



ASI-T-700JA3L6/D

Item	Contents	Unit
Size	7.0	inch
Resolution	1024(RGB) x 600	/
Interface	LVDS	/
Technology type	a-Si TFT	/
Pixel pitch	0.1506 x 0.1432	mm
Pixel Configuration	R.G.B. Stripe	
Outline Dimension (W x H x D)	165.06 x 100.32 x 4.68	mm
Active Area	154.21 x 85.92	mm
Display Mode	Transmissive	/
Display Driver IC	HX8282-A / HX8696-A	/
Touch Driver IC	FT5426	/
Viewing Direction	12 o'clock	/
Backlight Type	LED	/



Record of Revision

Date	Revision No.	Summary
2020-04-21	1.0	Rev 1.0 was issued

1. Scope

This data sheet is to introduce the specification of ASI-T-700JA3L6/D, active matrix TFT module. It is composed of a color TFT-LCD panel, driver ICs, FPC, CTP and a backlight unit. The 7.0" display area contains 1024 (RGB) x 600 pixels.

2. Application

Digital equipments which need color display, mobile navigator/video systems.

3. General Information

Item	Contents	Unit
Size	7.0	inch
Resolution	1024(RGB) x 600	/
Interface	LVDS	/
Technology type	a-Si TFT	/
Pixel pitch	0.1506 x 0.1432	mm
Pixel Configuration	R.G.B. Stripe	
Outline Dimension (W x H x D)	165.06 x 100.32 x 4.68	mm
Active Area	154.21 x 85.92	mm
Display Mode	Transmissive	/
Display Driver IC	HX8282-A / HX8696-A	/
Touch Driver IC	FT5426	/
Viewing Direction	12 o'clock	/
Backlight Type	LED	/

5. Interface signals

The recommended connector: FH12A-40S-0.5SH

No	Symbol	Description	Remark
1	VCOM	Common voltage	
2~3	VDD	Digital power	
4	NC	No connection	
5	RESET	Global reset pin. Active low to enter reset state. Suggest to connecting with an RC reset circuit for stability. Normally pull high. (R=10KΩ, C=0.1μF)	
6	STBYB	Standby mode, normally pull high STBYB="1", normal operation STBYB="0", timing control, source driver will turn off, all output are high-Z	
7	GND	Power Ground	
8	RXIN0-	Negative LVDS differential data inputs	
9	RXIN0+	Positive LVDS differential data inputs	
10	GND	Power Ground	
11	RXIN1-	Negative LVDS differential data inputs	
12	RXIN1+	Positive LVDS differential data inputs	
13	GND	Power Ground	
14	RXIN2-	Negative LVDS differential data inputs	
15	RXIN2+	Positive LVDS differential data inputs	
16	GND	Power Ground	
17	RXCLKIN-	Negative LVDS differential clock inputs	
18	RXCLKIN+	Positive LVDS differential clock inputs	
19	GND	Power Ground	
20	RXIN3-	Negative LVDS differential data inputs	
21	RXIN3+	Positive LVDS differential data inputs	
22	GND	Power Ground	
23~24	NC	No connection	
25	GND	Power Ground	
26	NC	No connection	
27	DIMO	Backlight dimmer signal for external controller.	
28	SELB	6bit/8bit mode select	Note 1
29	AVDD	Power for Analog Circuit	
30	GND	Power Ground	
31~32	LED-	LED Cathode	
33	L/R	Horizontal inversion	Note 2
34	U/D	Vertical inversion	Note 2
35	VGL	Negative power for TFT	

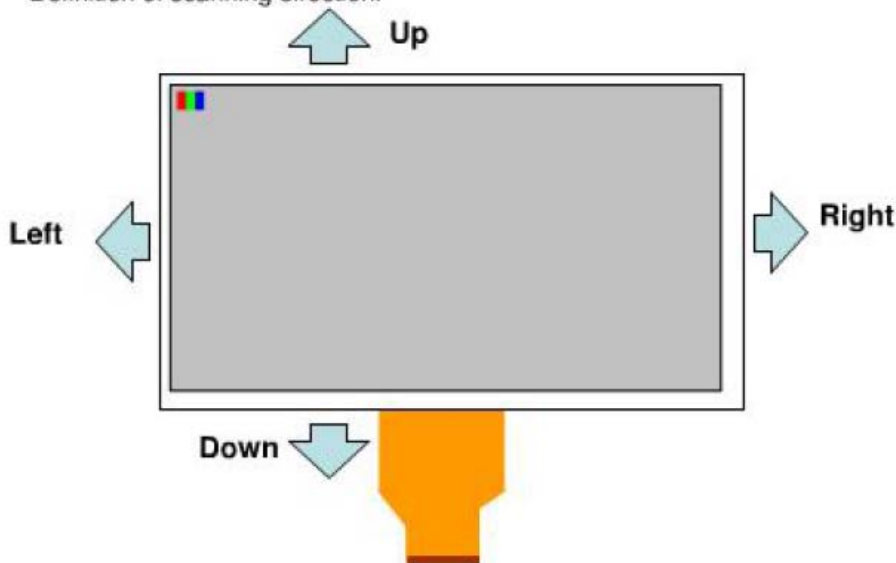
36~37	GND	Power Ground	
38	VGH	Positive power for TFT	
39~40	LED+	LED Anode	

Notes:

1. If LVDS input data is 6 bits ,SELB must be set to High;
If LVDS input data is 8 bits ,SELB must be set to Low.
2. When L/R="0", set right to left scan direction.
When L/R="1", set left to right scan direction.
When U/D="0", set top to bottom scan direction.
When U/D="1", set bottom to top scan direction.

L/R	U/D	Data Shifting
DVDD	GND	Left→Right, Up→Down(default)
GND	GND	Right→Left, Up→Down
DVDD	DVDD	Left→Right, Down→Up
GND	DVDD	Right→Left, Down→Up

Definition of scanning direction.



TP Interface Signals:

No	Symbol	Description	Remark
1~4	NC	No connection	
5	GND	Ground	
6	VDD	Power supply	
7	INT	Interrupt output pin	
8	RST	Reset pin	
9	SCK	I ² C clock signal	
10	SDA	I ² C data signal	

6. Absolute maximum Ratings

6.1. Electrical Absolute max. ratings

Parameter	Symbol	MIN	MAX	Unit	Remark
Digital Supply Voltage	DVDD	-0.5	3.96	V	

Note: If users use the product out off the environmental operation range (temperature and humidity, it will have visual quality concerns) .

6.2. Environment Conditions

Item	Symbol	MIN	MAX	Unit	Remark
Operating Temperature	TOPR	-20	70	°C	
Storage Temperature	TSTG	-30	80	°C	

7. Electrical Specifications

7.1 Electrical characteristics

GND=0V, Ta=25°C

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Digital Power Supply Voltage	VDD	2.3	3.3	3.6	V	Note 1
Analog Power Supply Voltage	AVDD	9.4	9.6	9.8	V	
Gate On Power Supply Voltage	VGH	17	18	19	V	
Gate Off Power Supply Voltage	VGL	-6.6	-6.0	-5.4	V	
Common Power Supply Voltage	VCOM	-	(3.3)	-	V	
Input Voltage	L level	VIL	GND	--	0.3*DVDD	VDD=2.3~3.6V
	H level	VIH	0.7*DVDD	--	VDD	

Note: Vcom must be adjusted to optimize display quality: Cross-talk, Contrast Ratio and etc.

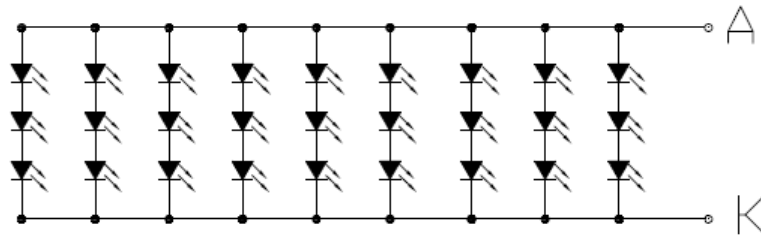
7.2 LED Backlight

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Forward Current	IL	--	180	--	mA	
Forward Voltage	VL	8.4	9.0	9.6	V	Note1
LED Life time	--	--	30,000	--	Hrs	Note2

Notes:

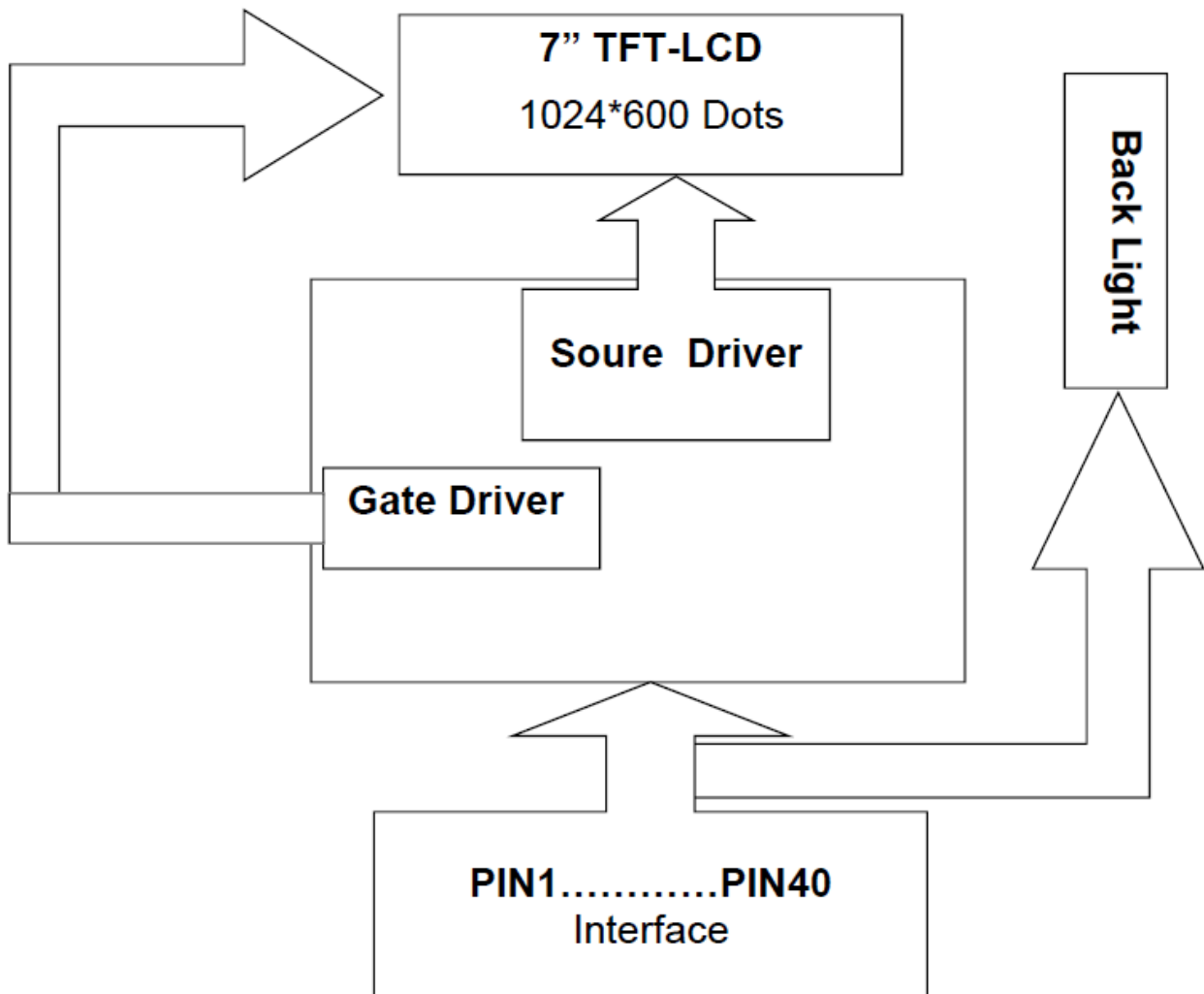
1. The LED Supply Voltage is defined by the number of LED at Ta=25°C and IL =180mA.
2. The "LED life time" is defined as the module brightness decrease to 50% original brightness at Ta=25°C and IL =180mA. The LED lifetime could be decreased if operating IL is larger than180mA.

Backlight Circuit Diagram:



$I_f = 180 \text{ mA}; V_f = 9.0 \pm 0.6 \text{ V}$

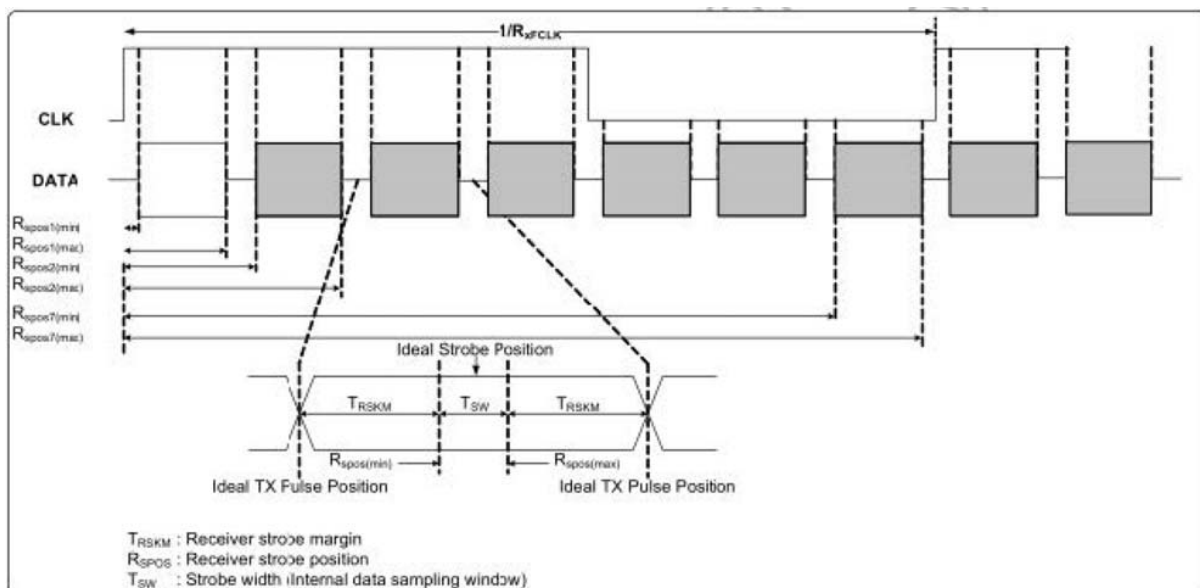
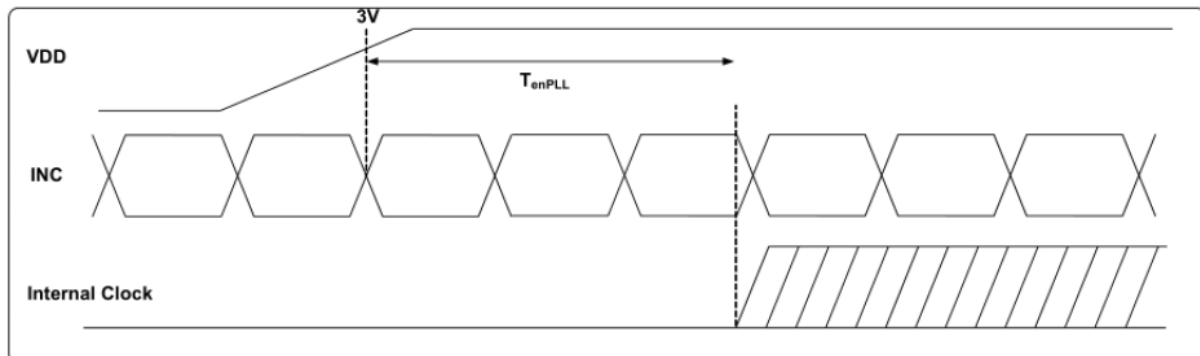
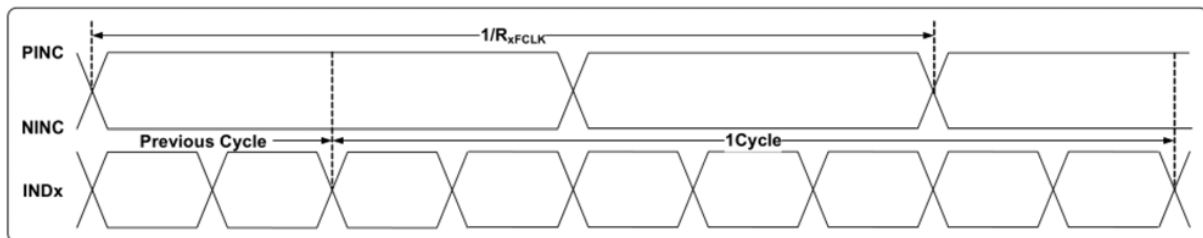
7.3 Block Diagram of LCM



8. Command/AC Timing

8.1 AC Electrical Characteristics

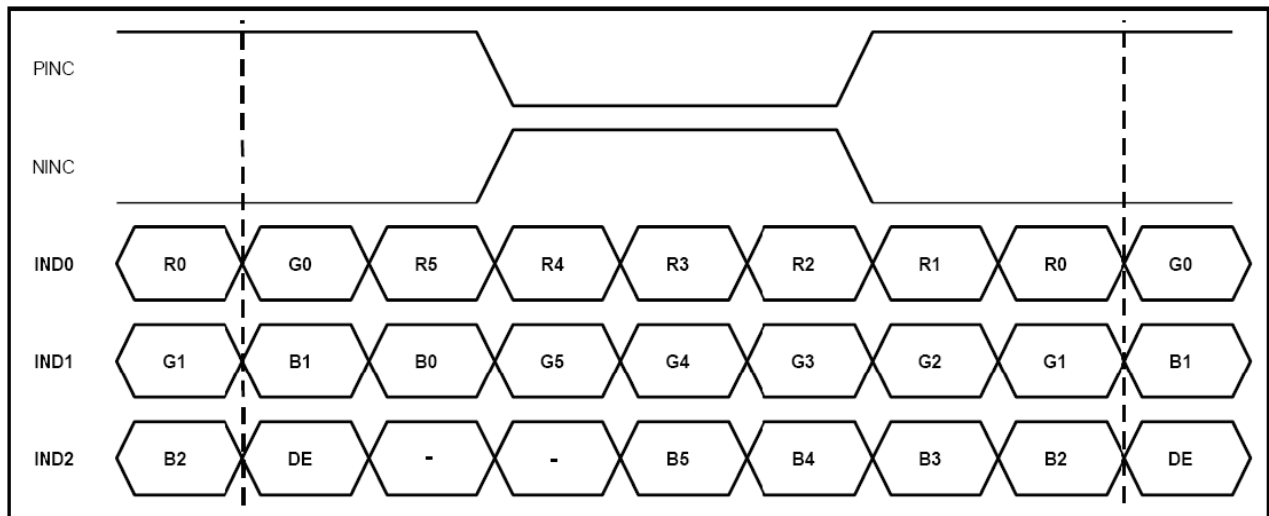
Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	RXFCLK	20	-	71	MHz	
Input data skew margin	TRSKM	500	-	-	ps	VID =400mV RXVCM=1.2V RXFCLK=71MHz
Clock high time	TLVCH	-	4/(7* RXFCLK)	-	ns	
Clock low time	TLVCL	-	3/(7* RXFCLK)	-	ns	
PLL wake-up time	TemPLL	-	-	150	µs	



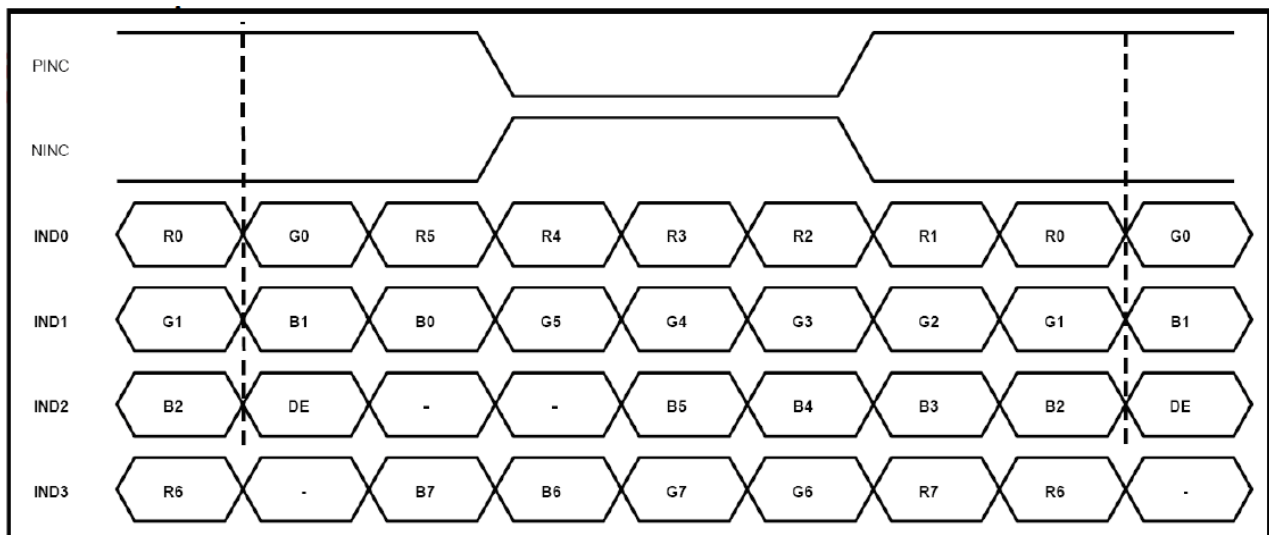
Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Modulation Frequency	SSCMF	23	-	93	KHz	-
Modulation Rate	SSCMR	-	-	±3	%	LVDS clock=71MHz center spread

8.2 LVDS Mode Data Input Format

6bit LVDS input



8bit LVDS input



9. Optical Specification

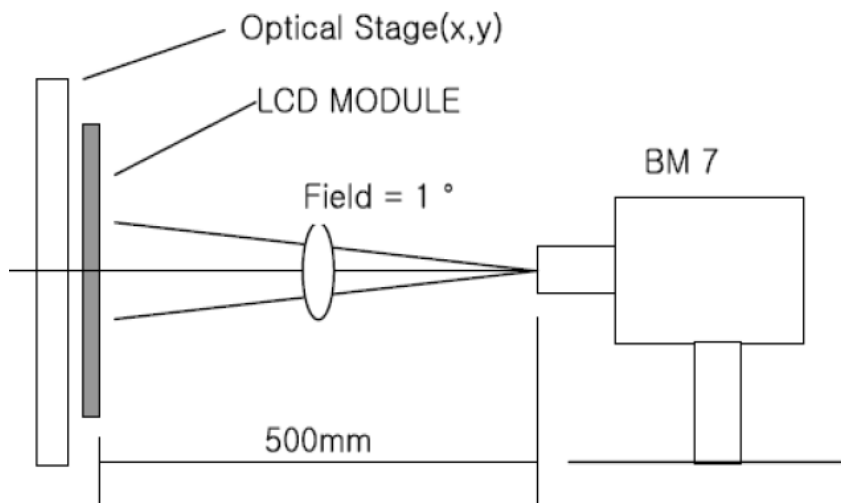
Ta=25°C

Item	Symbol	Condition	Min	Typ.	Max.	Unit	Remark
Contrast Ratio	CR	$\theta=0^\circ$	600	800	-		Note1 Note2
Response Time	Ton +Toff	25°C	-	25	40	ms	Note1 Note3
View Angles	ΘT	CR ≥ 10	55	60	-	Degree	Note 4
	ΘB		65	70	-		
	ΘL		75	80	-		
	ΘR		75	80	-		
Chromaticity	White	Brightness is on	x	0.263	0.313	0.363	Note5, Note1
			y	0.273	0.323	0.373	
	Red		x	0.573	0.623	0.673	
			y	0.292	0.342	0.392	
	Green		x	0.257	0.307	0.357	
			y	0.468	0.518	0.568	
	Blue		x	0.089	0.139	0.189	
			y	0.050	0.100	0.150	
Luminance	L		-	380	-	cd/m ²	Note1 Note6
Uniformity	U		80		-	%	Note1 Note7

Note 1: Definition of optical measurement system.

Temperature = 25°C(±3°C)

LED back-light: ON, Environment brightness < 150 lx

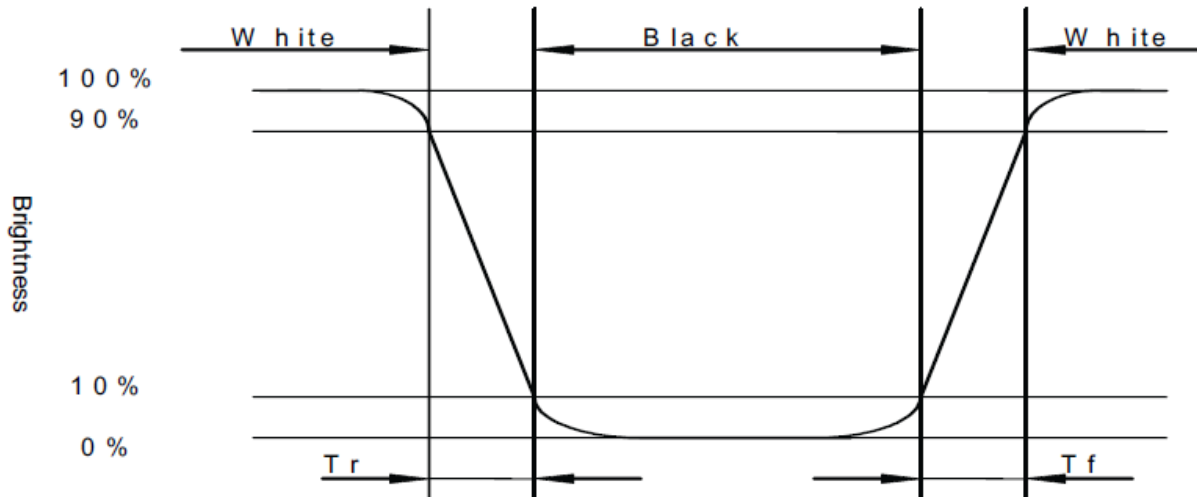


Note 2: Contrast ratio is defined as follow:

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance with all white pixels}}{\text{Surface Luminance with all black pixels}}$$

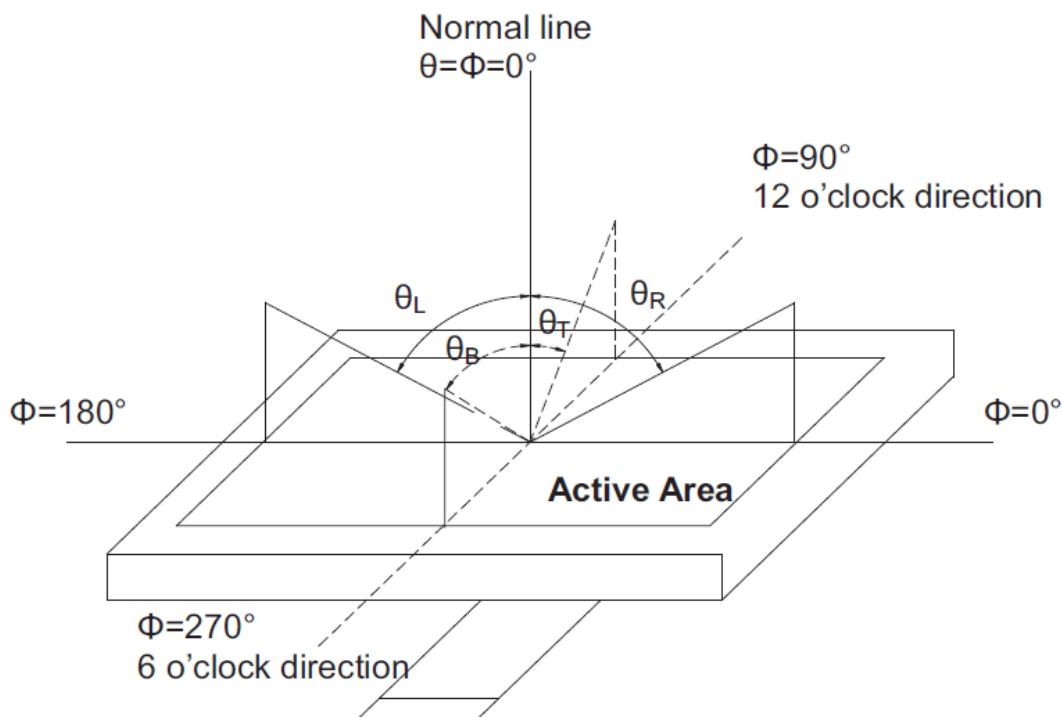
Note 3: Response time is defined as follow:

Response time is the time required for the display to transition from black to white (Rise Time, T_r) and from white to black(Decay Time, T_f).



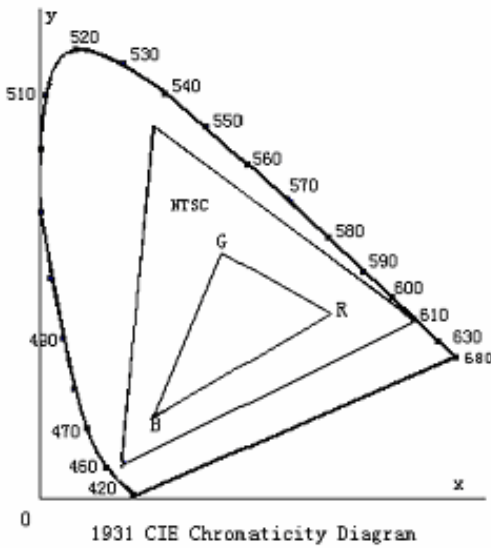
Note 4: Viewing angle range is defined as follow:

Viewing angle is measured at the center point of the LCD.



Note 5: Color chromaticity is defined as follow: (CIE1931)

Color coordinates measured at center point of LCD.



$$S = \frac{\text{area of RGB triangle}}{\text{area of NTSC triangle}} \times 100\%$$

Note 6: Luminance is defined as follow:

Luminance is defined as the brightness of all pixels “White” at the center of display area on optimum contrast.

Note 7: Luminance Uniformity is defined as follow:

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

$$\text{Uniformity (U)} = \frac{\text{Minimum Luminance(brightness) in 9 points}}{\text{Maximum Luminance(brightness) in 9 points}}$$

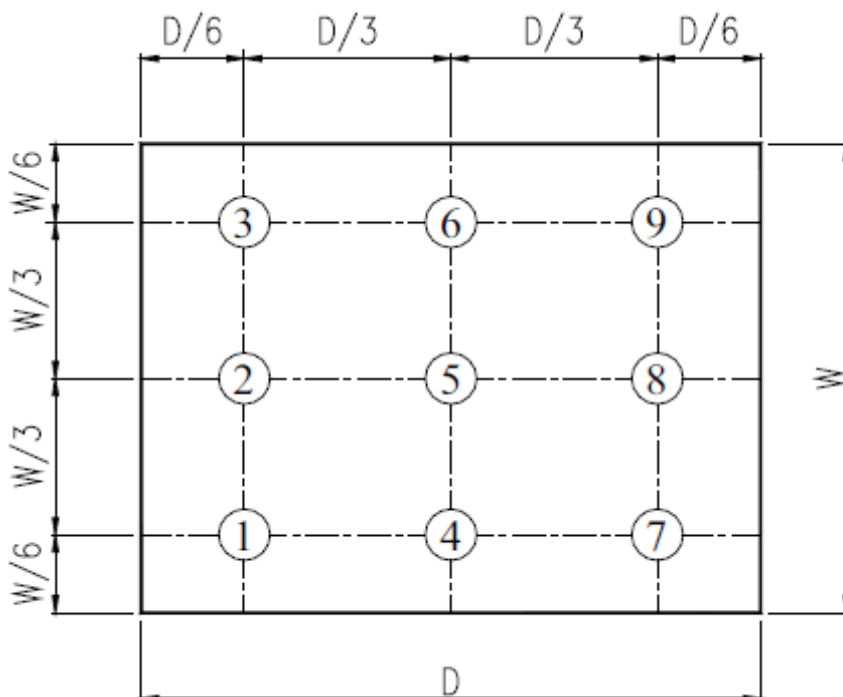


Fig. 2 Definition of uniformity

10. Environmental / Reliability Tests

No	Test Item	Condition	Judgment criteria
1	High Temp Operation	Ta= +70°C, 96hrs	Per table in below
2	Low Temp Operation	Ta= -20°C, 96hrs	Per table in below
3	High Temp Storage	Ta= +80°C, 96hrs	Per table in below
4	Low Temp Storage	Ta= -30°C, 96hrs	Per table in below
5	High Temp & High Humidity Storage	Ta=+40°C, 90% RH, 96hours	Per table in below (polarizer discoloration is excluded)
6	Thermal Shock (Non-operation)	-20°C 30 min~+70°C 30 min, Change time:5min, 10 Cycles	Per table in below
7	ESD (Operation)	C=150pF, R=330Ω · 5points/panel Air:±8KV, 5times; Contact:±4KV, 5 times;	Per table in below
8	Vibration (Non-operation)	Frequency range:10~55Hz, Stroke:1.5mm Sweep:10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z.	Per table in below
9	Shock (Non-operation)	60G 6ms, ±X,±Y,±Z 3times, for each direction	Per table in below
10	Package Drop Test	Height:80 cm, 1 corner, 3 edges, 6 surfaces	Per table in below

INSPECTION	CRITERION(after test)
Appearance	No Crack on the FPC, on the LCD Panel
Alignment of LCD Panel	No Bubbles in the LCD Panel No other Defects of Alignment in Active area
Electrical current	Within device specifications
Function / Display	No Broken Circuit, No Short Circuit or No Black line No Other Defects of Display

11. Precautions for Use of LCD Modules

11.1 Safety

The liquid crystal in the LCD is poisonous. Do not put it in your mouth. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water.

11.2 Handling

- A. The LCD and touch panel is made of plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
- B. Do not handle the product by holding the flexible pattern portion in order to assure the reliability
- C. Transparency is an important factor for the touch panel. Please wear clear finger sacks, gloves and mask to protect the touch panel from finger print or stain and also hold the portion outside the view area when handling the touch panel.
- D. Provide a space so that the panel does not come into contact with other components.
- E. To protect the product from external force, put a covering lens (acrylic board or similar board) and keep an appropriate gap between them.
- F. Transparent electrodes may be disconnected if the panel is used under environmental conditions where dew condensation occurs.
- G. Property of semiconductor devices may be affected when they are exposed to light, possibly resulting in IC malfunctions.
- H. To prevent such IC malfunctions, your design and mounting layout shall be done in the way that the IC is not exposed to light in actual use.

11.3 Static Electricity

- A. Ground soldering iron tips, tools and testers when they are in operation.
- B. Ground your body when handling the products.
- C. Power on the LCD module before applying the voltage to the input terminals.
- D. Do not apply voltage which exceeds the absolute maximum rating.
- E. Store the products in an anti-electrostatic bag or container.

11.4 Storage

- A. Store the products in a dark place at $+25^{\circ}\text{C} \pm 10^{\circ}\text{C}$ with low humidity (40% RH to 60% RH). Don't expose to sunlight or fluorescent light.
- B. Storage in a clean environment, free from dust, active gas, and solvent.

11.5 Cleaning

- A. Do not wipe the touch panel with dry cloth, as it may cause scratch.
- B. Wipe off the stain on the product by using soft cloth moistened with ethanol. Do not allow ethanol to get in between the upper film and the bottom glass. It may cause peeling issue or defective operation. Do not use any organic solvent or detergent other than ethanol.

11.6 Cautions for installing and assembling

- A. Bezel edge must be positioned in the area between the Active area and View area. The bezel may press the touch screen and cause activation if the edge touches the active area. A gap of approximately 0.5mm is needed between the bezel and the top electrode. It may cause unexpected activation if the gap is too narrow. There is a tolerance of 0.2 to 0.3mm for the outside dimensions of the touch panel and tail. A gap must be made to absorb the tolerance in the case and connector.
- B. In order to make the display assembly stable and firm, ASI recommends to design some supporting at the display backside, especially for the display with tape-attached touch panel, such supporting is important and essential, or else, the display may drop-off from front after some period of time.
- C. Do not display the fixed pattern for a long time because it may develop image sticking due to the LCD structure. If the screen is displayed with fixed pattern, use a screen saver.

