1. GENERAL SPECIFICATION

1.1 Description

The G14403AB01A4 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 1.44 inches transmissive type main TFT-LCD panel. The resolution of the panel is 128RGBx128 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

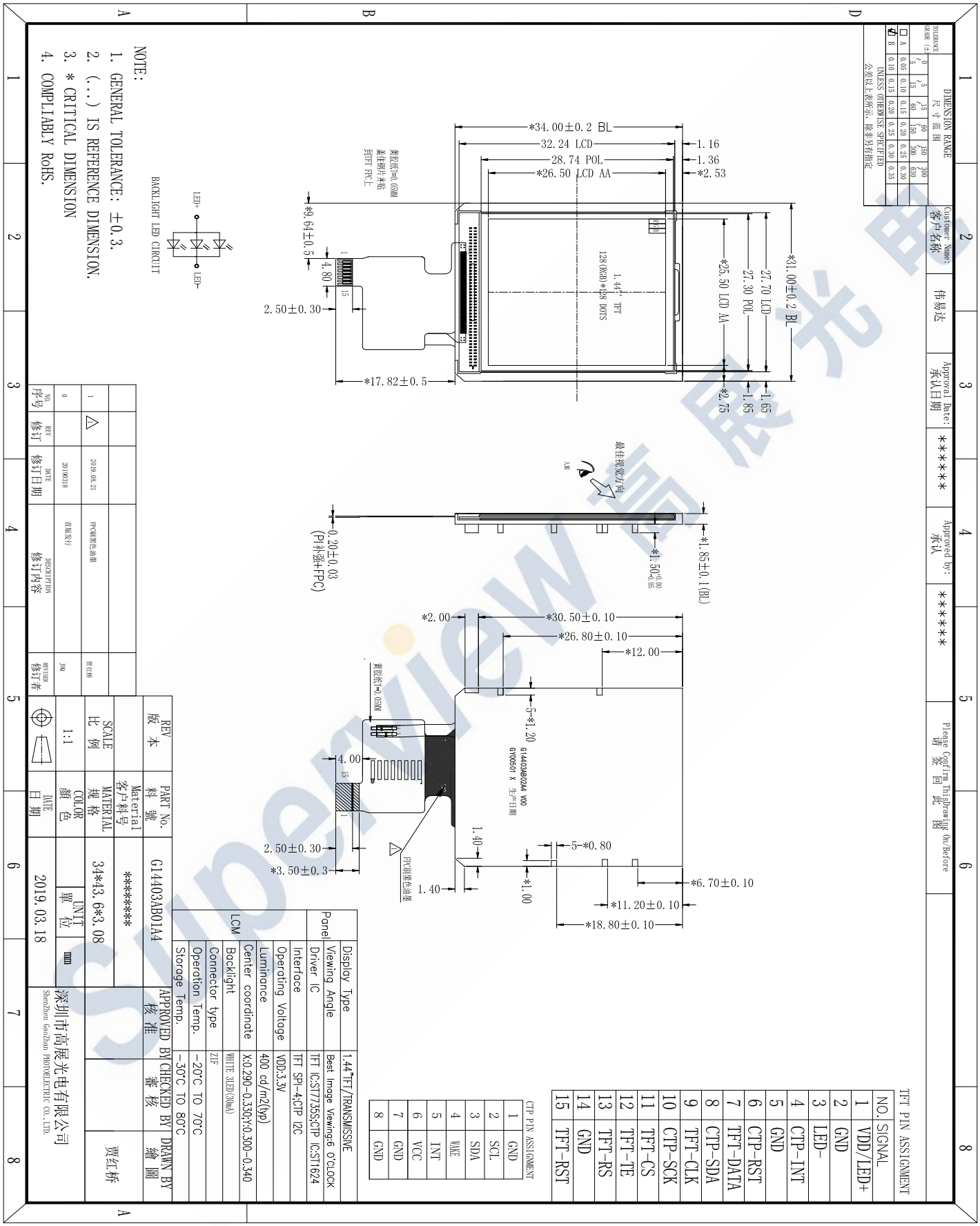
-Display terminals for Toys

1.4 General Specification

No.	Item	Specification	Unit	Remark
1	LCD Size	1.44	inch	-
2	Panel Type	a-Si TFT active matrix	-	-
3	Resolution	128 x (RGB) x 128	pixel	-
4	Display Mode	Normally White,Transmissive	-	-
5	Display Number of Colors	262k	-	-
6	Best Viewing Direction	6:00	-	Note
7	Contrast Ratio	500(Typ)	-	-
8	Luminance	400(Typ)	cd/m^2	-
9	Module Size	34.00(W) x43.8(L) x 1.85(T)	mm	Note
10	Active Area	25.5(W) x 26.5(L)	mm	Note
11	Pixel Pitch	0.1992(W) x 0.207（L）	mm	-
12	Weight	TBD	g	-
13	Driver IC	ST7735S	-	-
14	Driver IC RAM Size	132x162x18	bit	-
15	Light Source	3 LEDs White	-	-

Note: Please refer to the mechanical drawing.

2. MECHANICAL DRAWING



NO. 序号	REV 修订	DATE 修订日期	DESCRIPTION 修订内容	MODIFIER 修订者
1	△	2019.08.21	FPC端黑色油墨	
0		2019.03.18	首版发行	JINQ

REV 版 本			
SCALE 比 例	1:1		
PART No. 料 號	G14403AB01A4		
Material 客户料号	********		
MATERIAL 规 格	34*43.6*3.08		
COLOR 颜 色			
DATE 日 期	2019.03.18	UNIT 單 位	mm

Display Type	1.44"TFT/TRANSMISSIVE
Viewing Angle	Best Image Viewing:6 O'CLOCK
Driver IC	TFT IC:ST7735S;CTP IC:ST1624
Interface	TFT SPI-4;CTP I2C
Operating Voltage	VDD:3.3V
Luminance	400 cd/m2(typ)
Center coordinate	X:0.290~0.330;Y:0.300~0.340
Backlight	WHITE 3LED(30mA)
Connector type	ZIF
Operation Temp.	-20°C TO 70°C
Storage Temp.	-30°C TO 80°C

CTP PIN ASSIGNMENT	
1	GND
2	SCL
3	SDA
4	RESET
5	INT
6	VCC
7	GND
8	GND

TFT PIN ASSIGNMENT		
NO.	SIGNAL	
1	VDD/LED+	
2	GND	
3	LED-	
4	CTP-INT	
5	GND	
6	CTP-RST	
7	TFT-DATA	
8	CTP-SDA	
9	TFT-CLK	
10	CTP-SCK	
11	TFT-CS	
12	TFT-TE	
13	TFT-RS	
14	GND	
15	TFT-RST	

DIMENSION RANGE 尺寸范围						
TOLERANCE 公差 (±)	0 ~ 5	5 ~ 15	15 ~ 40	40 ~ 150	150 ~ 500	500 ~ 1000
A	0.05	0.10	0.15	0.20	0.30	0.50
B	0.10	0.15	0.20	0.25	0.35	0.55

UNLESS OTHERWISE SPECIFIED
公差以上表所示，除非另有指定

Customer Name: 客户名称	伟易达	Approval Date: 承认日期	******	Approved by: 承认	******	Please Confirm This Drawing On/Before 请签回此图
APPROVED BY 核准	CHECKED BY 審核	DRAWN BY 繪圖				
		贾红桥				

深圳市高展光电有限公司
ShenZhen GaoZhan PHOTOELECTRIC CO., LTD.

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.

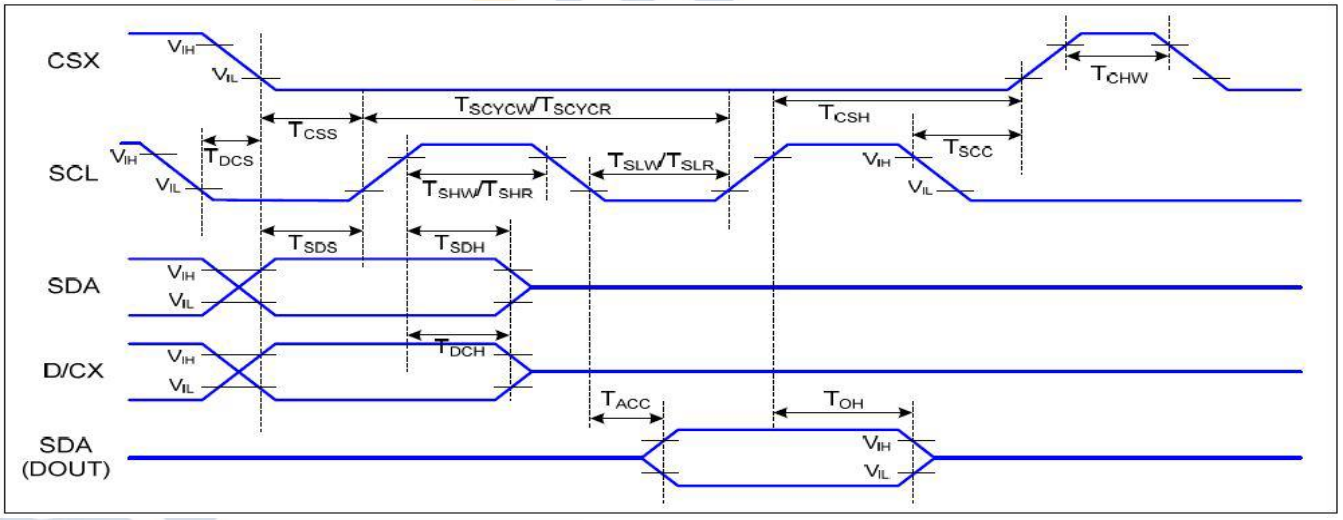
3.2. TFT TYPICAL OPERATION CONDITION

3.2.1 TFT DC Characteristics

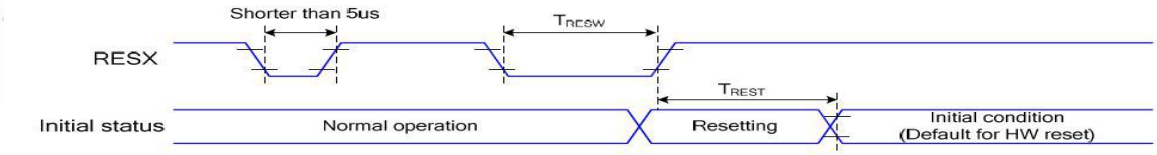
ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN	TYP	MAX	
Power Supply for Analog	VDD	Ta=25 ºC	2.5	2.8	3.5	V
Power Supply for Digital IO	IOVDD	Ta=25 ºC	1.65	1.8	3.3	V
Input Signal “H” Level	V_{IH}	-	0.7IOVDD	-	IOVDD	V
Input Signal “L” Level	V_{IL}	-	0	-	0.3IOVDD	V
Output Signal “H” Level	V_{OH}	I_{OH}=-1.0mA	0.8IOVDD	-	IOVDD	V
Output Signal “L” Level	V_{OL}	I_{OL}=1.0mA	0	-	0.2IOVDD	V
Frame Frequency	FRAME	-	50	70	80	Hz

3.3.TFT INTERFACE TIMING CHARACTERISTICS

Serial Interface Characteristics (4-line Serial)



3.4 TFT RESET TIMING CHARACTERISTICS



Related Pins	Symbol	Parameter	MIN	MAX	Unit
RESX	tRESW	Reset Pulse Duration	10	-	us
	tREST	Reset Cancel	-	5	ms
				120	ms

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	60	70	-	degree	Note 1
	Right	θ_R		60	70	-		
	Top	Φ_T		60	75	-		
	Botto	Φ_B		50	60	-		
Response Time		Rising	Normal θ=Φ=0˚	-	4	8	ms	Note ,2
		Falling			12	24		
Contrast Ratio		CR	Normal θ=Φ=0˚	400	500	-	-	Note 3
Luminance		L	Normal θ=Φ=0˚	350	400	600	cd/m^2	Note 4
Color Chromaticity	White	X	Normal θ=Φ=0˚	0.273	0.293	0.313	-	Note 5
		Y		0.305	0.325	0.345		
Luminance		U_L	Normal θ=Φ=0˚	75	80	-	%	Note 6

Note 1: Definition of viewing angle range

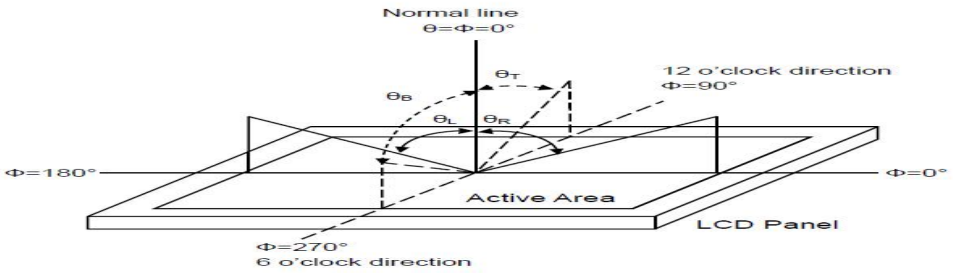


Fig. 1 Definition of viewing angle

Note 2 :Definition of response

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%.

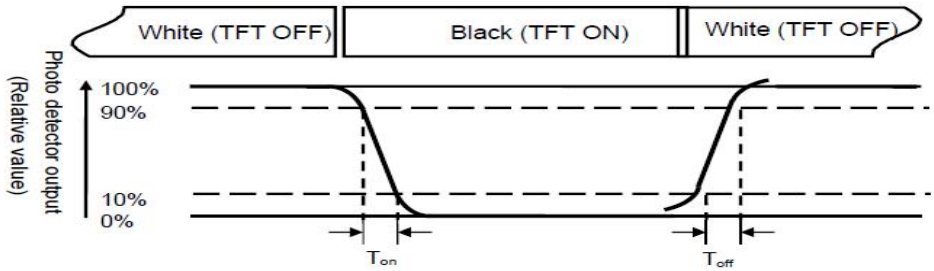


Fig. 4 Definition of response time

time

Note 3:efinition 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 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: Definition of luminance

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

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

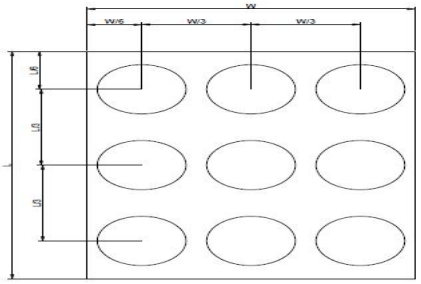


Fig. 5 Definition of luminance uniformity

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

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

8. RELIABILITY TESTS

ITEM	CONDITION	CRITERION
Operating Temperature Test	High Temperature: +70 ºC, 96hrs	No defects in display and operational functions
	Low Temperature: -20 ºC, 96 hrs	
Storage Temperature Test	High Temperature: +80 ºC, 96 hrs	No defects in display and operational functions
	Low Temperature: -30 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 (30mins)～ +70 ºC (30mins) 10 cycles	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