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Custom Display

PCAP

Mechanical design

Production Custom designs Installation



MODEL NO : ET101WX01-X**MODEL VERSION:** 01**SPEC VERSION :** 1.0**ISSUED DATE:** 2017-12-11☒ **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	1280*3(RGB)*800
	Technology Type	a-Si
	Pixel Configuration	RGB Vertical Stripe
	Pixel pitch(mm)	0.0565(H)*0.1695(V)
	Display Mode	Transmissive/Normally Black
	Viewing Direction	Free angle
Mechanical Characteristics	LCM (W x H x D) (mm)	229.46(W) x 149.2(H) x 2.65(D)
	Active Area(mm)	216.96(H)*135.60(V)
	With /Without TSP	Without TSP
	Weight (g)	TBD
Electrical Characteristics	Interface	LVDS
	Color Depth	262K

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: $\pm 5\%$

2 Input/Output Terminals

Pin No.	Symbol	I/O	Function
1	NC	P	No Connection
2	VDD	P	Power voltage for digital circuit(3.3V)
3	VDD	P	Power voltage for digital circuit(3.3V)
4	NC	-	No Connection
5	NC	I	No Connection
6	NC	I	No Connection
7	NC	P	No Connection
8	RXIN0-	I	-LVDS differential data input
9	RXIN0+	I	+LVDS differential data input
10	GND	P	Ground
11	RXIN1-	I	-LVDS differential data input
12	RXIN1+	I	+LVDS differential data input
13	GND	P	Ground
14	RXIN2-	I	-LVDS differential data input
15	RXIN2+	I	+LVDS differential data input
16	GND	P	Ground
17	RXCLKIN-	I	-LVDS differential clock input
18	RXCLKIN+	I	+LVDS differential clock input
19	GND	P	Ground
20	RXIN3-	I	-LVDS differential data input
21	RXIN3+	I	+LVDS differential data input
22	GND	P	Ground
23	NC	-	No Connection
24	NC	-	No Connection
25	GND	P	Ground
26	NC	-	No Connection
27	NC	-	No Connection
28	GND	I	Ground
29	NC	P	No Connection
30	NC	P	No Connection
31	GND	P	Ground
32	GND	P	Ground
33	GND	I	Ground
34	NC	I	No Connection

35	PWM	P	LED BULL Brightness Control
36	LED-EN	-	POWER enable.(+3.3v input).
37	NC	-	No Connection
38	VLED	P	LED POWER SUPPLY (5.5v)
39	VLED	P	LED POWER SUPPLY (5.5v)
40	VLED	P	LED POWER SUPPLY (5.5v)

3 Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit
Digital Supply Voltage	VDD	-0.3	6.5	V

4 Electrical Characteristics

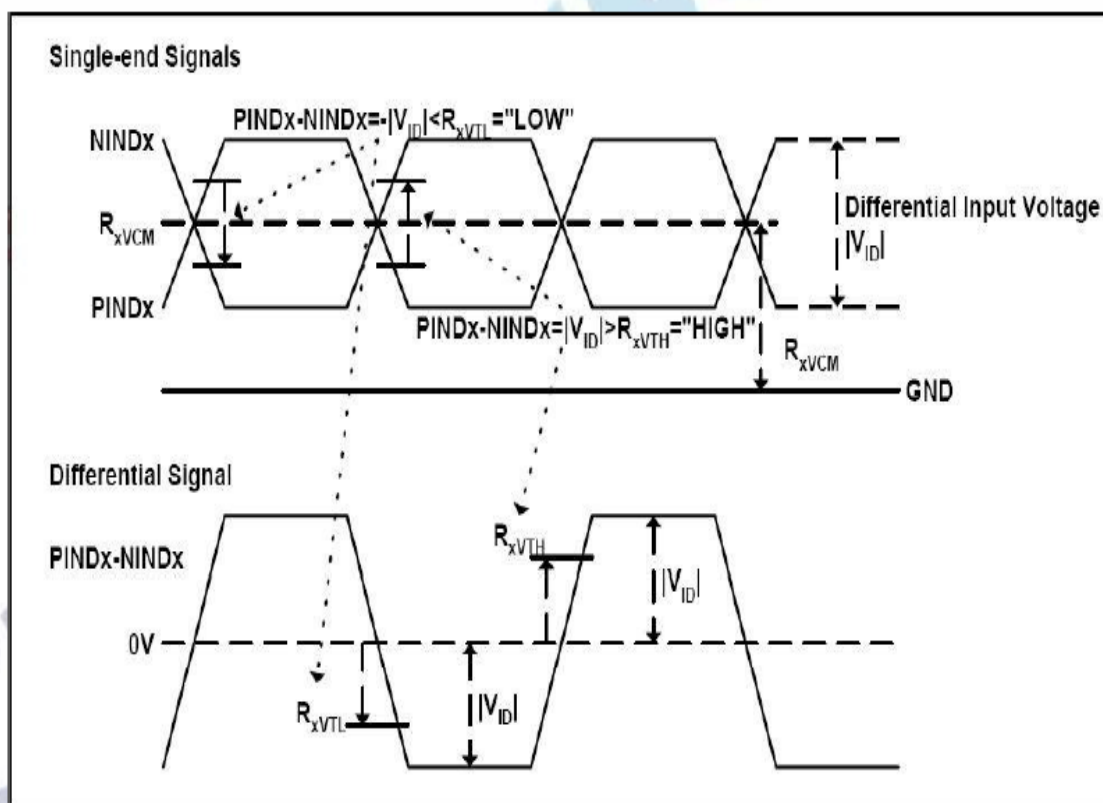
4.1 Driving TFT LCD Panel

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

5 Timing Chart

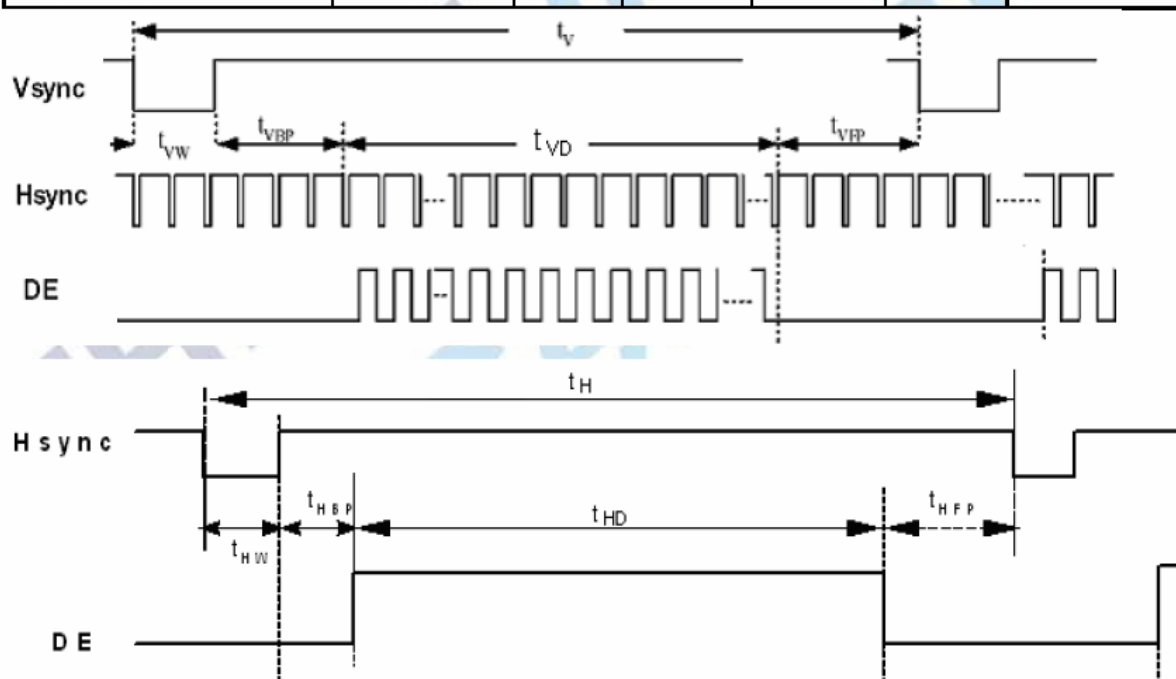
5.1AC CHARACTERISTICS

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
LVDS Differential input high Threshold voltage	R_{xVTH}	-	-	+100	mV	$R_{xVCM}=1.2V$
LVDS Differential input low Threshold voltage	R_{xVTL}	-100	-	-	mV	
LVDS Differential input common mode voltage	R_{xVCM}	0.7	-	1.6	V	
LVDS Differential voltage	$ V_{ID} $	100	-	600	mV	

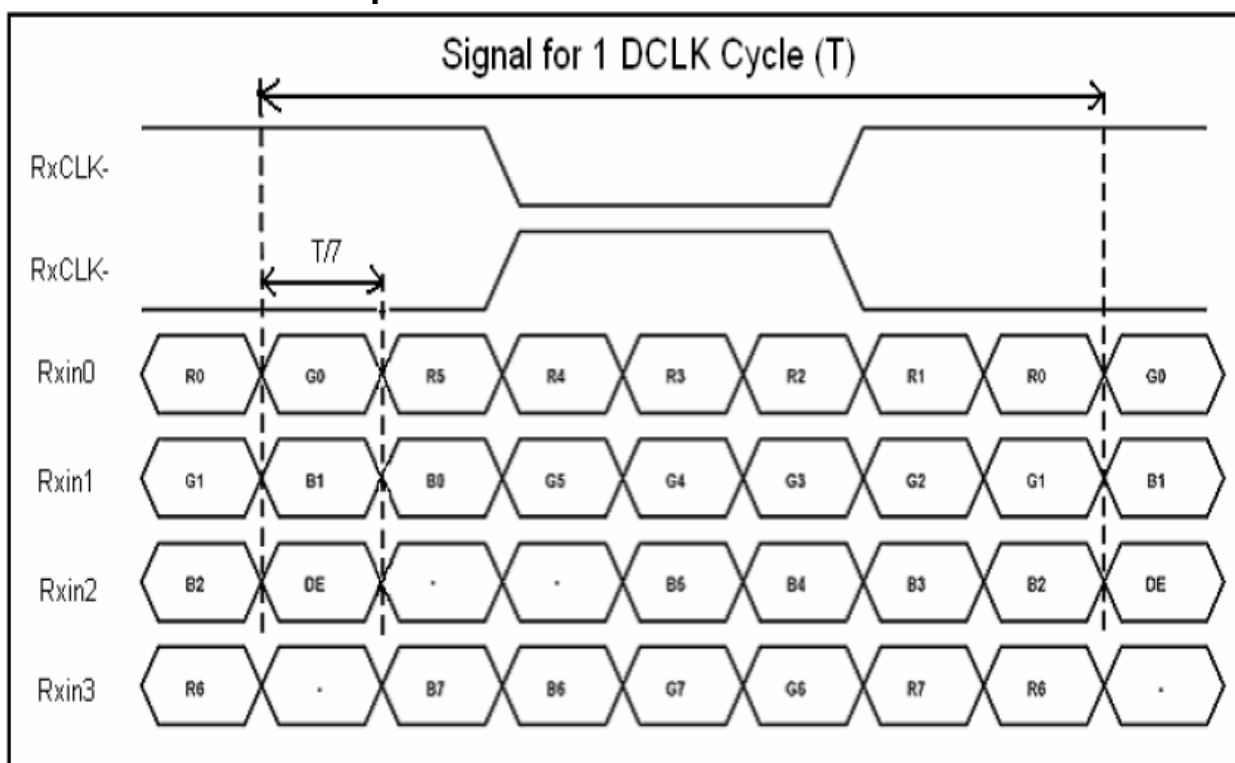


5.2 Timing Table

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	1/Tc	(68.9)	71.1	(73.4)	MHz	Frame rate =60Hz
Horizontal display area	t _{HD}	1280			Tc	
HS period time	t _H	(1410)	1440	(1470)	Tc	
HS Width +Back Porch +Front Porch	t _{HW} + t _{HBP} +t _{HFP}	(60)	160	(190)	Tc	
Vertical display area	t _{VD}	800			t _H	
VS period time	t _V	(815)	823	(833)	t _H	
VS Width +Back Porch +Front Porch	t _{VW} + t _{VBP} +t _{VFP}	(15)	23	(33)	t _H	

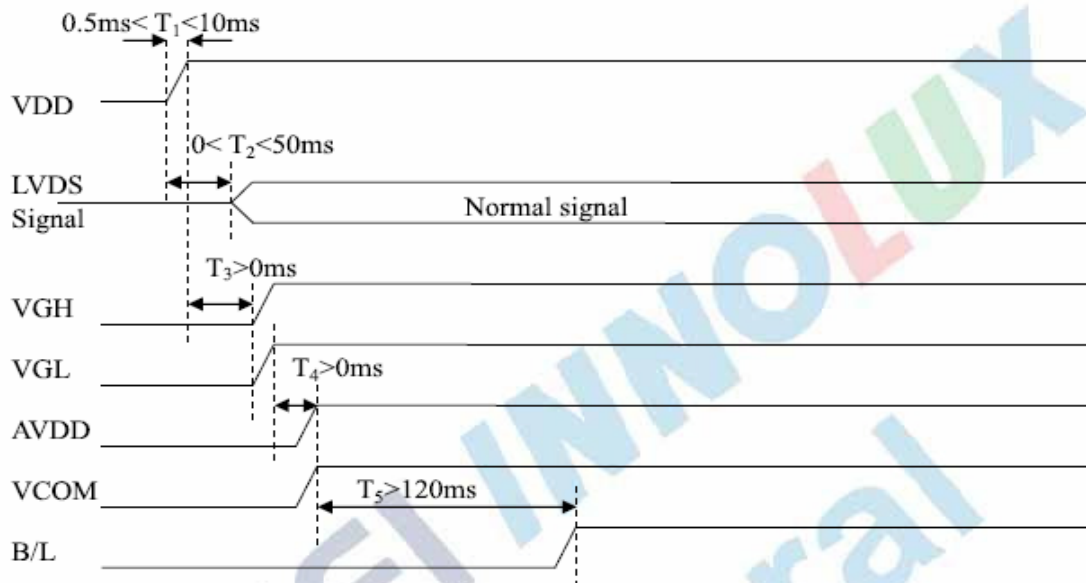


5.3 LVDS Data Input Format

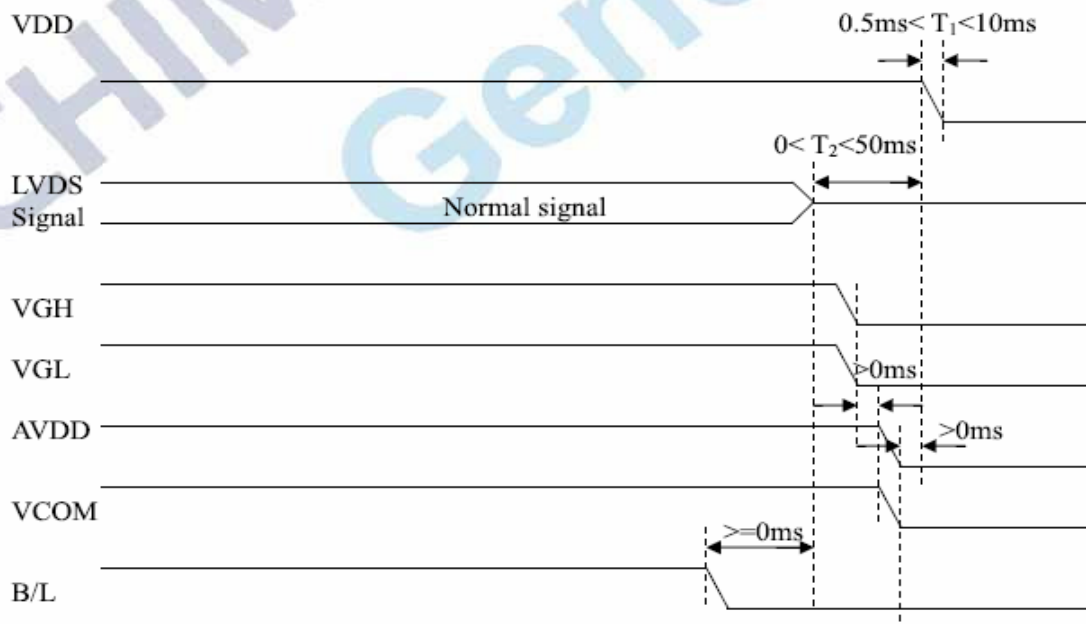


5.4 Power Sequence

a. Power on:



b. Power off:



6 Optical Characteristics

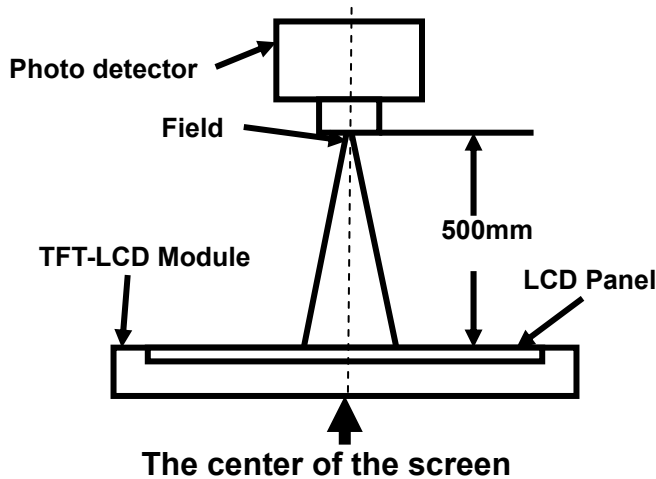
Item		Symbol	Condition	Mi	Typ	Max	Unit	Remark
View Angles		θT	CR≧10	80	85	-	Degree	Note2,3
		θB		80	85	-		
		θL		80	85	-		
		θR		80	85	-		
Contrast Ratio		CR	θ=0°	600	800	-		Note 3
Response Time		T _{ON}	25℃	-	25	30	ms	Note 4
		T _{OFF}						
Chromaticity	White	x	Backlight is on	0.26	0.29	0.32		Note 1,5
		y		0.31	0.34	0.37		
	Red	x						Note 1,5
		y						
	Green	x						Note 1,5
		y						
	Blue	x						Note 1,5
		y						
Uniformity		U		80	85	--	%	Note 6
Luminance		L		250	300	-	cd/m ²	Note 7

Test Conditions:

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

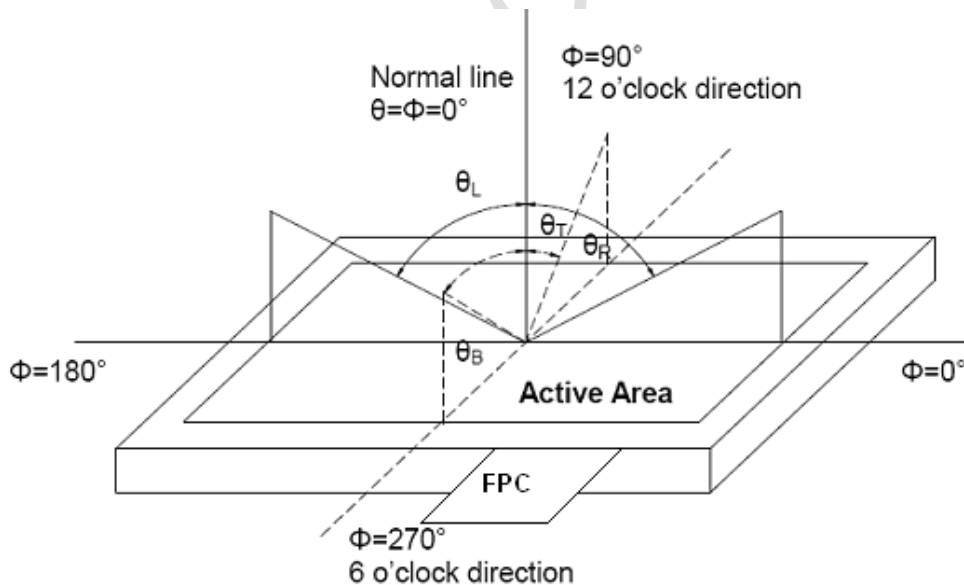
Note 1: Definition of optical measurement system.

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

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

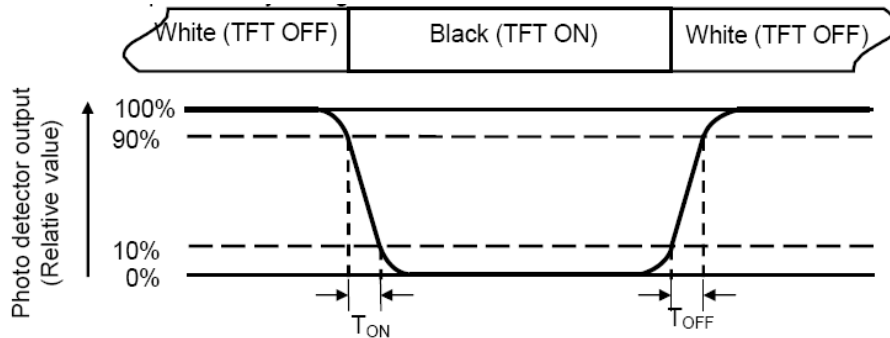
"White state ": The state is that the LCD should drive by V_{white} .

"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)

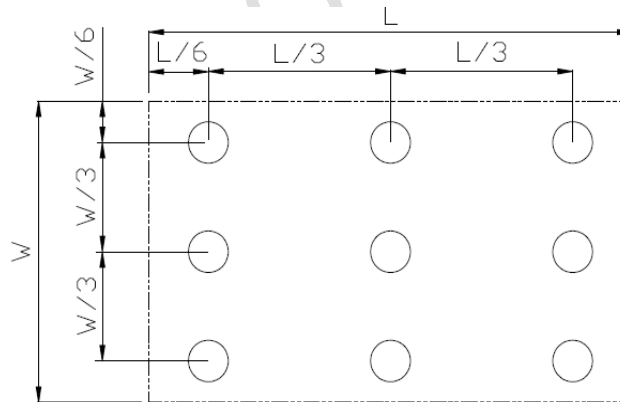
Color coordinates measured at center point of LCD.

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°C / 24Hours	IEC60068-2-1:2007 GB2423.2-2008
2	Low Temperature Operation	-10°C / 24Hours	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Storage	60°C / 24Hours	IEC60068-2-1:2007 GB2423.2-2008
4	Low Temperature Storage	-20°C / 24Hours	IEC60068-2-1:2007 GB2423.1-2008
5	Storage at High Temperature and Humidity	60°C x 90%RH / 24H	IEC60068-2-78 :2001 GB/T2423.3—2006
6	Thermal Shock (non-operation)	0°C $\leftrightarrow$ 50°C x 10cycles (30min) (5min) (30min)	Start with cold temperature, End with high temperature, IEC60068-2-14:1984,G B2423.22-2002
7	ESD	Contact: $\pm$ 4KV Air: $\pm$ 8KV 150PF/330 Ω ,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

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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.

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.