



Product Specification

F150PET-TJ1

- ☐ Draft Specifications
☐ Preliminary Specifications
☒ Final Specifications

Title	15.0-inches Touch Display Product Specifications
Model Name	F150PET-TJ1
Version	2

Customer	
Approved by	Date
Notice: This Specification is subject to change without notice.	

Approved By	Prepared By
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2026-05-20	2026-05-20



REVISION HISTORY

Version	ECN No.	Description of Changes	Date	Prepared
0		Draft specification first edition	2023-03-13	Allen Fang
1		Preliminary specification	2025-12-23	Allen Fang
2		Final specification	2026-05-20	Allen Fang

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1. GENERAL DESCRIPTION

1.1. INTRODUCTION

F150PET-TJ1 is a 15.0" color active matrix TFT LCD module G150XTN06.A 01 with projected capacitive multi-touch B150PBU-E03 air bonding, with touch driver B000PDU-E03.

The display format is intended to support the XGA mode (1024(H) x 768(V)) screen and 262K/16.2M colors (LVDS 6/8-bits). And LED driving circuit for backlight built in PCBA.

1.2. FEATURES

- Long life LED backlight (50k hrs)
- Industrial application
- RoHS product

1.3. APPLICATION

- TFT LCD monitor
- Industrial application

1.4. GENERAL SPECIFICATIONS

Parameter	Specification	Unit	Remarks
Active Area Size	15.0	inch	
Display Area	304.128 x 228.096 (V)	mm	
Outline Dimension	326.50 (H) x 253.50 (V) x 12.54 (D)	mm	D:PCAP+LCM
Weight	1410	g	Typ.
Driver Element	a-Si TFT active matrix	-	
Display Colors	16,194,277 / 262,144	Colors	
Electrical Interface	LVDS	-	
Number of Pixels	1024 (H) x 768 (V)	pixels	
Pixel Pitch	0.297 (H) x 0.297(W)	mm	
Pixel Arrangement	RGB vertical stripe	-	
Display Mode	TN / Normal White	-	
Color Gamut	60	%	
Touch Technology	Projected Capacitive Multi-Touch Panel	-	
Touch Method	Finger or exclusive pen	-	
Numbers of Touch	10	Points	
Touch Driver	B000PDU-E03: USB	-	
Touch Sensor Glass Type	Strengthening Glass	-	
Touch Controller IC	EETI, EXC80W46	-	
Touch Driver Interface	USB 1.1 Full Speed / I ² C	-	
Support OS	Windows (Embedded/CE/XP/2000/Vista/7/8/10) / Linux / Android / MAC / QNX	-	

2. ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit.

Parameter	Symbol	Min.	Max.	Unit
Logic/LCD Drive Voltage	V _{DD}	-0.3	+3.6	V
Converter Input Voltage	V _{LED}	-0.3	+13.2	V
Converter Control Signal Voltage	V _{LED_PWM}	-0.3	+5.5	V
Converter Control Signal Voltage	V _{LED_EN}	-0.3	+5.5	V
Operating Temperature	T _{op}	-20	+70	°C
Operating Humidity	H _{op}	10	90	%RH
Storage Temperature	T _{st}	-30	+70	°C
Storage Humidity	H _{st}	10	90	%RH
Touch DC Supply Voltage	USB_V _{DD}	-0.3	+5.5	V

Note: Maximum Wet-Bulb temperature should be 39°C and no condensation.

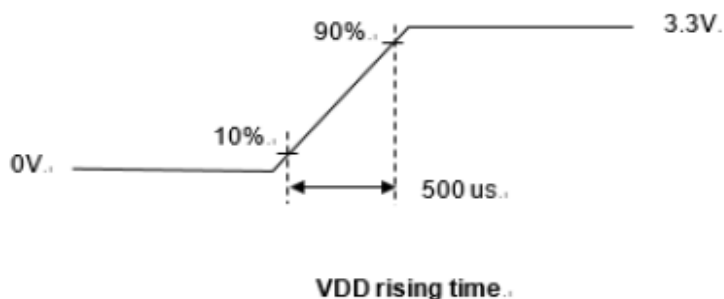
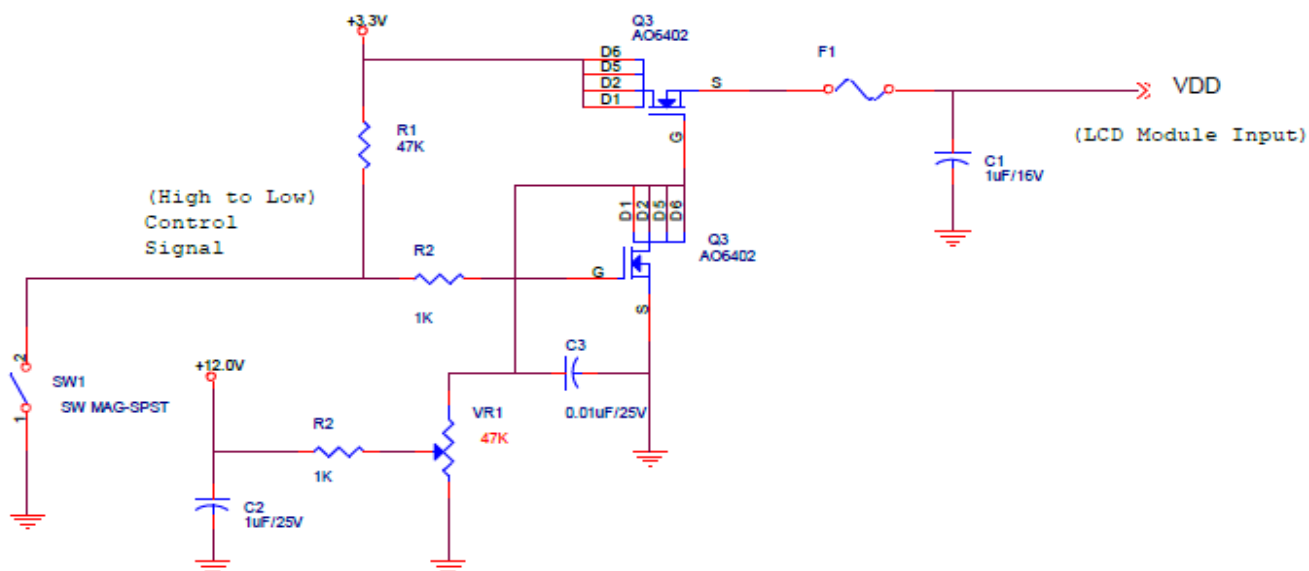
3.ELECTRICAL CHARACTERISTICS

3.1. LCD MODULE

3.1.1. POWER SPECIFICATION

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Logic/LCD Drive Voltage	VDD	3	3.3	3.6	V	±10%
VDD Current	I _{VDD}	-	1	1.2	A	Black Pattern (VDD=3.3V at 60Hz)
LCD Inrush Current	I _{rush LCD}	-	-	3	A	Note 1
VDD Power	P _{VDD}	-	3.3	3.96	W	Black Pattern (VDD=3.3V at 60Hz)

Notes 1: Measurement condition



3.1.2. SIGNAL ELECTRICAL CHARACTERISTICS

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Differential Input High Threshold	V _{TH}	-	-	+100	mV	V _{ICM} =1.2V
Differential Input Low Threshold	V _{TL}	-100	-	-	mV	V _{ICM} =1.2V
Input Differential Voltage	V _{ID}	100	400	600	mV	
Differential Input Common Mode Voltage	V _{ICM}	1.0	1.2	1.5	V	V _{TH} /V _{TL} =±100mV

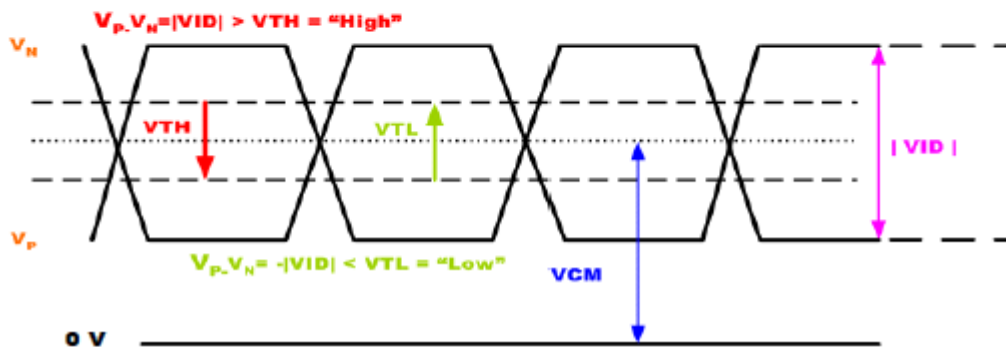
Input signals shall be low or Hi-Z state when VDD is off.

Note: LVDS Signal Waveform.

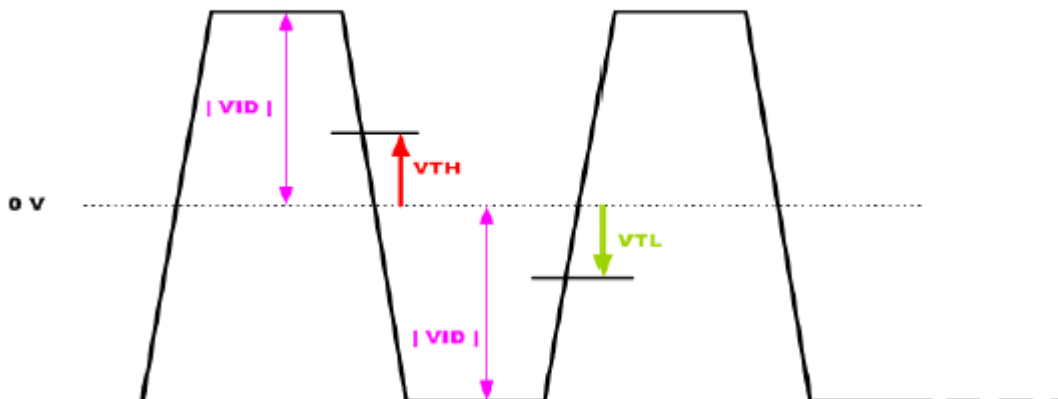
$V_P - V_N = |V_{ID}| > V_{TH} = \text{"High"}$

$V_P - V_N = -|V_{ID}| < V_{TL} = \text{"Low"}$

Single-end Signal



Differential Signal



3.2. LCD BACKLIGHT UNIT

3.2.1. PARAMETER GUIDELINE FOR LED BACKLIGHT

Following characteristics are measured under a stable condition using a inverter at 25°C. (Room Temperature):

Parameter		Symbol	Values			Unit	Notes
			Min.	Typ.	Max.		
Input Voltage		V _{LED}	10.8	12	13.2	V	
Input Current		I _{VLED}	-	1.71	1.88	A	100% PWM Duty
Power Consumption		P _{VLED}	-	20.51	22.49	W	100% PWM Duty
Inrush Current		I _{rush}			4	A	
VLED On/Off	Backlight on	V _{LED_EN}	2.5	3.3	5.5	V	
	Backlight off				0.7	V	
PWM Dimming Frequency		F _{PWM}	200	-	20K	Hz	
PWM Control level	PWM High	V _{PWM}	2.5	3.3	5.5	V	
	PWM Low				0.7	V	
PWM Control Duty Ratio		D _{PWM}	5	-	100	%	200Hz~5KHz
PWM Control Duty Ratio		D _{PWM}	15	-	100	%	5KHz~20KHz
LED Forward Current		I _F	-	63	-	mA	Ta=25°C
LED Life Time		LT _{LED}	50,000	-	-	Hrs	I _F =63mA, Ta=25°C

Note:

1. Ta, means ambient temperature of TFT-LCD module.
2. If G150XTN06.A module is driven by high current or at high ambient temperature & humidity condition. The operating life will be reduced.
3. Operating life means brightness goes down to 50% initial brightness. Minimum operating life time is estimated data.

3.2.2. DRIVER CONNECTOR

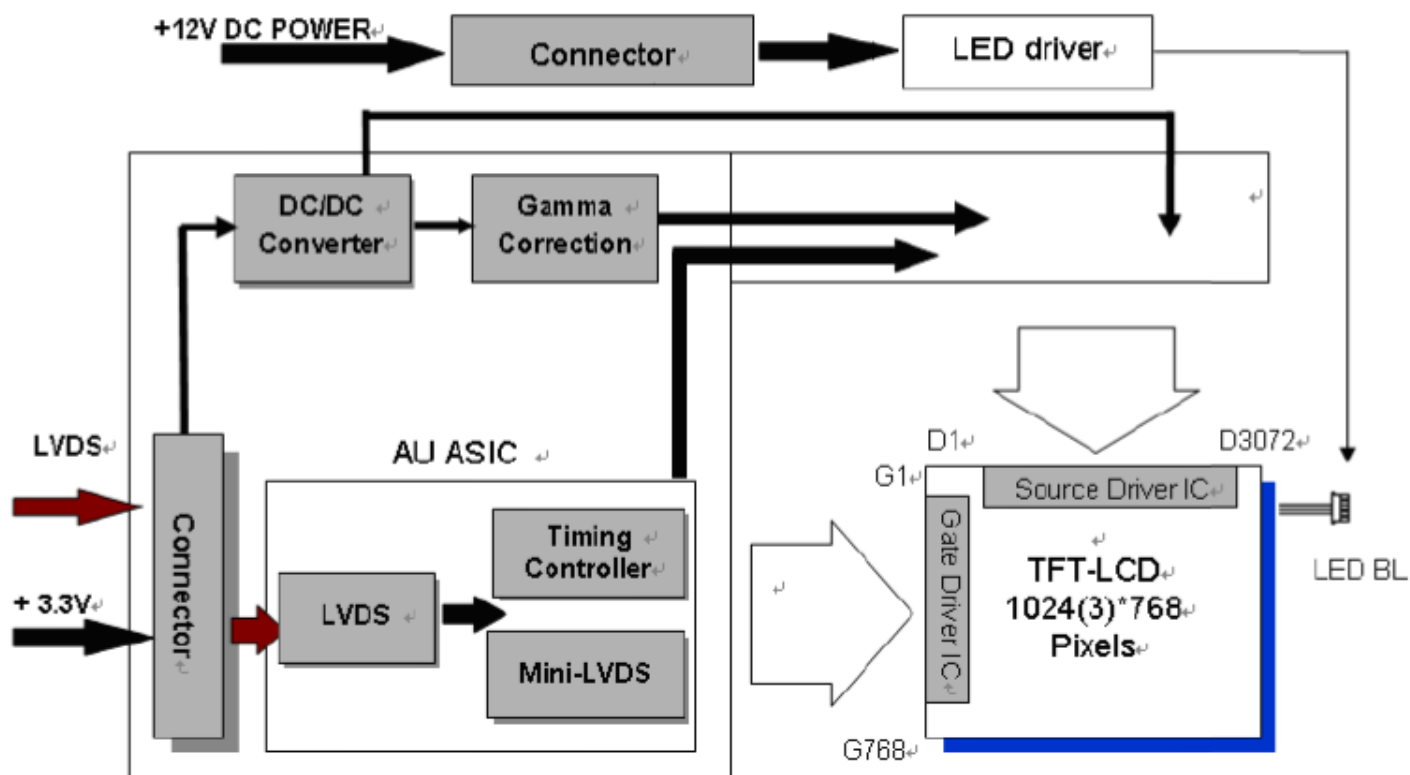
Connector Model: ENTRY, 3806K-F12N-03L or ACES, 50278-01201-001 or compatible

Mating Model: ENTRY, H208K-D12N-22B or ACES, 50280-012H0H0-001 or compatible

Pin No.	Symbol	Description
1	V _{CC}	Power Supply (Typ. 12V)
2	V _{CC}	Power Supply (Typ. 12V)
3	V _{CC}	Power Supply (Typ. 12V)
4	V _{CC}	Power Supply (Typ. 12V)
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	NC	No Connect
10	NC	No Connect
11	Enable	V _{LED} On/Off
12	Dimming	PWM Dimming

3.3. LCD BLOCK DIAGRAM

The following diagram shows the functional block of the 15 inch color TFT/LCD module:



3.4. INPUT TERMINAL PIN ASSIGNMENT

LVDS is a differential signal technology for LCD interface and a high-speed data transfer device.

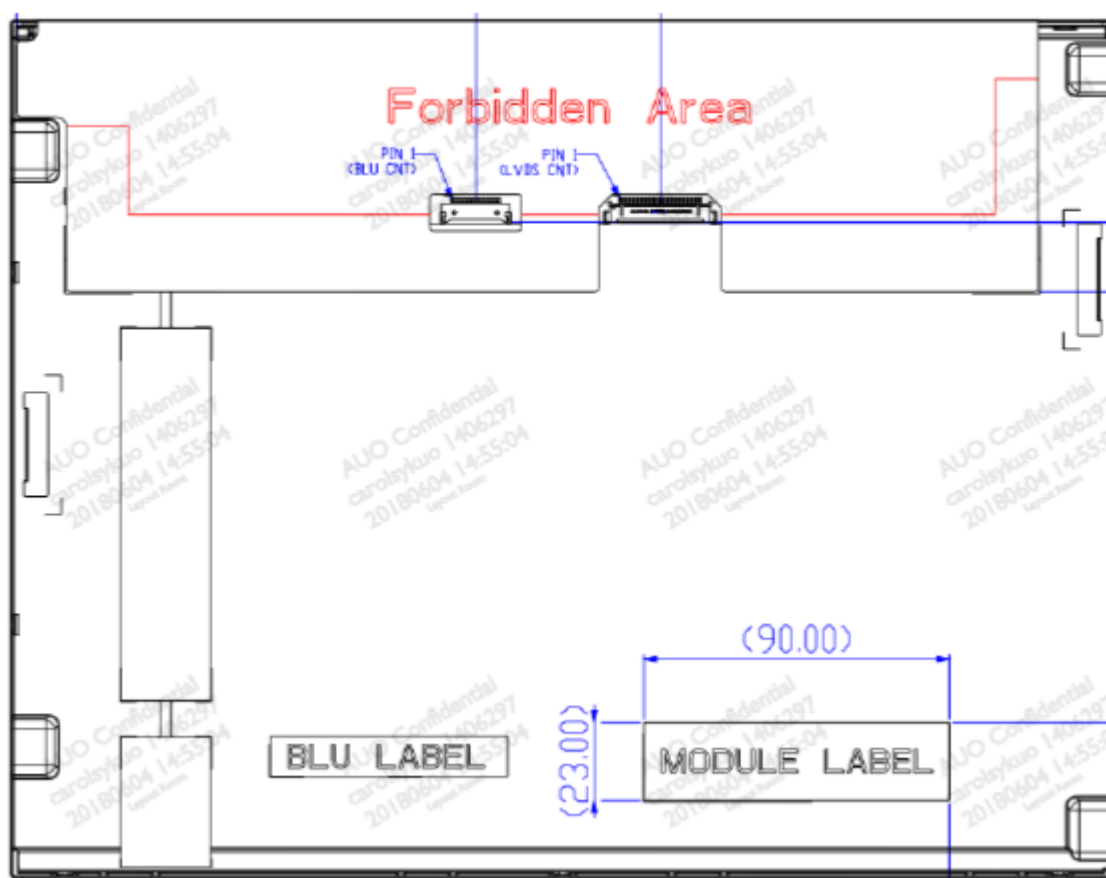
Pin	Symbol	Description
1	VDD	Power supply: +3V
2	VDD	Power supply: +3V
3	NC	No Connect
4	NC	No Connect
5	RX0-	Negative LVDS Differential Data Input
6	RX0+	Positive LVDS Differential Data Input
7	GND	Ground
8	RX1-	Negative LVDS Differential Data Input
9	RX1+	Positive LVDS Differential Data Input
10	GND	Ground
11	RX2-	Negative LVDS Differential Data Input
12	RX2+	Positive LVDS Differential Data Input
13	GND	Ground
14	RXCLK-	Negative LVDS Clock Input
15	RXCLK+	Positive LVDS Clock Input
16	GND	Ground
17	RX3-	Negative LVDS Differential Data Input
18	RX3+	Positive LVDS Differential Data Input
19	GND	Ground
20	SEL68	6/8 bit LVDS data selection [H or NC: 6 bits / L: 8bit]

Note1. LCD connector: **STM MSB240420HD** or compatible

Note2. User's connector Part No.: **STM P240420** or compatible

Note3. Input Signals should be in low status when V_{DD} is off.

Note4. High Stands for "3.3V", Low stands for "0V", NC stands for "No Connect".



3.5. TOUCH CONTROL BOARD

B000PDU-E03

Parameter	Values			Unit	Notes
	Min.	Typ.	Max.		
Input Voltage	3.5	5	5.5	V	
Interface	USB:1.1 Full Speed / I ² C			-	
Max Resolution	4096*4096			-	
Precision	≤2.5			mm	
Two points separate distance	≥15 (pitch of finger center)			mm	
Touch point	1~10 points			-	
Power consumption (mA)	Active Mode: About 50mA			mA	
Report rate (points/sec)	≥120			Hz	
Response time	15			ms	

3.6. TOUCH CONTROL BOARD PIN ASSIGNMENT

JP1 : USB

Brand: JST

Part number: SM05B-SRSS-TB or equivalence

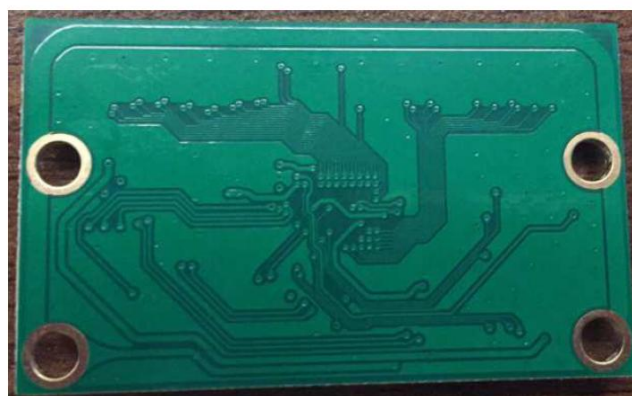
JP2 : I2C

Brand: Centenary Materials

Part number: ZIF-FPC-1.0mm-SMT-6P-Bottom flap or equivalence

FCON1				JP1 USB		JP2 I2C	
Pin	Name	Pin	Name	Pin	Name	Pin	Name
1	Shielding(TX0)	33	GND	1	5V	1	RST
2~29	TX1-TX28	34	Shielding(RX0)	2	D-	2	INT
30	NC	35~78	RX1-RX44	3	D+	3	SCL
31	Shielding(TX29)	79	NC	4	GND	4	SDA
32	GND	80	Shielding(RX45)	5	GND	5	3.3V
						6	GND

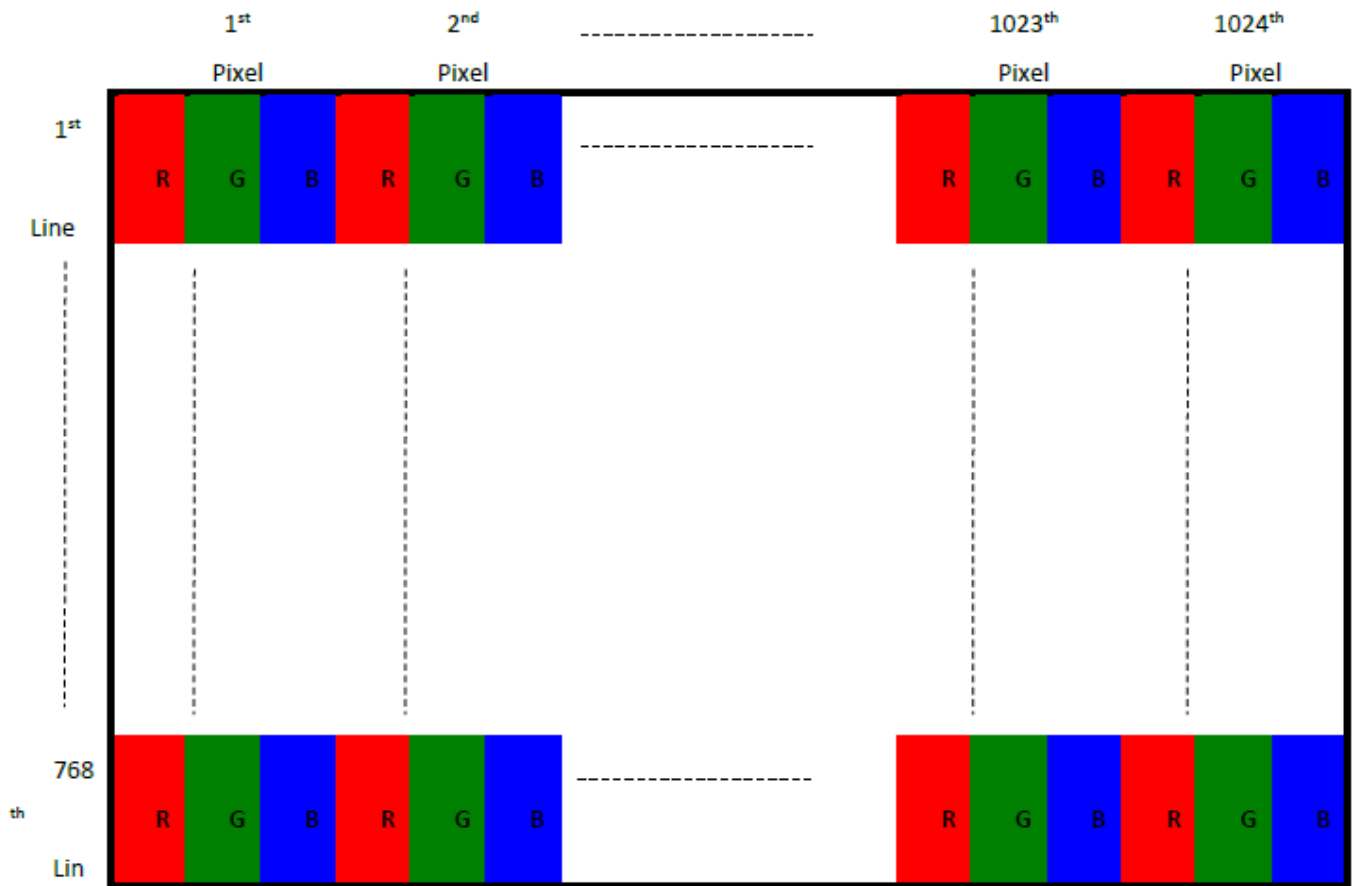
B000PDU-E03



4. LCD SIGNAL CHARACTERISTIC

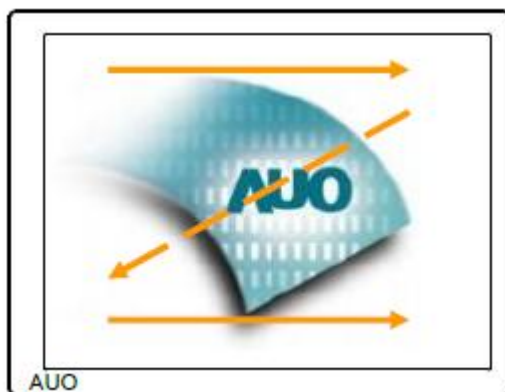
4.1. PIXEL FORMAT IMAGE

Following figure shows the relationship between input signal and LCD pixel format.



4.1.1. SCANNING DIRECTION

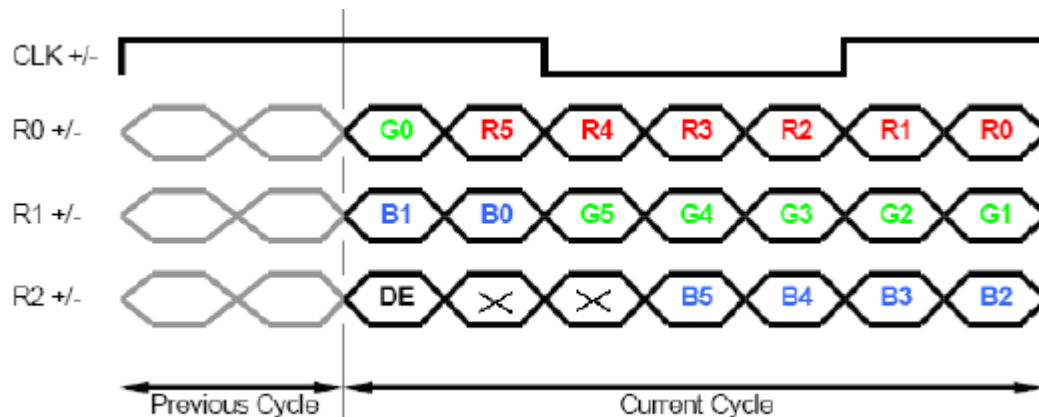
The following figures show the image seen from the front view. The arrow indicates the direction of scan.



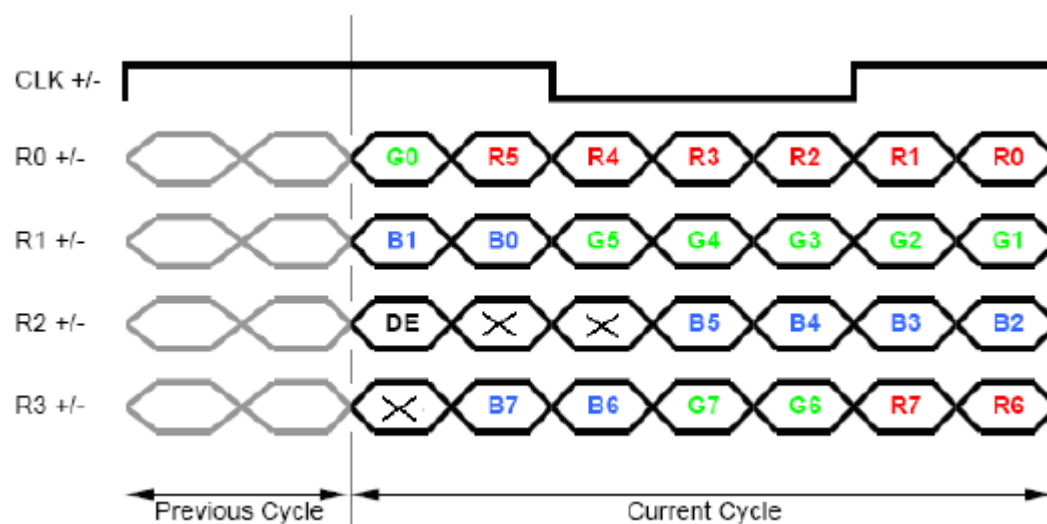
4.2. THE LCD INPUT DATA FORMAT

4.2.1. SEL68 AND ORDER_SEL

SEL68 = "High" or NC for 6 bits LVDS Input



SEL68 = "Low" for 8 bits LVDS Input



Note 1: Please follow PSWG.

Note 2: R/G/B data 7: MSB, R/G/B data 0: LSB

4.3. LCD INTERFACE TIMING

4.3.1. LCD TIMING CHARACTERISTICS

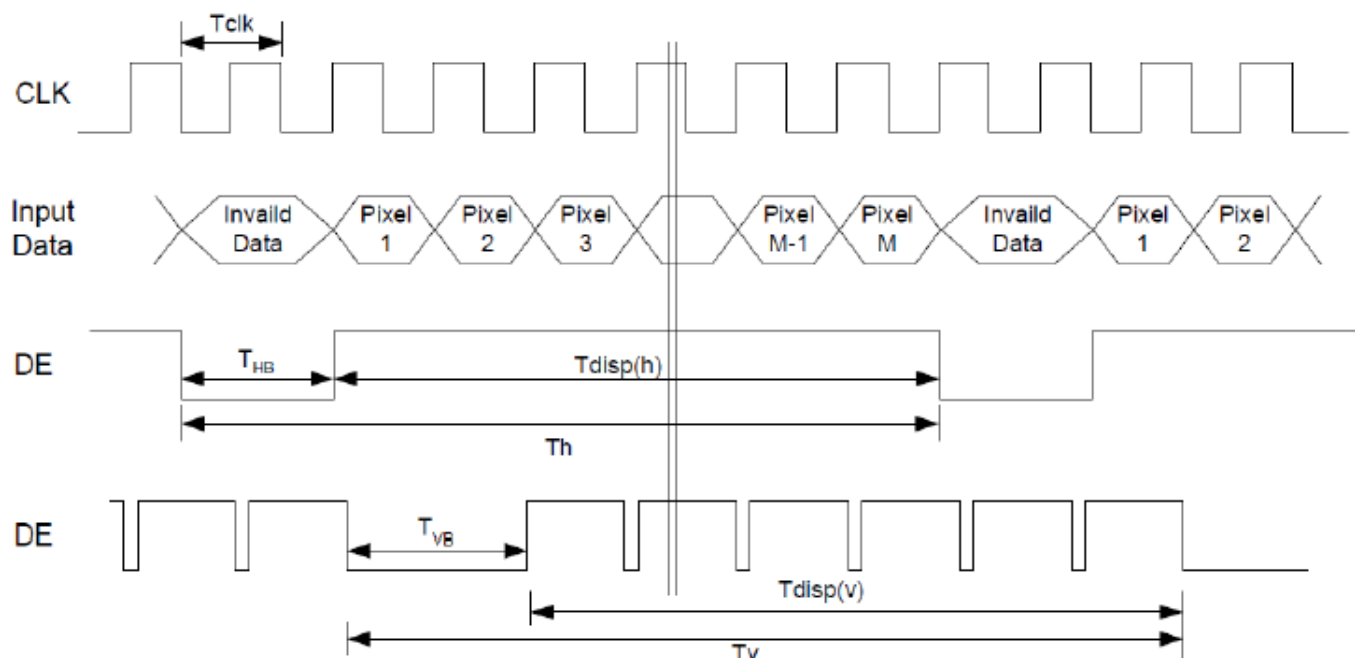
Signal		Symbol	Min.	Typ.	Max.	Unit
Clock Frequency		$1/T_{\text{dclk}}$	50	65	81	MHz
Vertical Section	Period	T_V	783	806	968	Vsync Timing
	Active	T_{VD}	768	768	768	
	Blanking	T_{VB}	15	38	200	
Horizontal Section	Period	T_H	1224	1344	2024	Hsync Timing
	Active	T_{HD}	1024	1024	1024	
	Blanking	T_{HB}	200	320	1000	
Frame Rate		F		60		Hz

Note: The Maximum Frame Rate $< 81 \text{ MHz} / [(V_Period) * (H_Period)]$

Note: Support DE mode only

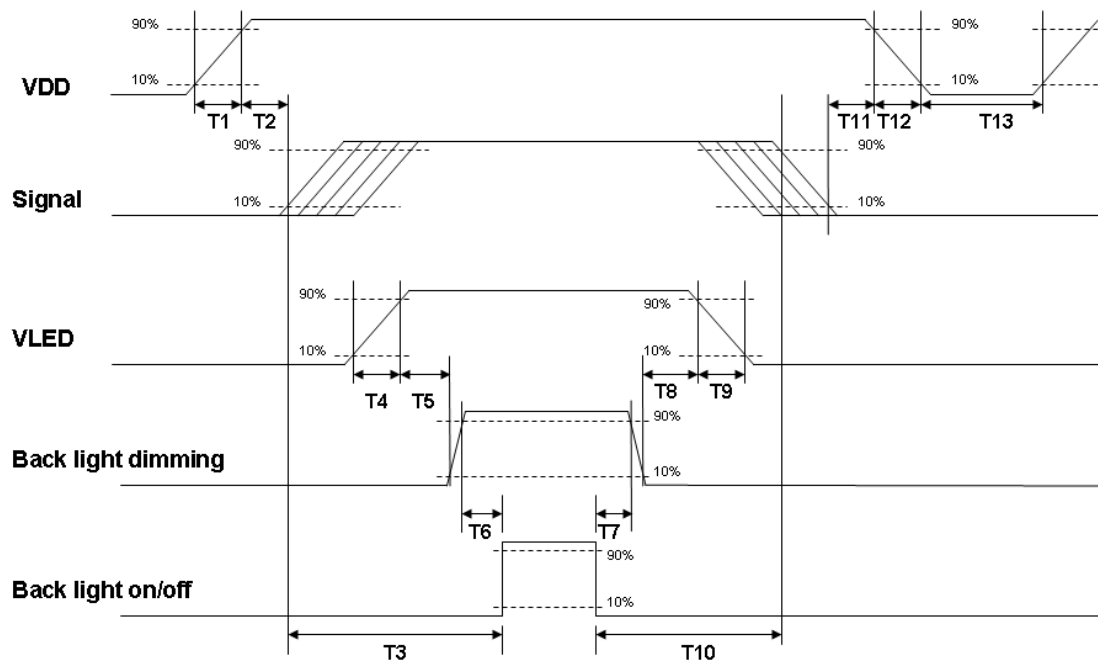
Note: Typical value refer to VESA STANDARD

4.3.2. LCD INPUT TIMING DIAGRAM



4.4. POWER SEQUENCE FOR LCD

VDD power and lamp on/off sequence is as below. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.



Power ON/OFF sequence timing

Parameter	Values			Unit
	Min.	Typ.	Max.	
T1	0.5	---	10	ms
T2	30	40	50	ms
T3	200	---	---	ms
T4	0.5	---	10	ms
T5	10	---	---	ms
T6	10	---	---	ms
T7	0	---	---	ms
T8	10	---	---	ms
T9	---	---	200	ms
T10	110	---	---	ms
T11	0	16	50	ms
T12	---	---	200	ms
T13	1000	---	---	ms

The above on/off sequence should be applied to avoid abnormal function in the display. Please make sure to turn off the power when you plug the cable into the input connector or pull the cable out of the connector.

5. OPTICAL CHARACTERISTICS

The optical characteristics are measured under stable conditions at 25°C (Room Temperature):

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
White Luminance		L _{WH}		1600	1800	--	Cd/m ²	1
Uniformity		δ _{W9}	9 points	75	80	--	%	1, 2, 3
Contrast Ratio		CR		400	800	--		4
Cross talk				--	1.2	1.5	%	5
Response Time		T _R	Rising	--	5.7	--	ms	6
		T _F	Falling	--	2.3	--	ms	
		T _R +T _F	Rising+Falling	--	8	--	ms	
Viewing Angle	Horizontal	θ _r	CR=10	70	80	--	degree	7
		θ _l		70	80	--	degree	
	Vertical	θ _u		60	70	--	degree	
		θ _d		70	80	--	degree	
Color Coordinates (CIE 1931)	Red	R _x		0.547	0.597	0.647		
		R _y		0.289	0.339	0.389		
	Green	G _x		0.279	0.329	0.379		
		G _y		0.546	0.596	0.646		
	Blue	B _x		0.104	0.154	0.204		
		B _y		0.003	0.053	0.103		
	White	W _x		0.263	0.313	0.363		
		W _y		0.279	0.329	0.379		
Color Gamut			NTSC	--	60	--	%	

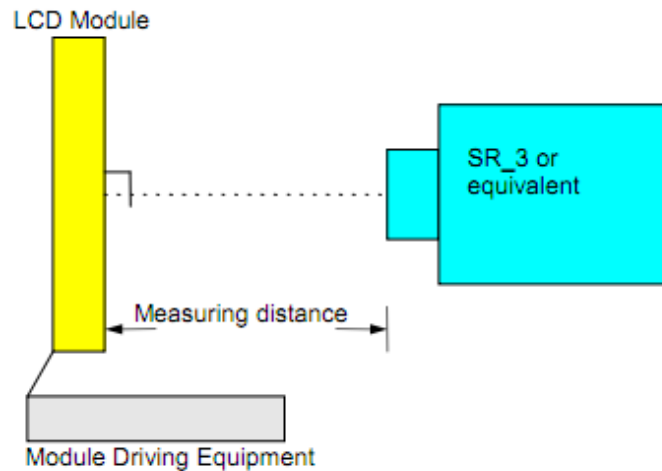
Note 1: Measurement method

Equipment Pattern Generator, Power Supply, Digital Voltmeter, Luminance meter (SR_3 or equivalent)

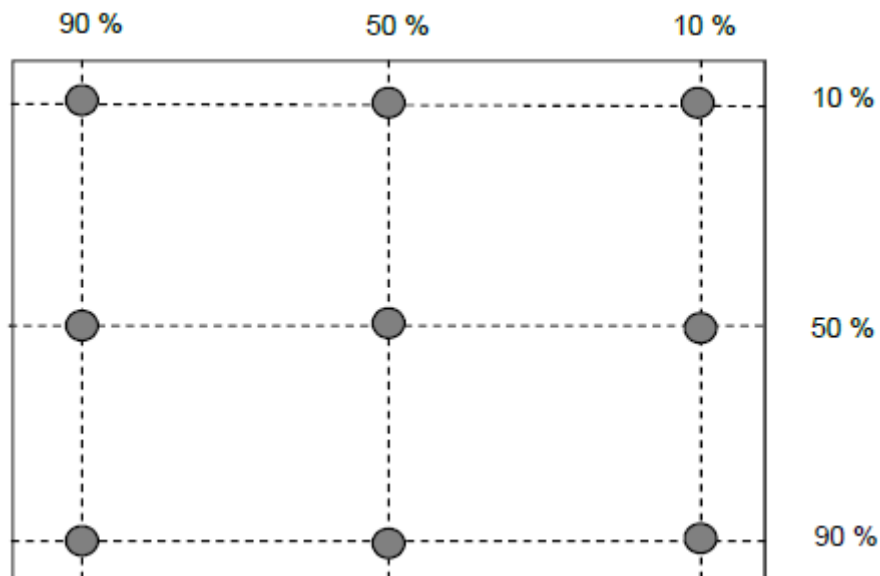
Aperture 1° with 50cm viewing distance

Test Point Center

Environment < 1 lux



Note 2: Definition of 9 points position (Display active area: 304.128mm (H) x228.096mm (V))



Note 3: The luminance uniformity of 9 points is defined by dividing the minimum luminance values by the maximum test point luminance

$$\delta_{w9} = \frac{\text{Minimum Brightness of nine points}}{\text{Maximum Brightness of nine points}}$$

Note 4: Definition of contrast ratio (CR)

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "White" state}}{\text{Brightness on the "Black" state}}$$

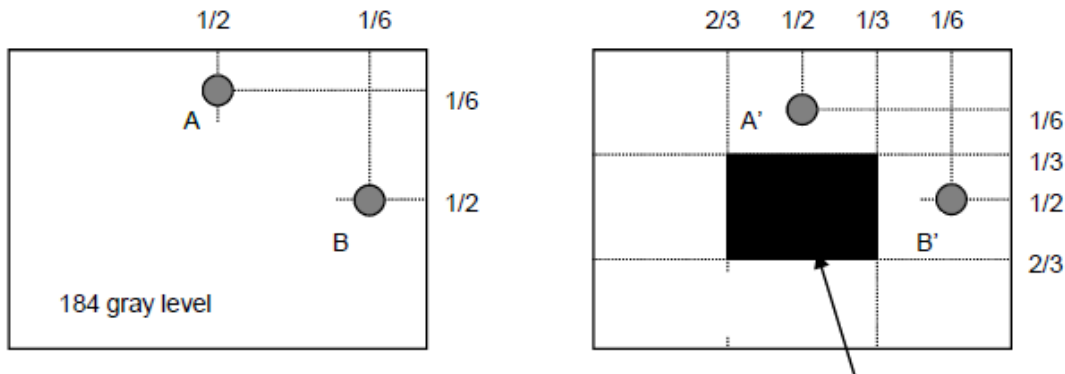
Note 5: Definition of cross talk (CT)

$$CT = |YB - YA| / YA \times 100 (\%)$$

Where

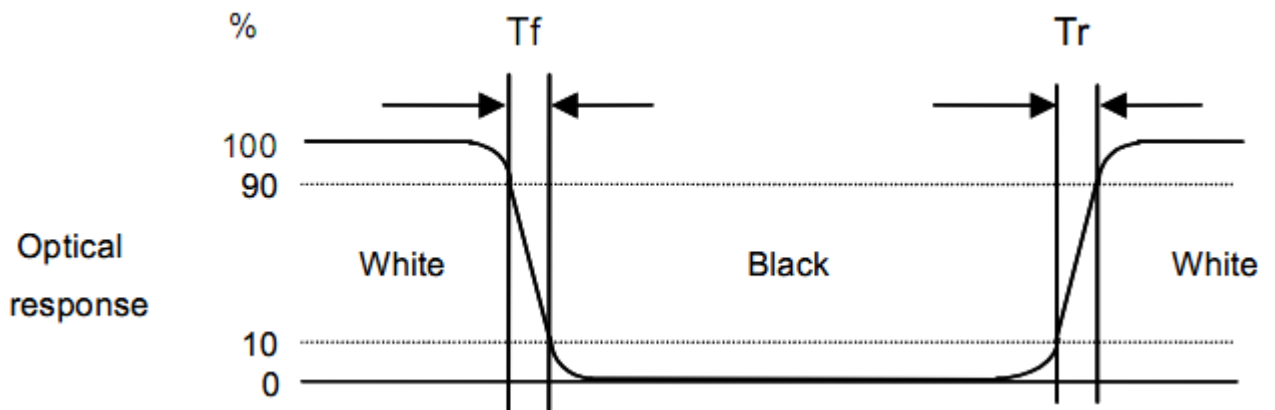
YA = Luminance of measured location without gray level 0 pattern (cd/m2)

YB = Luminance of measured location with gray level 0 pattern (cd/m2)



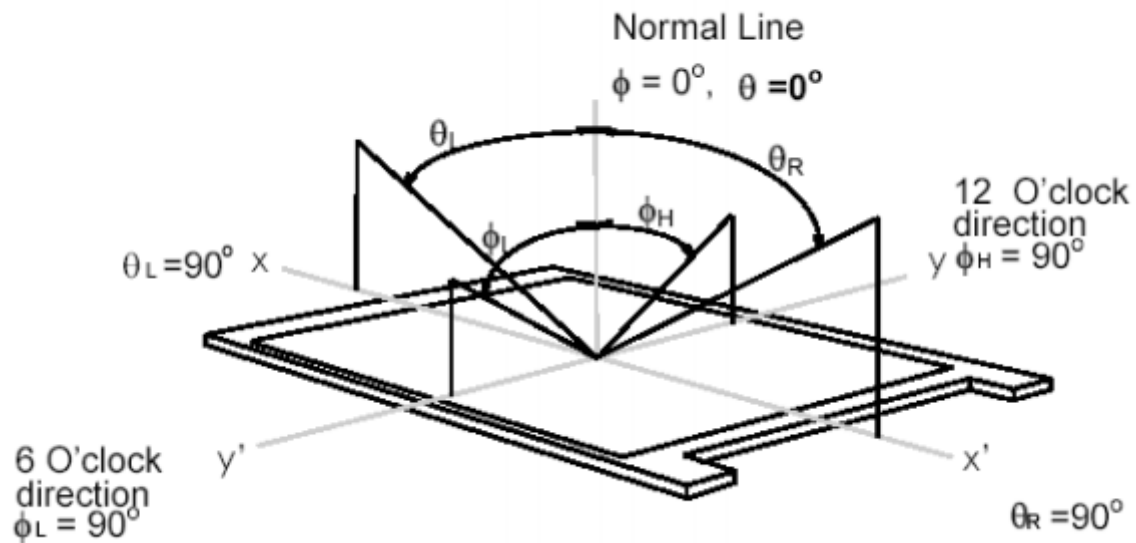
Note 6: Definition of Response Time (T_R , T_F)

The output signals of photo detector are measured when the input signals are changed from “White” to “Black” (falling time) and from “Black” to “White” (rising time), respectively. The response time interval is between 10% and 90% of amplitudes. Please refer to the figure as below.



Note 7: Definition of viewing angle

Viewing angle is the measurement of contrast ratio ≥ 10 , at the screen center, over a 180° horizontal and 180° vertical range (off-normal view angles). The 180° viewing angle range is broken down as below: 90° (θ) horizontal left and right, and 90° (ϕ) vertical high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated to its center to develop the desired measurement viewing angle.



6. RELIABILITY TEST ITEMS

Test Item		Condition
1	High temperature/Humidity Bias test	50°C, 80%RH, 240hrs
2	High temperature storage test	70°C, 240hrs
3	Low temperature storage test	-30°C, 240hrs
4	High temperature operation test	70°C, 240hrs
5	Low temperature operation test	-20°C, 240hrs
6	Thermal Cycle storage test	-20°C(30min)~60°C(30min), 10cycles

7. LABEL

Model NO. F150PET-TJ1

條碼

SN 3A Z 20 2 21 0 XXX1

L=32mm



W=14mm

code 1,2 Production location

code 3 Production version

code 4,5 Production year

code 6 Production month

code 7,8 Production day

code 9 Production code

code 10,11,12,13 Serial number

字型:Arial (6)

code:128

字型:Arial (8)

8. MECHANICAL CHARACTERISTICS

Item		Dimension	Unit	Note
Outline Dimension	Horizontal	326.50	mm	PCAP : B150PBU-E03
	Vertical	253.50	mm	
	Depth	2.40	mm	
	Horizontal	326.50	mm	LCD : G150XTN06.A 01
	Vertical	253.50	mm	
	Depth	9.50	mm	
	Horizontal	50.00	mm	Touch Driver : B000PDU-E03
	Vertical	30.00	mm	
	Depth	1.60	mm	
Weight		1410	g	F150PET-TJ1
Item		Specification		Remarks
PCAP Viewing Area		305.13 mm x 229.10 mm		
PCAP Sensor Area		325.50 mm x 252.50 mm		
PCAP FPC Length		110.00 mm		
PCAP Input method		Finger or exclusive pen		
PCAP Light Transmission		≥85%		
PCAP Operation force		≤10g		Finger Input
PCAP Hardness of surface		≥6H		Pressure 500gf test
PCAP Surface Treatment		Clear Type		

Front View



Back View



9. ENGINEERING DRAWING

