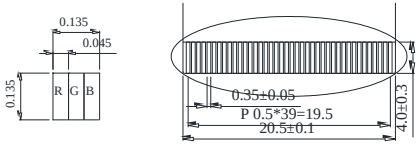


CIRCUIT DIAGRAM

| PIN NO. | SYMBOL |
|---|---|
| 1 | VSS |
| 2 | VDDT |
| 3 | SCL |
| 4 | NC |
| 5 | SDA |
| 6 | NC |
| 7 | /RST |
| 8 | /WAKE |
| 9 | /INT |
| 10 | VSS |

| PIN NO. | SYMBOL |
|---|---|
| 1 | VLED- |
| 2 | VLED+ |
| 3 | GND |
| 4 | VDD |
| 5 | R0 |
| 6 | R1 |
| 7 | R2 |
| 8 | R3 |
| 9 | R4 |
| 10 | R5 |
| 11 | R6 |
| 12 | R7 |
| 13 | G0 |
| 14 | G1 |
| 15 | G2 |
| 16 | G3 |
| 17 | G4 |
| 18 | G5 |
| 19 | G6 |
| 20 | G7 |
| 21 | B0 |
| 22 | B1 |
| 23 | B2 |
| 24 | B3 |
| 25 | B4 |
| 26 | B5 |
| 27 | B6 |
| 28 | B7 |
| 29 | GND |
| 30 | DCLK |
| 31 | DISP |
| 32 | HSYNC |
| 33 | VSYNC |
| 34 | DE |
| 35 | NC |
| 36 | GND |
| 37 | NC |
| 38 | NC |
| 39 | NC |
| 40 | NC |

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




SCALE 1:100

DETAIL CON
SCALE 1:3

winstar

# LCM Sample Estimate Feedback Sheet

**Module Number：** _____ 

## 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 Temperature： □ Pass □ NG ,_____
7. Storage Temperature： □ Pass □ NG ,_____
8. Others：_____

## 2、Mechanical Specification：

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 Type)： □ 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 ,_____

>> **Go to 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**：____/____/____