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SPEC. NUMBER

PRODUCT GROUP

Rev.

ISSUE DATE

PAGE

LCM

P0

2016.01.25

1 OF 36

**NV133FHM-N52**

**Preliminary Product Specification**

**Rev. P0**

SPLCD.com  
Supply & Purchase Cloud Platform



**CHONGQING BOE OPTOELECTRONICS TECHNOLOGY CO.,LTD**

PRODUCT GROUP	REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT	P0	2016.01.25	

SPEC. NUMBER	SPEC. TITLE	PAGE
	NV133FHM-N52 Preliminary Product Specification	2 OF 36

**REVISION HISTORY**

REV.	ECN No.	DESCRIPTION OF CHANGES	DATE	PREPARED
P0	-	Initial Release		

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**Contents**

No.	Items	Page
	REVISION HISTORY	2
	CONTENTS	3
1.0	General Description	4
2.0	Absolute Maximum ratings	6
3.0	Electrical specifications.	7
4.0	Optical specifications.	10
5.0	Interface Connection	15
6.0	Signal Timing Specification	18
7.0	Horizontal Timing Waveforms	20
8.0	Input Signals, Basic Display Colors & Gray Scale Of Colors	21
9.0	Power Sequence	22
10.0	Reliability Test	24
11.0	Handling & Cautions.	24
12.0	Label	25
13.0	Packing information	27
14.0	Mechanical Outline Dimension	28
15.0	EDID Table	30

**1.0 General Description**

**1.1 Application**

- Notebook PC Without Touch function

**1.2 General Specification**

1.2.1.General LCM Specification(Table 1.)

<Table 1. General Specifications>

Parameter	Specification	Unit	Remarks
Active area	293.76 (H) x 165.24 (V)	mm	
Number of pixels	1920 (H) x 1080 (V)	pixels	
Pixel pitch	0.153 (H) x 0.153 (V)	mm	
Pixel arrangement	RGB Vertical stripe		
Display colors	262K	colors	
Display mode	Normally Black		
Dimensional outline	300.26(H)*188.25(V) (W/PCB)*2.4(Max) 300.26(H)*177.39(V)*2.4(Max)	mm	
Weight	215(max)	g	
Back-light	Lower Down side, 1-LED Lighting Bar type		Note 1
Power consumption	P <sub>D</sub> : 0.92 (max)	W	@mosaic pattern
	P <sub>BL</sub> :2.9(max.)	W	
	3.82(Type.)	W	

Notes : 1. LED Lighting Bar (36\*LED Array)

PRODUCT GROUP		REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT		P0	2016.01.25	
SPEC. NUMBER	SPEC. TITLE			PAGE
	NV133FHM-N52 Preliminary Product Specification			5 OF 36

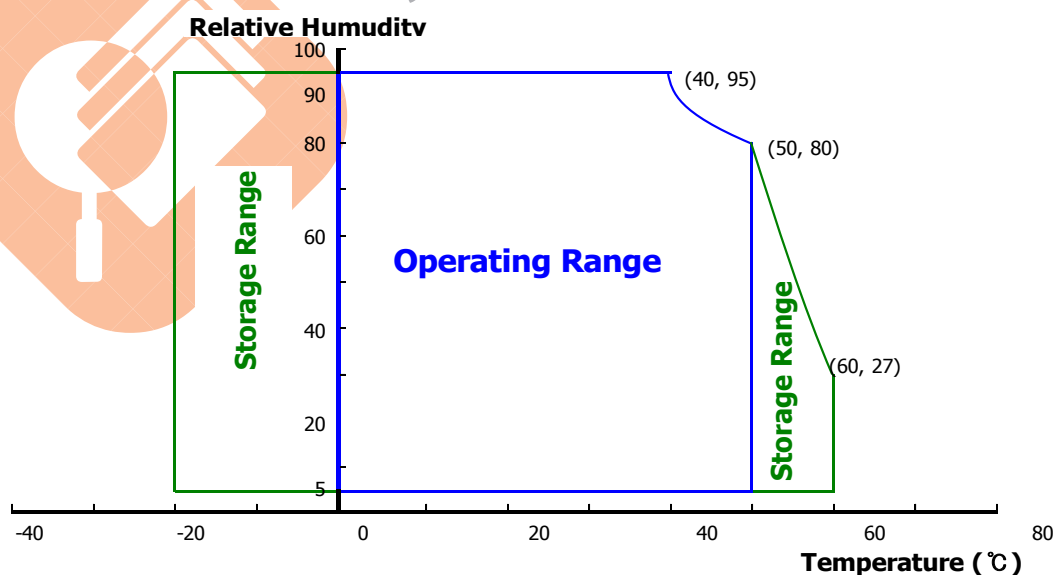
## 2.0 ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 2. Absolute Maximum Ratings >  $T_a=25\pm 2^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage	$V_{DD}$	-0.5	4.0	V	Note 1
Logic Supply Voltage	$V_{IN}$	$V_{SS}-0.3$	$V_{DD}+0.3$	V	
Operating Temperature	$T_{OP}$	0	+50	$^\circ\text{C}$	Note 2
Storage Temperature	$T_{ST}$	-20	+60	$^\circ\text{C}$	

- Notes :
- Permanent damage to the device may occur if maximum values are exceeded functional operation should be restricted to the condition described under normal operating conditions.
  - Temperature and relative humidity range are shown in the figure below.  
 95 % RH Max. ( $40^\circ\text{C} \geq T_a$ )  
 Maximum wet - bulb temperature at  $39^\circ\text{C}$  or less. ( $T_a > 40^\circ\text{C}$ ) No condensation.



### 3.0 ELECTRICAL SPECIFICATIONS

#### 3.1 Electrical Specifications

&lt; Table 3. Electrical specifications &gt;

Ta=25+/-2°C

Parameter		Min.	Typ.	Max.	Unit	Remarks
Power Supply Voltage	V <sub>DD</sub>	3.0	3.3	3.6	V	Note 1
Permissible Input Ripple Voltage	V <sub>RF</sub>	-	-	100	mV	At V <sub>DD</sub> = 3.3V
Power Supply Current	I <sub>DD</sub>	-	300	-	mA	Note 1
Differential Input Voltage	V <sub>ID</sub>	120	-	1320	mV	
Power Consumption	P <sub>D</sub>	-	0.92	-	W	Note 1
	P <sub>BL</sub>	-	2.9	-	W	Note 2
	P <sub>total</sub>	-	3.82	-	W	

Notes : 1. The supply voltage is measured and specified at the interface connector of LCM. The current draw and power consumption specified is for 3.3V at 25°C.

- a) Typ : Mosaic Pattern
- b) Max : Skip sub pixel255

$$2. I_F \times V_F \times 36 / \text{efficiency} = P_{LED}$$

**3.2 Backlight Unit**

< Table 4. LED Driving guideline specifications >

Ta=25+/-2°C

Parameter		Min.	Typ.	Max.	Unit	Remarks
LED Forward Voltage	V <sub>F</sub>	-	-	2.9	V	-
LED Forward Current	I <sub>F</sub>	-	23.5	-	mA	-
LED Power Consumption	P <sub>LED</sub>		2.7	-	W	Note 1
LED Life-Time	N/A	15,000	-	-	Hour	I <sub>F</sub> = 22.8mA
Power supply voltage for LED Driver	V <sub>LED</sub>	6	12	21	V	
EN Control Level	Backlight on	2.0		5.0	V	
	Backlight off	0		1.0	V	
PWM Control Level	PWM High Level	2.0		5.0	V	
	PWM Low Level	0		0.1	V	
PWM Control Frequency	F <sub>PWM</sub>	200	-	10,000	Hz	
Duty Ratio	-	1	-	100	%	

Notes : 1. Power supply voltage 12V for LED Driver

Calculator Value for reference  $I_F \times V_F \times 36 / \text{efficiency} = P_{LED}$

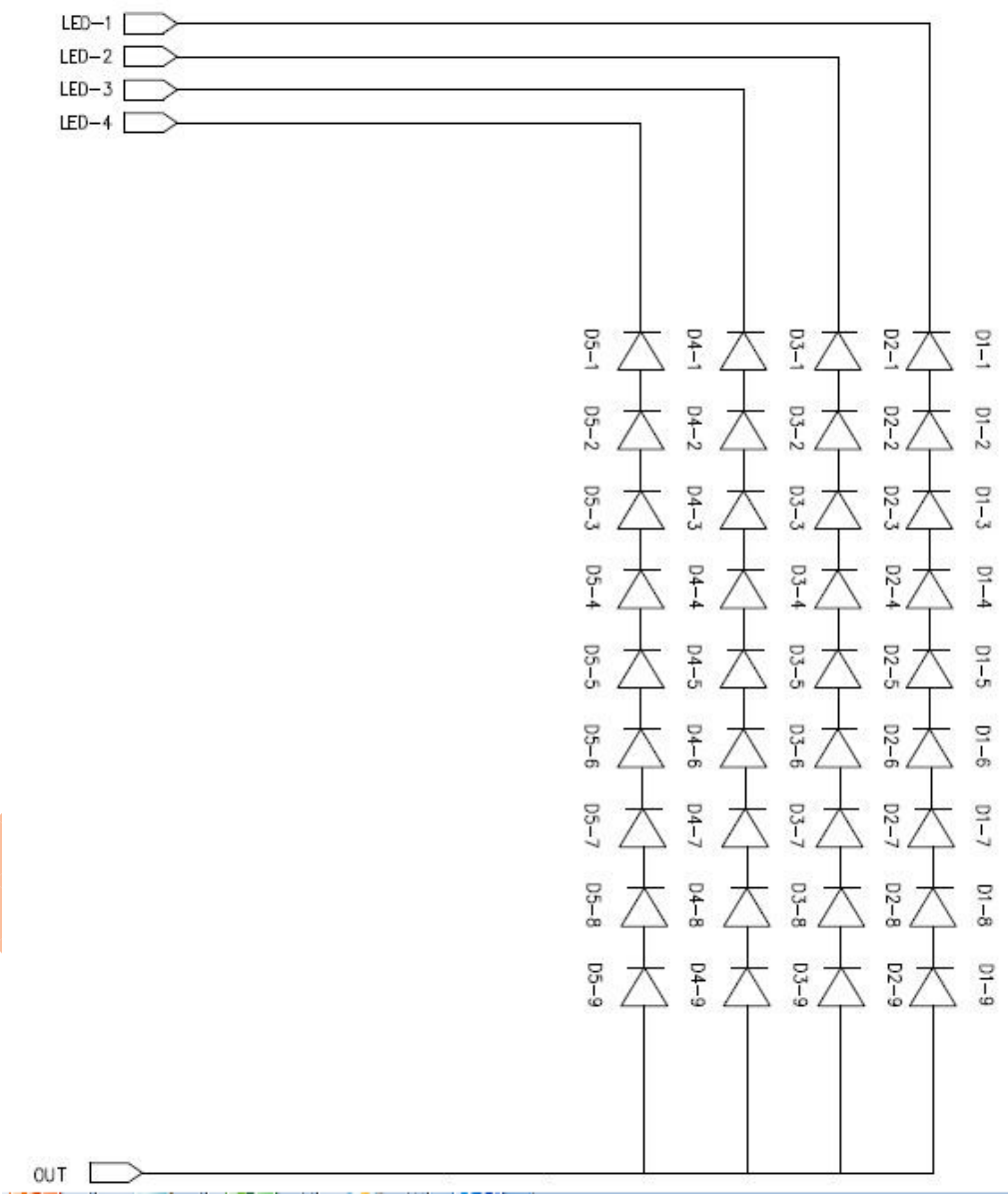
2. The LED Life-time define as the estimated time to 50% degradation of initial luminous.

3. 1% duty cycle is achievable with a dimming frequency less than 1KHz.

PRODUCT GROUP	REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT	P0	2016.01.25	

SPEC. NUMBER	SPEC. TITLE	PAGE
	NV133FHM-N52 Preliminary Product Specification	8 OF 36

### 3.3 LED structure





**4.0 OPTICAL SPECIFICATION**

**4.1 Overview**

The test of Optical specifications shall be measured in a dark room (ambient luminance  $\leq 1$  lux and temperature =  $25 \pm 2^\circ\text{C}$ ) with the equipment of Luminance meter system (Goniometer system and TOPCON BM-5) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of  $\theta$  and  $\Phi$  equal to  $0^\circ$ . We refer to  $\theta\Phi=0$  ( $=\theta_3$ ) as the 3 o'clock direction (the "right"),  $\theta\Phi=90$  ( $=\theta_{12}$ ) as the 12 o'clock direction ("upward"),  $\theta\Phi=180$  ( $=\theta_9$ ) as the 9 o'clock direction ("left") and  $\theta\Phi=270$  ( $=\theta_6$ ) as the 6 o'clock direction ("bottom"). While scanning  $\theta$  and/or  $\Phi$ , the center of the measuring spot on the Display surface shall stay fixed. The backlight should be operating for 30 minutes prior to measurement. VDD shall be  $3.3 \pm 0.3\text{V}$  at  $25^\circ\text{C}$ . Optimum viewing angle direction is 6 'clock.

**4.2 Optical Specifications**

<Table 5. Optical Specifications>

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	$\theta_3$	CR > 10	-	85	-	Deg.	Note 1
		$\theta_9$		-	85	-	Deg.	
	Vertical	$\theta_{12}$		-	85	-	Deg.	
		$\theta_6$		-	85	-	Deg.	
Luminance Contrast ratio		CR	$\theta = 0^\circ$	600	800	-	-	
Luminance of White	5 Points	$Y_w$	$\theta = 0^\circ$ ILED = 23.5mA	-	300	-	-	
White Luminance uniformity	5 Points	$\Delta Y_5$		-	80%	-	-	Type.
	13 Points	$\Delta Y_{13}$		-	60%	-	-	
White Chromaticity		$x_w$	$\theta = 0^\circ$	0.283	0.302	0.343	-	
		$y_w$		0.299	0.334	0.359	-	
Reproduction of color	Red	$x_R$	$\theta = 0^\circ$	TBD	0.650	TBD	-	
		$y_R$			0.345		-	
	Green	$x_G$			0.330		-	
		$y_G$			0.619		-	
	Blue	$x_B$			0.151		-	
		$y_B$			0.334		-	
Gamut		-	-	68	72	-	%	
Response Time (Rising + Falling)		$T_{RT}$	Ta = $25^\circ\text{C}$ $\theta = 0^\circ$	-	30	35	Ms	Note 6
Cross Talk		CT	$\theta = 0^\circ$	-	-	-	%	

PRODUCT GROUP		REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT		P0	2016.01.25	
SPEC. NUMBER	SPEC. TITLE			PAGE
	NV133FHM-N52 Preliminary Product Specification			10 OF 36

Notes :

1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIGURE 1).

2. Contrast measurements shall be made at viewing angle of  $\Theta = 0$  and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state .

(see FIGURE 1) Luminance Contrast Ratio (CR) is defined mathematically.

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Center Luminance of white is defined as luminance values of 5 point average across the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE 2 for a total of the measurements per display.

4. The White luminance uniformity on LCD surface is then expressed as :  $\Delta Y = \text{Minimum Luminance of 5(or 13) points} / \text{Maximum Luminance of 5(or 13) points}$ .  
(see FIGURE 2 and FIGURE 3).

5. The color chromaticity coordinates specified in Table 5 shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.

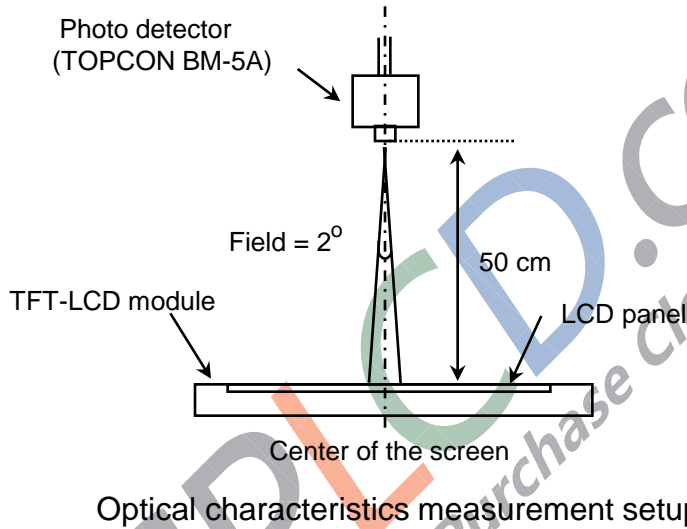
6. The electro-optical response time measurements shall be made as FIGURE 4 by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is  $T_r$ , and 90% to 10% is  $T_d$ .

7. Cross-Talk of one area of the LCD surface by another shall be measured by comparing the luminance ( $Y_A$ ) of a 25mm diameter area, with all display pixels set to a gray level, to the luminance ( $Y_B$ ) of that same area when any adjacent area is driven dark.  
(See FIGURE 5).

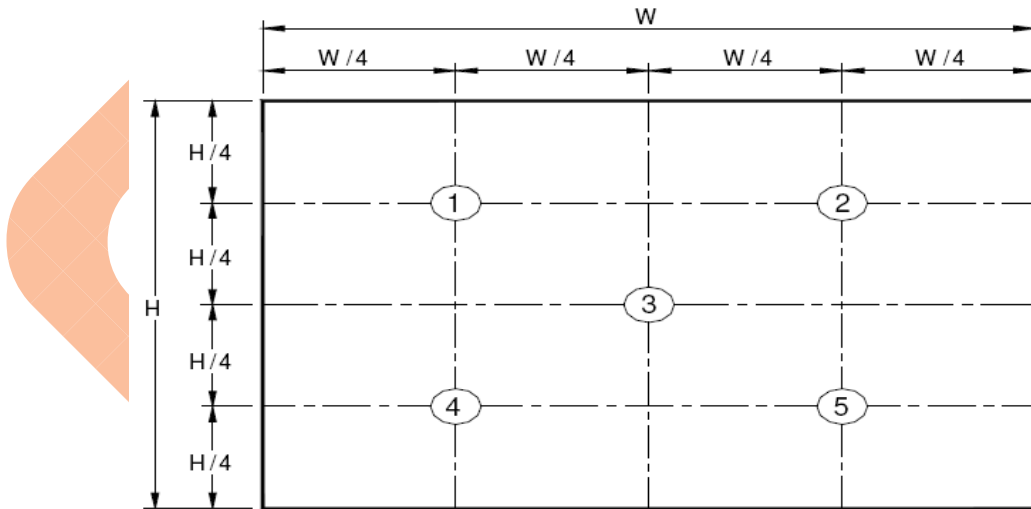
PRODUCT GROUP		REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT		P0	2016.01.25	
SPEC. NUMBER	SPEC. TITLE			PAGE
	NV133FHM-N52 Preliminary Product Specification			11 OF 36

**4.3 Optical measurements**

**Figure 1. Measurement Set Up**



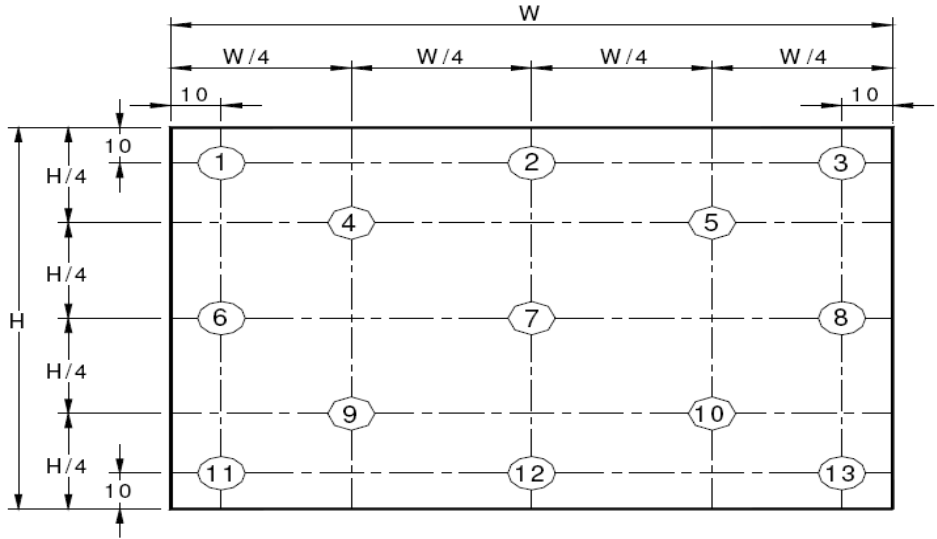
**Figure 2. White Luminance and Uniformity Measurement Locations (5 points)**



Center Luminance of white is defined as luminance values of center 5 points across the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE 2 for a total of the measurements per display.

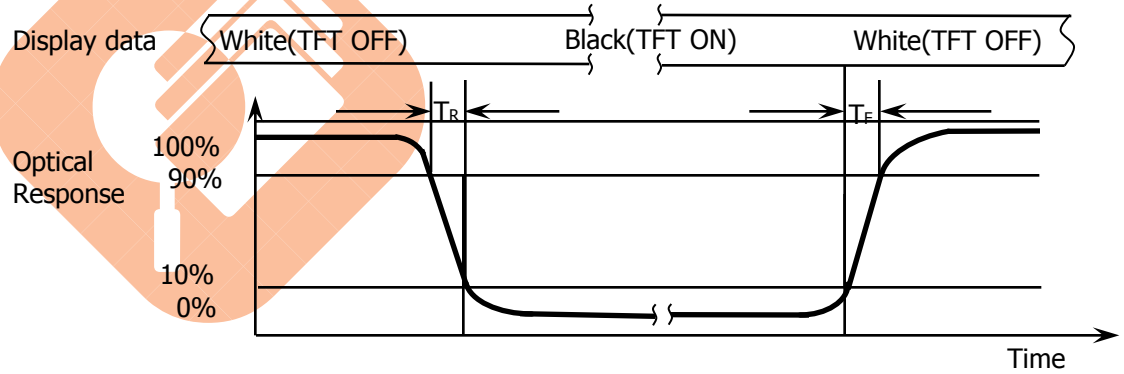
PRODUCT GROUP		REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT		P0	2016.01.25	
SPEC. NUMBER	SPEC. TITLE			PAGE
	NV133FHM-N52 Preliminary Product Specification			12 OF 36

**Figure 3. Uniformity Measurement Locations (13 points)**



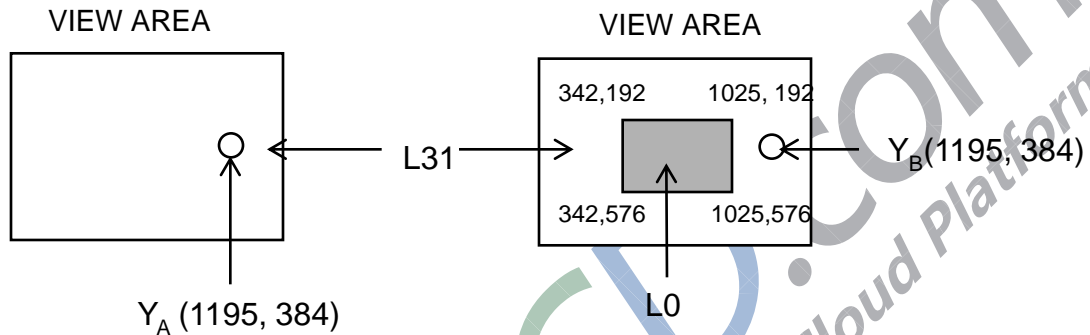
The White luminance uniformity on LCD surface is then expressed as :  $\Delta Y5 = \text{Minimum Luminance of five points} / \text{Maximum Luminance of five points}$  (see FIGURE 2) ,  $\Delta Y13 = \text{Minimum Luminance of 13 points} / \text{Maximum Luminance of 13 points}$  (see FIGURE 3).

**Figure 4. Response Time Testing**



The electro-optical response time measurements shall be made as shown in FIGURE 4 by switching the “data” input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is  $T_d$  and 90% to 10% is  $T_r$ .

**Figure 5. Cross Modulation Test Description**



$$\text{Cross-Talk (\%)} = \left| \frac{Y_B - Y_A}{Y_A} \right| \times 100$$

Where:

$Y_A$  = Initial luminance of measured area (cd/m<sup>2</sup>)

$Y_B$  = Subsequent luminance of measured area (cd/m<sup>2</sup>)

The location measured will be exactly the same in both patterns

Cross-Talk of one area of the LCD surface by another shall be measured by comparing the luminance ( $Y_A$ ) of a 25mm diameter area, with all display pixels set to a gray level, to the luminance ( $Y_B$ ) of that same area when any adjacent area is driven dark (Refer to FIGURE 5).

**5.0 INTERFACE CONNECTION.****5.1 Electrical Interface Connection**

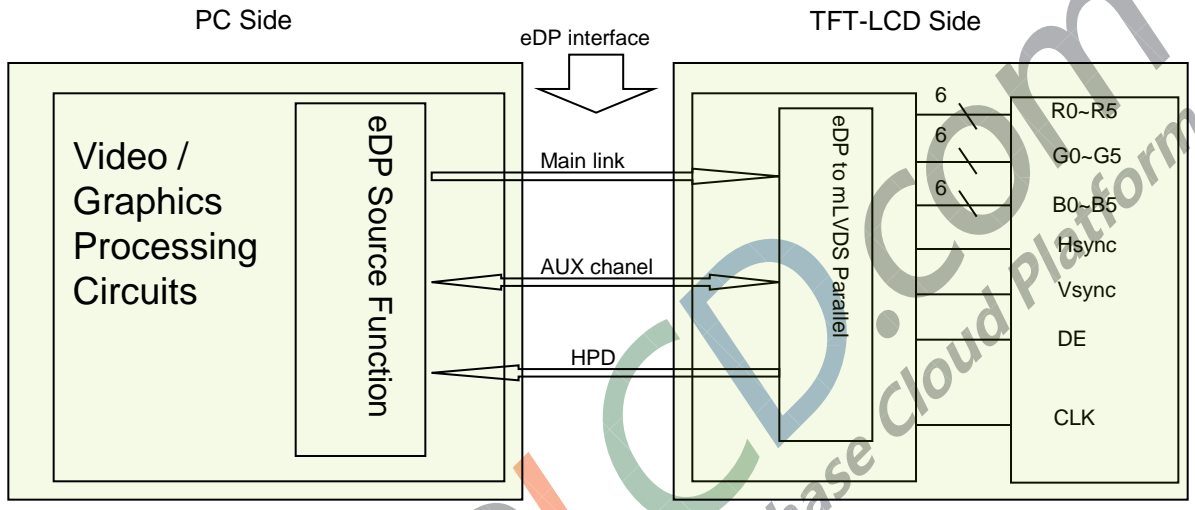
The electronics interface connector is STM MSAK24025P30 or Compatible.

The connector interface pin assignments are listed in Table 6.

<Table 6. Pin Assignments for the Interface Connector>

Terminal	Symbol	Functions
Pin No.	Symbol	Description
1	NC	No connection
2	H-GND	Ground
3	LAN1_N	Complement Signal Link_Lane1
4	LAN1_P	True Signal Link_Lane1
5	H-GND	Ground
6	LAN0_N	Complement Signal Link_Lane0
7	LAN0_P	True Signal Link_Lane0
8	H-GND	High Speed Ground
9	AUXP	True Signal Link_Auxiliary Channel
10	AUXN	Complement Signal Link_Auxiliary Channel
11	H-GND	Ground
12	LCD_VCC	Power Supply, 3.3V (typ.)
13	LCD_VCC	Power Supply, 3.3V (typ.)
14	BIST	Panel self test enable
15	H-GND	Ground
16	H-GND	Ground
17	HPD	HPD(Hot Plug Detect) Signal Pin
18	BL_GND	High Speed Ground
19	BL_GND	High Speed Ground
20	BL_GND	High Speed Ground
21	BL_GND	High Speed Ground
22	BL_EN	Backlight on/off Control pin
23	BL_PWM	Back light PWM Dimming
24	Hsync	Line synchronization
25	NC	No connection
26	BL_PWR	Backlight power
27	BL_PWR	Backlight power
28	BL_PWR	Backlight power
29	BL_PWR	Backlight power
30	NC	No connection

**5-2. eDP Interface**



Note. Transmitter : HX8879-BG2 or equivalent.  
 Transmitter is not contained in Module.

**5.3.eDP Input signal**

Lane 0	
R0-5:0	G0-5:4
G0-3:0	B0-5:2
B0-1:0	R1-5:0
G1-5:0	B1-5:4
B1-3:0	R2-5:2
R2-1:0	G2-5:0
B2-5:0	R3-5:4
R3-3:0	G3-5:2
G3-1:0	B3-5:0

**5.4 Back-light & LCM Interface Connection**

<Table 7. Pin Assignments for the BLU & LCM Connector>

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	LED	LED cathode connection	6	NC	No Connection
2	LED	LED cathode connection	7	Vout	LED anode connection
3	LED	LED cathode connection	8	Vout	LED anode connection
4	LED	LED cathode connection	9	Vout	LED anode connection
5	NC	No Connection			





## 6.0 SIGNAL TIMING SPECIFICATION

6.1 The NV133FHM-N52 is operated by the DE only.

Item		Symbols	Min	Typ	Max	Unit
Clock	Frequency	1/Tc	100	148.5	160	MHz
Frame Period		Tv	1112	1125	1238	lines
			-	60	-	Hz
			25	16.67	15.15	ms
Vertical Display Period		Tvd	-	1080	-	lines
One line Scanning Period		Th	2080	2200	2400	clocks
Horizontal Display Period		Thd	-	1920	-	clocks

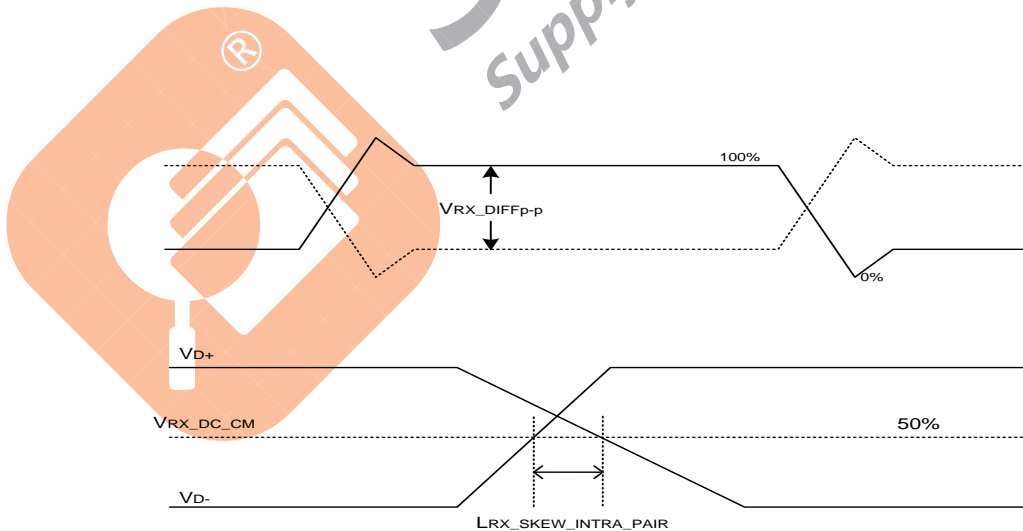


**6.2 eDP Rx Interface Timing Parameter**

The specification of the eDP Rx interface timing parameter is shown in Table 8.

<Table 9. eDP Rx Interface Timing Specification>

Item	Symbol	Min	Typ	Max	Unit	Remark
Spread spectrum clock	SSC		0.5		%	
Differential peak-to-peak input voltage at package pins	VRX-DIFFp-p	500	0	1000	mV	
Rx input DC common mode voltage	VRX_DC_CM	-	GND	-	V	
Differential termination resistance	RRX-DIFF	80	-	100	$\Omega$	
Single-ended termination resistance	RRX-SE	40	-	60	$\Omega$	
Rx short circuit current limit	IRX_SHORT	-	-	20	mA	
Intra-pair skew at Rx package pins (HBR) RX intra-pair skew tolerance at HBR	LRX_SKEW_INTRA_PAIR	-	-	150	ps	

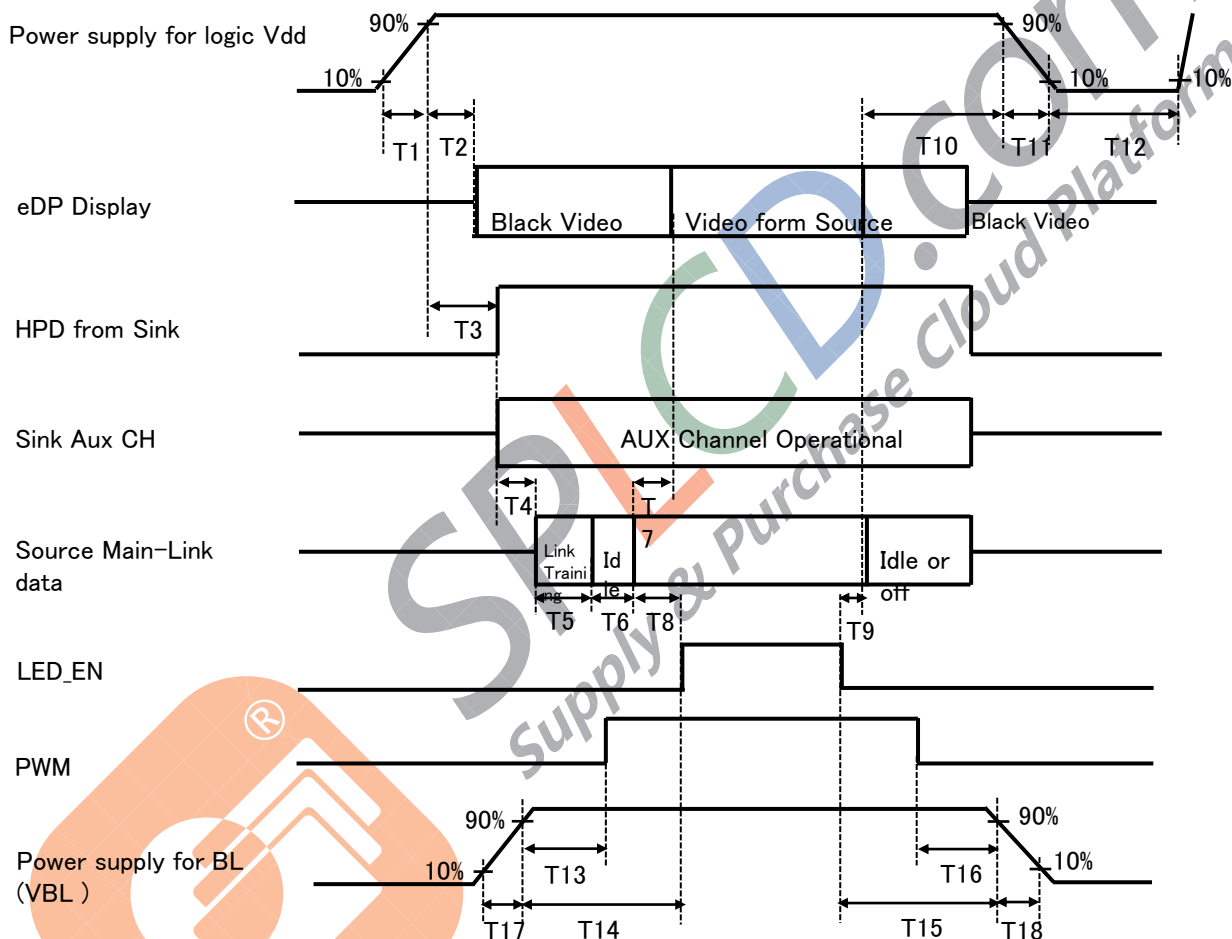


**7.0 INPUT SIGNALS, BASIC DISPLAY COLORS & GRAY SCALE OF COLORS**

	Colors & Gray scale	Data signal																	
		R0	R1	R2	R3	R4	R5	G0	G1	G2	G3	G4	G5	B0	B1	B2	B3	B4	B5
Basic colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Light Blue	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Purple	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray scale of Red	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△																		
	▽																		
	Brighter	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	▽	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
Gray scale of Green	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Darker	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	△																		
	▽																		
	Brighter	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0
	▽	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0
Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	
Gray scale of Blue	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	△																		
	▽																		
	Brighter	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
	▽	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	
Gray scale of White & Black	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	△	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
	Darker	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
	△																		
	▽																		
	Brighter	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1
	▽	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1
White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

### 8.0 POWER SEQUENCE

To prevent a latch-up or DC operation of the LCD module, the power on/off sequence shall be as shown in below



- 0.5ms ≤ T1 ≤ 10 ms
- 0ms ≤ T2 ≤ 200 ms
- 0ms ≤ T3 ≤ 200 ms
- 10ms ≤ T13
- 20ms ≤ T14
- 0.5ms ≤ T17 ≤ 20ms
- 0ms ≤ T7 ≤ 50ms
- 0ms ≤ T10 ≤ 500 ms
- 3ms ≤ T11 ≤ 10 ms
- 500ms ≤ T12
- 20ms ≤ T15
- 10ms ≤ T16
- 0.5ms ≤ T18 ≤ 20ms

Notes:

1. When the power supply VDD is 0V, keep the level of input signals on the low or keep high impedance.
2. Do not keep the interface signal high impedance when power is on. Back Light must be turn on after power for logic and interface signal are valid.

PRODUCT GROUP		REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT		P0	2016.01.25	
SPEC. NUMBER	SPEC. TITLE			PAGE
	NV133FHM-N52 Preliminary Product Specification			21 OF 36

## 9.0 RELIABILITY TEST

The Reliability test items and its conditions are shown in below.

<Table 10. Reliability test>

No	Test Items	Conditions
1	High temperature storage test	Ta = 60 °C , 240 hrs
2	Low temperature storage test	Ta = -20 °C , 240 hrs
3	High temperature & high humidity operation test	Ta = 40 °C , 90%RH, 240 hrs
4	High temperature operation test	Ta = 50 °C , 240 hrs
5	Low temperature operation test	Ta = 0 °C , 240 hrs
6	Thermal shock	Ta = -40 °C ↔ 80 °C (0.5 hr), 100 cycle
7	Drop (non-operating)	60cm/1 corner/3 edges/6 faces
8	Shock test (non-operating)	220G, Half Sine Wave 2msec ±X, ±Y, ±Z Once for each direction
9	Electro-static discharge test (non-operating)	Air : 150 pF, 330Ω, 15 KV Contact : 150 pF, 330Ω, 8 KV

## 11.0 HANDLING & CAUTIONS

### (1) Cautions when taking out the module

- Pick the pouch only, when taking out module from a shipping package.

### (2) Cautions for handling the module

- As the electrostatic discharges may break the LCD module, handle the LCD module with care. Peel a protection sheet off from the LCD panel surface as slowly as possible.
- As the LCD panel and back - light element are made from fragile glass material, impulse and pressure to the LCD module should be avoided.
- As the surface of the polarizer is very soft and easily scratched, use a soft dry cloth without chemicals for cleaning.
- Do not pull the interface connector in or out while the LCD module is operating.
- Put the module display side down on a flat horizontal plane.
- Handle connectors and cables with care.

### (3) Cautions for the operation

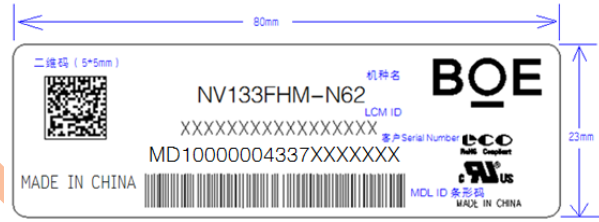
- When the module is operating, do not lose CLK, ENAB signals. If any one of these signals is lost, the LCD panel would be damaged.
- Obey the supply voltage sequence. If wrong sequence is applied, the module would be damaged.

PRODUCT GROUP		REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT		P0	2016.01.25	
SPEC. NUMBER	SPEC. TITLE			PAGE
	NV133FHM-N52 Preliminary Product Specification			22 OF 36

- (4) Cautions for the atmosphere
- Dew drop atmosphere should be avoided.
  - Do not store and/or operate the LCD module in a high temperature and/or humidity atmosphere. Storage in an electro-conductive polymer packing pouch and under relatively low temperature atmosphere is recommended.
- (5) Cautions for the module characteristics
- Do not apply fixed pattern data signal to the LCD module at product aging.
  - Applying fixed pattern for a long time may cause image sticking.
- (6) Other cautions
- Do not disassemble and/or re-assemble LCD module.
  - Do not re-adjust variable resistor or switch etc.
  - When returning the module for repair or etc., Please pack the module not to be broken. We recommend to use the original shipping packages.

## 12.0 LABEL

### (1) LCM label



### LCM ID 编码规则:


序列号	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
代码	S	L	S	T	1	2	3	5	9	4	2	0	0	0	1	D	B
描述	GBN		等级	line	年		月	FG-Code后4位				Serial Number					

### 客户Serial Number 编码规则 :

	YMD	####
Part Number	MFG Date	S/N
13 digit: num-alphabet	3 digit: Num-alphabet	4 digit: Num-alphabet
Follow Timi PN Rule MD10000004337	Skip "I,O,Q"	SN:4bit, use 0~9 and A~Z numeral-alphabet, skip letter "I,O,Q,U" ; SN must NOT be duplicated.
	Year=last digit of year	
	Month=1-9 for Jan-Sept, A=Oct, B=Nov, C=Dec	
	Day=1-9 for 1 <sup>st</sup> thru 9 <sup>th</sup> , A=10, B=11, etc. skip "I,O,Q,U"	


PRODUCT GROUP		REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT		P0	2016.01.25	
SPEC. NUMBER	SPEC. TITLE			PAGE
	NV133FHM-N52 Preliminary Product Specification			23 OF 36

(2) High voltage caution label

	<p>HIGH VOLTAGE CAUTION</p>	<p>COLD CATHODE FLUORESCENT LAMP IN LCD PANEL CONTAINS A SMALL AMOUNT OF MERCURY. PLEASE FOLLOW LOCAL ORDINANCES OR REGULATIONS FOR DISPOSAL.</p>
	<p>RISK OF ELECTRIC SHOCK. DISCONNECT THE ELECTRIC POWER BEFORE SERVICING</p>	

(3) Box label

**BOE** CHONGQING BOE OPTOELECTRONICS TECHNOLOGY Co., LTD

MODEL: XXXXXXX-XXX ①	QTY: XX ②
SERIAL NO: XXXXXXXXXXXX ③	DATE: XXXXXXXX ④
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">BOX ID 条形码</div>	
XXXXXXXXXX ⑤	XXXX ⑥
	XXXX ⑦

蓝色字体为后打印标识, 说明如下:

1. **FG-CODE**
2. **Box 产品数量**
3. **Box ID, 编码规则如下**
4. **Box Packing 日期**
5. **产品物料号(客户端)**
6. **FG-CODE 后四位**

Box ID 编码规则

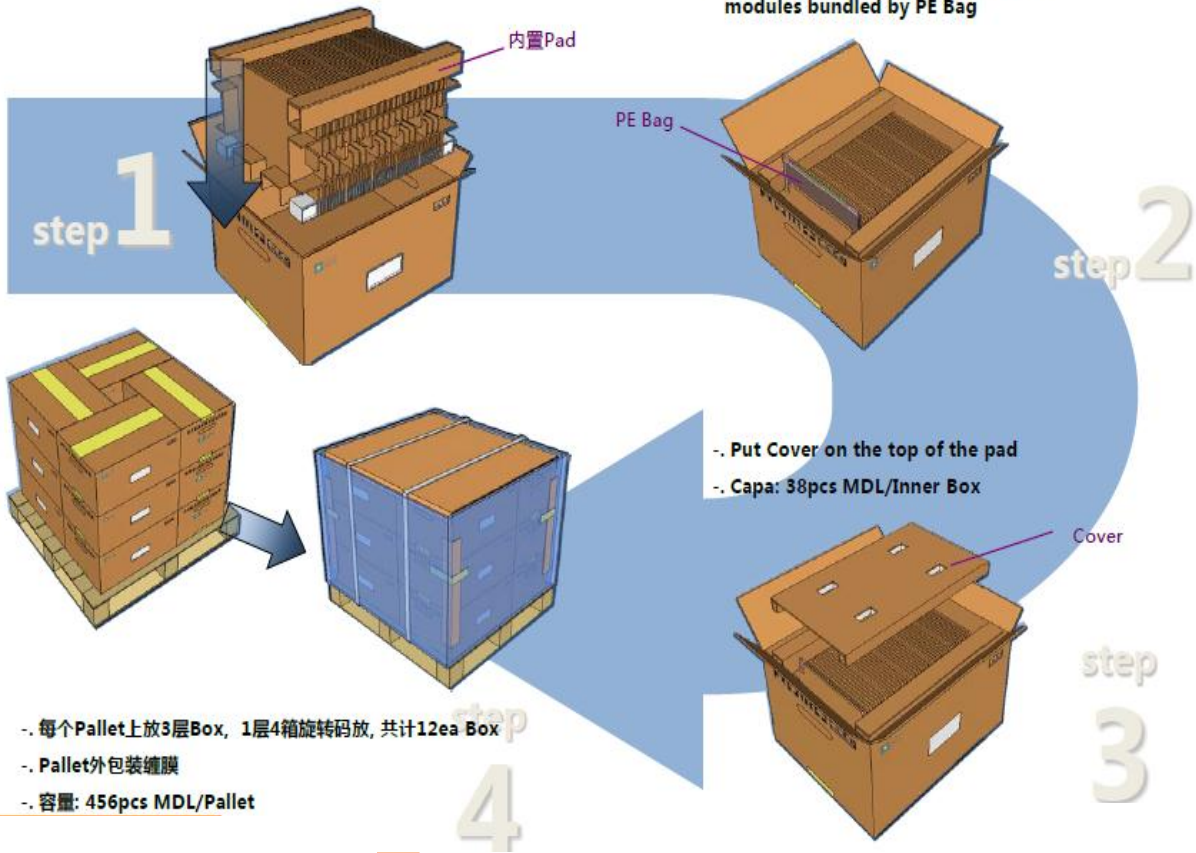
序列号	1	2	3	4	5	6	7	8	9	10	11	12	13
代码	S	L	S	T	1	4	3	D	0	0	1	H	D
描述	GBN代码		等级	TM1	年份	月	Rev	Serial Number					

### 13.0 PACKING INFORMATION

#### 13.1 Packing order

- Put Pad into the inner box

- Put module into the paper spacer and modules bundled by PE Bag



#### 13.2 Notes

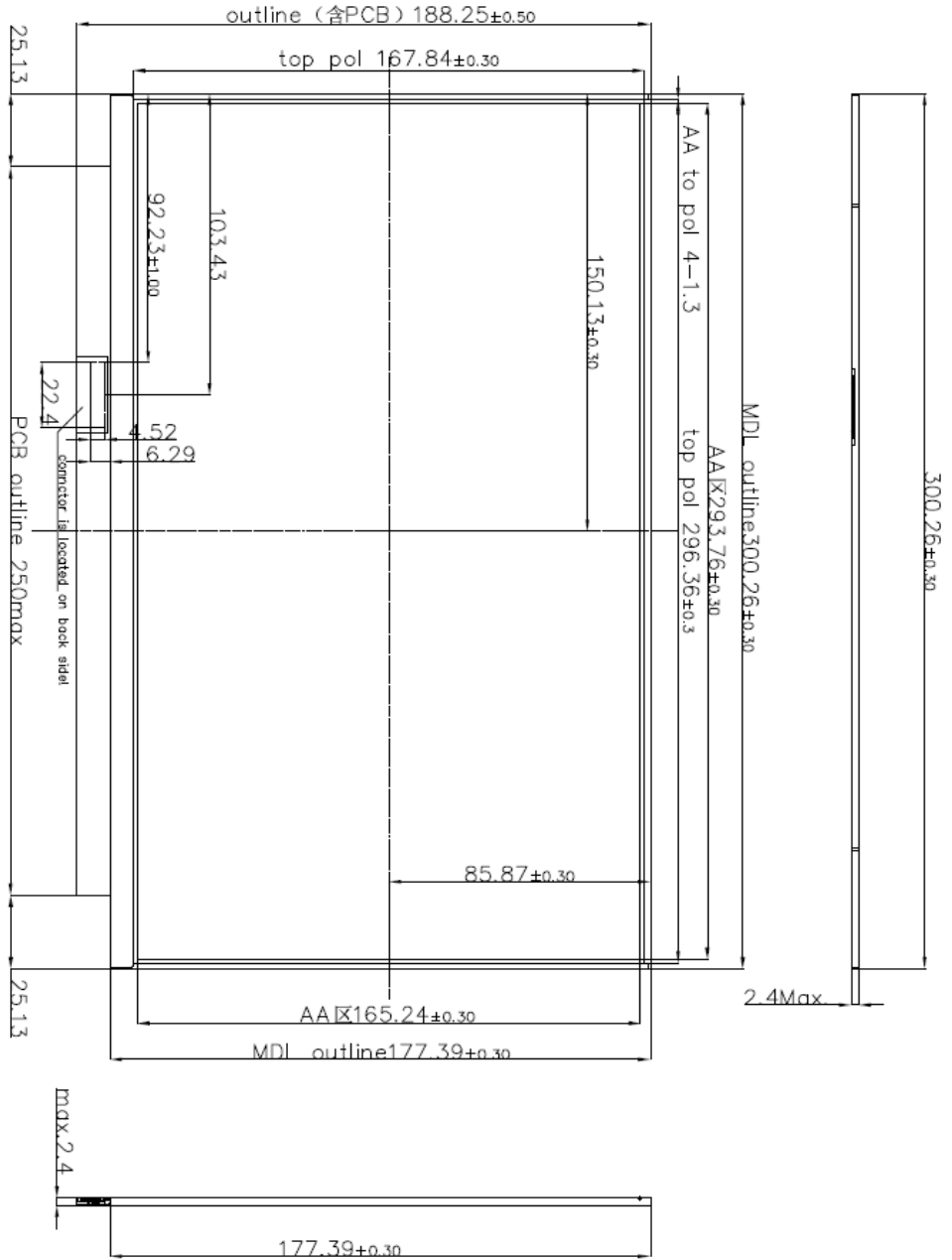
- Box Dimension: TBD
- Package Quantity in one Box: 25pcs
- Total Weight: TBD



PRODUCT GROUP		REV	ISSUE DATE	<b>BOE</b>
LCM PRODUCT		P0	2016.01.25	
SPEC. NUMBER	SPEC. TITLE			PAGE
	NV133FHM-N52 Preliminary Product Specification			25 OF 36

**14. MECHANICAL OUTLINE DIMENSION**  
**14.1 Outline Dimension**

Figure 6. Outline Dimensions (Front view)

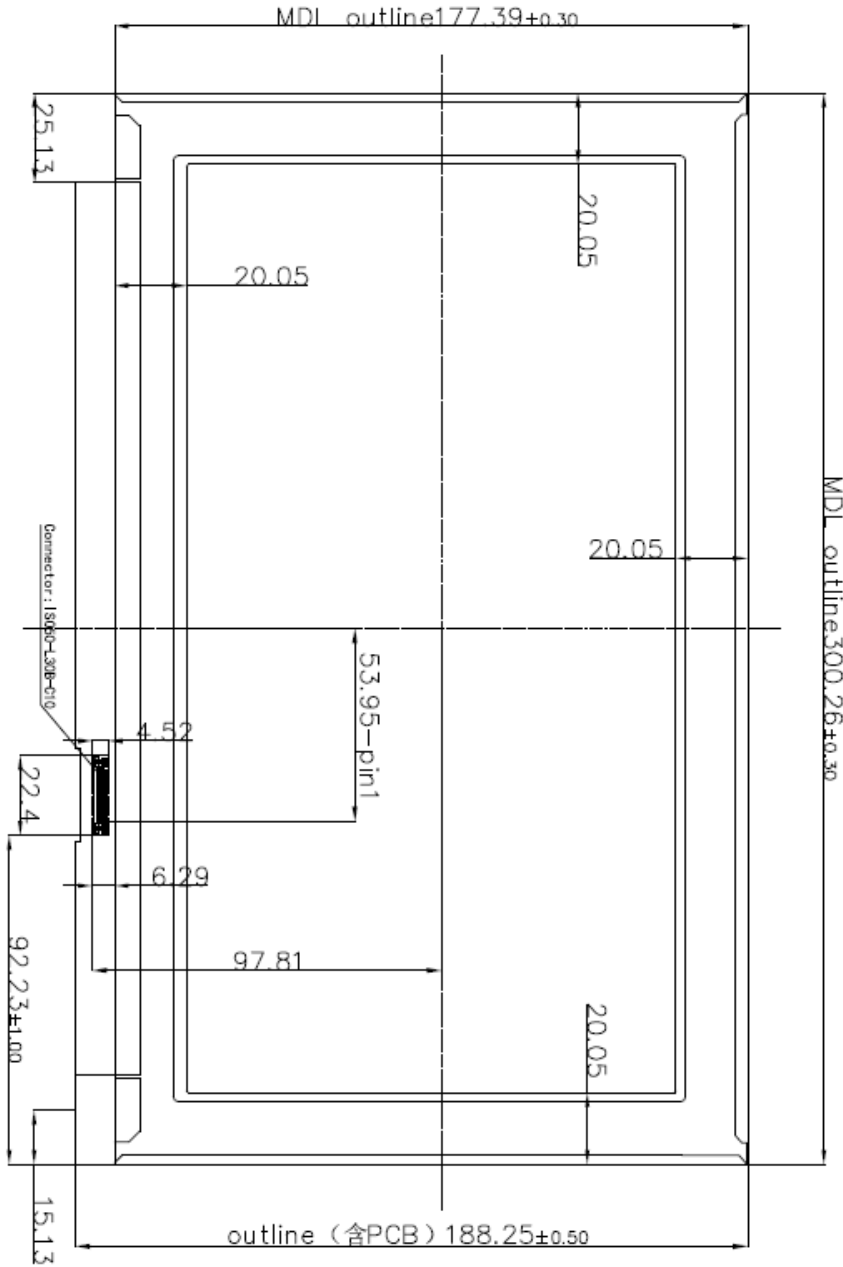


NOTE:  
 1. 尺寸未注公差以右侧公差表为准:

TOLERANCE TABLE(±)	
DIMENSION	tolerance
L ≤ 20	0.09
20 < L ≤ 50	0.1
50 < L ≤ 100	0.15
100 < L ≤ 200	0.2
200 < L	0.25

UNLESS OTHERWISE SPECIFIED

**14.2 Total Solution Outline Dimension**



NOTE:  
1. 尺寸未注公差以右侧公差表为准:

TOLERANCE TABLE(±)			
DIMENSION	GRADE 1	GRADE 2	GRADE 3
L ≤ 20	0.05	0.1	0.1
20 < L ≤ 50	0.1	0.15	0.2
50 < L ≤ 100	0.15	0.2	0.25
100 < L ≤ 200	0.2	0.25	0.3
200 < L	0.25	0.3	0.4

UNLESS OTHERWISE SPECIFIED

**15.0 EDID Table**

Address (HEX)	Function	Hex	Dec	Input values.	Notes
00	Header	00	0	0	EDID Header
01		FF	255	255	
02		FF	255	255	
03		FF	255	255	
04		FF	255	255	
05		FF	255	255	
06		FF	255	255	
07		00	0	0	
08	ID Manufacturer Name	09	9	BOE	ID = BOE
09		E5	229		
0A	ID Product Code	B7	183	1719	ID = 1719
0B		06	6		
0C	32-bit serial No.	00	0		
0D		00	0		
0E		00	0		
0F		00	0		
10	Week of manufacture	01	1	1	
11	Year of Manufacture	1A	26	2016	Manufactured in 2016
12	EDID Structure Ver.	01	1	1	EDID Ver 1.0
13	EDID revision #	04	4	4	EDID Rev. 0.4
14	Video input definition	95	149	-	digital signal/DP input
15	Max H image size	1D	29	29	29 cm (Approx)
16	Max V image size	11	17	17	17 cm (Approx)
17	Display Gamma	78	120	2.2	Gamma curve = 2.2
18	Feature support	0A	10		RGB display, Preferred Timming mode
19	Red/Green low bits	11	17	-	Red / Green Low Bits
1A	Blue/White low bits	60	96	-	Blue / White Low Bits
1B	Red x high bits	AB	171	0.668	Red (x) = 10101011 (0.668)
1C	Red y high bits	53	83	0.326	Red (y) = 01010011 (0.326)
1D	Green x high bits	47	71	0.278	Green (x) = 01000111 (0.278)
1E	Green y high bits	96	150	0.587	Green (y) = 10010110 (0.587)
1F	Blue x high bits	23	35	0.138	Blue (x) = 00100011 (0.138)
20	BLue y high bits	18	24	0.096	Blue (y) = 00011000 (0.096)
21	White x high bits	50	80	0.313	White (x) = 01010000 (0.313)
22	White y high bits	54	84	0.329	White (y) = 01010100 (0.329)
23	Established timing 1	00	0	-	
24	Established timing 2	00	0	-	

25	Established timing 3	00	0	-	
26	Standard timing #1	01	1		Not Used
27		01	1		
28	Standard timing #2	01	1		Not Used
29		01	1		
2A	Standard timing #3	01	1		Not Used
2B		01	1		
2C	Standard timing #4	01	1		Not Used
2D		01	1		
2E	Standard timing #5	01	1		Not Used
2F		01	1		
30	Standard timing #6	01	1		Not Used
31		01	1		
32	Standard timing #7	01	1		Not Used
33		01	1		
34	Standard timing #8	01	1		Not Used
35		01	1		
36	Detailed timing/monitor descriptor #1	BC	188	147.8	147.8MHz Main clock
37		39	57		
38	Detailed timing/monitor descriptor #1	80	128	1920	Hor Active = 1920
39		18	24	280	Hor Blanking = 280
3A	Detailed timing/monitor descriptor #1	71	113	-	4 bits of Hor. Active + 4 bits of Hor. Blanking
3B		38	56	1080	Ver Active = 1080
3C	Detailed timing/monitor descriptor #1	28	40	40	Ver Blanking = 40
3D		40	64	-	4 bits of Ver. Active + 4 bits of Ver. Blanking
3E	Detailed timing/monitor descriptor #1	30	48	48	Hor Sync Offset = 48
3F		20	32	32	H Sync Pulse Width = 32
40	Detailed timing/monitor descriptor #1	36	54	3	V sync Offset = 3 line
41		00	0	6	V Sync Pulse width : 6 line
42	Detailed timing/monitor descriptor #1	26	38	294	Horizontal Image Size = 294 mm (Low 8 bits)
43		A5	165	165	Vertical Image Size = 165 mm (Low 8 bits)
44	Detailed timing/monitor descriptor #1	10	16	-	4 bits of Hor Image Size + 4 bits of Ver Image Size
45		00	0	0	Hor Border (pixels)
46	Detailed timing/monitor descriptor #1	00	0	0	Vertical Border (Lines)
47		1A	26		Refer to right table

PRODUCT GROUP

REV

ISSUE DATE

**BOE**

LCM PRODUCT

P0

2016.01.25

SPEC. NUMBER

SPEC. TITLE

PAGE

NV133FHM-N52 Preliminary Product Specification

29 OF 36

48	Detailed timing/monitor descriptor #2	36	54	118.3	118.3MHz Main clock
49		2E	46		
4A		80	128	1920	Hor Active = 1920
4B		18	24	280	Hor Blanking = 280
4C		71	113	-	4 bits of Hor. Active + 4 bits of Hor. Blanking
4D		38	56	1080	Ver Active = 1080
4E		28	40	40	Ver Blanking = 40
4F		40	64	-	4 bits of Ver. Active + 4 bits of Ver. Blanking
50		30	48	48	Hor Sync Offset = 48
51		20	32	32	H Sync Pulse Width = 32
52		36	54	3	V sync Offset = 3 line
53		00	0	6	V Sync Pulse width : 6 line
54		26	38	294	Horizontal Image Size = 294 mm (Low 8 bits)
55		A5	165	165	Vertical Image Size = 165 mm (Low 8 bits)
56		10	16	-	4 bits of Hor Image Size + 4 bits of Ver Image Size
57		00	0	0	Hor Border (pixels)
58		00	0	0	Vertical Border (Lines)
59		1A	26		
5A		00	0		ASCII Data Sting Tag
5B		00	0		
5C	00	0			
5D	FE	254			
5E	00	0			
5F	42	66	B	Manufacture name : BOE CQ	
60	4F	79	O		
61	45	69	E		
62	20	32			
63	43	67	C		
64	51	81	Q		
65	0A	10			
66	20	32			
67	20	32			
68	20	32			
69	20	32			
6A	20	32			
6B	20	32			

Detailed timing/monitor descriptor #2

Detailed timing/monitor descriptor #3

6C		00	0		Product Name Tag (ASCII)
6D		00	0		
6E		00	0		
6F		FE	254		
70		00	0		
71		4E	78	N	Model name : NV133FHM-N62
72		56	86	V	
73		31	49	1	
74	Detailed timing/monitor descriptor #4	33	51	3	
75		33	51	3	
76		46	70	F	
77		48	72	H	
78		4D	77	M	
79		2D	45	-	
7A		4E	78	N	
7B		36	54	6	
7C		32	50	2	
7D		0A	10		
7E	Extension flag	00	0		
7F	Checksum	C7	199	-	

