



深圳市鹏信捷通科技有限公司

Shenzhen Peng Xin jie Tong Technology Co. Ltd.

PRDDUCT SPECIFICATION

Model: PX116IA42172322A

CUSTOMER		
Approved 核 准	Checked 审 核	Prepared 确 认

Approved 核 准	Checked 审 核	Prepared 制 作

工厂地址: 广东省深圳市福永街道福州大道 22 号中阳大厦 406

电 话: 13714897731 刘先生



Contents

Model NO. PX116IA42172322A



Document Revision History

Change No.	Date	Subject And Reason	Version No.	Responser
1	2023.07.04	New	00	



1.0 General Description

1.1 Introduction

PX116IA42172322A 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 and a driving circuit. This TFT LCD has a 11.6 inch diagonally measured active display area with (1366 horizontal by 768 vertical pixels) resolution.

1.2. Features

11.6 inch configuration
ROHS design

1.3. General information

Item	Specification	Unit
Outline Dimension	267.72(H) x 164.42 (V) x 6.1(D)	mm
Display area	256.32(H) x 144.18(V)	mm
Number of Pixel	1366RGB (H) x 768 (V)	pixels
Pixel pitch	0.1875(H) x 0.1875(V)s	mm
Pixel arrangement	RGB Vertical stripe	
Display mode	Normally Black	
Color Filter Array	RGB vertical stripes	
Backlight	White LED	
Weight	TBD	g
Electrical Interface	1 lane eDP	
Response Time	8 ms (typ)	
Nominal Input Voltage	+ 3.3 typ	
Support Color	262K colors (RGB 6-bit)	



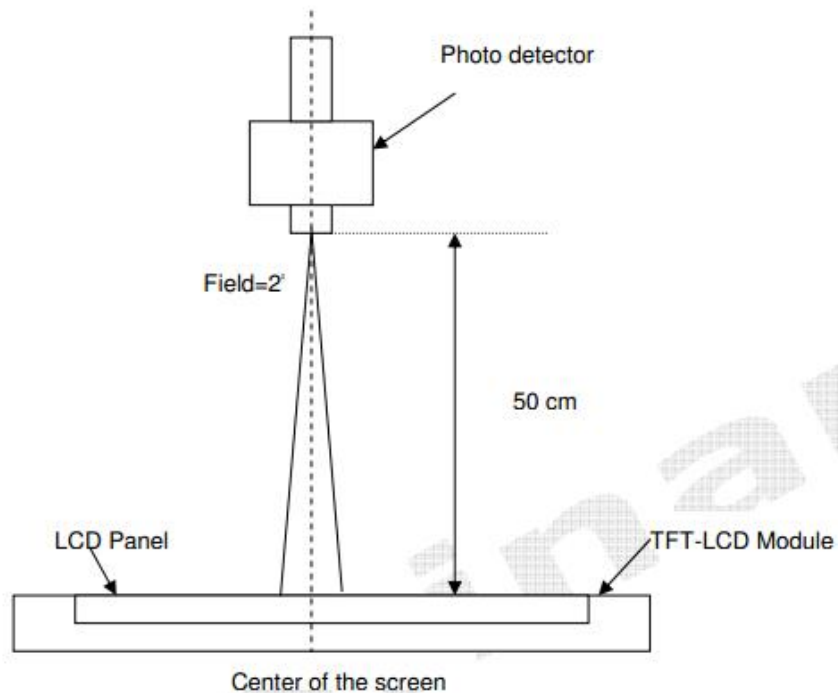
2.0 Optical Characteristics

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (CR \geq 10)	θ_L	$\Phi=180^\circ$ (9 o'clock)		85	-	degree	Note 1
	θ_R	$\Phi=0^\circ$ (3 o'clock)		85	-		
	θ_T	$\Phi=90^\circ$ (12 o'clock)		85	-		
	θ_B	$\Phi=270^\circ$ (6 o'clock)		85	-		
Response time Rise+Fall	T_{RT}	Normal $\theta=\Phi=0^\circ$	8	16	-	Ms	Note 3
Contrast ratio	CR		-	400	-	-	Note 4
Color chromaticity	W_X		0.26	0.31	0.34	-	Note 2/5/6
	W_Y		0.27	0.32	0.35	-	
Luminance	L		800	850	-	cd/m2	Note 4
Luminance uniformity	Y_U	9 AVG	75	80	-	%	Note7

Note 1: Measurement method

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting .

Backlight for 30 minutes in a stable, windless and dark room, and it should be measured in the center of screen.



Note 2: Definition of Average Luminance of White (YL):

Measure the luminance of gray level 63 at 5 points, $YL = [L(1) + L(2) + L(3) + L(4) + L(5)] / 5$
 $L(x)$ is corresponding to the luminance of the point X at Figure in Note (1)

Note 3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula.

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

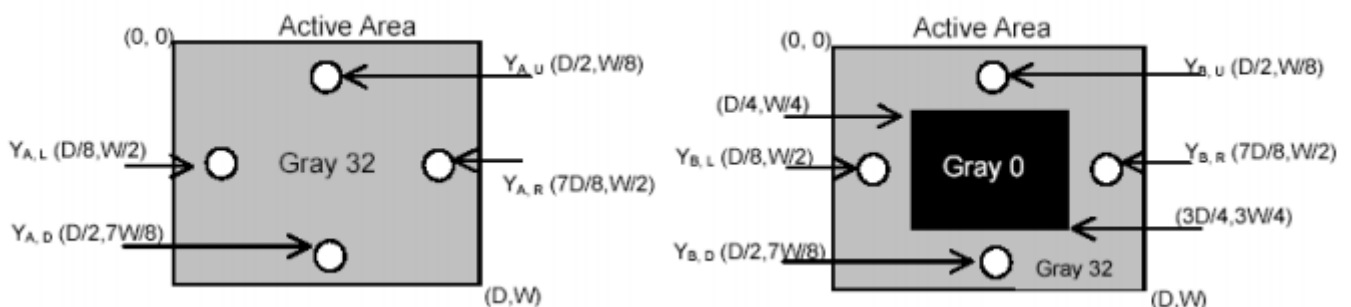
Note 4: Definition of Cross Talk (CT)

$$CT = |Y_B - Y_A| / Y_A \times 100 (\%)$$

Where

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

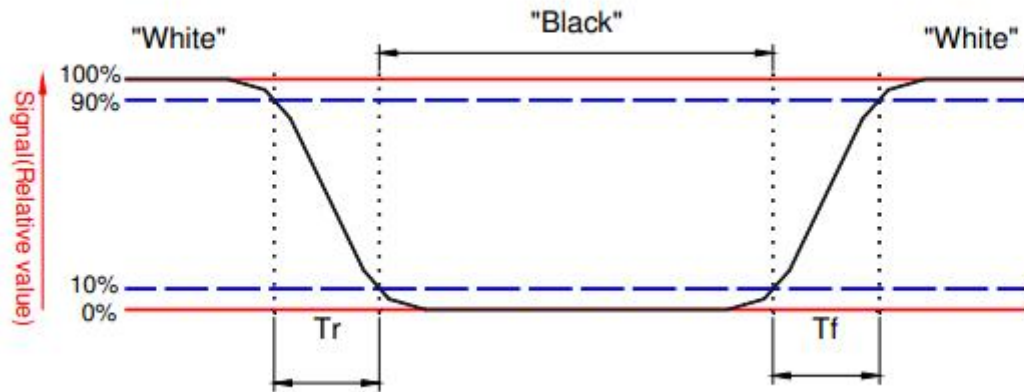
Y_B = Luminance of measured location with gray level 0 pattern (cd/m²)





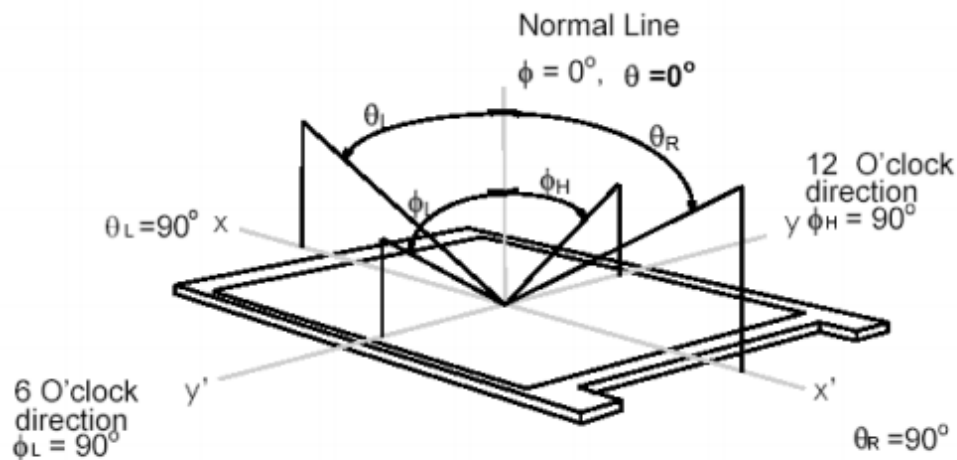
Note 5: Definition of response time:

The output signals of BM-7 or equivalent are measured when the input signals are changed from "Black" to "White" (falling time) and from "White" to "Black" (rising time), respectively. The response time interval between the 10% and 90% of amplitudes. Refer to figure as below.



Note 6. 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 viewing angles). The 180° viewing angle range is broken down as follows; 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 about its center to develop the desired measurement viewing angle.





3. Electrical Characteristic

3.1 Absolute Maximum Ratings

Parameter	Symbol	Condition	Ratings		Unit	Remark
			Min.	Max.		
+3.3V supply voltage	VDD	Ta=25°C	-0.3	+4.0	V	
Back Light supply voltage	VBL	Ta=25°C	-0.3	+26.5	V	
Input voltage(eDP)	VI	Ta=25°C	-0.3	+1.5	V	[Note 5-1]
Input voltage(BL)	VBL_I	Ta=25°C	-0.3	VDD+0.3	V	[Note 5-2]
Operation temperature	TOPR	-	0	+50	°C	[Note 5-3]
Storage temperature	TSTG	-	-20	+60	°C	

(*) “Absolute Maximum Ratings” is regulations that do not exceed it even momentarily.

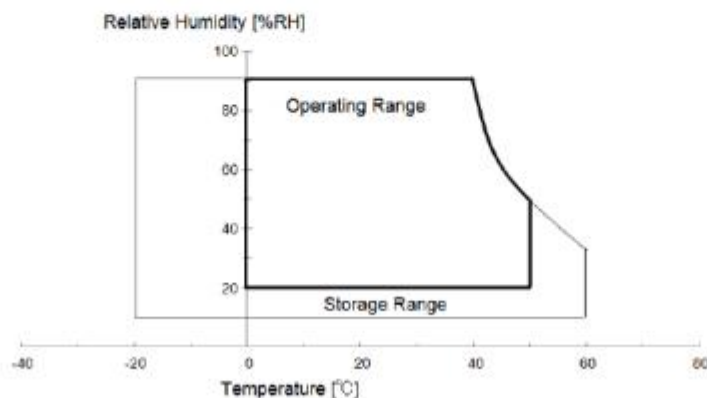
(*) Stress beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device.

[Note 5-1] eDP signal

[Note 5-2] Backlight control signals(BL_ENABLE,BL_PWM_DIM)

[Note 5-3] Humidity: 90%RH Max. (Ta ≤ +40°C).

Maximum wet-bulb temperature at +39°C or less at Ta > +40°C, No condensation.





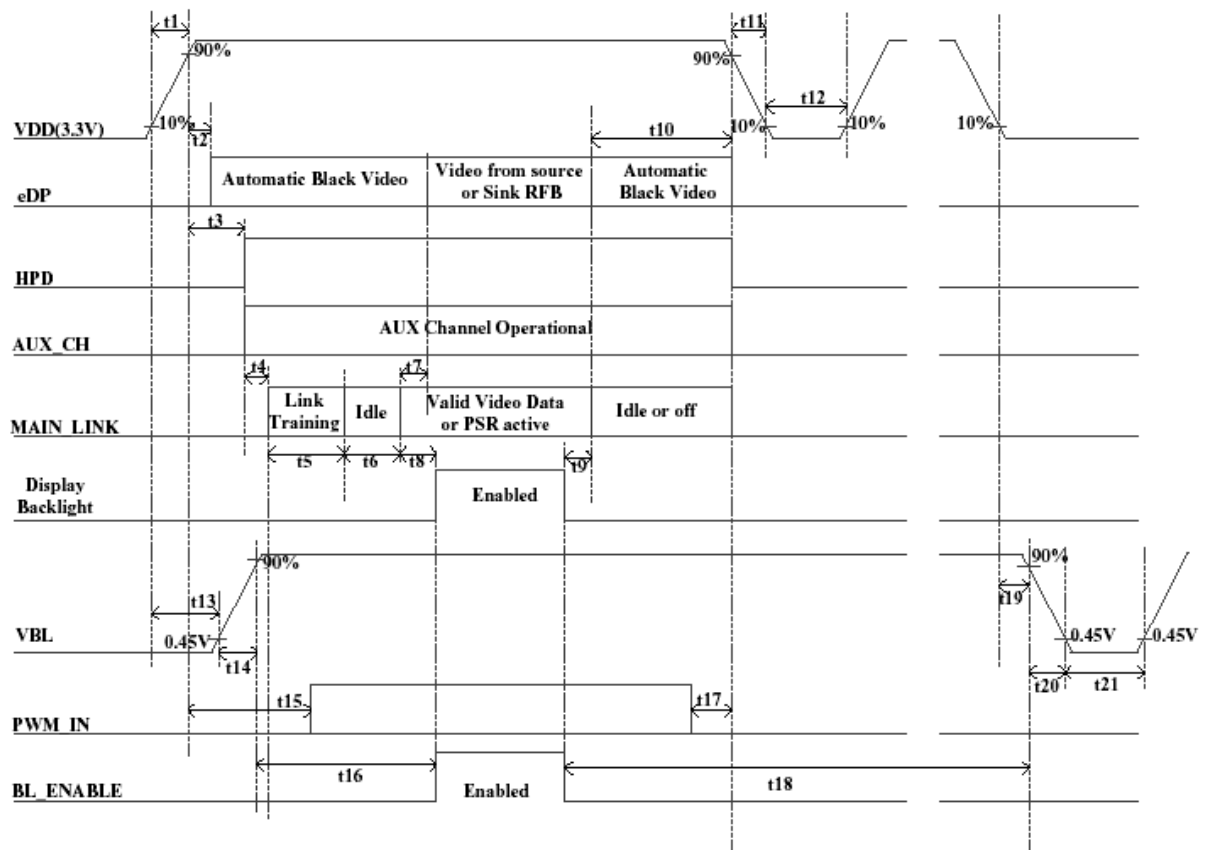
3.2 DC Characteristics

3.2.1 TFT-LCD panel driving

Ta=+25℃

DC Electrical Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
+3.3V supply voltage	VDD	+3.0	+3.3	+3.6	V	[Note 5-2-1]
Current dissipation	IDD	-	180		mA	[Note 5-2-2]
Permissible input ripple voltage	V _{IRP}	-	-	100	mVp-p	VDD=+3.3V
eDP AUX Channel Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Unit Interval for AUX channel	UI _{AUX}	0.4	0.5	0.6	μS	
Peak-to-peak voltage at TP1	V _{AUX-DIFF-pp}	0.32	-	1.36	V	
AUX DC Common mode Voltage	V _{AUX-DC-CM}	0	-	2.0	V	
AUX Short current limit	I _{AUX-SHORT}	-	-	90	mA	
AUX CH terminationDCresistor	R _{AUX-TERM}	-	100	-	Ω	Differential input
AUX AC coupling capacitor	C _{AUX}	75	-	200	nF	
Number of pre-charge pulses	Pre-charge pulses	10	-	16		
eDP Main Link Receiver Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Link clock down spreading	Down_Spread_Amplitude	0		0.5	%	
Differential Peak-to-peak Input Voltage at Rx package pins	V _{RX-DIFF-pp}	90	-	1200	mV	
Differential Return Loss at 1.35GHz at Rx package pins	RL _{RX-DIFF}	9	-	-	dB	
Differential termination resistance	R _{RX-TERM}	-	100	-	Ω	
RX short circuit Current Limit	I _{RX-SHORT}	-	-	50	mA	
Lane Intra-pair Skew at RX package pins	T _{RX-SKEW-INTRAPAIR-High-Bit-Rate}	-	-	50	ps	

[Note 5-2-1] ON-OFF conditions for supply voltage



[Note] Do not keep the interface signal high-impedance or unusual signal when power is on.

Symbol	Min	Max	Unit	Note
t1	0.5	10	ms	
t2	0	100	ms	
t3	0	100	ms	
(t4)	-	-	ms	
(t5)	-	-	ms	
(t6)	-	-	ms	
(t7)	0	50	ms	
(t8)			ms	
(t9)			ms	
(t10)	0	500	ms	
t11	1	50	ms	[Note1]
t12	500	-	ms	
(t13)	-	-	ms	
t14	0.5	10	ms	
t15	100		ms	
(t16)	-	-	ms	
t17	0	-	ms	
(t18)	-	-	ms	
t19	-	-	ms	
t20	0.1	-	ms	
t21	100		ms	

[Note 1] As for the power off sequence for VDD (t11), be sure to keep above mentioned timing.



If the VDD power off sequence timing is other than shown above, LCD may cause permanent damage.

*1 : As for the power sequence for backlight, it is recommended to apply above mentioned input timing.

If the backlight is light on and off at a timing other than shown above, displaying image maybe getdisturbed.

VDD-dip-conditions

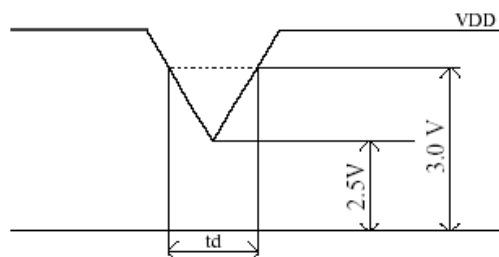
1) $2.5\text{ V} \leq \text{VDD} < 3.0\text{ V}$

$t_d \leq 10\text{ ms}$

Under above condition, the display image should return to an appropriate figure after VDD voltage recovers.

2) $\text{VDD} < 2.5\text{ V}$

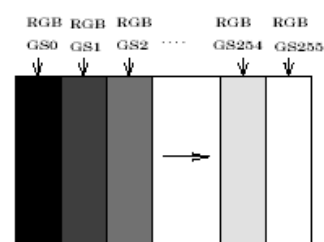
VDD-dip conditions should also follow the ON-OFF conditions for supply voltage.



[Note 6-1-2]

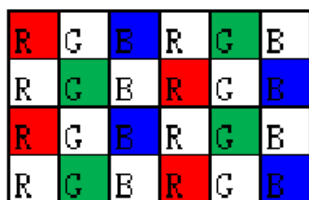
Typical current condition: 16-gray-bar pattern.

$\text{VDD} = +3.3\text{V}$



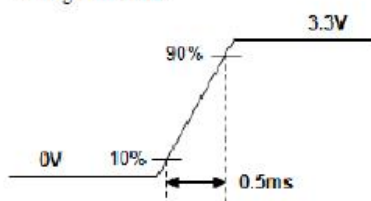
Maximum current condition: Vertical stripe pattern.

$\text{VDD} = +3.3\text{V}$

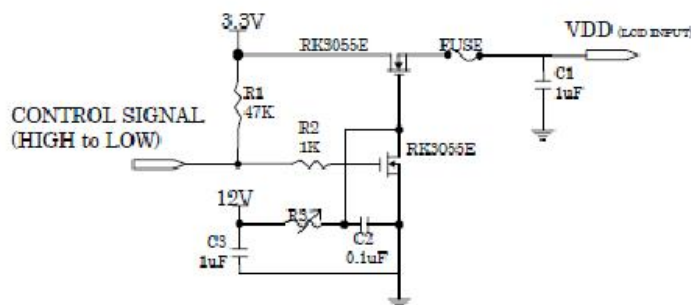


[Note 6-1-3]

• Rising time VDD :



• measurement condition :





3.3 Timing characteristics of input signals

Parameter		Symbol	Min.	Typ.	Max.	Unit
Frame Rate		-		60	-	Hz
Clock frequency		1/ T _{Clock}	66.4	76.3	80	MHz
Vertical Section	Period	T _V	776	798	1000	T _{Line}
	Active	T _{VD}	768			
	Blanking	T _{VB}	8	30	232	
Horizontal Section	Period	T _H	1426	1592	2000	T _{Clock}
	Active	T _{HD}	1366			

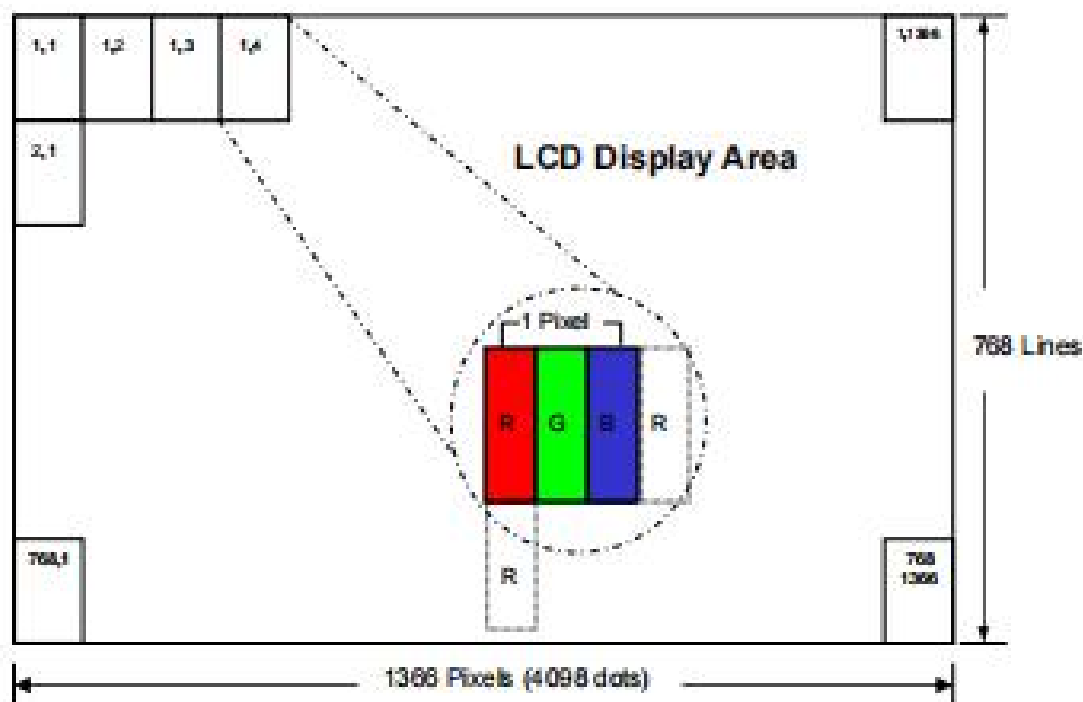
	Blanking	T_{HB}	60	226	634	
--	----------	----------	----	-----	-----	--



4. Signal Interface Characteristic

4.1 Pixel Format Image

Following figure shows the relationship of the input signals and LCD pixel format.





5.0 Back-light Unit:

PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
LED Current	IF	–	420	–	mA	–	–
LED Voltage	VF	16.8	18.6	20.5	V	–	–
Life Time		–	20000	–	Hr.	$I \leq 420\text{mA}$	–
Color	White						

Note (1) Permanent damage may occur to the LCD module if beyond this specification. Functional operation should be restricted to the conditions described under normal operating conditions.

(2) $T_a = 25 \pm 2^\circ\text{C}$

(3) Test condition: LED Current 420mA

Backlight input signal characteristics

Parameter	Symbol	Min	Typ	Max	Units
LED Power Supply	VLED	5.0	12.0	21.0	[Volt]
LED Drive IC Output Voltage range	Vout	22.0	--	34	[Volt]
LED Enable Input High Level	VLED_EN	2.5	-	5.5	[Volt]
LED Enable Input Low Level		-	-	0.8	[Volt]
PWM Logic Input High Level	VPWM_EN	2.5	-	5.5	[Volt]
PWM Logic Input Low Level		-	-	0.8	[Volt]
PWM Input Frequency	FPWM	200	1K	10K	Hz
PWM Duty Ratio	Duty	1	--	100	%
LED Drive IC Output Current limit range (1 channel)	ILED	24.25	25	25.75	mA

Define as connector interface ($T_a = 25^\circ\text{C}$)



6.0 Interface Pin Connection

PIN NO	SYMBOL	DESCRIPTION
1	NC	Reserved for LCD
2	H_GND	High Speed Ground
3	Lane1_N	Complement Signal Link Lane 1
4	Lane1_P	True Signal Link Lane 1
5	H_GND	High Speed Ground
6	Lane0_N	Complement Signal Link Lane 0
7	Lane0_P	True Signal Link Lane 0
8	H_GND	High Speed Ground
9	AUX_CH_P	True Signal Auxiliary Channel
10	AUX_CH_N	Complement Signal Auxiliary Channel
11	H_GND	High Speed Ground
12	LCD_VCC	LCD logic and driver power(3.3V)
13	LCD_VCC	LCD logic and driver power(3.3V)
14	NC	Reserved for LCD manufacturer's use
15	LCD_GND	LCD logic and driver ground
16	LCD_GND	LCD logic and driver ground
17	HPD	HPD Signal
18	BL_GND	Backlight ground
19	BL_GND	Backlight ground
20	BL_GND	Backlight ground
21	BL_GND	Backlight groundv
22	BL_ENABLE	Backlight on/off
23	BL_PWM_DIM	System PWM
24	NC	Reserved for LCD for manufacturer's use
25	NC	Reserved for LCD for manufacturer's use
26	BL_PWR	Backlight power 5-12v
27	BL_PWR	Backlight power 5-12v
28	BL_PWR	Backlight power 5-12v
29	BL_PWR	Backlight power 5-12v
30	NC	Reserved for LCD for manufacturer's use

[Note 4-1-1] Don't input any signals or any powers into a NC pin. Keep the NC pin open.

[Note 4-1-2] The shielding case is connected with signal GND.

- Connector used :20455-030E-76 (I-PEX)
- Corresponding connector : 20453-030T (I-PEX)

(Panda is not responsible to its product quality, if the user applies a connector not corresponding to th



7.0 Reliability test items

NO	Item	Conditions	Remark
1	High Temperature Storage	Ta=+70℃,24hrs	
2	Low Temperature Storage	Ta=-20℃,24hrs	
3	High Temperature Operation	Ta=+50℃,24hrs	
4	Low Temperature Operation	Ta=-0℃,24hrs	
5	High Temperature and High Humidity (operation)	Ta=+40℃,90%RH,24hrs	
6	Thermal Cycling Test (non operation)	-20℃ (0.5hr)→+70℃ (0.5hr),200cycles	
11	Electrostatic Discharge	150pf/330Ω/±6KV air 200pf/0Ω/±4KV contact test	

Note: All tests above are practiced at module type.

There is no display function NG issue occurred, All the cosmetic specification is judged before the reliability stress.



8.0 Outline dimension

