



# Winstar Display Co., LTD

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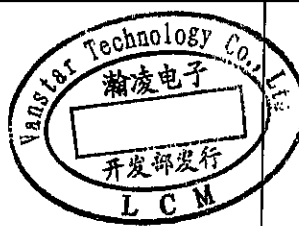
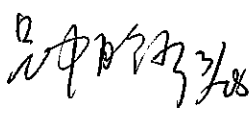
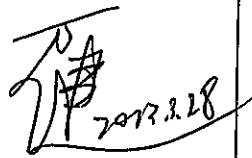
### SPECIFICATION

**CUSTOMER :** \_\_\_\_\_

**MODULE NO.:** WF57FTLFFDATO#

未出样, 参数仅供参考

<p><b>APPROVED BY:</b> ( FOR CUSTOMER USE ONLY )</p>	<p><b>PCB VERSION:</b> _____</p> <p><b>DATA:</b> _____</p>
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SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
			<p>叶慧芬</p>
<p><b>ISSUED DATE:</b> 2013-3-27</p>			



MODLE NO :
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<b>RECORDS OF REVISION</b>	<b>DOC. FIRST ISSUE</b>
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VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2013.03.27		First issue

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# 1. Module Classification Information

W   F   57   F   T   L   F   F   D   A   T   0   #  
 ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨   ⑩   ⑪   ⑫   ⑬

①	Brand : WINSTAR DISPLAY CORPORATION						
②	Display Type : H→Character Type, G→Graphic Type F→TFT Type						
③	Display Size : 5.7 ” TFT						
④	Model serials no.						
⑤	Backlight Type :	F→CCFL, White			T→LED, White		
⑥	LCD Polarize Type/ Temperature range/ Gray Scale Inversion Direction	I→Transmissive, W. T, 6:00 L→Transmissive, W.T,12:00					
⑦	A : TFT LCD B : TFT+FR+CONTROL BOARD C : TFT+FR+A/D BOARD D : TFT+FR+A/D BOARD+CONTROL BOARD E : TFT+FR+POWER BOARD F : TFT+CONTROL BOARD			G : TFT+FR H : TFT+D/V BOARD I : TFT+FR+D/V BOARD J : TFT+POWER BD			
⑧	Solution:						
	A: 128160	B:320234	C:320240	D:480234	E:480272	F: 640480	G: 800480
	H:1024600	I:320480	J:240320	K:800600	L:240400	M :1024768	
⑨	D: Digital    L : LVDS						
⑩	Interface :    N : without control board    A : 8Bit    B : 16Bit						
⑪	TS :    N : Without TS    T : resistive touch panel    C : capacitive touch panel						
⑫	Version						
⑬	Special Code	#:Fit in with ROHS directive regulations					

## 2.SUMMARY

This technical specification applies to 5.7” color TFT-LCD panel. The 5.7” color TFT-LCD panel is designed for camcorder, digital camera application and other electronic products which require high quality flat panel displays. This module follows RoHS.

## 3.General Specification

Item	Dimension	Unit	Remark
Dot Matrix	640 x RGBx480(TFT)	dots	
Module dimension	127.14 x 100.94 x7.5	mm	Note 1
Active area	115.20 x 86.40	mm	
Dot pitch	0.06 x 0.18	mm	
LCD type	TFT, Negative, Transmissive		
View Direction	6 o'clock		
Gray Scale Inversion Direction	12 o'clock		
Backlight Type	LED, Normally White		
Controller IC	SSD1963		
Interface	Digital 8080 family MPU		

\*Color tone slight changed by temperature and driving voltage.

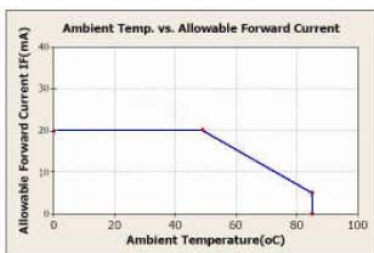
NOTE 1:LCM height does not include component and CN.

## 4.Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T <sub>OP</sub>	-20	—	+70	°C
Storage Temperature	T <sub>ST</sub>	-30	—	+80	°C

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. ≤ 60°C, 90% RH MAX. Temp. > 60°C , Absolute humidity shall be less than 90% RH at 60°C



# 5. Electrical Characteristics

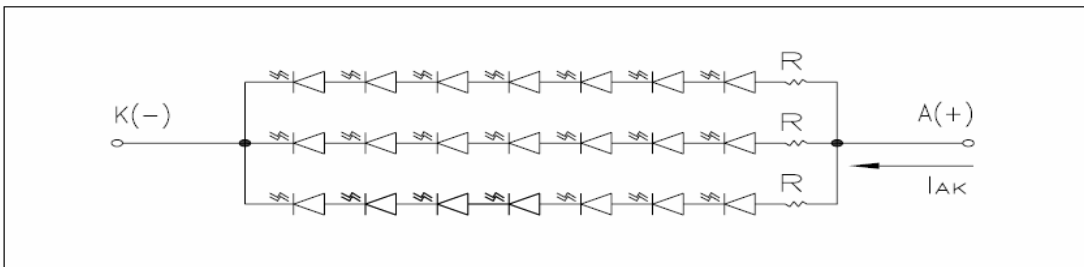
## 5.1. Operating conditions:

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	$V_{DD}$	—	3.0	3.3	3.6	V

## 5.2 LED driving conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
LED current		-	60	-	mA	
Power Consumption			1386	1470	mW	
LED voltage	$V_{BL+}$	9.0	23.1	24.5	V	Note 1
LED Life Time		-	25,000	-	Hr	Note 2,3,4

Note 1 : There are 1 Groups LED



Note 2 :  $T_a = 25\text{ }^\circ\text{C}$

Note 3 : Brightness to be decreased to 50% of the initial value

Note 4 : The single LED lamp case

# 6. DC CHARACTERISTICS

Parameter	Symbol	Rating			Unit	Condition
		Min	Typ	Max		
Low level input voltage	$V_{IL}$	0	-	0.3 VDD	V	
Hight level input voltage	$V_{IH}$	0.7 VDD	-	VDD	V	

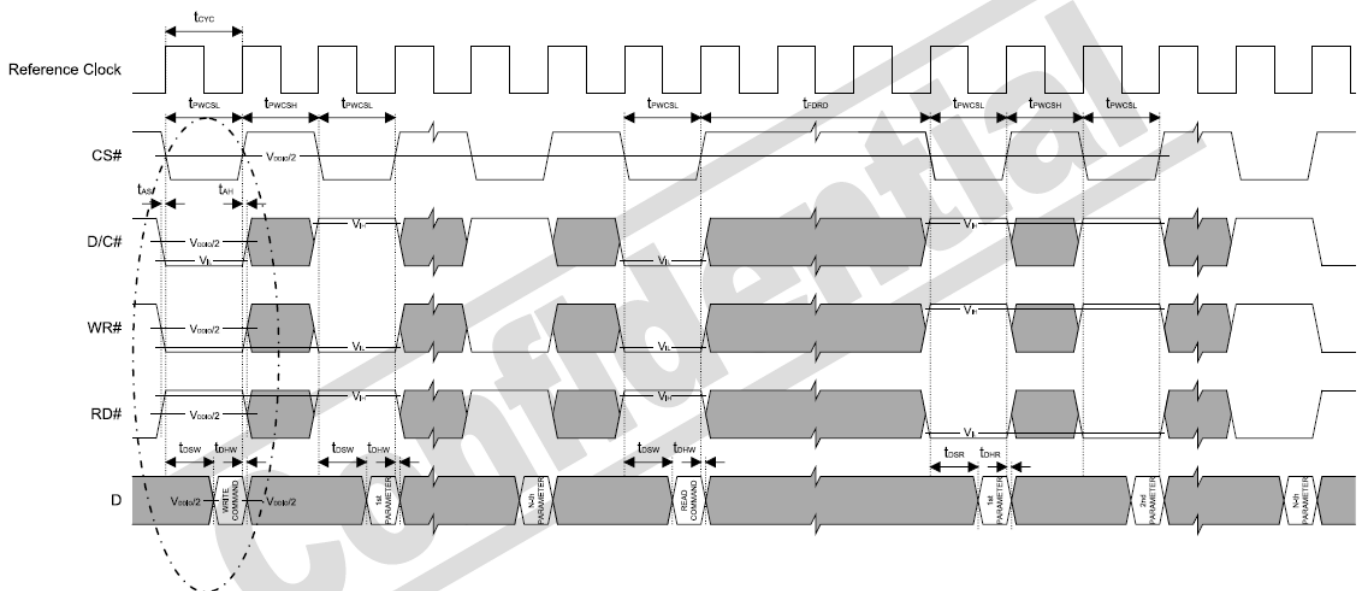
# 7. Interface Timing

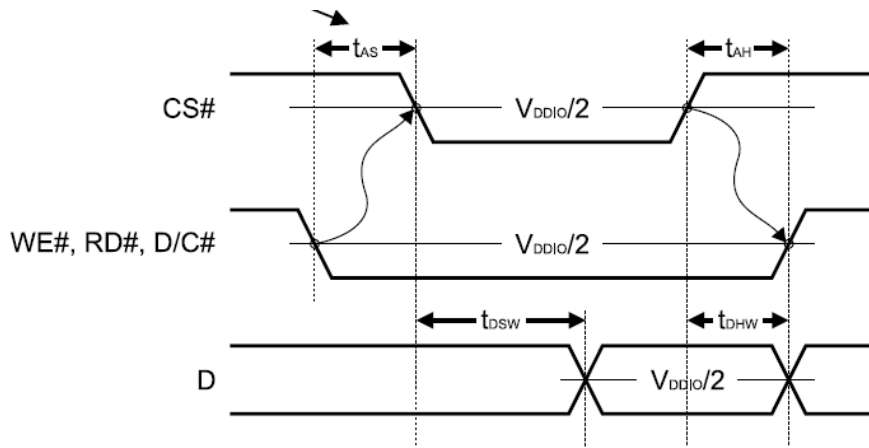
## 7.1.1 8080 Mode

The 8080 mode MCU interface consist of CS#, D/C#, RD#, WR#, D[23:0] and TE signals (Please refer to Table 6-1 for pin multiplexed with 6800 mode). This interface use WR# to define a write cycle and RD# for read cycle. If the WR# goes low when the CS# signal is low, the data or command will be latched into the system at the rising edge of WR#. Similarly, the read cycle will start when RD# goes low and end at the rising edge of RD#.

## 7.1.2 8080 Mode Write Cycle

Symbol	Parameter	Min	Typ	Max	Unit
$t_{cyc}$	Reference Clock Cycle Time	9	-	-	ns
$t_{PWCSL}$	Pulse width CS# low	1	-	-	$t_{cyc}$
$t_{PWCSH}$	Pulse width CS# high	1	-	-	$t_{cyc}$
$t_{FDRD}$	First Read Data Delay	5	-	-	$t_{cyc}$
$t_{AS}$	Address Setup Time	1	-	-	ns
$t_{AH}$	Address Hold Time	1	-	-	ns
$t_{DSW}$	Data Setup Time	4	-	-	ns
$t_{DHW}$	Data Hold Time	1	-	-	ns
$t_{DSR}$	Data Access Time	-	-	5	ns
$t_{DHR}$	Output Hold time	1	-	-	ns





### 7.1.3 Pixel Data Format

Interface	Cycle	D[23]	D[22]	D[21]	D[20]	D[19]	D[18]	D[17]	D[16]	D[15]	D[14]	D[13]	D[12]	D[11]	D[10]	D[9]	D[8]	D[7]	D[6]	D[5]	D[4]	D[3]	D[2]	D[1]	D[0]	
24 bits	1 <sup>st</sup>	R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0	
18 bits	1 <sup>st</sup>							R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0	
16 bits (565 format)	1 <sup>st</sup>									R5	R4	R3	R2	R1	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	
16 bits	1 <sup>st</sup>									R5	R4	R3	R2	R1	R0	X	X	G5	G4	G3	G2	G1	G0	X	X	
	2 <sup>nd</sup>									B5	B4	B3	B2	B1	B0	X	X	R5	R4	R3	R2	R1	R0	X	X	
	3 <sup>rd</sup>									G5	G4	G3	G2	G1	G0	X	X	B5	B4	B3	B2	B1	B0	X	X	
9 bits	1 <sup>st</sup>																	R5	R4	R3	R2	R1	R0	G5	G4	G3
	2 <sup>nd</sup>																	G2	G1	G0	B5	B4	B3	B2	B1	B0
8 bits	1 <sup>st</sup>																	R5	R4	R3	R2	R1	R0	X	X	
	2 <sup>nd</sup>																	G5	G4	G3	G2	G1	G0	X	X	
	3 <sup>rd</sup>																	B5	B4	B3	B2	B1	B0	X	X	

X: Don't Care



# 8. OPTICAL CHARACTERISTIC

Item	Symbol	Condition.	Min	Typ.	Max.	Unit	Remark
Response time	Tr+ Tf	$\theta = 0^\circ$ 、 $\Phi = 0^\circ$	-	50	80	.ms	Note 3
Contrast ratio	CR	At optimized viewing angle	150	250	-	-	Note 4
Color Chromaticity	White	$\frac{W_x}{W_y}$	$\theta = 0^\circ$ 、 $\Phi = 0$	0.24	0.29	0.34	Note 2,5
		$\frac{W_x}{W_y}$		0.26	0.31	0.36	
Viewing angle	Hor.	$\Theta_R$	CR $\geq 10$	-	60	Deg.	Note 1
		$\Theta_L$		-	60		
	Ver.	$\Phi_T$		-	60		
		$\Phi_B$		-	40		
Brightness	-	-	170	-	210	cd/m <sup>2</sup>	Center of display

Ta=25±2°C, IL=20mA

Note 1: Definition of viewing angle range

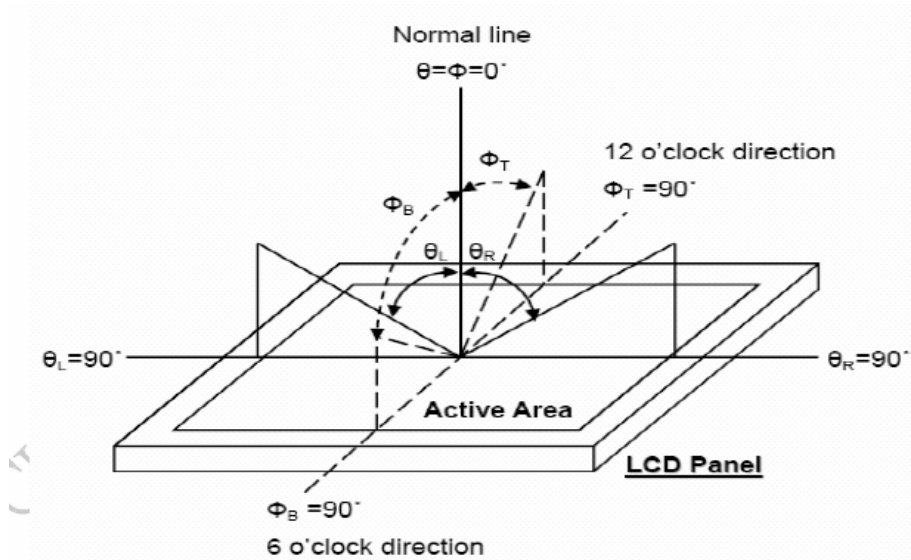


Fig. 8-1 Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

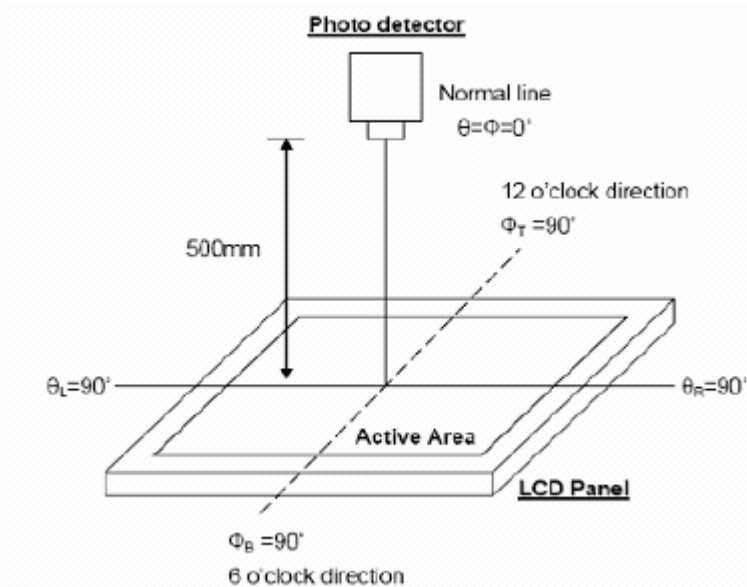


Fig. 8-2 Optical measurement system setup

Note 3: Definition of Response time:

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time,  $T_r$ , is the time between photo detector output intensity changed from 90% to 10%. And fall time,  $T_f$ , is the time between photo detector output intensity changed from 10% to 90%

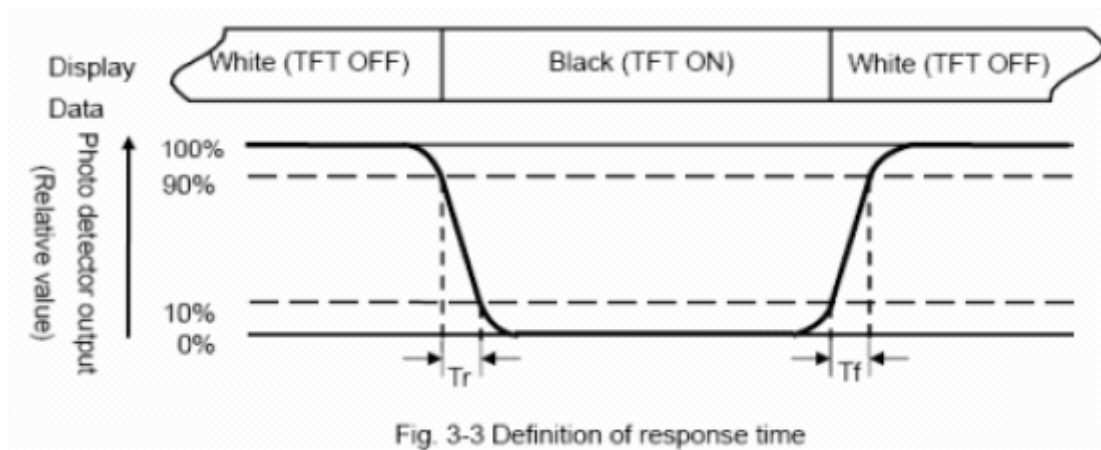


Fig. 3-3 Definition of response time

Note 4: Definition of contrast ratio:

The contrast ratio is defined as the following expression.

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

Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

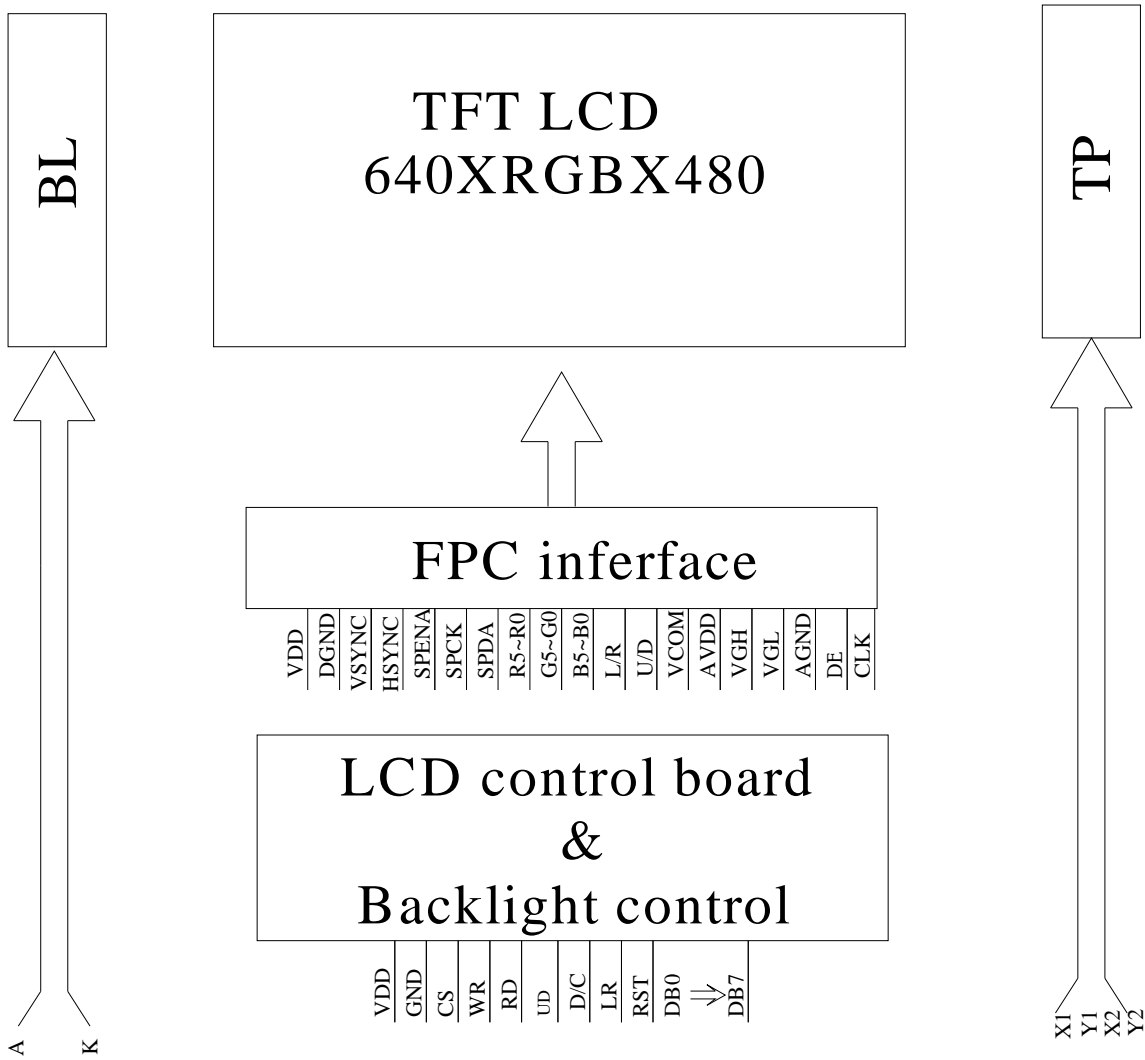
Note 6: All input terminals LCD panel must be ground while measuring the center area of the panel.

## 9. INTERFACE

### 9.1. LCM PIN Definition

Pin No.	Symbol	I/O	Description	Remark
1	GND		System ground pin of the IC. Connect to system ground.	
2	VDD		Power Supply : +3.3V	
3	NC		No connection	
4	D/C		Data/Command select	
5	WR		Write strobe signal	
6	RD		Read strobe signal	
7	DB0		Data bus	
8	DB1		Data bus	
9	DB2		Data bus	
10	DB3		Data bus	
11	DB4		Data bus	
12	DB5		Data bus	
13	DB6		Data bus	
14	DB7		Data bus	
15	CS		Chip select	
16	UD		Up/down selection	
17	LR		Left /right selection	
18	RST		Hardware reset	
19	NC		No connection	
20	NC		No connection	

# 10. BLOCK DIAGRAM



# 11. Reliability

## Content of Reliability Test (Wide temperature, -20°C~70°C)

Environmental Test			
Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80°C 200hrs	2
Low Temperature storage	Endurance test applying the high storage temperature for a long time.	-30°C 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70°C 200hrs	—
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20°C 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60°C,90%RH max For 96hrs under no-load condition excluding the polarizer, Then taking it out and drying it at normal temperature.	60°C,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation  <div style="text-align: center;"> <p style="margin: 0;">-20°C    25°C    70°C</p> <p style="margin: 0;">←—————→</p> <p style="margin: 0;">30min    5min    30min</p> <p style="margin: 0;">1 cycle</p> </div>	-20°C/70°C 10 cycles	—
Vibration test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude : 3 15mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=800V,RS=1.5kΩ CS=100pF 1 time	—

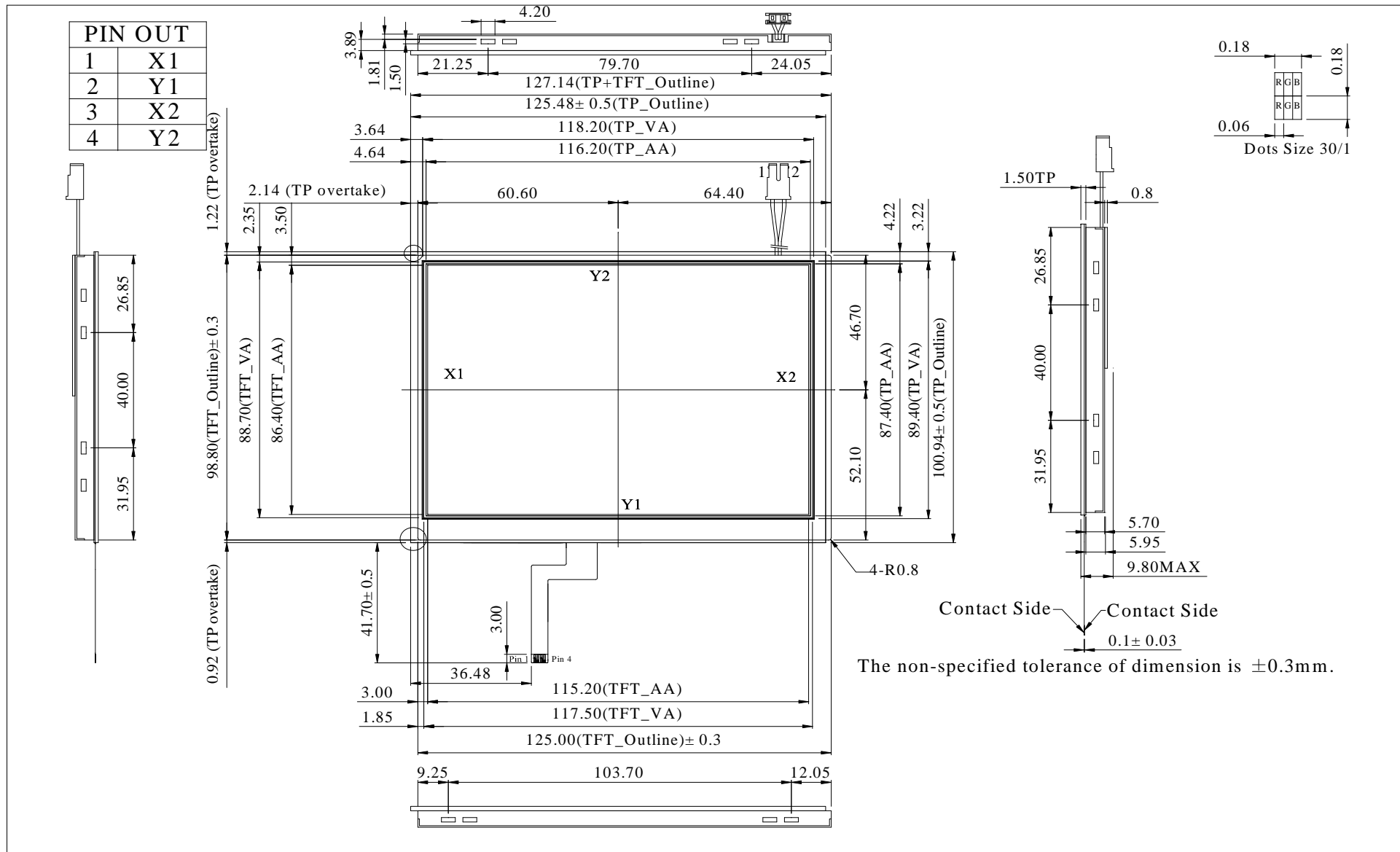
**Note1: No dew condensation to be observed.**

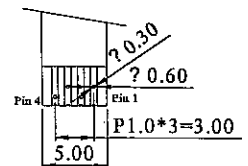
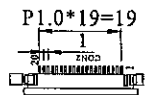
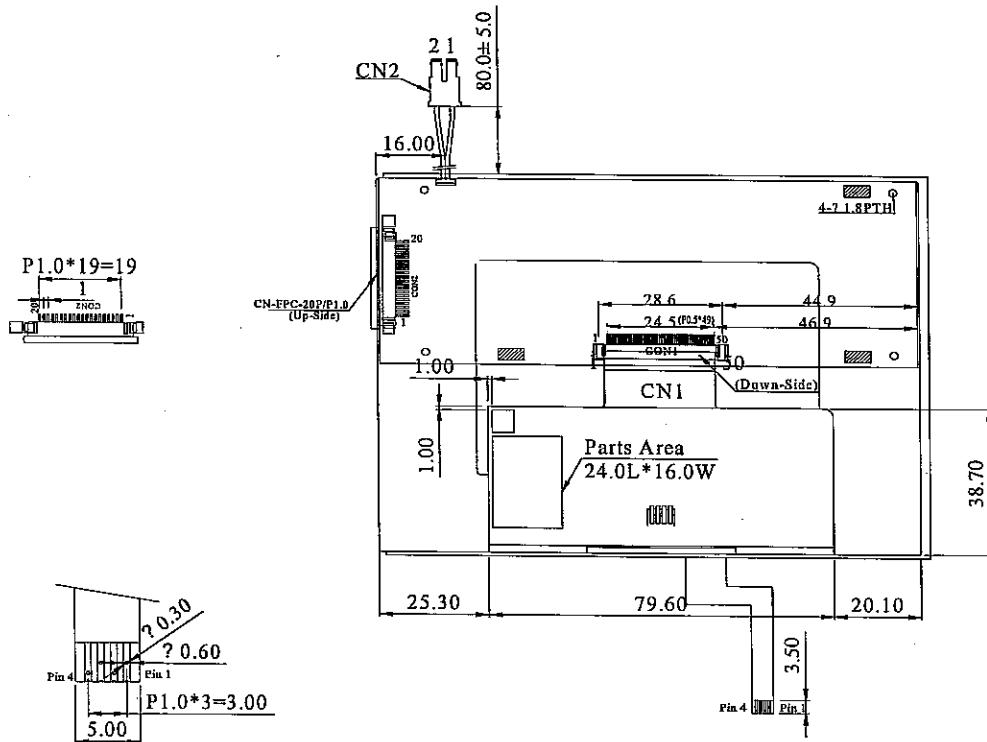
**Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.**

**Note3: Vibration test will be conducted to the product itself without putting it in a container.**



# 13. Contour Drawing





SCALE 2/1

CON2

PIN NO.	SYMBOL
1	GND
2	VDD
3	NC
4	D/C
5	WR
6	RD
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	CS
16	UD
17	LR
18	RST
19	NC
20	NC

CN2

PIN NO.	SYMBOL
1	A
2	K

The non-specified tolerance of dimension is  $\pm 0.3\text{mm}$ .



# 14. Package specification

<b>LCM Model</b>	WF57FTLFFDAT0#	<h2 style="margin: 0;">LCM 包裝規格書</h2> <h3 style="margin: 0;">LCM Packaging Specifications</h3>	<b>Approve</b>	<b>Check</b>	<b>Contact</b>
<b>Drawing NO.</b>			<b>DATE</b>	初版	版次 Ver
			13'1/22	13'1/22	0

**1. 包裝材料規格表 (Packaging Material) :(per carton)**

NO.	Item	Model	Dimensions	Quantity
1	成品 (LCM)	WF57FTLFFDAT0#	<b>TBD</b>	<b>TBD</b>
2	TRAY 盤 (2)	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>
3	BP01 內盒(3)Product Box	PK3R1XXXXXXXXXXXX0001	<b>TBD</b>	<b>TBD</b>
4	泡棉(4)Foam	-----	<b>TBD</b>	<b>TBD</b>
5	外紙箱(5)Carton	PK4Q1XXXXXXXXXXXX0000	<b>TBD</b>	<b>TBD</b>
6				
7				
8				
9				

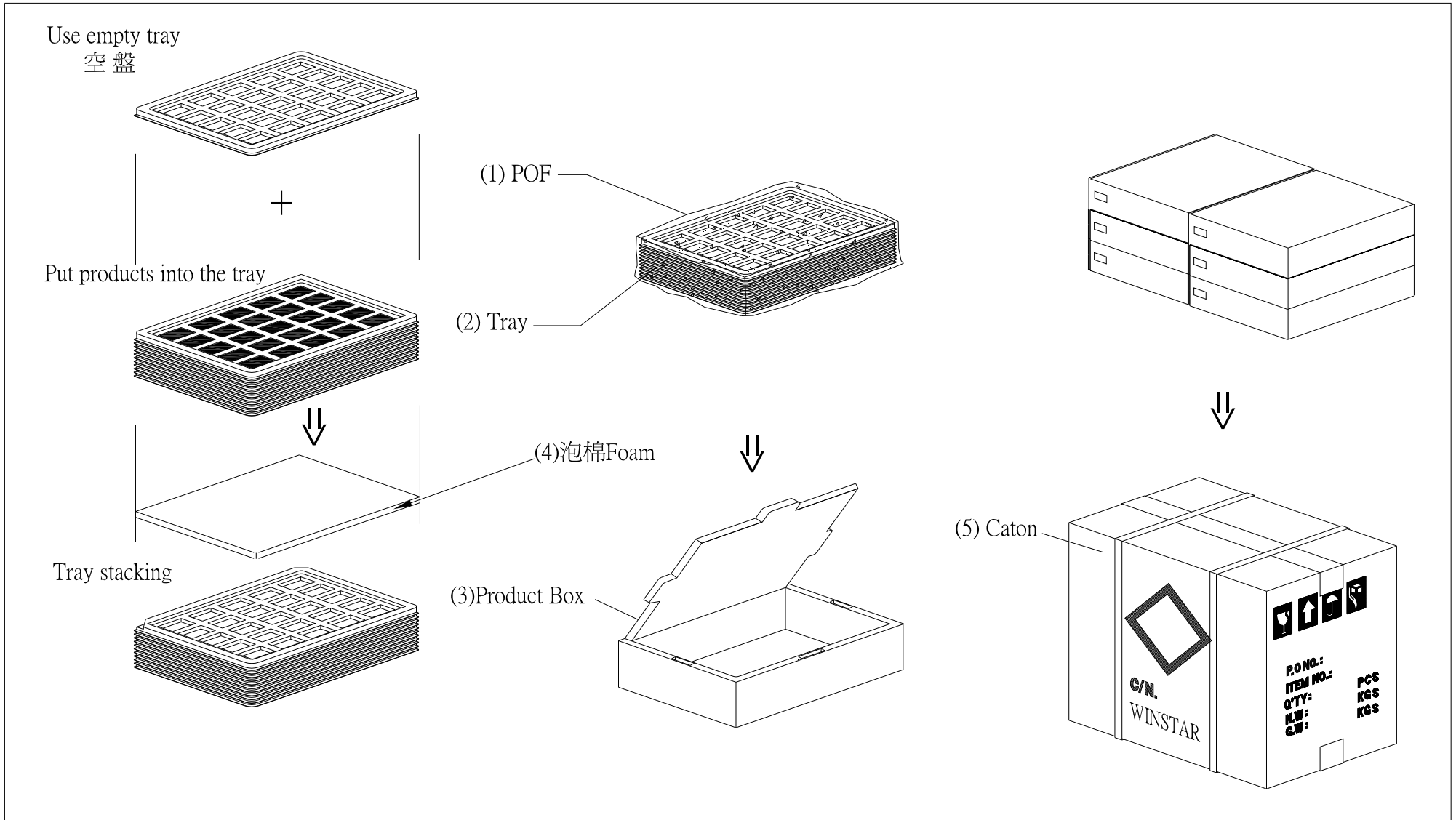
**2. 單箱數量規格表(Packaging Specifications and Quantity) :**

(1)LCM quantity per box : no per box	<b>TBD</b>	x no of box	<b>TBD</b>	=	<b>TBD</b>
(2)Total LCM quantity in carton : quantity per box	<b>TBD</b>	x no of boxes	<b>TBD</b>	=	<b>TBD</b>

**特 記 事 項 (REMARK)**

<p>1. Label Specifications :</p> <table border="1" style="width: 100%; height: 100px;"> <tr> <td style="padding: 2px;">MOEEL:</td> </tr> <tr> <td style="padding: 2px;">LOT NO :</td> </tr> <tr> <td style="padding: 2px;">QUANTITY:</td> </tr> <tr> <td style="padding: 2px;">CHECK:</td> </tr> </table>	MOEEL:	LOT NO :	QUANTITY:	CHECK:	
MOEEL:					
LOT NO :					
QUANTITY:					
CHECK:					



## 15. Initial Code For Reference

TBD



Module Number : \_\_\_\_\_

Page: 1

**1、Panel Specification :**

- 1. Panel Type :  Pass  NG , \_\_\_\_\_
- 2. View Direction :  Pass  NG , \_\_\_\_\_
- 3. Numbers of Dots :  Pass  NG , \_\_\_\_\_
- 4. View Area :  Pass  NG , \_\_\_\_\_
- 5. Active Area :  Pass  NG , \_\_\_\_\_
- 6. Operating Temperature :  Pass  NG , \_\_\_\_\_
- 7. Storage Temperature :  Pass  NG , \_\_\_\_\_
- 8. Others : \_\_\_\_\_

**2、Mechanical Specification :**

- 1. PCB Size :  Pass  NG , \_\_\_\_\_
- 2. Frame Size :  Pass  NG , \_\_\_\_\_
- 3. Material of Frame :  Pass  NG , \_\_\_\_\_
- 4. Connector Position :  Pass  NG , \_\_\_\_\_
- 5. Fix Hole Position :  Pass  NG , \_\_\_\_\_
- 6. Backlight Position :  Pass  NG , \_\_\_\_\_
- 7. Thickness of PCB :  Pass  NG , \_\_\_\_\_
- 8. Height of Frame to PCB :  Pass  NG , \_\_\_\_\_
- 9. Height of Module :  Pass  NG , \_\_\_\_\_
- 10. Others :  Pass  NG , \_\_\_\_\_

**3、Relative Hole Size :**

- 1. Pitch of Connector :  Pass  NG , \_\_\_\_\_
- 2. Hole size of Connector :  Pass  NG , \_\_\_\_\_
- 3. Mounting Hole size :  Pass  NG , \_\_\_\_\_
- 4. Mounting Hole Type :  Pass  NG , \_\_\_\_\_
- 5. Others :  Pass  NG , \_\_\_\_\_

**4、Backlight Specification :**

- 1. B/L Type :  Pass  NG , \_\_\_\_\_
- 2. B/L Color :  Pass  NG , \_\_\_\_\_
- 3. B/L Driving Voltage (Reference for LED Type) :  Pass  NG , \_\_\_\_\_
- 4. B/L Driving Current :  Pass  NG , \_\_\_\_\_
- 5. Brightness of B/L :  Pass  NG , \_\_\_\_\_
- 6. B/L Solder Method :  Pass  NG , \_\_\_\_\_
- 7. Others :  Pass  NG , \_\_\_\_\_

>> **Go to page 2** <<



Module Number : \_\_\_\_\_

5、Electronic Characteristics of Module :

- 1. Input Voltage :  Pass  NG , \_\_\_\_\_
- 2. Supply Current :  Pass  NG , \_\_\_\_\_
- 3. Driving Voltage for LCD :  Pass  NG , \_\_\_\_\_
- 4. Contrast for LCD :  Pass  NG , \_\_\_\_\_
- 5. B/L Driving Method :  Pass  NG , \_\_\_\_\_
- 6. Negative Voltage Output :  Pass  NG , \_\_\_\_\_
- 7. Interface Function :  Pass  NG , \_\_\_\_\_
- 8. LCD Uniformity :  Pass  NG , \_\_\_\_\_
- 9. ESD test :  Pass  NG , \_\_\_\_\_
- 10. Others :  Pass  NG , \_\_\_\_\_

6、Summary :

Sales signature : \_\_\_\_\_

Customer Signature : \_\_\_\_\_

Date : \_\_\_\_ / \_\_\_\_ / \_\_\_\_