

1. GENERAL SPECIFICATION

1.1 Description

SUPERVIEW Display model G04309AA01A4 is a color active matrix thin film transistor(TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT LCD panel, a driving circuit and a back light system. This TFT LCD has a 4.3 inch diagonally measured active display area with WQVGA (480 horizontal by 272 vertical pixel) resolution.

1.2 Feature

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

1.3 General Specification

No.	Item	Specification	Unit	Remark
1	LCD Size	4.3 inches	inch	-
2	Panel Type	a-Si TFT	-	-
3	Resolution	480 x 3 RGB x272	pixel	-
4	Display Mode	Normally White	-	-
5	Display Number of Colors	16M	-	-
6	Viewing Direction (Gray inversion)	12 O'clock	-	Note
7	Contrast Ratio	250(Typ)	-	-
8	Luminance	400(Typ)	cd/m ²	-
9	Module Size	105.5(W) x67.2(L) x 2.9(T)	mm	Note
10	Active Area	95.04(W) x 53.86(L)	mm	Note
11	Pixel Pitch	0.066(H) × 0.198(V)	mm	-
12	Driver IC	HX8257	-	-
14	Light Source	9 LEDs White	-	-
15	Interface	RGB	-	-
16	Operating Temperature	-20~70	°C	-
17	Storage Temperature	-30~80	°C	-

Note: Please refer to the 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 °C	-0.3	3.3	3.6	V
Power Supply for Digital IO	IOVCC	Ta=25 °C	-0.3	1.8	3.6	V

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

3.2 Typical Operation Conditions

ITEM	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Digital Power Supply voltage For Lcd	VDD	3.0	3.3	3.6	V	
Gate On voltage	VGH	--	15	--	V	
Gate Off voltage	VGL	--	-10	--	V	
TFT Common electrode voltage	VCOMH	--	4.2	--	V	
	VCOML	--	-1.4	--	V	
Logic Input voltage	VIH	0.7VDD		VDD	V	
	VIL	GND		0.3VDD	V	

Note: Vcom must be adjusted to optimize display quality: cross talk, contrast ratio and etc.

4. OPTICAL CHARACTERISTICS

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

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing Angle Range	Hor.	Θ_{x+}	-	45	-	degree	Note 1
		Θ_{x-}	-	45	-		
	Ver.	Φ_{y+}	-	15	-		
		Φ_{y-}	-	35	-		
Response Time		T_R	-	5	-	ms	Note ,2
		T_F	-	15	-		
Contrast Ratio		CR	-	250	-	-	Note 3
Luminance		L	--	400	--	cd/m^2	Note 4
Color Chromaticity	White	X	-0.03	0.29	+0.03	-	Note 5
		Y		0.32			
Transmittance		Trans	-	6.1	-	%	Note6

Note 1: Definition of viewing angle range

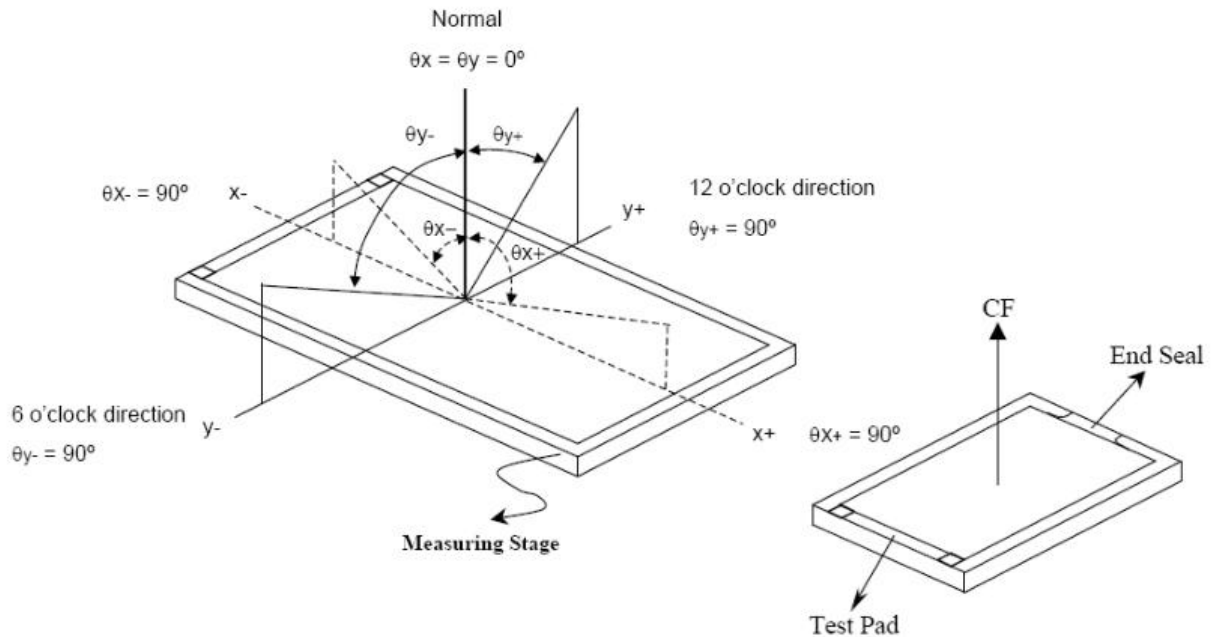


Fig. 1 Optical measurement system setup

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%.

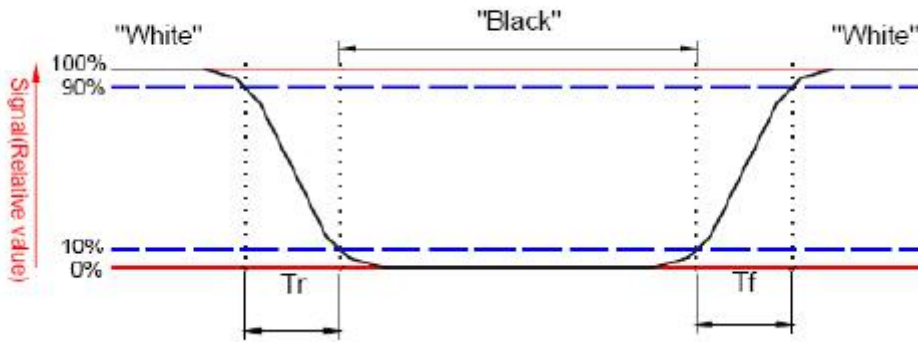


Fig. 2 Definition of response time

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

5.RELIABILITY TESTS

ITEM	CONDITION	CRITERION
Operating Temperature Test	High Temperature: +70 °C, 96 hrs	No defects in display and operational functions
	Low Temperature: -20 °C, 96 hrs	
Storage Temperature Test	High Temperature: +80 °C, 96 hrs	No defects in display and operational functions
	Low Temperature: -30 °C, 96 hrs	
Humidity Endurance Test	60°C, 90%RH, 96 hrs	No defects in display and operational functions
Thermal Shock Test	-20 °C (30mins)~ +70 °C (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

NOTE:

- 1) The samples must be free from defect before test, must be restored at room condition at least for 2 hours after reliability test before any inspection.
- 2) Before test the function of TP, the sample must be placed in room temperature for 24hrs after RA test.