



Model No: MTD0686AML

TEL: 1-888-499-TIPS (8477)

FAX: (407) 273-0771

E-MAIL: [mtusainfo@microtipsusa.com](mailto:mtusainfo@microtipsusa.com)

WEB: [www.microtipsusa.com](http://www.microtipsusa.com)

## Record of Revision

[illegible]

### 1. Scope

This data sheet is to introduce the specification of **MTD0686AML**, active matrix TFT module. It is composed of a color TFT-LCD panel, driver ICs, FPC and a backlight unit. The 6.8" display area contains 480x(RGB)x1280 pixels.

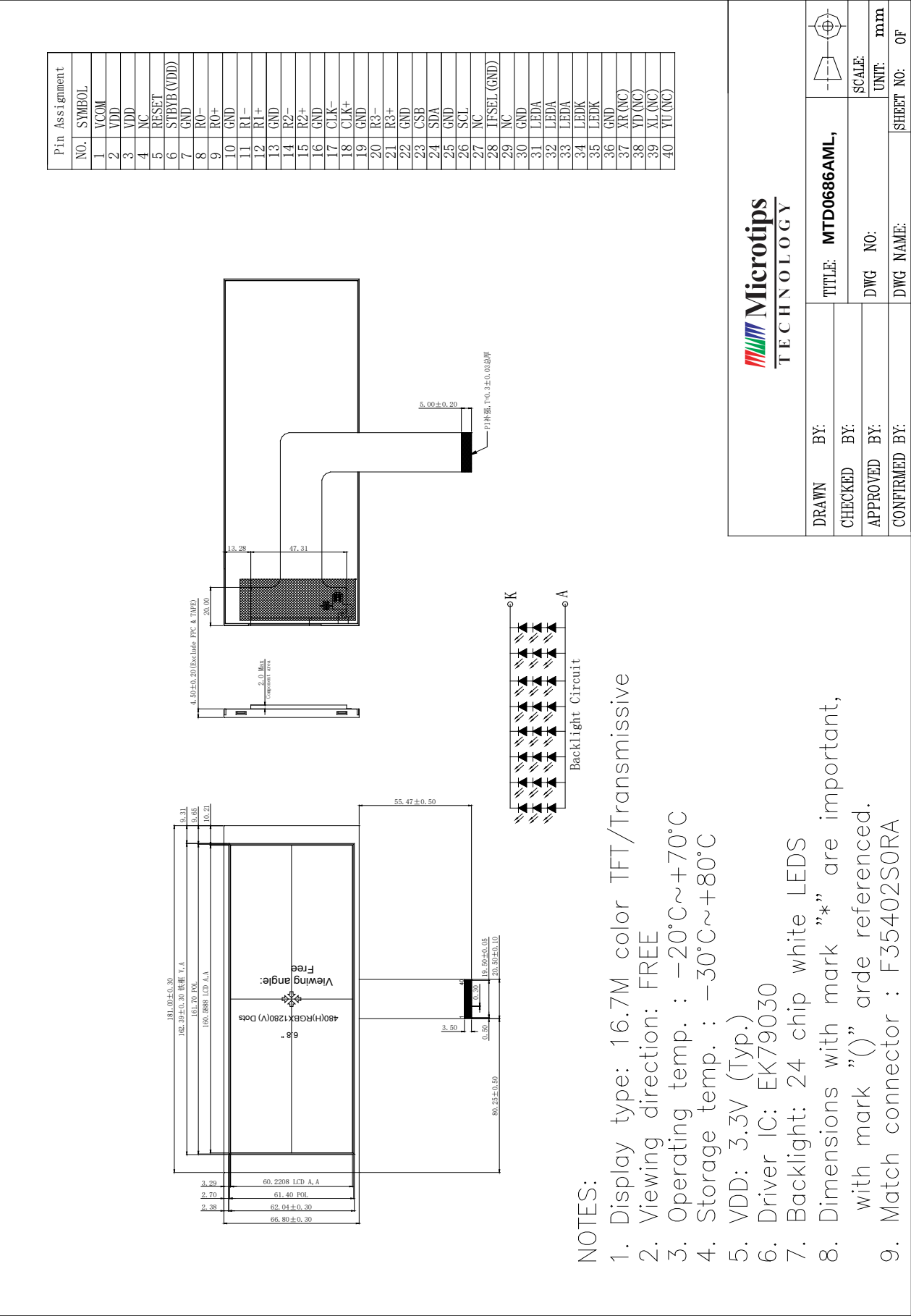
### 2. Application

Digital equipments which need color display, mobile navigator/video systems.

### 3. General Information

| Item                          | Contents              | Unit    |
|-------------------------------|-----------------------|---------|
| Size                          | 6.8                   | inch    |
| Resolution                    | 480x(RGB)x1280        | /       |
| Interface                     | LVDS                  | /       |
| Technology type               | IPS                   | /       |
| Pixel Configuration           | R.G.B Vertical Stripe |         |
| Outline Dimension (W x H x D) | 66.8 x 181.0 x 4.5    | mm      |
| Active Area                   | 60.22 x 160.59        | mm      |
| View Direction                | All                   | O'Clock |
| Display Mode                  | Transmissive          | /       |
| Backlight Type                | LED                   | /       |
| Suggested Driver IC           | EK79030               | /       |

4. Outline Drawing



NOTES:

1. Display type: 16.7M color TFT/Transmissive
2. Viewing direction: FREE
3. Operating temp. : -20°C~+70°C
4. Storage temp. : -30°C~+80°C
5. VDD: 3.3V (Typ.)
6. Driver IC: EK79030
7. Backlight: 24 chip white LEDs
8. Dimensions with mark "\*" are important, with mark "(" are referenced.
9. Match connector : F35402S0RA

## 5. Interface signals

| No | Symbol     | Description                                                                          | Remark |
|----|------------|--------------------------------------------------------------------------------------|--------|
| 1  | VCOM       | Common voltage output. Connect a capacitor to GND.                                   |        |
| 2  | VDD        | Supply voltage for the analog circuit. (+3.3V)                                       |        |
| 3  | VDD        |                                                                                      |        |
| 4  | NC         | No connection                                                                        |        |
| 5  | RESET      | Chip reset signal. Active "Low"                                                      |        |
| 6  | STBYB(VDD) | Standby mode selection.<br>STBYB="0", Standby mode<br>STBYB="1", Normal display mode |        |
| 7  | GND        | Power Ground                                                                         |        |
| 8  | R0-        | LVDS-DSI data Lane 0 negative-end input/output pin                                   |        |
| 9  | R0+        | LVDS-DSI data Lane 0 positive-end input pin                                          |        |
| 10 | GND        | Power Ground                                                                         |        |
| 11 | R1-        | LVDS-DSI data Lane 1 negative-end input/output pin                                   |        |
| 12 | R1+        | LVDS-DSI data Lane 1 positive-end input pin                                          |        |
| 13 | GND        | Power Ground                                                                         |        |
| 14 | R2-        | LVDS-DSI data Lane 2 negative-end input/output pin                                   |        |
| 15 | R2+        | LVDS-DSI data Lane 2 positive-end input pin                                          |        |
| 16 | GND        | Power Ground                                                                         |        |
| 17 | CLK-       | LVDS-DSI clock Lane negative-end input pin                                           |        |
| 18 | CLK+       | LVDS-DSI clock Lane positive-end input pin                                           |        |
| 19 | GND        | Power Ground                                                                         |        |
| 20 | R3-        | LVDS-DSI data Lane 3 negative-end input/output pin                                   |        |
| 21 | R3+        | LVDS-DSI data Lane 3 positive-end input pin                                          |        |
| 22 | GND        | Power Ground                                                                         |        |
| 23 | CSB        | Serial communication enables. Normally pull high or open                             |        |
| 24 | SDA        | Serial communication data input. Normally pull high or open                          |        |
| 25 | GND        | Power Ground                                                                         |        |
| 26 | SCL        | Serial communication clock input. Normally pull high or open                         |        |
| 27 | NC         | No connection                                                                        |        |
| 28 | IFSEL(GND) | LVDS/MIPI Interface select pin. Pull Low                                             |        |
| 29 | NC         | No connection                                                                        |        |
| 30 | GND        | Power Ground                                                                         |        |
| 31 | LEDA       | Backlight Anode                                                                      |        |
| 32 | LEDA       | Backlight Anode                                                                      |        |
| 33 | LEDA       | Backlight Anode                                                                      |        |
| 34 | LEDK       | Backlight Cathode                                                                    |        |
| 35 | LEDK       | Backlight Cathode                                                                    |        |
| 36 | GND        | Power Ground                                                                         |        |
| 37 | XR(NC)     | No connection                                                                        |        |
| 38 | YD(NC)     | No connection                                                                        |        |
| 39 | XL(NC)     | No connection                                                                        |        |
| 40 | YU(NC)     | No connection                                                                        |        |

## 6. Absolute maximum Ratings

### 6.1. Electrical Absolute max. ratings

| Parameter               | Symbol | MIN  | MAX | Unit | Remark |
|-------------------------|--------|------|-----|------|--------|
| Logic Supply Voltage    | VDD    | -0.3 | 4   | V    | Ta=25℃ |
| Backlight input voltage | LEDA   | 8.6  | 10  | V    |        |

Note: The module may be destroyed and not be recovered while the absolute maximum rating values of this product have been exceeded

### 6.2. Environment Conditions

| Item                  | Symbol | MIN | MAX | Unit | Remark |
|-----------------------|--------|-----|-----|------|--------|
| Operating Temperature | TOPR   | -20 | 70  | ℃    |        |
| Storage Temperature   | TSTG   | -30 | 80  | ℃    |        |

### 6.3. LED Backlight Absolute max. ratings

| Item                | Symbol | MIN | MAX | Unit | Remark       |
|---------------------|--------|-----|-----|------|--------------|
| LED Forward Current | ILED   | --  | 25  | mA   | For each LED |
| LED Reverse Voltage | VR     | --  | 1.2 | V    |              |

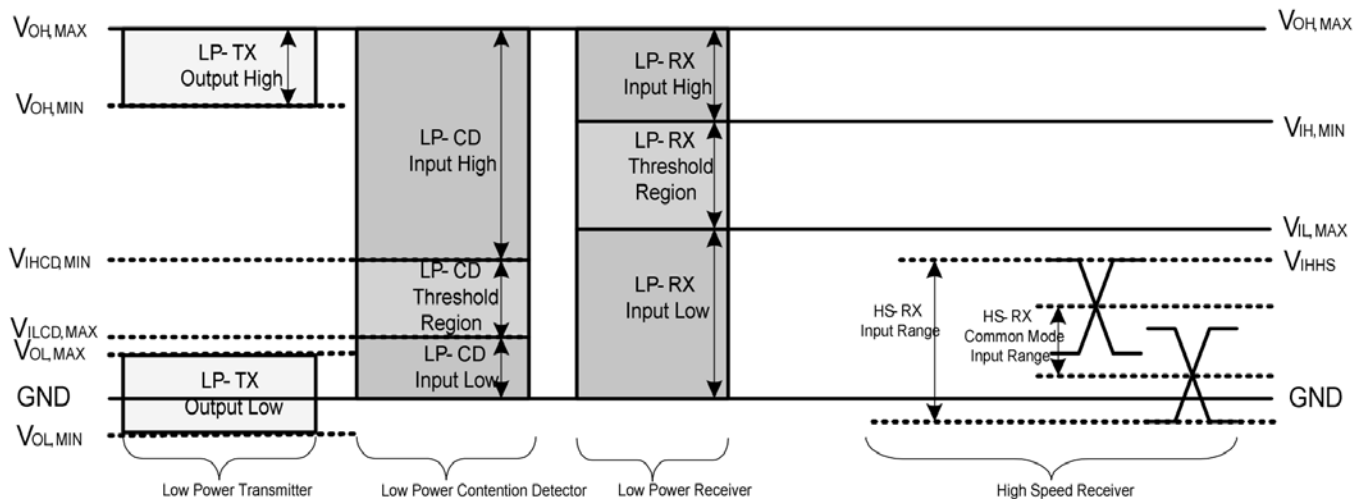
## 7. Electrical Specifications

### 7.1 Electrical characteristics (operating condition)

| Item                  | Symbol | MIN   | TYP   | MAX  | Unit | Remark |
|-----------------------|--------|-------|-------|------|------|--------|
| Power supply voltage  | VDD    | 3.0   | 3.3   | 3.6  | V    |        |
| Common voltage output | VCOM   | -2.75 | -1.48 | -0.2 | V    |        |

### 7.2 DC electrical characteristics

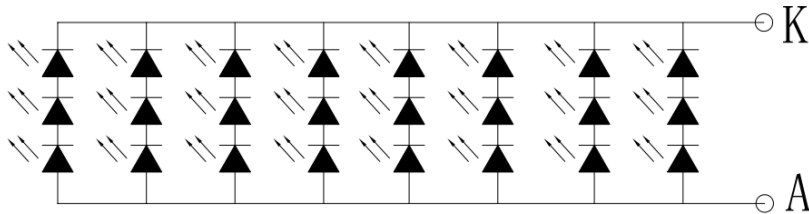
| Parameter                      | Symbol   | Min         | Typ   | Max         | Unit |
|--------------------------------|----------|-------------|-------|-------------|------|
| VDDIO Input high level voltage | VIH      | 0.8 x VDDIO |       | VDDIO       | V    |
| VDDIO input low level voltage  | VIL      | VSS         |       | 0.2 x VDDIO | V    |
| Input Leakage Current          | Ileak    | (-1)        |       | (+1)        | uA   |
| VGL_REG2 output voltage        | VGL_REG2 |             |       |             | V    |
| VGMP output voltage            | VGMP     |             |       |             | V    |
| VGMN output voltage            | VGMN     |             |       |             | V    |
| VCI1 output voltage            | VCI1     |             |       |             | V    |
| VGL output voltage             | VGL_O    | -16         |       | -6          | V    |
| VGH output voltage             | VGH_O    | 8           |       | 19          | V    |
| VCL output voltage             | VCL      | -2.1        | -2.4  | -3          | V    |
| VOM output voltage             | VCOM     | -2.75       | -1.48 | -0.2        | V    |
| Input terminal resistance      | ZID      |             | 100   |             | ohm  |



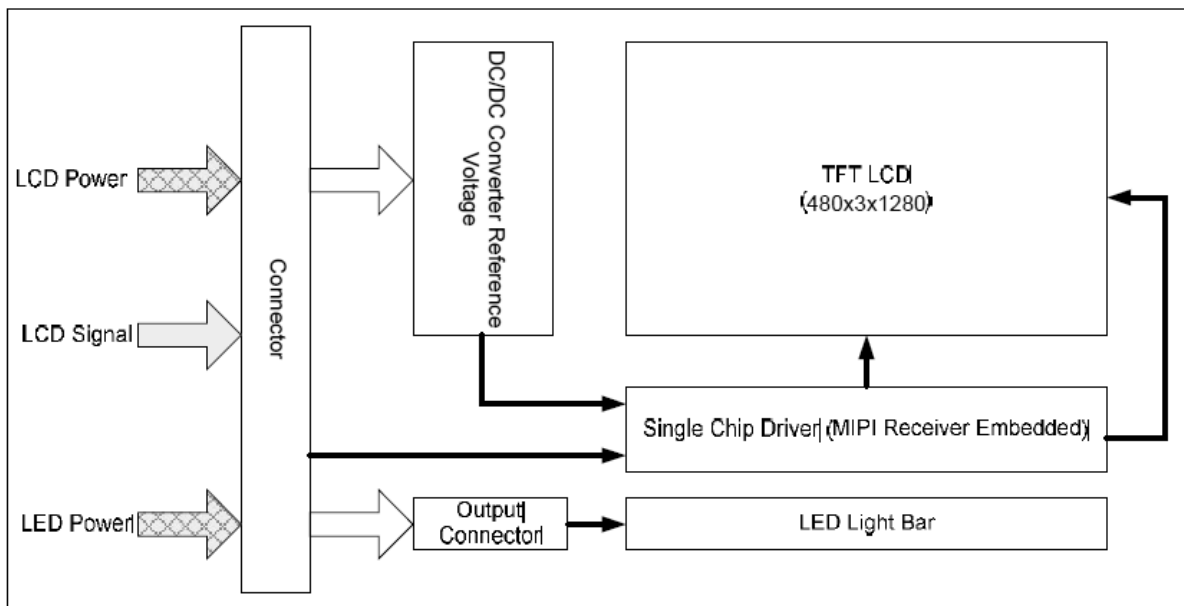
### 7.3 LED Backlight

Ta=25°C

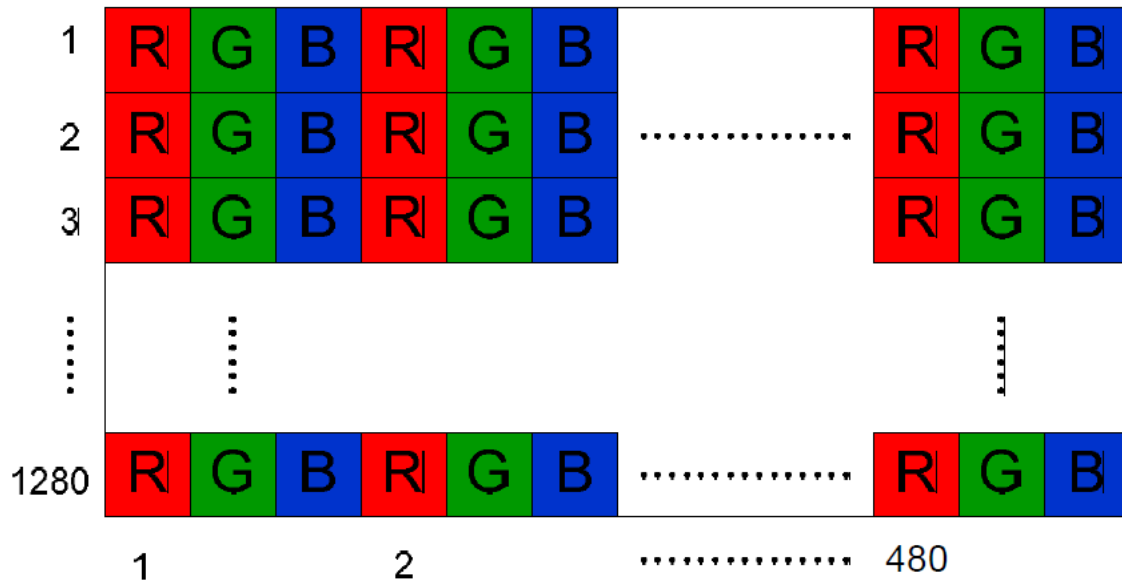
| Item                | Symbol | MIN | TYP | MAX | Unit | Remark |
|---------------------|--------|-----|-----|-----|------|--------|
| VLED Supply Voltage | Vled   | -   | 9.6 | -   | V    |        |
| VLED Supply Current | Iled   | -   | 160 | -   | mA   |        |



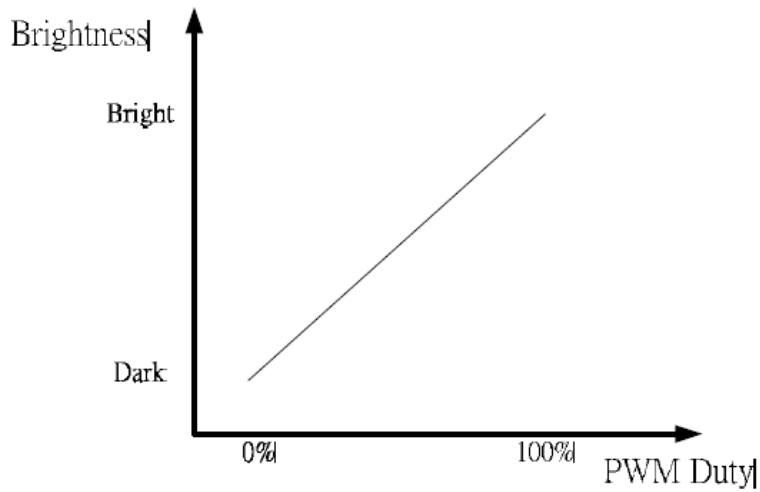
### 7.4 Function Block Diagram



Pixel Format :



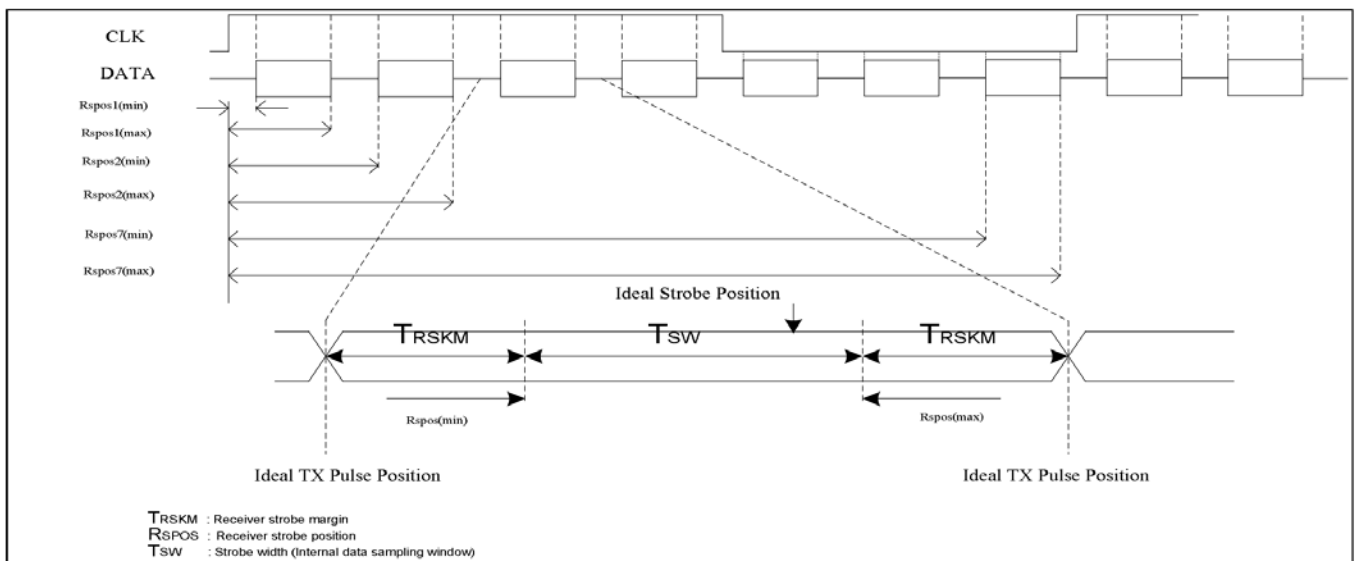
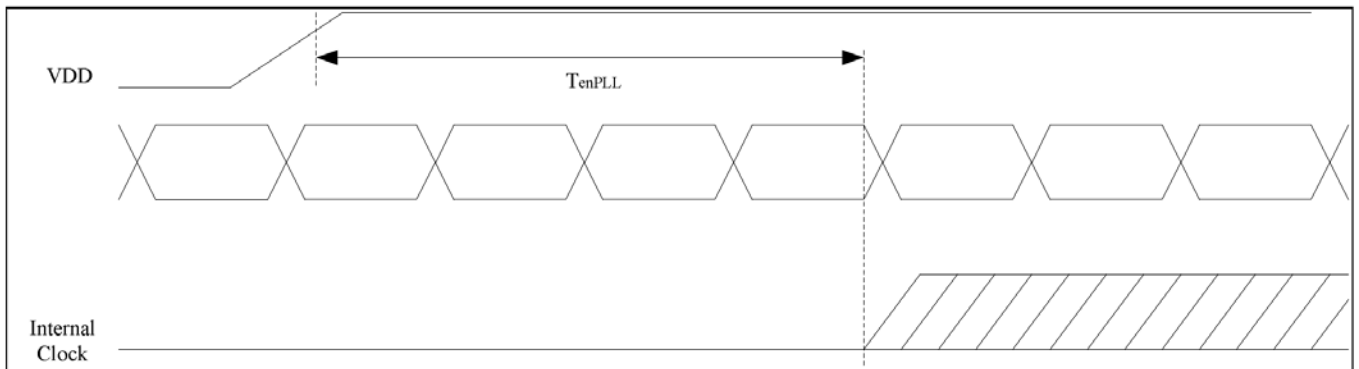
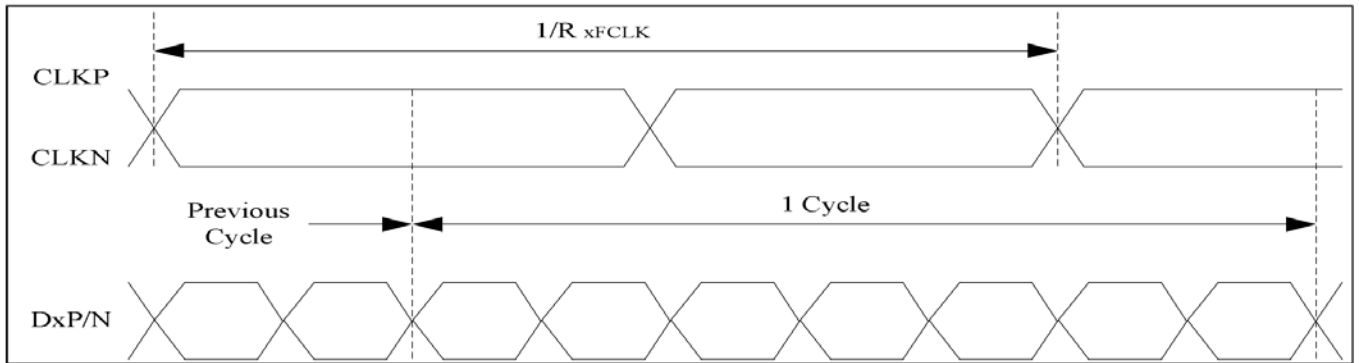
Note:



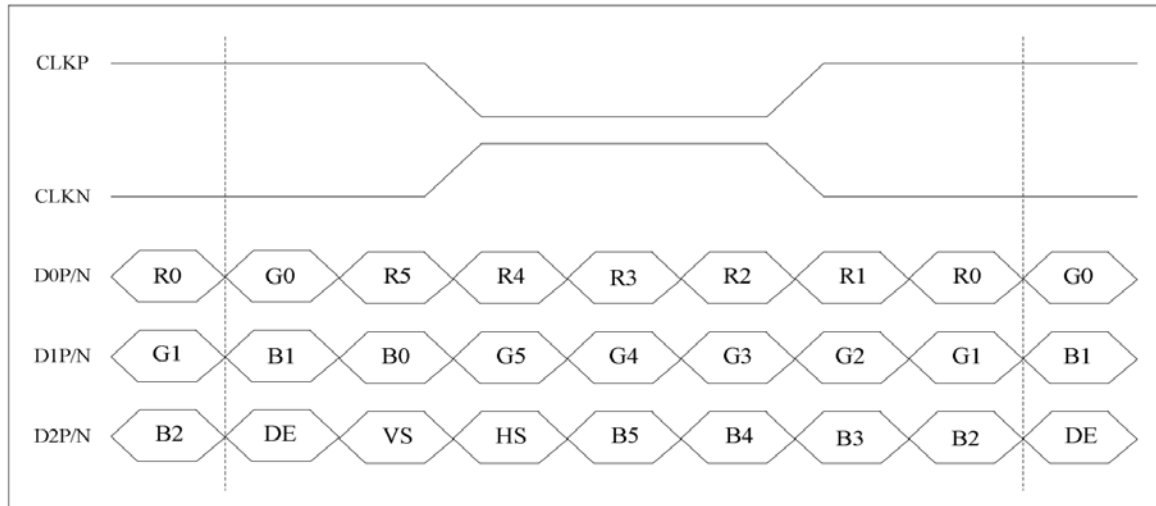
## 8. Command/AC Timing

### 8.1 LVDS mode AC Electrical Characteristics

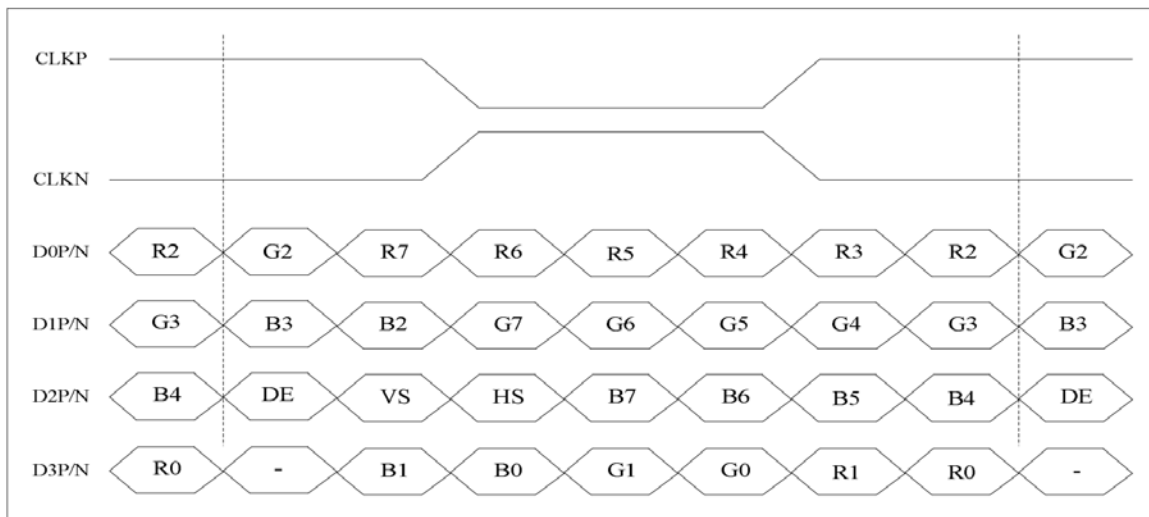
| Parameter              | Symbol      | Spec. |                     |      | Unit | Condition                                               |
|------------------------|-------------|-------|---------------------|------|------|---------------------------------------------------------|
|                        |             | Min.  | Typ.                | Max. |      |                                                         |
| Clock frequency        | $R_{xFCLK}$ | 30    | -                   | -    | Mhz  | Refer to input timing table for each display resolution |
| Input data skew margin | $T_{RSKM}$  | 500   | -                   | -    | ps   | $ VID  = 200mV$<br>$RxVCM = 1.2V$<br>$RxFCLK = 81MHz$   |
| Clock high time        | $T_{LVCH}$  | -     | $4/(7 * R_{xFCLK})$ | -    | ns   |                                                         |
| Clock low time         | $T_{LVCL}$  | -     | $3/(7 * R_{xFCLK})$ | -    | ns   |                                                         |
| PLL wake-up time       | $T_{enPLL}$ | -     | -                   | 150  | us   |                                                         |



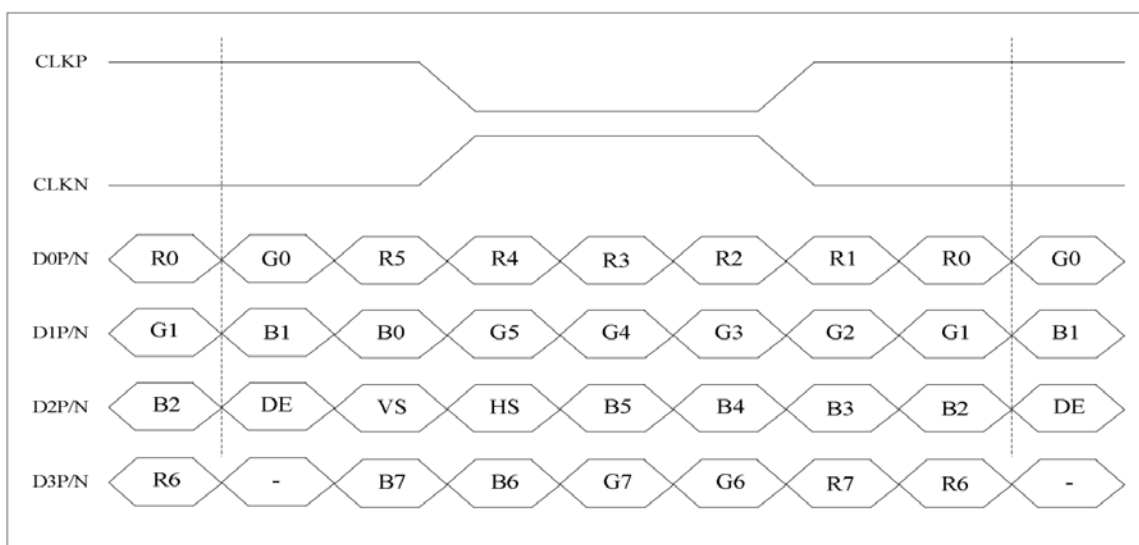
## 8.2 Data input format for LVDS



**6-bit LVDS input (LVBIT=L, LVFMT=Don't care)**



**8-bit LVDS input (LVBIT=H, LVFMT=L)**



**8-bit LVDS input(LVBIT=H, LVFMT=H)**

### 8.3 LVDS/MIPI input Timing Table

| Parameter                       | Symbol            | Spec. |      |      | Unit |
|---------------------------------|-------------------|-------|------|------|------|
|                                 |                   | Min.  | Typ. | Max. |      |
| MIPI (4 Lane) @Frame rate=60Hz  |                   |       | 349  |      | Mbps |
| MIPI (3 Lane) @Frame rate=60Hz  |                   |       | 465  |      | Mbps |
| DCLK frequency @Frame rate=60Hz | F <sub>DCLK</sub> |       | 58.2 |      | MHz  |
| HSYNC period time               | T <sub>H</sub>    |       | 744  |      | DCLK |
| Horizontal display area         | T <sub>HD</sub>   | 480   |      |      | DCLK |
| HSYNC pulse width               | T <sub>HPW</sub>  |       | 24   |      | DCLK |
| HSYNC back porch                | T <sub>HBP</sub>  |       | 160  |      | DCLK |
| HSYNC front porch               | T <sub>FBP</sub>  |       | 160  |      | DCLK |
| VSYNC period time               | T <sub>V</sub>    |       | 1304 |      | H    |
| Vertical display area           | T <sub>VD</sub>   | 1280  |      |      | H    |
| VSYNC pulse width               | T <sub>VPW</sub>  |       | 2    |      | H    |
| VSYNC back porch                | T <sub>VBP</sub>  |       | 10   |      | H    |
| VSYNC front porch               | T <sub>VFP</sub>  |       | 12   |      | H    |

### 8.4 Data mapping

|             | INPUT DATA | R7<br>MSB | R6 | R5 | R4 | R3 | R2 | R1 | R0<br>LSB | G7<br>MSB | G6 | G5 | G4 | G3 | G2 | G1 | G0<br>LSB | B7<br>MSB | B6 | B5 | B4 | B3 | B2 | B1 | B0<br>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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 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  | 1         |

## 9. Optical Specification

Ta=25°C

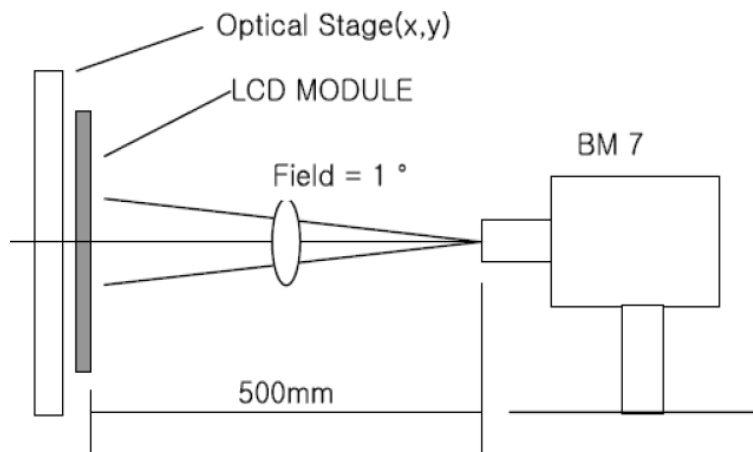
| Item           |       | Symbol        | Condition           | Min    | Typ.  | Max.  | Unit              | Remark          |
|----------------|-------|---------------|---------------------|--------|-------|-------|-------------------|-----------------|
| Contrast Ratio |       | CR            | $\theta=0^{\circ}$  | 700    | 900   | -     |                   | Note1<br>Note2  |
| Response Time  |       | Ton +<br>Toff | 25°C                | -<br>- | 25    | 35    | ms                | Note1<br>Note3  |
| View Angles    |       | $\theta T$    | $CR \geq 10$        | 70     | 80    | -     | Degree            | Note 4          |
|                |       | $\theta B$    |                     | 70     | 80    | -     |                   |                 |
|                |       | $\theta L$    |                     | 70     | 80    | -     |                   |                 |
|                |       | $\theta R$    |                     | 70     | 80    | -     |                   |                 |
| Chromaticity   | White | x             | Brightness<br>is on | 0.284  | 0.314 | 0.344 |                   | Note5,<br>Note1 |
|                |       | y             |                     | 0.322  | 0.352 | 0.382 |                   |                 |
| Luminance      |       | L             |                     | 400    | 450   | -     | cd/m <sup>2</sup> | Note1<br>Note6  |
| Uniformity     |       | U             |                     | 75     |       | -     | %                 | Note1<br>Note7  |

Test condition: VDD=3.3V, the ambient temperature is 25°C.

### Note 1: Definition of optical measurement system.

Temperature = 25°C(±3°C)

LED back-light: ON, Environment brightness < 150 lx

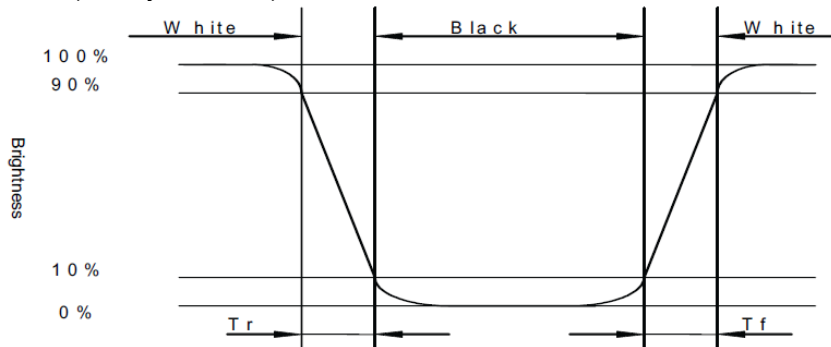


### Note 2: Contrast ratio is defined as follow:

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance with all white pixels}}{\text{Surface Luminance with all black pixels}}$$

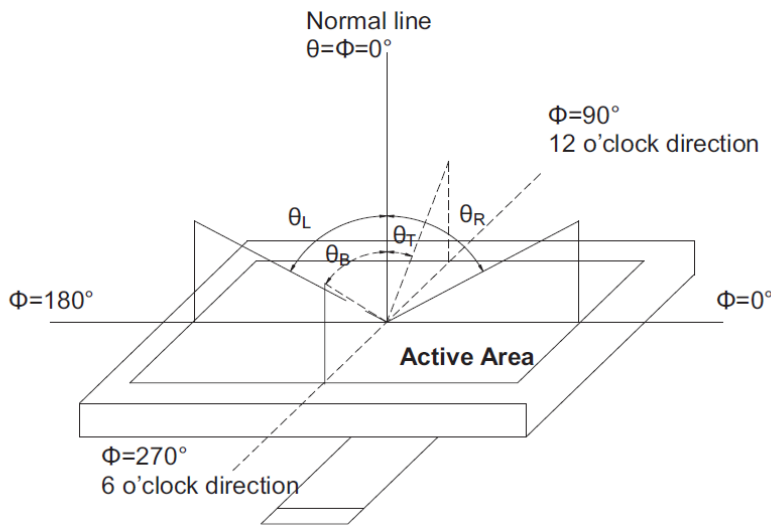
Note 3: Response time is defined as follow:

Response time is the time required for the display to transition from black to white (Rise Time,  $T_r$ ) and from white to black (Decay Time,  $T_f$ ).



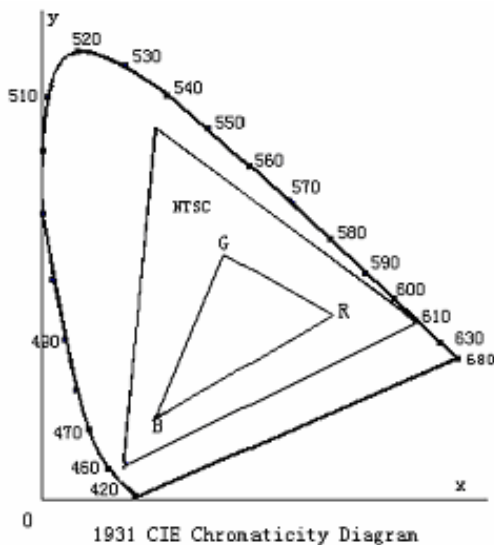
Note 4: Viewing angle range is defined as follow:

Viewing angle is measured at the center point of the LCD.



Note 5: Color chromaticity is defined as follow: (CIE1931)

Color coordinates measured at center point of LCD.



$$S = \frac{\text{area of RGB triangle}}{\text{area of NTSC triangle}} \times 100\%$$

Note 6: Luminance is defined as follow:

Luminance is defined as the brightness of all pixels “White” at the center of display area on optimum contrast.

Note 7: Luminance Uniformity is defined as follow:

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

$$\text{Uniformity}(U) = \frac{\text{Minimum Luminance(brightness) in 9 points}}{\text{Maximum Luminance(brightness) in 9 points}}$$

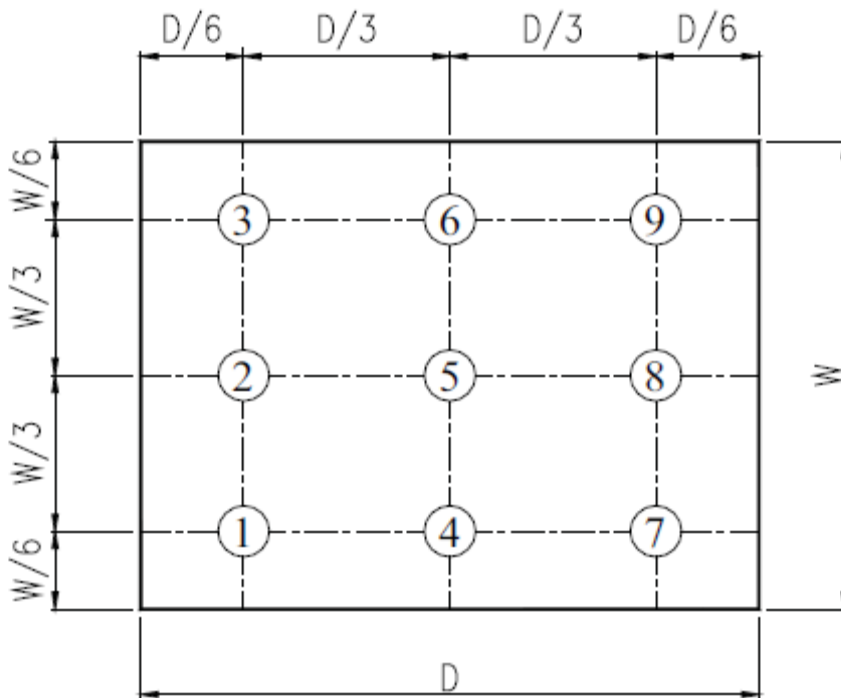


Fig. 2 Definition of uniformity

## 10. Environmental / Reliability Tests

| No | Test Item                         | Condition                                                                                                | Judgment criteria                                           |
|----|-----------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 1  | High Temp Operation               | Ts=+70°C, 120hrs                                                                                         | Per table in below                                          |
| 2  | Low Temp Operation                | Ta=-20°C, 120hrs                                                                                         | Per table in below                                          |
| 3  | High Temp Storage                 | Ta=+80°C, 120hrs                                                                                         | Per table in below                                          |
| 4  | Low Temp Storage                  | Ta=-30°C, 120hrs                                                                                         | Per table in below                                          |
| 5  | High Temp & High Humidity Storage | Ta=+80°C, 90% RH<br>120 hours                                                                            | Per table in below<br>(polarizer discoloration is excluded) |
| 6  | Thermal Shock<br>(Non-operation)  | -30°C 30 min~+80°C 30 min,<br>Change time:5min, 10 Cycles                                                | Per table in below                                          |
| 7  | ESD (Operation)                   | C=150pF, R=330Ω□5points/panel<br>Air:±8KV, 5times;<br>Contact:±4KV, 5 times;                             | Per table in below                                          |
| 8  | Vibration<br>(Non-operation)      | Frequency range:10~55Hz,<br>Stroke:1.5mm<br>Sweep:10Hz~55Hz~10Hz 2 hours<br>for each direction of X.Y.Z. | Per table in below                                          |
| 9  | Shock<br>(Non-operation)          | 60G 6ms, ±X,±Y,±Z 3times,<br>for each direction                                                          | Per table in below                                          |
| 10 | Package Drop Test                 | Height:80 cm,<br>1 corner, 3 edges, 6 surfaces                                                           | Per table in below                                          |

| INSPECTION             | CRITERION(after test)                                                               |
|------------------------|-------------------------------------------------------------------------------------|
| Appearance             | No Crack on the FPC, on the LCD Panel                                               |
| Alignment of LCD Panel | No Bubbles in the LCD Panel<br>No other Defects of Alignment in Active area         |
| Electrical current     | Within device specifications                                                        |
| Function / Display     | No Broken Circuit, No Short Circuit or No Black line<br>No Other Defects of Display |

## 11. Precautions for Use of LCD Modules

### 11.1 Safety

The liquid crystal in the LCD is poisonous. Do not put it in your mouth. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water.

### 11.2 Handling

- A. The LCD and touch panel is made of plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
- B. Do not handle the product by holding the flexible pattern portion in order to assure the reliability
- C. Transparency is an important factor for the touch panel. Please wear clear finger sacks, gloves and mask to protect the touch panel from finger print or stain and also hold the portion outside the view area when handling the touch panel.
- D. Provide a space so that the panel does not come into contact with other components.
- E. To protect the product from external force, put a covering lens (acrylic board or similar board) and keep an appropriate gap between them.
- F. Transparent electrodes may be disconnected if the panel is used under environmental conditions where dew condensation occurs.
- G. Property of semiconductor devices may be affected when they are exposed to light, possibly resulting in IC malfunctions.
- H. To prevent such IC malfunctions, your design and mounting layout shall be done in the way that the IC is not exposed to light in actual use.

### 11.3 Static Electricity

- A. Ground soldering iron tips, tools and testers when they are in operation.
- B. Ground your body when handling the products.
- C. Power on the LCD module before applying the voltage to the input terminals.
- D. Do not apply voltage which exceeds the absolute maximum rating.
- E. Store the products in an anti-electrostatic bag or container.

### 11.4 Storage

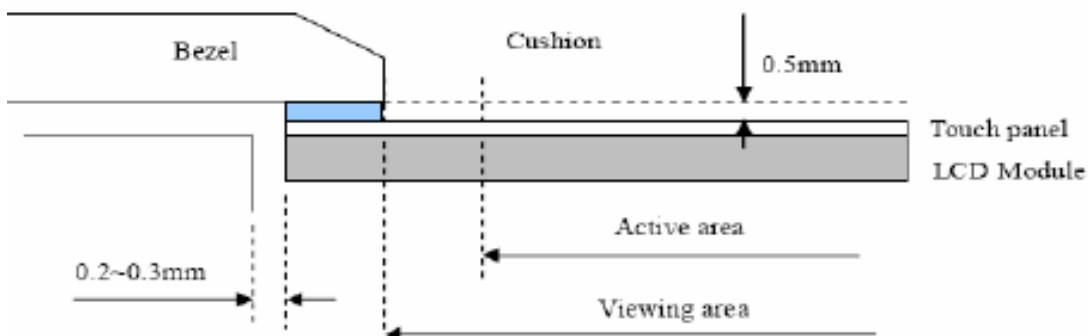
- A. Store the products in a dark place at  $+25^{\circ}\text{C} \pm 10^{\circ}\text{C}$  with low humidity (40% RH to 60% RH). Don't expose to sunlight or fluorescent light.
- B. Storage in a clean environment, free from dust, active gas, and solvent.

### 11.5 Cleaning

- A. Do not wipe the touch panel with dry cloth, as it may cause scratch.
- B. Wipe off the stain on the product by using soft cloth moistened with ethanol. Do not allow ethanol to get in between the upper film and the bottom glass. It may cause peeling issue or defective operation. Do not use any organic solvent or detergent other than ethanol.

### 11.6 Cautions for installing and assembling

Bezel edge must be positioned in the area between the Active area and View area. The bezel may press the touch screen and cause activation if the edge touches the active area. A gap of approximately 0.5mm is needed between the bezel and the top electrode. It may cause unexpected activation if the gap is too narrow. There is a tolerance of 0.2 to 0.3mm for the outside dimensions of the touch panel and tail. A gap must be made to absorb the tolerance in the case and connector.





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.