

# 1. GENERAL SPECIFICATION

## 1.1 Description

The G03506AC01A8(GD3095 ) 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 3.5 inches transmissive type main TFT-LCD panel. The resolution of the panel is 320RGBx480 pixels and can display up to 16.7M color.

## 1.2 Feature

- TN type for main TFT-LCD panel
- Structure COG+FPC+BL
- Full, Normal (Still), Partial, Sleep mode are available

## 1.3 Application

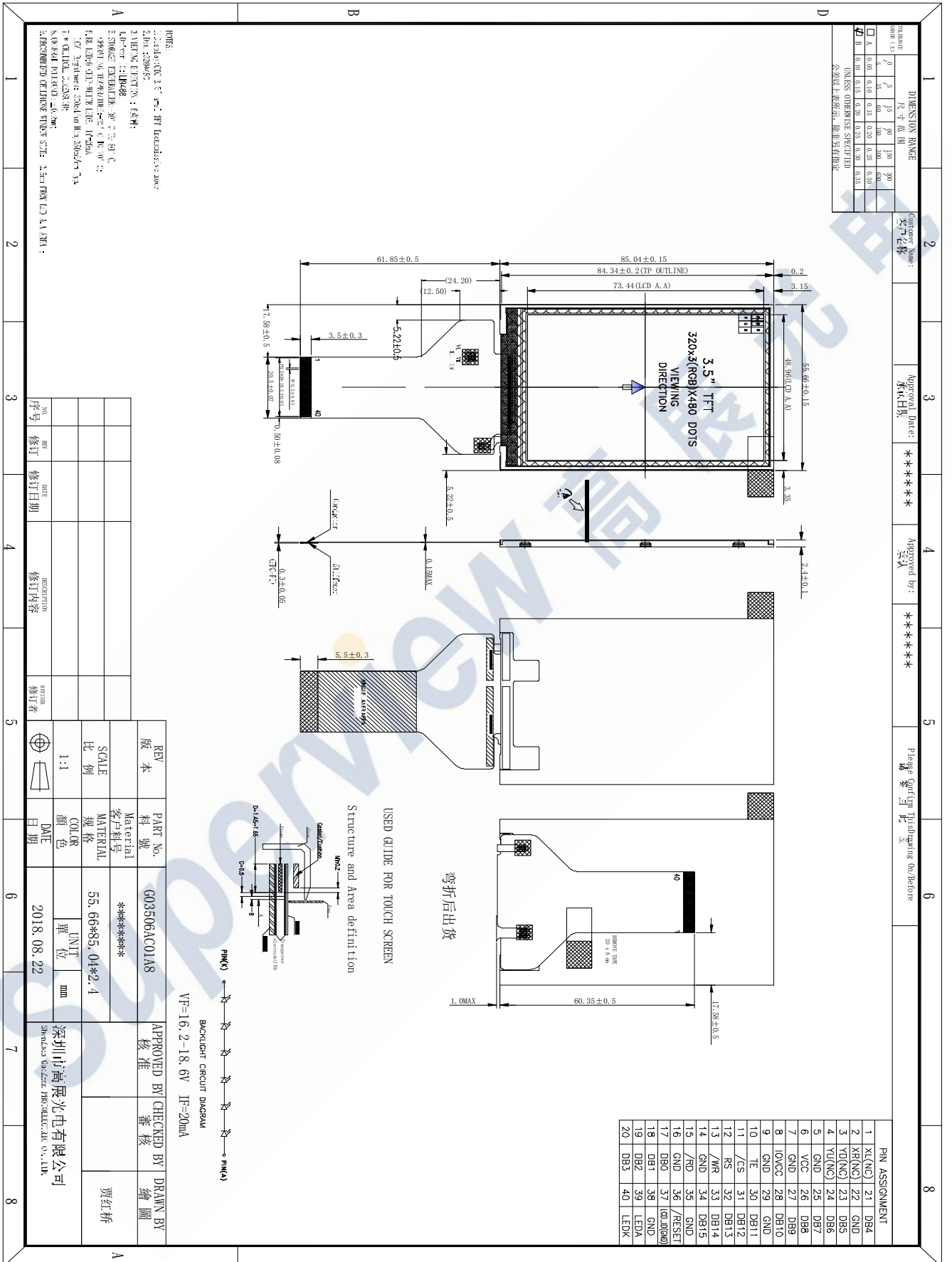
- Display terminals

## 1.4 General Specification

No.	Item	Specification	Unit	Remark
1	LCD Size	3.5	inch	-
2	Panel Type	a-Si TFT active matrix	-	-
3	Resolution	320x (RGB) x480	pixel	-
4	Display Mode	Normally White, Transmissive	-	-
5	Display Number of Colors	16.7M	-	-
6	Viewing Direction	12 o'clock	-	Note
7	Contrast Ratio	500(Typ)	-	-
8	Luminance	200(Typ)	cd/m <sup>2</sup>	-
9	Module Size	55.66(W ) x85.04(L) x 2.4(T)	mm	Note
10	Active Area	48.96(W) x 73.44(L)	mm	Note
11	Pixel Pitch	0.153(W) x 0.153(L)	mm	-
12	Driver IC	ILI9488	-	-
13	Driver IC RAM Size	2764.8K	bit	-
14	Light Source	6 LEDs White	-	-
15	Interface	MCU	-	-
16	Operating Temperature	-20~70	°C	-
17	Storage Temperature	-30~80	°C	-

Note: Please refer to the mechanical drawing.

2. MECHANICAL DRAWING



**4. ELECTRICAL SPECIFICATION**

**4.1. ABSOLUTE MAXIMUM RATINGS**

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

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

**4.2. TYPICAL OPERATION CONDITION**

**4.2.1 DC Characteristics**

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN	TYP	MAX	
Power Supply for Analog	VDD	Ta=25 °C	2.5	2.8	3.5	V
Power Supply for Digital IO	IOVDD	Ta=25 °C	1.65	1.8	3.3	V
Input Signal "H" Level	V <sub>IH</sub>	-	0.7IOVDD	-	IOVDD	V
Input Signal "L" Level	V <sub>IL</sub>	-	0	-	0.3IOVDD	V
Output Signal "H" Level	V <sub>OH</sub>	I <sub>OH</sub> =-1.0mA	0.8IOVDD	-	IOVDD	V
Output Signal "L" Level	V <sub>OL</sub>	I <sub>OL</sub> =1.0mA	0	-	0.2IOVDD	V
Frame Frequency	FRAME	-	50	60	70	Hz

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

**4.2.2 Current Consumption**

Item	Symbol	Values		Unit	Remark
		type	Max.		
MCU Interface					
Normal(Still) Mode	I <sub>cc1</sub>	--	60	mA	Note1
Standby Mode	I <sub>cc1</sub>	-	150	uA	Note2

**4.3. Interface Characteristics:**

**16-bit Parallel MCU Interface**

The 8080-system 16-bit parallel bus interface of the ILI9488 can be used by setting external pin IM [2:0] as 010. Figure 114 shows this system interface.

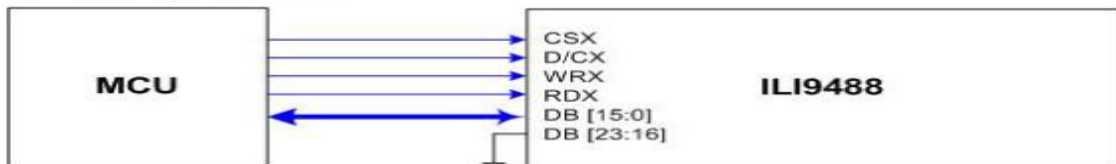


Figure 114: 16-bit Parallel MCU Interface

The available display data formats are:

- 65K-Colors, RGB 5, 6, 5 bits input data (set Standard Command 3Ah, DBI [2:0] as 101)
- 262K-Colors, RGB 6, 6, 6 bits input data (set Standard Command 3Ah, DBI [2:0] as 110)

**5. OPTICAL CHARACTERISTICS**

( $T_a=+25^{\circ}\text{C}$ ,  $V_{CI}=+2.85\text{V}$   $I_{OVCC}=+1.8\text{V}$ ,  $I_B=20\text{mA}$ )

Item	Symbol	Condition	Values			Unit	Remark	
			Min.	Typ.	Max.			
Viewing Angle Range	Left	$\theta_L$	$CR \geq 10$	-	70	-	degree	Note 1
	Right	$\theta_R$		-	70	-		
	Top	$\Phi_T$		-	60	-		
	Botto	$\Phi_B$		-	60	-		
Response Time	$T_{on} + T_{off}$	Normal $\theta = \Phi = 0^{\circ}$	-	20	40	ms	Note ,2	
Contrast Ratio	CR	Normal $\theta = \Phi = 0^{\circ}$	-	500	-	-	Note 3	
Luminance	L	Normal $\theta = \Phi = 0^{\circ}$	200		--	cd/m <sup>2</sup>	Note 4	
Color Chromaticity	White	X	Normal $\theta = \Phi = 0^{\circ}$	0.260	0.310	0.360	-	Note 5
		Y		0.260	0.310	0.360		
NTSC				57%	60%	-	%	Note 6
Transmittance	Trans		-	5.5			%	Note7
Croos talk	Ct		-	-	2%			Note8

Note 1: Definition of viewing angle range

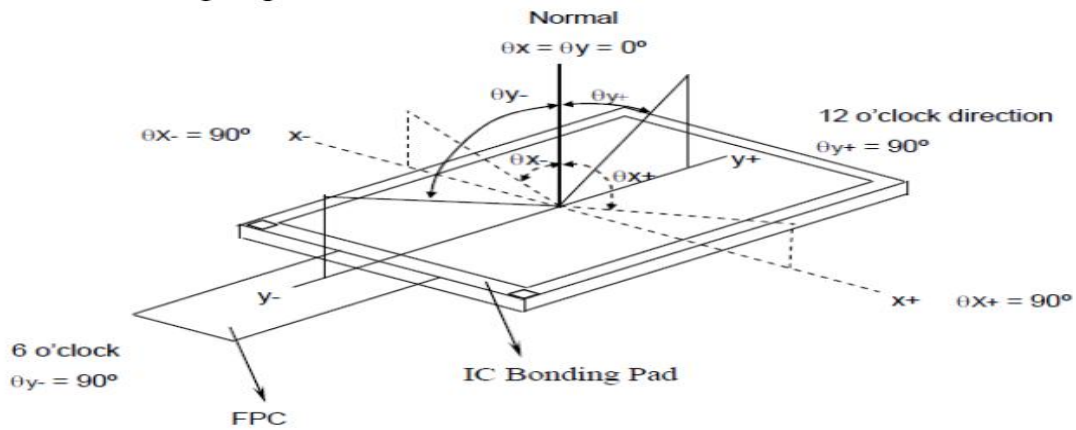


Fig. 1 Optical measurement system setup

Note 2: 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%.

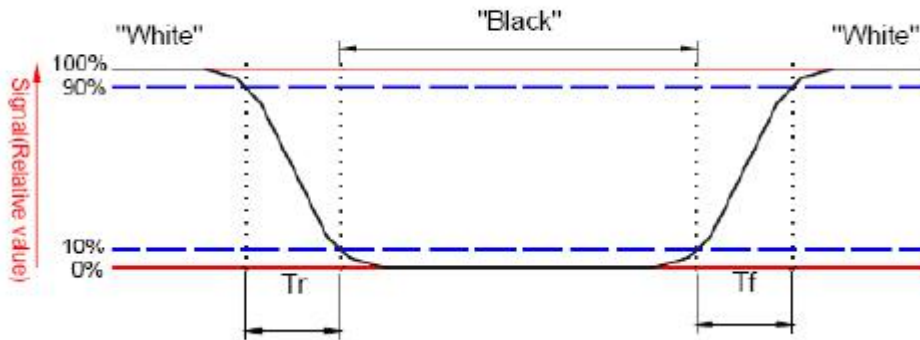


Fig. 2 Definition of response time

Note 3: 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 4: Definition of luminance

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

Note 5: Definition of color chromaticity (CIE1931)

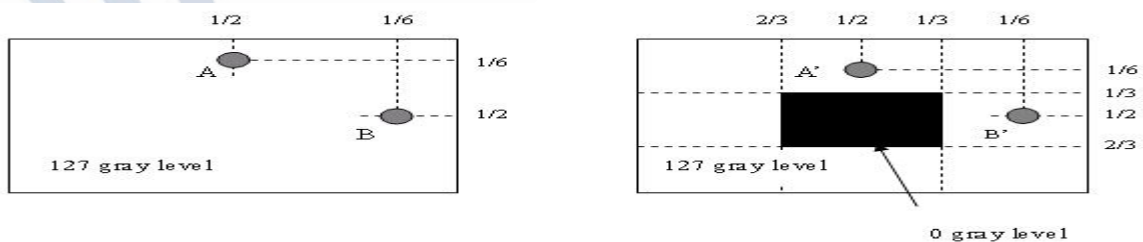
Color coordinates measured at the center point of LCD when panel is driven at "White", "Red", "Green" and "Blue" state respectively.

Note 6: To be measured with Otsuta chromaticity meter LCF-2100M, CF only measure under C light simulation

Note 7: CTC shipping status is cell without polarizer. Transmittance of Specification is cell with polarizer. The tolerance of Transmittance is +/-10%.

Note

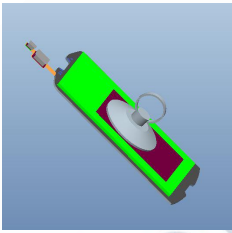
8:



$|LA - LA'| / LA \times 100\% = 3\% \text{ max.}$ , LA and LA' are brightness at location A and A'.  
 $|LB - LB'| / LB \times 100\% = 3\% \text{ max.}$ , LB and LB' are brightness at location B and B'.

## 6.RELIABILITY TESTS



ITEM	CONDITION	CRITERION
Operating Temperature Test	High Temperature: +70 °C, 48hrs	No defects in display and operational functions
	Low Temperature: -20 °C, 48 hrs	
Storage Temperature Test	High Temperature: +70 °C, 48 hrs	No defects in display and operational functions
	Low Temperature: -30 °C, 48hrs	
Humidity Endurance Test	40 °C±3°C, 95%±3%RH, 48 hrs	No defects in display and operational functions
Thermal Shock Test	-30 °C (30mins)~ +70 °C (30mins) 14 cycles	No defects in display and operational functions
框贴背胶剥离力测试	1、用积水背胶贴在屏框背面的中间 2、吸盘粘附在积水背胶上，对应屏的中心位置 3、进行拉力测试:>5KG 	TP 和 LCD 不分离
Vibration Resistance Test	Operating Time: thirty minutes exposure for each direction (X,Y,Z) Sweep Frequency:10~55Hz (1 min) Amplitude: 1.5mm	No defects in display and operational functions
Mechanical Shock	Height :76cm (Weight ≤9.5kg); 61cm(9.5<Weight ≤18.6kg) 1 corner, 3 edges, 6 surfaces	No defects in display and operational functions
Electro Static Discharge	± 4KV, Human BodyMode,150pF/330Ω; ± 8KV,Air Mode,150pF/330Ω	No defects in display and operational functions