



ALL SHORE INDUSTRIES

ASI-T-10251248AKLN/D

Item	Contents	Unit
Size	10.25	inch
Resolution	1280 (RGB) x 480	/
Interface	LVDS	/
Technology type	IPS	/
Pixel pitch	0.1905 x 0.1905	mm
Pixel Configuration	RGB stripes	
Outline Dimension (W x H x D)	258.60 x 107.00 x 6.31	mm
Active Area	243.84 x 91.44	mm
Display Mode	Transmissive	/
Backlight Type	LED	/
Viewing Direction	ALL	/
Weight	TBD	g

1. Scope

This data sheet is to introduce the specification of ASI-T-10251248AKLN/D active matrix TFT module. It is composed of a color TFT-LCD panel, driver IC, FPC and a backlight unit. The 10.25" display area contains 1280(RGB) x 480 pixels.

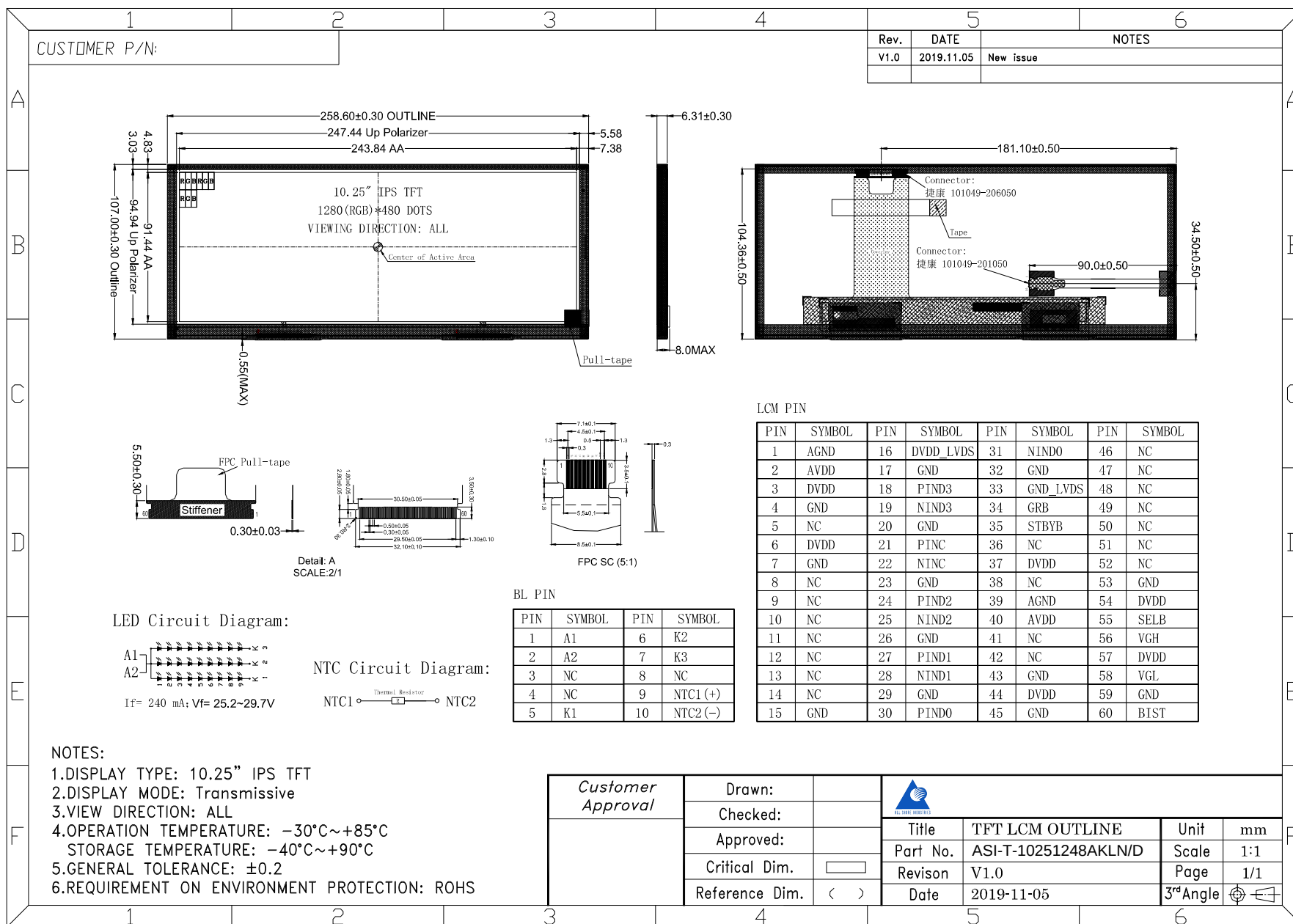
2. Application

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

3. General Information

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4. Outline Drawing



5. Interface signals

Pin No	Symbol	Function
1	AGND	Analog ground
2	AVDD	Analog power
3	DVDD	Digital power
4	GND	Digital ground
5	NC	No connection
6	DVDD	Digital power
7	GND	Digital ground
8~14	NC	No connection
15	GND	Digital ground
16	DVDD_LVDS	Digital ground
17	GND	Digital ground
18	PIND3	Positive LVDS differential data input
19	NIND3	Negative LVDS differential data input
20	GND	Digital ground
21	PINC	Positive LVDS differential clock input
22	NINC	Negative LVDS differential clock input
23	GND	Digital ground
24	PIND2	Positive LVDS differential data input
25	NIND2	Negative LVDS differential data input
26	GND	Digital ground
27	PIND1	Positive LVDS differential data input
28	NIND1	Negative LVDS differential data input
29	GND	Digital ground
30	PIND0	Positive LVDS differential data input
31	NIND0	Negative LVDS differential data input
32	GND	Digital ground
33	GND_LVDS	LVDS ground
34	GRB	Global reset pin. Active low to enter reset stable. Suggest to connecting with an RC reset circuit for stability. Normally pull high. (R=10KΩ, C=0.1μF)
35	STBYB	Standby mode STBYB=1, Normal operation STBYB=0, timing control, source driver will turn off, all output are high-Z.
36	NC	No connection
37	DVDD	Digital power

38	NC	No connection
39	AGND	Analog ground
40	AVDD	Analog power
41~42	NC	No connection
43	GND	Digital ground
44	DVDD	Digital power
45	GND	Digital ground
46~52	NC	No connection
53	GND	Digital ground
54	DVDD	Digital power
55	SELB	6-bit/8-bit mode select, must connect DVDD or GND. SELB="1" (DVDD): LVDS input data is 8bits (Default) SELB="0" (GND): LVDS input data is 6bits.
56	VGH	Positive power for TFT
57	DVDD	Digital power for Gate IC
58	VGL	Negative power for TFT
59	GND	Digital ground for Gate IC
60	BIST	Normal operation/BIST pattern select. Must connect DVDD or GND. BIST="1" (DVDD): BIST mode BIST="0" (GND): Normal operation.

6. Absolute maximum Ratings

6.1. Electrical Absolute max. ratings

Parameter	Symbol	MIN	MAX	Unit	Remark
Power supply voltage	VDD	-0.3	3.6	V	
	VGH	-0.3	23.0	V	
	VGL	-15.0	0.3	V	
	AVDD	-0.5	15	V	
	VI	-0.3	VDD+0.3	V	
Logic signal input level	VDD	-0.3	3.6	V	

6.2. Environment Conditions

Item	Symbol	MIN	MAX	Unit	Remark
Operating Temperature	TOPR	-30	85	°C	
Storage Temperature	TSTG	-40	90	°C	

7. Electrical Specifications

7.1 Electrical characteristics

Ta = 25°C, GND=0V

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Supply Voltage	VDD	3.0	3.3	3.6	V	
	VGH	19	20	21	V	Note 1
	VGL	-11	-10	-9	V	Note 2
	AVDD	12.3	12.4	12.5	V	
Current of power supply	IDD	10	15	20	mA	VDD=3.3V
	IADD	20	45	55	mA	AVDD=12V
	IGH	0.2	0.5	1	mA	VGH=18
	IGL	0.4	0.8	1	mA	VGL=10V

Notes:

1. VGH is TFT Gate operating voltage.
2. VGL is TFT Gate operating voltage.
3. VCOM must be adjusted to optimize display quality_Flicker pattern.
4. @ white pattern & 60Hz.

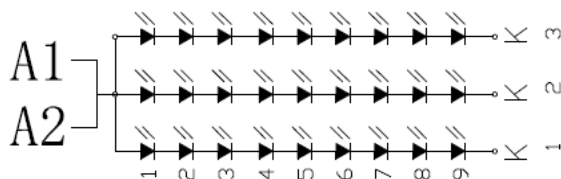
7.2 LED Backlight

Ta=25°C

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Forward Current	IF	-	240	-	mA	
Forward Voltage	VF	25.2	27	29.7	V	If=240mA
LED Life time	-	-	30,000	-	Hrs	Note

Note: The "LED life time" is defined as the module brightness decrease to 50% original brightness at Ta=25°C and IF=240mA. The LED life time could be decreased if operating IF is larger than 240mA.

LED Circuit Diagram:

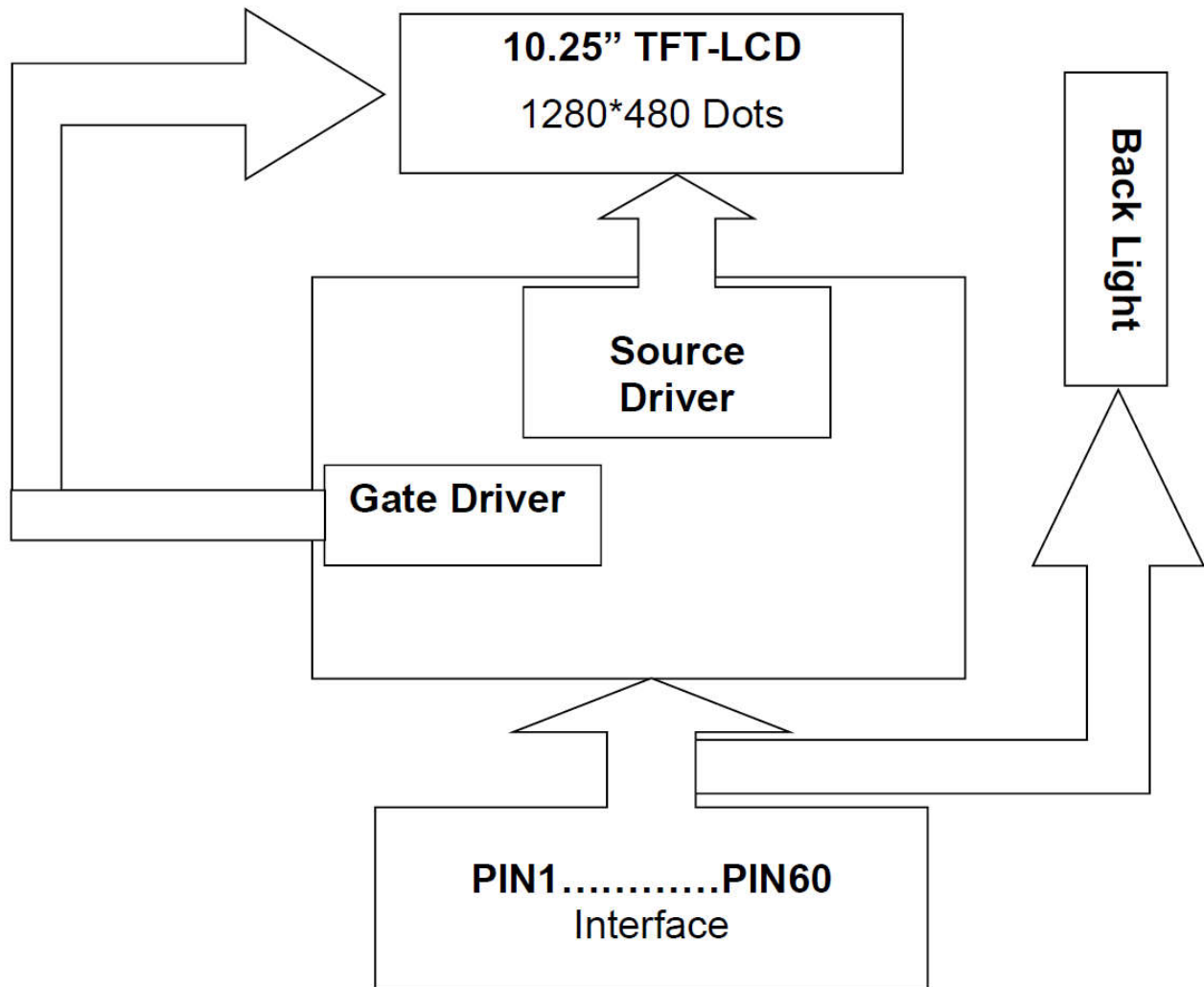


If= 240 mA; Vf= 25.2~29.7V

7.3 Switching Characteristics for LVDS Receiver

Item	Symbol	MIN	TYP	MAX	Unit	Condition
Differential input high Threshold	V_{TH}	100	-	300	mV	
Differential input low Threshold	V_{TL}	-300	-	100	mV	
Differential input common mode voltage	V_{CM}	1.0	1.2	$1.7 - VID / 2$	V	
Input current	I_{IN}	-10	-	10	μA	$RX+/-, RXC+/-$
Differential input voltage	$ VID $	200	-	600	mV	

7.4 Block Diagram of LCM



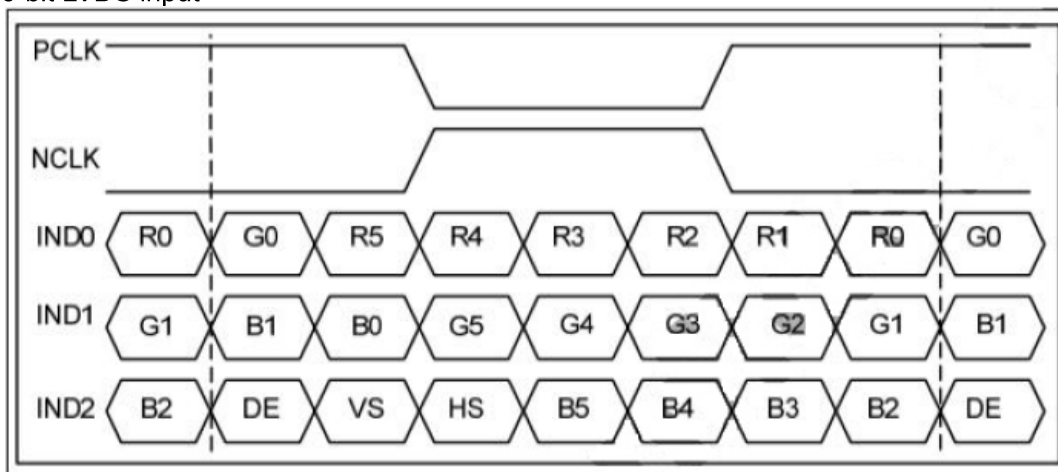
8. Command/AC Timing

8.1 Timing Characteristics

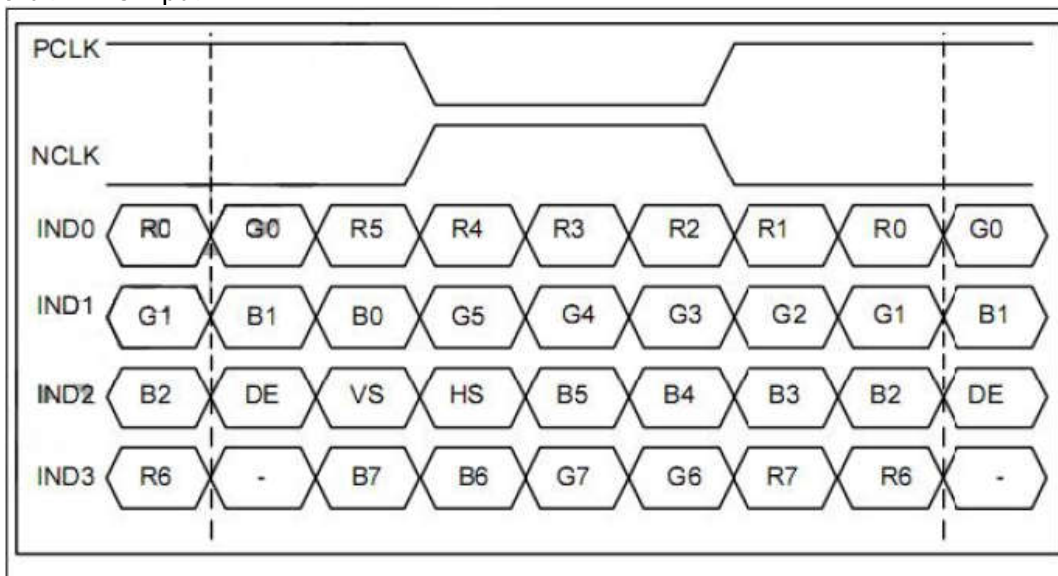
Interface Timing (DE Mode) (1280xRGBx480)

Item	Symbol	Min.	Typ.	Max.	Unit
DCLK frequency	FCLK	37.4	39.4	42.3	MHz
Horizontal display area	THD		1280		CLK
HS period time	TH	1340	1344	1360	CLK
HS blanking	THFP + THBP	60	64	80	CLK
Vertical display area	TVD		480		H
VS period time	TV	486	488	500	H
VS blanking	TVFP + TVBP	6	8	20	H
Frame rate	FR	55	60	65	Hz

6-bit LVDS input



8-bit LVDS input

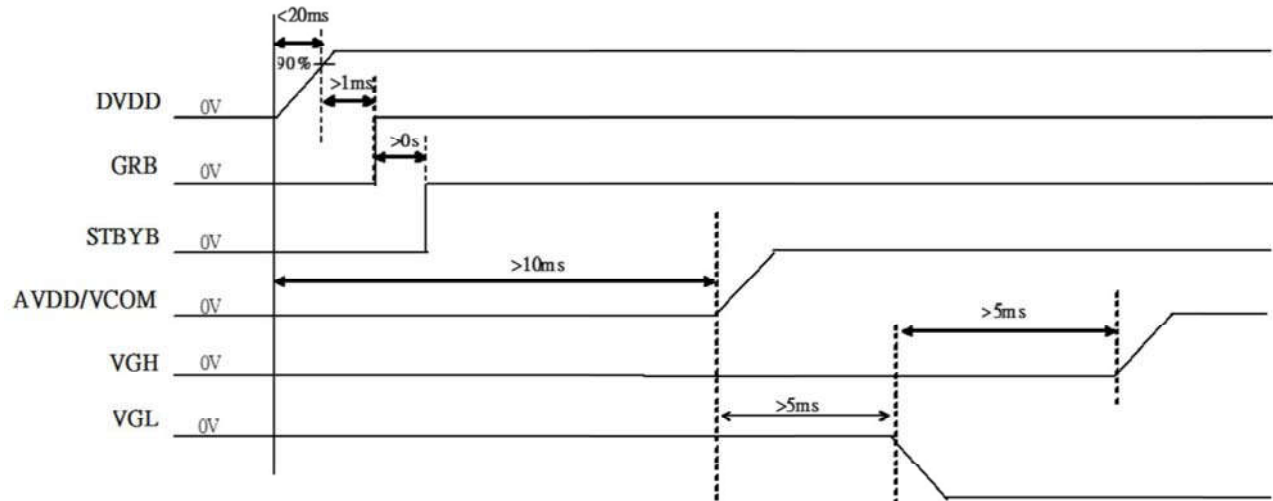


8.2 Relationship Between Display Color and Input

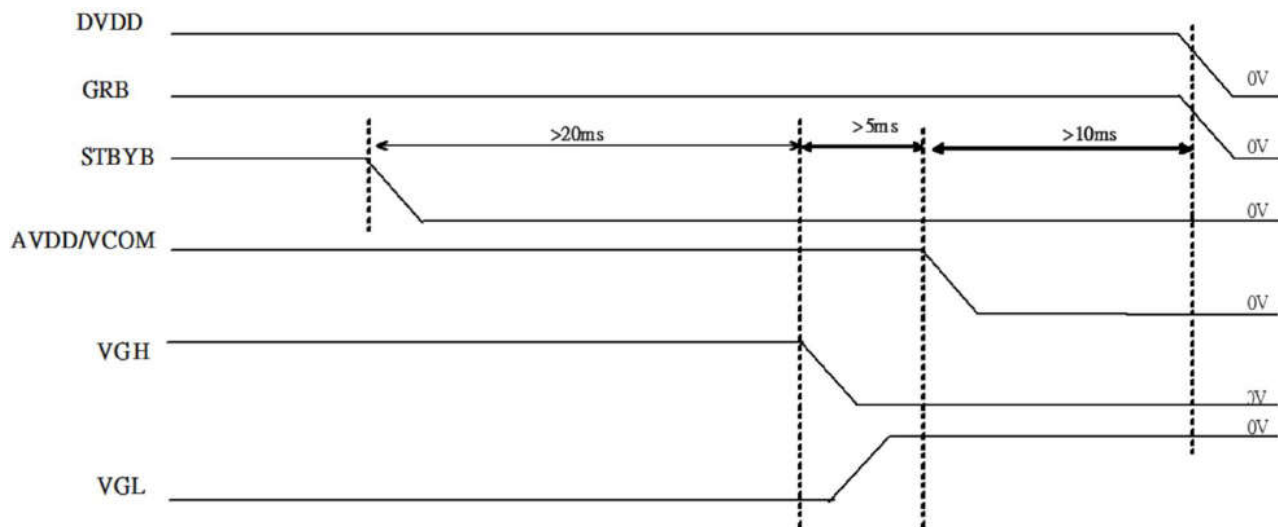
	Display	MSB R7 R6 R5 R4 R3 R2 R1 R0	LSB G7 G6 G5 G4 G3 G2 G1 G0	MSB B7 B6 B5 B4 B3 B2 B1 B0	Gray scale Level
Basic color	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	-
	Blue	L L L L L L L L	L L L L L L L L	H H H H H H H H	-
	Green	L L L L L L L L	H H H H H H H H	L L L L L L L L	-
	Light Blue	L L L L L L L L	H H H H H H H H	H H H H H H H H	-
	Red	H H H H H H H H	L L L L L L L L	L L L L L L L L	-
	Purple	H H H H H H H H	L L L L L L L L	H H H H H H H H	-
	Yellow	H H H H H H H H	H H H H H H H H	L L L L L L L L	-
	White	H H H H H H H H	H H H H H H H H	H H H H H H H H	-
Gray scale of Red	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	L0
	Dark ↑ ↓ Light	L L L L L L L H	L L L L L L L L	L L L L L L L L	L1
		L L L L L L L L	L L L L L L L L	L L L L L L L L	L2
		:	:	:	L3...L251
		H H H H H H L L	L L L L L L L L	L L L L L L L L	L252
		H H H H H H L H	L L L L L L L L	L L L L L L L L	L253
		H H H H H H H L	L L L L L L L L	L L L L L L L L	L254
	Red	H H H H H H H H	L L L L L L L L	L L L L L L L L	Red L255
Gray scale of Green	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	L0
	Dark ↑ ↓ Light	L L L L L L L L	L L L L L L L H	L L L L L L L L	L1
		L L L L L L L L	L L L L L L L H	L L L L L L L L	L2
		:	:	:	L3...L251
		L L L L L L L L	H H H H H H L L	L L L L L L L L	L252
		L L L L L L L L	H H H H H H L H	L L L L L L L L	L253
		L L L L L L L L	H H H H H H H L	L L L L L L L L	L254
	Green	L L L L L L L L	H H H H H H H H	L L L L L L L L	Green L255
Gray scale of Blue	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	L0
	Dark ↑ ↓ Light	L L L L L L L L	L L L L L L L L	L L L L L L L H	L1
		L L L L L L L L	L L L L L L L L	L L L L L L L H	L2
		:	:	:	L3...L251
		L L L L L L L L	L L L L L L L L	H H H H H H L L	L252
		L L L L L L L L	L L L L L L L L	H H H H H H L H	L253
		L L L L L L L L	L L L L L L L L	H H H H H H H L	L254
	Blue	L L L L L L L L	L L L L L L L L	H H H H H H H H	Blue L255
Gray scale of White & Black	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	L0
	Dark ↑ ↓ Light	L L L L L L L H	L L L L L L L H	L L L L L L L H	L1
		L L L L L L L L	L L L L L L L L	L L L L L L L L	L2
		:	:	:	L3...L251
		H H H H H H L L	H H H H H H L L	H H H H H H L L	L252
		H H H H H H L H	H H H H H H L H	H H H H H H L H	L253
		H H H H H H H L	H H H H H H H L	H H H H H H H L	L254
	White	H H H H H H H H	H H H H H H H H	H H H H H H H H	White L255

8.3 Power ON/OFF Sequence

Power ON



Power OFF



9. Optical Specification

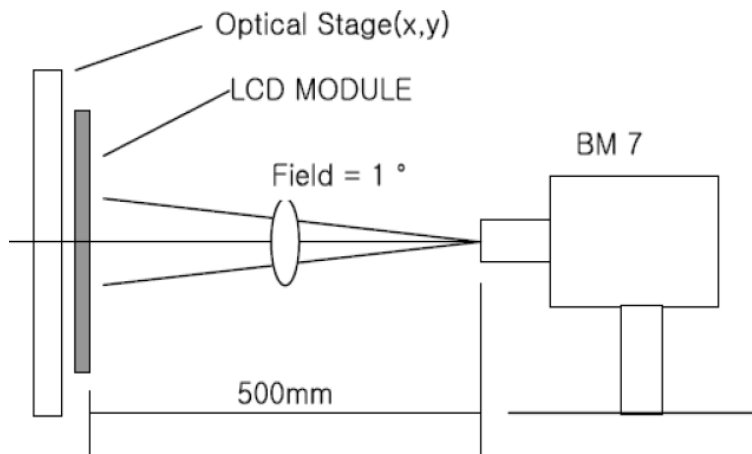
Ta=25°C

Item	Symbol	Condition	Min	Typ.	Max.	Unit	Remark
Contrast Ratio	CR	$\theta=0^\circ$	800	1000	-		Note1 Note2
Response Time	Ton/ Toff	25°C	-	30	40	ms	Note1 Note3
View Angles	ΘT	$CR \geq 10$	80	85	-	Degree	Note 4
	ΘB		80	85	-		
	ΘL		80	85	-		
	ΘR		80	85	-		
Chromaticity	White	x	Typ-0.05	0.307	Typ+0.05		Note5, Note1
		y		0.335			
Luminance	L		900	1000	-	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

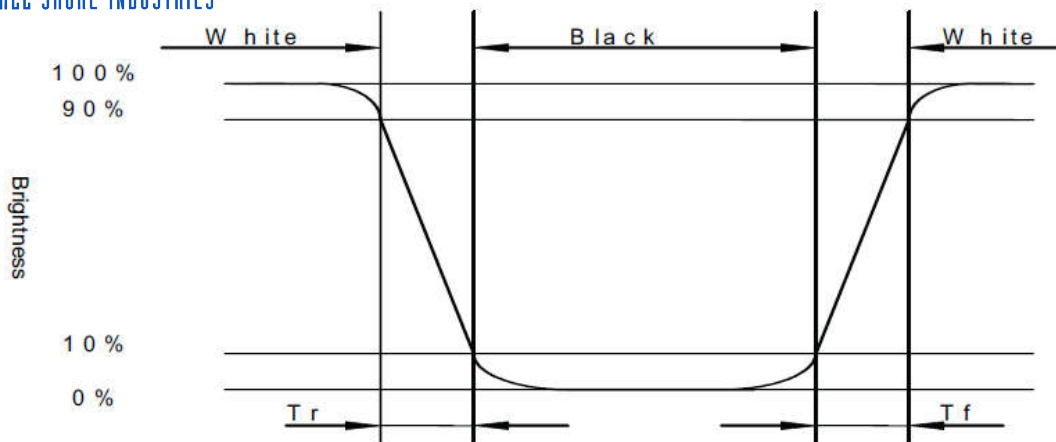


Note 2: Contrast ratio is defined as follow:

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

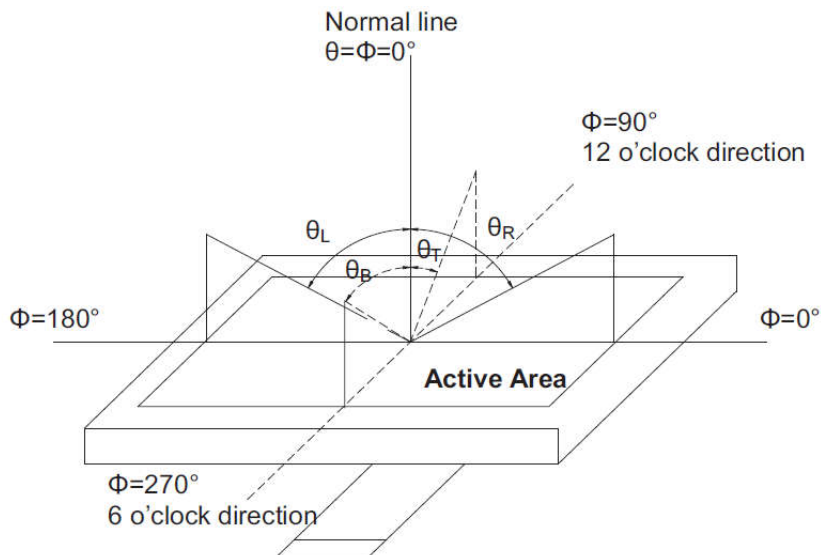
Note 3: Response time is defined as follow:

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



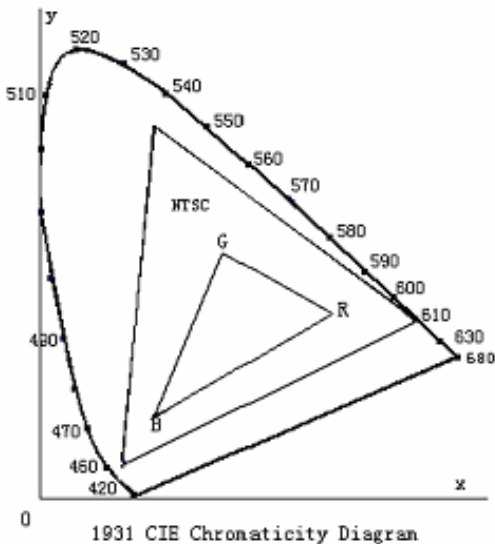
Note 4: Viewing angle range is defined as follow:

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.

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

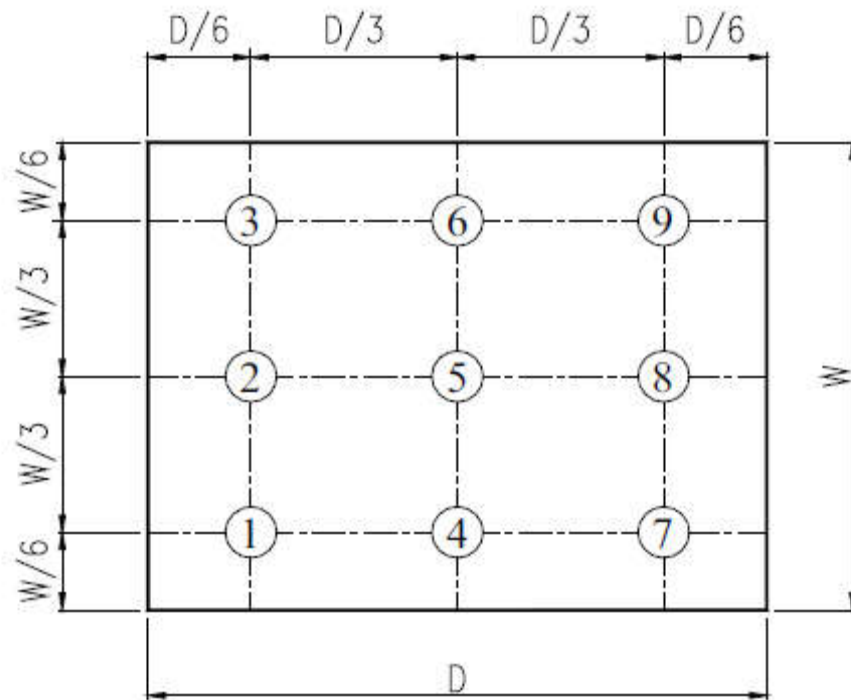


Fig. 2 Definition of uniformity

10. Environmental / Reliability Tests

No	Test Item	Condition	Judgment criteria
1	High Temp Operation	Ta= +85℃, 120hrs	Per table in below
2	Low Temp Operation	Ta= -30℃, 120hrs	Per table in below
3	High Temp Storage	Ta= +90℃, 120hrs	Per table in below
4	Low Temp Storage	Ta= -40℃, 120hrs	Per table in below
5	High Temp & High Humidity Storage	Ta= +60℃, 90% RH, 120hours	Per table in below (polarizer discoloration is excluded)
6	Thermal Shock (Non-operation)	-40℃ 30 min~+90℃ 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.
- F. Peel off the LCM protective film slowly since static electricity may be generated.

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, 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.

