

To :  
Date : 2025/4/15

**TFT LCD**  
**RJY080XUAY-300-40**

ACCEPTED BY :  
**Tentative V0.0**

| APPROVED BY | CHECKED BY | PREPARED BY |
|-------------|------------|-------------|
|             |            |             |

Doc.No: RJY080XUAY-350-40

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## 1. OVERVIEW

**RJY080XUAY-300-30** is a 8.2" color TFT-LCD (Thin Film Transistor Liquid Crystal Display) OLB module (finish outer lead bonding) composed of LCD panel, driver ICs (the backlight is included in this OLB module).

The 8.2" screen produces 10800×RGB (3) ×1080 resolution image. By applying R.G.B. input signal, 16.7M color images are displayed.

### 1.1 LCD Specifications

| ITEM                            | SPECIFICATION              |
|---------------------------------|----------------------------|
| LCM Outline Size                | 219.3(H)×224.02(V)×4.0(T)  |
| Display Area (mm)               | 208.1(H) × 208.1(V)        |
| Number of Pixels                | 1080(H) × 3(RGB) × 1080(V) |
| Pixel Pitch (um)                | 192.6(H) × 192.6(V)        |
| Color Pixel Arrangement         | RGB Stripe                 |
| Display Mode                    | Normally Black             |
| Number of Colors                | 16.7M                      |
| Response Time (ms)              | 35(Max)                    |
| View direction (Gray inversion) | Free                       |
| Contrast Ratio                  | 1000(typ)                  |
| Viewing Angle ( CR ≥ 10)        | 85°/85° / 85°/85°(Typ)     |
| Interface connection            | MIPI                       |
| Driver IC                       | FT8006S-AA                 |
| Luminance                       | 300cd/m <sup>2</sup>       |
| Surface Treatment               | NA                         |

■ Compatible with ROHS Standard

### 1.2 TP Specifications

| ITEM                      | SPECIFICATION    | Remarks   |
|---------------------------|------------------|-----------|
| TP Structure              | TDDI             |           |
| Sensing Method            | Self-Capacitance |           |
| Number of Touch           | 10               |           |
| Performance               | Report Rate      | max 120Hz |
|                           | Response Time    | 25ms max  |
|                           | Accuracy(mm)     | 1.0       |
|                           | Precision(mm)    | 1.0       |
|                           | Linearity(mm)    | 1.0       |
|                           | Jitter(mm)       | 1.0       |
| TID Sensor Channels (X*Y) | 28 (x)*28(y)     |           |

## 2. ABSOLUTE MAXIMUM RATINGS

The following are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

| Item                         | Symbol | Min. | Max. | Unit | Remark |
|------------------------------|--------|------|------|------|--------|
| Power Supply Voltage for I/O | VDD1.8 | 1.65 | 2.0  | V    |        |
| Power Supply Voltage for     |        |      |      | V    |        |
| Positive Voltage             | VSP-   | 5.5  | 6.1  | V    |        |
| Negative Voltage             | VSN-   | -6.0 | -5.5 | V    |        |

Note1: If users use the product out off the environmental operation range (temperature and humidity), it will have visual quality concerns.

## 3. ELECTRICAL CHARACTERISTICS

### 3.1 TFT LCD Power Supply Voltage

(GND=VSSA=VSSD=0V)

Ta=25°C

|                            |         |             |      |             |   |  |
|----------------------------|---------|-------------|------|-------------|---|--|
| I/O Operating Voltage      | DVDD1.8 | 1.7         | 1.8  | 1.9         | V |  |
| Operating Positive Voltage | AVDD    | 5.8         | 6.0  | 6.1         | V |  |
| Operating Negative Voltage | AVEE    | -6.1        | -6.0 | -5.8        | V |  |
| Input Signal Voltage       | VIH     | 0.7* VDD1.8 | --   | VDD1.8      | V |  |
|                            | VIL     | GND         | --   | 0.3* VDD1.8 | V |  |
| Output Signal Voltage      | VOH     | 0.8* VDD1.8 | --   | VDD1.8      | V |  |
|                            | VOL     | GND         | --   | 0.2* VDD1.8 | V |  |

### 3.2 TFT-LCD Current consumption

(GND=VSSA=VSSD=0V)

Ta=25

°C

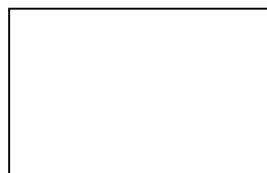
| ITEM                    | SYMBOL            | Condition    | MIN | TYPE | MAX | UNIT | NOTE  |
|-------------------------|-------------------|--------------|-----|------|-----|------|-------|
| Current For Driving     | I <sub>VDDI</sub> | VDD1.8= 1.8V | -   | 30   | 35  | mA   |       |
|                         | I <sub>AVDD</sub> | AVDD = 5.9V  | -   | 30   | 70  | mA   |       |
|                         | I <sub>AVEE</sub> | AVEE=-5.8    |     | 30   | 70  | mA   |       |
| Total Power Consumption | PC                |              | -   | -    | -   | mW   | Note1 |

Note1: Typ. specification: : Gray-level test Pattern

Max. specification: White test Pattern

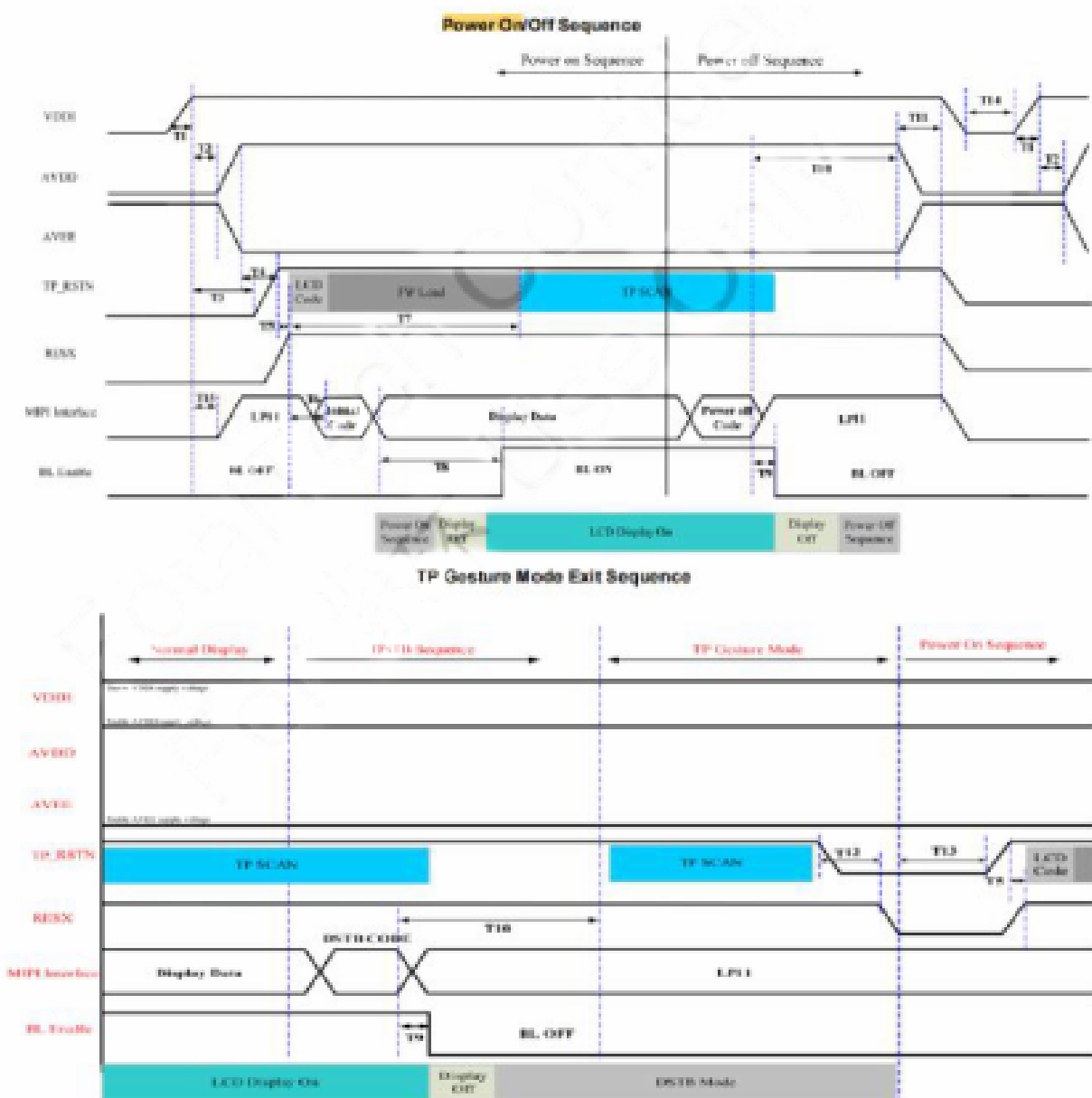


(a) Gray-level Pattern



(b) White Pattern

### 3.3 Power on/off sequence



| Power On / Off Sequence Timing |                                                             |      |      |      |
|--------------------------------|-------------------------------------------------------------|------|------|------|
| Parameter                      | Description                                                 | Min. | Max. | Unit |
| T1                             | Rise time from 0.1VDDI to 0.9VDDI                           | 0    | 5    | mS   |
| T2                             | AVDD power up after VDDI power on                           | 3    |      | mS   |
| T2d                            | AVEE power up after AVDD power up                           | 0    |      | mS   |
| T3                             | TP reset time after VDDI power on                           | 5    |      | mS   |
| T4                             | TP Reset release time after AVDD power on                   | 100  |      | uS   |
| T5                             | TP Reset release to LCD Reset release                       | 0    |      | mS   |
| T6                             | FLASH download LCD code after LCD Reset                     | 35   |      | mS   |
| T7                             | LCD Reset release to TP SCAN Start                          | 220  |      | mS   |
| T8                             | LED On after Initial Code                                   | 150  |      | mS   |
| T9                             | LED Off after power off code                                | 50   |      | mS   |
| T10                            | AVEE power down after power off code                        | 150  |      | mS   |
| T10d                           | AVDD power down after AVEE power down                       | 0    |      | mS   |
| T11                            | VDDI power down after AVDD power off                        | 5    |      | mS   |
| T12                            | TP reset time before LCD reset                              | 5    |      | mS   |
| T13                            | RESX reset falling to TP reset release                      | 5    | 120  | mS   |
| T14                            | VDDI rise again after previous VDDI powered down            | 50   |      | mS   |
| T15                            | MIPI signals start ( Hi-Z/GND to LP11 ) after VDDI power on | 3    |      | mS   |

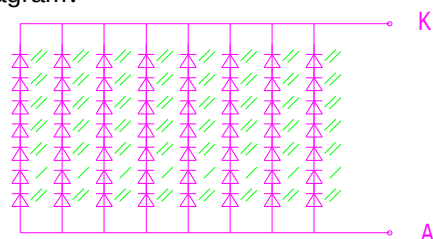
### 3.4 Backlight

Ta=25°C

| ITEM              | SYMBOL | CONDITIONS | MIN | TYP   | MAX | UNIT | NOTE |
|-------------------|--------|------------|-----|-------|-----|------|------|
| LED current       | IL     | Ta=25°C    | --  | 160   | --  | mA   |      |
| LED voltage       | VL     | Ta=25°C    | --  | 21    | --  | V    |      |
| Power consumption | WL     | Ta=25°C    | --  | 3.36  | --  | W    |      |
| LED Lifetime      | -      | Ta=25°C    | --  | 20000 | --  | Hr   |      |

【Note】

\*1)LED Circuit Diagram:



$$LED = 7 \times 8 = 56PCS$$

cklight LED Circuit IF=160mA;Vf=21V

\*2) Calculator value for reference  $I_F \times V_F \times N = P_{LED}$

\*3) Life time means that estimated time to 50% degradation of initial luminous intensity.

\*4) In order to prevent module brightness or screen display unstable, LED shall be controlled under constant current.

## 4. INTERFACE CONNECTION

CN (Interface signal)

Connector type: FP225H-040S10M or compatible

| Pin No. | Pin Name | Description                                                                                          |
|---------|----------|------------------------------------------------------------------------------------------------------|
| 1       | AVDD     | 6.0V input power                                                                                     |
| 2       | AVDD     | 6.0V input power                                                                                     |
| 3       | NC       | NC                                                                                                   |
| 4       | AVEE     | -6.0V input power                                                                                    |
| 5       | AVEE     | -6.0V input power                                                                                    |
| 6       | NC       | NC                                                                                                   |
| 7       | VDD18    | Power supply 1.8V                                                                                    |
| 8       | VDD18    | Power supply 1.8V                                                                                    |
| 9       | REST     | This signal will reset the device and must be Applied properly to initialize the chip ( $\pm 1.8V$ ) |
| 10      | GND      | Ground                                                                                               |
| 11      | GND      | Ground                                                                                               |
| 12      | D0-      | MIPI differential data0 input(Negative)                                                              |
| 13      | D0+      | MIPI differential data0 input(Positive)                                                              |
| 14      | GND      | Ground                                                                                               |
| 15      | D1-      | MIPI differential data1 input(Negative)                                                              |
| 16      | D1+      | MIPI differential data1 input(Positive)                                                              |
| 17      | GND      | Ground                                                                                               |
| 18      | CLK-     | MIPI differential clock input(Negative)                                                              |
| 19      | CLK+     | MIPI differential clock input(Positive)                                                              |
| 20      | GND      | Ground                                                                                               |
| 21      | D2-      | MIPI differential data2 input(Negative)                                                              |
| 22      | D2+      | MIPI differential data2 input(Positive)                                                              |
| 23      | GND      | Ground                                                                                               |
| 24      | D3-      | MIPI differential data3 input(Negative)                                                              |
| 25      | D3+      | MIPI differential data3 input(Positive)                                                              |
| 26      | GND      | Ground                                                                                               |
| 27      | ID0      | System Hardware ID0 Select                                                                           |
| 28      | ID1      | System Hardware ID1 Select                                                                           |
| 29      | GND      | Ground                                                                                               |
| 30      | TP-SDA   | I2C SDA, TYP.1.8V                                                                                    |
| 31      | TP-SCL   | I2C CLK, TYP.1.8V                                                                                    |
| 32      | TP-INT   | Interrupt signal for TP                                                                              |
| 33      | TP-RST   | The external reset input for TP                                                                      |
| 34      | GND      | Ground                                                                                               |
| 35      | NC       | NC                                                                                                   |
| 36      | LEDK     | Power for LED1 Cathode                                                                               |
| 37      | LEDK     | Power for LED2 Cathode                                                                               |
| 38      | NC       | NC                                                                                                   |
| 39      | LEDA     | Power for LED Anode                                                                                  |
| 40      | LEDA     | Power for LED Anode                                                                                  |
|         |          |                                                                                                      |
|         |          |                                                                                                      |

## 5. INTERFACE TIMING CHART

### 5.1 MIPI Interface Timing Sequence

#### (a) MIPI interface DC characteristic

#### DC characteristics for MIPI LP mode

| Parameter              | Symbol   | Spec. |      |      | Unit |
|------------------------|----------|-------|------|------|------|
|                        |          | Min.  | Typ. | Max. |      |
| Logic 1 input voltage  | $V_{IH}$ | 880   | -    | -    | mV   |
| Logic 0 input voltage  | $V_{IL}$ | 0     | -    | 550  | mV   |
| Logic 1 output voltage | $V_{OH}$ | 1.1   | 1.2  | 1.3  | V    |
| Logic 0 output voltage | $V_{OL}$ | -50   | -    | 50   | mV   |

#### DC characteristics for MIPI HS mode

| Parameter                                        | Symbol       | Min. | Spec. |      | Unit     |
|--------------------------------------------------|--------------|------|-------|------|----------|
|                                                  |              |      | Typ.  | Max. |          |
| Common-mode voltage HS Receive mode              | $V_{CMRXDC}$ | 70   | -     | 330  | mV       |
| Differential input high threshold <sup>(1)</sup> | $V_{IDTH}$   | -    | -     | 70   | mV       |
| Differential input low threshold <sup>(1)</sup>  | $V_{IDTL}$   | -70  | -     | -    | mV       |
| Single-ended input high voltage                  | $V_{IHHS}$   | -    | -     | 460  | mV       |
| Single-ended input low voltage                   | $V_{ILHS}$   | -40  | -     | -    | mV       |
| Differential input impedance                     | $Z_{ID}$     | 80   | 100   | 125  | $\Omega$ |
| HS transmit differential voltage (VDP-VDN)       | $ VOD $      | 140  | 200   | 270  | mV       |

Note: (1) VIDTH and VIDTL only for reference, related to power and ground noise, this spec need to check on panel performance to fine tune

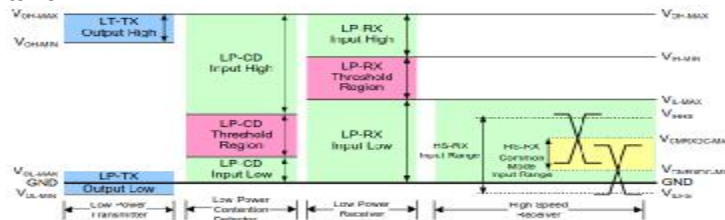


Figure. MIPI signaling and contention voltage levels

#### (b) MIPI interface AC characteristics

##### MIPI data-clock timing specification

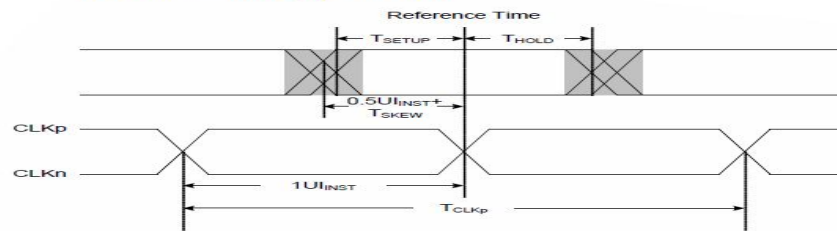


Figure 8.5: Data to clock timing

| Parameter                | Symbol      | Spec.               |      |                     | Unit        |
|--------------------------|-------------|---------------------|------|---------------------|-------------|
|                          |             | Min.                | Typ. | Max.                |             |
| UI instantaneous         | $UI_{INST}$ | 1.0                 | -    | 12.5 <sup>(1)</sup> | ns          |
| Data to clock setup time | $T_{SETUP}$ | 0.15 <sup>(2)</sup> | -    | -                   | $UI_{INST}$ |
| Data to clock hold time  | $T_{HOLD}$  | 0.15 <sup>(2)</sup> | -    | -                   | $UI_{INST}$ |

Note: (1) This value corresponds to a minimum 80 Mbps data rate.

(2) Total SETUP and HOLD window for receiver of 0.3\*  $UI_{INST}$ .

#### 5.2 I2C interface AC characteristics

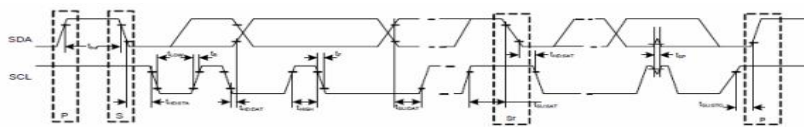


Figure 8.8: I2C timing

| Parameter                                                                                   | Symbol        | Standard-Mode I <sup>2</sup> C-BUS |      | Fast-Mode I <sup>2</sup> C-BUS |      | Unit    |
|---------------------------------------------------------------------------------------------|---------------|------------------------------------|------|--------------------------------|------|---------|
|                                                                                             |               | Min.                               | Max. | Min.                           | Max. |         |
| SCL clock frequency                                                                         | $f_{SCL}$     | 0                                  | 100  | 0                              | 400  | KHz     |
| Bus free time between STOP and START condition                                              | $t_{BUF}$     | 4.7                                | -    | 1.3                            | -    | $\mu$ s |
| Hold time (Repeated) START condition. After this period, the first clock pulse is generated | $t_{HD-STA}$  | 4.0                                | -    | 0.6                            | -    | $\mu$ s |
| LOW period of the SCL clock                                                                 | $t_{LOW}$     | 4.7                                | -    | 1.3                            | -    | $\mu$ s |
| HIGH period of the SCL clock                                                                | $t_{HIGH}$    | 4.0                                | -    | 0.6                            | -    | $\mu$ s |
| Set-up time for a repeated START condition                                                  | $t_{SU-STA}$  | 4.7                                | -    | 0.6                            | -    | $\mu$ s |
| Data hold time                                                                              | $t_{HD-DAT}$  | 0                                  | -    | 0                              | 0.9  | $\mu$ s |
| Data set-up time                                                                            | $t_{SU-DAT}$  | 250                                | -    | 100                            | -    | ns      |
| Rise time of both SDA and SCL signals                                                       | $t_R$         | -                                  | 1000 | 20+0.1 $C_b$                   | 300  | ns      |
| Fall time of both SDA and SCL signals                                                       | $t_F$         | -                                  | 300  | 20+0.1 $C_b$                   | 300  | ns      |
| Set-up time for STOP condition                                                              | $t_{SU-STOP}$ | 4.0                                | -    | 0.6                            | -    | $\mu$ s |
| Capacitive load for each bus line.                                                          | $C_b$         | -                                  | 400  | -                              | 400  | pF      |

Note: (1) All values are referred to VIH (0.75xVCCD) and VIL (0.25xVCCD) level.

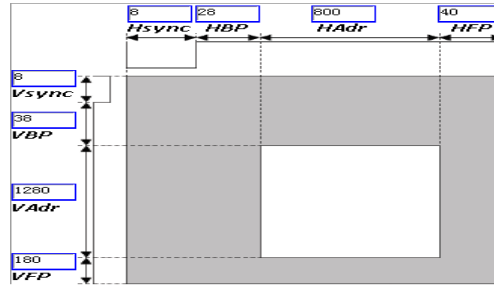
(2) A device must internally provide a hold time of at least 300ns for the SDA signal (referred to the VIH of the SCL signal) in order to bridge the undefined region of the falling edge of SCL.

(3) The maximum  $t_{HD-DAT}$  has only to be met if the device does not stretch the LOW period ( $t_{LOW}$ ) of the SCL signal.

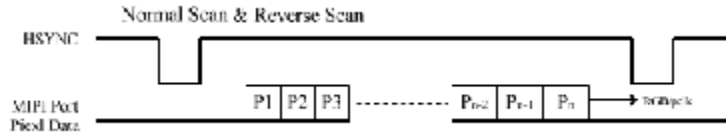
(4) A fast-mode I<sup>2</sup>C-bus device can be used in a standard-mode I<sup>2</sup>C-bus system, but the requirement  $t_{SU-DAT} \geq 250$ ns must then be met. This will automatically be the case if the device does not stretch the LOW period of the SCL signal. If such a device does stretch the LOW period of the SCL signal, it must output the next data bit to the SDA line  $t_{Rmax} + t_{SU-DAT} = 1000+250=1250$ ns (according to the standard-mode I<sup>2</sup>C-bus specification) before the SCL line is released.

(5)  $C_b$  = total capacitance of one bus line in pF.

### 5.3 Timing Chart



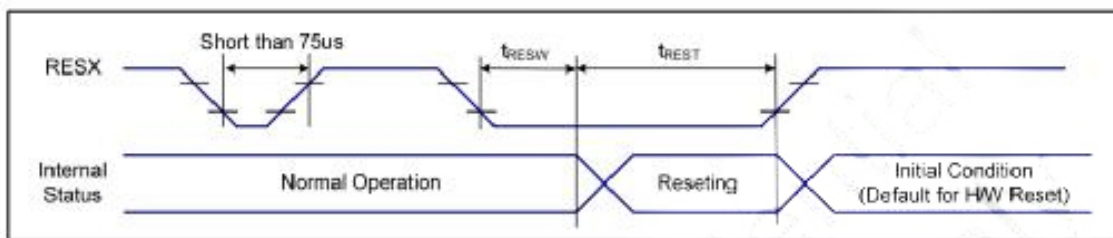
MIPI Multi-Drop type when normal or reverse scan.



| Input Timing               | Symbol | 1080RGBx1080 |      |      | Unit |
|----------------------------|--------|--------------|------|------|------|
|                            |        | Min.         | Typ. | Max. |      |
| PCLK Frequency             | -      | -            | 79   |      | MHz  |
| Horizontal Total           | THT    |              | 1156 |      | DCLK |
| Horizontal Synchronization | THS    |              | 8    |      | DCLK |
| Horizontal Back Porch      | THB    |              | 28   |      | DCLK |
| Horizontal Address         | THA    |              | 1080 |      | DCLK |
| Horizontal Front Porch     | THF    |              | 40   |      | DCLK |
| Vertical Frequency         | -      |              | 60   |      | Hz   |
| Vertical Total(1)          | TVT    |              | 1308 |      | THT  |
| Vertical Synchronization   | TVS    |              | 8    |      | THT  |
| Vertical Back Porch        | TVB    |              | 38   |      | THT  |
| Vertical Address           | TVA    |              | 1080 |      | THT  |
| Vertical Front Porch       | TVF    |              | 180  |      | THT  |

### 5.4 Reset Input Timing

$t_{RESW}$  shorter than 75us, Reset will be rejected.



VSS=0V, VDDI=1.65V to 1.95V, Ta = -30°C to 70°C

| Symbol     | Parameter                         | MIN | TYP | MAX | Note                    | Unit |
|------------|-----------------------------------|-----|-----|-----|-------------------------|------|
| $t_{RESW}$ | *1) Reset low pulse minimum width | 150 | -   | -   | Reset signal recognized | us   |
| $t_{REST}$ | *2) Reset complete time           | 5   | -   | 120 | Reset action complete   | ms   |

### 5.5 DATA mapping

| COLOR       | INPUT DATA | R DATA |    |    |    |    |    |    |     | G DATA |    |    |    |    |    |    |     | B DATA |    |    |    |    |    |    |     |
|-------------|------------|--------|----|----|----|----|----|----|-----|--------|----|----|----|----|----|----|-----|--------|----|----|----|----|----|----|-----|
|             |            | R7     | R6 | R5 | R4 | R3 | R2 | R1 | R0  | G7     | G6 | G5 | G4 | G3 | G2 | G1 | G0  | B7     | B6 | B5 | B4 | B3 | B2 | B1 | B0  |
|             |            | MSB    |    |    |    |    |    |    | LSB | MSB    |    |    |    |    |    |    | LSB | MSB    |    |    |    |    |    |    | LSB |
| BASIC COLOR | BLACK      | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | RED(255)   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | GREEN(255) | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | BLUE(255)  | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1      | 1  | 1  | 1  | 1  | 1  | 1  |     |
|             | CYAN       | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1      | 1  | 1  | 1  | 1  | 1  | 1  |     |
|             | MAGENTA    | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1      | 1  | 1  | 1  | 1  | 1  | 1  |     |
|             | YELLOW     | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | WHITE      | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1      | 1  | 1  | 1  | 1  | 1  | 1  |     |
| RED         | RED(0)     | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | RED(1)     | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | RED(2)     | 0      | 0  | 0  | 0  | 0  | 0  | 1  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             |            |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |
|             |            |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |
|             | RED(254)   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | RED(255)   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
| GREEN       | GREEN(0)   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | GREEN(1)   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | GREEN(2)   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 1  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             |            |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |
|             |            |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |
|             | GREEN(254) | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | GREEN(255) | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1      | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
| BLUE        | BLUE(0)    | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  |     |
|             | BLUE(1)    | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 1  |     |
|             | BLUE(2)    | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 1  | 0  |     |
|             |            |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |
|             |            |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |        |    |    |    |    |    |    |     |
|             | BLUE(254)  | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1      | 1  | 1  | 1  | 1  | 1  | 0  |     |
|             | BLUE(255)  | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0      | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1      | 1  | 1  | 1  | 1  | 1  | 1  |     |

#### 【Note】

- 1) Gray level:  
Color(n): n is level order; higher n means brighter level.
- 2) DATA:  
1: high, 0: low

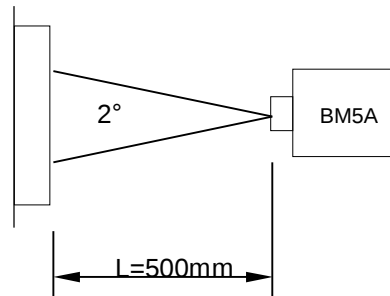
[illegible]

## 7. OPTICAL CHARACTERISTICS

Ta = 25°C, VCC=3.3V

| ITEM                      |            | SYMBOL |                          | CONDITION                | MIN. | TYP. | MAX. | UNIT   | NOTE   |
|---------------------------|------------|--------|--------------------------|--------------------------|------|------|------|--------|--------|
| Luminance                 |            | L      |                          |                          |      | 300  | --   | cd/m2  | Note 6 |
| Contrast                  |            | CR     |                          |                          | 800  | 1000 | --   | --     | Note2  |
| Response Time             |            | Tr+Tf  |                          | $\theta=\phi= 0^{\circ}$ | --   | 30   | 35   | ms     | Note 3 |
| Viewing Angle             | Vertical   | U      |                          | $CR \geq 10$             | 80   | 85   | --   | degree | Note 4 |
|                           |            | D      |                          |                          | 80   | 85   | --   | degree |        |
|                           | Horizontal | L      |                          |                          | 80   | 85   | --   | degree |        |
|                           |            | R      |                          |                          | 80   | 85   | --   | degree |        |
| Color Filter Chromaticity | W          | x      | $\theta=\phi= 0^{\circ}$ |                          |      |      | --   | Note 5 |        |
|                           |            | y      |                          |                          |      |      | --   |        |        |
|                           | R          | x      |                          |                          |      |      | --   |        |        |
|                           |            | y      |                          |                          |      |      | --   |        |        |
|                           | G          | x      |                          |                          |      |      | --   |        |        |
|                           |            | y      |                          |                          |      |      | --   |        |        |
|                           | B          | x      |                          |                          |      |      | --   |        |        |
|                           |            | y      |                          |                          |      |      | --   |        |        |
|                           | NTSC       |        |                          |                          | 63   | 68   | ---  |        | %      |
|                           | Flicker    |        |                          |                          |      |      | -TBD |        | dB     |
| Crosstalk                 |            |        |                          |                          |      | TBD  | %    |        |        |

Note1: Measure condition : 25°C±2°C , 60±10%RH , under 10 Lux in the dark room. BM-7 (TOPCON) , viewing angle 2° , IL=90mA (Backlight current) measurement after lighting on 10 mins.



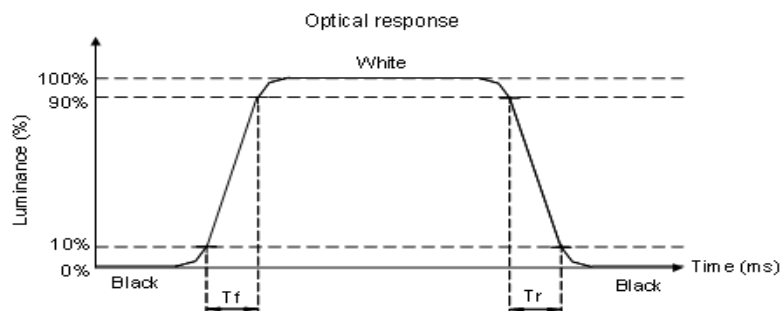
Note 2 Definition of Contrast Ratio:

Contrast ratio is calculated with the following formula.

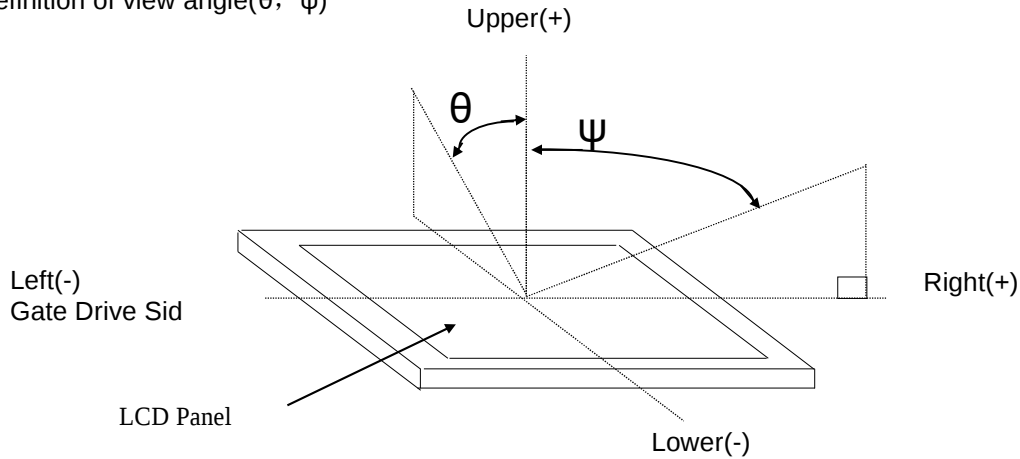
Contrast ratio (CR)= White Luminance (ON) / Black Luminance (OFF)

Note 3 Definition of response time

The output signals of photo detector are measured when the input signals are changed from “black” to “white” (rising time) and from “white” to “black” (falling time), respectively. Definition of response time: The response time is defined as the time interval between the 10% and 90% amplitudes.



Note 4 Definition of view angle( $\theta$ ,  $\psi$ )



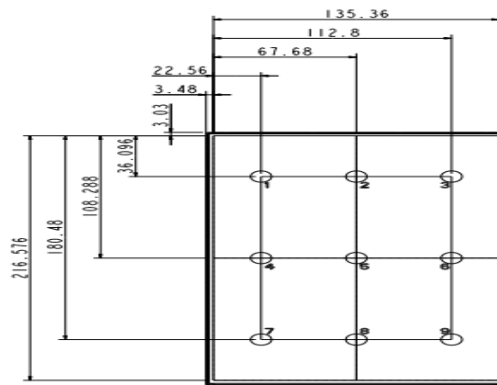
Note 5. (a) CF Glass light source: C light.

(b) Chromaticity & NTSC spec is for reference. ( Different polarizer & backlight will both affect the MODULE chromaticity. )

Note 6. Definition of Luminance and Luminance uniformity

Central luminance: The white luminance is measured at the center position “5” on the screen, see Fig below.

9P Uniformity:  $\Delta L = (L_{min} / L_{max}) \times 100\%$  at measuring points 1 & 9 see Fig below.



## 8. RELIABILITY TEST

| TEST ITEMS                               | CONDITIONS                          | NOTE            |
|------------------------------------------|-------------------------------------|-----------------|
| High Temperature Operation               | 50℃,96hrs                           | 1               |
| High Temperature Storage                 | 60℃,96hrs                           | 1               |
| High Temperature High Humidity Operation | 50℃,90%RH,96hrs                     | No condensation |
| Low Temperature Operation                | -10℃,96hrs                          | 1               |
| Low Temperature Storage                  | -20℃,96hrs                          | 1               |
| Thermal Shock                            | -20℃(0.5hr) ~ 60℃(0.5hr) ,50 Cycles | Non-Operating   |

### NOTE

- All judgement of display are performed after temperature of panel return to room temperature.
- Display function should be no change under normal operating condition.
- Under no condensation of dew.
- Axsj only guarantee the above 6 test items, and without guarantee the others.