



**WINSTAR Display Co.,Ltd.**  
**華凌光電股份有限公司**



# Winstar Display Co., LTD

## 華凌光電股份有限公司



WEB: <https://www.winstar.com.tw> E-mail: sales@winstar.com.tw

### SPECIFICATION

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

**MODULE NO.:** WF0340ATYAB7MNNO#

<p style="text-align: center;"><b>APPROVED BY:</b></p> <p>( 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
			葉虹蘭
<b>ISSUED DATE: 2023/06/05</b>			

Precaution in use of TFT module: <https://www.winstar.com.tw/technology/download/declaration.html>

MODLE NO :

RECORDS OF REVISION			DOC. FIRST ISSUE
VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2023/06/05		First issue

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# 1.Module Classification Information

W F 0340 A T Y A B7 M N N 0 #  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

①	Brand : WINSTAR DISPLAY CORPORATION											
②	Display Type : F→TFT Type, J→Custom TFT											
③	Display Size : 3.4" TFT											
④	Model serials no.											
⑤	Backlight Type :	F→CCFL, White S→LED, High Light White					T→LED, White Z→Nichia LED, White					
⑥	LCD Polarize Type/ Temperature range/ Gray Scale Inversion Direction	A→Transmissive, N.T, IPS TFT C→Transmissive, N. T, 6:00 ; F→Transmissive, N.T,12:00 ; I→Transmissive, W. T, 6:00 K→Transflective, W.T,12:00 L→Transmissive, W.T,12:00 N→Transmissive, Super W.T, 6:00					Q→Transmissive, Super W.T, 12:00 R→Transmissive, Super W.T, O-TFT V→Transmissive, Super W.T, VA TFT W→Transmissive, Super W.T, IPS TFT X→Transmissive, W.T, VA TFT Y→Transmissive, W.T, IPS TFT Z→Transmissive, W.T, O-TFT					
⑦	A : TFT LCD B : TFT+SCREW HOLES+CONTROL BOARD C : TFT+ SCREW HOLES +A/D BOARD D : TFT+ SCREW HOLES +A/D BOARD+CONTROL BOARD E : TFT+ SCREW HOLES +POWER BOARD					F : TFT+CONTROL BOARD G : TFT+ SCREW HOLES H : TFT+D/V BOARD I : TFT+ SCREW HOLES +D/V BOARD J : TFT+POWER BD						
⑧	Resolution:											
	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	N	128128	P	1280800	Q	480800	R	640320	S	480128
	T	800320	U	8001280	V	176220	W	1280398	X	1024250	Y	1920720
	Z	800200	B7	800800								
⑨	D: Digital L : LVDS M:MIPI											
⑩	Interface:											
	N	Without control board			A	8Bit		B	16Bit		H	HDMI
	I	I2C Interface			R	RS232		S	SPI Interface		U	USB
⑪	TS:											
	N	Without TS			T	Resistive touch panel			C	Capacitive touch panel (G-F-F)		
	G	Capacitive touch panel (G-G)					C1	Capacitive touch panel (G-F-F)+OCA				
	C2	Capacitive touch panel (G-F-F)+OCR					G1	Capacitive touch panel (G-G)+OCA				
	G2	Capacitive touch panel (G-G)+OCR					B	CTP+GG+USB				
⑫	Version: X:Raspberry pi											
⑬	Special Code	#:Fit in with ROHS directive regulations										

## **2.General Specifications**

<b>Item</b>	<b>Dimension</b>	<b>Unit</b>
Size	3.4	inch
Dot Matrix	800 x RGB x 800 (TFT)	dots
Module dimension	94.9 (W) x 96.95 (H) x 2.22 (D)	mm
Active area	87.6 x 87.6	mm
Pixel pitch	0.1095 x 0.1095	mm
LCD type	TFT, Normally black, Transmissive	
Viewing Angle	85/85/85/85	
IC	ILI9881C or equivalent	
TFT Interface	4-Lanes MIPI	
Backlight Type	LED, Normally White	
With /Without TP	Without TP	
Surface	Anti-Glare	

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

### 3. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-20	—	+70	°C
Storage Temperature	TST	-30	—	+80	°C
Power Supply voltage 1	VCI~GND	-0.3	—	+3.6	V
Power Supply voltage 2	IOVCC~GND	-0.3	—	+3.3	V
Logic Input Voltage Range	VIN	-0.3	—	IOVCC+0.3	V
Logic Output Voltage Range	VO	-0.3	—	IOVCC+0.3	V

\*The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

# 4. Electrical Characteristics

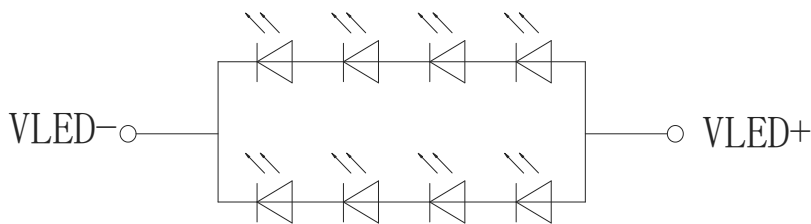
## 4.1. Operating conditions:

Item	Symbol	Min	Typ	Max	Unit
Supply voltage for analog circuit	VCI	2.5	3.3	3.6	V
Supply voltage for logic circuit	IOVCC	1.65	1.8	3.3	V
Current for VCI	I-vci	-	20	30	mA
Current for IOVCC	I-iovcc	-	20	30	mA
Input voltage "H" level	VIH	0.7*IOVCC	—	IOVCC	V
Input voltage "L" level	VIL	GND	—	0.3*IOVCC	V
Output voltage "H" level	VOH	0.8*IOVCCI	—	IOVCC	V
Output voltage "L" level	VOL	GND	—	0.2*IOVCC	V

## 4.2. LED driving conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
LED current	I <sub>LED</sub>	—	40	—	mA	
LED voltage	V <sub>LED</sub>	22.0	24.0	26.4	V	Note 1
LED Life Time		—	30000	—	Hr	Note 2,3,4

Note 1 : There are 1 Groups LED



Note 2 : Ta = 25 °C

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

Note 4 : The single LED lamp case



# 5. Timing characteristics

## 5.1. High Speed Mode-Clock Channel Timing

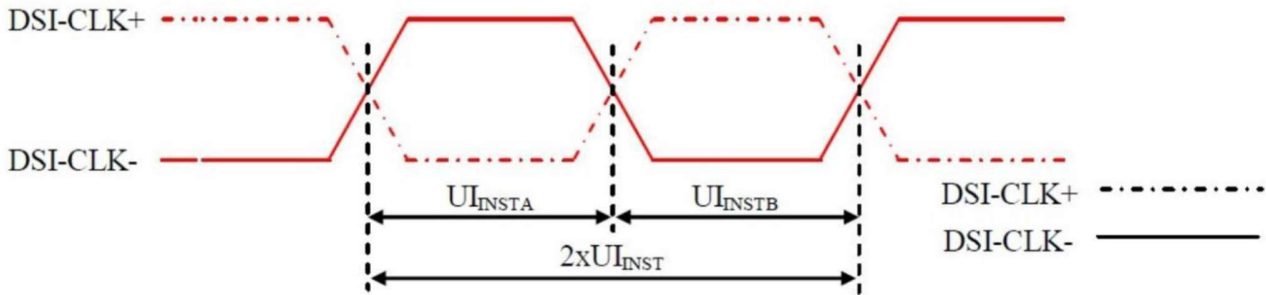


Figure 1 DSI Clock Channel Timing

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.  $UI = UI_{INSTA} = UI_{INSTB}$
2. Define the minimum value of 24 UI per Pixel, see Table 39.

Table 39: Limited Clock Channel Speed

Data type	Two Lanes speed	Three Lanes speed	Four Lanes speed
Data Type = 00 1110 (0Eh), RGB 565, 16 UI per Pixel	566 Mbps	433 Mbps	366 Mbps
Data Type = 01 1110 (1Eh), RGB 666, 18 UI per Pixel	637 Mbps	487 Mbps	412 Mbps
Data Type = 10 1110 (2Eh), RGB 666 Loosely, 24 UI per Pixel	850 Mbps	650 Mbps	550 Mbps
Data Type = 11 1110 (3Eh), RGB 888, 24 UI per Pixel	850 Mbps	650 Mbps	550 Mbps

## 5.2. High Speed Mode-Data Clock Channel Timing

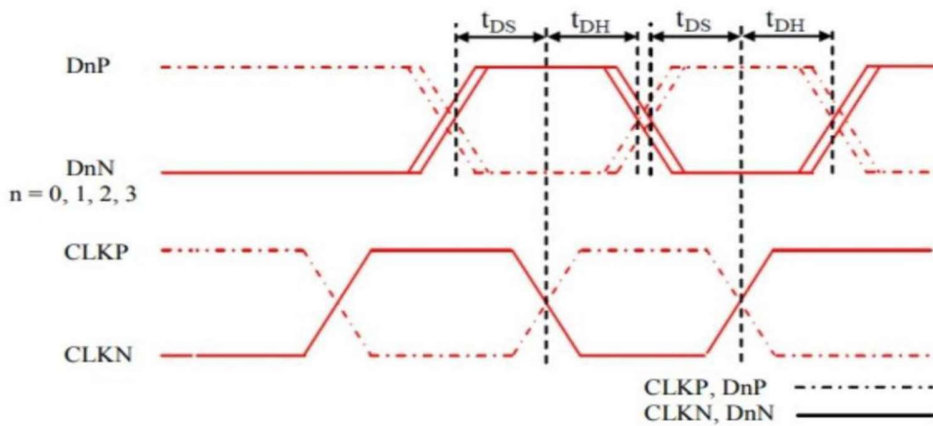


Figure 2 Data to Clock Channel Timing

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	-

### 5.3. High Speed Mode-Rising and Falling Timings

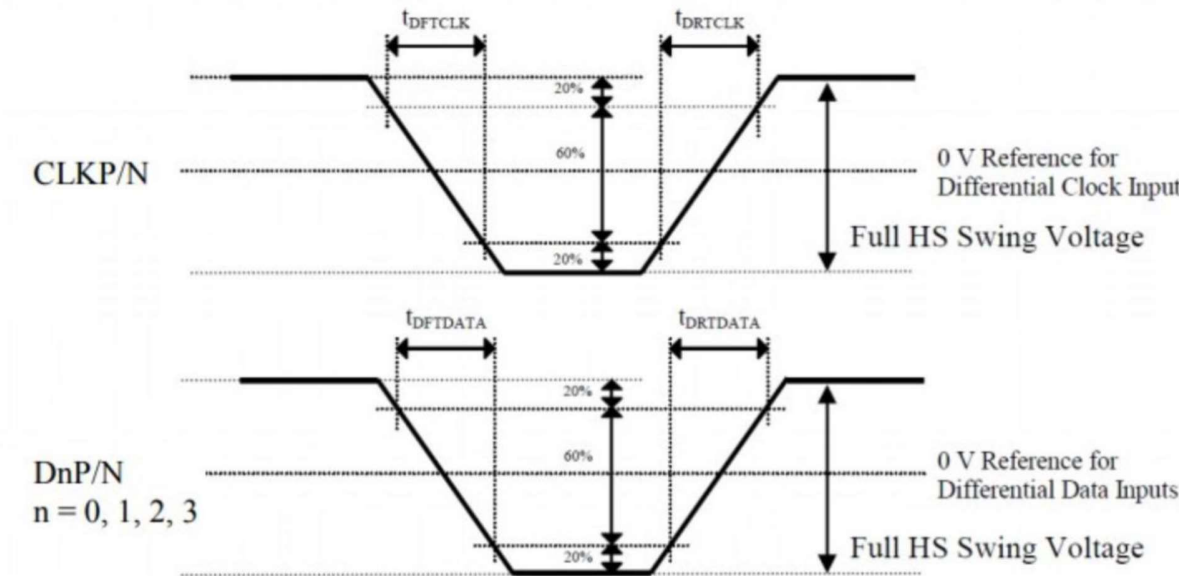
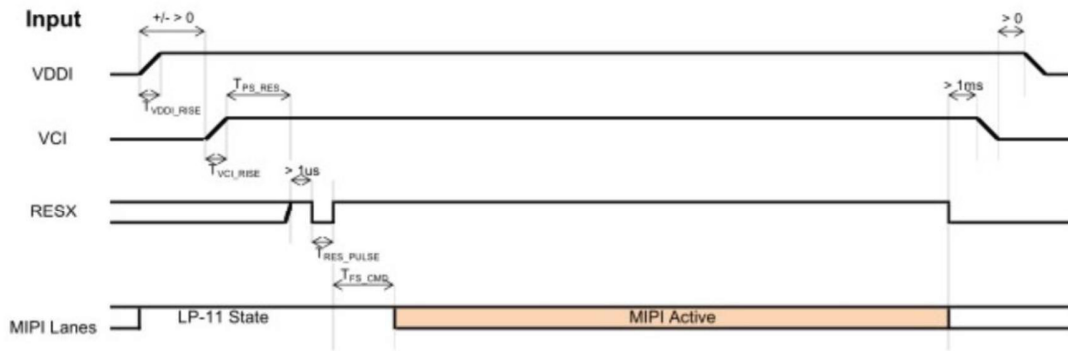


Figure 3 Rising and Falling Timings on Clock and Data channels

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.

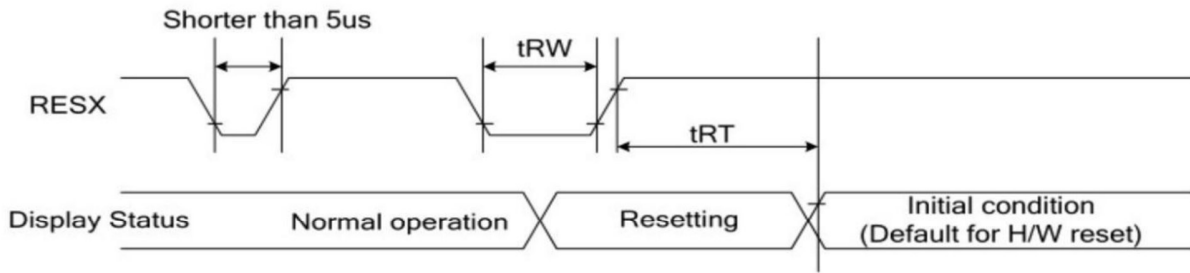
### 5.4. VCI VDDI(IOVCC) Input power sequence



Symbol	Characteristics	Min.	Typ.	Max.	Units
$T_{VDDI\_RISE}$	VDDI Rise time	200	-	-	us
$T_{VCI\_RISE}$	VCI Rise time	200	-	-	us
$T_{PS\_RES}$	VDDI/VCI on to Reset high	5	-	-	ms
$T_{RES\_PULSE}$	Reset low pulse time	10	-	-	us
$T_{FS\_CMD}$	Reset to first command	10	-	-	ms

Figure 4 VCI/VDDI(IOVCC) input power on/of sequence

# 6.Reset Timing



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

Notes:

- The reset cancel also includes required time for loading ID bytes, VCOM setting and other settings from EEPROM (or similar device) to registers. This loading is done every time when there is HW reset cancel time (tRT) within 10 ms after a rising edge of RESX(RESET).
- Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below :

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 9us	Reset
Between 5us and 9us	Reset starts

- During the Resetting period, the display will be blanked(The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts at Sleep-Out status. The display remains the blank state in Sleep-In mode). Then return to Default condition for Hardware Reset
- Spike Rejection also applies during a valid reset pulse as shown below :
- When Reset applied during Sleep-In Mode.
- When Reset applied during Sleep-Out Mode
- It is necessary to wait 10ms after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120 ms.

# 7. Optical Characteristics

Item	Symbol	Condition.	Min	Typ.	Max.	Unit	Remark	
Response time	Tr+Tf	$\theta=0^\circ$ 、 $\Phi=0^\circ$	-	30	35	.ms	Note 3	
Contrast ratio	CR	At optimized viewing angle	1000	1200	-	-	Note 4	
Color Chromaticity	White	Wx	$\theta=0^\circ$ 、 $\Phi=0$	0.232	0.282	0.332	Note 2,6,7	
		Wy		0.259	0.309	0.359		
Viewing angle	Hor.	$\Theta_R$	$CR \geq 10$	-	85	-	Deg.	Note 1
		$\Theta_L$		-	85	-		
	Ver.	$\Phi_T$		-	85	-		
		$\Phi_B$		-	85	-		
Brightness	-	-	250	300	-	cd/m <sup>2</sup>	Center of display	
Uniformity	(U)	-	70	-	-	%	Note 5	

Ta=25±2°C

Note 1: Definition of viewing angle range

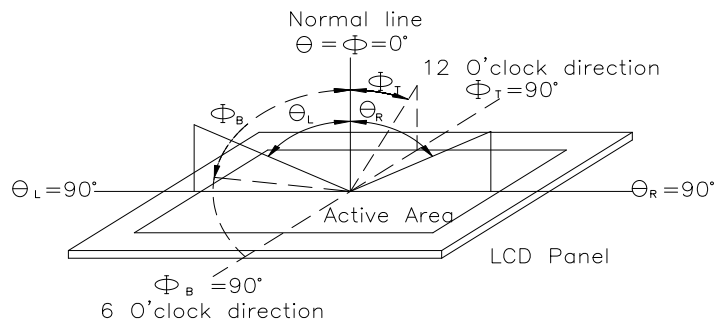


Fig.7.1. Definition of viewing angle

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 or BM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

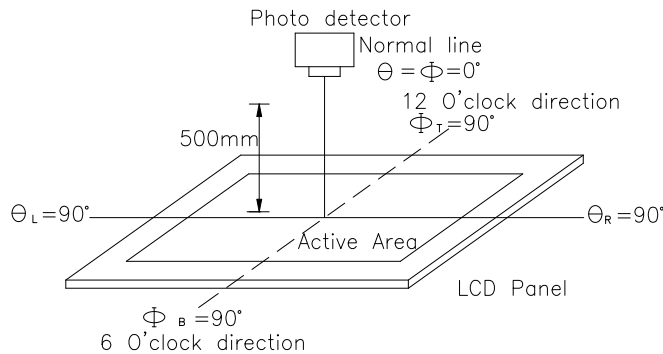
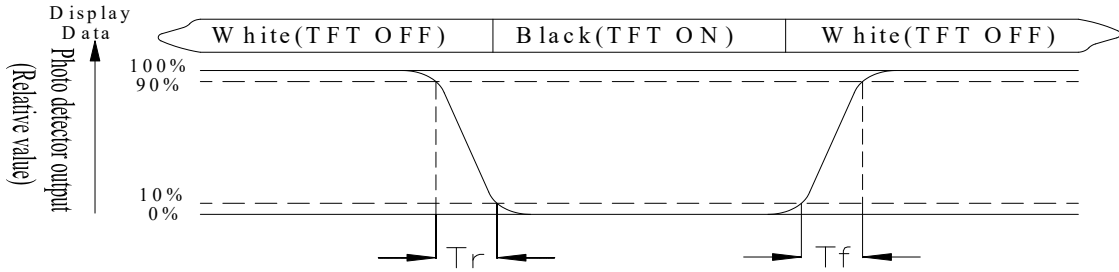


Fig. 7.2. Optical measurement system setup

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%



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 Luminance Uniformity

Active area is divided into 5 measuring areas (reference the picture in below). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity (U) =  $L_{\min}/L_{\max} \times 100\%$

L = Active area length

W = Active area width

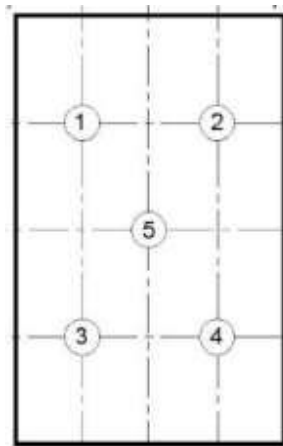


Fig7.3. Definition of uniformity

Note 6: Definition of color chromaticity (CIE 1931)

Color coordinates measured at the center point of LCD

Note 7: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

# 8.Interface

## 8.1. LCM PIN Definition

Pin	Symbol	Function	Remark
1	VLED+	VLED backlight anode.	
2	VLED-	VLED backlight cathode.	
3	VLED-	VLED backlight cathode.	
4	VCI	Power supply for the analog power	
5	IOVCC	Power supply for the logic power and I/O circuit (IOVCC = VDDI)	
6	RESET	Reset signal(low active) (RESET=RESX)	
7	TE	Tearing effect output	
8	NC	No connection	
9	GND	Power ground	
10	D0P	MIPI-DSI data lane 0 positive input pin.	
11	D0N	MIPI-DSI data lane 0 negative input pin	
12	GND	Power ground	
13	D1P	MIPI-DSI data lane 1 positive input pin.	
14	D1N	MIPI-DSI data lane 1 negative input pin.	
15	GND	Power ground	
16	CLKP	MIPI-DSI data lane positive input pin.	
17	CLKN	MIPI-DSI data lane negative input pin.	
18	GND	Power ground	
19	D2P	MIPI-DSI data lane 2 positive input pin.	
20	D2N	MIPI-DSI data lane 2 negative input pin	
21	GND	Power ground	
22	D3P	MIPI-DSI data lane 3 positive input pin.	
23	D3N	MIPI-DSI data lane 3 negative input pin	
24	GND	Power ground	
25-30	NC	No connection	

# 9. 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 48hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C 48hrs	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 48hrs	—
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20°C 48hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60°C,90%RH max	60°C,90%RH 48hrs	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;">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 : 1.5mm 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 finished product housing.	VS=±6KV(contact), ±8KV(air), RS=330Ω CS=150pF 10 times	4

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: The packing have to including into the vibration testing.





# 11. Inspection Specification

This specification is made to be used as the standard acceptance/rejection criteria for Normal LCM Product.

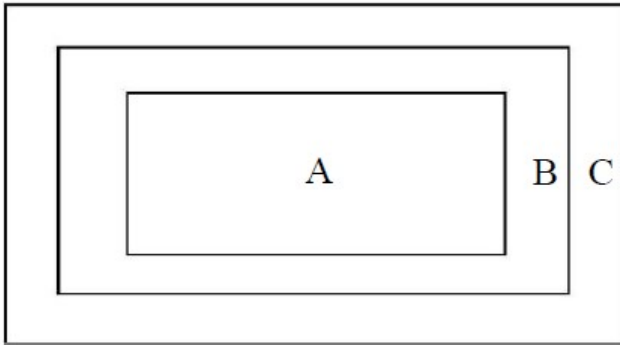
## 11.1. Sample plan

Sampling plan according to GB/T2828.1-2003/ISO 2859-1 : 1999 and ANSI/ASQC Z1.4-1993, normal level 2 and based on:  
 Major defect: AQL 0.65  
 Minor defect: AQL 1.0

## 11.2. Inspection condition

Viewing distance for cosmetic inspection is about 30cm with bare eyes, and under an environment of 20~40W light intensity, all directions for inspecting the sample should be within 45° against perpendicular line. (Normal temperature 20~25°C and normal humidity 60±15%RH).

## 11.3. Definition of inspection zone in LCD.



Zone A: character/Digit area

Zone B: viewing area except Zone A (Zone A + Zone B=minimum Viewing area)

Zone C: Outside viewing area (invisible area after assembly in customer's product)

Fig.1 Inspection zones in an LCD.

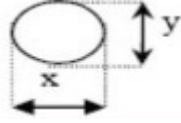
Note: As a general rule, visual defects in Zone C are permissible, when it is no trouble for quality and assembly of customer's product.

## 11.4. Standards of inspection items

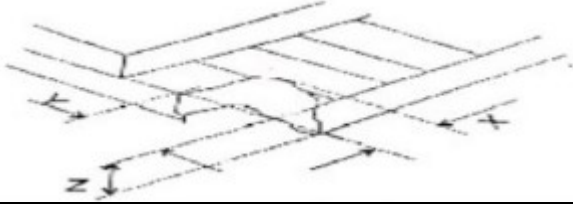
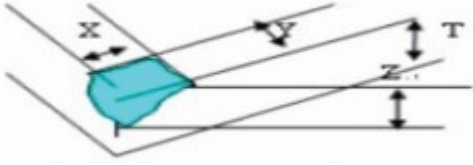
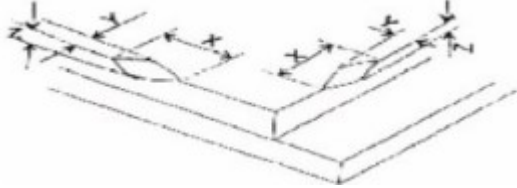
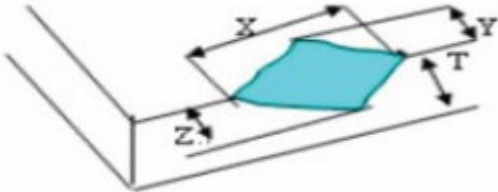
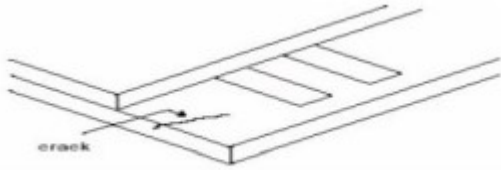
### 1 Major Defect

Item No	Items to be inspected	Inspection Standard	Classification of defects
1.1	All functional defects	1.No display	Major
		2.Display abnormally	
		3.Missing vertical · horizontal segment	
		4.Short circuit	
		5. Back-light no lighting, flickering and abnormal lighting	
1.2	Missing	Missing component	
1.3	Outline dimension	Overall outline dimension beyond the drawing is not allowed.	
1.4	linearity	No more than 1.5%	

## 2 Cosmetic Defect

Item No	Items to be inspected	Inspection Standard	Classification of defects			
2.1	Clear Spots Black and white Spot defect Pinhole, Foreign Particle, Polarizer Dirt	For dark/white spot, size $\Phi$ is defined as $\Phi = (x + y)/2$ 	Minor			
		1				
		Zone		Acceptable Qty		
		Size(mm)		A	B	C
		$\Phi \leq 0.15$		Ignore		Ignore
		$0.15 < \Phi \leq 0.20$		2		
		$0.20 < \Phi \leq 0.30$		1		
	$\Phi > 0.30$	0				
	Clear Spots TP Dirt	2				
		Zone	Acceptable Qty			
		Size(mm)	A	B	C	
		$\Phi \leq 0.15$	Ignore		Ignore	
		$0.15 < \Phi \leq 0.20$	2			
		$0.20 < \Phi \leq 0.30$	1			
	$\Phi > 0.30$	0				
	Dim Spots Circle shaped and dim edged defects	3				
		Zone	Acceptable Qty			
		Size(mm)	A	B	C	
		$\Phi \leq 0.2$	Ignore		Ignore	
$0.20 < \Phi \leq 0.40$		2				
$0.40 < \Phi \leq 0.60$		1				
$\Phi > 0.60$	0					

Item No	Items to be inspected	Inspection Standard					Classification of defects
2.2	Line Defect Black line, White line, Foreign Material On polarizer	Size(mm)		Acceptable Qty			Minor
		L(Length)	W(Width)	Zone			
				A	B	C	
		Ignore	$W \leq 0.05$	Ignore		Ignore	
		$L \leq 5.0$	$0.05 < W \leq 0.08$	2			
		$W > 0.08$	0				
	Foreign Material On TP film	The line can be seen after mobile phone in the operating condition:					Minor
		Size(mm)		Acceptable Qty			
		L(Length)	W(Width)	Zone			
				A	B	C	
Ignore		$W \leq 0.05$	Ignore		Ignore		
$L \leq 5.0$		$0.05 < W \leq 0.08$	3				
	$W > 0.08$	0					
2.3	Dim line Defect Polarizer scratch TP film scratch	If the scratch can be seen after mobile phone cover assembling or in the operating condition, judge by the line defect of 2.2. If the scratch can be seen only in non-operating condition or some special Dim line angle, judge by the following.					Minor
		Size(mm)		Acceptable Qty			
		L(Length)	W(Width)	Zone			
				A	B	C	
		Ignore	$W \leq 0.03$	Ignore		Ignore	
		$5.0 < L \leq 10.0$	$0.03 < W \leq 0.05$	2			
		$L \leq 5.0$	$0.05 < W \leq 0.08$	1			
	$W > 0.08$	0					
2.4	Polarize Air bubble	Air bubbles between glass & polarizer					Minor
		Size(mm)	Zone	Acceptable Qty			
				A	B	C	
		$\Phi \leq 0.20$		Ignore		Ignore	
		$0.20 < \Phi \leq 0.3$		2			
$\Phi > 0.30$		0					

Item No	Items to be inspected	Inspection Standard	Classification of defects						
2.5	Glass defect	(i) Chips on corner A:LCD Glass defect 	Minor						
		<table border="1"> <tr> <td>X(mm)</td> <td>Y(mm)</td> <td>Z(mm)</td> </tr> <tr> <td>≤3.0</td> <td>≤3.0</td> <td>Disregard</td> </tr> </table>		X(mm)	Y(mm)	Z(mm)	≤3.0	≤3.0	Disregard
		X(mm)		Y(mm)	Z(mm)				
		≤3.0		≤3.0	Disregard				
		Notes: S=contact pad length Chips on the corner of terminal shall not be allowed to extend into the ITO pad or expose perimeter seal. B:TP Glass defect 							
		<table border="1"> <tr> <td>X(mm)</td> <td>Y(mm)</td> <td>Z(mm)</td> </tr> <tr> <td>≤3.0</td> <td>≤3.0</td> <td>Disregard</td> </tr> </table>		X(mm)	Y(mm)	Z(mm)	≤3.0	≤3.0	Disregard
		X(mm)		Y(mm)	Z(mm)				
		≤3.0		≤3.0	Disregard				
		(ii) Usual surface cracks Glass A:LCD Glass defect 							
		<table border="1"> <tr> <td>X(mm)</td> <td>Y(mm)</td> <td>Z(mm)</td> </tr> <tr> <td>≤3.0</td> <td>&lt;Inner border line of the seal</td> <td>Disregard</td> </tr> </table>		X(mm)	Y(mm)	Z(mm)	≤3.0	<Inner border line of the seal	Disregard
		X(mm)		Y(mm)	Z(mm)				
		≤3.0		<Inner border line of the seal	Disregard				
B:TP Glass defect 									
<table border="1"> <tr> <td>X(mm)</td> <td>Y(mm)</td> <td>Z(mm)</td> </tr> <tr> <td>≤6.0</td> <td>&lt;2.0</td> <td>Disregard</td> </tr> </table>	X(mm)	Y(mm)	Z(mm)	≤6.0	<2.0	Disregard			
X(mm)	Y(mm)	Z(mm)							
≤6.0	<2.0	Disregard							
(iii) Crack Cracks tend to break are not allowed. 									

2.6 Product operating temperature	Min 25°C	Max55°C	Ta=25°C 60±10%RH Forward voltage= 24V/ 40mA
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winstar

## LCM Sample Estimate Feedback Sheet

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

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### 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  Pass  NG , \_\_\_\_\_
7. Storage Temperature :  Pass  NG , \_\_\_\_\_
8. Others : \_\_\_\_\_

### 2、Mechanical

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  Pass  NG , \_\_\_\_\_  
PCB :
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  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 <<



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

Page: 2

**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 :        /        /        \_\_\_\_\_