# 1. GENERAL SPECIFICATION

## 1.1 Description

The G69518AA01A1 is a color active matrix Thin Film Transistor (TFT) Liquid Crystal Display (LCD) that uses amorphous silicon(a-Si) TFT as a switching device.This model is composed of a single 6.95 inches transmissive type main TFT-LCD panel. The resolution of the panel is 600RGBx1024 pixels and can display up to 16.7M color.Which supports image horizontal flip but not compression algorithms. And it has not ESD register.

## 1.2 Feature

-IPS type for main TFT-LCD panel

-Structure COG+FPC+BL

-Full, Normal (Still), Partial, Sleep mode are available

## 1.3 Application

-Display terminals for intelligent device

## 1.4 General Specification

| No. | Item | Specification | Unit | Remark |
|---|---|---|---|---|
| 1 | LCD Size | 6.95 | inch | - |
| 2 | Panel Type | a-Si TFT active matrix | - | - |
| 3 | Resolution | 600 x (RGB) x 1024 | pixel | - |
| 4 | Display Mode | Normally Black, Transmissive | - | - |
| 5 | Display Number of Colors | 16.7M | - | - |
| 6 | Viewing Direction | ALL | - | Note1 |
| 7 | Contrast Ratio | 800(Typ) | - | - |
| 8 | Luminance | 320(Typ) | $cd/m^2$ | - |
| 9 | Module Size | 95(W ) x163.1(L) x 2.5(T) | mm | Note1 |
| 10 | Active Area | 89.28(W) x 152.3712(L) | mm | Note1 |
| 11 | Pixel Pitch | 0.1488(W ) x 0.1488(L） | mm | - |
| 12 | Driver IC | OTA7290B-C | - | - |
| 13 | Driver IC Vendor ID | 0x18 | - | Note2 |
| 14 | Light Source | 18 LEDs White | - | - |
| 15 | Interface | MIPI_4lane | - | - |
| 16 | Operating Temperature | -15~60 | ℃ | - |
| 17 | Storage Temperature | -20~70 | ℃ | - |

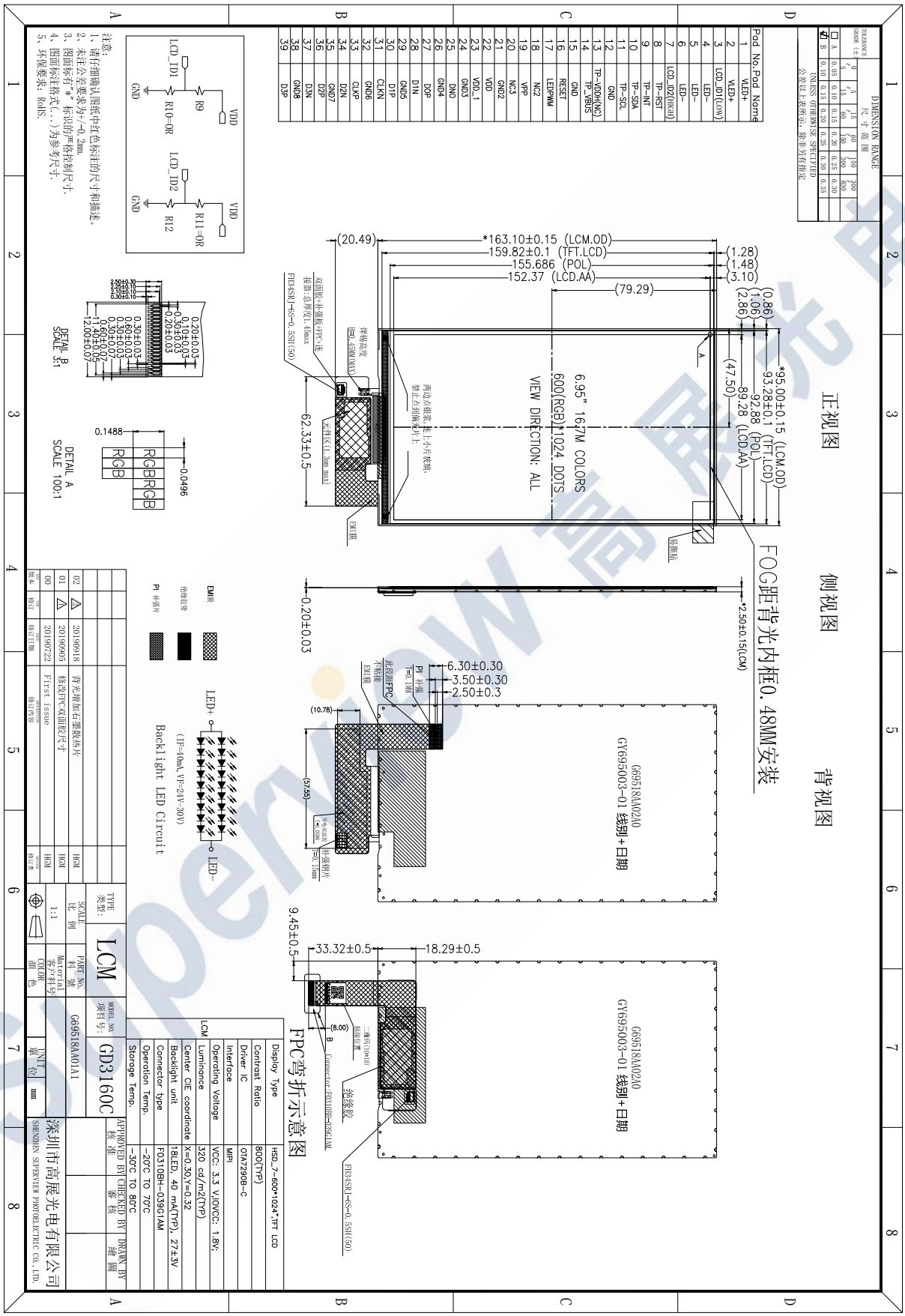
Note1: Please refer to the mechanical drawing.

Note2： W_COM(0xB0,0x5A);

W_COM(0xB1,0x03)：

Read(0x7D,0x18);//This value can be set to any value from 0 to FF, and 0x18 is the vendor ID of the Superview.

# 2. MECHANICAL DRAWING




| Pad No. | Pad Name |
|---|---|
| 1 | VLED+ |
| 2 | VLED+ |
| 3 | LCD_ID1(LOW) |
| 4 | LED- |
| 5 | LED- |
| 6 | LED- |
| 7 | LCD_ID2(HIGH) |
| 8 | TP-RST |
| 9 | TP-INT |
| 10 | TP-SDA |
| 11 | TP-SCL |
| 12 | GND |
| 13 | TP-VDDH(NC) |
| 14 | TP_VBUS |
| 15 | GND |
| 16 | RESET |
| 17 | LEDPWM |
| 18 | NC2 |
| 19 | VPP |
| 20 | NC3 |
| 21 | GND2 |
| 22 | VDD |
| 23 | VDD_1 |
| 24 | GND3 |
| 25 | DNO |
| 26 | GND4 |
| 27 | D0P |
| 28 | D1N |
| 29 | GND5 |
| 30 | D1P |
| 31 | CLKN |
| 32 | GND6 |
| 33 | CLKP |
| 34 | D2N |
| 35 | GND7 |
| 36 | D2P |
| 37 | D3N |
| 38 | GND8 |
| 39 | D3P |

| | TYPE | SCALE | DRAWN BY | CHECKED BY | APPROVED BY | UNIT | TOLERANCE |
|---|---|---|---|---|---|---|---|
| | 类型: | 比 例 | 绘 圖 | 審 核 | 核 准 | 單 位 | DIMENSION RANGE 尺 寸 範 圍 |
| | LCM | 1:1 | | | | mm | 0~3 / 3~6 / 6~10 / 10~18 / 18~30 / 30~50 / 50~80 / 80~120 / 120~180 / 180~250 / 250~315 / 315~400 / 400~500 / 500~630 / 630~800 / 800~1000 |
| | | | | | | | A ±0.05 ±0.05 ±0.1 ±0.15 ±0.20 ±0.25 ±0.30 ±0.35 ±0.40 ±0.45 ±0.50 ±0.75 ±1.00 ±1.25 ±1.50 |
| | | | | | | | B ±0.10 ±0.15 ±0.20 ±0.25 ±0.30 ±0.35 ±0.40 ±0.45 ±0.50 ±0.75 ±1.00 ±1.25 ±1.50 ±2.00 ±2.50 |
| | | | | | | | UNLESS OTHERWISE SPECIFIED 公差以上表所示, 除非另有指定 |

| REV. 版本 | DESCRIPTION 修訂 | DATE 修訂日期 | CHECKED 修訂者 |
|---|---|---|---|
| 02 | 背光铜箔石墨散热片 | 20190918 | HOM |
| 01 | 修改FPC双面胶尺寸 | 20190905 | HOM |
| 00 | First Issue 修訂內容 | 20190722 | HOM |

| Display Type | HSD_7-600*1024-TFT LCD |
|---|---|
| Contrast Ratio | 800(TYP) |
| Driver IC | OTA7290B-C |
| Interface | MIPI |
| Operating Voltage | VCC: 3.3 V,IOVCC: 1.8V; |
| Luminance | 320 cd/m2(TYP) |
| Center CIE coordinate | X=0.30,Y=0.32 |
| Backlight unit | 18LED, 40 mA(TYP), 27±3V |
| Connector Type | FC310BH-039G1AM |
| Operation Temp. | -20°C TO 70°C |
| Storage Temp. | -30°C TO 80°C |

# 3. ELECTRICAL SPECIFICATION for TFT

## 3.1. TFT ABSOLUTE MAXIMUM RATINGS

| ITEM | SYMBOL | CONDITION | STANDARD VALUE | | | UNIT |
|---|---|---|---|---|---|---|
| | | | MIN | TYP | MAX | |
| Power Supply for Analog | VCC | Ta=25 ºC | -0.3 | - | 5.5 | V |
| Power Supply for Digital IO | IOVCC | Ta=25 ºC | -0.3 | - | 3.5 | V |

Note: Permanent damage to the device may occur if maximum values are exceeded or reverse voltage is applied.

## 3.2. TFT TYPICAL OPERATION CONDITION

3.2.1 TFT DC Characteristics

| ITEM | SYMBOL | CONDITION | STANDARD VALUE | | | UNIT |
|---|---|---|---|---|---|---|
| | | | MIN | TYP | MAX | |
| Power Supply for Analog | VDD | Ta=25 ºC | 3.0 | 3.3 | 3.6 | V |
| Power Supply for Digital IO | IOVDD | Ta=25 ºC | -- | 1.8 | -- | V |
| Input Signal “H” Level | $V_{IH}$ | - | 0.7IOVDD | - | IOVDD | V |
| Input Signal “L” Level | $V_{IL}$ | - | 0 | - | 0.3IOVDD | V |
| Output Signal “H” Level | $V_{OH}$ | $I_{OH}$=-1.0mA | 0.8IOVDD | - | IOVDD | V |
| Output Signal “L” Level | $V_{OL}$ | $I_{OL}$=1.0mA | 0 | - | 0.2IOVDD | V |
| Frame Frequency | FRAME | - | 50 | 60 | 80 | Hz |

Note: To prevent IC latch up or DC operation in LCD panel, the power on/off sequence should follow the driver IC specification.

# 4. LCD OPTICAL CHARACTERISTICS

($T_a$=+25ºC, VCI=+2.85V IOVCC=+1.8V, $I_B$=20mA)

| Item | | Symbol | Condition | Values | | | Unit | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | | |
| Viewing Angle Range | Left | $\theta_L$ | CR≧10 | 80 | 85 | - | degree | (1) (4) |
| | Right | $\theta_R$ | | 80 | 85 | - | | |
| | Top | $\Phi_T$ | | 80 | 85 | - | | |
| | Botto | $\Phi_B$ | | 80 | 85 | - | | |
| Response Time | | $T_{on}$ +$T_{off}$ | Normal θ=Φ=0˚ | - | 30 | 40 | ms | (1) (3) |
| Contrast Ratio | | CR | Normal θ=Φ=0˚ | 700 | 800 | - | - | (1) (2) |
| Luminance | | L | Normal θ=Φ=0˚ | 260 | 320 | - | cd/m$^2$ | (5) |
| Color Chromaticity (CIE1931) | White | X | Normal θ=Φ=0˚ | -0.03 | 0.30 | +0.03 | - | (1) (4) |
| | | Y | | | 0.32 | | | |
| Color Gamut | | S(%) | | - | 50 | - | % | (C-light) |
| Transmittance | | Trans | | - | 4.7 | - | % | Measuring with normal polarizer, For Reference Only |

Note (1): Definition of viewing angle range

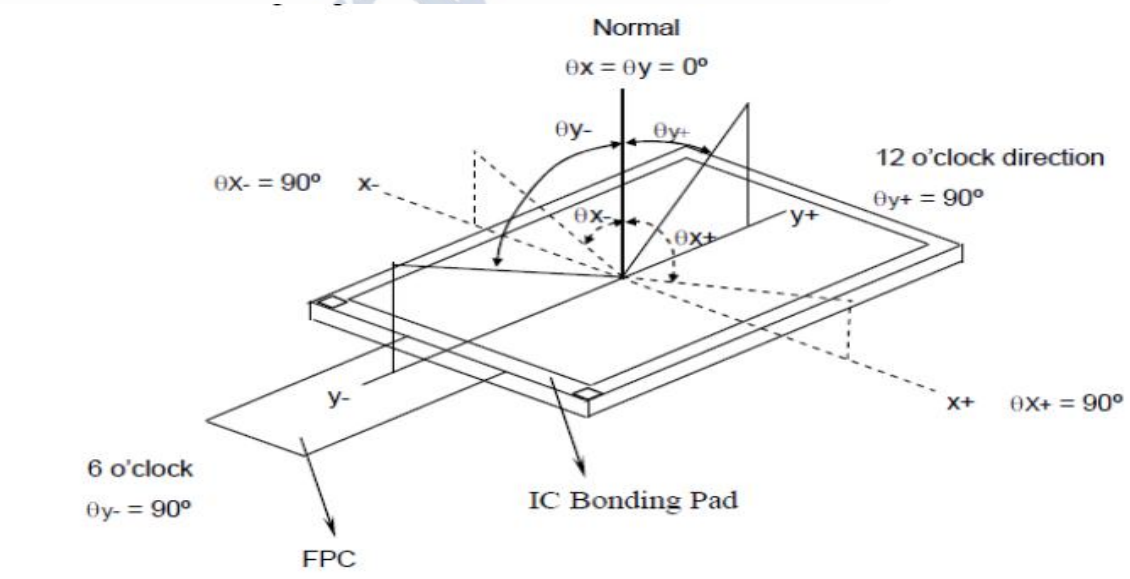



Fig. 1 Optical measurement system setup

Note (2): Definition of contrast ratio

Contrast ratio is calculated by the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "white" state}}{\text{Brightness on the "black" state}}$$

Note (3): Definition of response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time ($T_{on}$) is the time between photo detector output intensity changed from 90% to 10%, and fall time ($T_{off}$) is the time between photo detector output intensity changed from 10% to 90%.

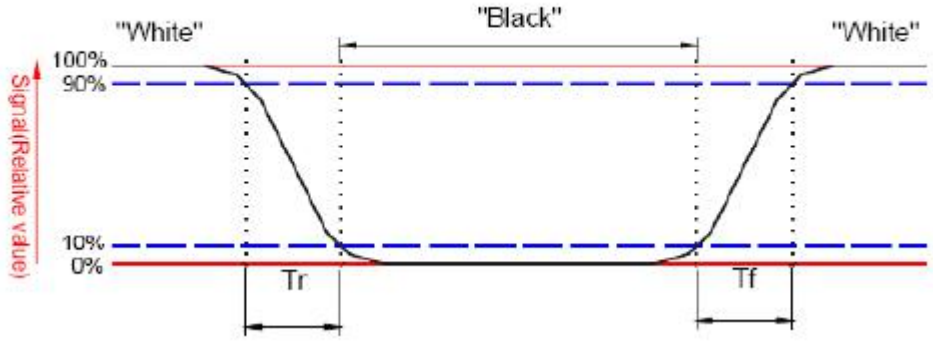
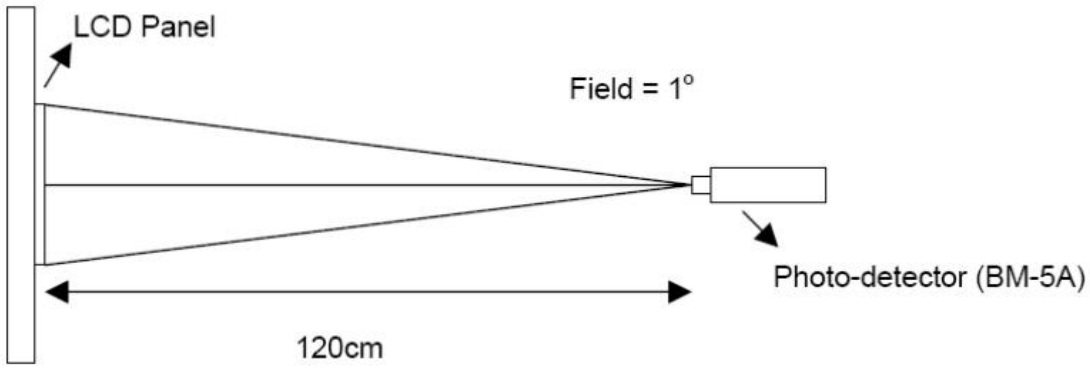



Fig. 2 Definition of response time

Note (4): Definition of optical measurement setup




Note (5): Definition of luminance

Measured at the center area of the panel when LCD panel is driven at “white” state.

## 5.RELIABILITY TESTS

| ITEM | CONDITION | CRITERION |
|---|---|---|
| Operating Temperature Test | High Temperature: +60 ºC, 96 hrs | No defects in display and operational functions |
| | Low Temperature: -15 ºC, 96hrs | |
| Storage Temperature Test | High Temperature: +70 ºC, 96 hrs | No defects in display and operational functions |
| | Low Temperature: -20 ºC, 96hrs | |
| Humidity Endurance Test | 60 ºC±3℃, 90%±3%RH, 96 hrs | No defects in display and operational functions |
| Thermal Shock Test | -20 ºC (22mins)～<br>+70 ºC (22mins) 25cycles | No defects in display and operational functions |
| Electro Static Discharge | ± 4KV, Human BodyMode,150pF/330Ω;<br>± 8KV,Air Mode,150pF/330Ω | No defects in display and operational functions |
| Drop Test | 50cm / 4Corner / 6Face, 1clcye | No defects in display and operational functions |

NOTE:

1) The samples must be free from defect before test, must be restored at room condition at least for 2 hours after reliability test before any inspection.

2) Before test the function of TP, the sample must be placed in room temperature for 24hrs after RA test.