

# 1. GENERAL SPECIFICATION

## 1.1 Description

The G39708AP01A0(GA3011 ) is a color active matrix Thin Film Transistor (TFT) Liquid Crystal Display(LCD) that uses amorphous silicon(a-Si) TFT as a switching device,and with a Capacitive Touch Panel(CTP). This model is composed of a single 3.97 inches transmissive type main TFT-LCD panel. The resolution of the panel is 480RGBx800 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

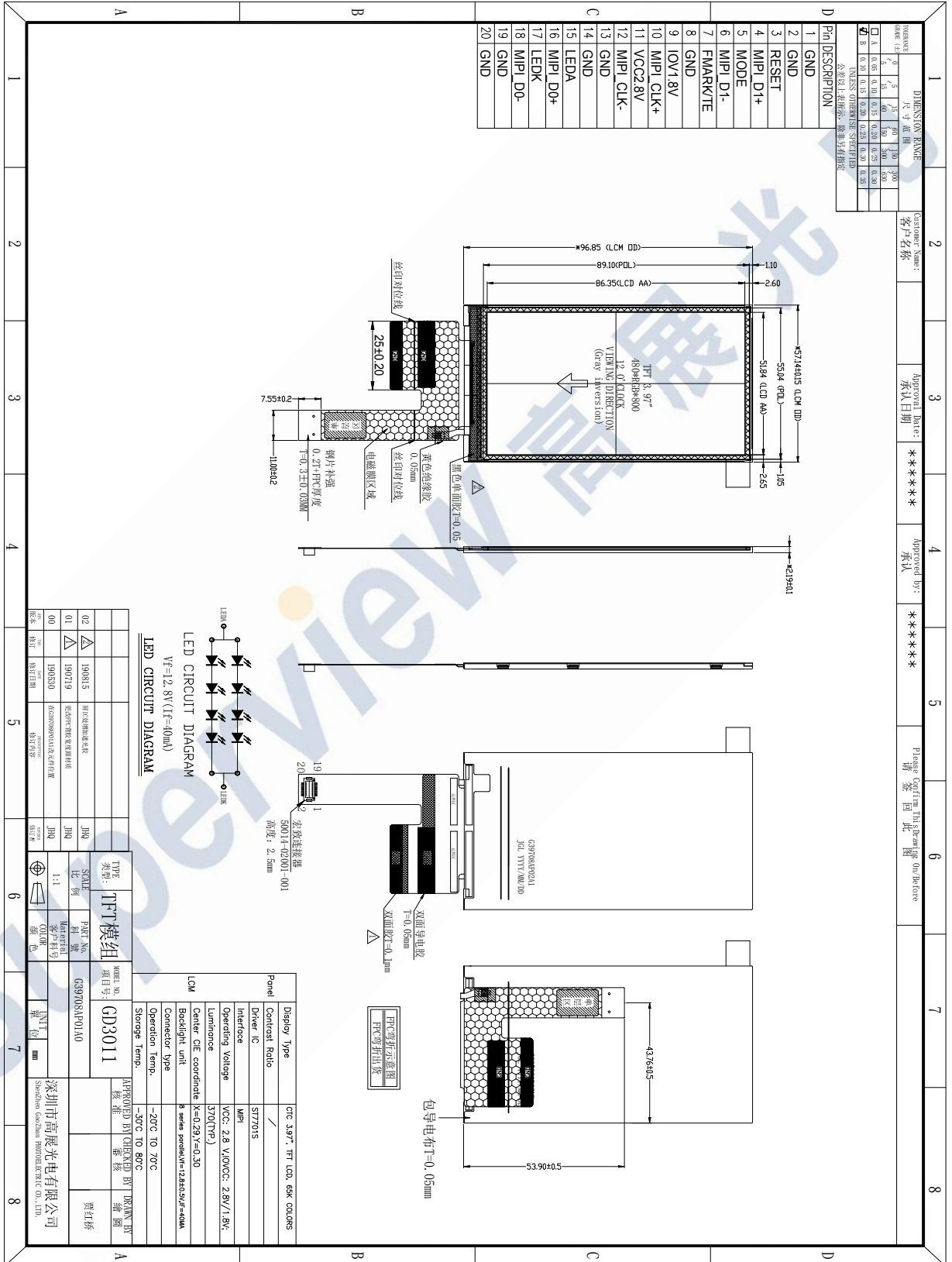
- Display terminals for Bank Card-switching Machine

## 1.4 General Specification

No.	Item	Specification	Unit	Remark
1	LCD Size	3.97	inch	-
2	Panel Type	a-Si TFT active matrix	-	-
3	Resolution	480 x (RGB) x 800	pixel	-
4	Display Mode	Normally White,Transmissive	-	-
5	Display Number of Colors	16.7M	-	-
6	Best Viewing Direction	12 点钟	-	Note
7	Contrast Ratio	700(Typ)	-	-
8	Luminance	300(Typ)	cd/m <sup>2</sup>	-
9	Module Size	71.0(W ) x103.95(L) x 2.19(T)	mm	Note
10	Active Area	51.84(W) x 86.4(L)	mm	Note
11	Pixel Pitch	0.108(W) x 0.108 (L)	mm	-
12	Driver IC	ST7701S	-	-
13	Driver IC RAM Size	Without RAM	bit	-
14	Light Source	8 LEDs White	-	-
15	Interface	MIPI 2-Lane	-	-
16	Operating Temperature	-20~70	°C	-
17	Storage Temperature	-30~80	°C	-

Note: Please refer to the mechanical drawing.

2. MECHANICAL DRAWING



REV	REV	REV	REV	REV	REV	REV	REV
02	01	00					
190815	190719	190530					
初次电路原理图	初次电路原理图	初次电路原理图					

TYPE	SCALE	PART No.	MODEL No.
TFT模组	1:1	GD3011	GD3011
比例	客户料号	项目号	

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DATE: 2019.05.10

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**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 °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.

**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 °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	70	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.

**3.2.2 TFT Current Consumption**

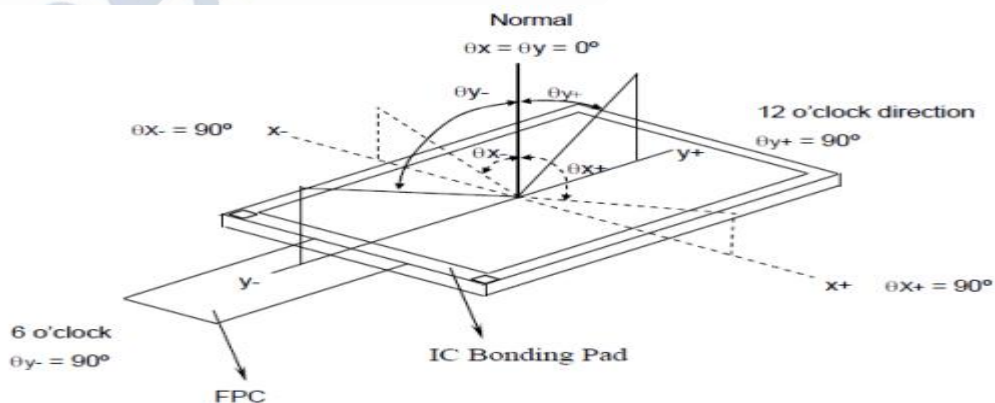
Item	Symbol	Values		Unit	Remark
		type	Max.		
MIPI 2-Lane Interface					
Normal(Still) Mode	I <sub>CC1</sub>	40	60	mA	Note1
Standby Mode	I <sub>CC1</sub>	-	150	uA	Note2

4. 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	Specification			Unit	Remark
			Min.	Typ.	Max.		
Response time (By Quick)	Tr+Tf	$\theta=0^{\circ}$	-	25	40	ms	Note 5
Contrast ratio (use EWV Polarizer)	CR	$\theta=0^{\circ}$	-	700	-		Note 2,6
Viewing angle (use EWV Polarizer)	Top	$CR \geq 10$	60	70	-	deg.	Note 2,6,7
	Bottom	$CR \geq 10$	40	60	-		
	Left	$CR \geq 10$	60	70	-		
	Right	$CR \geq 10$	60	70	-		
Color chromaticity (CF only with ITO, light source is C light, CIE 1931)	Wx	$\theta=0^{\circ}$	-0.03	0.308	+0.03		Note 3
	Wy			0.328			
	Rx			0.608			
	Ry			0.330			
	Gx			0.302			
	Gy			0.565			
	Bx			0.144			
	By			0.111			
NTSC			-	55.6	-	%	Note 3
Cross talk	Ct		-	-	3	%	Note 9
Transmittance	Trans		-	4	-	%	Note 4

Note 1: Definition of viewing angle range



Note 2: Definition of optical measurement system

The optical characteristics should be measured in a dark room with ambient temperature  $T_a=+25^{\circ}\text{C}$ . The optical properties are measured at the center point of the LCD screen after 5 minutes operation. (Equipment: Photo detector TOPCON BM-5AS Field of view:  $1^{\circ}$ /Height: 500mm.)

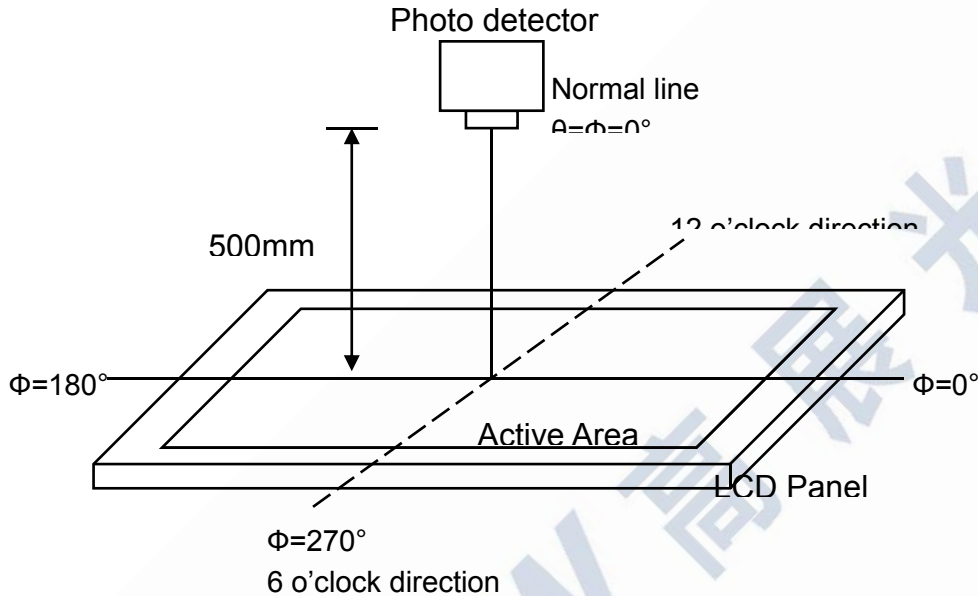


Fig. 3 Optical measurement system setup

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 ( $T_{on}$ ) 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%.

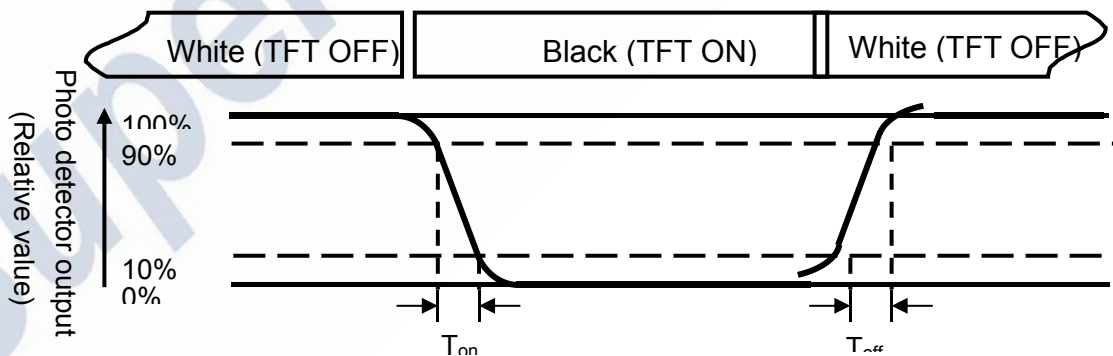


Fig. 4 Definition of response time

Note 4: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5: Definition of luminance

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

Note 6: 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 7: Definition of luminance uniformity

To test for uniformity, the tested area is divided into 3 rows and 3 columns. The measurement spot is placed at the center of each circle as below.

$$\text{Luminance Uniformity } (U_L) = \frac{L_{\min}}{L_{\max}}$$

L-----Active area length      W----- Active area width

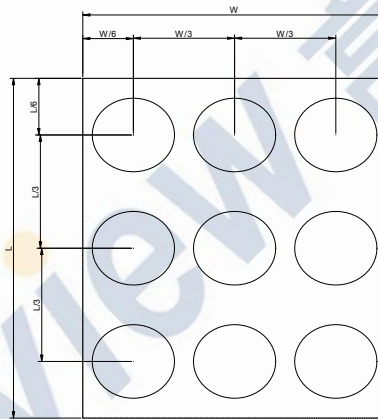


Fig. 5 Definition of luminance uniformity

$L_{\min}$ : The measured minimum luminance of all measurement position.

$L_{\max}$ : The measured maximum luminance of all measurement position.