1. GENERAL SPECIFICATION

1.1 Description

The G546AKA085A0(GF3176) is a color active matrix Thin Film Transistor (TFT) Liquid Crystal Display (LCD) that uses LTPS TFT as a switching device,and with a Capacitive Touch Panel(CTP). This model is In-Plane Switching Mode, The resolution of the panel is 1080RGBx1920 pixels and can display up to 16.7M colors.

1.2 Feature

-AHVA type for main TFT-LCD panel

-Structure COG+FPC+BL+CGL

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

1.3 Application

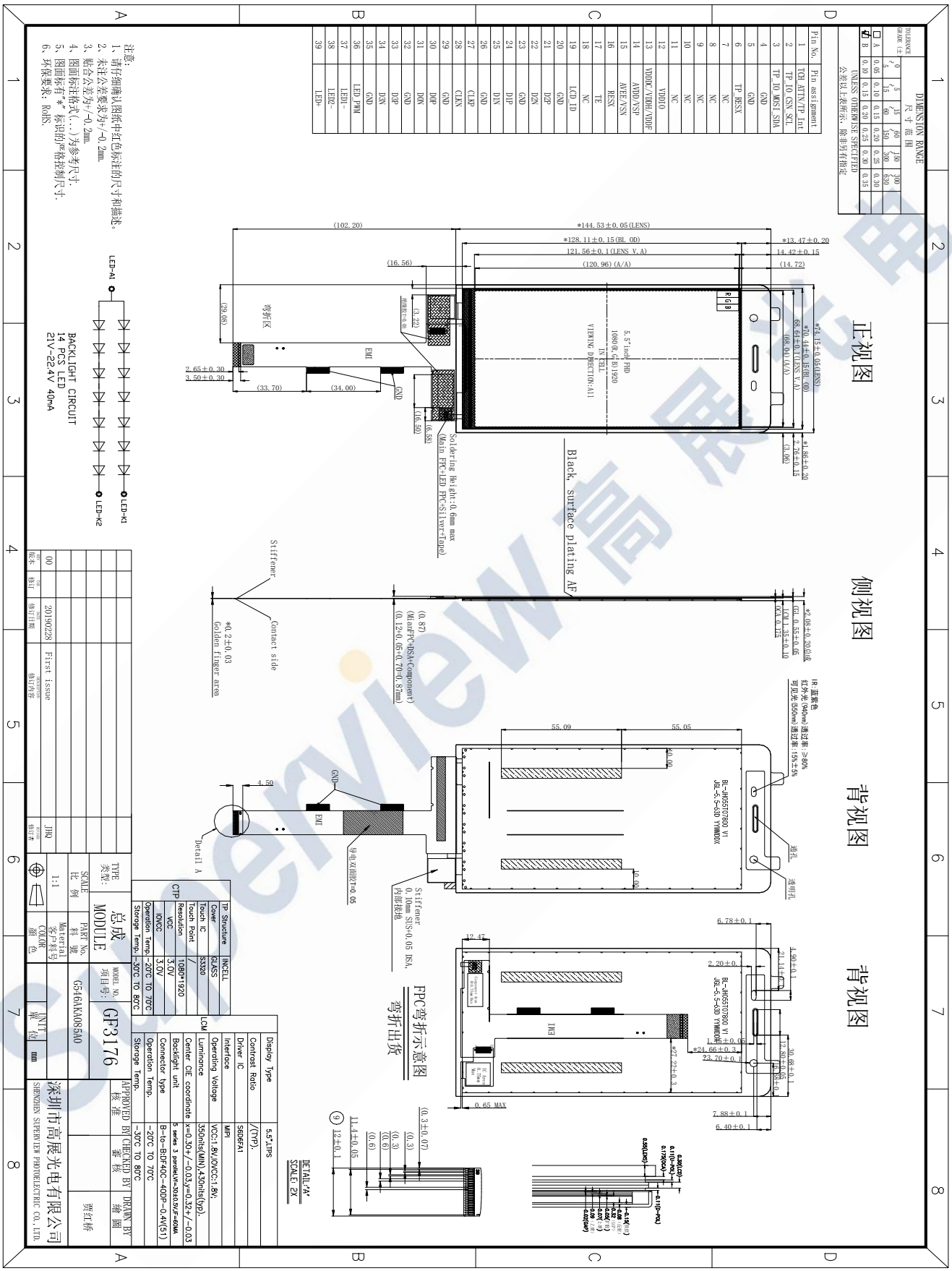
-Display terminals for intelligent controller

1.4 General Specification

No.	Item	Specification	Unit	Remark
1	LCD Size	5.46	inch	-
2	Panel Type	In-Plane Switching Mode	-	-
3	Resolution	1080 x (RGB) x 1920	pixel	-
4	Display Mode	Normally Black,Transmissive	-	-
5	Display Number of Colors	16.7M	-	-
6	Viewing Direction	ALL	-	Note
7	Contrast Ratio	1000(Typ)	-	-
8	Luminance	430(Typ)	cd/m^2	-
9	Module Size	74.15(W) x144.53(L) x 2..08±0.2	mm	Note
10	Active Area	68.04(W) x 120.96(L)	mm	Note
11	Pixel Pitch	0.063(W) x 0.063（L）	mm	-
12	Driver IC/TOUCH IC	S6D6FA1/S3320A	-	-
13	Light Source	14 LEDs White	-	-
14	Interface	MIPI 4-Lane	-	-
15	Operating Temperature	-20~70	℃	-
16	Storage Temperature	-30~80	℃	-

Note: Please refer to the mechanical drawing.

2. MECHANICAL DRAWING



3.TFT TYPICAL OPERATION CONDITION

TFT DC Characteristics

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN	TYP	MAX	
Power Supply for Analog	VDD	Ta=25 ºC	2.5	2.8	3.5	V
Power Supply for Digital IO	IOVDD	Ta=25 ºC	1.65	1.8	3.3	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	θ_L	CR≧10	70	80	-	degree	Note 1
	Right	θ_R		70	80	-		
	Top	Φ_T		70	80	-		
	Bottom	Φ_B		70	80	-		
Response Time		T_{on} +T_{off}	Normal θ=Φ=0˚	-	30	45	ms	Note ,2
Contrast Ratio		CR	Normal θ=Φ=0˚ angle	1000	1500	-	-	Note 3
Color Chromaticity (CIE1931)	White	X	Normal θ=Φ=0˚	TBD	TBD	TBD	-	Note 5
		Y		TBD	TBD	TBD		
	Red	X			TBD			
		Y			TBD			
	Green	X			TBD			
		Y			TBD			
	Blue	X			TBD			
		Y			TBD			
Transmittance		Trans		4.25	5.0		%	Note7

Judgement criterion：

$$\Delta c_{白}' = \sqrt{(\Delta u')^2 + (\Delta v'/1.5)^2} = \sqrt{(u'_{白} - u'_{白0})^2 + [(v'_{白} - v'_{白0})/1.5]^2}$$

，the "$u'_{白0}$"and "$u'_{白0}$" is the type value in the Figure 1.

the error of the Red 、Green and Blue must be controlled as follow

$\Delta c_{白}' \leq 0.0115$， $\Delta c_{红}' \leq 0.0230$， $\Delta c_{绿}' \leq 0.0230$， $\Delta c_{蓝}' \leq 0.0230$。

Note 1: Definition of viewing angle range

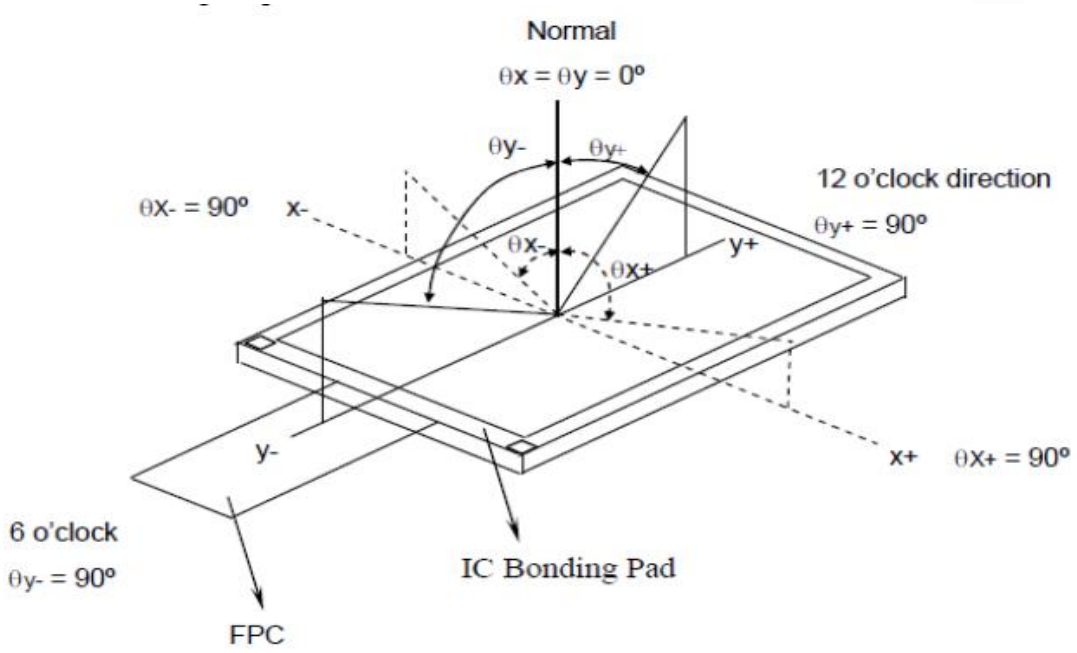


Fig. 1 Optical measurement system setup

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%.

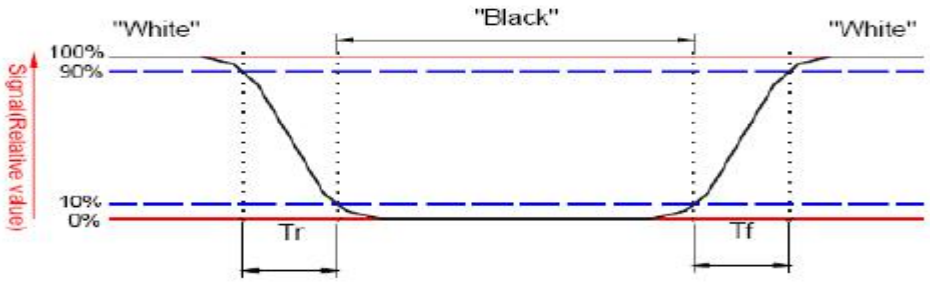


Fig. 2 Definition of response time

Note 3: Definition of contrast ratio

Contrast ratio is calculated by the following formula.

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