晶 發 科 技 股 份 有 限 公 司
GI FAR TECHNOLOGY CO.,LTD
No. 81, Dongfeng St, Shulin District, 23874, New Taipei City, Taiwan, R.O.C.

SPECIFICATIONS

CUSTOMER : _____

MODEL NO. : GFTRU070JB800480-JD7

VERSION : 0.1

DATE : 2017.04.13

CERTIFICATION : ROHS

CUSTOMER SIGN : _____

QA Approved By	Approved By	Prepared By	Prepared By

晶 發 科 技 股 份 有 限 公 司
GI FAR TECHNOLOGY CO.,LTD

新北市樹林區東豐街 81 號
No. 81, Dongfeng St, Shulin District, 23874, New Taipei City, Taiwan, R.O.C.
TEL: +886-2-8684-1188 FAX: +886-2-8684-8532

Revision Record

Revision Date	Ver.	Description	Note	page
2017.04.13	0.1	Preliminary Specification		

CONTENTS

1. Description

The specifications is a transmissive type color active matrix liquid crystal display (LCD) which uses amorphous thin film transistor (TFT) as switching devices. This product is composed of a TFT LCD panel, driver IC and a FPC unit. The following table described the features of JD7.

2. PRODUCT SPECIFICATIONS

Item	Standard Value	Unit
Resolution	800 x 3(RGB) x 480 Dots	
LCD Type	a-Si TFT, Normally White, Transmissive	
Screen Size(inch)	7.0	inch
Viewing Direction	6 O'clock	-
Color Configuration	RGB-Strip	-
Pixel Pitch	0.0642(H) x 0.1790(V)	mm
Active Area	154.08(H) x 85.92(V)	mm
LCM Outline Dimension	164.9(H) x 100.0(V) x 5.7(D)	mm
PCB Outline Dimension	138.5(H) x 62.0(V) x 1.0(D)	mm
Black Light	LED	
Interface	USB, RS232	

Note 1: Refer to Mechanical Drawing.

3. Features

3.1 Features

- Color Depth : 16M Colors
- Supporting Interface :
  - USB
  - RS232
- Available in standard ASCII characters, font sizes from 8x8 to 36x49.
- Provide instructions for points, lines, circles, rectangles.

3.2 Electrical Absolute Rating

3.2.1 Absolute Maximum Ratings

Characteristic	Symbol	Value	Unit
Operating Voltage (logic)	V_{DD}	-0.3 to +5.5	V
Logic Signal Input Level	V_i	0.3 to V_{DD}+0.3	V
Storage Temperature	T_{ST}	-30 to 80	℃
Operating Temperature	T_{OP}	-20 to 70	℃

Note 1: Referenced to V_{SS}=0V

3.2.2 Back-Light Unit

Item	Symbol	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	8.7	9.3	9.9	V
Forward Current	I_F	170	180	200	mA

3.2.3 Optical Specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	
Response Time	Rise	T_R	Ta =25℃ θ x, θ y = 0°	-	10	20	ms	Note2
	Fall	T_F		-	15	30		
Viewing Angle	Top	θ Y+	CR ≧ 10	40	50	-	Deg.	Note4
	Bottom	θ Y-		60	70	-		
	Left	θ X+		60	70	-		
	Right	θ X-		60	70	-		
Contrast Rate		CR		400	500	-	-	Note3
Color of CIE Coordinate	White	X	Ta =25℃ θ x, θ y = 0°		0.31		-	NoteA
		Y			0.33			
Brightness		IV	I_F = 20mA	200	250		cd/m^2	
Uniformity		△B	I_F = 20mA	70			%	

Note A:

*1: △B=B(min)/(max)

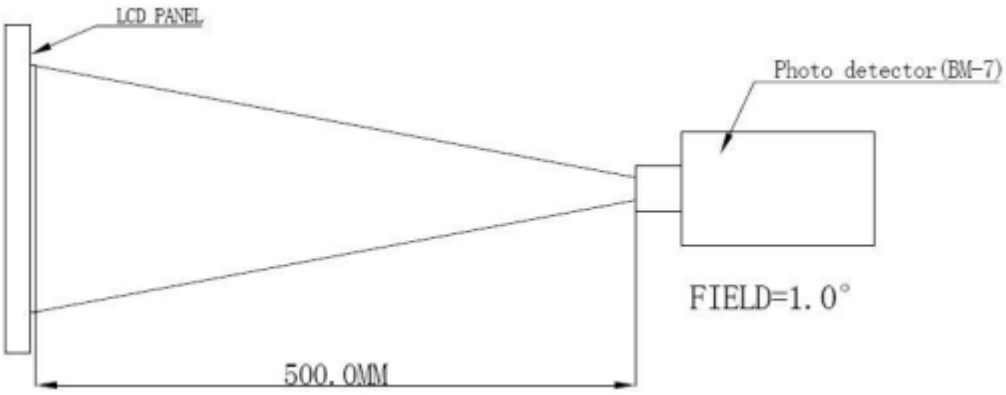
*2: Measurement Condition for Optical Characteristics:

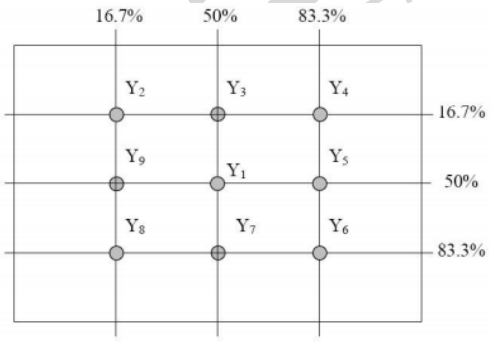
a: Environment 25℃±5℃ /60±20R.H, no wind, dark room below 10 Lux at typical lamp current and typical operating frequency.

b: Measurement Distance 500±50mm (θ =0°)

c: Equipment: TOPCON BM-7 fast, (field 1°), after 10 minutes operation.

d: The uncertainty of the C.I.E coordinate measurement ±0.01 , Average Brightness ±4





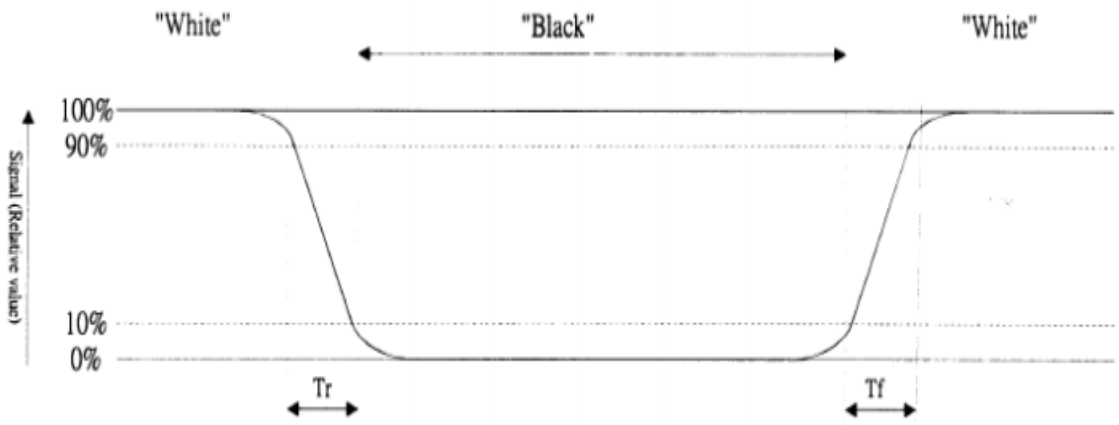
$$\text{Luminance Uniformity} = \frac{\text{(Min Luminance of 9 points)}}{\text{(Max Luminance of 9 points)}}$$

Note1: To be measured at the center area of panel with a viewing cone of 1◦ by Topcon luminance meter BM-7, after 10 minutes operation (module)

Note2: Definition of Response time:

The output signals of photo detector are measured when the input signals are changed from “black” to “white” (falling time) and from “white” to “black” (rising time). respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:



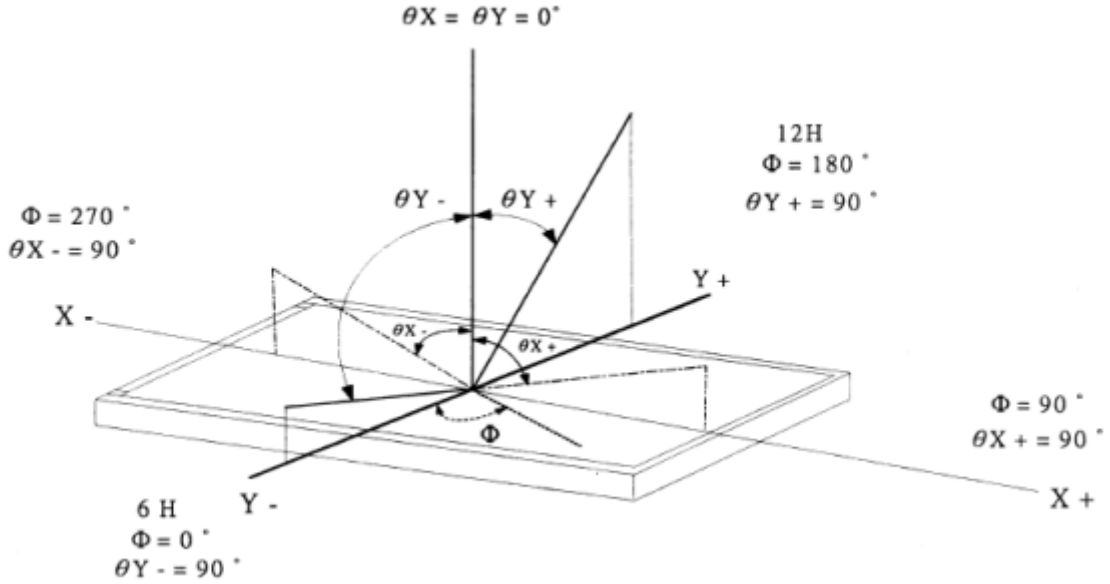
Note3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula

$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at “White” state}}{\text{Photo detector output when LCD is at “Black” state}}$$

Note4: Definition of viewing angle:

Refer to figure as below:



4. Pin Assignment

4.1 RS232 (CON 3)

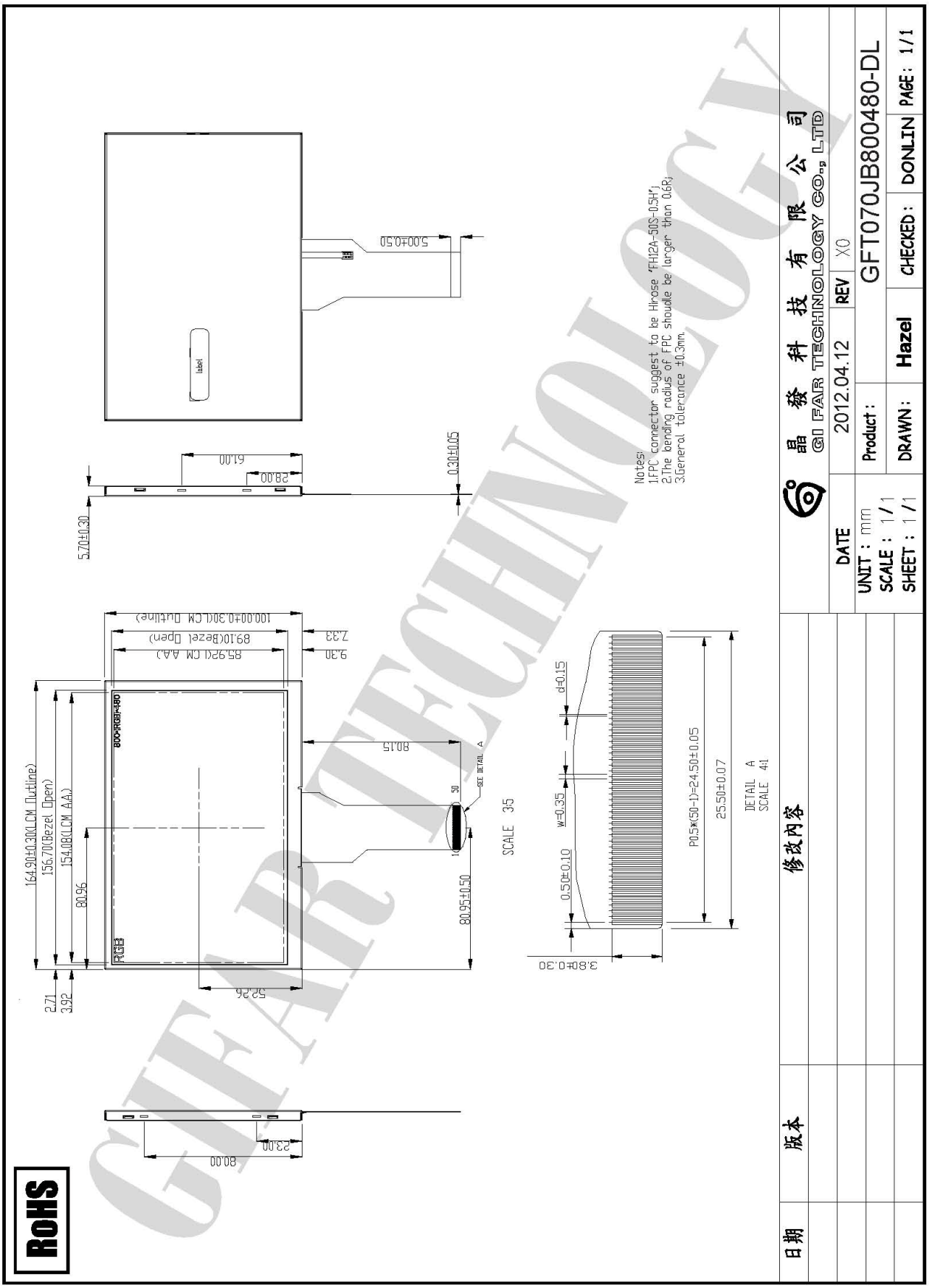
Pin No.	Symbol	I/O	Function	Remark
1	V_{DD}	P	DC 5V	
2	RX	O	Transmit Data	LCM to PC
3	TX	I	Receiver Data	PC to LCM
4	GND	P	Ground	

4.2 USB (CON 4)

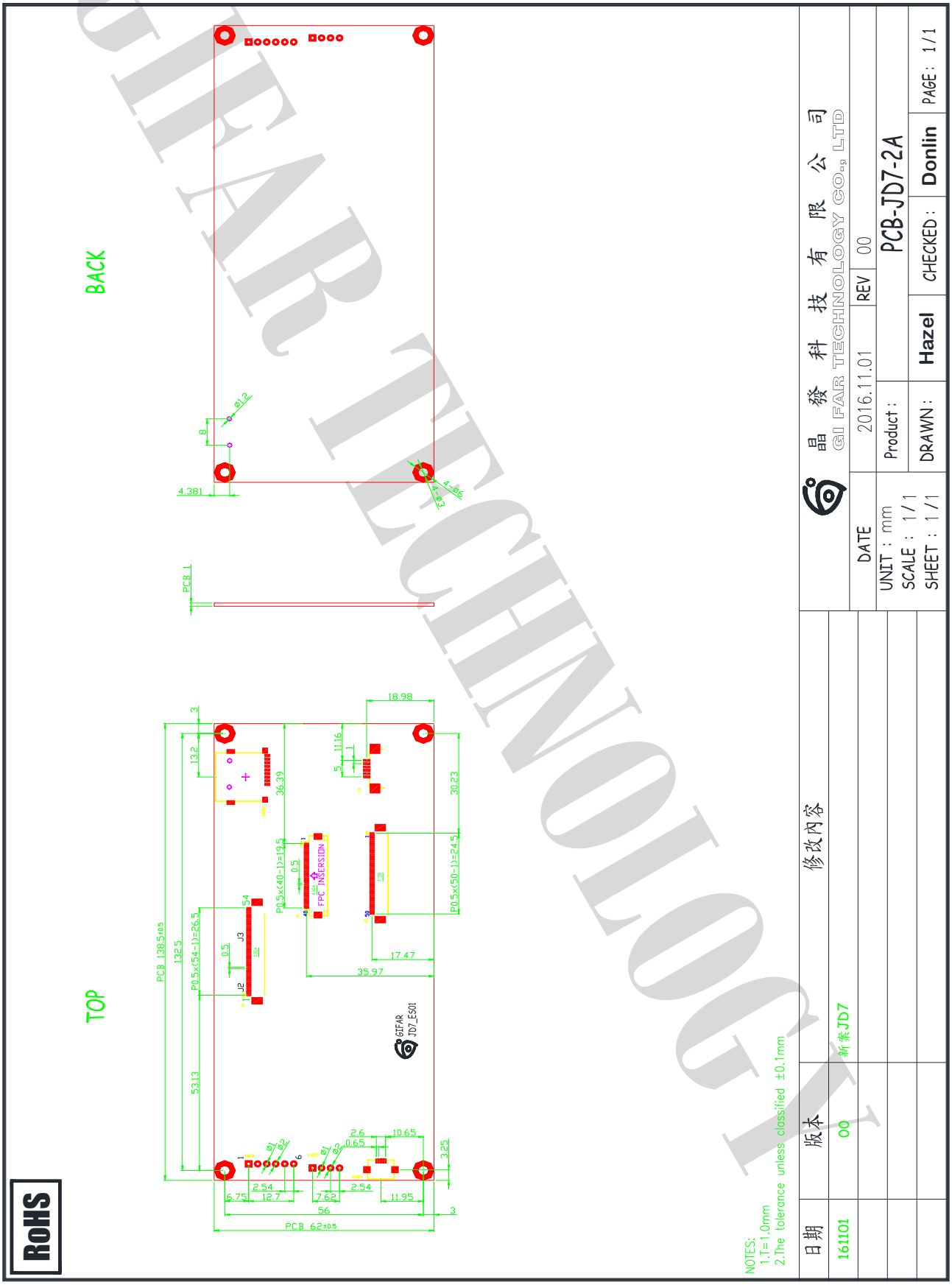
Pin No.	Symbol	I/O	Function	Remark
1	V_{DD}	P	DC 5V	
2	D-	I/O	USB Port D- Signal	
3	D+	I/O	USB Port D+ Signal	
4	NC	--	No Connection	
5	GND	P	Ground	

5. Mechanical Drawing

5.1 LCM



5.2 PCB



6. RELIABILITY

NO.	ITEM	CONDITION		STANDARD	NOTE
1	High Temp. Storage	80℃	120 hrs	Appearance Without defect	
2	Low Temp. Storage	-30℃	120 hrs	Appearance Without defect	
3	High Temp. & High Humi. Storage	60℃ 90% RH	120 hrs	Appearance Without defect	
4	High Temp. Operating Display	70℃	120 hrs	Appearance Without defect	
5	Low Temp. Operating Display	-20℃	120 hrs	Appearance Without defect	
6	Thermal Shock	-30℃, 30min. → 80℃,30min. (1cycle)		Appearance Without defect	10 cycles

Note 1: Ta is the ambient temperature of samples.

Note 2: Ts is the temperature of panel's surface.

Note 3: 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 doesn't guarantee all the cosmetic specification.

Note 4: Before cosmetic and function tests, the product must have enough recovery time, at least 2 hours at room temperature.

Note 5: Before cosmetic and function tests, the product must have enough recovery time, at least 24 hours at room temperature.

7. NOTES

▪ Safety

- If the LCD panel breaks, be careful not to get the liquid crystal in your mouth. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and plenty of water.

Handling

- Avoid static electricity as this can damage the CMOS LSI.
- The LCD panel is plate glass; do not hit or crush it.
- Do not remove the panel or frame from the module.
- The polarizing plate of the display is very fragile; handle it very carefully

Mounting and Design

- Mount the module by using the specified mounting part and holes.
- To protect the module from external pressure, leave a small gap by placing transparent plates (e.g. acrylic or glass) on the display surface, frame, and polarizing plate
- Design the system so that no input signal is given unless the power-supply voltage is applied.
- Keep the module dry. Avoid condensation, otherwise the transparent electrodes may break.

Storage

- Store the module in a dark place where the temperature is 25 °C±10 °C and the humidity below 65% RH.
- Do not store the module near organic solvents or corrosive gases.
- Do not crush, shake, or jolt the module (including accessories).

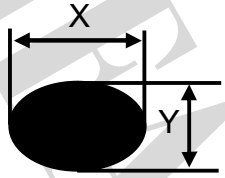
Cleaning

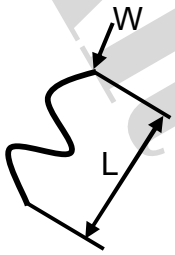
- Do not wipe the polarizing plate with a dry cloth, as it may scratch the surface.
- Wipe the module gently with soft cloth soaked with a petroleum benzine.
- Do not use ketonic solvents (ketone and acetoe) or aromatic solvents (toluene and xylene), as they may damage the polarizing plate.

8. OPERATION PRECAUTIONS

Any changes that need to be made in this specification or any problems arising from it will be dealt with quickly by discussion between both companies.

9. Inspection Standard

<table>
<tr><th>No</th><th>Item</th><th>Criteria</th><th>Rank</th><th>Remark</th></tr>
<tr><td>1</td><td>Spots</td><td>φ = (X + Y)/2
 

<table>
<tr><th>φ (mm)</th><th>Acceptable Qty</th></tr>
<tr><td>φ ≦ 0.25</td><td>Ignore</td></tr>
<tr><td>0.25 < φ ≦ 0.5</td><td>3</td></tr>
<tr><td>φ > 0.5</td><td>0</td></tr>
</table>
Defect distance > 5mm</td><td></td><td>Minor
AQL0.65%</td></tr>
<tr><td>2</td><td>Lines</td><td> 

<table>
<tr><th>L(mm)</th><th>W(mm)</th><th>Acceptable Qty</th></tr>
<tr><td>--</td><td>W ≦ 0.01</td><td>Ignore</td></tr>
<tr><td>L ≦ 3.0</td><td>0.01<W≦ 0.05</td><td>3</td></tr>
<tr><td>L > 3.0</td><td>W > 0.05</td><td>0</td></tr>
</table></td><td></td><td>Minor
AQL0.65%</td></tr>
<tr><td>3</td><td>Bright/Dark Dot</td><td><table>
<tr><th></th><th>Acceptable Qty</th></tr>
<tr><td>Bright Dot</td><td>N ≦ 2</td></tr>
<tr><td>Dark Dot</td><td>N ≦ 3</td></tr>
</table>
Dot defect > 1/2 Dot
Bright Dot : Use 2% ND filter not visible in black pattern.
Dark Dot : Test pattern red、green、blue</td><td></td><td>Minor
AQL0.65%</td></tr>
<tr><td>4</td><td>No Display</td><td>No Signal Outputs In Display</td><td></td><td>Major
AQL0.4%</td></tr>
<tr><td>5</td><td>Line Defect</td><td>Not Allowed Any Vertical / Horizontal / Cross Line</td><td></td><td>Major
AQL0.4%</td></tr>
<tr><td>6</td><td>Mura</td><td>All kinds of Mura should be judged by equivalent limit sample</td><td></td><td>Minor
AQL0.65%</td></tr>
<tr><td>7</td><td>Irregular Display</td><td>Not Allowed Abnormal Signal Outputs In Display</td><td></td><td>Major
AQL0.4%</td></tr>
<tr><td>8</td><td>Outline size</td><td>Out of spec. is not permitted</td><td></td><td>Major
AQL0.4%</td></tr>
</table>