



Product Specification

10.1" TFT LCD Module

Model No :	FB101NFV300-A
Resolution:	1280*800
Interface:	LVDS
Luminance:	320cd/m ² (typ)

- ☒ Tentative Specification
☐ Preliminary Specification
☐ Approval Specification

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Designed by	Checked by	Approved by

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Prepared by	Checked by	Approved by

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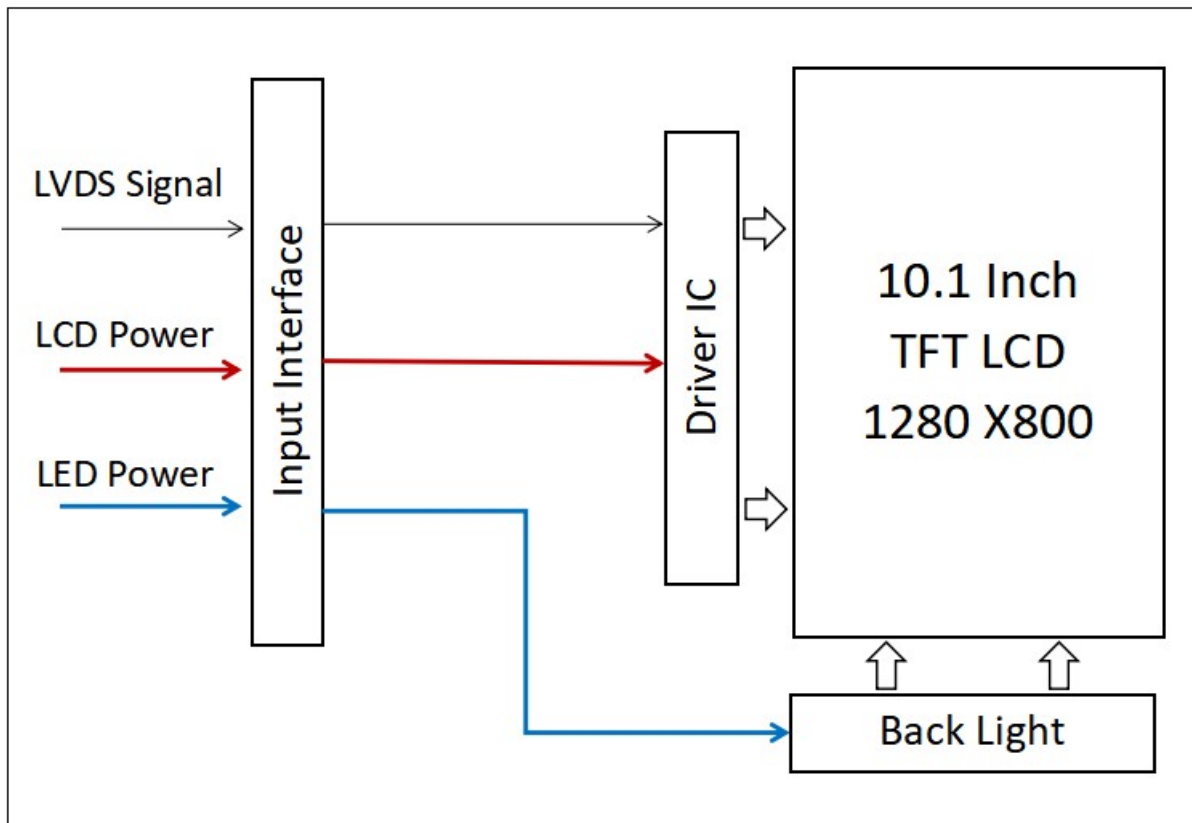


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1. General Description

The LCM **FB101NFV300-A** is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device.



2. Mechanical Specifications

No.	Item	Specification
1	LCD Type	10.1 inch
2	Resolution	1280(RGB)X800
3	Display mode	Normally Black
4	Outline size (mm)	229.46(H) x 149.10(V) x 2.50(body)
5	Active area (mm)	216.96(W) x 135.60(H)
5	Pixel pitch (mm)	0.0565(H) x 0.1695(V)
6	Viewing direction	ALL
7	Display Color	16.7M
8	Surface Treatment	HC
9	Interface	LVDS
10	Brightness	320cd/m ² (typ)
11	Driver IC	EK79202



Item	Symbol	Condition	min.	typ.	max.	Unit
Forward Current	I _F	I _F = 250 mA	8.1	9.6	10.8	V
Reverse Current	I _R	V _R = 5 V	—	—	10	μA
Power dissipation	P _D	I _F = 350 mA	—	—	4.11	W
Colour Coordinates	—	I _F = 200 mA	—	—	—	—
EL luminance (Center Area)	L _v	I _F = 240 mA	—	—	—	cd/m ²
Luminance Uniformity	—	I _F = 260 mA	70	75	—	%
LCM luminance (reference 50%)	L _v	I _F = 260 mA	—	320	—	cd/m ²
Operating Temperature Range	Temp	normal use	—	—	+70	°C
Storage Temperature Range	T _{stg}	normal use	-30	—	+80	°C



4.Interface Assignment

Pin No.	Symbol	Description	Remark
1	NC	No connection	
2	VDD	Power supply.	
3	VDD	Power supply.	
4	NC	SPI-CS FOR INX Test	
5	NC	SPI-SDA FOR INX Test	
6	NC	SPI-SCK FOR INX Test	
7	GND	Ground	
8	Rxin0-	-LVDS Differential Data Input	R0-R5, G0
9	Rxin0+	+LVDS Differential Data Input	
10	GND	Ground	
11	Rxin1-	-LVDS Differential Data Input	G1~G5, B0,B1
12	Rxin1+	+LVDS Differential Data Input	
13	GND	Ground	
14	Rxin2-	-LVDS Differential Data Input	B2-B5,HS,VS, DE
15	Rxin2+	+LVDS Differential Data Input	
16	GND	Ground	
17	RxCLK-	-LVDS Differential Clock Input	LVDS CLK
18	RxCLK+	+LVDS Differential Clock Input	
19	GND	Ground	
20	Rxin3-	-LVDS Differential Data Input	R6, R7, G6, G7, B6, B7
21	Rxin3+	+LVDS Differential Data Input	
22	GND	Ground	
23	NC	No connection	
24	NC	No connection	
25	GND	Ground	
26	NC	No connection	
27	NC	No connection	
28	NC	No connection	
29	AVDD	Power for Analog Circuit	
30	GND	Ground	
31	LED-	LED Cathode	
32	LED-	LED Cathode	
33	NC	No connection	
34	NC	No connection	
35	VGL	Gate OFF Voltage	
36	NC	No connection	
37	NC	No connection	
38	VGH	Gate ON Voltage	
39	LED+	LED Anode	
40	LED+	LED Anode	



5. Operation Specifications

5.1 Absolute Max. Rating

Item	Symbol	Values		Unit
		Min.	Max.	
LCD Power Voltage	VDD	-0.3	3.8	V
	AVDD	-0.3	13	V
	VGH	-0.3	22	V
	VGL	0	-7	V
BL Power Voltage	LED+	-0.3	10.8	V
Input Signal Voltage	V _I	-0.3	VDD	V
Operation Temperature	T _{OP}	-10	50	°C
Storage Temperature	T _{ST}	-20	60	°C

5.2 Typical Operation Conditions

(Note 1)

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	VDD	TBD	2.5	TBD	V	Note 2
	AVDD	TBD	8.2	TBD	V	
	V _{GH}	-	15	-	V	
	V _{GL}	-	-13	-	V	
Input logic high voltage	V _{IH}	0.8 VDD	-	VDD	V	
Input logic low voltage	V _{IL}	0	-	0.2 DV _{DD}	V	

Note 1: Be sure to apply VDD and V_{GL} to the LCD first, and then apply V_{GH}.

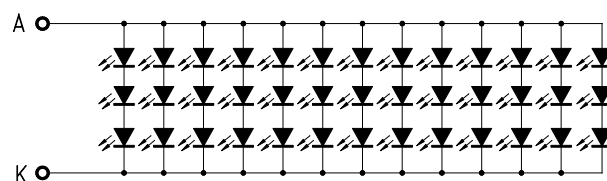
Note 2: VDD setting should match the signals output voltage (refer to Note 3) of customer's system board.

5.3 LED Back Light Specification

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	V _f	I _f =60mA	8.1	9.6	10.8	V
Uniformity (with L/G)	Δ B _p	I _f =60mA	70	75	-	%
Luminance for LCM	/	I _f =60mA	-	320	-	cd/m ²

LED circuit:

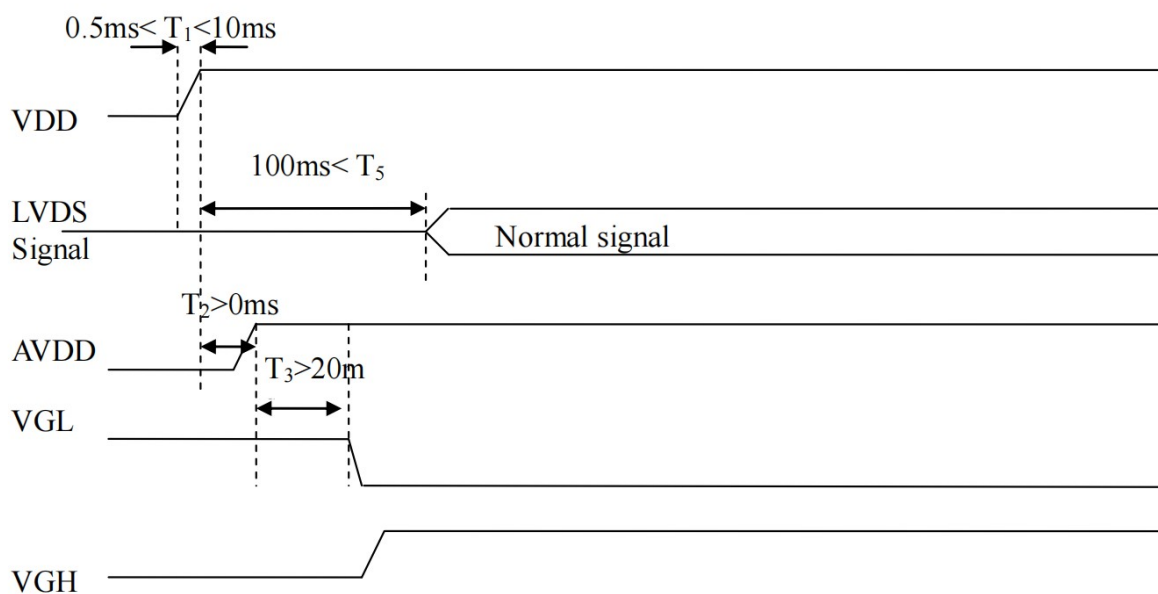
CIRCUIT DIAGRAM (LED 3串X13并=39 dies)



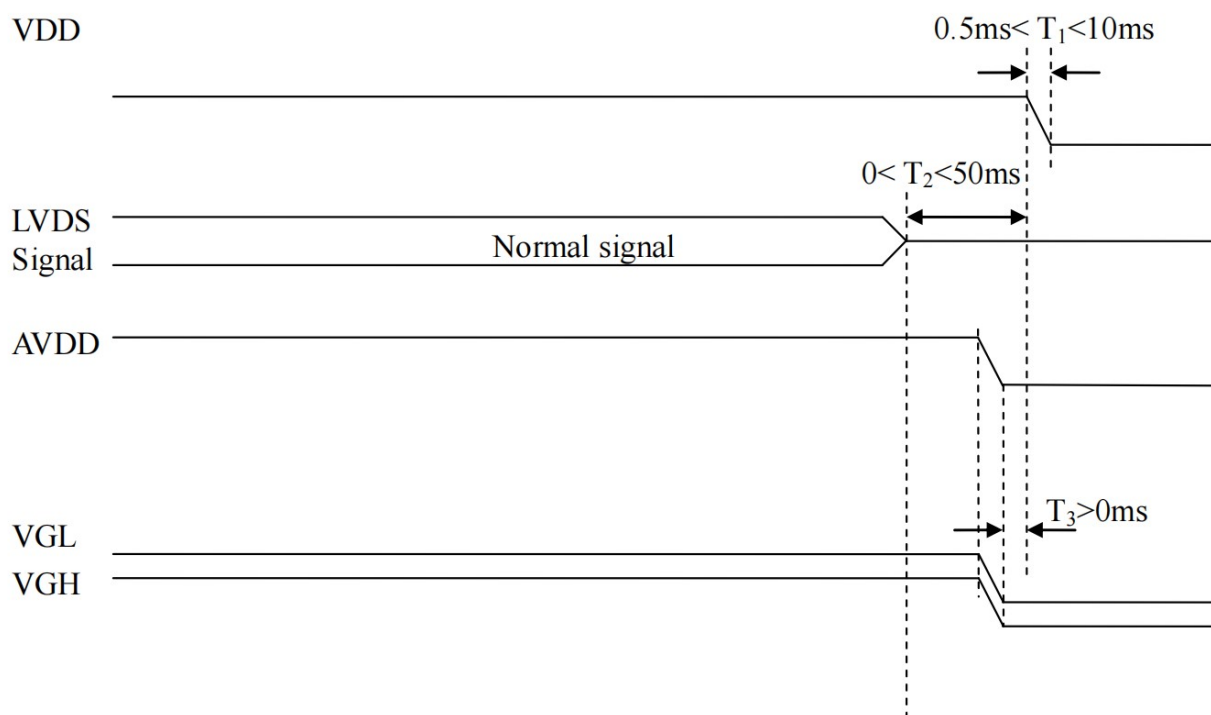


5.4 Power On/Off Sequence

a. Power on:



b. Power off:

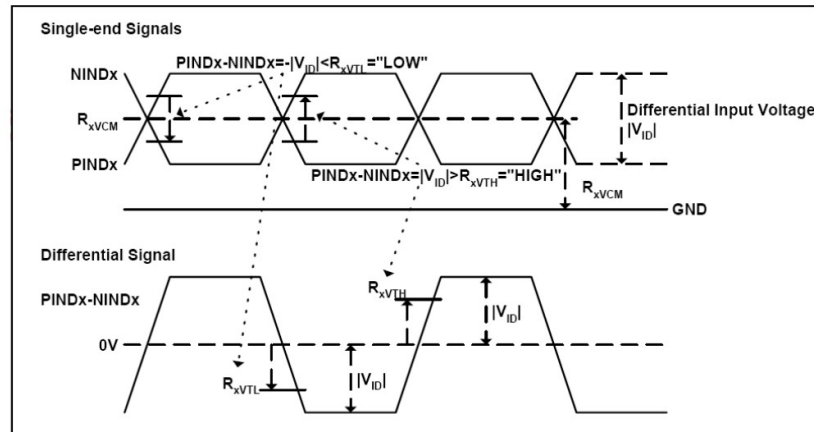




6. Signal Timing Characteristics

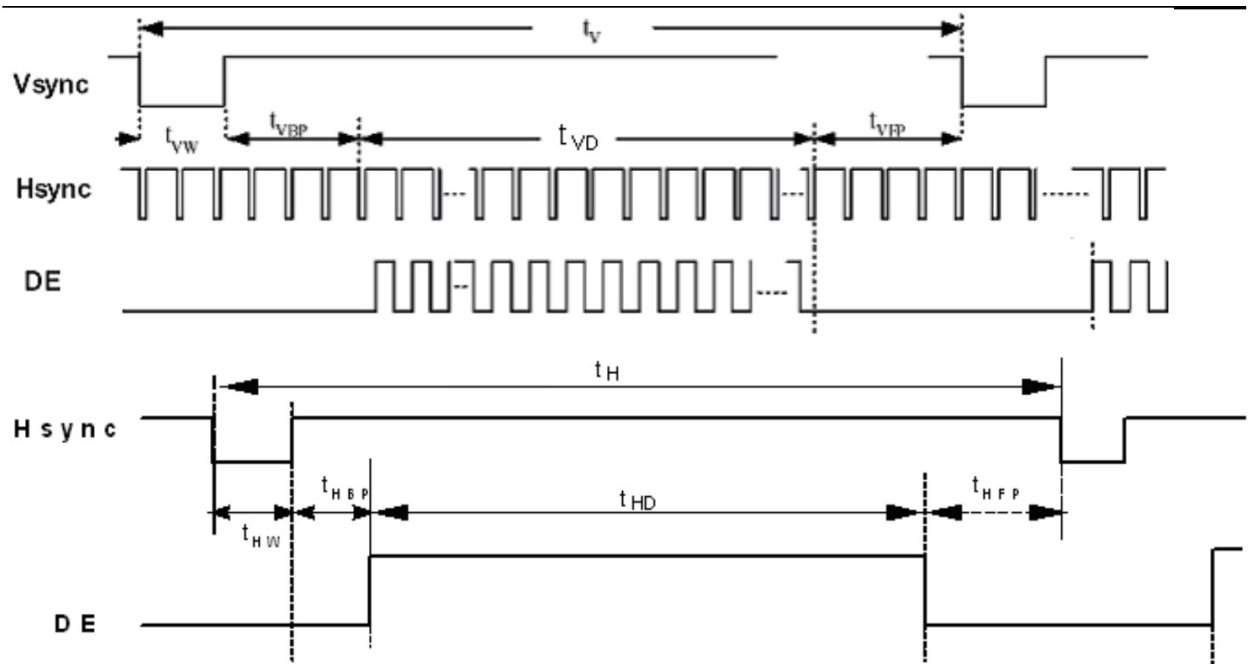
6.1 AC Electrical Characteristics

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
LVDS Differential input high Threshold voltage	R_{xVTH}	-	-	+100	mV	$R_{xVCM}=1.2V$
LVDS Differential input low Threshold voltage	R_{xVTL}	-100	-	-	mV	
LVDS Differential input common mode voltage	R_{xVCM}	0.7	-	1.6	V	
LVDS Differential voltage	$ V_{ID} $	200	-	600	mV	

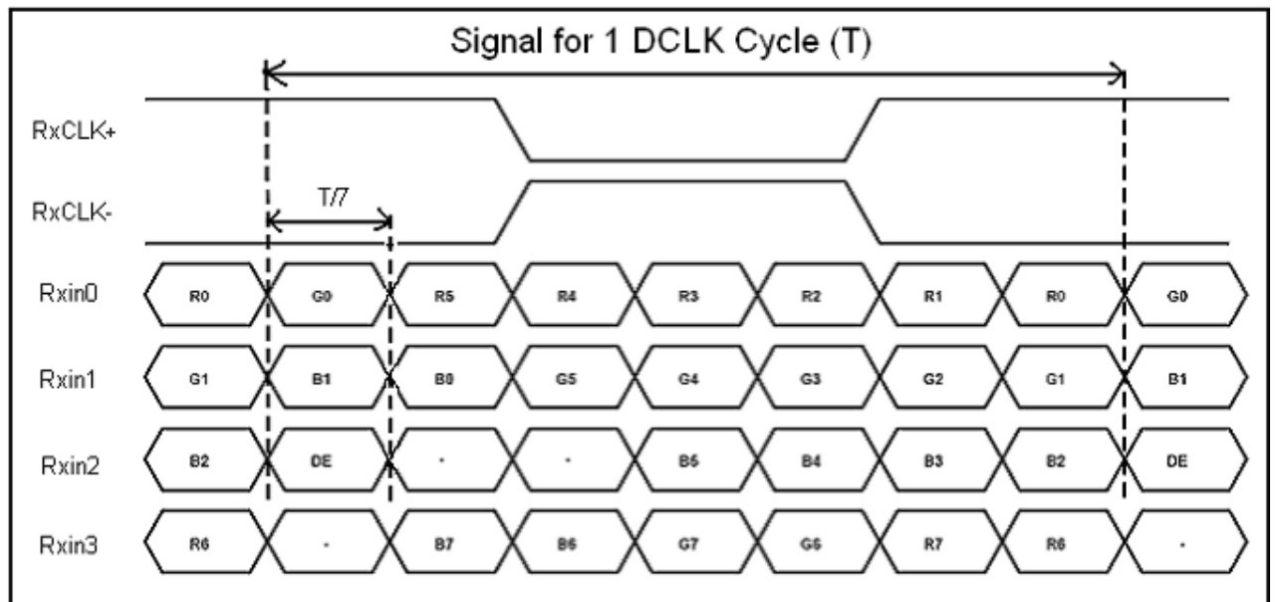


6.2 Timing Table

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	$1/T_c$	68.9	71.1	73.4	MHz	Frame rate =60Hz
Horizontal display area	t_{HD}	1280				
HS period time	t_H	1410	1440	1470	T_c	
HS Width +Back Porch +Front Porch	$t_{HW} + t_{HBP}$ $+t_{HFP}$	60	160	190	T_c	
Vertical display area	t_{VD}	800				
VS period time	t_v	815	823	833	t_H	
VS Width +Back Porch +Front Porch	$t_{vW} + t_{vBP}$ $+t_{vFP}$	15	23	33	t_H	



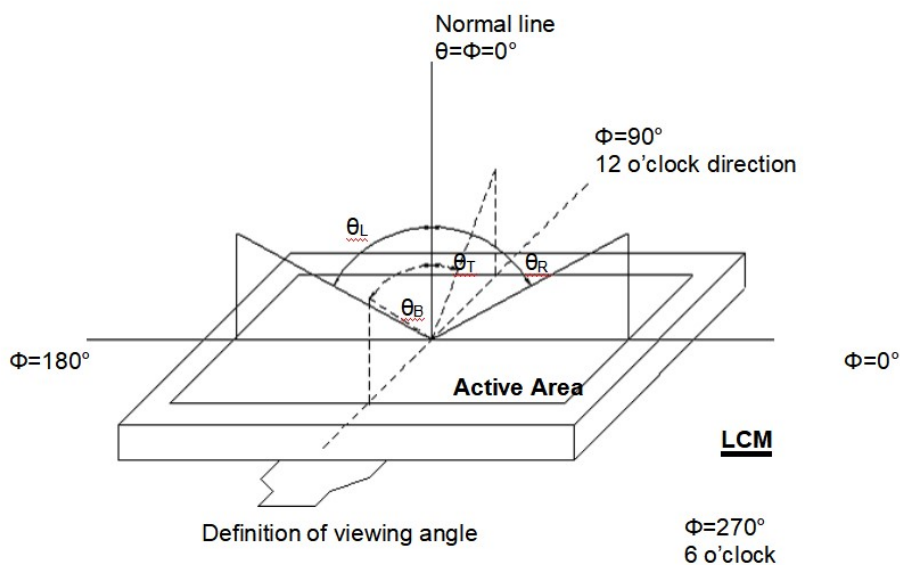
6.3 LVDS Data Input Format



7. Optical specifications

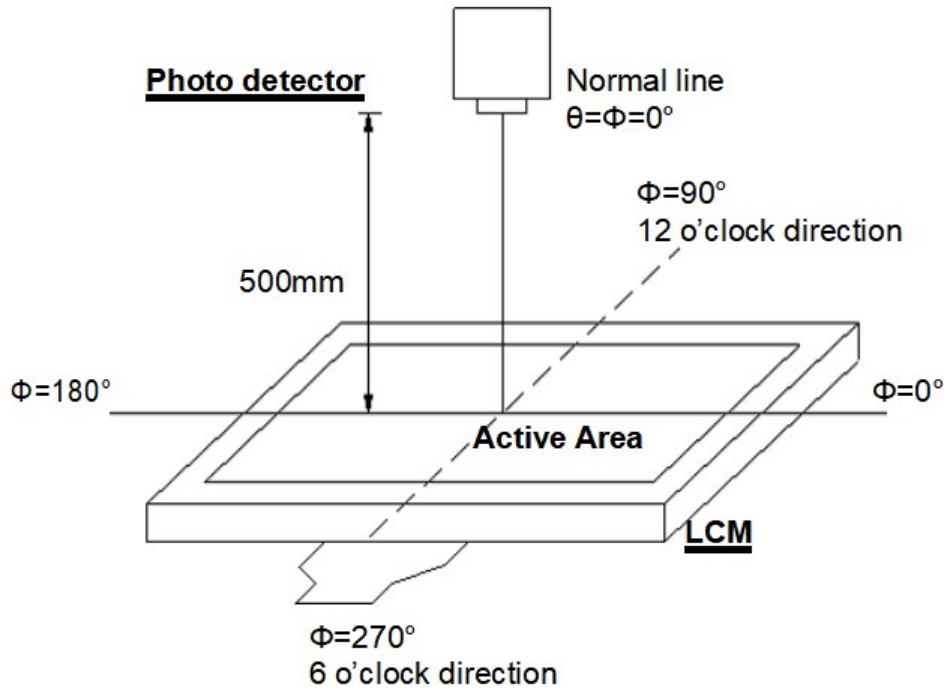
Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (CR $\geq$ 10)	θ_L	$\Phi=180^\circ$ (9 o'clock)	75	85	-	degree	Note 1
	θ_R	$\Phi=0^\circ$ (3 o'clock)	75	85	-		
	θ_T	$\Phi=90^\circ$ (12 o'clock)	75	85	-		
	θ_B	$\Phi=270^\circ$ (6 o'clock)	75	85	-		
Response time Rise+Fall	T_{RT}	Normal $\theta=\Phi=0^\circ$	-	25	50	msec	Note 3
Contrast ratio	CR		600	800	-	-	Note 4
Color chromaticity	W_X		-	0.31	-	-	Note 2
	W_Y		-	0.32	-	-	Note 5
NTSC	Ratio		-	-	-	%	Note 6
Luminance	L		-	320	-	cd/m ²	Note 6

Note 1: Definition of viewing angle range



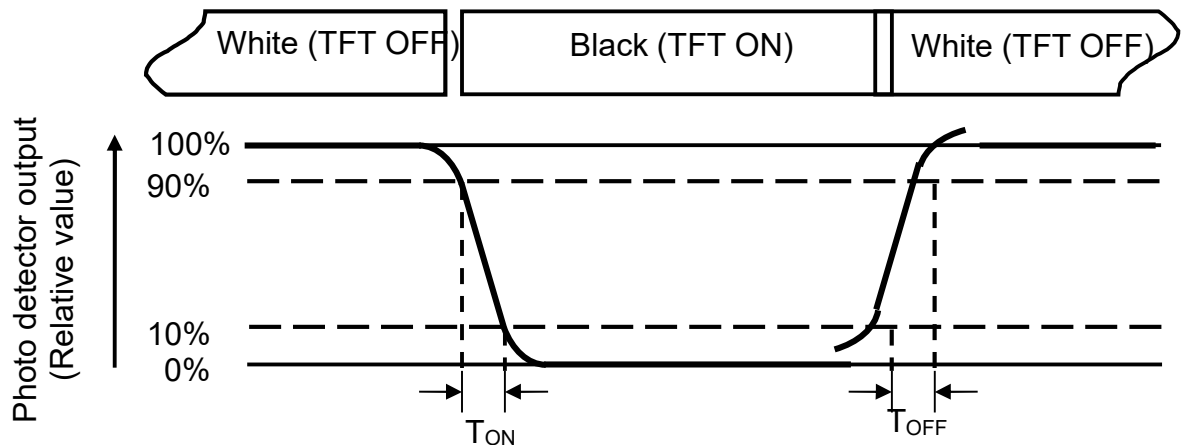
Note 2: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. (Viewing angle is measured by ELDIM-EZ contrast/Height :1.2mm ,Response time is measured by Photo detector TOPCON BM-7A, other items are measured by BM-7A/Field of view: 1° /Height: 500mm.)



Note 3: 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%.



Definition of response time

Note 4: 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 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

Note 6: All input terminals LCD panel must be ground while measuring the center area of the panel.



8. Reliability Test Conditions And Methods

Item	Test Conditions		Remark
High Temperature Storage	Ta = 60℃	96hrs	
Low Temperature Storage	Ta = -20℃	96 hrs	
High Temperature Operation	Ts = 50℃	96 hrs	
Low Temperature Operation	Ta = -10℃	96 hrs	
Operate at High Temperature and Humidity	60℃, 90%RH max.	96 hrs	Operation
Thermal Shock	-20℃~+60℃ 100cycles 0.5 Hrs/cycle		Non-operation
Electrostatic Discharge	Contact=±4KV, class B Air=±8KV, class B		

Note1: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

Note2: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

9. Package Drawing

TBD