HTDISPLAY

SPECIFICATIONS

Version: V0
This module uses ROHS material

PRODUCT: TFT LCD MODULE

MODEL NO: HT0700AJI03ACB19

SUPPLIER: HTDisplay

ISSUED DATE: 2025-08-20

☑ **Preliminary Specification**
☐ **Final Product Specification**

HT display		Customer
Prepared by	ZXY	Approved By
Reviewed by	JYQ	
Quality Dept	ZL	Date
Approved by	HK	

Beijing HT display Electronic co.,Ltd

Address: 5F Bld. #5, 7 East Rongchang St., Yizhuang Dvpt. Zone, Daxing District, Beijing 100176 CHINA
Tel: (86) 10 67806456 Fax: (86) 10 67805529
Email:sales@htdisplay.com www.htdisplay.com

Revision Record

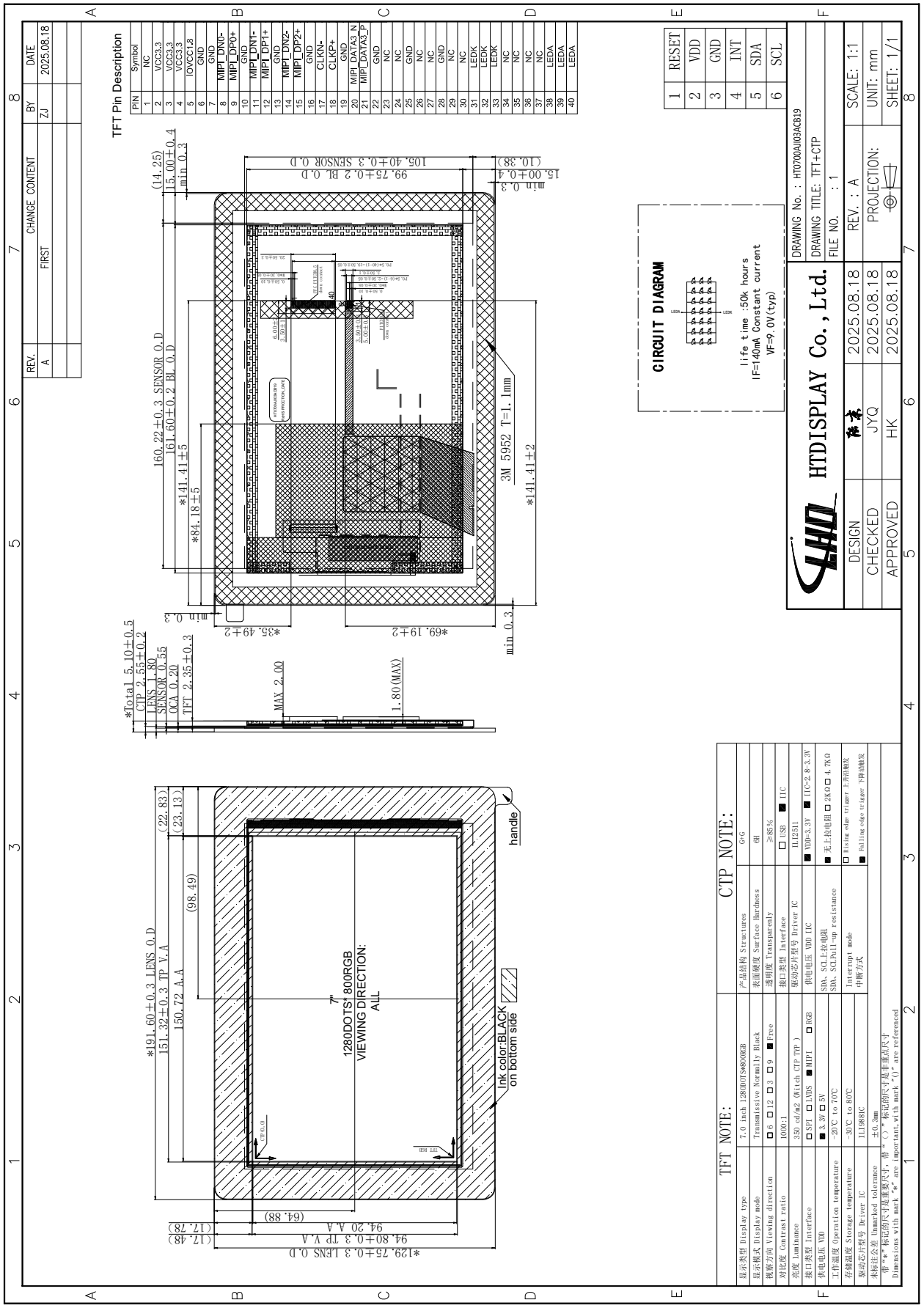
REV No.	REV Date	Contents	Editor	Remarks
V0	2025-08-20	First release	ZXY	Preliminary

No.	Contents	Page
1	General Information	4
2	Mechanical Drawing	5
3	Absolute Maximum Ratings	6
4	Electrical Characteristics	6
5	TP DC Characteristics	6
6	Backlight Characteristics	6
7	Electro Optical Characteristics	8
8	Timing Characteristics	10
9	Interface Description	17
10	Reliability Test Conditions	18
11	Storage and use Precautions	18
12	Packing	20

1. General information

Feature		Spec	Unit
Display Spec	LCD size	7.0	inch
	Resolution	800 RGB x 1280	Dots
	Pixel pitch (WxH)	39.25 x RGB x 117.25	um
	Display Mode	IPS,NW	---
	Viewing Direction	FREE	o’ clock
Mechanical Characteristics	Active area	94.20(H) x 150.72 (V)	mm
	Viewing area	94.80(H) x 151.32(V)	mm
	LCM Outline(With TP) (WxHxT)	129.75 × 191.60 × 5.1	mm
	With/Without TP	With CTP	---
	Weight (g)	240g	g
Electrical Characteristics	TFT Driver IC	ILI9881C	---
	TFT Interface	MIPI	---
	CTP Driver IC	ILI2511	
	CTP Interface	IIC	
	Color depth	16.7M	colors
	TFT Input voltage	3.3	V
	TFT Power consumption	TBD	mW
	Backlight Power consumption	1.26	W
	LCM brightness	TYP 350(With CTP)	Cd/m^2

2. Mechanical drawing



3. Absolute maximum ratings

Item	Symbol	Min.	Max.	Unit
Power voltage for analog circuits	VCC	-0.3	6.0	V
Power voltage for I/O PADS	VCCI	-0.3	3.8	V
Operating temperature	TOP	-20	70	°C
Storage temperature	TST	-30	80	°C

4. Electrical characteristics

Item	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	VCC	3.0	3.3	3.6	V
	VCCI	--	1.8	--	V

5. TP DC Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit
power supply voltage	VDD	--	3.3	--	V
I/0 input power supply voltage	VDDI	2.8	--	3.3	V

6. Backlight characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Current	If	--	140	--	mA	
Forward Voltage	Vf	--	9.0	--	V	
LED Life Time	L_L	--	50000	--	Hrs	Ta=25 °C

CIRCUIT DIAGRAM

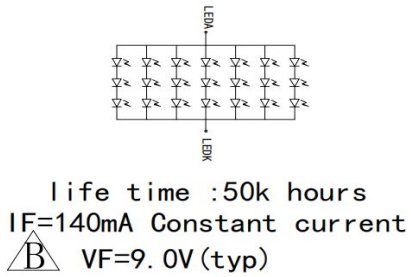


Figure 2

Note1: Under LCM operating, the stable forward current should be inputted. And forward voltage is for reference only.

Note2: Optical performance should be evaluated at Ta=25℃. if LED is driven by high current, high ambient temperature & Humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

7. Electro-optical characteristics

Optical Specification

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	75	85	-	Deg.	Note 1
		Θ_9		75	85	-	Deg.	
	Vertical	Θ_{12}		75	85	-	Deg.	
		Θ_6		75	85	-	Deg.	
Contrast ratio		CR	Θ = 0°	800	1000	-	-	Note 2
Transmittance		Tr	-	4.39	5.17	-	%	Note 3 Without APF and Haze
Color Gamut	NTSC	CIE1931	Θ = 0°	45	50	-	%	Note 4 CF@C Light
Response Time		Tr+Tf	Ta= 25° C Θ = 0°	-	25	35	ms	Note 5

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 Θ= 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.

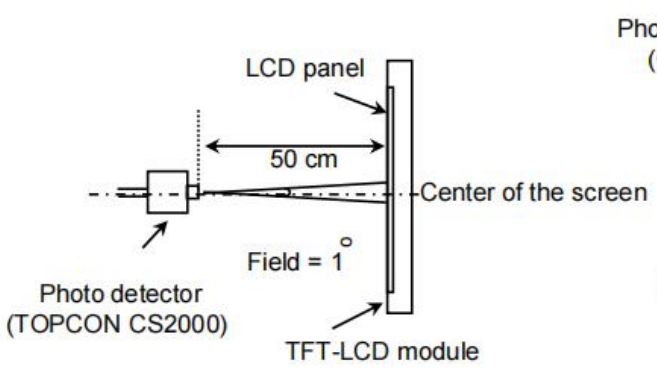
$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Transmittance is the Value without APF、Haze and CG.

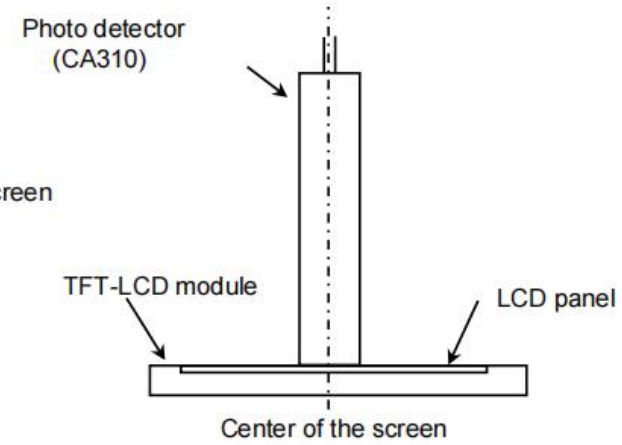
4. The color chromaticity coordinates specified in Table 5. shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the CF and based on C Light

5. The electro-optical response time measurements shall be made as FIGURE 2. The times needed for the luminance to change from 10% to 90% is Tr, and 90% to 10% is Tf.

Figure 1. Measurement Set Up

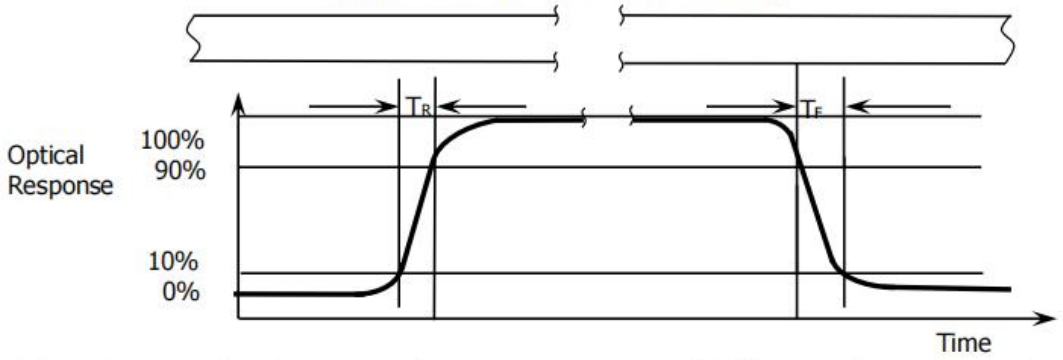


View angel range, uniformity, etc. measurement setup



Flicker, measurement setup

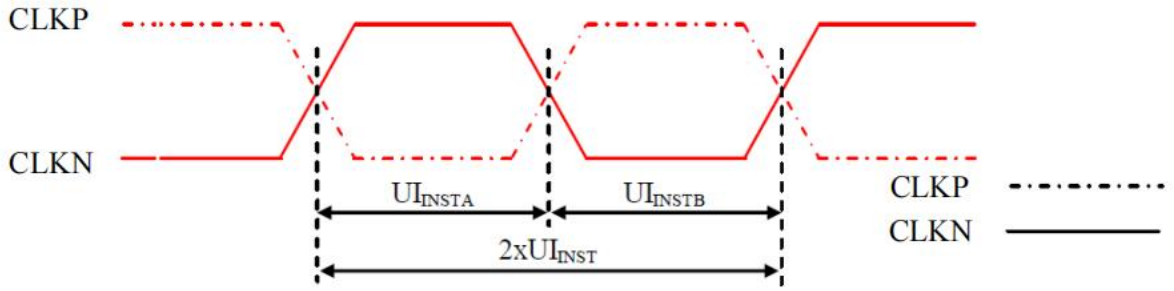
Figure 2. Response Time Testing



The electro-optical response time measurements shall be made as shown in FIGURE 2. The times needed for the luminance to change from 10% to 90% is Tr and 90% to 10% is Tf.

8. Timing Characteristics

8.1 High Speed Mode-Clock Channel Timing



DSI Clock Channel Timing

DSI Clock Channel Timing

Signal	Symbol	Parameter	Min	Max	Unit
CLKP/N	$2xUI_{INST}$	Double UI instantaneous	4	25	ns
CLKP/N	UI_{INSTA}, UI_{INSTB} (Note 1)	UI instantaneous Half	2 (Note 2)	12.5	ns

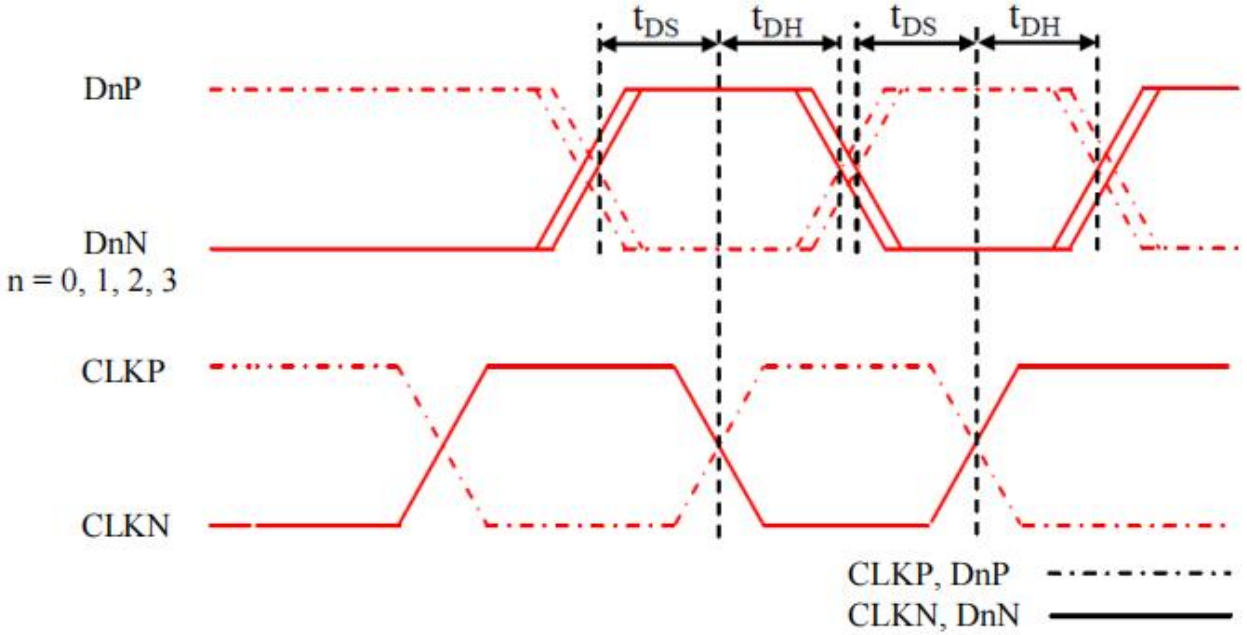
Notes:

1. UI = UIINSTA = UIINSTB

2. Define the minimum value of 24 UI per Pixel .

Data type	Two Lanes	Three Lanes	Four Lanes
Data Type = 00 1110 (0Eh), RGB 565, 16 UI per	566 Mbps	433 Mbps	366 Mbps
Data Type = 01 1110 (1Eh), RGB 666, 18 UI per	637 Mbps	487 Mbps	412 Mbps
Data Type = 10 1110 (2Eh), RGB 666 Loosely,	850 Mbps	700 Mbps	550 Mbps
Data Type = 11 1110 (3Eh), RGB 888, 24 UI per	850 Mbps	700 Mbps	550 Mbps

8.2 High Speed Mode-Data Clock Channel Timing

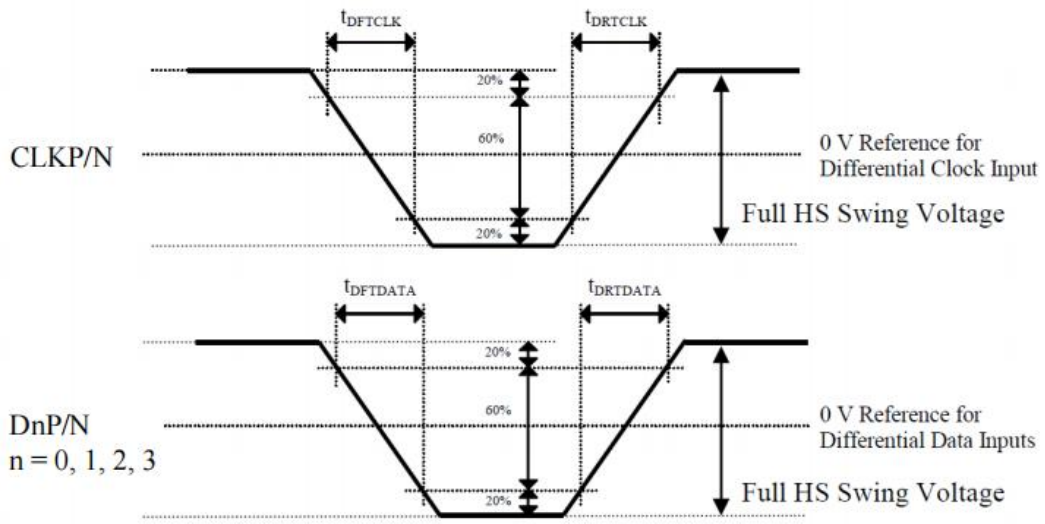


DSI Data to Clock Channel Timings

DSI Data to Clock Channel Timings

Signal	Symbol	Parameter	Min	Max
DnP/N , n=0 and 1	t_{DS}	Data to Clock Setup time	0.15xUI	-
	t_{DH}	Clock to Data Hold Time	0.15xUI	-

8.3 High Speed Mode-Rising and Falling Timing



Rising and Falling Timings on Clock and Data Channels

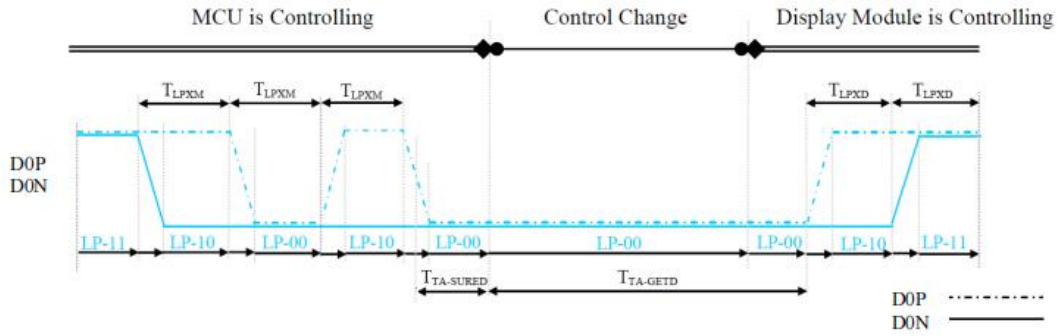
Rise and Fall Timings on Clock and Data Channels

Parameter	Symbol	Condition	Specification		
			Min	Typ	Max
Differential Rise Time for Clock	t_{DRTCLK}	CLKP/N	150 ps	-	0.3UI (Note)
Differential Rise Time for Data	$t_{DRTDATA}$	DnP/N n=0 and 1	150 ps	-	0.3UI (Note)
Differential Fall Time for Clock	t_{DFTCLK}	CLKP/N	150 ps	-	0.3UI (Note)
Differential Fall Time for Data	$t_{DFTDATA}$	DnP/N n=0 and 1	150 ps	-	0.3UI (Note)

Note: *The display module has to meet timing requirements, which are defined for the transmitter (MCU) on MIPI D-Phy standard.*

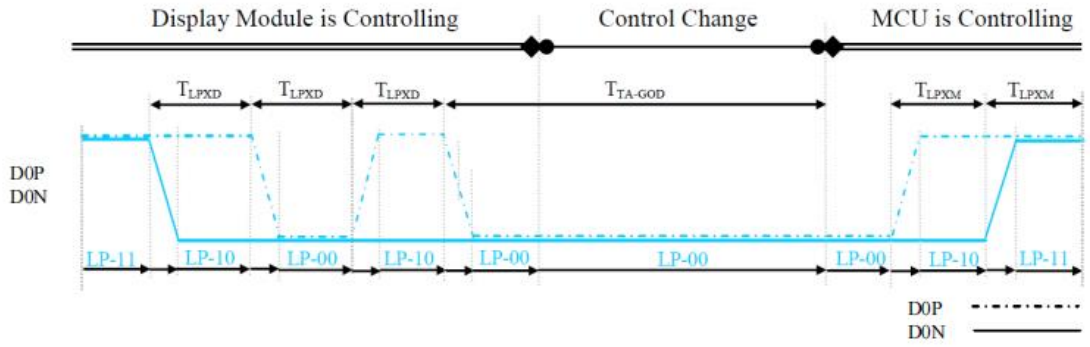
8.4 Low Speed Mode-Bus Turn Around

Lower Power Mode and its State Periods on the Bus Turnaround (BTA) from the MCU to the Display Module (ILI9881C) are illustrated for reference purposes below.



BTA from the MCU to the Display Module

Lower Power Mode and its State Periods on the Bus Turnaround (BTA) from the Display Module (ILI9881C) to the MCU are illustrated for reference purposes below.



BTA from the Display Module to the MCU

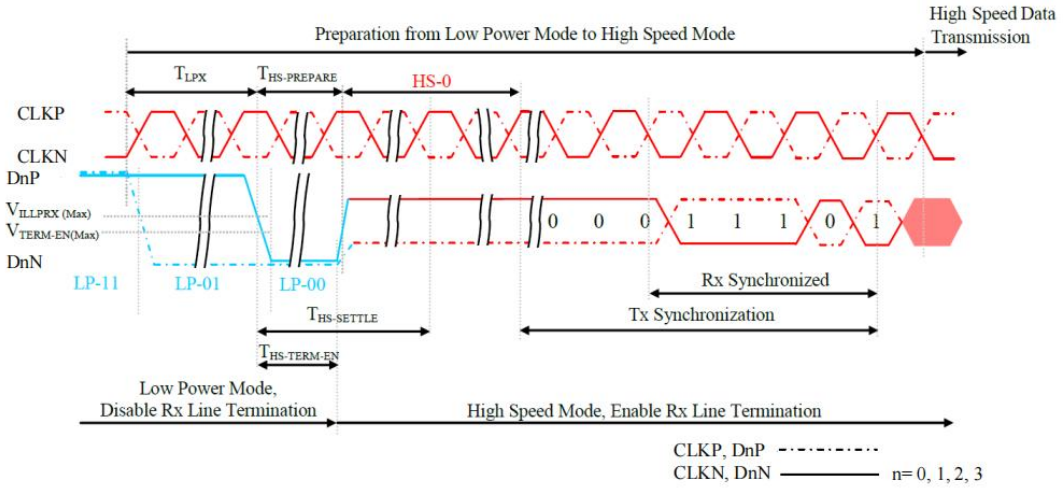
Low Power State Period Timings – A

Signal	Symbol	Description	Min	Max	Unit
D0P/N	T_{LPXM}	Length of LP-00, LP-01, LP-10 or LP-11 periods MCU → Display Module (ILI9881C)	50	75	ns
D0P/N	T_{LPXD}	Length of LP-00, LP-01, LP-10 or LP-11 periods Display Module (ILI9881C) → MCU	50	75	ns
D0P/N	$T_{TA-SURED}$	Time-out before the Display Module (ILI9881C) starts driving	T_{LPXD}	$2xT_{LPXD}$	ns

Low Power State Period Timings – B

Signal	Symbol	Description	Time	Unit
D0P/N	$T_{TA-GETD}$	Time to drive LP-00 by Display Module (ILI9881C)	$5xT_{LPXD}$	ns
D0P/N	T_{TA-GOD}	Time to drive LP-00 after turnaround request - MCU	$4xT_{LPXD}$	ns

8.5 Data Lanes from Low Power Mode to High Speed Mode

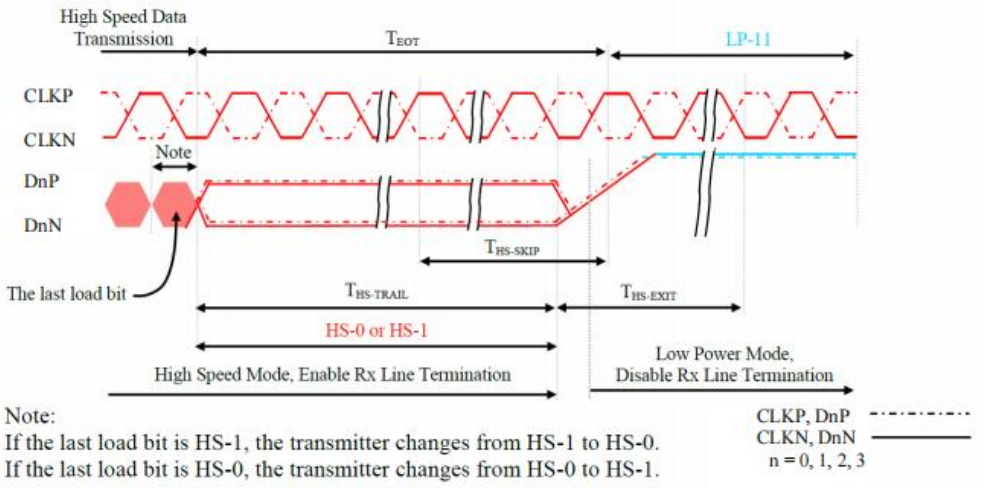


Data Lanes - Low Power Mode to High Speed Mode Timings

Data Lanes - Low Power Mode to High Speed Mode Timings

Signal	Symbol	Description	Min	Max	Unit
DnP/N, n = 0 and 1	T_{LPX}	Length of any Low Power State Period	50	-	ns
DnP/N, n = 0 and 1	$T_{HS-PREPARE}$	Time to drive LP-00 to prepare for HS Transmission	40+4xUI	85+6xUI	ns
DnP/N, n = 0 and 1	$T_{HS-TERM-EN}$	Time to enable Data Lane Receiver line termination measured from when Dn crosses VILMAX	-	35+4xUI	ns

8.6 Data Lanes from High Speed Mode to Low Power Mode

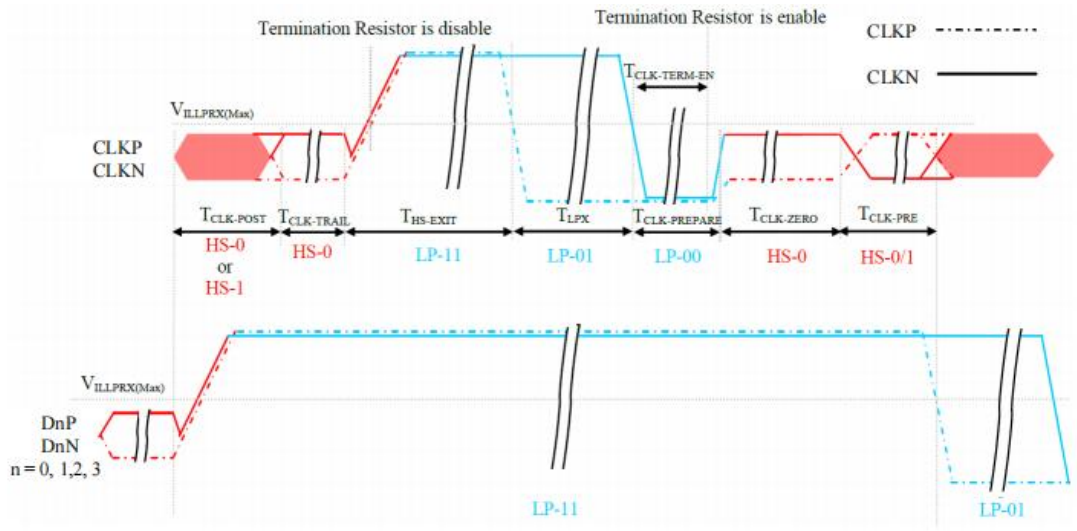


Data Lanes - High Speed Mode to Low Power Mode Timings

Data Lanes - High Speed Mode to Low Power Mode Timings

Signal	Symbol	Description	Min	Max	Unit
DnP/N, n = 0 and 1	$T_{HS-SKIP}$	Time-Out at Display Module (ILI9881C) to ignore transition period of EoT	40	55+4xUI	ns
DnP/N, n = 0 and 1	$T_{HS-EXIT}$	Time to driver LP-11 after HS burst	100	-	ns

8.7 DSI Clock Burst- High Speed Mode to/from Low Power Mode



Clock Lanes - High Speed Mode to/from Low Power Mode Timings

Clock Lanes - High Speed Mode to/from Low Power Mode Timings

Signal	Symbol	Description	Min	Max	Unit
CLKP/N	$T_{CLK-POST}$	Time that the MCU shall continue sending HS clock after the last associated Data Lanes has transitioned to LP mode	60+52xUI	-	ns
CLKP/N	$T_{CLK-TRAIL}$	Time to drive HS differential state after last payload clock bit of a HS transmission burst	60	-	ns
CLKP/N	$T_{HS-EXIT}$	Time to drive LP-11 after HS burst	100	-	ns
CLKP/N	$T_{CLK-PREPARE}$	Time to drive LP-00 to prepare for HS transmission	38	95	ns
CLKP/N	$T_{CLK-TERM-EN}$	Time-out at Clock Lane to enable HS termination	-	38	ns
CLKP/N	$T_{CLK-PREPARE}$ + $T_{CLK-ZERO}$	Minimum lead HS-0 drive period before starting Clock	300	-	ns
CLKP/N	$T_{CLK-PRE}$	Time that the HS clock shall be driven prior to any associated Data Lane beginning the transition from LP to HS mode	8xUI	-	ns

8.8 Reset Timing

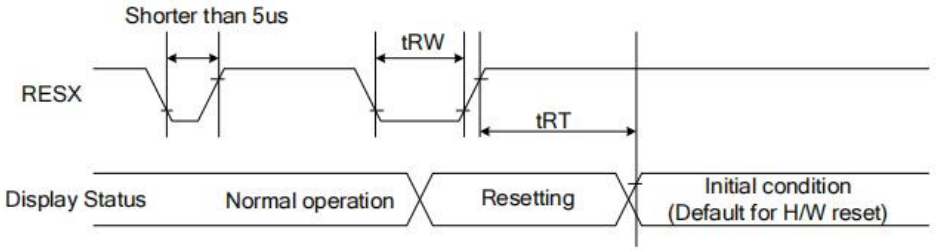


Figure 126: Reset Timing

Table 47: Reset Timing

Signal	Symbol	Parameter	Min	Max	Unit
RESX	tRW	Reset pulse duration	10		uS
	tRT	Reset cancel		5 (note 1,5)	mS
				120 (note 1,6,7)	mS

Notes:

1. *The reset cancel also includes required time for loading ID bytes, VCOM setting and other settings from EEPROM to registers. This loading is done every time when there is H/W reset cancel time (tRT) within 5 ms after a rising edge of RESX.*

2. *Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the Table 48.*

Table 48: Reset Descript

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 10us	Reset
Between 5us and 10us	Reset starts

3. During the Resetting period, the display will be blanked (The display enters the blanking sequence, which maximum time is 120 ms, when Reset Starts in the Sleep Out mode. The display remains the blank state in the Sleep In mode.) and then return to Default condition for Hardware Reset.
4. Spike Rejection can also be applied during a valid reset pulse, as shown below:

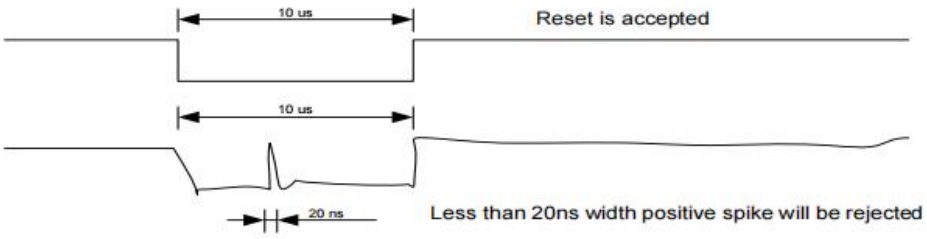


Figure 127: Positive Noise Pulse during Reset Low

5. When Reset applied during Sleep In Mode.
6. When Reset applied during Sleep Out Mode.
7. It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

Note:This section is only for reference,Details please refer to the IC specification.

9. Interface description

No.	SYMBOL	I/O	Description
1	NC		--
2-4	VCC3.3	P	Power supply voltage
5	IOVCC1.8	P	Analog supply voltage
6-7	GND	P	Ground
8	MIPI_DN0-	I	MIPI data input
9	MIPI_DP0+	I	MIPI data input
10	GND	P	Ground
11	MIPI_DN1-	I	MIPI data input
12	MIPI_DP1+	I	MIPI data input
13	GND	P	Ground
14	MIPI_DN2-	I	MIPI data input
15	MIPI_DP2+	I	MIPI data input
16	GND	P	Ground
17	CLKN-	I	Clock Input pin for MIPI
18	CLKP+	I	Clock Input pin for MIPI
19	GND	P	Ground
20	MIPI_DN3-	I	MIPI data input
21	MIPI_DP3+	I	MIPI data input
22	GND	P	Ground
23-24	NC		--
25	GND	P	Ground
26-27	NC		--
28	GND	P	Ground
29-30	NC		--
31-33	LEDK	P	LED power cathode
34-37	NC		--
38-40	LEDA	P	LED power anode

CTP Interface

No.	SYMBOL	I/O	Description
1	RESET	I	External hardware reset input
2	VDD	P	Supply voltage for touch panel
3	GND	P	Ground
4	INT	O	Interrupt pin
5	SDA	I	I2C data pin
6	SCL	I	I2C clock input pin

10. Reliability test conditions

No.	Test Item	Test condition	Remark
1	High Temperature Storage	80°C±2°C 240H	IEC60068-2-1:2007 GB2423.2-2008
2	Low Temperature Storage	-30°C±2°C 240H	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Operation	70°C±3°C 240H	IEC60068-2-1:2007 GB2423.2-2008
4	Low Temperature Operation	-20°C±3°C 240H	IEC60068-2-1:2007 GB2423.1-2008
5	High Temperature /Humidity Storage	60°C±3°C 90%RH 240H	IEC60068-2-78:2007 GB2423.3-2006
6	Temperature Cycle	-30℃←→25℃←→80℃ 5min 30min ←→25℃ , 5min after 10cycle, Restore 4H at 25℃	IEC60068-2-14:1984 GB2423.22-2002

Note:
After completing the reliability test, leave the samples under the room temperature and for th e following inspection items:

1. No clearly visible defects or deterioration of display quality allowed.
2. No function-related abnormalities.
3. Connected parts still connecting tightly.
4. Display characteristics fulfill initial value contrast ratio should be an least 30% of initial value.
5. In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

11. Storage and use precautions

When storing and using the LCD modules, the following precaution are necessary:

10.1 Store them in a sealed polyethylene bag. If properly sealed, there is no need for the desiccant.

10.2 Store them in a dark place. Do not expose to sunlight or fluorescent light, keep the temperature between 0°C and 35°C, and keep the relative humidity between 40%RH and 60%RH.

10.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

10.4 The polarizer surface should not come in contact with any other objects (We advise you to store them in the anti-static electricity container in which they were shipped).

10.5 The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.

10.6 Liquid crystals solidify under low temperature (below the storage temperature range) leading to defective orientation or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subject to a low temperature.

10.7 If the LCD modules have been operating for a long time showing the same display patterns, the display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. A normal operating status can be gained by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability.

10.8 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

10.9 If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

10.10 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

10.11 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

10.12 If the display surface is contaminated, gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

— Isopropyl alcohol
— Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

— Water
— Ketone
— Aromatic solvents

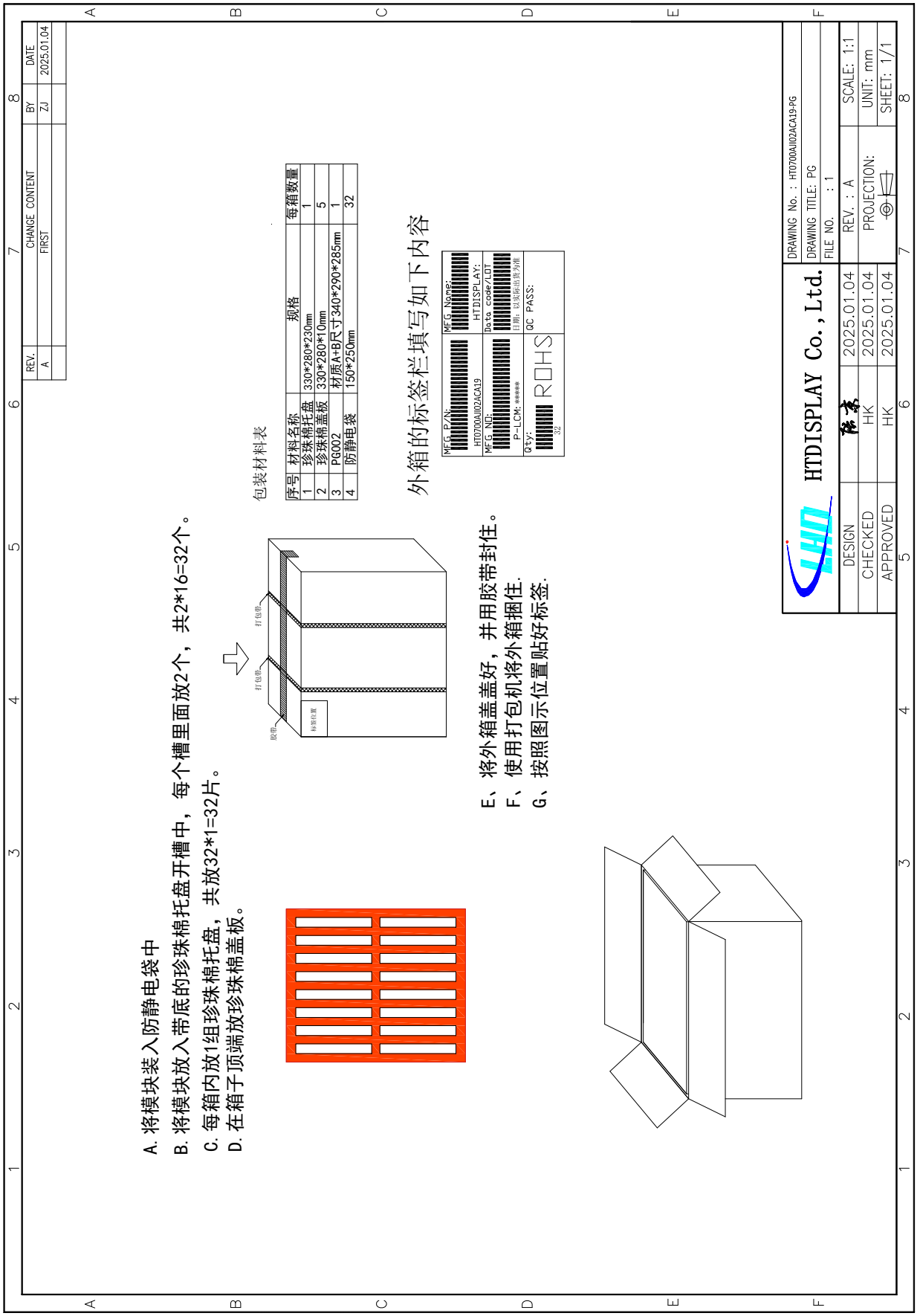
10.13 Do not attempt to disassemble the LCD Module.

10.14 If the logic circuit power is off, do not apply the input signals.

10.15 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

--Be sure to ground the body when handling the LCD Modules.
--Tools required for assembly, such as soldering irons, must be properly ground.
--To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions
--The LCD Module is coated with a film to protect the display surface. ---Be care when peeling off this protective film since static electricity may be generated.
--Exposed area of the printed circuit board.
--Terminal electrode sections

12. Packing


REV.
CHANGE CONTENT
BY
DATE
A
FIRST
ZJ
2025.01.04
包装材料表
序号 材料名称 规格 每箱数量
1 珍珠棉托盘 330*280*230mm 1
2 珍珠棉盖板 330*280*10mm 5
3 PG002 材质A+B尺寸340*290*285mm 1
4 防静电袋 150*250mm 32
外箱的标签栏填写如下内容
MFG P/N:
HT0700AI02ACA19
MFG No:
HTDISPLAY:
MFG NO:
Data code/LOT
P-LCM: *****
QC PASS:
Qty:
32
A. 将模块装入防静电袋中
B. 将模块放入带底的珍珠棉托盘开槽中，每个槽里面放2个，共2*16=32个。
C. 每箱内放1组珍珠棉托盘，共放32*1=32片。
D. 在箱子顶端放珍珠棉盖板。
E、将外箱盖盖好，并用胶带封住。
F、使用打包机将外箱捆住.
G、按照图示位置贴好标签.
HTDISPLAY Co.,Ltd.
DRAWING No. : HT0700AI02ACA19-PG
DRAWING TITLE: PG
FILE NO. : 1
DESIGN
CHECKED
APPROVED
2025.01.04
HK
2025.01.04
HK
2025.01.04
REV. : A
PROJECTION:
SCALE: 1:1
UNIT: mm
SHEET: 1/1