1. GENERAL SPECIFICATION

1.1 Description

The **G17703AE01A3(GD3023 V00)** 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 1.77 inches transmissive type main TFT-LCD panel. The resolution of the panel is 128*160 pixels and can display up to 262K 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

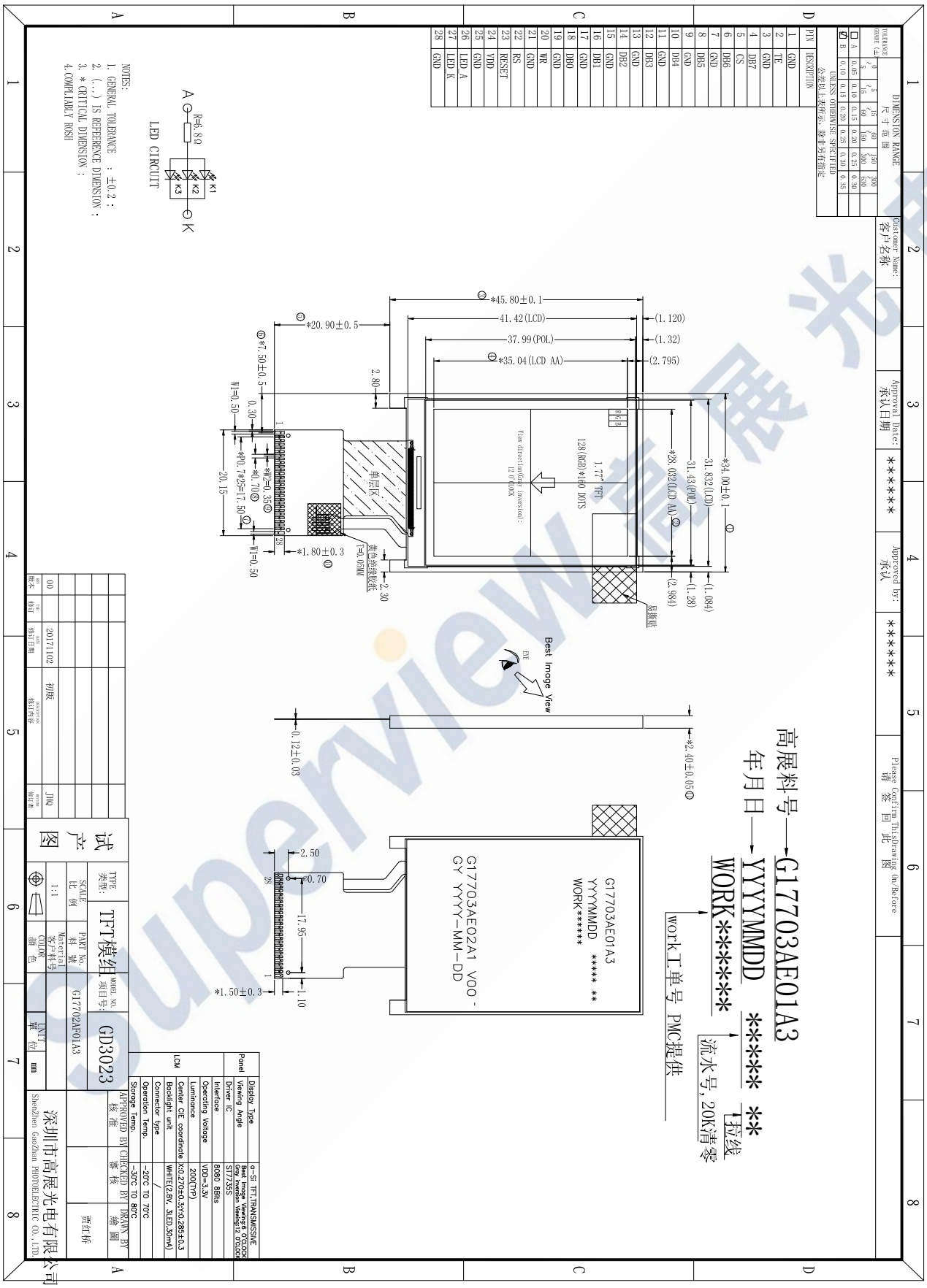
-Display terminals for Toys

1.4 General Specification

No.	Item	Specification	Unit	Remark
1	LCD Size	1.77	inch	-
2	Panel Type	a-Si TFT transmissive	-	-
3	Resolution	128 x (RGB) x 160	pixel	-
4	Display Mode	Normally White,Transmissive	-	-
5	Display Number of Colors	262K	-	-
6	Viewing Direction	12 o'clock	-	Note
7	Contrast Ratio	300(Typ)	-	-
8	Luminance	200(Typ)	cd/m2	-
9	Module Size	34(W) x 45.8(L) x2.4(T)	mm	Note
10	Active Area	28.032(W) x 35.04(L)	mm	Note
11	Pixel Pitch	0.219(W) x 0.219（L）	mm	-
12	Weight	TBD(TYP)	g	-
13	Driver IC	ST7735S	-	-
14	Driver IC Size	10080X670X300	um	-
15	Light Source	3 White LEDs	-	-
16	Interface	8080 8-bit(TFT)	-	-
17	Operating Temperature	-20~70	℃	-

Note: Please refer to the mechanical drawing.

2. MECHANICAL DRAWING



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

3.3.1 TFT DC Characteristics

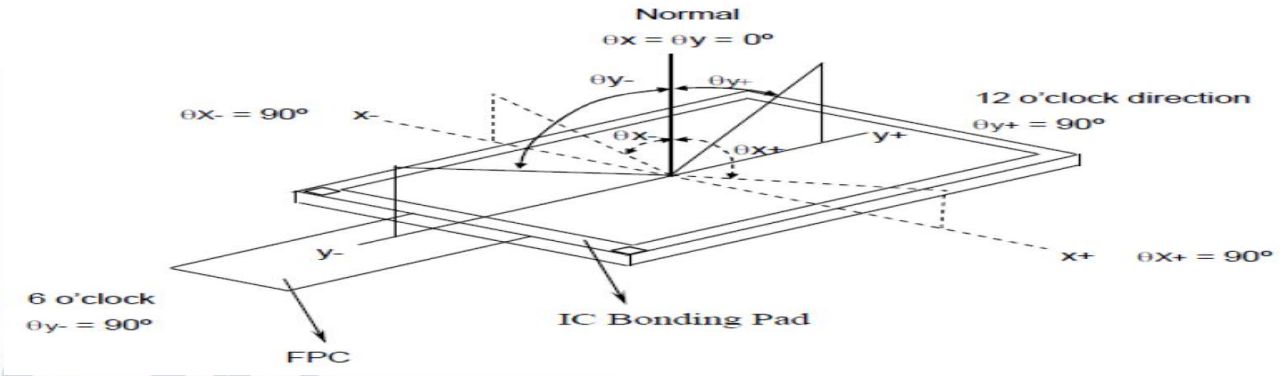
ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN	TYP	MAX	
Power Supply for Analog	VDD	Ta=25 ºC	2.5	2.8	3.5	V
Power Supply for Digital IO	IOVDD	Ta=25 ºC	1.65	1.8	3.3	V
Input Signal “H” Level	V_{IH}	-	0.7IOVDD	-	IOVDD	V
Input Signal “L” Level	V_{IL}	-	0	-	0.3IOVDD	V
Output Signal “H” Level	V_{OH}	I_{OH}=-1.0mA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

4.OPTICAL CHA

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

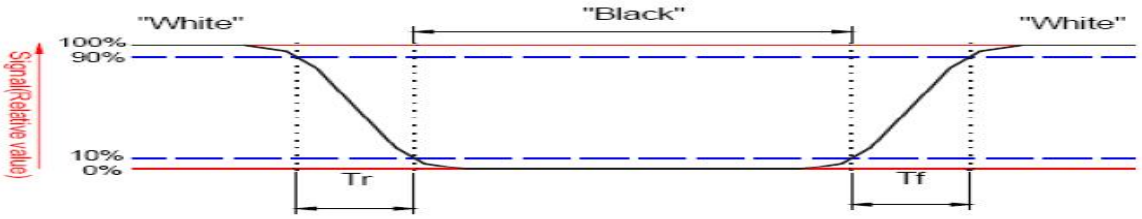
Item		Symbol	Condition	Values			Unit	Remark
				Min.	Typ.	Max.		
Viewing Angle Range	Left	θ_L	CR≧10	40	45	-	degree	Note 1
	Right	θ_R		40	45	-		
	Top	Φ_T		40	45	-		
	Bottom	Φ_B		15	20	-		
Response Time		T_{on} +T_{off}	Normal θ=Φ=0˚	-	30	60	ms	Note 2
Contrast Ratio		CR	Normal θ=Φ=0˚	200	300	-	-	Note 3
Luminance		L	Normal θ=Φ=0˚	200	300	--	cd/m^2	Note 4
Color Chromaticit	White	X	Normal θ=Φ=0˚	-0.02	0.308	+0.02	-	Note 5
		Y			0.327			
Croos talk		Ct		-	-	2%		Note6
Transmittance		Trans		6.21%	6.9%		-	Note7

Note 1: Definition of viewing angle range



Note 2: Definition of response time

The output signals of TRD-100 are measured when the input signals are changed to “White” (falling time) and from “White” to Black” (rising time). respectively. The interval is between the 10% and 90% of amplitudes. Refer to figure as below.



Note 3: Definition of contrast ratio

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

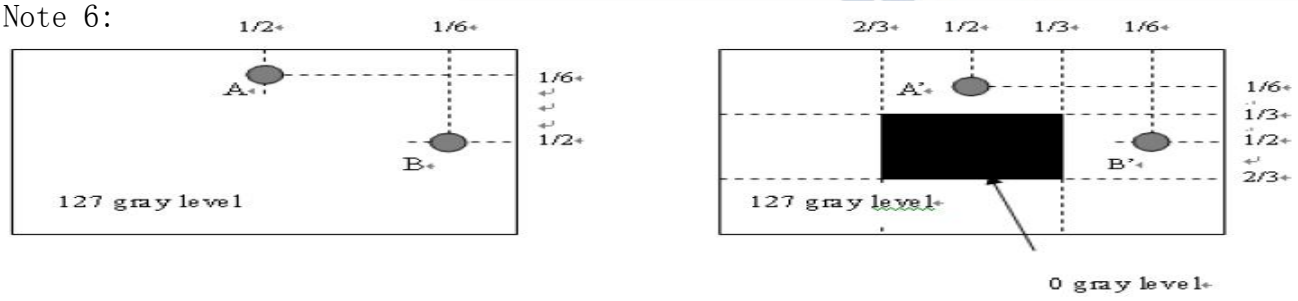
Note 4: Definition of luminance

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:



| LA-LA' | / LA x 100%= 2% max., LA and LA' are brightness at location A and A'
| LB-LB' | / LB x 100%= 2% max., LB and LB' are brightness at location B and B'

Note 7:

CDY shipping status is cell without polarizer. Transmittance of Specification is cell with polarizer

4.RELIABILITY TESTS

ITEM	CONDITION	CRITERION
Operating Temperature Test	High Temperature: +70 ºC, 96 hrs	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, 96 hrs	
Humidity Endurance Test	60ºC, 90%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