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Custom designs
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Mechanical design



MODEL NO : ET101WX02-X**MODEL VERSION: 01****SPEC VERSION : 2.0****ISSUED DATE: 2019-06-02****☒ Preliminary Specification****☐ Final Product Specification****Customer : _____**

Approved by	Notes

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Record of Revision

[illegible]

1 General Specifications

Feature		Spec
Display Spec.	Size	10.1 inch
	Resolution	800(RGB) X 1280
	Technology Type	a-Si
	Pixel Configuration	RGB Vertical Stripe
	Pixel pitch(mm)	0.1692(H)×0.1692(V)
	Display Mode	Normally Black
	Viewing Direction	Full viewing
Mechanical Characteristics	LCM (W x H x D) (mm)	143(W)×228.6(H)×2.6(D)
	Active Area(mm)	135.36(H)x 216.576(V)
	With /Without TSP	Without TSP
	Weight (g)	TBD
Electrical Characteristics	Interface	MIPI interface
	Color Depth	16.7M

Note 1: Viewing direction for best image quality is different from TFT definition. There is a 180 degree shift.

Note 2: Requirements on Environmental Protection: Q/S0002

Note 3: LCM weight tolerance: ± 5%

2 Input/Output Terminals

No.	Symbol	Function	Remark
1	NC	No connection	
2	VDD3.3V	power Voltage for digital circuit	
3	VDD3.3V	power Voltage for digital circuit	
4	NC	No connection	
5	RESET	Global reset pin(1.8V)	
6	NC	No connection	
7	GND	Ground	
8	MIPI_2N	Negative MIPI differential data input	
9	MIPI_2P	Positive MIPI differential data input	
10	GND	Ground	
11	MIPI_1N	Negative MIPI differential data input	
12	MIPI_1P	Positive MIPI differential data input	
13	GND	Ground	
14	MIPI_CKN	Negative MIPI differential clock input	
15	MIPI_CKP	Positive MIPI differential clock input	
16	GND	Ground	
17	MIPI_0N	Negative MIPI differential data input	
18	MIPI_0P	Positive MIPI differential data input	
19	GND	Ground	
20	MIPI_3N	Negative MIPI differential data input	
21	MIPI_3P	Positive MIPI differential data input	
22	GND	Ground	
23	NC	No connection	
24	NC	No connection	
25	GND	Ground	
26	NC	No connection	
27	NC	No connection	
28	NC	No connection	
29	NC	No connection	
30	GND	Ground	

31	LED-	LED Cathode	
32	LED-	LED Cathode	
33	NC	No connection	
34	NC	No connection	
35	NC	No connection	
36	NC	No connection	
37	NC	No connection	
38	NC	No connection	
39	LED+	LED Anode	
40	LED+	LED Anode	

3 Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit
Digital Supply Voltage	VDD	-0.3	5	V
Digital Supply Voltage	VDDIO	-0.3	3	V

GND=0V

4 Electrical Characteristics

4.1 Driving TFT LCD Panel

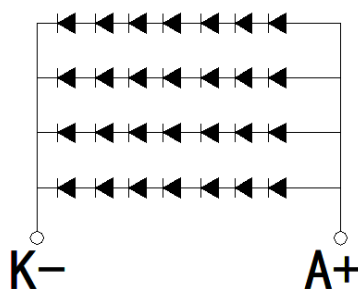
Parameter	Symbol	Min.	Typ.	Max.	Unit
Digital Power Supply Voltage	VDD	3.0	3.3	3.6	V
Digital Power Supply Voltage	VDDIO	1.6	1.8	2.0	V

4.2 Backlight Unit

Ta=25℃

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED current	ILED		90		mA	Total LED
Forward voltage	VF	21	23.1	24.5	V	IF=90mA
Reverse current	IR			50	μA	VR=5V, 1LED
Power dissipation	Pd	2079			mW	Total LED
Peak forward current	IFP	100			mA	1LED
Reverse Voltage	VR	5			V	1LED

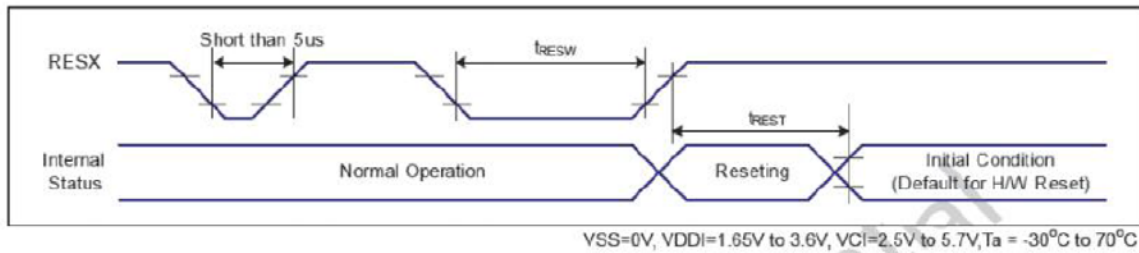
※1. Internal Circuit Diagram



$$4 \times 7 = 28 \text{LED} \quad 22.5 \times 4 = 90 \text{mA}$$

5 Timing Chart

5.1 reset timing characteristic



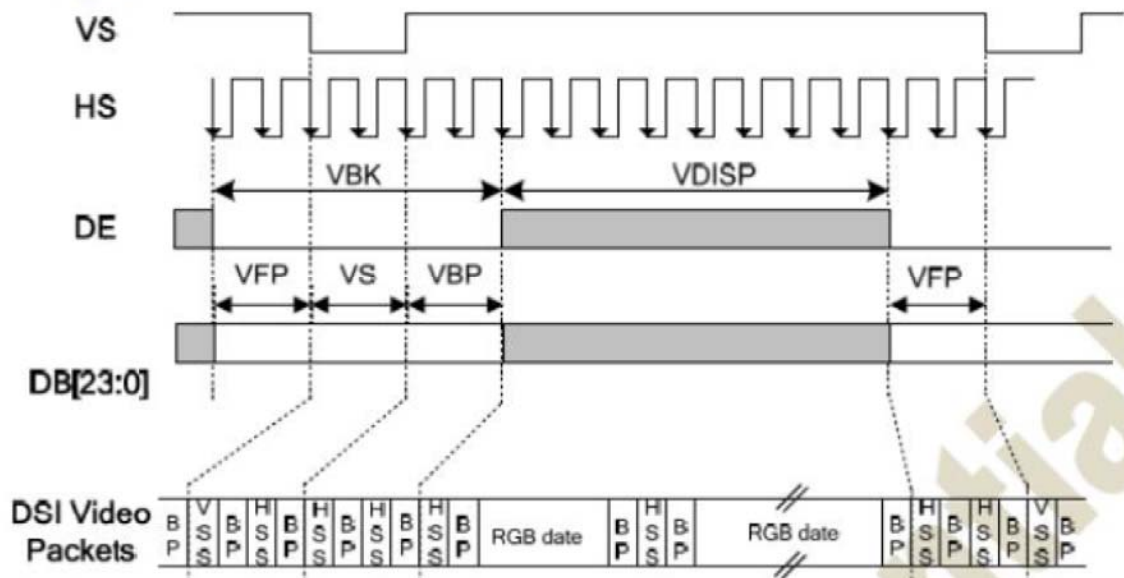
Symbol	Parameter	Related Pins	MIN	TYP	MAX	Note	Unit
t_{RESW}	*1) Reset low pulse width	RESX	10	-	-	-	us
t_{REST}	*2) Reset complete time	-	-	-	5	When reset applied during Sleep in mode	ms
		-	-	-	120	When reset applied during Sleep out mode	ms

Table:Reset input timing

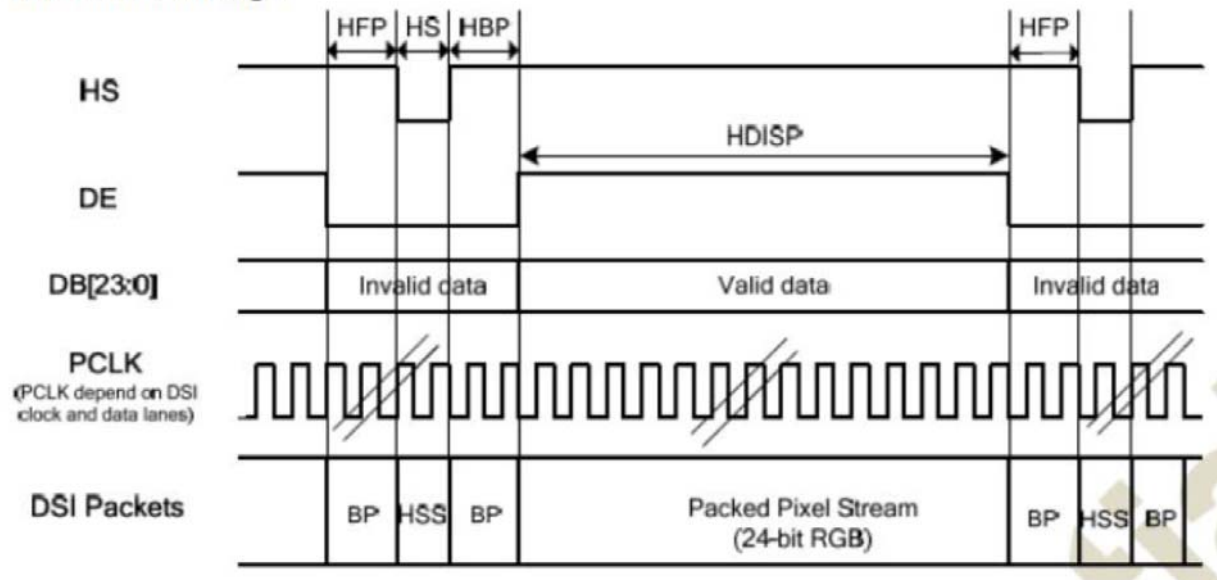
Note 1: Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below.

5.2 Timings for DSI video mode

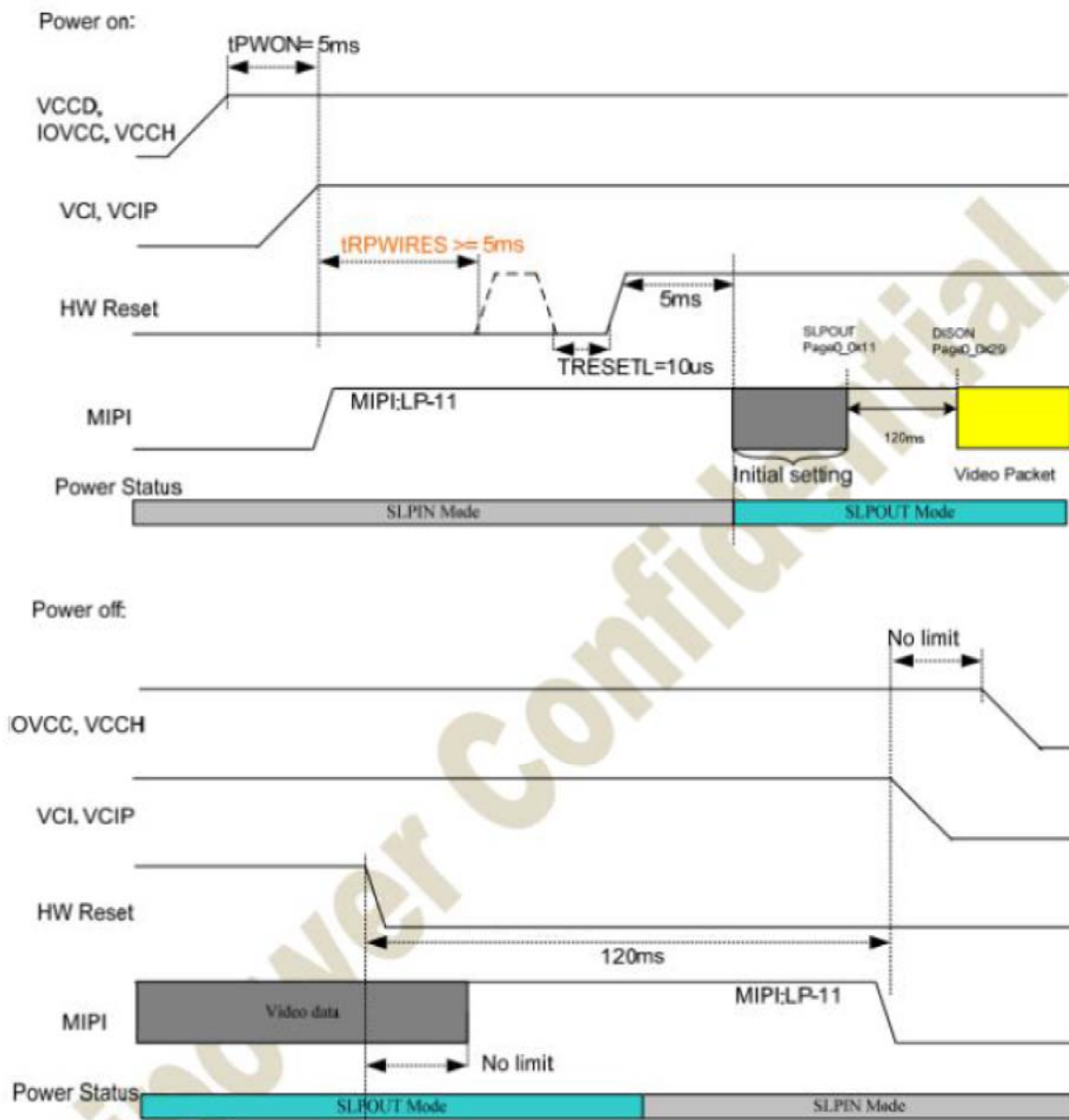
Vertical Timings



Horizontal Timings



5.3 power ON/OFF sequence



6 Optical Characteristics

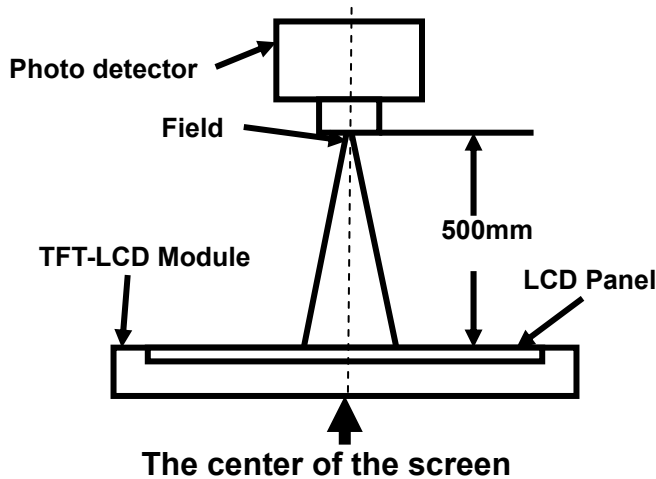
Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles		θT	CR≧10	-	85	-	Degree	Note2,3
		θB		-	85	-		
		θL		-	85	-		
		θR		-	85	-		
Contrast Ratio		CR	θ=0°	-	800	-		Note 3
Response Time		T _{ON}	25℃	-	30	-	ms	Note 4
		T _{OFF}						
Chromaticity	White	x	Backlight is on	0.260	0.310	0.360		Note 1,5
		y		0.286	0.336	0.386		
	Red	x						Note 1,5
		y						
	Green	x						Note 1,5
		y						
	Blue	x						Note 1,5
		y						
Uniformity		U		75	80	--	%	Note 6
Luminance		L		250	300	-	cd/m ²	Note 7

Test Conditions:

1. $I_F = 20$ mA, and the ambient temperature is 25°C.
2. The test systems refer to Note 1 and Note 2.

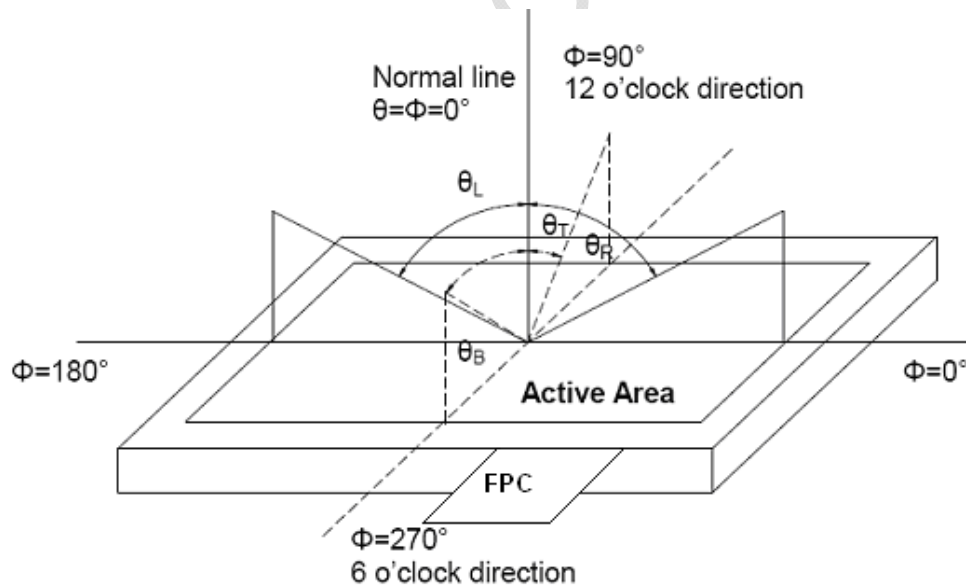
Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 Minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Note 2: Definition of viewing angle range and measurement system.

viewing angle is measured at the center point of the LCD.



Note 3: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

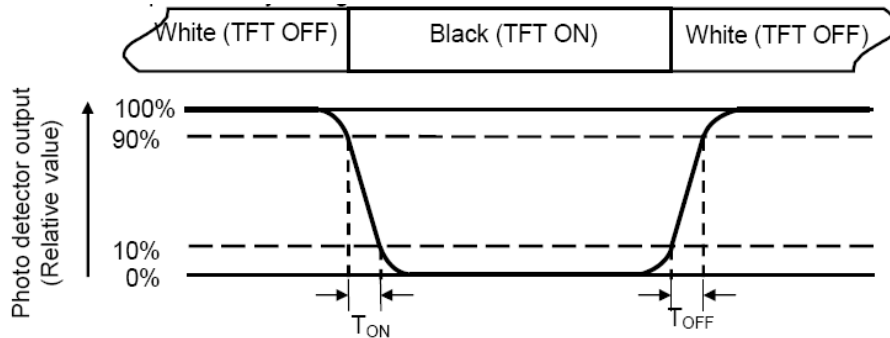
"White state ": The state is that the LCD should drive by V_{white}.

"Black state": The state is that the LCD should drive by V_{black}.

V_{white}: To be determined V_{black}: To be determined.

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931)

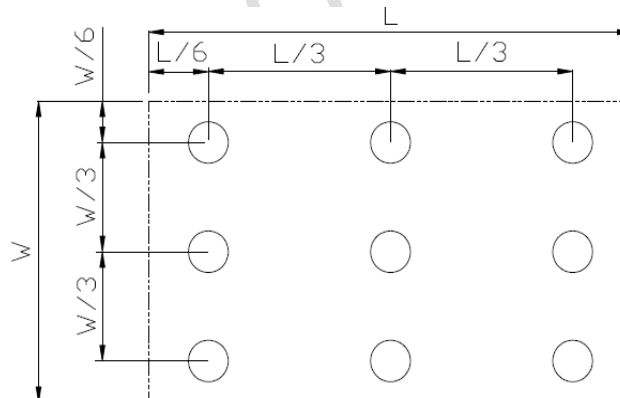
Color coordinates measured at center point of LCD.

Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity (U)} = L_{\min} / L_{\max}$$

L-----Active area length W----- Active area width



$L_{\max}$: The measured Maximum luminance of all measurement position.

$L_{\min}$: The measured Minimum luminance of all measurement position.

Note 7: Definition of Luminance:

Measure the luminance of white state at center point.

7 Environmental / Reliability Test

No	Test Item	Condition	Remarks
1	High Temperature Operation	50℃, 96Hours	IEC60068-2-1:2007 GB2423.2-2008
2	Low Temperature Operation	0℃, 96Hours	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Storage	60℃, 96Hours	IEC60068-2-1:2007 GB2423.2-2008
4	Low Temperature Storage	-10℃, 96Hours	IEC60068-2-1:2007 GB2423.1-2008
5	Storage at High Temperature and Humidity	50℃, 90%RH, 96Hours	IEC60068-2-78 :2001 GB/T2423.3—2006
6	Thermal Shock (non-operation)	-10℃(0.5h)~60℃(0.5h)/ 10cycle	Start with cold temperature, End with high temperature, IEC60068-2-14:1984,G B2423.22-2002
7	ESD	Contact: ±4KV Air: ±8KV 150PF/330Ω,5Points/panel,5times	IEC61000-4-2:2001 GB/T17626.2-2006
8	Vibration Test	Frequency: 10Hz~55Hz~10Hz Amplitude:1.5mm, 2 hours for each direction of X, Y, Z	IEC60068-2-6:1982 GB/T2423.10—1995
10	Package Drop Test	Drop to the ground from 1m height, 1 corner, 3 edges, 6 surfaces.	IEC60068-2-32:1990 GB/T2423.8—1995

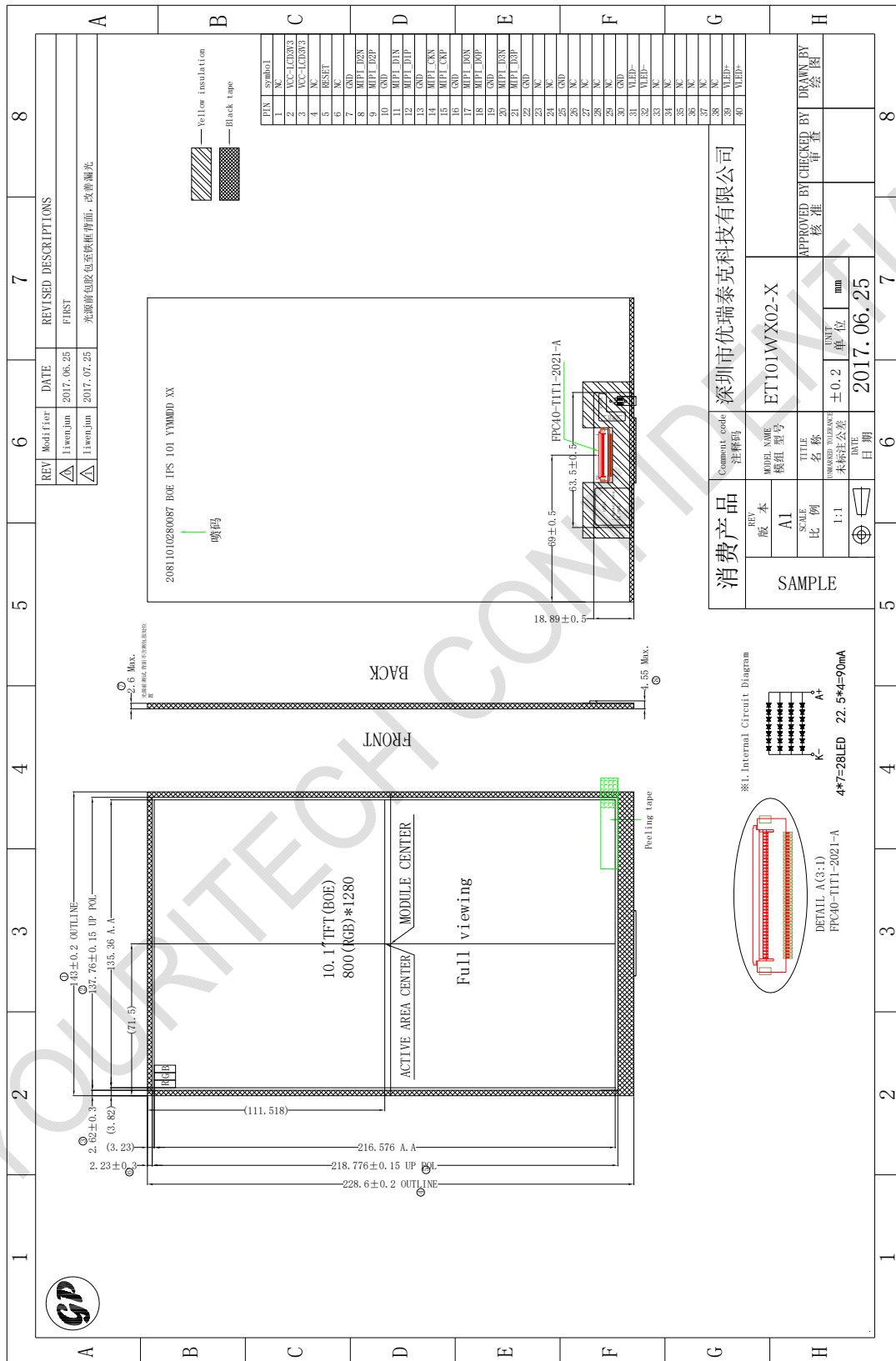
Note1: Ts is the temperature of panel's surface.

Note2: Ta is the ambient temperature of sample.

Note3: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

Note 4: 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.

8. Outline Dimension



9 Packing Drawing

TBD

10 Precautions for Use of LCD Modules

a) Handling Precautions

- i. The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.
- ii. 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.
- iii. Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.
- iv. The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.
- v. If the display surface is contaminated, breathe on the surface and 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
- vi. Do not attempt to disassemble the LCD Module.
 - vii. If the logic circuit power is off, do not apply the input signals.
 - viii. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

10.1.8.1 Be sure to ground the body when handling the LCD Modules.

10.1.8.2 Tools required for assembly, such as soldering irons, must be properly ground.

10.1.8.3 To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

10.1.8.4 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.

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b) Storage precautions

- i. When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

- ii. The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ~ 40℃ Relatively humidity: ≤80%

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

c) Transportation Precautions

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