



# SPECIFICATION

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**HSD101JHW1-F10**

**10.1" - HD - LVDS**

Version: 1.0

Date: 06.03.2024

Note: This specification is subject to change without prior notice

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TO : DATA MODUL

Date : Mar.06.2024

# **HannStar Product Information** **(Formal)**

## **10.1” Color TFT-LCD Module**

Model: **HSD101JHW1 – F10**

Note:

- (1) Please contact HannStar Display (NanJing) Corp. before designing your product based on this module specification.
- (2) The information contained herein is presented merely to indicate the characteristics and performance of our products. No responsibility is assumed by HannStar for any intellectual property claims or other problems that may result from application based on the module described herein.
- (3) The mark “\*\*\*” of Model means sub-model code.

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### Record of Revisions

Rev.	Date	Sub-Model	Description of change
1.0	Mar.06.2024	-F10	Formal Product Information was first released.

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## 1.0 GENERAL DESCRIPTION

### 1.1 Introduction

HannStar Display (NanJing) model HSD101JHW1-F10 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, a driving circuit and a back light system. This TFT LCD has a 10.1 inch diagonally measured active display area with HD (1280 horizontal by 720 vertical pixel) resolution. Made in China.

### 1.2 Features

- 10.1 (16:9 diagonal) inch configuration
- 16.7M
- ROHS / Halogen Free Compliance

### 1.3 Applications

- Automotive

### 1.4 General information

Item	Specification	Unit	
Outline Dimension	238.8 (H) x 148 (V) x 7 (D) (Typ)	mm	
Display area	224.64 (H) x 126.36 (V) (10.1" diagonal)	mm	
Number of Pixel	1280(H) x 720(V)	pixels	
Pixel pitch	0.1755(H) x 0.1755(V)	mm	
Pixel arrangement	RGB Vertical Stripe		
Display mode	Normally Black		
NTSC	70(Typ.)	%	
Surface treatment	Antiglare coating with 3H (Haze 25%)		
Weight	346	g	
Back-light	LED (Side-Light type)		
Power Consumption	Logic System (White Pattern)	Logic 1.65 (max), 1.44 (typ)	W
	B/L System	9.248 (Max.)	W

### 1.5 Mechanical Information

Item	Min.	Typ.	Max.	Unit	
Module Size	Horizontal (H)	238.5	238.8	239.1	mm
	Vertical (V)	147.7	148	148.3	mm
	Depth (D)	6.7	7	7.3	mm
Weight	—	346	—	g	

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## 2.0 ABSOLUTE MAXIMUM RATINGS

### 2.1 Electrical Absolute Rating

#### 2.1.1 TFT LCD Module

Item	Symbol	Min.	Max.	Unit	Note
Power supply voltage	$V_{DD}$	-0.3	5.0	V	

### 2.2 Environment Absolute Rating

Item	Symbol	Min.	Max.	Unit	Note
Operating Temperature	$T_{opa}$	-30	85	°C	
Storage Temperature	$T_{stg}$	-40	90	°C	

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### 3.0 OPTICAL CHARACTERISTICS

#### 3.1 Optical specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note		
Contrast		CR	$\Theta=0$ Normal viewing angle	700	900	—		(1)(2)		
Response time	Rising	TR+TF		—	30	40	msec	(1)(3)		
	Falling									
White luminance (Center)		$Y_L$			800	1000	—	cd/m <sup>2</sup>	(1)(4) ( $I_L=340mA$ )	
Color chromaticity (CIE1931)	White	$W_x$			0.273	0.313	0.353		(1)(4)	
		$W_y$			0.289	0.329	0.369			
	Red	$R_x$			0.620	0.650	0.680			
		$R_y$			0.303	0.333	0.363			
	Green	$G_x$			0.265	0.295	0.325			
		$G_y$			0.582	0.612	0.642			
	Blue	$B_x$		0.118	0.148	0.178				
		$B_y$		0.026	0.056	0.086				
Viewing angle	Hor.	$\Theta_L$	CR>10	80	85	—		(1)(4)		
		$\Theta_R$		80	85	—				
	Ver.	$\Theta_U$		80	85	—				
		$\Theta_D$		80	85	—				
Viewing angle	Hor.	$\Theta_L$		CR>150	60	70	—			(1)(4)
		$\Theta_R$			60	70	—			
	Ver.	$\Theta_U$			60	70	—			
		$\Theta_D$			60	70	—			
Brightness uniformity (White)		$B_{UNI}$	$\Theta=0$		70	80	—	%	(5)	
Black uniformity		by area scan	$\Theta=0$		35	—	—	%	(6)	
Optima View Direction		Free						(7)		

#### 3.2 Measuring Condition

- Measuring surrounding : dark room
- LED current  $I_L$  : 340mA
- Ambient temperature :  $25\pm 2^\circ C$
- 15min. warm-up time.

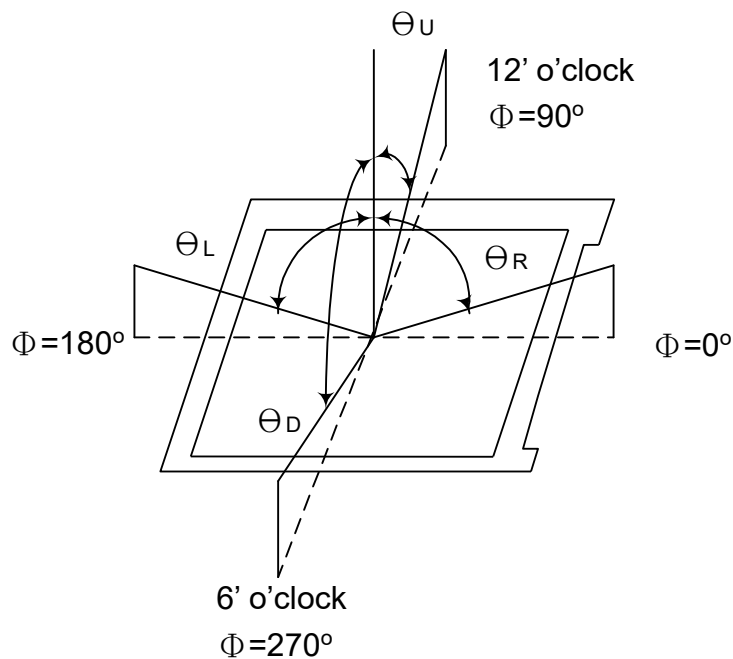
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### 3.3 Measuring Equipment

- FPM520 of Westar Display technologies, INC., which utilized SR-3 for Chromaticity and BM-5A for other optical characteristics.

- Measuring spot size : 20 ~ 21 mm

**Note (1)** Definition of Viewing Angle:



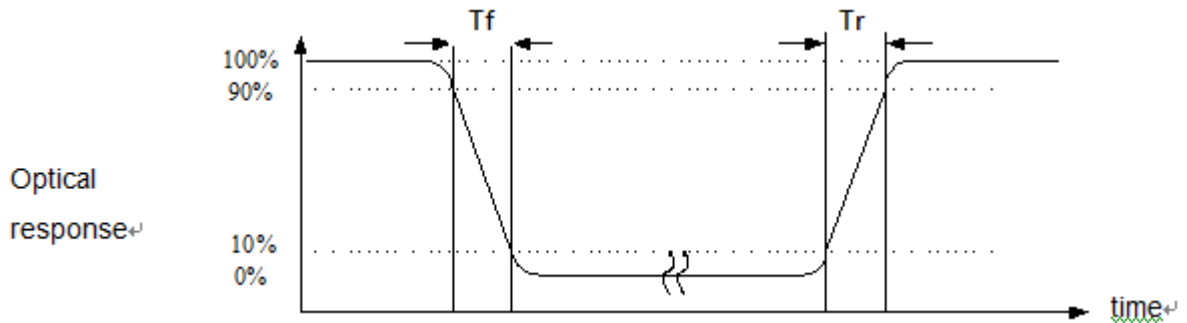
**Note (2)** Definition of Contrast Ratio (CR) :  
measured at the center point of panel

$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

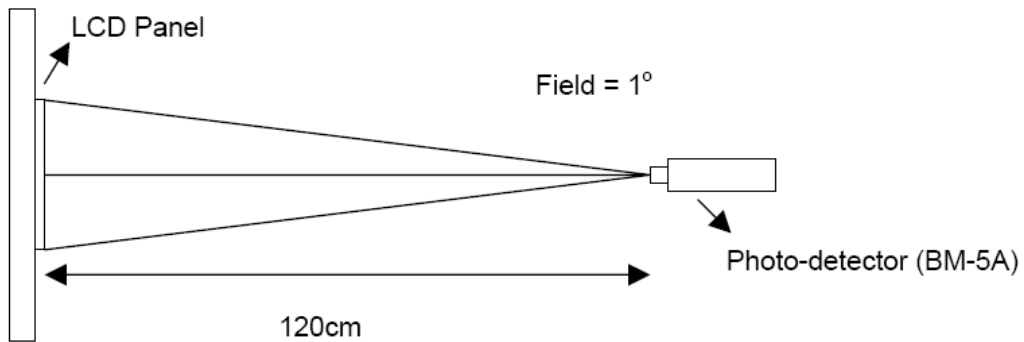


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**Note (3)** Definition of Response Time : Sum of  $T_R$  and  $T_F$

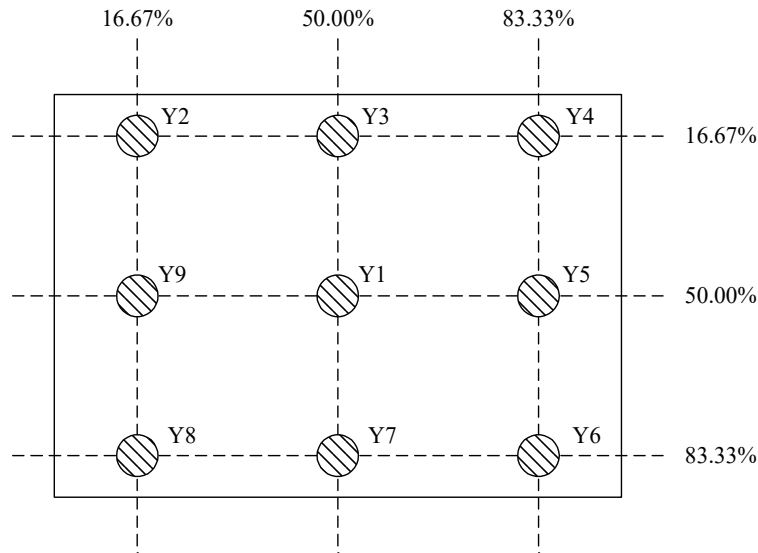


**Note (4)** Definition of optical measurement setup



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**Note (5)** Definition of brightness uniformity



$$\text{Luminance uniformity} = \frac{(\text{Min Luminance of 9 points})}{(\text{Max Luminance of 9 points})} \times 100\%$$

**Note (6)** Definition of black uniformity by area scan, conditions as below:

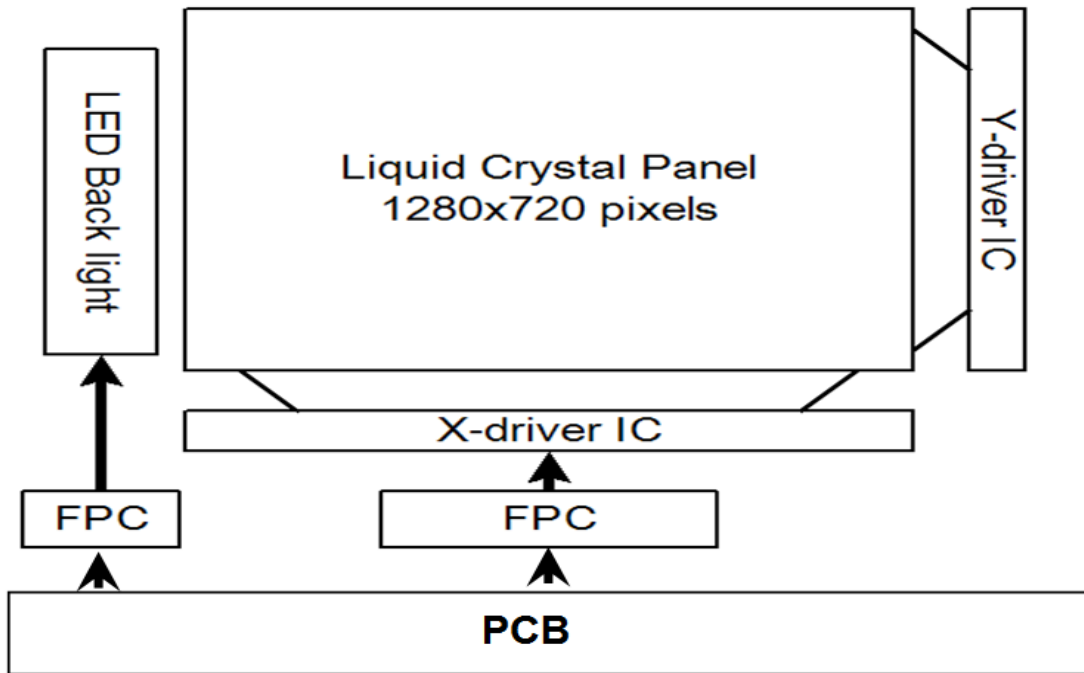
- Instrument : Radiant IC-PMI16
- Lens : 50mm
- Distance between DUT and CCD camera :  
1/2 ~ 2/3 of active area long axis dimension.  
In this product, would set distance to 80cm.
- Back light current : 100% turn on
- Border distance : 11 display pixel

**Note (7)** : Rubbing Direction (The different Rubbing Direction will cause the different optima view direction.

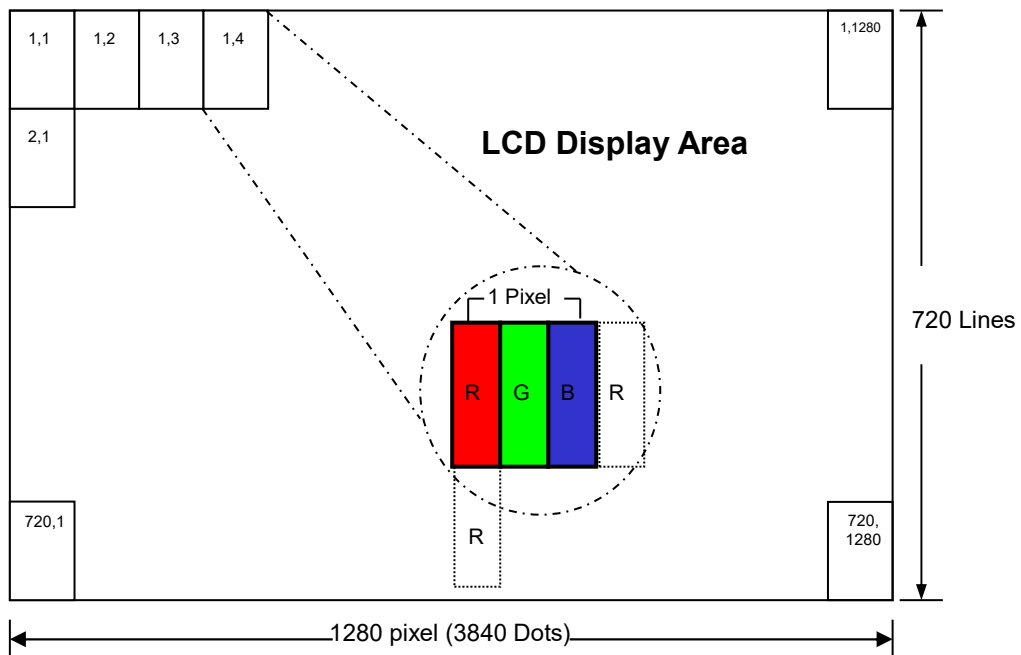
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## 4.0 BLOCK DIAGRAM

### 4.1 TFT LCD Module:



### 4.2 Pixel Format



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### 4.3 Relationship Between Displayed Color and Input

	Display	MSB				LSB				MSB				LSB				MSB				LSB				Gray scale Level				
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0					
Basic color	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	-
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	-
	Green	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	-
	Light Blue	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	-
	Red	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	-
	Purple	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	-
	Yellow	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	-
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	-
Gray scale of Red	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L1
		L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
		H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L252
	H	H	H	H	H	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L253	
	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L254	
	Red	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	Red L255
Gray scale of Green	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
		L	L	L	L	L	L	L	L	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L252
	L	L	L	L	L	L	L	L	H	H	H	H	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L253	
	L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L254	
	Green	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	Green L255
Gray scale of Blue	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L2	
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L	L	L	L	L	L	L	L252
	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L	H	L	L	L	L	L	L253	
	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	L254	
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	Blue L255
Gray scale of White & Black	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	H	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	H	L	L1	
		L	L	L	L	L	L	H	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	H	L	L2			
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251	
		H	H	H	H	H	L	L	H	H	H	H	L	L	H	H	H	H	L	L	H	H	H	H	L	L	L252			
	H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	H	L253				
	H	H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	L254				
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	White L255

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## 5.0 INTERFACE PIN CONNECTION

### 5.1 FPC Pin Assignment:

FPC connector is used for electronics interface. The recommended model is CN: F31L-1A7H1-21050

Pin NO.	Symbol	Description	Note
1	GND	Power ground	
2	NC/BIST	No connector(BIST Pin)	
3	VCC	Digital Power/Vin = 3.3V	
4	VCC	Digital Power/Vin = 3.3V	
5	GND	Power ground	
6	GND	Power ground	
7	NC	No connector(Serial interface OTP Power)	
8	NC	No connector	
9	GND	Power ground	
10	ORXIN0-	Negative LVDS differential data input	
11	ORXIN0+	Positive LVDS differential data input	
12	ORXIN1-	Negative LVDS differential data input	
13	ORXIN1+	Positive LVDS differential data input	
14	ORXIN2-	Negative LVDS differential data input	
15	ORXIN2+	Positive LVDS differential data input	
16	ORXCLKIN-	Negative LVDS differential clock input	
17	ORXCLKIN+	Positive LVDS differential clock input	
18	ORXIN3-	Negative LVDS differential data input	
19	ORXIN3+	Positive LVDS differential data input	
20	NC	No connector	
21	NC	No connector	
22	NC	No connector	
23	NC	No connector	
24	NC	No connector	
25	NC	No connector	
26	NC	No connector	
27	NC	No connector	
28	NC	No connector	
29	NC	No connector	
30	GND	ground	

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Pin NO.	Symbol	Description	Note
31	FAULT	AB_IND signal output(normal=L,abnormal=H)	
32	RESET	Global reset pin,active low.	
33	STBYB	Standby mode,active low.	
34	NC	No connector(Serial interface chip enable.CSB)	
35	NC	No connector(Serial interface clock input.SCL)	
36	NC	No connector(Serial interface data input/output.CDA)	
37	NC	No connector(Serial interface data input/output.CDA)	
38	GND	Power ground	
39	GND	Power ground	
40	NC	No connector	
41	LEDA	LED power (Anode)	
42	LEDA	LED power (Anode)	
43	LEDA	LED power (Anode)	
44	NC	No connector	
45	LEDK	Cathode 1	
46	LEDK	Cathode 2	
47	LEDK	Cathode 3	
48	LEDK	Cathode 4	
49	NTC_A	NTC_Anode	Note 1
50	NTC_K	NTC_Cathode	Note 1

Note :

(1) : Murata NCU15XH103F6SRC

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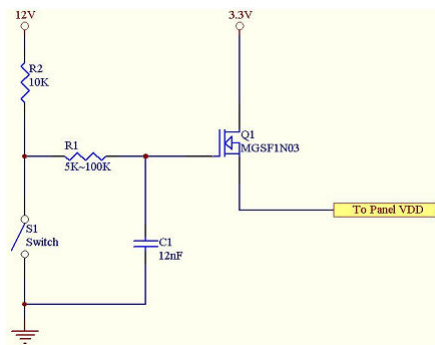
## 6.0 ELECTRICAL CHARACTERISTICS

### 6.1 TFT LCD Module

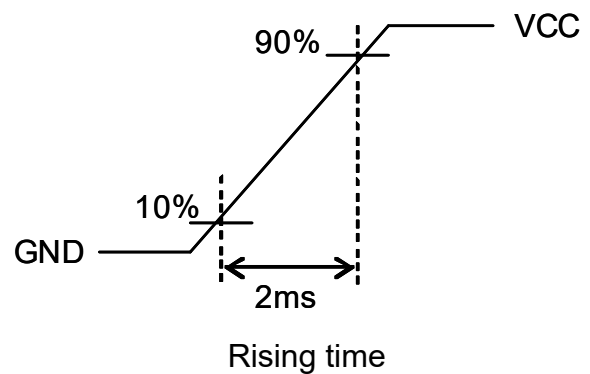
Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	VDD	3	3.3	3.6	V	Note (1)
	V <sub>IH</sub>	0.7VDD	-	VDD	V	Note (2)
	V <sub>IL</sub>	GND	-	0.3VDD	V	Note (2)
Current of power supply	IDD	-	436	500	mA	White Pattern
Inrush current	I <sub>RUSH</sub>	—	—	2.0	A	Note (3)

Note :

- (1) : VDD setting should match the signals output voltage of customer's system board.
- (2) : RESET, STBYB
- (3) : Inrush current test circuit and rising time setting (power on)



Test circuit

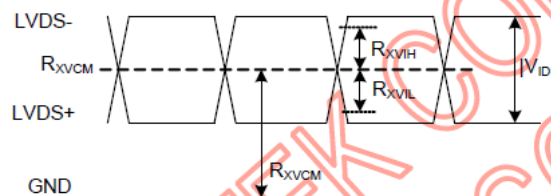


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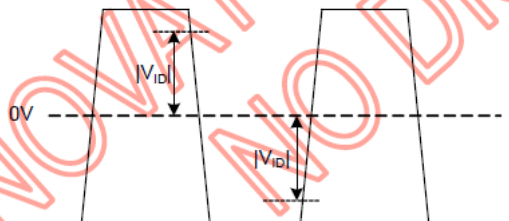
### 6.2 Switching Characteristics for LVDS Receiver

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Differential Input High Threshold	$R_{xVTH}$	+100	-	+300	mV	
Differential Input Low Threshold	$R_{xVTL}$	-300	-	-100	mV	
Differential input common mode voltage	$R_{xVCM}$	1.0	1.2	1.7- $I_{VID}/2$	V	
Input Current	$I_{IN}$	-10	-	10	uA	RX+/-, RXC+/-
Differential input Voltage	$I_{VID}$	200	-	600	mV	

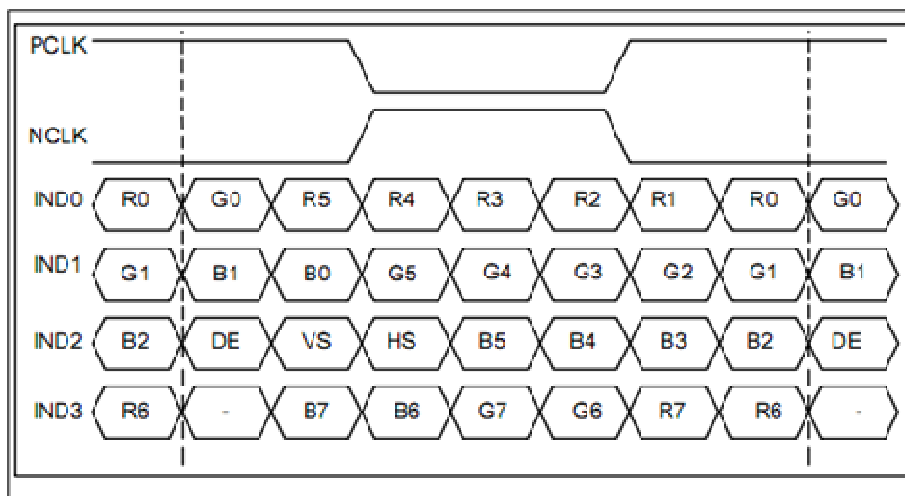
#### Single-end Signal



#### Differential Signal



### 6.3 8 Bit LVDS input (VESA Mode)





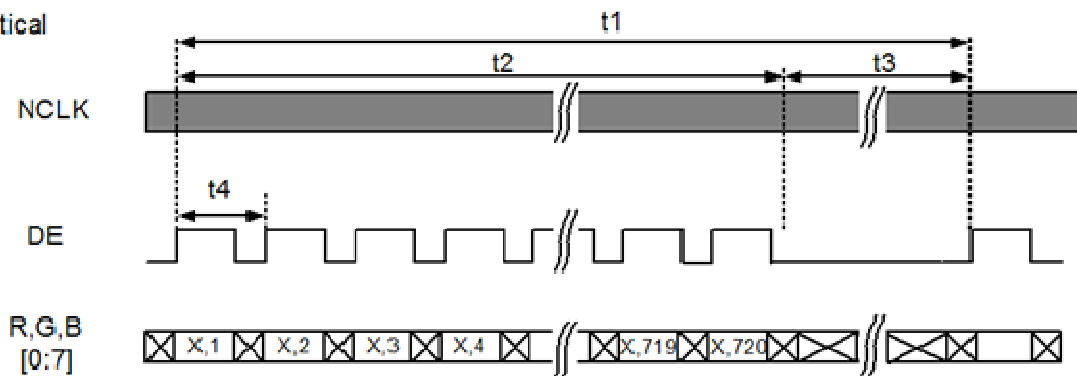
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### 6.4 Interface Timing (DE mode)

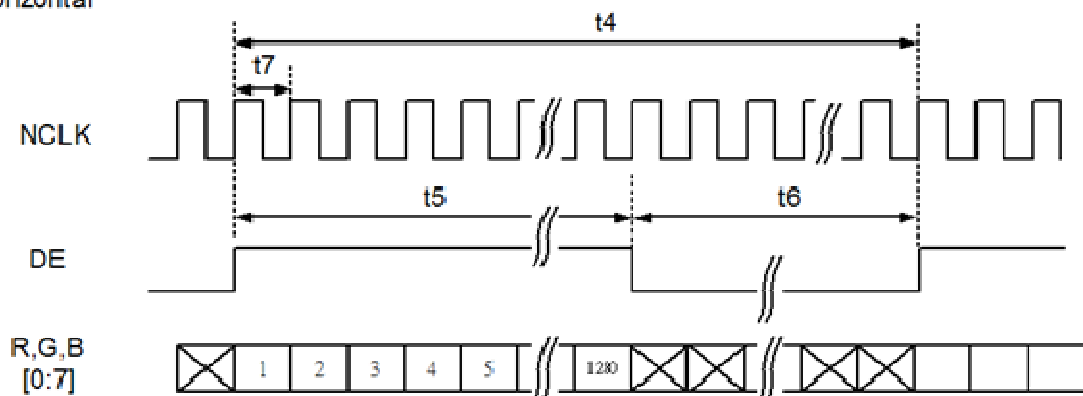
Item	Symbol	Min.	Typ.	Max.	Unit
Frame Rate	--	58	60	62	Hz
Vertical Total Time	t1	726	738	744	line
Vertical Display Time	t2	720			
Vertical Blanking Time	t3	6	18	24	line
Horizontal Total Time	t4	1340	1344	1348	clock
Horizontal Display Time	t5	1280			
Horizontal Blanking Time	t6	60	64	68	clock
Clock Rate	t7	58.2	59.5	60.3	MHz

#### Timing Diagram of Interface Signal (DE mode)

##### 1. Vertical

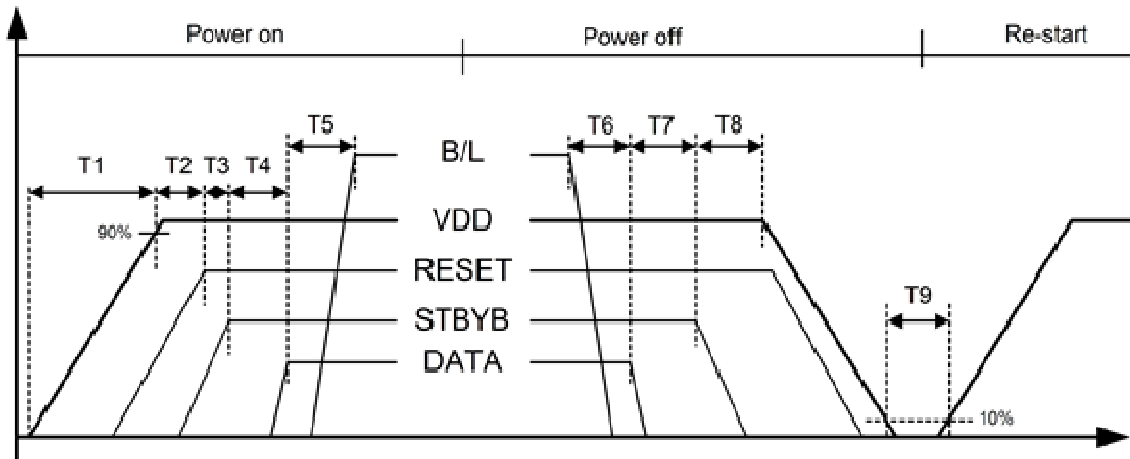


##### 2. Horizontal



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### 6.5 Power On / Off Sequence



Item	Min.	Typ.	Max.	Unit
T1	0.5	--	20	ms
T2	1	--	--	ms
T3	1	--	--	ms
T4	200	--	--	ms
T5	50	--	--	ms
T6	50	--	--	ms
T7	16	--	--	ms
T8	16	--	--	ms
T9	1000	--	--	ms

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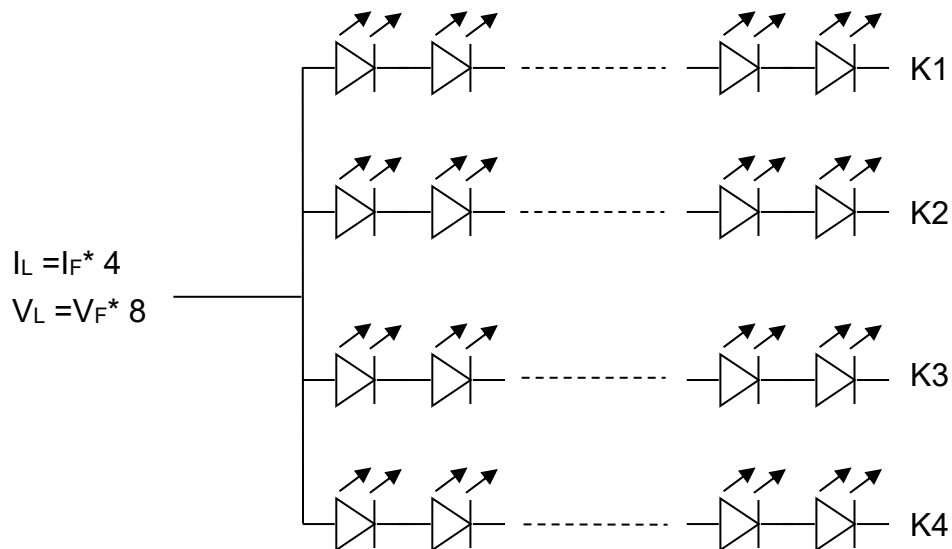
### 6.6 Backlight Unit

Parameter	Symbol	Min	Typ	Max	Units	Condition
LED Current	$I_L$	--	340	--	mA	$T_a=25^\circ\text{C}$
LED Voltage	$V_L$	--	24.8	27.2	Volt	$T_a=25^\circ\text{C}$
LED Life-Time	N/A	30,000	--	--	Hour	$T_a=25^\circ\text{C}$ $I_F=85\text{mA}$ Note (2)

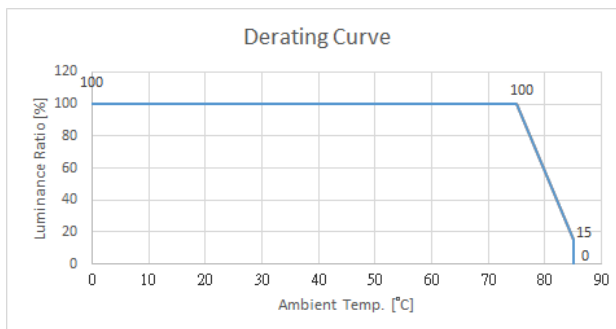
Note (1) LED life time (Hr) can be defined as the time in which it continues to operate under the condition:  $T_a=25\pm 3^\circ\text{C}$ , typical  $I_L$  value indicated in the above table until the brightness becomes less than 50%.

Note (2) The "LED life time" is defined as the module brightness decrease to 50% original brightness at  $T_a=25^\circ\text{C}$  and  $I_L=340\text{mA}$ . The LED lifetime could be decreased if operating  $I_L$  is larger than 340mA. The constant current driving method is suggested.

Note (3) LED Light Bar Circuit



Note (4) Suggestion for the derating curve of display module.



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## 7.0 RELIABILITY TEST ITEMS

No.	Item	Conditions	Remark
1	High Temperature Storage	Ta=+90°C, 500hrs	1, 2, 3
2	Low Temperature Storage	Ta=-40°C, 500hrs	1, 2, 3
3	High Temperature Operation	Ta=+85°C, 500hrs	1, 2, 3
4	Low Temperature Operation	Ta=-30°C, 500hrs	1, 2, 3
5	High Temperature and High Humidity (operation)	Ta=+60°C, 90%RH, 240hrs	1, 2, 3
6	Thermal Cycling Test (non operation)	-30°C(30min) → +85°C(30min), 100 cycles	1, 2, 3
7	Electrostatic Discharge	R=330Ω,C=150pF Contact = ± 8 kV, class B; Air = ± 15 kV, class B; 1 time for each point.	
8	Vibration	1.Random: 1.04G, 10~500Hz, XYZ, 30min/each direction 2.Sine: Freq.1.5G, 8~33.3Hz, Stoke: 1.3mmhz Sweep: 2.9G, 33.3~400 X/Z: 2hrs, Y:4hrs	
9	Shock	Half-Sine, 100G, 6ms, ±XYZ, 1time	
10	Vibration (with carton)	Random: 0.015G <sup>2</sup> /Hz, 5~200Hz -6dB/Octave, 200~400Hz XYZ 2hrs/each direction	
11	Drop (with carton)	Drop height condition, basis on the product weight and follow QB100-0027 1 corner, 3 edges, 6 surfaces	

Note1: There is no display function NG issue occurred, all the cosmetic specification is judged before the reliability stress.

Note2: The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours without load. No condensation shall be accepted. The sample shall be free from defects:

(Air bubble in the LCD、Seal leak、Non-display、Missing segments、Glass crack).

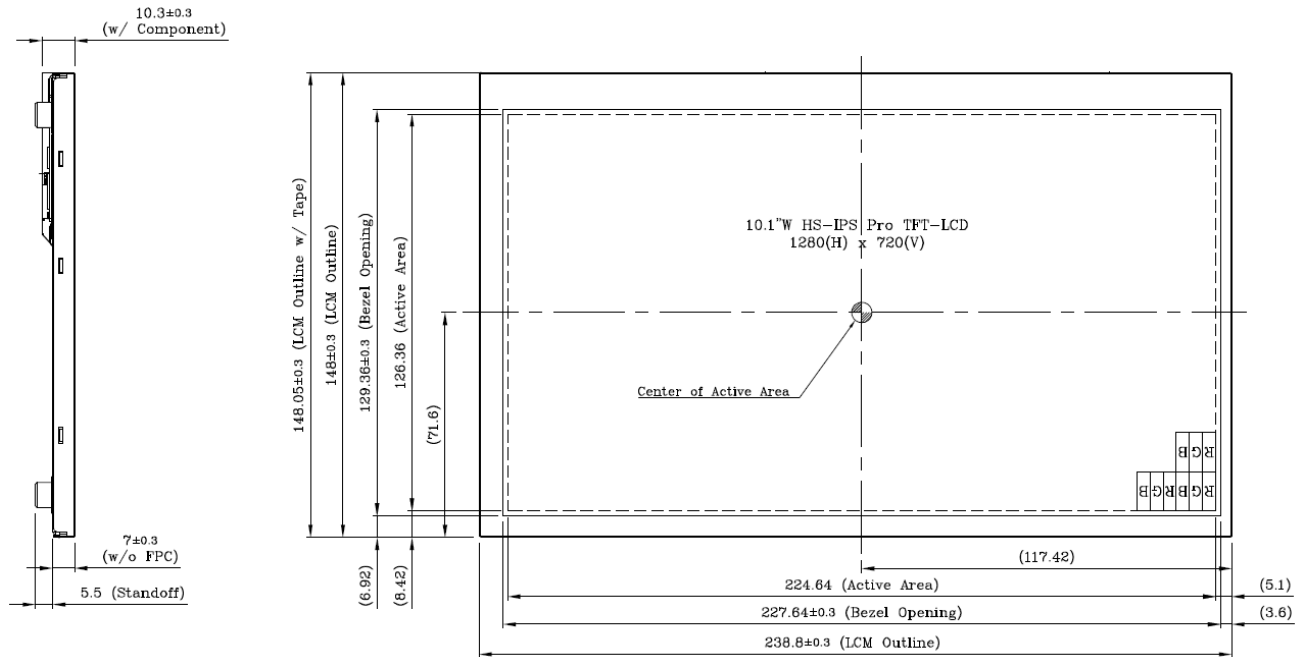
Note3: The test condition definition panel's surface temperature.

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## 8.0 OUTLINE DIMENSION

### 8.1 Front View:

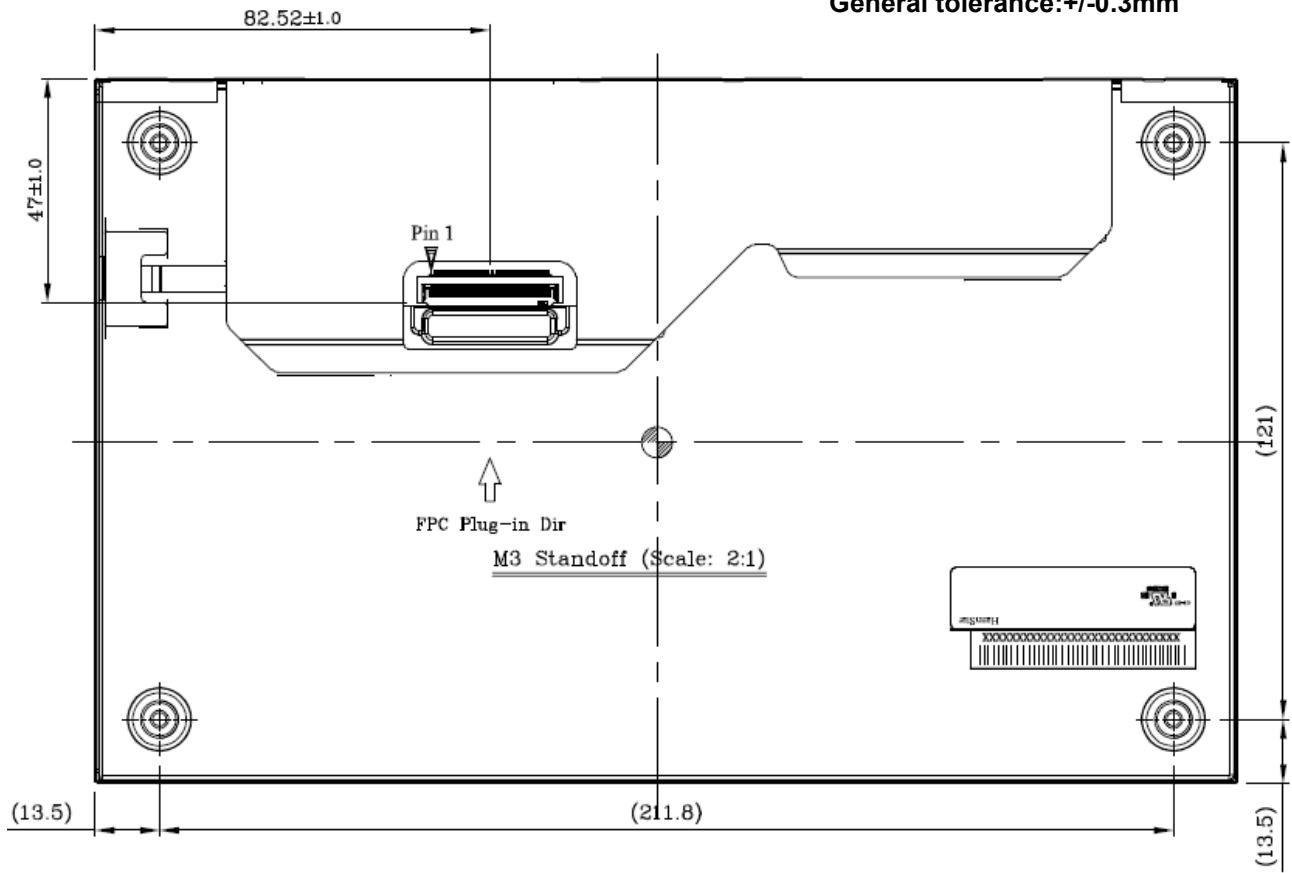
Unit : mm



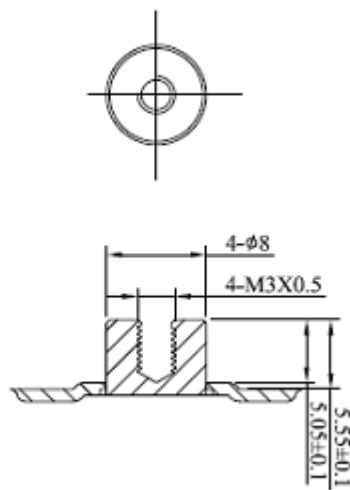
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**8.1 Rear View:**

General tolerance: +/-0.3mm



M3 Standoff (Scale: 2:1)



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## 9.0 LOT MARK

### 9.1 Lot Mark

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

Code 1,2,3,4,5,6: HannStar internal flow control code.

Code 7: production location.

Code 8: production year.

Code 9: production month.

Code 10,11,12,13,14,15: serial number.

Note (1) Production Year: Code 8 is defined by the last number of the year, for example

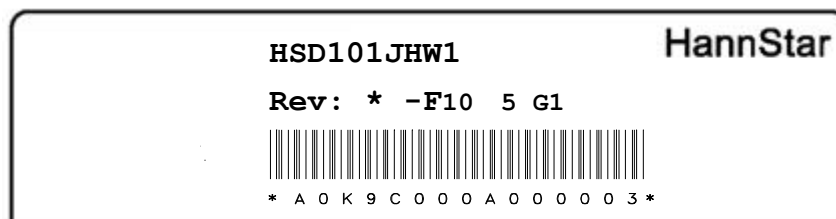
Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Mark	6	7	8	9	0	1	2	3	4	5

Note (2) Production Month

Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct	Nov.	Dec.
Mark	1	2	3	4	5	6	7	8	9	A	B	C

### 9.2 Detail of Lot Mark

- (1) Below label is attached on the backside of the LCD module. See Section 8.0: Outline Dimension.
- (2) The detail of Lot Mark is attached as below.
- (3) This is subject to change without prior notice.



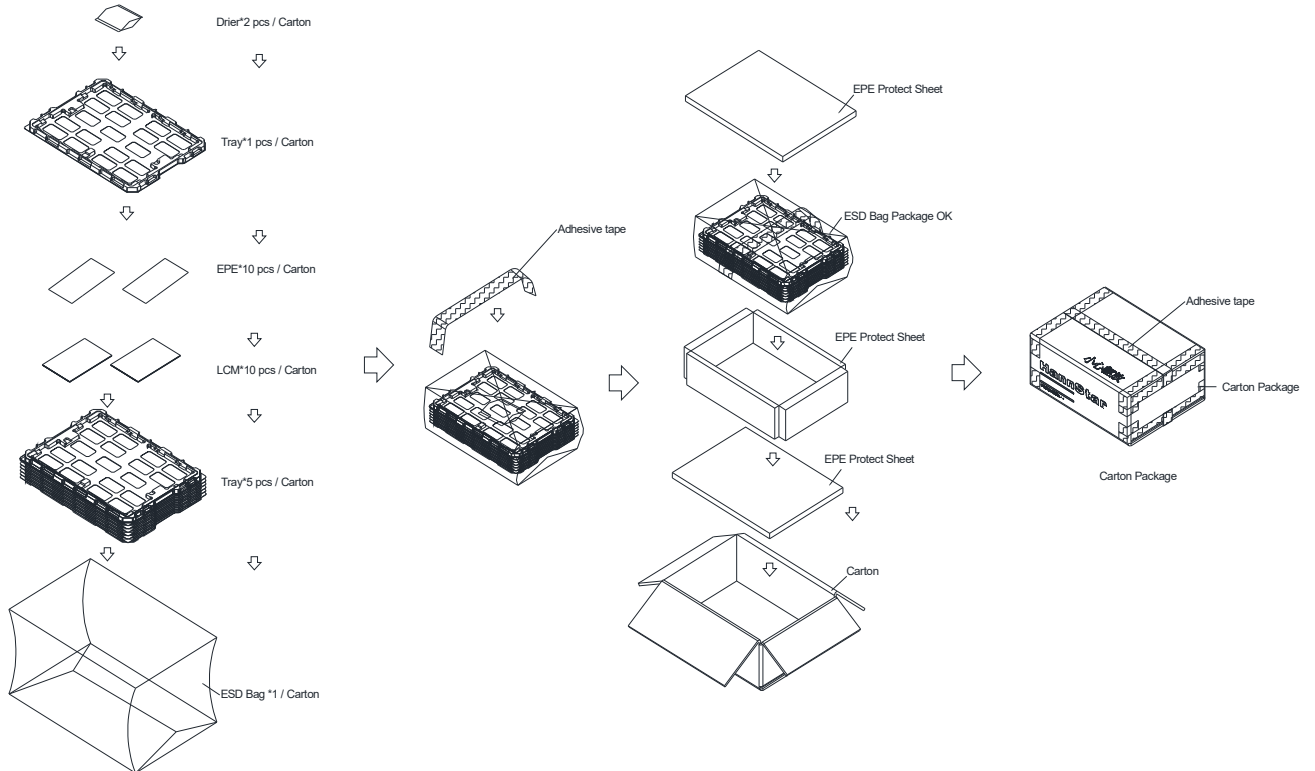
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## 10.0 PACKAGE SPECIFICATION

### 10.1 Packing form

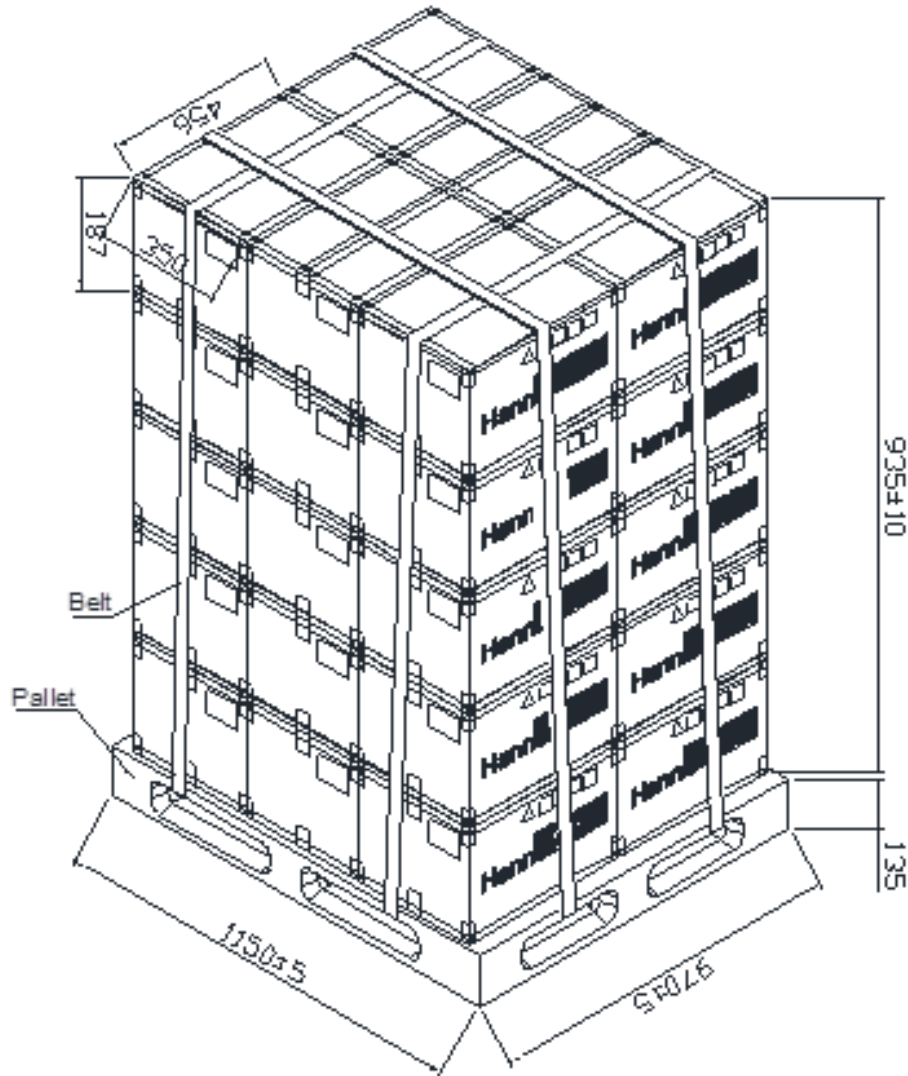
LCM Model	Qty. in the Box	Inner Box Size(mm)	Notice
HSD101JHW1-F10	10 pcs/Box	Ref. 456 x 350 x 187 <sup>H</sup>	--

### 10.2 Packing assembly drawings





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- Notes :
- 1 Tray : 2 pcs MOD
  - 1 Carton : 10 pcs MOD
  - 1 Pallet : 30 pcs Cartons

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## **11.0 GENERAL PRECAUTION**

### **11.1 Use Restriction**

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life-threatening or otherwise catastrophic.

### **11.2 Disassembling or Modification**

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. HannStar Display (NanJing) Corp. does not warrant the module, if customers disassemble or modify the module.

### **11.3 Breakage of LCD Panel**

11.3.1. If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.

11.3.2. If liquid crystal contacts mouth or eyes, rinse out with water immediately.

11.3.3. If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.

11.3.4. Handle carefully with chips of glass that may cause injury, when the glass is broken.

### **11.4 Electric Shock**

11.4.1. Disconnect power supply before handling LCD module.

11.4.2. Do not pull or fold the LED cable.

11.4.3. Do not touch the parts inside LCD modules and the fluorescent LED's connector or cables in order to prevent electric shock.

### **11.5 Absolute Maximum Ratings and Power Protection Circuit**

11.5.1. Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged.

11.5.2. Please do not leave LCD module in the environment of high humidity and high temperature for a long time.

11.5.3. It's recommended to employ protection circuit for power supply.

### **11.6 Operation**

11.6.1 Do not touch, push or rub the polarizer with anything harder than 3H pencil lead.

11.6.2 Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.

11.6.3 When the surface is dusty, please wipe gently with absorbent cotton or other soft material.

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11.6.4 Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may causes deformation or color fading.

11.6.5 When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzine or other adequate solvent.

### **11.7 Mechanism**

Please mount LCD module by using mounting holes arranged in four corners tightly.

### **11.8 Static Electricity**

11.8.1 Protection film must remove very slowly from the surface of LCD module to prevent from electrostatic occurrence.

11.8.2 Because LCD module use CMOS-IC on circuit board and TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge. Persons who handle the module should be grounded through adequate methods.

### **11.9 Strong Light Exposure**

The module shall not be exposed under strong light such as direct sunlight. Otherwise, display characteristics may be changed.

### **11.10 Disposal**

When disposing LCD module, obey the local environmental regulations.

### **11.11 Optical Bonding**

Before CL/TP bonding, LCM must pre baking by 80°C/8hr.



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