DESCRIPTION

The following specifications are applied to the following TFT LCD module.
This specification is based on customer's request specification version 0.6 (update on 10 October 2014).

Product Name : VVX14P048M00

General Specifications

Effective display area	: (H) 285.30 × (V) 190.20	(mm)
Number of pixels	: (H) 3,000 × (V) 2,000	(pixels)
Pixel pitch	: (H) 0.0951 × (V) 0.0951	(mm)
Color pixel arrangement	: R+G+B vertical stripe	
Display mode	: Transmissive mode Normally black mode	
Top polarizer type	: Hard Coat + Retardation Film Contact angle on top polarizer : $< 85^{\circ}$ (without protective film / Pure water)	
Number of colors	:16,777,216	(colors)
Input signal	: eDP 1.3 4Lanes	
Backlight	: 60pcs LEDs	
External dimensions	: Typ. (H) 294.5 × (V)201.3 × (t) 2.21 (PCB area : 4.43 (mm)	
Weight	: Max 222	(gram)
RoHS directive	:RoHS compliant	

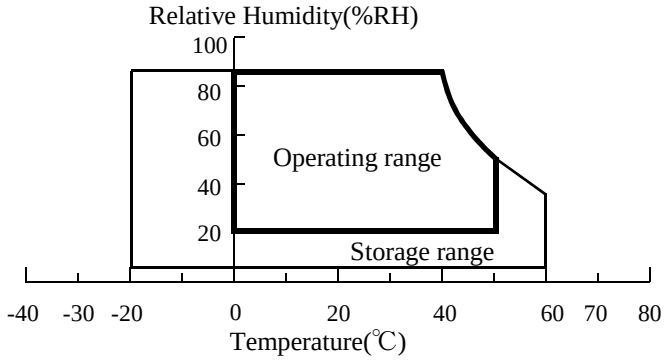
1. ABSOLUTE MAXIMUM RATINGS

1. 1 Environmental Absolute Maximum Ratings

ITEM	Operating		Storage		UNIT	NOTE
	Min.	Max.	Min.	Max.		
Temperature	0	50	-20	60	℃	1),3)
Humidity	2)		2),4)		%RH	1)
Vibration	-	-	5)		m/s^2	
Shock	-	-	6)		m/s^2	
Corrosive Gas	Not Acceptable		Not Acceptable		-	
Illumination at LCD Surface	-	50,000	-	50,000	1x	

Note 1) Temperature and Humidity should be applied to the glass surface of a IPS-Pro TFT LCD module, not to the system installed with a module.

2) Ta≦40 ℃ · · · · · · Relative humidity should be less than 85 %RH max. Dew is prohibited.
Ta＞40 ℃ · · · · · · Relative humidity should be lower than the moisture of the 85 %RH at 40 ℃.



3) The temperature of LCD front surface would be 65 ℃ in operating, it may affect the optical characteristics however it does not damage the function of the module.

4) The humidity of LCD front surface would be less than 20%RH in storage
it may affect the optical characteristics
however it does not damage the function of the module.

5) Vibration (Non-OP) : Frequency 5-500Hz , Acceleration 2.41 Grms , 30min each axis (X,Y&Z)

6) Shock (Non-OP) : Acceleration 120G 2ms half sine, 1 times each direction (X,Y&Z)

1. 2 Electrical Absolute Maximum Ratings

(1)TFT-LCD module V_{SS} = 0 V

ITEM	SYMBOL	Min.	Max.	UNIT	NOTE
Power Supply Voltage	VCC	-0.3	6.3	V	
Input Voltage for logic 1	VI_1	-0.3	1.4	V	1)
Input Voltage for logic 2	VI_2	-0.3	2.0	V	2)
LED Forward Current	IfLED	-	30	mA/string	3)

Note 1) eDP signal (Main Link, AUX)
2) PWMI
3) The specification shall be applied at connector pins for LED at start-up.

2. INITIAL OPTICAL CHARACTERISTICS

The following optical characteristics are measured under stable conditions. It takes about 30 minutes to reach stable conditions. The measuring point is the center of display area unless otherwise noted.

The optical characteristics should be measured in a dark room or equivalent state.

Measuring equipment : CS-2000, or equivalent

Ambient Temperature =25 ℃ , BL_PWR=3.0 ～5.0V , f v=60 Hz ,

If=20mA (on duty 100%)

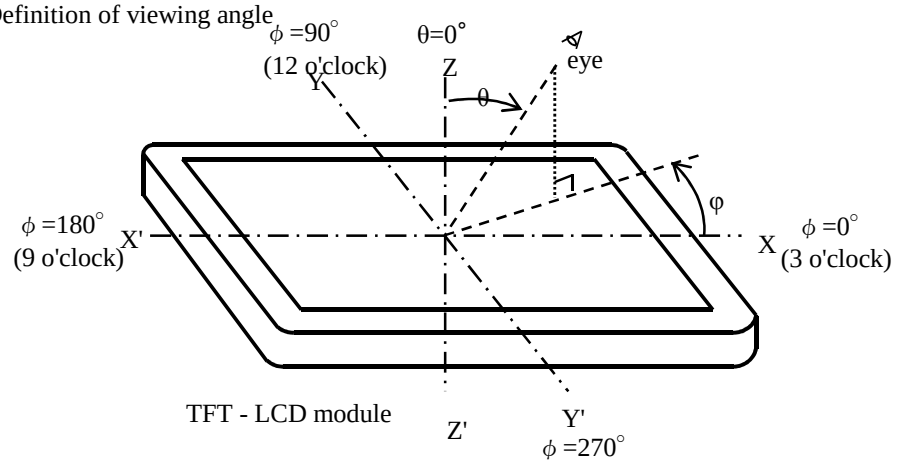
ITEM		SYMBOL	CONDITION	Min.	Typ.	Max.	UNIT	NOTE
Contrast ratio		CR	θ = 0 ° 1)	1200	1800	-	-	1),2)
Response time (Rise + Fall)		Tr + Tf	θ = 0 ° 1)	-	-	35−80 ∗)	ms	1),3)
Brightness of white		Bwh(5points)		400	480	-	cd/m^2	1),4)
Brightness uniformity		Buni(13points)		70	-	-	%	1),5)
Color chromaticity (CIE)	Red	x		0.615	0.640	0.665	-	1) 【Gray scale =255】
		y		0.305	0.330	0.355		
	Green	x		0.275	0.300	0.325		
		y		0.575	0.600	0.625		
	Blue	x		0.125	0.150	0.175		
		y		0.035	0.060	0.085		
	White	x		0.288	0.313	0.338		
		y		0.304	0.329	0.354		
Contrast for View Angle	Right	−	θ=80 °,φ=0°	80	-	-	-	1)
	Top	−	θ=80 °,φ=90°	80	-	-		
	Left	−	θ=80 °,φ=180°	80	-	-		
	Bottom	−	θ=80 °,φ=270°	80	-	-		
sRGB		−	θ = 0 ° 1)	−	100	-	%	1)
W,R,G,B Gamma		−	θ = 0 °	1.95	2.2	2.45	-	1)
Cross talk		CT	θ = 0 °			2	%	6)

*) Detail response time

y gray level \ x gray level	0	31	63	95	127	159	191	223	255
0		-	-	-	-	-	-	-	-
31	-		-	-	-	-	-	-	-
63	<55	<60		-	-	-	-	-	-
95	<60	<70	<75		-	-	-	-	-
127	<65	<75	<80	<75		-	-	-	-
159	<55	<65	<70	<75	<75		-	-	-
191	<50	<60	<65	<70	<70	<65		-	-
223	<45	<55	<60	<60	<60	<60	<55		-
255	<35	<40	<45	<50	<50	<50	<45	<45	

(ms)

Note 1) Definition of viewing angle

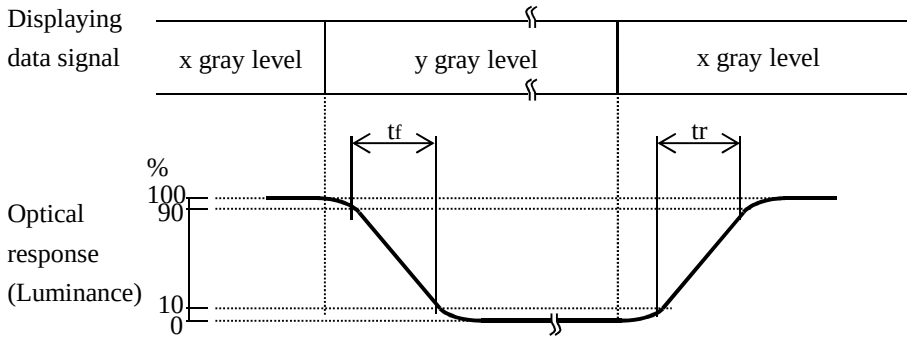


2) Definition of contrast ratio (CR)

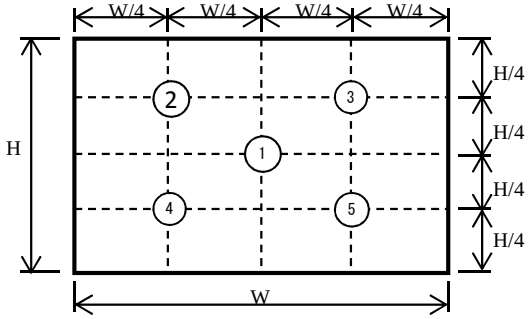
$$CR = \frac{\text{(Luminance at displaying WHITE on each measuring point)}}{\text{(Luminance at displaying BLACK on each measuring point)}}$$

CR(5points) = Average of CRs at measureing points (①～⑤) on 4)

3) Definition of response time



4) Definition of Brightness

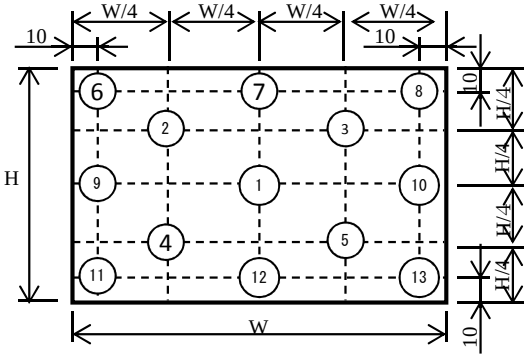


①～⑤ : measuring points

Bwh ＝(①＋②＋③＋④＋⑤)/5

Unit : mm

5) Definition of Uniformity



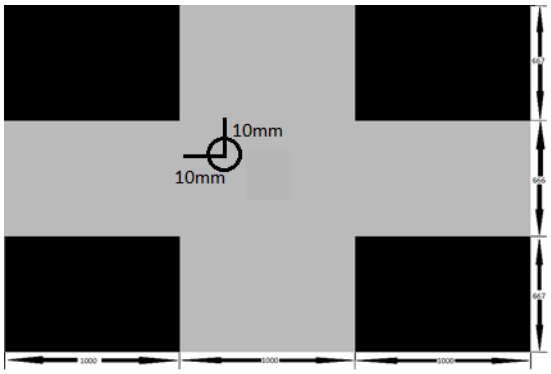
①～⑬ measuring points

Buni (13 Points) ＝ max(①～⑬)/min(①～⑬)

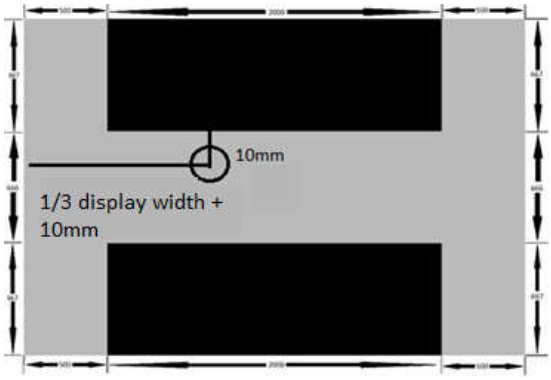
6) Definition of Cross talk

The following images are to be used for display crosstalk measurements. The grays are 186 gray level and 0 gray level. In each cases, the luminance measurements are to be taken while the respective test patterns are displayed.
The cross talk is defined as the following equation.

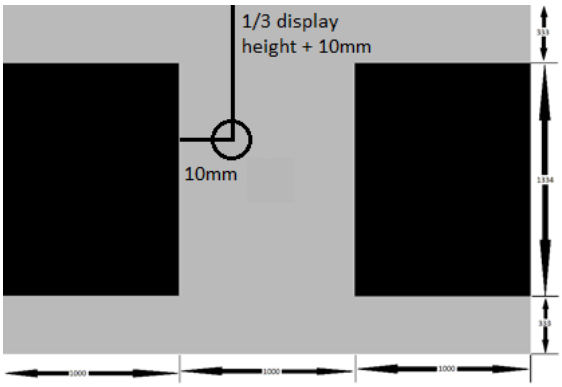
Vertical Crosstalk = (|Lver-Lref|/Lref)*100%
Horizontal Crosstalk = (|Lh-Lref|/Lref)*100%



Display Pattern for Lref



Display pattern for Lver



Display pattern for Lh

3. ELECTRICAL CHARACTERISTICS

3. 1 TFT-LCD module

Ta = 25 ℃ , V_{SS} = 0 V

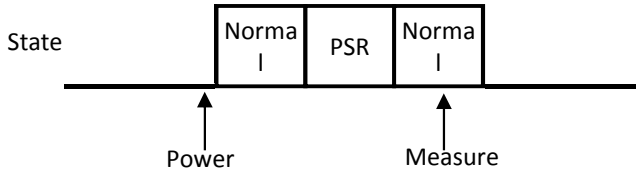
ITEM		SYMBOL	Min.	Typ.	Max.	UNIT	NOTE
Power supply voltage		VCC	3.0	3.3	3.6	V	
Power consumption		P_{CC}	-	1.2	1.3	W	1)2)4)
			-	2.7	3.2	W	1)3)4)
Ripple voltage of power supply		V_{CCR}	-	-	(100)	mV	
LED forward voltage		VfLED	-	29	32	V/strings	
LED forward current		IfLED	-	20	-	mA/strings	
Logic signals input voltage	High	VIH	1.12	-	1.8	V	PWMI
	Low	VIL	0	-	0.47	V	
Logic signals output voltage 1	High	VOH	1.55	-	1.8	V	PWMO
	Low	VOL	0	-	0.188	V	
Logic signals output voltage 2	High	VOH	2.70	-	3.6	V	HPD 5)
	Low	VOL	0	-	0.36	V	

Note 1) fV=60.0Hz, VCC=3.3V

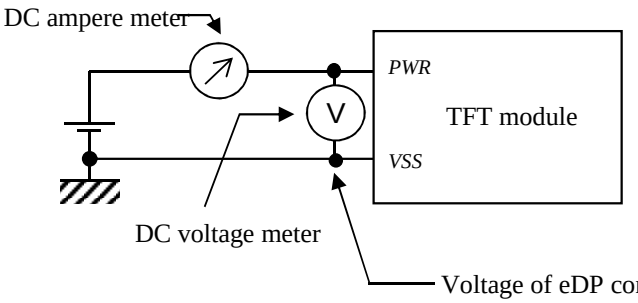
2) display pattern is white raster.

3) display pattern is Horizontal stripe
Horizontal stripe pattern stands for black and white horizontal stripe, line by line.

4) After the system start-up, please support the PSR ON → OFF.



5) HPD voltage may vary according to VCC voltage.



3. 2 Backlight unit

ITEM	SYMBOL	Min.	Typ.	Max.	UNIT	NOTE
Power Consumption	Pbl	-	3.48	3.84	W	1), 2)
Power Supply Voltage	VfLED	-	2.9	3.2	V	

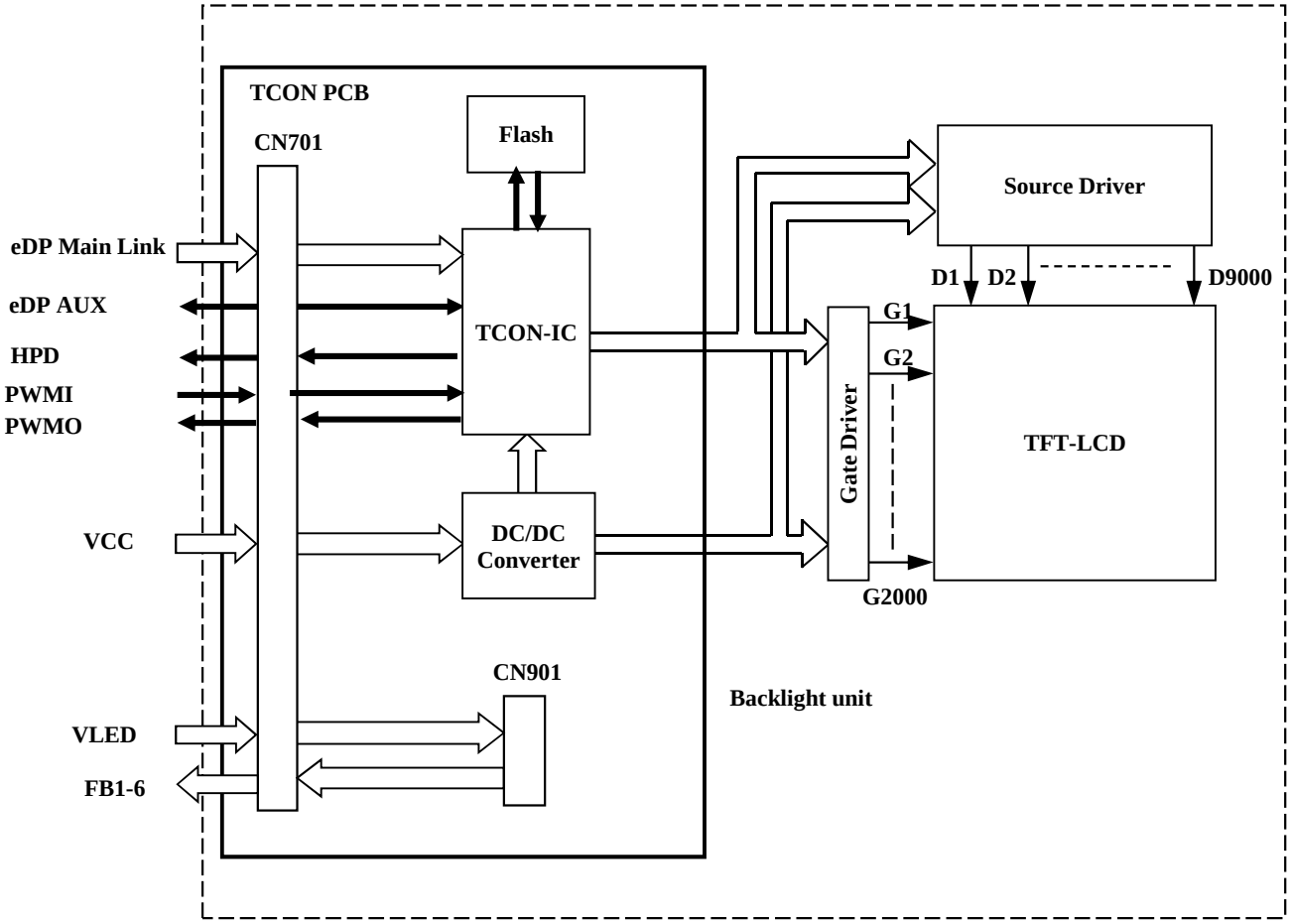
One Backlight Unit : 1 LED Array
One LED Array : 6 LED String
One LED String : 10 LED package

Note 1) This characteristics should be applied putting on the LED about 60 minutes later with ambient temperature.
(Ta = 25 ℃ ± 2 ℃)

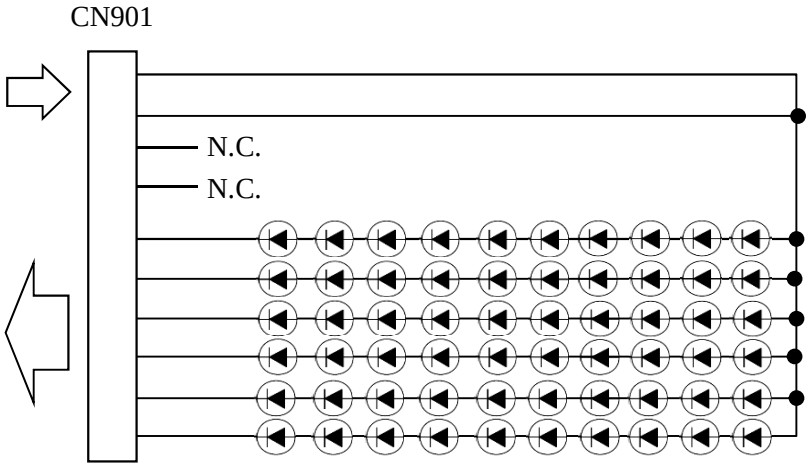
2) This value does not include LED driver loss.

4. BLOCK DIAGRAM

4. 1 TFT-LCD module



4. 2 Backlight unit



5. INTERFACE PIN ASSIGNMENT

5. 1 TFT-LCD module

CN700:AXE550127FV1

PIN No.	SYMBOL	DESCRIPTION	Note
1	VCC	LCD logic and driver power	
3	VCC	LCD logic and driver power	
5	VCC	LCD logic and driver power	
7	VCC	LCD logic and driver power	
9	GND	LCD logic and driver ground	1)
11	GND	LCD logic and driver ground	1)
13	GND	High Speed Ground	1)
15	DRXON		3)
17	DRXOP		3)
19	GND	High Speed Ground	1)
21	DRX1N		3)
23	DRX1P		3)
25	GND	High Speed Ground	1)
27	DRX2N		3)
29	DRX2P		3)
31	GND	High Speed Ground	1)
33	DRX3N		3)
35	DRX3P		3)
37	GND	High Speed Ground	1)
39	WP	Internally used	4)
41	FB5	Backlight cathode feedback	
43	FB3	Backlight cathode feedback	
45	FB1	Backlight cathode feedback	
47	NC		
49	VLED	Backlight anode power	

PIN No.	SYMBOL	DESCRIPTION	Note
2	VCC	LCD logic and driver power	
4	VCC	LCD logic and driver power	
6	VCC	LCD logic and driver power	
8	SDA	Internally used	4)
10	SCL	Internally used	4)
12	GND	LCD logic and driver ground	1)
14	GND	LCD logic and driver ground	1)
16	GND	LCD logic and driver ground	1)
18	PWMI	System PWM signal input	
20	GND	LCD logic and driver ground	1)
22	BRD_REV(0)		
24	BRD_REV(1)		
26	GND	LCD logic and driver ground	
28	HPD	HPD signal pin	2)
30	PWMO	PWM signal output	
32	GND	High Speed Ground	1)
34	DAUXP		3)
36	DAUXN		3)
38	GND	High Speed Ground	1)
40	BIST	Internally used	4)
42	FB6	Backlight cathode feedback	
44	FB4	Backlight cathode feedback	
46	FB2	Backlight cathode feedback	
48	NC		
50	VLED	Backlight anode power	

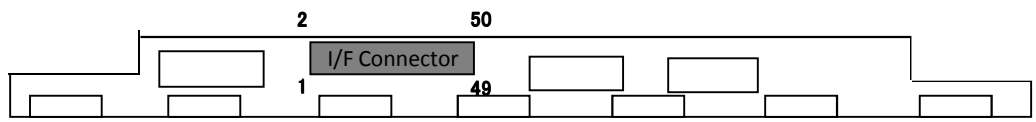
Note 1) All GND pins shall be grounded (0V).

2) HPD signal's Hi voltage is typ.3.3V.

3) Capacitors are necessary to all Main Link and AUX signal lines at Tx (source device) according to eDP standard ver.1.3.

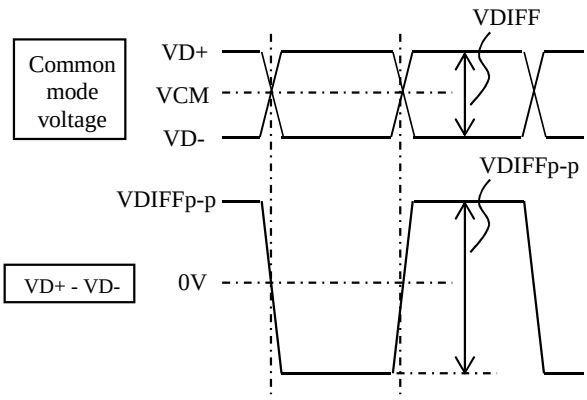
4) Please keep it open.

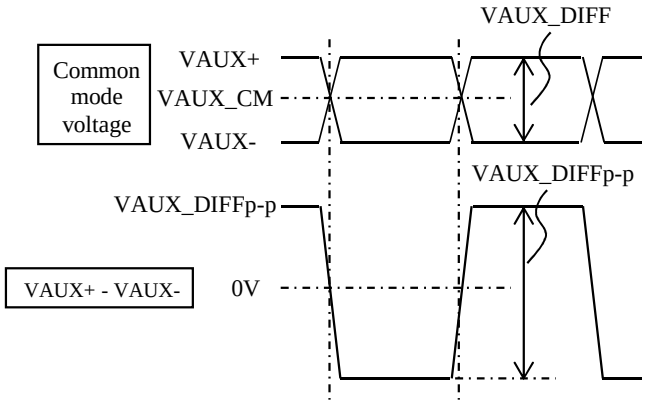
LCD module back side view



6. INTERFACE TIMING

6. 1 eDP receiver timing





(1) DisplayPort Main Link Receiver Characteristics

Symbol	Description	Min.	Typ.	Max.	Unit	Comments
VDIFFp-p	Differential peak-to-peak input voltage	120	-	-	mV	For HBR.
VCM	DC common mode voltage	0	-	2.0	V	
RTERM	Differential termination resistance	-	100	-	Ω	
ISHORT	Short circuit current limit	-	-	50	mA	
LSKEW	Lane Intra-pair skew	-	-	60	ps	For HBR.
LSKEW2	Lane Intra-pair skew 2	-	-	50	ps	For HBR2.

(2) DisplayPort AUX Channel Characteristics

Symbol	Description	Min.	Typ.	Max.	Unit	Comments
UI	AUX Unit interval	0.4	0.5	0.6	us	
VAUX_DIFFp-p	AUX Differential peak-to-peak voltage at a transmitting device	0.39	0.6	1.38	V	
	AUX Differential peak-to-peak voltage at a receiving device	0.32	0.6	1.32	V	
VAUX_CM	AUX DC common mode voltage	-	0.5	-	V	
RAUX_TERM	AUX CH termination resistance	-	100	-	Ω	
IAUX_SHORT	AUX Short circuit current limit	-	-	12	mA	
CAUX	AUX AC coupling capacitor	75	-	200	nF	1)

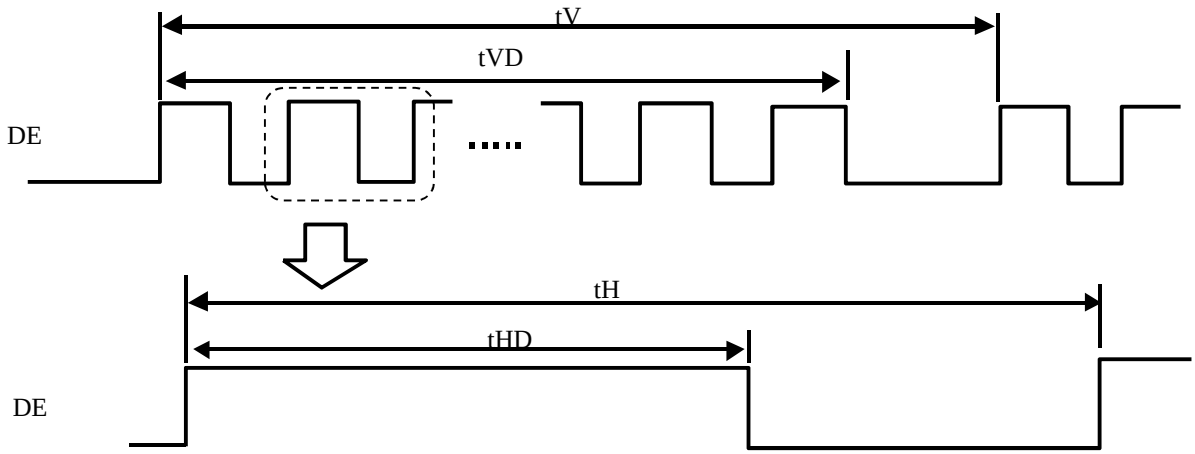
Note 1) Coupling capacitor is not mounted on our PCB.

6. 2 eDP receiver timing

Lane0	Lane1	Lane2	Lane3
R0-7:0	R1-7:0	R2-7:0	R3-7:0
G0-7:0	G1-7:0	G2-7:0	G3-7:0
B0-7:0	B1-7:0	B2-7:0	B3-7:0
R4-7:0	R5-7:0	R6-7:0	R7-7:0
G4-7:0	G5-7:0	G6-7:0	G7-7:0
B4-7:0	B5-7:0	B6-7:0	B7-7:0
R8-7:0	R9-7:0	R10-7:0	R11-7:0
G8-7:0	G9-7:0	G10-7:0	G11-7:0
B8-7:0	B9-7:0	B10-7:0	B11-7:0

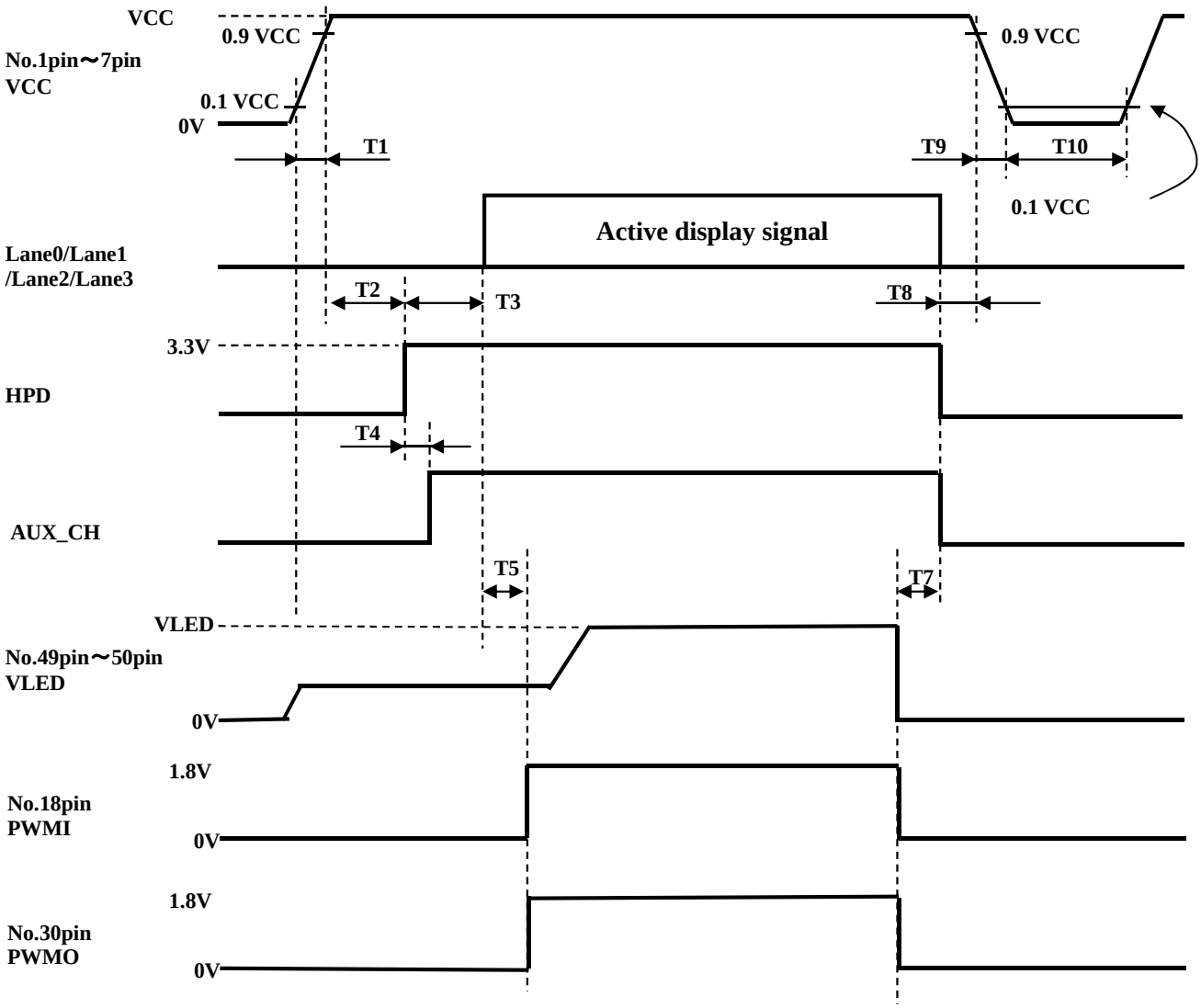
at 8bit Mode

6.4 SYNCRONIZATION SIGNAL TIMING



ITEM		SYMBOL	Min.	Typ.	Max.	UNIT	NOTE
DE	Vertical Frequency	fV	46.0	60.0	60.0	Hz	
	Vertical Period	tV		2064		tH	
	Vertical Valid	tVD		2000		tH	
	Horizontal Frequency	fH	94.94	123.84	123.84	kHz	
	Horizontal Period	tH		3360		tCLK	
	Horizontal Valid	tHD		3000		tCLK	

6.5 Timing between interface signals and power supply



SYMBOL	Min.	Typ.	Max.	UNIT	Note
T1	1	-	10	ms	
T2	−	-	200	ms	
T3	0	-	-	ms	1)
T4	0	-	-	ms	
T5	33.3	-	-	ms	2)
T7	0	-	-	ms	
T8	0	-	500	ms	
T9	-	-	10	ms	
T10	500	-	-	ms	3)

Note 1) It is necessary to wait the period of link training completion.

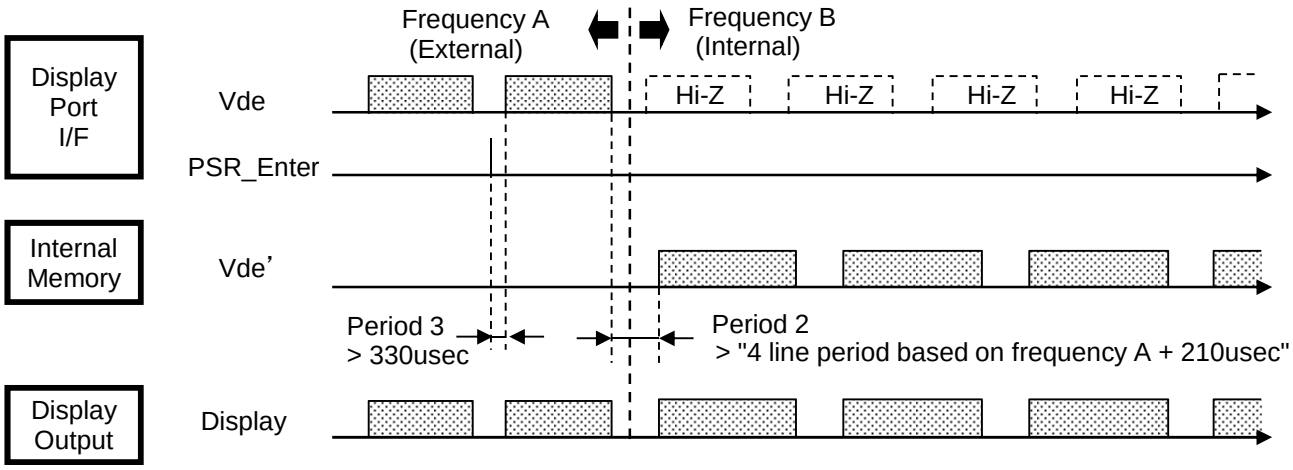
2) At refresh rate of 60Hz.

3) Rebooting without discharging VCC to 0V can not be guaranteed (including instantaneous voltage drop). Once VCC fall below Min. defined voltage (=3.0V), predifined sequence is required.

4) Do not keep the LCD panel with its operation in the condition while the backlight is turned off because there is a possibility that the panel is charged up and may cause MURA.

6.6 Transition Sequence for PSR

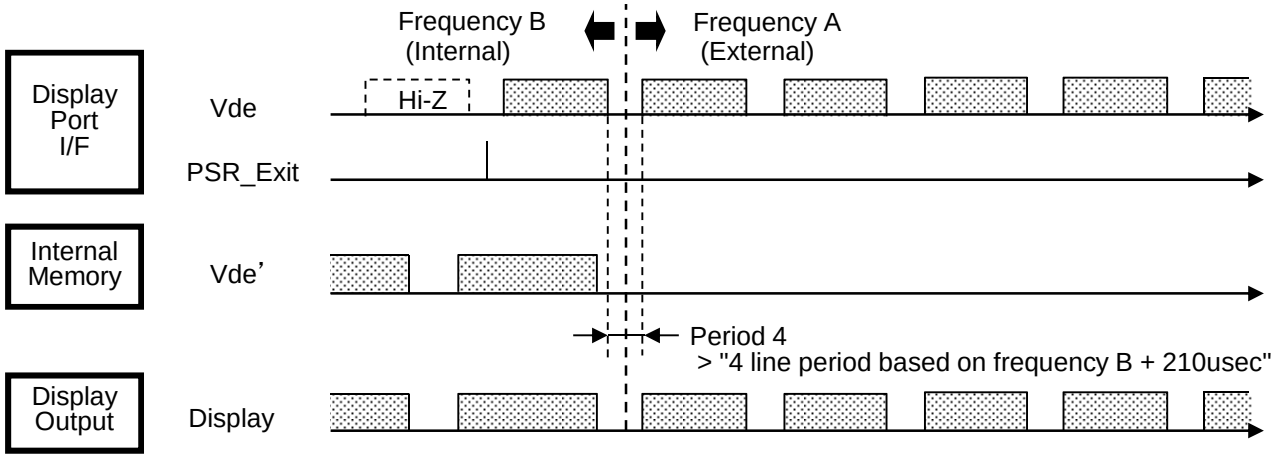
6.6.1 PSR clock switching for entering action



"Period of vertical blanking at PSR mode set by ROM (=period 2)" should be longer than
"4 line period based on frequency A + 210usec".

Also period longer than 330usec should be reserved
"between PSR_Enter command and next rising edge of Vde (=period 3)".

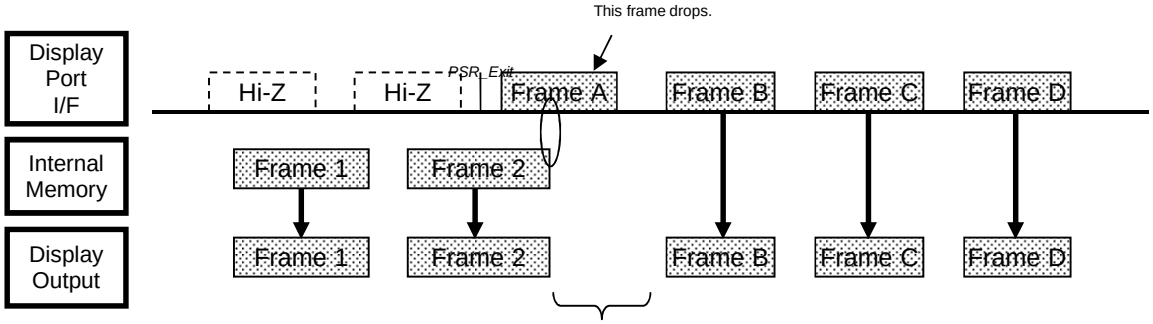
6.6.2 PSR clock switching for exiting action



"Vertical blanking period of video signal from DP (=period 4)" should be longer than
"4 line period based on frequency B + 210usec".
Note that frequency B may vary within +/- 5%.

6.6.2.1 Frame drop of input signal - CASE 1

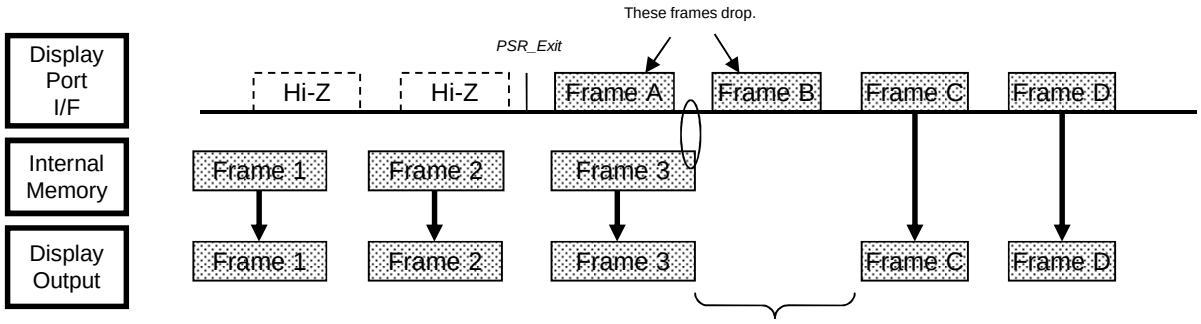
If active period of first frame from DP I/F after PSR_Exit command (=frame A) is still active at the timing when last line data of PSR video signal finished to read out from internal memory, first frame from PSR_Exit command will not be displayed.



Long blanking period may induce flickering of the picture.

6.6.2.2 Frame drop of input signal - CASE 2

If active period of first frame from DP I/F after PSR_Exit command (=frame A) is at vertical blanking period at the timing when last line data of PSR video signal finished to read out from internal memory, first and second frames from PSR_Exit command will not be displayed.



Long blanking period may induce flickering of the picture.

7. LABEL FORMAT

7.1 Lot mark

The Lot mark is on the Rim tape as shown in 12. Dimensional Outline.
The style of character will be changed without notice.

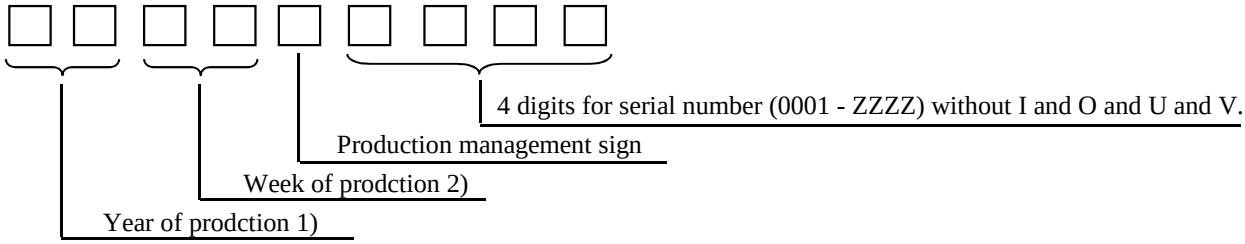
Printing method : Inkjet printing
Color : Black

① Contents of ②～⑧ are indicated by bar codes.【Express by the data matrix】
② Vendor : PLD ※ No print on trial sample
③ Production name : VVX14P048M00
④,⑤,⑥,⑦ Please refer to 7.3.
⑧ A cord for production of PLD inside management.
⑨ Production base
⑩ A suffix for PLD inside management.

7.2 Revision (REV.) control

REV. is the column for manufacturing convenience. A-Z except I and O may be written on this column.

7.3 Lot mark



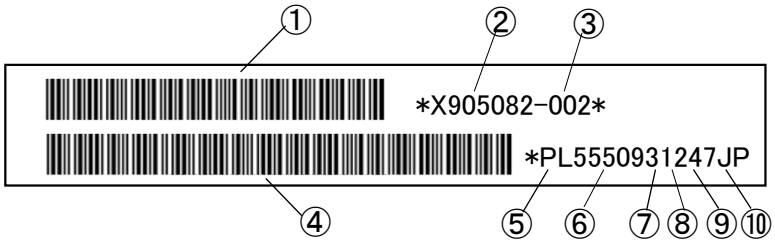
1)

Mark	Year
14	2014
15	2015
16	2016

Note 2)
01 , The 1st week of year
02 , The 2nd week of year
03 , The 3rd week of year
04 , The 4th week of year
05 , The 5th week of year
06 , The 6th week of year
・・・・・
52 , The 52th week of year

7.3 Customer Label

The label is on the Rim tape as shown in 12. Dimensional Outline.



① Contents of ②～③ are indicated by bar codes.
② Specified code (7 digit) : X905082
③ Specification number (4 digit) : -000 ～
④ Contents of ⑤～⑩ are indicated by bar codes.
⑤ Specified code (2 digit) : PL
⑥ Specified code (6 digit) : 000001 ～ 999999
⑦ Check digit (1 digit)
⑧ Year of production (1 digit) : last digit only
⑨ Work week of production (2 digit)
⑩ Specified code (2 digit) : JP

9. PRECAUTION

Please pay attention to the followings when a TFT module with a backlight unit is used, handled and mounted.

9.1 Precaution to handling and mounting

(1) Applying strong force to a part of the module may cause partial deformation of frame or mold, and cause damage to the display.

(2) The module should gently and firmly be held by both hands. Never hold by just one hand in order to avoid any internal damage. Never drop or hit the module.

(3) Uneven force such as twisted stress should not be applied to a module when a module is mounted on the cover case. The cover case must have sufficient strength so that external force can not be transmitted directly to a module.

(4) It is recommended to leave a space between a module and a holding board of a module so that partial force is not applied to a module.

(5) A transparent protective plate should be added on the display area of a module in order to protect a polarizer and TFT cell.The transparent protective plate should have sufficient strength so that the plate can not touch a module by external force.

(6) Materials included acetic acid and choline should not be used for a cover case as well as other parts and boards near a module. Acetic acid attacks a polarizer. Choline attacks electric circuits due to electro-chemical reaction.

(7) The polarizer on a TFT cell should carefully be handled due to its softness, and should not be touched, pushed or rubbed with glass, tweezers or anything harder than HB pencil lead. The surface of a polarizer should not be touched and rubbed with bare hand, greasy clothes or dusty clothes.

(8) The surface of a polarizer should be gently wiped with absorbent cotton, chamois or other soft materials slightly contained petroleum benzene when the surface becomes dirty. Normal-hexane or Isopropyl alcohol as cleaning chemicals is recommended in order to clean adhesives which fix front/rear polarizers on a TFT cell. Other cleaning chemicals such as acetone, toluen and alcohol should not be used to clean adhesives because they cause chemical damage to a polarizer.

(9) Saliva or water drops should be immediately wiped off. Otherwise, the portion of a polarizer may be deformed and its color may be faded.

(10) The module should not be opened or modified. It may cause not to operate properly.

(11) A module should not be handled with bare hand or dirty gloves. Otherwise, color of a module fixed sheet and metal frame may become dirty during its storage. It is recommended to use clean soft gloves and clean finger stalls when a module is handled at incoming inspection process and production (assembly) process.

(12) Printed circuits board part should not be held and touched. It may cause not to operate properly.

9.2 Precaution to operation

(1) The ambient temperature near the operated module should be satisfied with the absolute maximum ratings. Unless it meets the specifications, sufficient cooling system should be adopted to system.

(2) The spike noise causes the mis-operation of a module. The level of spike noise should be as follows:

$-100\text{mV} \leqq$ over- and under- shoot of VDD $\leqq +100\text{mV}$

VDD including over- and under- shoot should be satisfied with the absolute maximum ratings.

(3) Optical response time, luminance and chromaticity depend on the temperature of a TFT module.

(4) Sudden temperature change may cause dew on and/or in the a module. Dew makes damage to a polarizer and/or electrical contacting portion. Dew causes fading of displayed quality.

(5) Fixed patterns displayed on a module for a long time may cause after-image. It will be recovered soon.

(6) A module has high frequency circuits. Sufficient suppression to electromagnetic interference should be done by system manufacturers. Grounding and shielding methods may be effective to minimize the interference.

(7) Noise may be heard when a backlight is operated. If necessary, sufficient suppression should be done by system manufacturers.

(8) The module should not be connected or removed while a main system works.

(9) Inserting or pulling I/F connectors causes any trouble when power supply and signal data are on-state. I/F connectors should be inserted and pulled after power supply and signal data are turned off.

(10)Do not keep the LCD panel with its operation in the condition while the backlight is turned off because there is a possibility that the panel is charged up and may cause MURA.

9.3 Electrostatic discharge control

(1) Since a module consists of a TFT cell and electronic circuits with CMOS-ICs, which are very weak to electrostatic discharge, persons who are handling a module should be grounded through adequate methods such as a list band. I/F connector pins should not be touched directly with bare hands.

(2) Protection film for a polarizer on a module should be slowly peeled off so that the electrostatic charge can be minimized.

9.4 Precaution to strong light exposure

(1) A module should not be exposed under strong light. Otherwise, characteristics of a polarizer and color filter in a module may be degraded.

9.5 Precaution to storage

When modules for replacement are stored for a long time, following precautions should be taken care of:

(1) Modules should be stored in a dark place. It is prohibited to apply sunlight or fluorescent light during storage. Modules should be stored at 0 to 35℃ at normal humidity (60%RH or less).

(2) The surface of polarizers should not come in contact with any other object. It is recommended that modules should be stored in the Panasonic Liquid Crystal Display's shipping box.

9.6 Precaution to handling protection film

(1) The protection film for polarizers should be peeled off slowly and carefully by persons who are electrically grounded with adequate methods such as a list band. Besides, ionized air should be blown over during peeling action. Dusts on a polarizer should be blown off by an ionized nitrogen gun and so on.

(2) The protection film should be peeling off without rubbing it to the polarizer. Because, if the film is rubbed together with the polarizer, since the film is attached to the polarizer with a small amount of adhesive, the adhesive may remain on a polarizer.

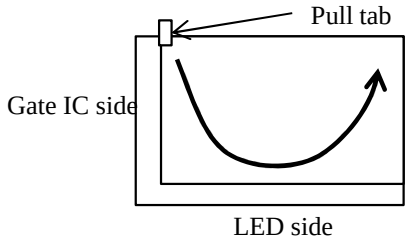
(3) The module with protection film should be stored on the conditions explained in 10.5 (1). However, in case that the storage time is too long, adhesive may remain on a polarizer even after a protection film is peeled off. Besides, in case that a module is stored at higher temperature and/or higher humidity, adhesive may remain on a polarizer. The remained adhesive may cause non-uniformity of display image.

(4) The adhesive can be removed easily with Normal-Hexane or Isopropyl alcohol. The remained adhesive or its vestige on the polarizer should be wiped off with absorbent cotton or other soft materials such as chamois slightly contained Normal-Hexane or Isopropyl alcohol.

(5) The procedure of peeling protection film on polarizer is recommended as follows.

Peel off protection film from upper polarizer film with tape.

Please peel off the protection film like the below figure.



9.7 Safety

(1) Since a TFT cell is made of glass, handling to the broken module should be taken care sufficiently in order not to be injured. Hands touched liquid crystal from a broken cell should be washed sufficiently.

(2) The module should not be taken apart during operation so that backlight drives by high voltage.

9.8 Environmental protection

Flexible printed circuits and printed circuits board used in a module contain small amount of lead. Please follow local ordinance or regulations for its disposal.

9.9 Use restrictions and limitations

(1) This product is not authorized for use in life support devices or systems, military applications or other applications which pose a significant risk of personal injury.

(2) In no event shall Panasonic Liquid Crystal Display Co.,Ltd., be liable for any incidental, indirect or consequential damages in connection with the installation or use of this product, even if informed of the possibility thereof in advance. These limitations apply to all causes of action in the aggregate, including without limitation breach of contact, breach of warranty, negligence, strict liability, misrepresentation and other torts.

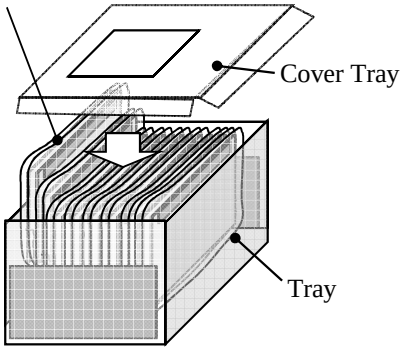
9.10 Others

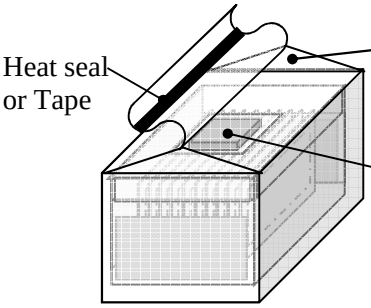
Electrical components which may not affect electrical performance are subjective to change without notice because of their availability.

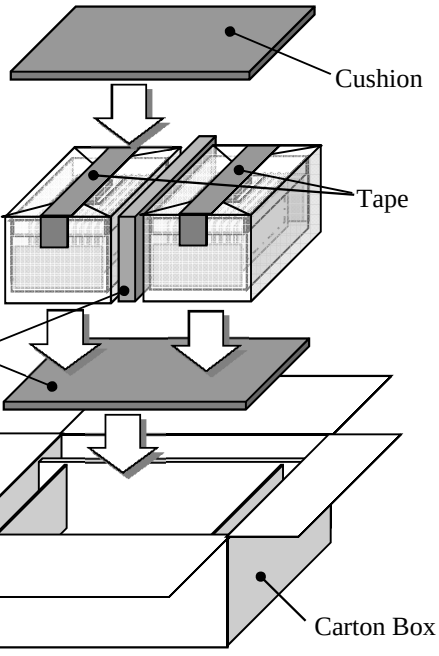
10. PACKING

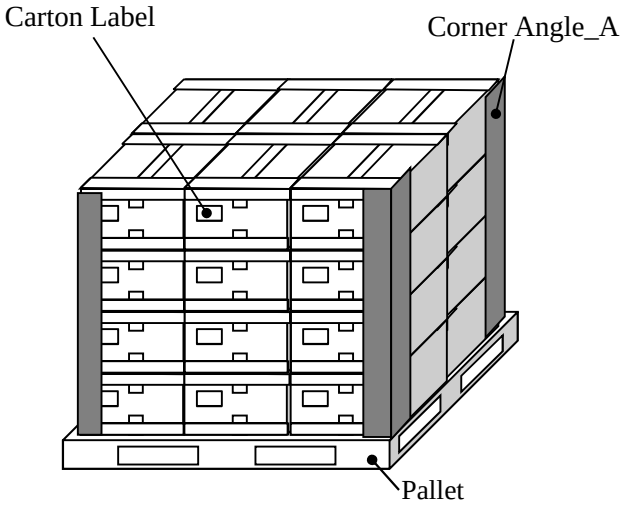
10.1 Standard packing specification

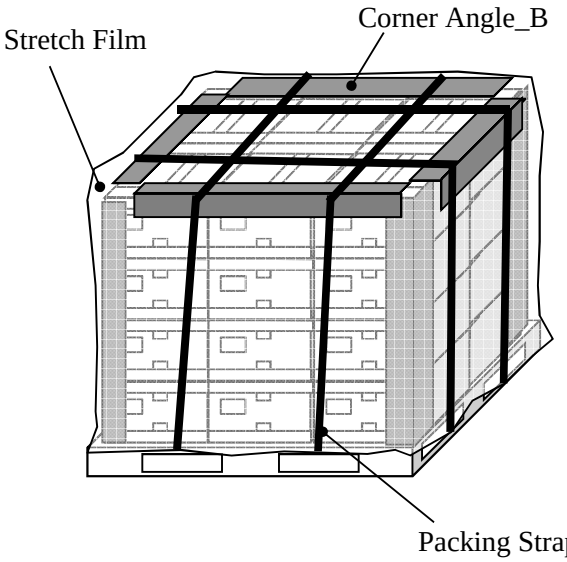
Module
※1 Put the module in PE bag
※2 Put the 2 modules in 1 groove
※3 Screen on the inside
※4 PCB top







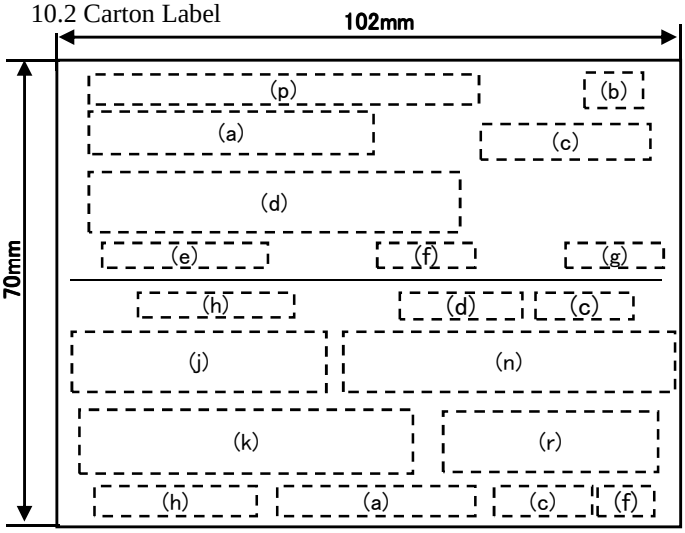




Package information

Item	Box	Pallet
Packing Size [mm]	511×403×275 (inner size)	1300 x 1100 x 1320
Product quantity [Pieces]	40	960
Weight [kg]	-	360

10.2 Carton Label



【Ex.】

Code	Contents of Printing
(a)	PLD internal code.
(b)	The place of issuing label.
(c)	Quantity of the product (pcs)
(d)	This shows product name.(VVX14P048M00)
(e)	Lot of registration
(f)	Revision (Rev.)
(g)	PLD internal code.
(h)	Serial No. of identification tag Serial No. is defined as follows. 1 7 11 B 0001 Serial No. (0001～9999 and A000~Z9999) must be continuous. Do not reset. Date (Refer to the table 1.) The production base refers to Note (1) Base Code mentioned above. Month (Refer to the table 2.) Year (Last 1digit of AD)
(j)	Bar code corresponds to (h).
(k)	Bar codes correspond to (h), (a),(c) and (f). Code of 128.
(n)	Bar codes correspond to (d), (c). Code of 128.
(p)	Panasonic Liquid Crystal Display Co., Ltd.
(n)	10 digits for production number

Table 1 Date ※Do not use I.O.

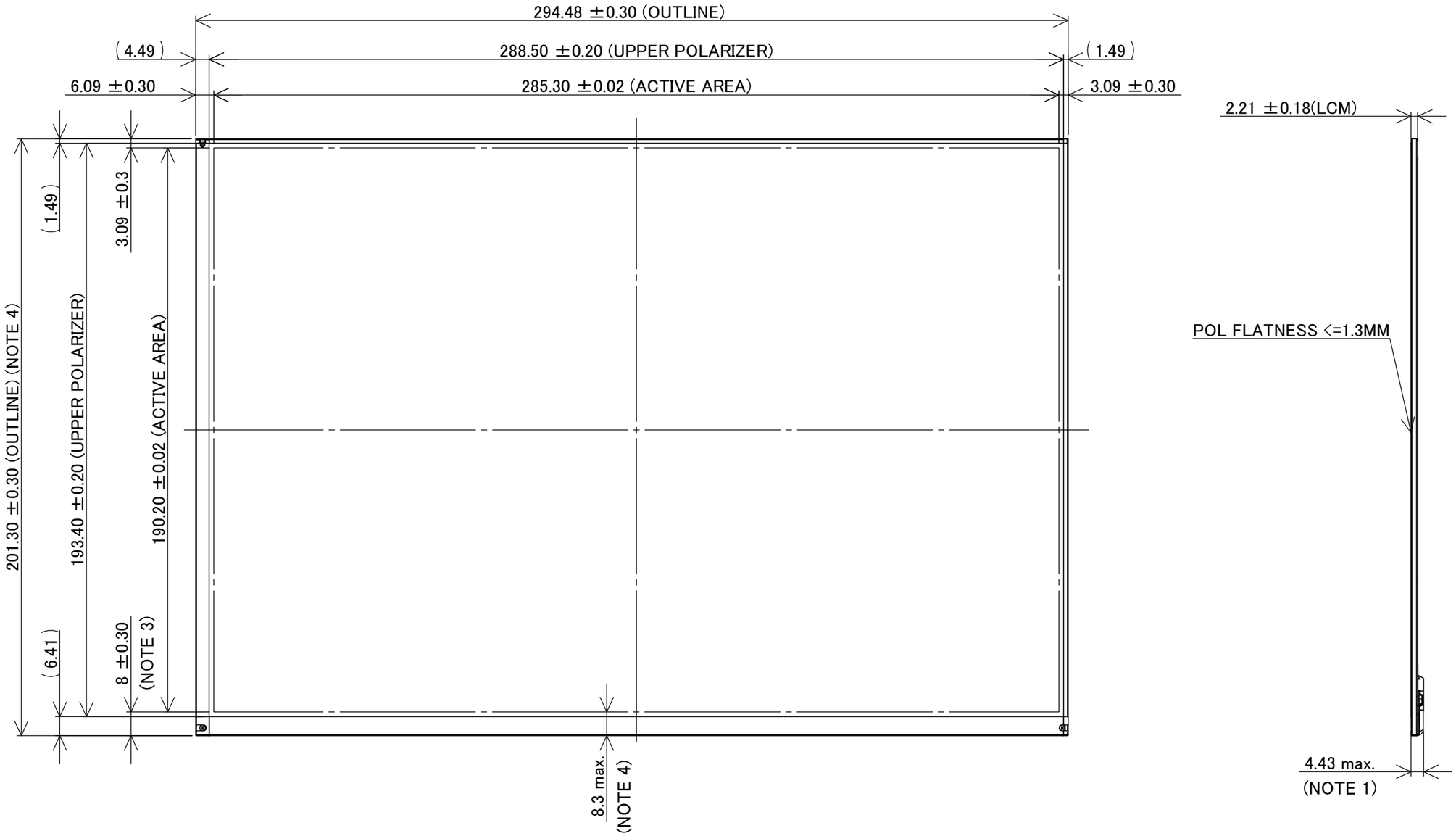
Date	1	2	3	4	5	6	7	8	9	10	11	12
Code	1	2	3	4	5	6	7	8	9	A	B	C
Date	13	14	15	16	17	18	19	20	21	22	23	24
Code	D	E	F	G	H	J	K	L	M	N	P	Q
Date	25	26	27	28	29	30	31					
Code	R	S	T	U	V	W	X					

Table 2 Month ※Do not use I.O.

Month	1	2	3	4	5	6	7	8	9	10	11	12
Code	A	B	C	D	E	F	G	H	J	K	L	M

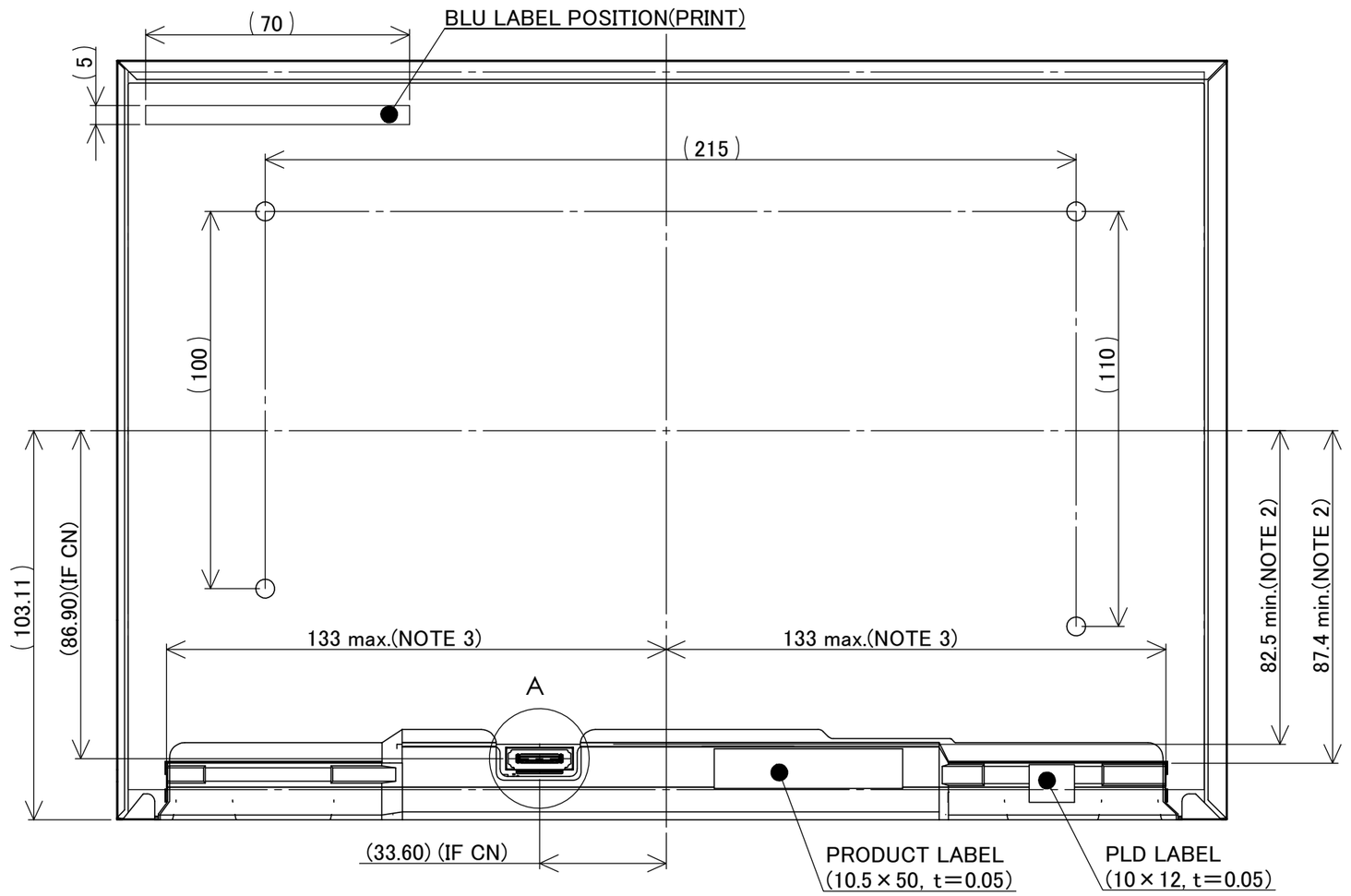
12 DIMENSIONAL OUTLINE

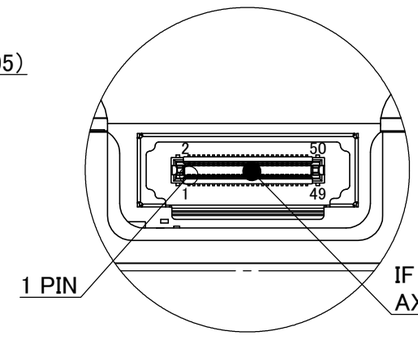
12.1 FRONTSIDE VIEW



NOTES)
1.LABEL THICKNESS NOT INCLUDE.
2.PCB ATTACHED AREA LINE.
3.MEASUREMENT LOCATION : LEFT AND RIGHT. (3MM FROM THE CORNER ON THE SIDE.)
4.MEASUREMENT LOCATION : CENTER (FPC AREA)

12.2 BACKSIDE VIEW





DETAIL A

NOTES)
1.LABEL THICKNESS NOT INCLUDE.
2.PCB ATTACHED AREA LINE.
3.MEASUREMENT LOCATION : LEFT AND RIGHT. (3MM FROM THE CORNER ON THE SIDE.)
4.MEASUREMENT LOCATION : CENTER (FPC AREA)