

ASI-T-10101A2MP6/AT

General Information) *	+	Unit	Note
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	4;		
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4# % #	A 7		
% #	A .		

Item		Min.	Typ.	Max.	Unit	Note
Module size	Horizontal(H)	-	143.0	-	mm	-
	Vertical(V)	-	228.6	-	mm	-
	Depth(D)	-	-	3.0	mm	-
Weight		-	TBD	-	g	-

Version	Revise Date	Page	Content	Modified by
V1.0	2016.04.08	-	First Issued.	Cheng

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1. General Description

* **DESCRIPTION**

ASI-T-10101A2MP6/AT is a color active matrix TFT LCD (liquid crystal display) that uses amorphous silicon TFT as a switching device. This model is composed of a Transmissive type TFT-LCD Panel, driver circuit, back-light unit. The resolution of a 10.1" TFT-LCD contains 800*1280 pixels, and can display up to 16.7M colors.

* **Features**

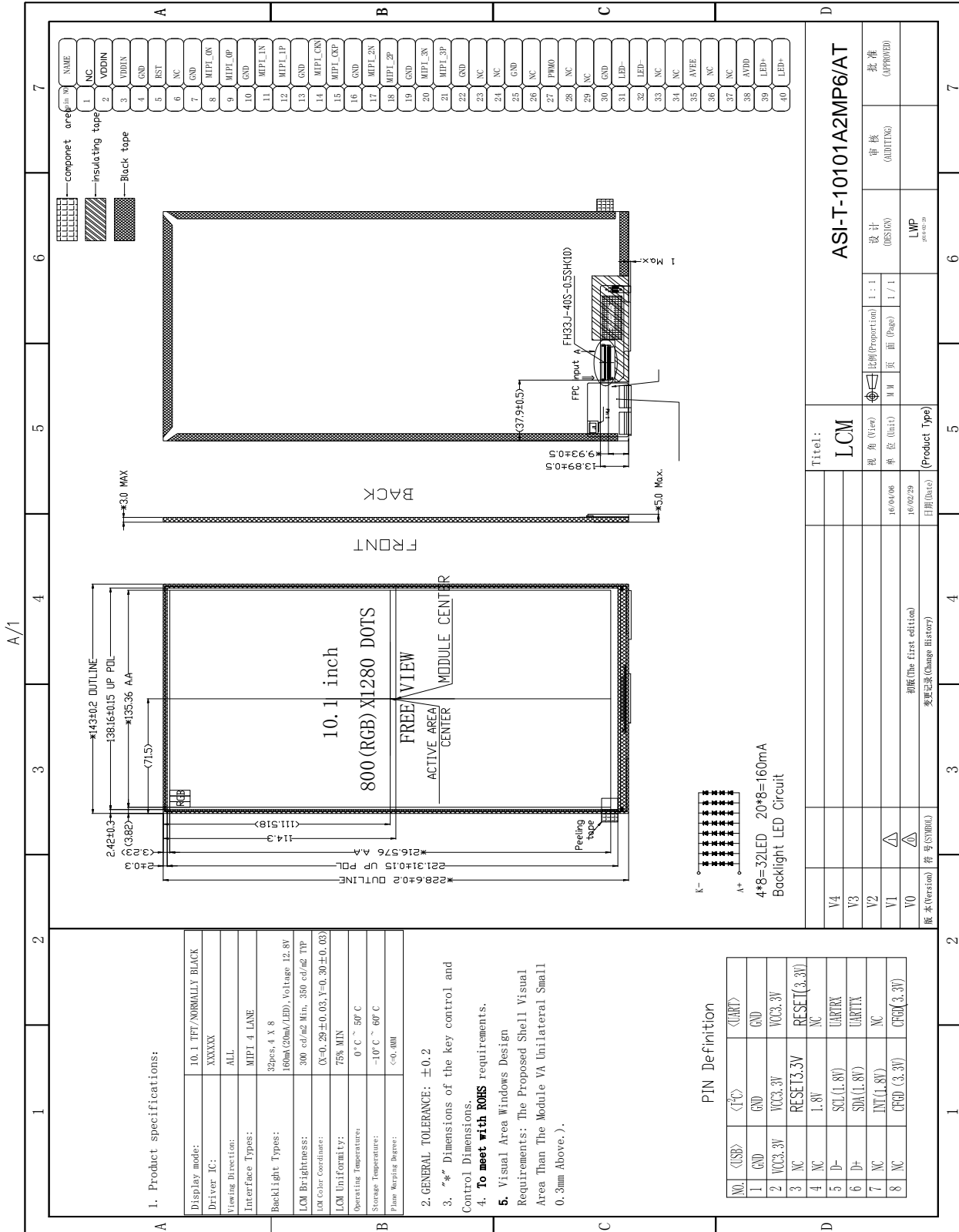
- Low Input Voltage: VDD: 3.3V; IOVCC: 1.8V
- Display Colors of TFT LCD: 16.7M colors
- CPU Interface: MIPI

General Information Items	Specification	Unit	Note
	Main Panel		
Display area(AA)	135.36(H) *216.576(V) (10.1 inch)	mm	-
Driver element	a-Si TFT active matrix	-	-
Display colors	16.7M	colors	-
Number of pixels	800(RGB) *1280	dots	-
Pixel arrangement	RGB vertical stripe	-	-
Pixel pitch	0.1692(H) *0.1692(V)	mm	-
Viewing angle	AHVA	o'clock	-
Drive IC	FOG	-	-
Display mode	Transmissive/ Normally White	-	-
Operating temperature	0~+50	°C	-
Storage temperature	-10~+60	°C	-

Mechanical Information

Item		Min.	Typ.	Max.	Unit	Note
Module size	Horizontal(H)	-	143.0	-	mm	-
	Vertical(V)	-	228.6	-	mm	-
	Depth(D)	-	-	3.0	mm	-
Weight		-	TBD	-	g	-

2. Mechanical Specification



3. PIN DESCRIPTION

Pin NO.	Symbol	Function
1	NC	Not Connect
2	VDDIN	Power supply
3	VDDIN	Power supply
4	GND	Ground
5	RST	Hardware reset pin
6	NC	Not Connect
7	GND	Ground
8	MIPI_0N	MIPI input pins
9	MIPI_0P	MIPI input pins
10	GND	Ground
11	MIPI_1N	MIPI input pins
12	MIPI_1P	MIPI input pins
13	GND	Ground
14	MIPI_CKN	MIPI CKN signal pins
15	MIPI_CKP	MIPI CKP signal pins
16	GND	Ground
17	MIPI_2N	MIPI input pins
18	MIPI_2P	MIPI input pins
19	GND	Ground
20	MIPI_3N	MIPI input pins
21	MIPI_3P	MIPI input pins
22	GND	Ground
23	NC	Not Connect
24	NC	Not Connect
25	GND	Ground
26	NC	Not Connect
27	PWMO	Backlight on/off control pin
28	NC	Not Connect
29	NC	Not Connect
30	GND	Ground
31	LED-	Backlight-
32	LED-	Backlight-
33	NC	Not Connect
34	NC	Not Connect
35	AVEE	External power supply (-4.5V~-6.6V)
36	NC	Not Connect
37	NC	Not Connect
38	AVDD	External power supply (4.5V-6.6V)

39	LED+	Backlight+
40	LED+	Backlight+

4. ELECTRICAL CHARACTERISTICS

4.1 ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Values		Unit	Remark
		Min	Max.		
Supply Voltage for Logic circuit	VDD	3.0	3.6	V	-
Supply Voltage for analog circuit	IOVCC	1.65	3.6	V	-

4.2 DC ELECTRICAL CHARACTERISTICS

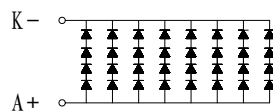
4.2.1 OPERATING CONDITIONS

Typical Operating Conditions (Ta=25°C)

Item	Symbol	Values			Unit	Remark
		Min	Typ	Max.		
Digital Supply Voltage	Vdd	3	3.3	3.6	V	
Analog Supply Voltage	IOVCC	1.65	1.8	3.6	V	
Common Voltage	VCOM	-0.779	-	1.848	V	
TFT Gate ON Voltage	VGH	-	+15	-	V	
TFT Gate OFF Voltage	VGL	-	-13	-	V	

4.2.2 BACKLIGHT UNIT (GND=0V)

Item	Symbol	Values			Unit	Remark
		Min	Typ	Max.		
Forward supply Voltage	V _f	11.5	12	12.8	V	
Forward supply Current	I _f	300	350	-	mA	
LCM Luminance	L _v		270	-	cd/m ²	I _B =160mA
Uniformity	/	80			%	-



4*8=32LED 20*8=160mA
Backlight LED Circuit

4.3 TIMING CHARACTERISTICS

3.2 MIPI Command Specification

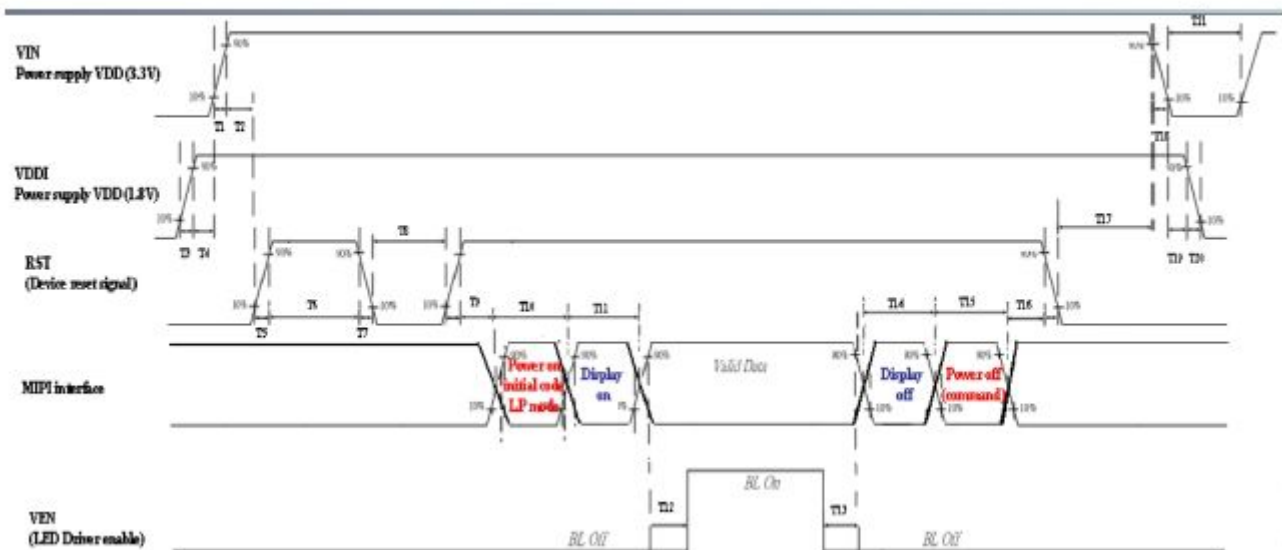
◆ Power On Command

No.	Command	Parameter	Description
1	11		Sleep out
2	29		Display on

◆ Power Off Command

No.	Command	Parameter	Description
1	28		Display off
2	10		Sleep in

3.6 power on/off sequence



3.7 Initial code

Reference 3.2

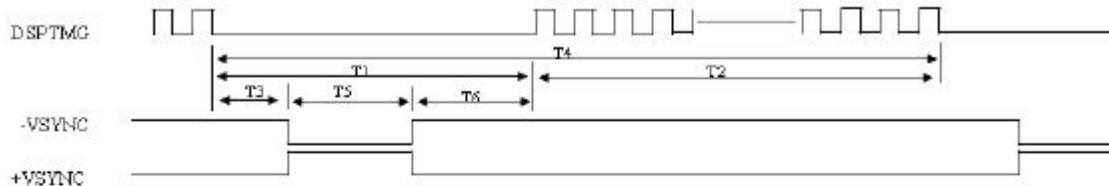
3.8 Timing

Vertical Total	VT (tv)	1300	line
Vertical Front-Porch	VFP (tvp)	8	line
Vertical Active	VA (tvd)	1280	line
Vertical Sync.	VS (twv)	4	line
Vertical Back-Porch	VBP (tvbp)	8	line
Horizontal Total	HT (th)	960	clk(pixel)
Horizontal Front-Porch	HFP (thfp)	24	clk(pixel)
Horizontal Active	HA (thd)	800	clk(pixel)
Horizontal Sync.	HS (thw)	4	clk(pixel)
Horizontal Back-Porch	HBP (thbp)	132	clk(pixel)
Pixel Frequency	CLK (fc)	75.00	MHz

Driving

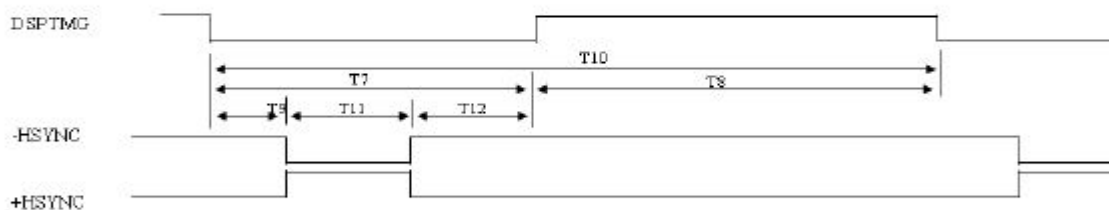
(LVDS Receiver Output)

Vertical Timing



Item	T1 Vertical Blanking	T2 Active Field	T3 VSYNC Front Porch	T4 Frame Time	T5 VSYNC Width	T6 VSYNC Back Porch
Value	20	1280	8	1300	4	8

Horizontal Timing



Item	T7 Horizontal Blanking	T8 Active Field	T9 HSYNC Front Porch	T10 H line Time	T11 HSYNC Width	T12 HSYNC Back Porch
Value	160	800	24	960	4	132

Dot Timing

Item	Dot Clock Frequency	Data Clock Frequency
Value	75MHz	Dot Clock Frequency

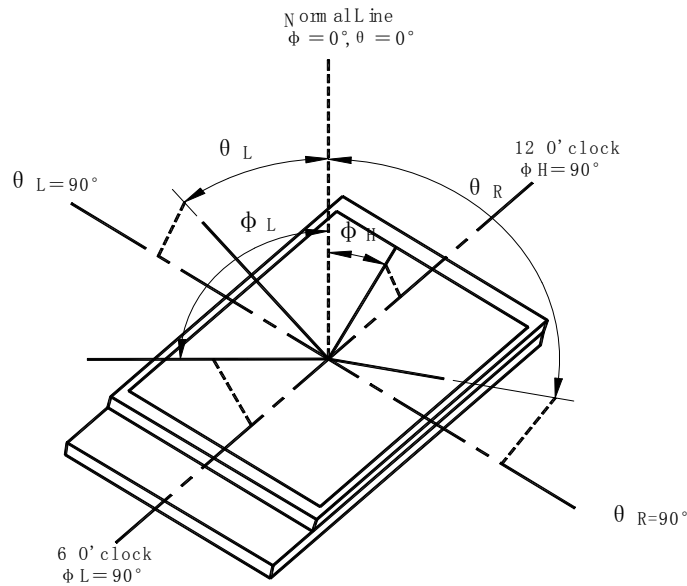
5. OPTICAL CHARACTERISTICS

6. The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state with the methods shown in Note.1.

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle	Horizontal	Θ_R	$CR \geq 10$	80	85	-	degree	Note.2
		Θ_L		80	85	-		
	Vertical	Φ_H		80	85	-		
		Φ_L		80	85	-		
Response Time(T_r+T_f)			$\Theta=0$	-	30	35	ms	Note.3
Brightness			Center	300	350		cd/m ²	
Contrast Ratio		CR	At optimized viewing angle	700	900	-	-	Note.4
Color Gamut(NTSC)		S		-	58	-	%	
Color Chromaticity	White	X_w	Viewing normal angle $\Phi, \Theta=0$	-	0.610	-	-	Note.5
		Y_w		-	0.348	-		
	Red	X_R		-	0.340	-		
		Y_R		-	0.599	-		
	Green	X_G		-	0.152	-		
		Y_G		-	0.085	-		
	Blue	X_B		-	0.300	-		
		Y_B		-	0.320	-		

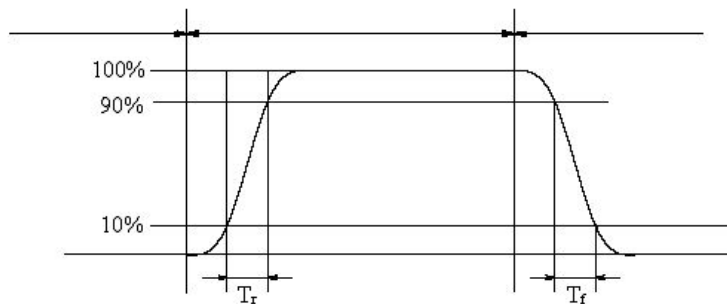
Note.1: After stabilizing and leaving the panel alone at a given temperature for 30 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7(fast) with a viewing angle of 1° at a distance of 50cm and normal direction.

Note.2: Definition of Viewing Angle: Refer to figure as below:



Note.3: Definition of Response Time: TR and TF

The figure below is the output signal of the photo detector.



Note.4: Definition of Contrast Ratio (CR)

$$\text{Contrast ratio (CR)} = (\text{G max}) / (\text{G min})$$

(G max)=luminance with all pixel white

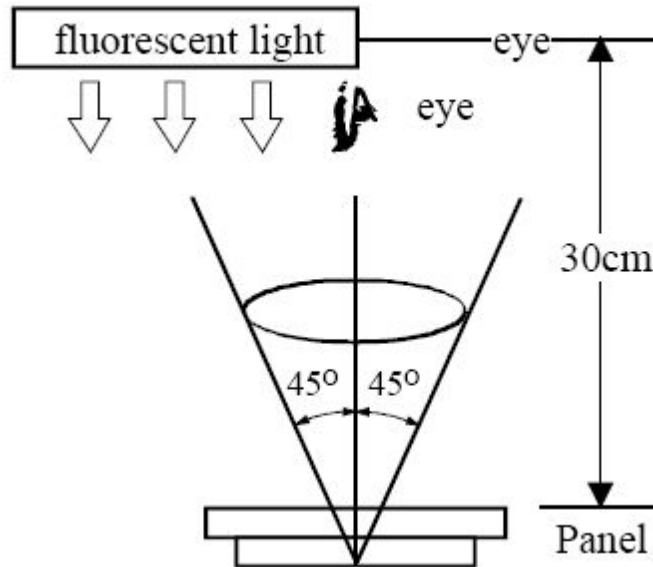
(G min)=luminance with all pixel black

Note.5: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

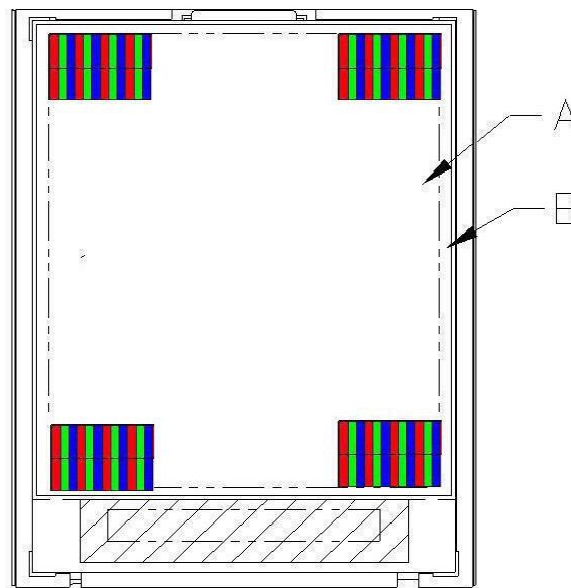
6. QUALITY SPECIFICATIONS

6.1 INSPECTION CONDITION

- (1) Inspect under 300~500Lux fluorescent light, leaving 30~35cm between panels and eyes, and between panels and lights.
- (2) Inspection condition is $23\pm 5^{\circ}\text{C}$, $50\pm 20\%RH$ maximum.





6.2 DEFINITION OF AREA


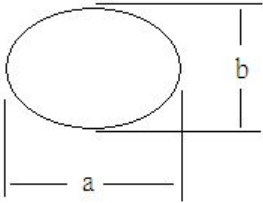


A Area : Viewing area.

B Area : Out of viewing.(outside viewing area)

6.3 INSPECTION SPECIFICATION

NO	Item	Acceptable specification	Judgment Criterion
1	Electrical Testing	<p>1-1 sub pixel classification</p> <ul style="list-style-type: none"> ● Sub Pixel: Number of sub pixel doesn't exceed one dot. <div style="text-align: center;">  <p>Sub Pixel (Dot)</p> </div> <p>a> Dark dot ----one Allowed b> Bright dot ---- one Allowed</p> <ul style="list-style-type: none"> ● Pixel : Three dots link together doesn't exceed ones <div style="text-align: center;">  <p>Pixel</p> </div> <p>1-2 Leakage to light</p> <ul style="list-style-type: none"> ● Leakage to light be not allowed. <p>1-3 Picture to shake</p> <ul style="list-style-type: none"> ● Picture had shake, twinkle and noise etc. instable of defect that be not allowed. <p>1-4 Function</p> <ul style="list-style-type: none"> ● No display or No function. ● Source Line, Gate Line. ● Contrast Ratio ● Current consumption exceeds product specifications. ● Display malfunction. 	<p>N ≦ 3</p> <p>N ≦ 1</p> <p>N=0</p> <p>N=0</p> <p>N=0</p>
2	Mechanical Dimension	<p>2-1 Mechanical Dimension exceeds product specifications.</p> <p>2-2 Out of frame and boss of plastic changed shape that be not allowed.</p>	<p>N=0</p>

NO	Item	Acceptable specification	Judgment Criterion																																												
3	Cosmetic Inspection	<p>3-1 Blemish: Line shapes of defect</p> <table border="1" data-bbox="363 412 1315 763"> <thead> <tr> <th>Length</th> <th>Width</th> <th>Acceptable number</th> <th>Mini. space</th> </tr> </thead> <tbody> <tr> <td>---</td> <td>$W \leq 0.08$</td> <td>Ignore</td> <td rowspan="3">10MM</td> </tr> <tr> <td>$L \leq 10MM$</td> <td>$0.08 < W \leq 0.10$</td> <td>3</td> </tr> <tr> <td>$L \leq 10MM$</td> <td>$0.10 < W \leq 0.20$</td> <td>1</td> </tr> <tr> <td>--</td> <td>$W > 0.20$</td> <td>Not allowed</td> <td>---</td> </tr> </tbody> </table> <p>L: length(mm) W: width(mm)</p>  <p>3-2 Blemish: dot shapes of defect.</p> <table border="1" data-bbox="435 1021 1283 1256"> <thead> <tr> <th>Dimension</th> <th>Acceptable number</th> <th>Mini. Space</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.20$</td> <td>Ignore</td> <td>---</td> </tr> <tr> <td>$0.20 < \Phi \leq 0.25$</td> <td>4</td> <td rowspan="2">5 m m</td> </tr> <tr> <td>$0.25 < \Phi \leq 0.35$</td> <td>3</td> </tr> <tr> <td>$\Phi > 0.35$</td> <td>2</td> <td>---</td> </tr> </tbody> </table> <p>3-3 Polarizer Bubble</p> <table border="1" data-bbox="435 1330 1283 1496"> <thead> <tr> <th>Dimension</th> <th>Acceptable number</th> <th>Mini. Space</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.30$</td> <td>Ignore</td> <td>---</td> </tr> <tr> <td>$0.30 < \Phi \leq 0.40$</td> <td>4</td> <td>15 m m</td> </tr> <tr> <td>$\Phi > 0.40$</td> <td>2</td> <td>---</td> </tr> </tbody> </table> <p>Foreign Substances</p>  <p>$\Phi = (a+b)/2$</p>	Length	Width	Acceptable number	Mini. space	---	$W \leq 0.08$	Ignore	10MM	$L \leq 10MM$	$0.08 < W \leq 0.10$	3	$L \leq 10MM$	$0.10 < W \leq 0.20$	1	--	$W > 0.20$	Not allowed	---	Dimension	Acceptable number	Mini. Space	$\Phi \leq 0.20$	Ignore	---	$0.20 < \Phi \leq 0.25$	4	5 m m	$0.25 < \Phi \leq 0.35$	3	$\Phi > 0.35$	2	---	Dimension	Acceptable number	Mini. Space	$\Phi \leq 0.30$	Ignore	---	$0.30 < \Phi \leq 0.40$	4	15 m m	$\Phi > 0.40$	2	---	
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7. RELIABILITY

Test Item	Test Condition
High Temperature Operation	60°C for 96 hours
Low Temperature Operation	-10°C for 96 hours
High Temperature Storage	70°C for 96 hours
Low Temperature Storage	-20°C for 96 hours
High Temperature Operation Humidity Operation	60°C, 90%RH for 72 hours
Thermal Shock	-10°C (30min) ~+25°C (5min)~ +60°C (30min) for 10 cycles

8. HANDLING PRECAUTION

8.1 SAFETY

- (1) Do not swallow any liquid crystal, even if there is no proof that liquid crystal is poisonous.
- (2) If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
- (3) If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

8.2 STORAGE CONDITIONS

- (1) Store the panel or module in a dark place where the temperature is $23\pm 5^{\circ}\text{C}$ and the humidity is below $50\pm 20\% \text{RH}$.
- (2) Store in anti-static electricity container.
- (3) Store in clean environment, free from dust, active gas, and solvent.
- (4) Do not place the module near organics solvents or corrosive gases.
- (5) Do not crush, shake, or jolt the module.

8.3 HANDLING PRECAUTIONS

- (1) Avoid static electricity which can damage the CMOS LSI.
- (2) The polarizing plate of the display is very fragile. So, please handle it very carefully.
- (3) Do not give external shock.
- (4) Do not apply excessive force on the surface.
- (5) Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
- (6) Do not use ketonic solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
- (7) Do not operate it above the absolute maximum rating.
- (8) Do not remove the panel or frame from the module.

9. PACKAGE DRAWING

