To :

Date : Dec. 26, 2016

Technical Manual	
Product Name	**LPM316M132A_4CF**

(NOTES)

1. This document is tentative.
2. This document may, wholly or partially, be subject to change without notice.

Japan Display Inc.

CONTENTS

RECORD OF REVISIONS

Date	Sheet No.	Summary

DESCRIPTION

Product Name : LPM316M132A

GENERAL SPECIFICATIONS

Effective Display Area	: (H)699.84 × (V)393.66	(mm)
Number of Pixels	: (H)1,920 × (V)1,080	(pixels)
Aspect ratio	: 16: 9	
Pixel Pitch	: (H)0.3645 × (V)0.3645	(mm)
Color Pixel Arrangement	: R+G1+G2+B Square	
Display Mode	: Full Reflective Mode Normally White Mode	
Driving method	: Memory In Pixel	
Frame frequency	: 30 Hz	
Top Polarizer Type	: Hard Coat	
Number of Colors	: 4,096 colors (R/G1/G2/B each 3bit)	
LCM Mode	: ECB	
Input Signal	: LVDS	
External Dimensions (Panel)	: (H)702.44 × (V)401.06 × (t)1.41 (mm)	
Weight	: TBD	
RoHS	: TBD	

1. ABSOLUTE MAXIMUM RATINGS

1.1 ENVIRONMENT ABSOLUTE MAXIMUM RATINGS

Item	Operating		Storage		Unit	Note
	Min.	Max.	Min.	Max.		
Panel surface Temperature	(-20)	(70)	(-30)	(80)	°C	
Humidity	TBD		TBD		%RH	

1.2 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

(1) TFT-LCD Module

Vss = 0 V

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{DD}	TBD		V	

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 environment with lamp.

2.1 SPECIFICATION

Items			Condition	Min.	Typ.	Max.	Unit	Notes
Contrast ratio			θ = 0	-	(30)	-	-	
Reflectance			θ = 0	-	(13)	-	%	
NTSC			θ = 0	-	(25)	-	%	
Color chromaticity	Red	x	θ = 0	(0.540)				
		y		(0.318)				
	Green	x		(0.307)				
		y		(0.465)				
	Blue	x		(0.178)				
		y		(0.192)				
	White	x		(0.318)				
		y		(0.352)				
Response time	Tr		θ = 0	-	(4)	(7)	ms	
	Tf			-	(6)	(10)		
	Total			-	(10)	(17)		
Viewing Angle	θL		CR>5	(50)	(65)	-	deg.	
	θR			(50)	(65)	-		
	θT			(50)	(65)	-		
	θB			(50)	(65)	-		

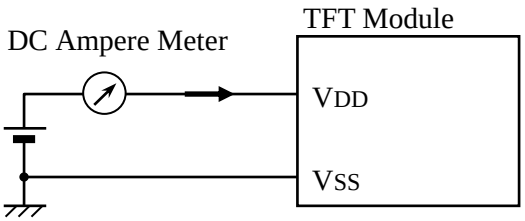
3. ELECTRICAL CHARACTERISTICS

3.1 TFT-LCD MODULE

Ta=25°C, Vss=0V

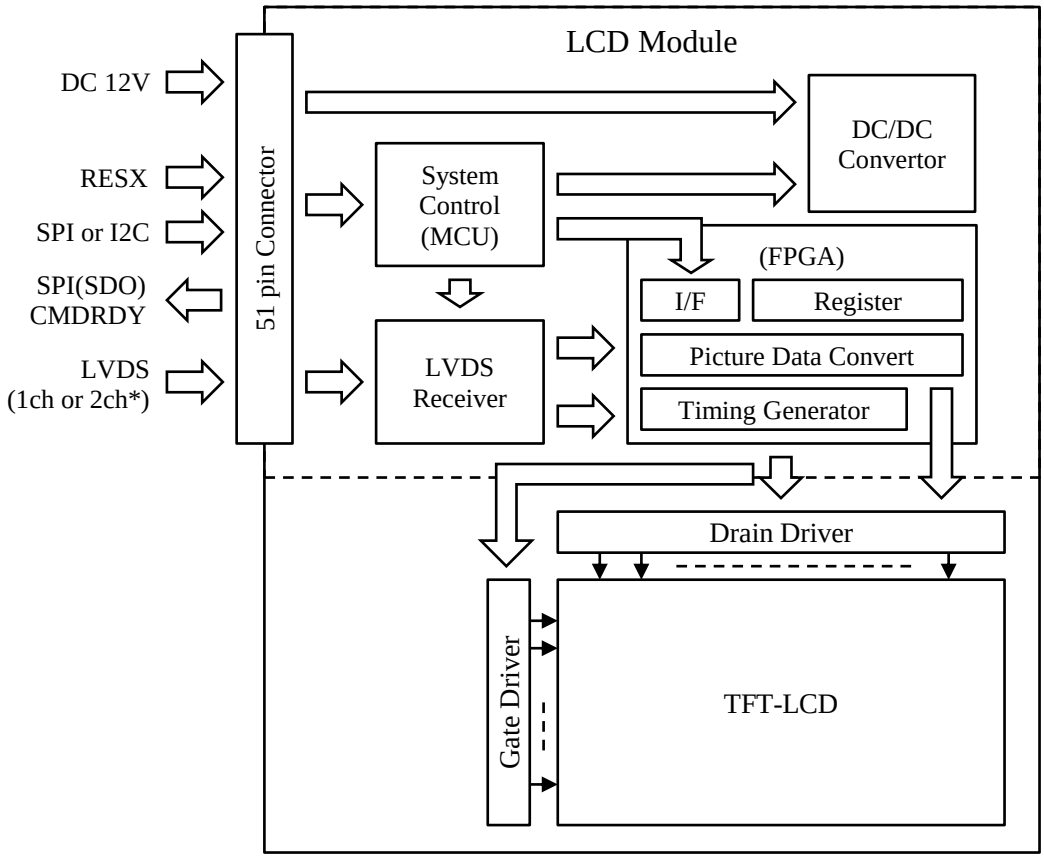
Item	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply Voltage	VDD	11.4	12.0	12.6	V	Note1
Power Supply Current(Movie)	IDD	-	TBD	TBD	A	Note2
Power Supply Current(Still)	IDD	-	-	TBD	A	Note3
VDD(12V) rise time	TVDDR	1(TBD)	-	20(TBD)	msec	10-90%
VDD(12V) fall time	TVDDF	TBD	-	TBD	msec	90-10%
VDD(12V) off time	TVDDOFF	TBD	-	-	msec	10-10%

Note1: Maximum load condition
Note2: DC current at Frame rate=30Hz, VDD=12V, White image
Note3: DC current at Frame rate=(TBD)Hz(Still image mode), VDD=12V, LVDS transfer stop



4. BLOCK DIAGRAM

(1) TFT Module



Symbol	I/O	Description
DC12V	I	Power supply
RESX	I	This signal resets the device and the value must be applied properly when initialize the chip. L=active
SPI or I2C	I/O	This signal is the interface for the command.Either SPI or I2C can be selected on circuit board.
CMDRDY	O	This signal detects the operation status of the System Controller. H=active(The command can be received) L=Power off Please reset the system when the command is not returned while "H" status.
LVDS	I	Either LVDS-1CH or LVDS-2CH* can be selected on circuit board.

*LVDS-2CH(Bch) of the LCD module is the custom. This sample is unsupported.

5.1 INTERNAL PIN CONNECTION

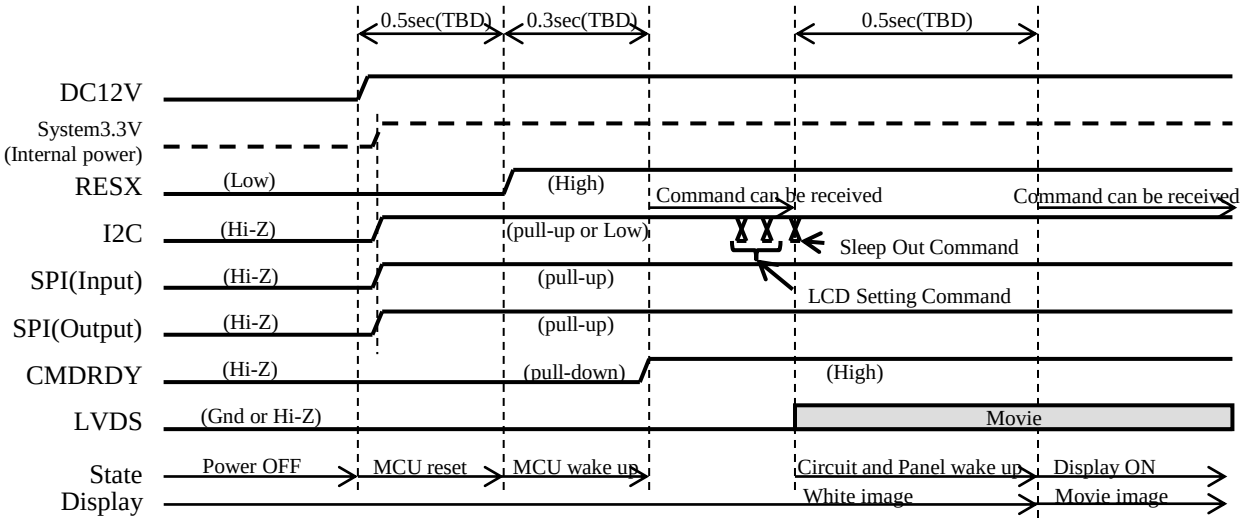
INPUT CONNECTOR : JAE
FI-RE51S-HF

No.	Signal	I/O	Function	Level	Connection when signal is unused
1	VSS	P	Ground		-
2	I2C_SDA	I/O	Data signal for I2C	0 to 3.3V±5%	Not connect
3	I2C_SCL	I/O	Clock signal for I2C	0 to 3.3V±5%	Not connect
4	SPI_SDO	O	DATA signal for SPI	0 to 3.3V±5%	Not connect
5	SPI_SDI	I	DATA signal for SPI	0 to 3.3V±5%	Not connect
6	SPI_SCK	I	Clock signal for SPI	0 to 3.3V±5%	Not connect
7	SPI_SCS	I	Chip select signal for SPI	0 to 3.3V±5%	Not connect
8	CMDRDY	O	Command ready signal	0 to 3.3V±5%	-
9	RESERVED	I/O	(Please open this pin)		Not connect
10	RESX	I	System reset signal	0 to 3.3V±5%	-
11	VSS	P	Ground		-
12	LVDS_ARX0N	I	Ach LVDS data0(-)		-
13	LVDS_ARX0P	I	Ach LVDS data0(+)		-
14	LVDS_ARX1N	I	Ach LVDS data1(-)		-
15	LVDS_ARX1P	I	Ach LVDS data1(+)		-
16	LVDS_ARX2N	I	Ach LVDS data2(-)		-
17	LVDS_ARX2P	I	Ach LVDS data2(+)		-
18	VSS	P	Ground		-
19	LVDS_ACLKN	I	Ach LVDS clock(-)		-
20	LVDS_ACLKP	I	Ach LVDS clock(+)		-
21	VSS	P	Ground		-
22	LVDS_ARX3N	I	Ach LVDS data3(-)		-
23	LVDS_ARX3P	I	Ach LVDS data3(+)		-
24	NC	-	-		-
25	NC	-	-		-
26	VSS	P	Ground		-
27	NC	-	-		-
28	(LVDS_BRX0N)	I	Bch LVDS data0(-)		Not connect
29	(LVDS_BRX0P)	I	Bch LVDS data0(+)		Not connect
30	(LVDS_BRX1N)	I	Bch LVDS data1(-)		Not connect
31	(LVDS_BRX1P)	I	Bch LVDS data1(+)		Not connect
32	(LVDS_BRX2N)	I	Bch LVDS data2(-)		Not connect
33	(LVDS_BRX2P)	I	Bch LVDS data2(+)		Not connect
34	VSS	P	Ground		-
35	(LVDS_BCLKN)	I	Bch LVDS clock(-)		Not connect
36	(LVDS_BCLKP)	I	Bch LVDS clock(+)		Not connect
37	VSS	P	Ground		-
38	(LVDS_BRX3N)	I	Bch LVDS data3(-)		Not connect
39	(LVDS_BRX3P)	I	Bch LVDS data3(+)		Not connect
40	NC	-	-		-
41	NC	-	-		-
42	VSS	P	Ground		-
43	VSS	P	Ground		-
44	VSS	P	Ground		-
45	VSS	P	Ground		-
46	VSS	P	Ground		-
47	VDD	P	Power supply(0.8A)	12V±5%	-
48	VDD	P	Power supply(0.8A)	12V±5%	-
49	VDD	P	Power supply(0.8A)	12V±5%	-
50	VDD	P	Power supply(0.8A)	12V±5%	-
51	VDD	P	Power supply(0.8A)	12V±5%	-

*LVDS-2CH(Bch) of the LCD module is the custom. This sample is unsupported.

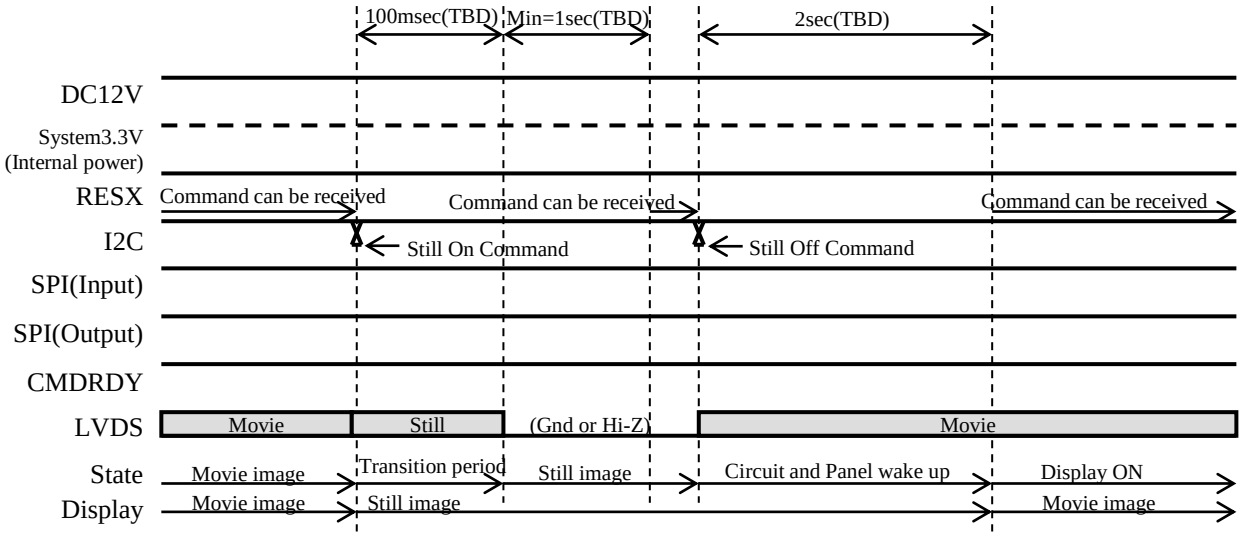
5.2 SEQUENCE

5.2.1 Power on→Sleep out→Movie image Sequence (for I2C)



(Power on -> Sleep out/Movie image sequence)
- Power on -> RESX=H (When the power supply is turned on, RESX signal keep “L” level)
- Wait 1 sec (TBD) -> CMDRDY signal = H (H = active (The command can be received))
- Send Sleep Out command and start LVDS signal at the same timing
- LCD Setting Command is set before sending Sleep Out Command
- Command can’t be received for the period of 0.5sec(TBD) after Sleep Out Command send

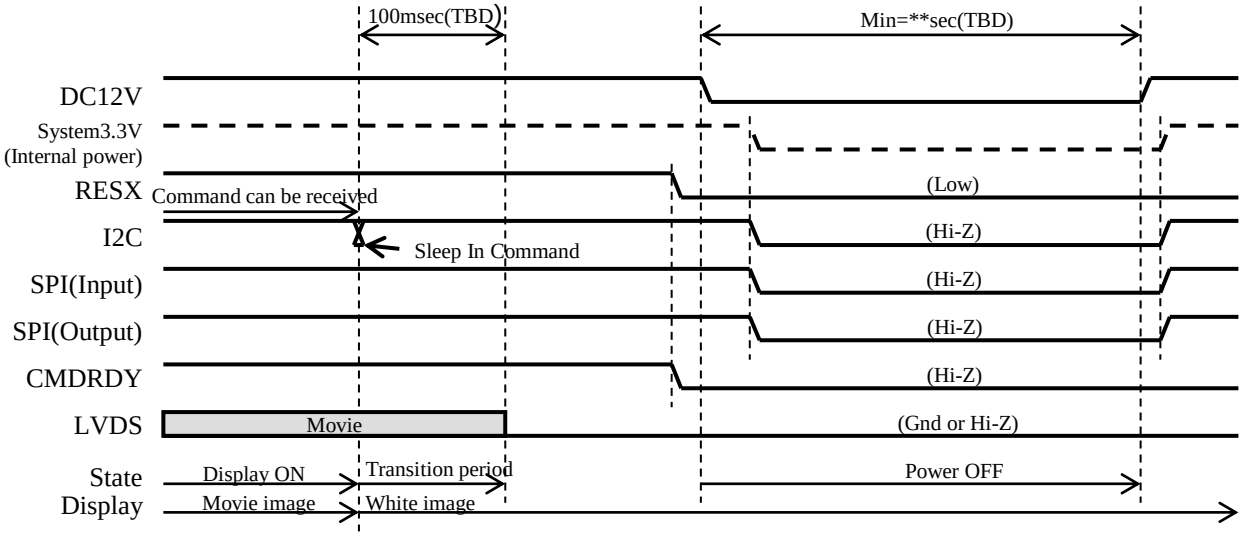
5.2.2 Movie image→Still on→Still image→Still off→Movie image Sequence (for I2C)



(Movie image -> Still image Sequence)
- Switch movie image to still image first
- Send Still On command -> wait 100msec(TBD) -> Stop LVDS signal

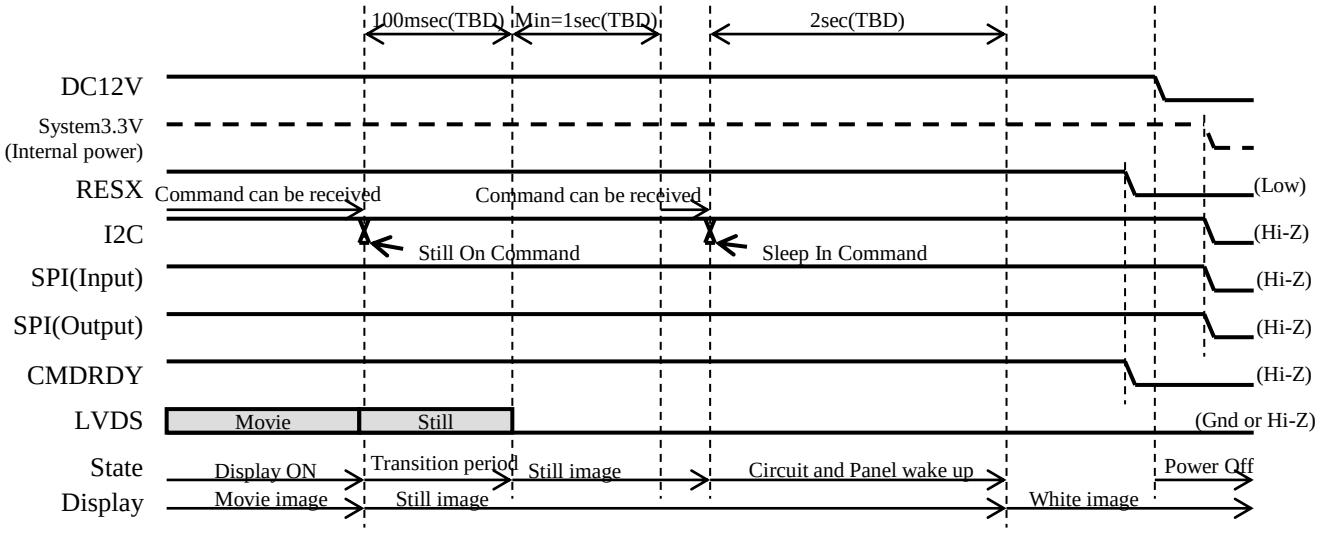
(Still image -> Movie image Sequence)
- Send Still Off command and start LVDS signal at the same timing
- Command can’t be received for the period of 2sec(TBD) after Still Off Command send

5.2.3 Movie image→Sleep in→Power off Sequence (for I2C)



(Movie image -> Sleep in/Power off sequence)
- Send Sleep In command -> wait 100msec (TBD) -> Stop LVDS signal
- RESX=L -> Power Off
- Power Off -> more than (TBD) msec -> Power On

5.2.4 Movie image→Still on→Still image→Sleep in→Power off Sequence (for I2C)

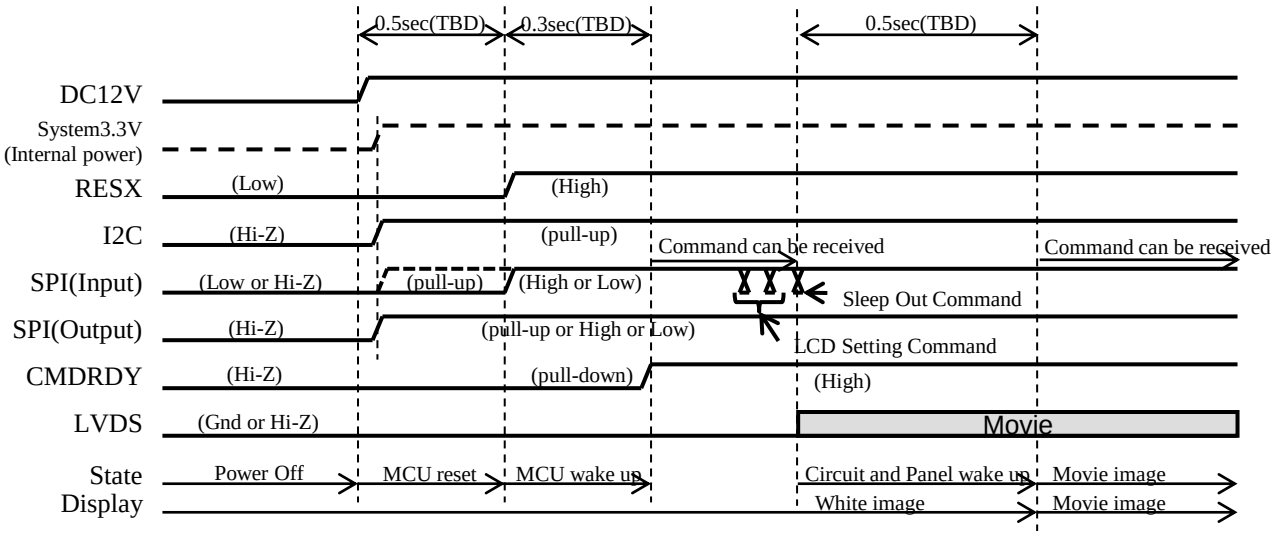


(Movie image -> Still image Sequence)
- Switch movie image to still image first
- Send Still On command -> wait 100msec(TBD) -> Stop LVDS signal

(Still image -> Sleep in/Power off sequence)
- Still image state -> Min 1sec*(TBD) -> Sleep In command

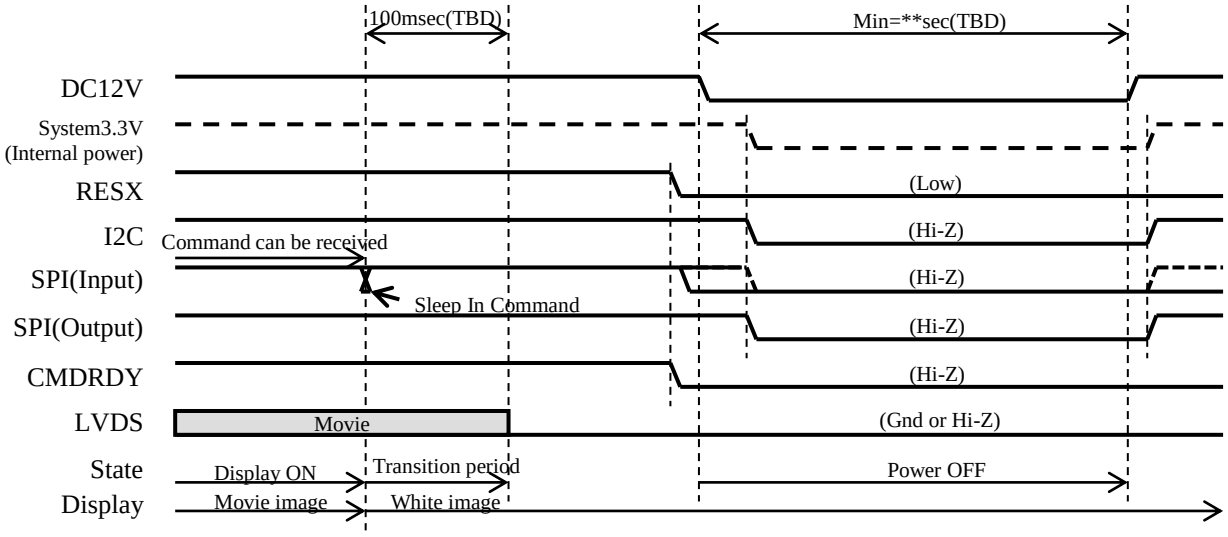
*Please wait more than 1 sec to send Sleep In command after stop sending LVDS signal

5.2.5 Power on→Sleep out→Movie image Sequence (for SPI)



(Power on -> Sleep out/Movie image sequence)
- Power on -> RESX=H (When the power supply is turned on, RESX signal keep “L” level)
- Waite 1 sec (TBD) -> CMDRDY signal = H (H = active (The command can be received)
- Send Sleep Out command and start LVDS signal at the same timing
- LCD Setting Command is set before sending Sleep Out Command
- Command can’t be received for the period of 0.5sec(TBD) after Sleep Out Command send

5.2.6 Movie image→Still on→Still image→Sleep in→Power off Sequence (for SPI)



(Movie image -> Still image Sequence)
- Switch movie image to still image first
- Send Still On command -> wait 100msec(TBD) -> Stop LVDS signal

(Still image -> Sleep in/Power off sequence)
- Still image state -> Min 1sec*(TBD) -> Sleep In command

*Please wait more than 1 sec to send Sleep In command after stop sending LVDS signal

5.3 COMMAND

5.3.1 System control

System control

Write command	Register Address	Parameter(Write Data)								
		D7	D6	D5	D4	D3	D2	D1	D0	Initial Value
00h	00h	0	0	0	1	Image processing mode[1:0]		Still On	Power On	00h

Command setting state for the LCD module

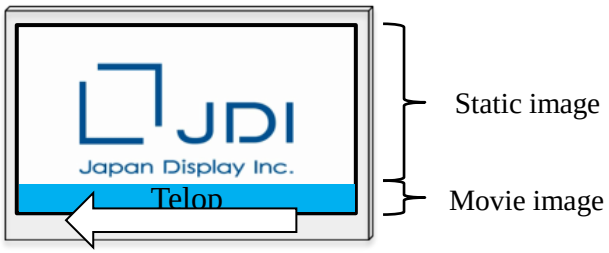
Power On	Still On	Detail	Command
0	0	Default(Reset release) Issue Sleep In commnad and shift to standby mode	Sleep In
0	1	Reserved	(Invalid)
1	0	Movie image mode Activate the all DC/DC converter, internal oscillator and start panel scanning	Sleep Out Still OFF
1	1	Still image Issue Still On command and Shift to still image mode. All of the unnecessary power is shut down and move to ultra-low power cousumption mode. Image data is hold on MIP.	Still On

Command setting mode for the image processing mode

Image processing mode		Detail
0	0	For static image
0	1	For partial movie image*
1	0	For movie image
1	1	reserved

Image processing mode are selectable for displaying good image quality.
When display static image, select "00"
When display partial movie image*, select "01"
When display movie image, select "10"

*Partial movie image



Scan direction control(LCD setting command)

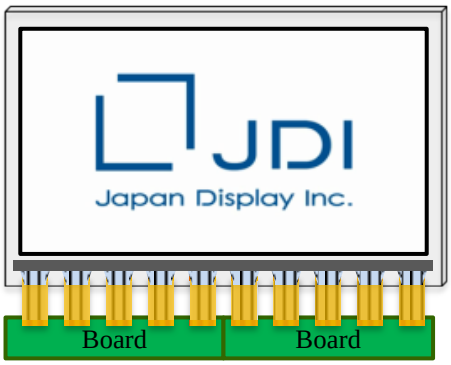
Write command	Register Address	Parameter(Write Data)								
		D7	D6	D5	D4	D3	D2	D1	D0	Initial Value
00h	01h	0	0	0	0	0	0	Scan H	Scan V	03h

Command setting scan direction mode for the LCD module

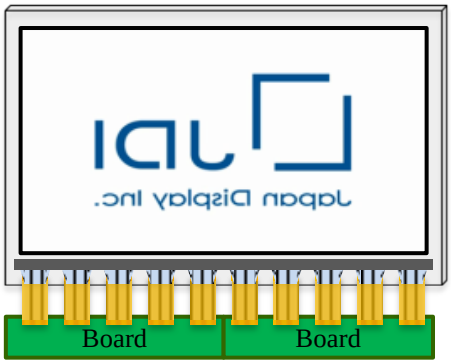
Scan V	Scan H	Detail	Initial Value
0	0	Under the FPC, Scan to Left -> Right	
0	1	Under the FPC, Scan to Right -> Left	
1	0	Top the FPC, Scan to Right -> Left	
1	1	Top the FPC, Scan to Left -> Right	○

This command is set befor sending Sleep Out Commnad and CMDRDY signal = H.

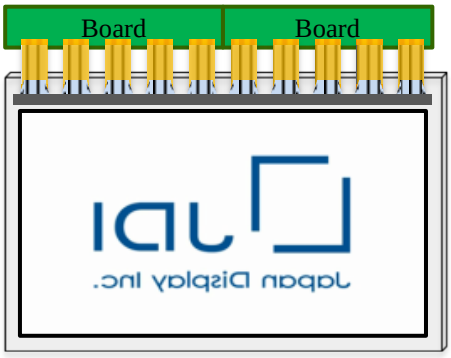
Scan V = 0 / Scan H = 0



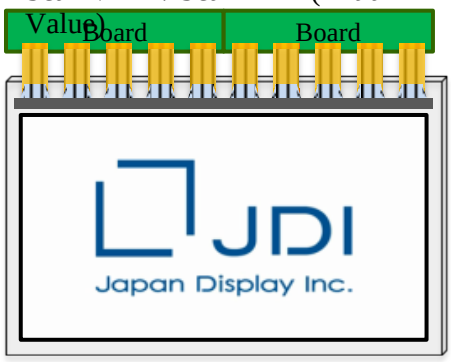
Scan V = 0 / Scan H = 1



Scan V = 1 / Scan H = 0



Scan V = 1 / Scan H = 1(Initial Value)



Register Read Address

Write command	Register Address	Parameter(Write Data)								
		D7	D6	D5	D4	D3	D2	D1	D0	Initial Value
00h	80h	Read Address[7:0]								00h

Register read sequence

1. Read address setting to "80h" register(Register Read Address).
2. Command interface out the Read data from the command send.
   <Case of SPI>
   SDO signal out always the Read data.
   If read the data only then, send to "command = 80h" + "Dummy 2bytes".
   Refet to "6-2. SPI I/F FORMAT"

5.3.4 Status Register

Status Register

Write command	Register Address	Status								
		S7	S6	S5	S4	S3	S2	S1	S0	Initial Value
-	-	0	Err1	Err2	Err3	Reserved		State[1:0]		00h

This commnad indicates the curent status of the LCD module as described in the table below.

State for the LCD module

State[1:0]		Detail
0	0	Standby mode
0	1	Reserved
1	0	For movie image
1	1	reserved

Error

Err1/Err2/Err3	Detail
0	Normal operate
1	Error issue

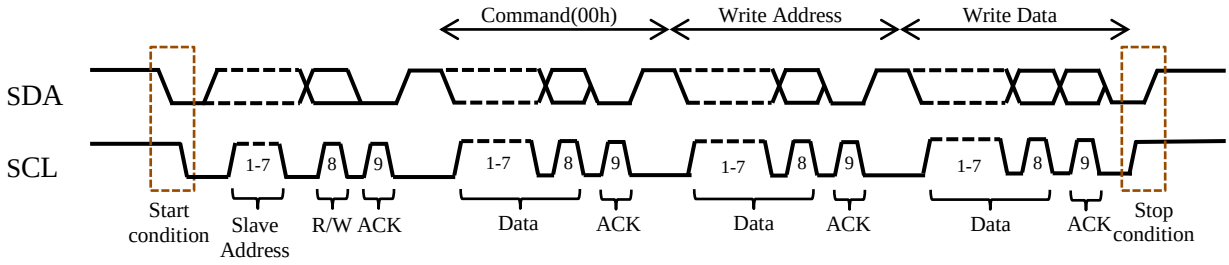
When Error bit = "1", Reset the system.

Error bit	Error mode
Err1	TBD
Err2	TBD
Err3	TBD

6. INTERFACE TIMING

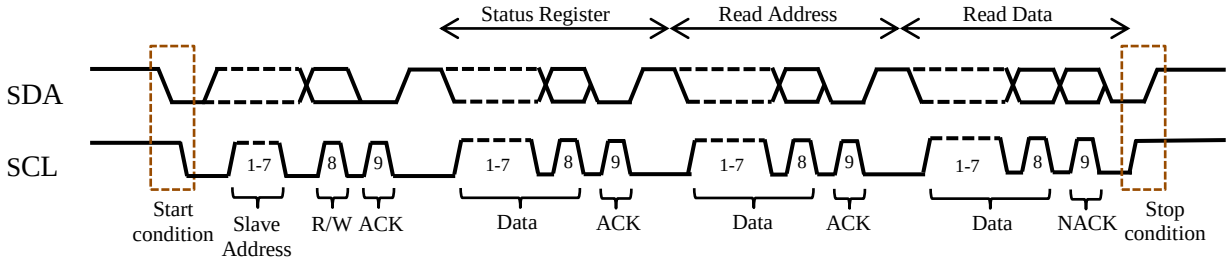
6.1 I2C I/F FORMAT

(1) Parameter write



Definition of I2C-Bus Protocol

(2) Parameter read

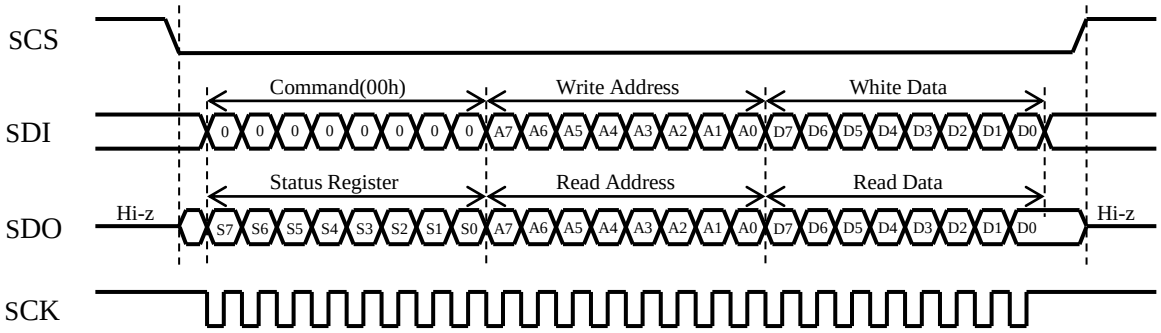


Definition of I2C-Bus Protocol

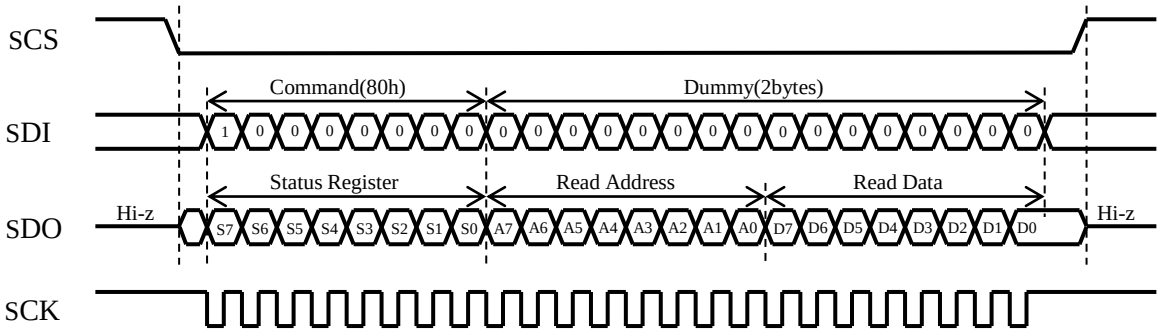
Signal level: 3.3V±5%(TBD)
SCL(MAX): 400KHz(TBD)
Slave Addres: 0x16

6.2 SPI I/F FORMAT

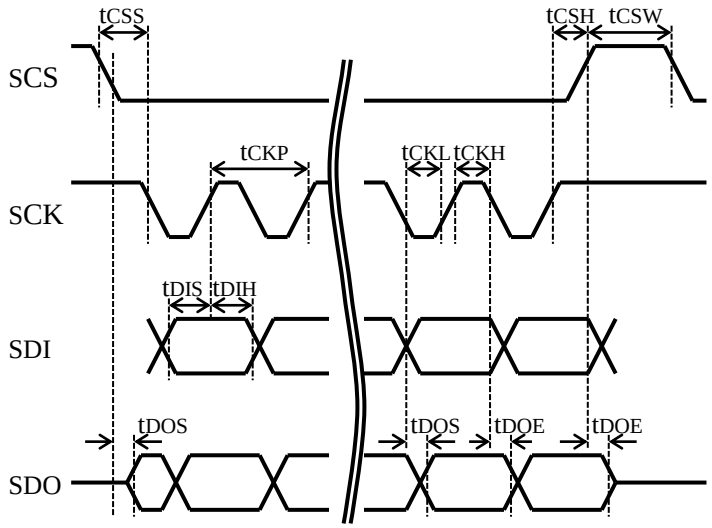
(1) Parameter write / Parameter read



(2) parameter read



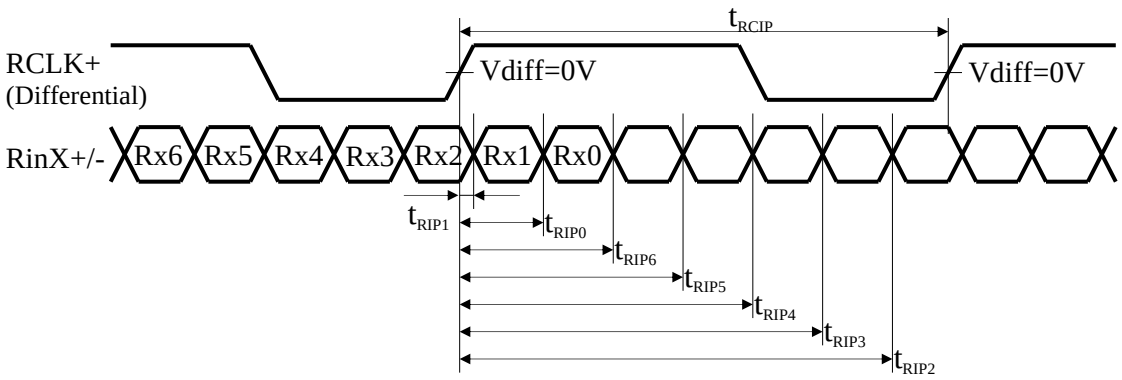
Signal level: 3.3V±5%(TBD)
SCK(MAX): 1MHz(TBD)



Item	Symbol	Min.	Typ.	Max	Unit	Remarks
SCS start low wait time	t_{CSS}	10	-	-	us	
SCS end low wait time	t_{CSH}	10	-	-		
SCS next cmd wait time	t_{CSW}	50	-	-		
SCK cycle time	t_{CKP}	1	-	-		
SCK low width	t_{CKL}	0.45	-	-		
SCK high width	t_{CKH}	0.45	-	-		
SDI setup time	t_{DIS}	0.25	-	-		
SDI hold time	t_{DIH}	0.25	-	-		
SDO output start delay time	t_{DOS}	-	-	0.25		
SDO output end delay time	t_{DOE}	0.01	-	-		

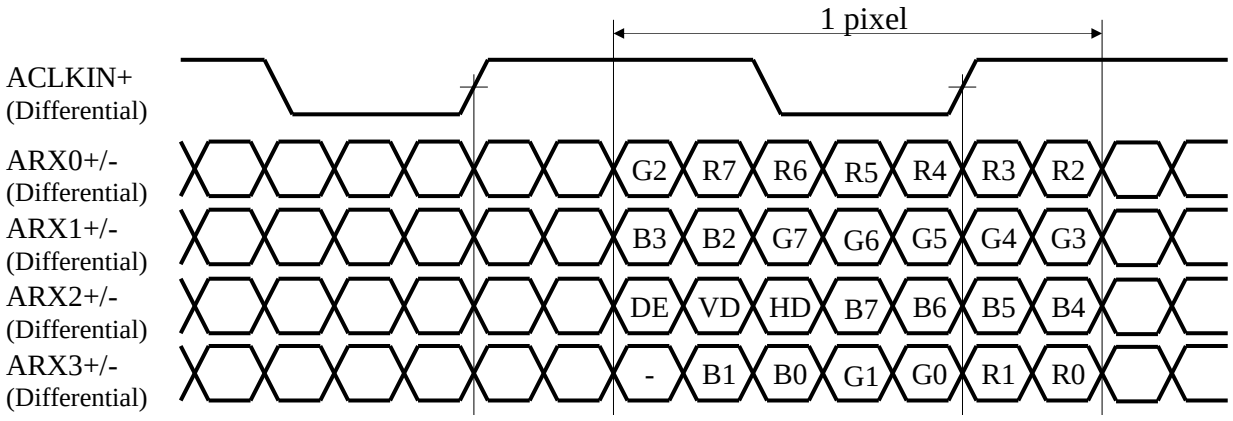
6.3 LVDS I/F FORMAT

6.3.1 LVDS receiver AC characteristics

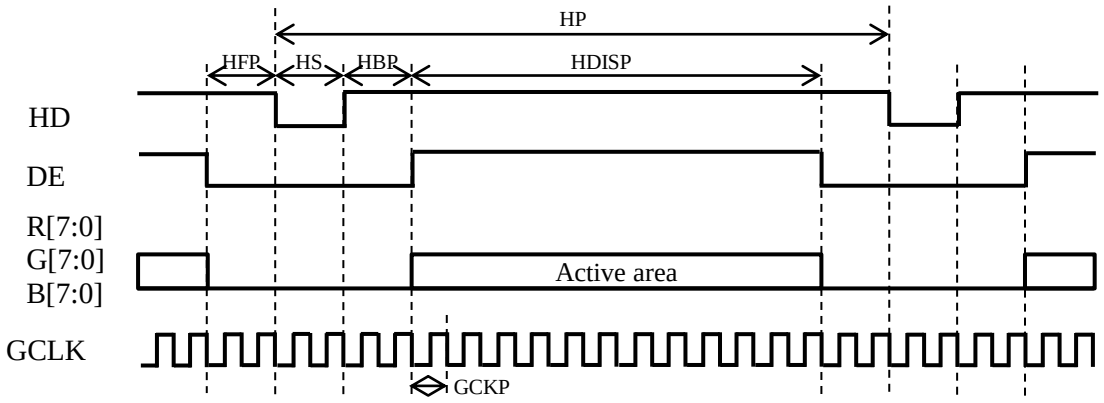


Item		Symbol	Min.	Typ.	Max	Unit	Remarks
RCLK	Parameter	$1/t_{RCIP}$	TBD	-	TBD	MHz	
RinX (X=0,1,2,3)	Input Data Position0	t_{RIP1}	-0.25	0	+0.25	ns	
	Input Data Position1	t_{RIP0}	$^{1/7}t_{RCIP}$-0.25	$^{1/7}t_{RCIP}$	$^{1/7}t_{RCIP}$+0.25		
	Input Data Position2	t_{RIP6}	$^{2/7}t_{RCIP}$-0.25	$^{2/7}t_{RCIP}$	$^{2/7}t_{RCIP}$+0.25		
	Input Data Position3	t_{RIP5}	$^{3/7}t_{RCIP}$-0.25	$^{3/7}t_{RCIP}$	$^{3/7}t_{RCIP}$+0.25		
	Input Data Position4	t_{RIP4}	$^{4/7}t_{RCIP}$-0.25	$^{4/7}t_{RCIP}$	$^{4/7}t_{RCIP}$+0.25		
	Input Data Position5	t_{RIP3}	$^{5/7}t_{RCIP}$-0.25	$^{5/7}t_{RCIP}$	$^{5/7}t_{RCIP}$+0.25		
	Input Data Position6	t_{RIP2}	$^{6/7}t_{RCIP}$-0.25	$^{6/7}t_{RCIP}$	$^{6/7}t_{RCIP}$+0.25		

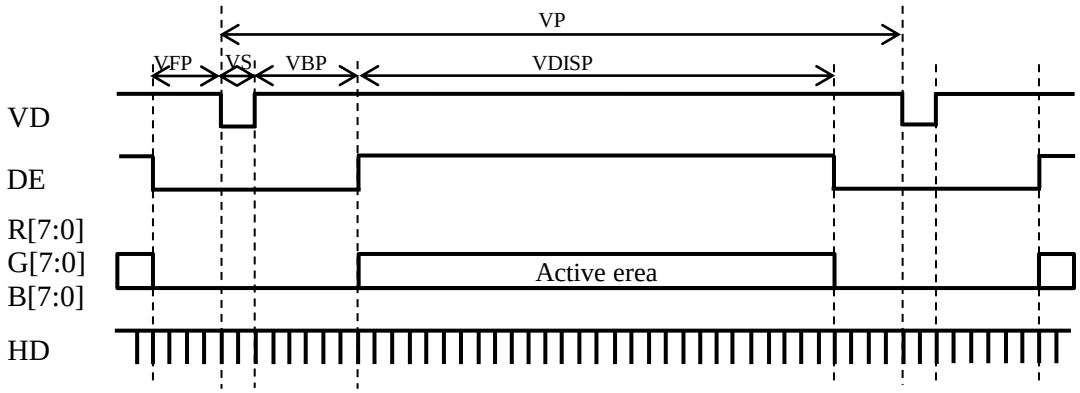
6.3.2 LVDS data mapping(Single Link/1CH)



(1) Horizontal timing



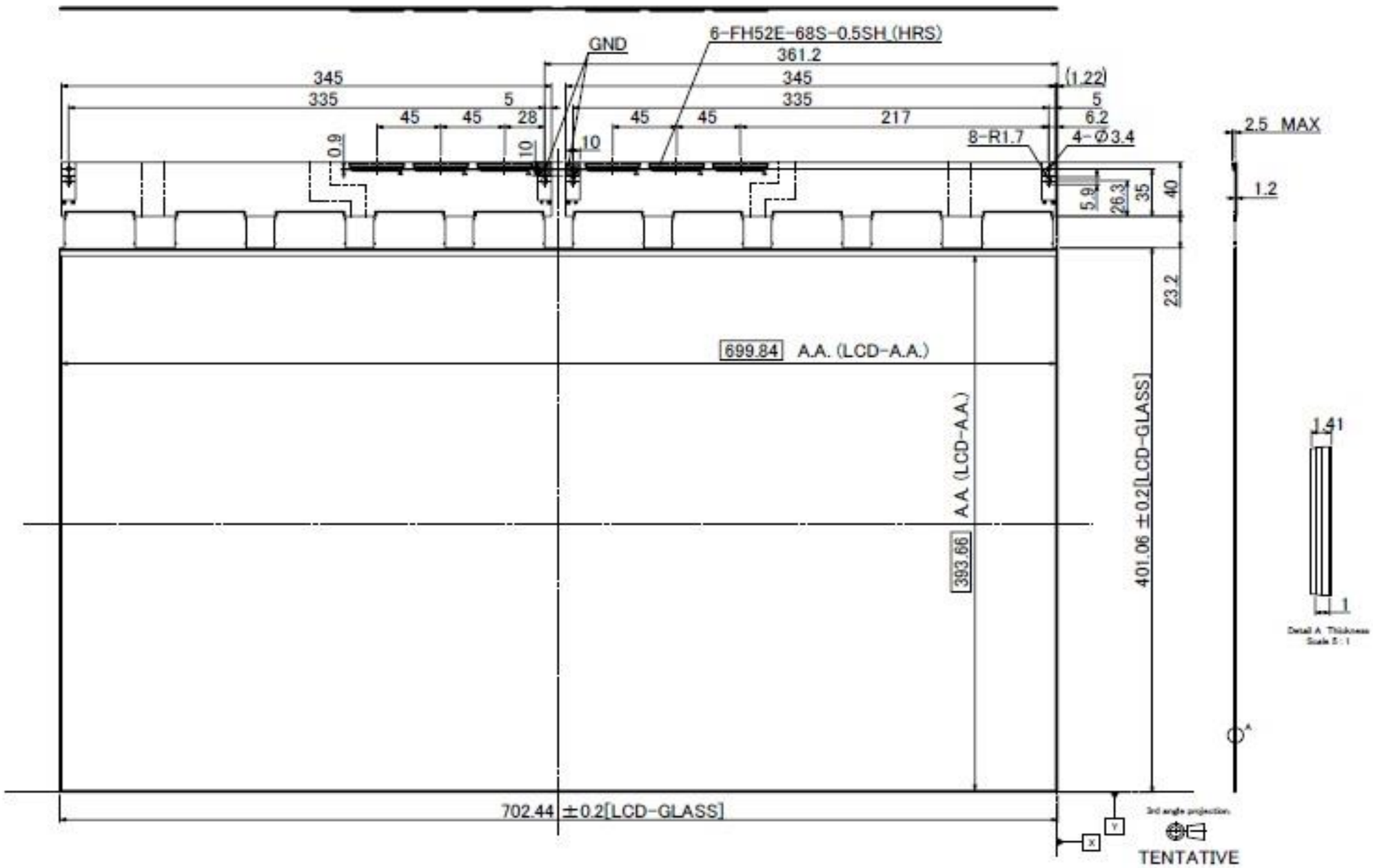
(2) Vertical timing



Item		Symbol	Min.	Typ.	Max	Unit	Remarks
GCLK	Pixel clock	GCKP	-5%	74.25	+5%	MHz	
HD	Horizontal time	HP	2200	-	2272	GCKP	
	H pulse	HS	44	-	-	GCKP	
	H back porch	HBP	148	-	-	GCKP	
	H front porch	HFP	88	-	-	GCKP	
	Horizontal active time	HDISP	-	1920	-	GCKP	
VD	Vertical time	VP	1090	-	1125	HP	
	V pulse	VS	5	-	-	HP	
	V back porch	VBP	1	-	-	HP	
	V front porch	VFP	4	-	-	HP	
	Vertical active time	VDISP	-	1080	-	HP	
	Frame rate	FR	-5%	30	+5%	Hz	

7. DIMENSIONAL OUTLINE

7.1 Panel Module OUTLINE



Unit : mm
Scale : NTS

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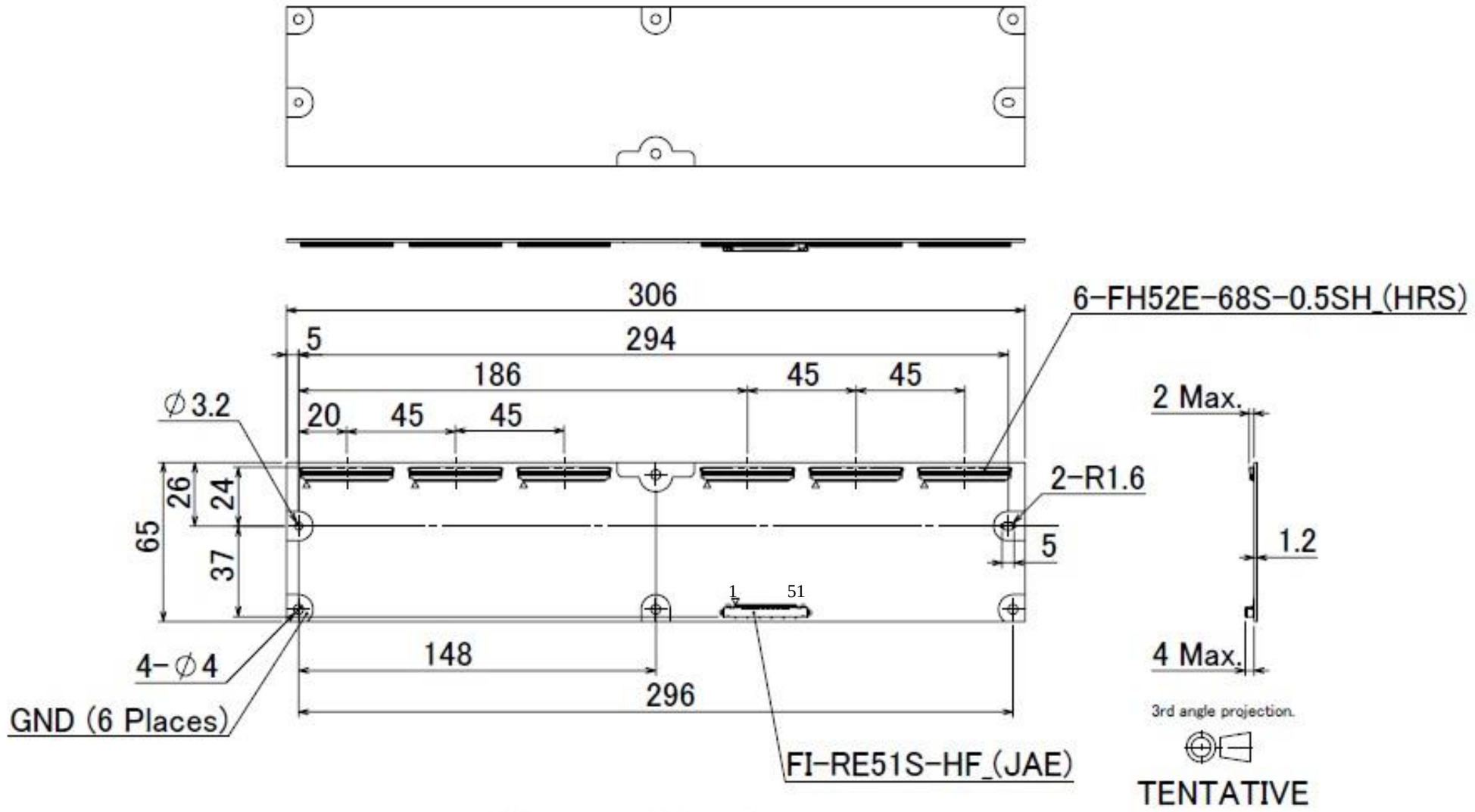
7.1 Contorol PWB OUTLINE



M132* PWB_CONT OUTLINE

Unit : mm
Scale : NTS

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8. COSMETIC SPECIFICATIONS

8.1 CONDITIONS FOR COSMETIC INSPECTION

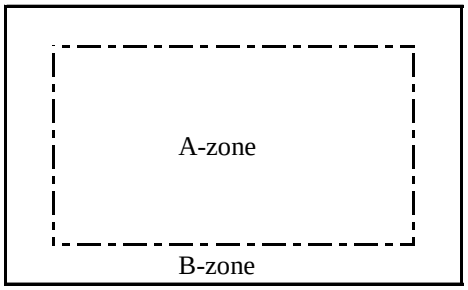
(1) Viewing zone

TBD

(2) Environmental

a) Temperature : 25℃
b) Ambient light : TBD

9.2 DEFINITION OF ZONE



•A-zone : Display area (pixel area).
•B-zone : Except Display area

8.2 COSMETIC SPECIFICATIONS

When displaying conditions are not stable (ex. at turn on or off), the following specifications are not applied.

	No.	Item			Max. acceptable number A-zone	Unit	Note
Operating inspection	1	Dot Defect	Sparkle mode	1 pixel	TBD	pcs	1)
				sub pixel	Ignore	pcs	2)
				Density	TBD	pcs/ ϕ (TBD)mm	1)
				Total	TBD	pcs	1)
			Black mode	1 pixel	TBD	pcs	1)
				sub pixel	Ignore	pcs	2)
				Density	TBD	pcs/ ϕ (TBD)mm	1)
				Total	TBD	pcs	1)
				Total	TBD	pcs	1)
	2	Line defect			0	—	
non-operating inspection	3	Stain inclusion (Line shape, W: width (mm), L: length (mm))			TBD		
	4	Stain inclusion (Dot shape, D: ave. dia. (mm))					
	5	Scratch on polarizer (Line shape, W: width (mm), L: length (mm))					
	6	Scratch on polarizer (Dot shape, D: ave. dia. (mm))					
	7	Bubbles, peeling in polarizer (D: ave. dia. (mm))					
	8	Wrinkles on polarizer			TBD	—	—

Notes

Notes 1) 1 pixel: Color information (R/G1/G2/B) unit

2) Sub pixel: R/G1/G2/B each color unit

9. PRECAUTION

Please pay close attention to the following precautions whilst using, handling and mounting the TFT module.

9.1 Precaution for handling and mounting

(1) Applying excessive force to any part of the module may result in partial deformation of the frame or mould, which could result in permanent damage to the display.

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

(3) Uneven force such as twisted stress should not be applied directly to the module once it is mounted within the cover case. The cover case must have sufficient strength such that any external forces are not transmitted directly to the module.

(4) A transparent protective plate should be added to the front of the display in order to protect both the polarizer and TFT cell. The transparent protective plate should have sufficient strength such that the plate can not be deformed, due to external forces, and touch the module. Polarizer surface hardness is 2H.

(5) Materials containing acetic acid and chlorine should not be used for the cover case nor for other parts which are positioned in close proximity to the module. This is because the Acetic acid will attack the polarizer, whilst the chlorine will attack the electric circuits by way of electro-chemical reaction.

(6) The front polarizer on the TFT cell should be handled carefully, due to its softness, and must not be touched, pushed or rubbed with glass, tweezers or anything harder than an HB pencil lead. The surface of the polarizer should not be touched nor rubbed with bare hands, greasy or dusty clothes.

(7) If the surface of the polarizer becomes dirty it should be gently wiped using an absorbent cotton (Traysee CC clean cloth), chamois or other soft material, slightly dampened with petroleum benzene. IPA (isopropyl alcohol) is recommended to clean away the traces of adhesive which is used to attach the front/rear polarizers to the TFT cell. Other cleaning chemicals such as acetone, toluene and alcohol should not be used to clean adhesives because they cause chemical damage to the polarizer.

(8) Saliva or water drops should be immediately wiped off. Otherwise, the affected portion of the polarizer may become deformed and its color may fade.

(9) Please pay attention to the packing and handling not to apply strong Z axis vibration. Because during our vibration test, of course we didn't have any functional failure, but we observed very tiny bright dots (within spec though) at Z axis direction.

9.2 Precaution to operation

(1) Spike noise could result in the mis-operation of this module. The level of spike noise should be as follows:
-200mV ≤ over- and under- shoot of VDD ≤ +200mV
VDD including over- and under- shoot should not exceed the absolute maximum ratings.
(2) Optical response times, luminance and chromaticity depend on the temperature of the TFT module.
(3) Sudden temperature changes may cause dew on and/or in the module. Dew can cause damage to the polarizer and/or electrical contacting areas of the module. Dew causes fading of the image quality.
(4) This module has high frequency circuits. Sufficient suppression to electromagnetic interference should be done by the system manufacturers. Grounding and shielding methods may be effective to minimize such interference.
(5) The module should not be connected or disconnected whilst the main system is operating.
(6) Connecting or disconnecting the I/F cables, whilst the power and data signals are present, could result in permanent damage to the module. The I/F connectors should only be connected and disconnected after the power supply and data signal have been turned off.
(7) 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.

9.3 Electrostatic discharge control

(1) This module consists of a TFT cell and electronic circuits with CMOS-ICs, which are very susceptible to electrostatic discharge. Persons who are handling the module should be grounded through adequate methods such as a wrist band. I/F connector pins should not be touched directly with bare hands.
(2) The polarizer protective film should be removed slowly so as to avoid an excessive build-up of electrostatic charge.

9.4 Precaution to strong light exposure

(1) The module should not be exposed to strong light. Otherwise, characteristics of the polarizer and color filter, may be degraded.

9.5 Precaution to storage

When modules are stored, for long period's of time, the following precautions should be taken:
(1) Modules should be stored in a dark place. It is prohibited to apply direct sunlight or fluorescent light during storage. Modules should be stored between 0 to 35°C at normal humidity (60%RH or less).
(2) The surface of the polarizer should not come into direct contact with other objects.
It is recommended that modules should be stored in the original Japan Display shipping box.

9.6 Precaution to handling protection film

(1) The protective film for polarizers should be pealed off slowly and carefully by people who are electrically grounded with adequate methods such as wrist bands. Also ionized air should be blown over the module during the peeling process.
Dust on the polarizer should be blown off gently using an ionized nitrogen gun.

(2) The protective film should be peeled off carefully to avoid it rubbing on the polarizer. If the film rubs together with the polarizer it is possible that a small amount of adhesive may remain on the polarizer.

(3) The module with protective film should be stored under the conditions explained in 9.5 (1). However , in case's where the storage time is excessive, some adhesive may remain on the polarizer even after the protective film has been removed. In the case where a module is stored at higher temperatures and/or higher humidity, adhesive may remain on the polarizer. Any remaining adhesive may cause non-uniformity of the displayed image.

9.7 Safety

(1) Since both the TFT cell is made of glass, handling of any broken module's should be carried out with the utmost care so as to avoid any injury. Hands which have come into direct contact with liquid crystal material should be washed immediately and thoroughly.

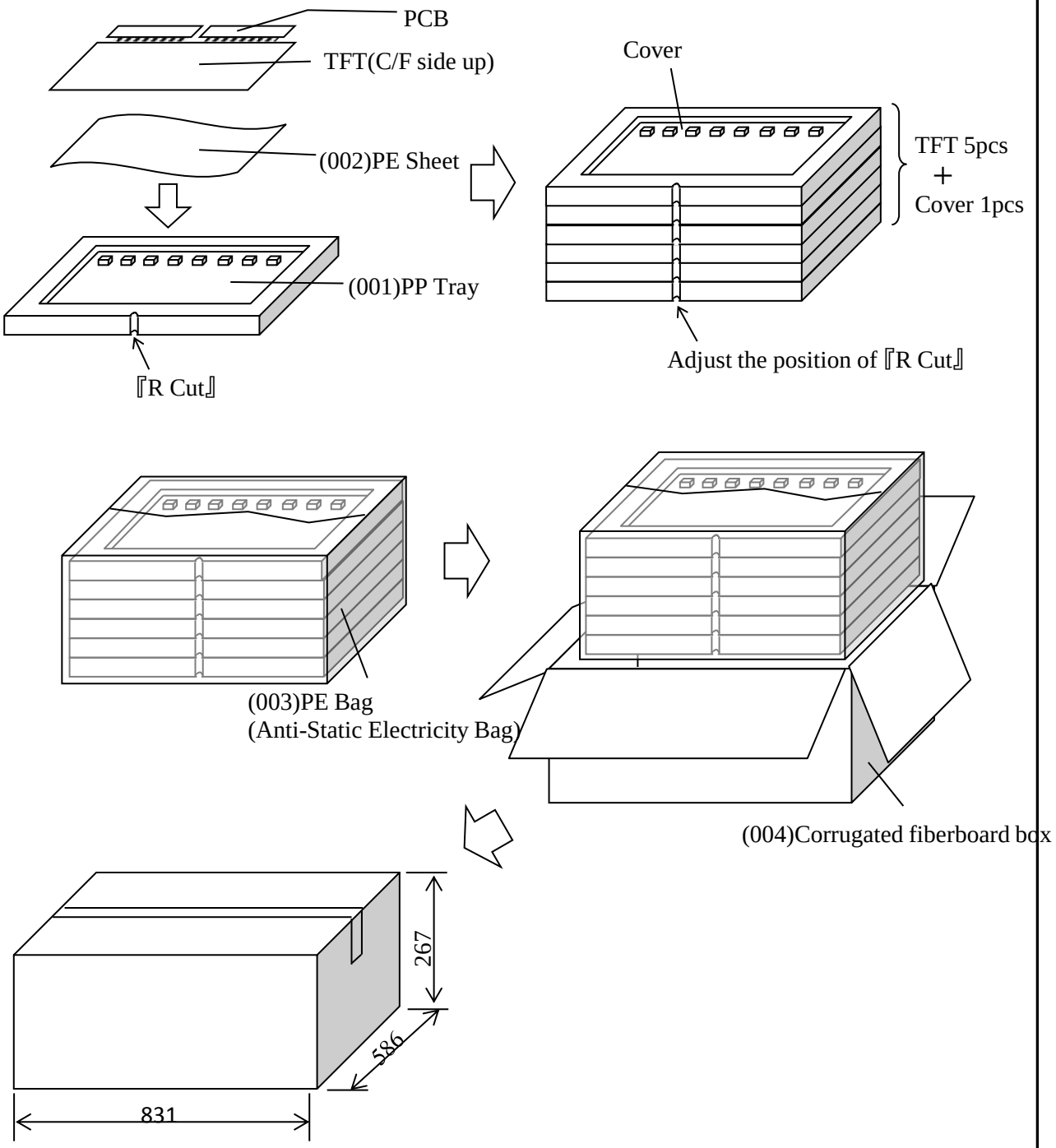
9.8 Use restrictions and limitations

(1) In no event shall Japan Display, 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 there of in advance. These limitations apply to all causes action in aggregate, including without limitation breach of contract, breach of warranty, negligence, strict liability, misrepresentation and other torts.

(2) This product is not authorized for military applications or other applications which pose a significant risk of personal injury.

10. PACKING SPECIFICATIONS

(1) Inner box specification



Size (L, W, H)	831×586×267 mm
Application	1～5 pcs
Gross	Approximatly 12kg (In case of carry 5pcs)