

**SPECIFICATION
FOR
LCD Module
PY101BDGS40M25F106**

MODULE:	PY101BDGS40M25F106
CUSTOMER:	

PY	INITIAL	DATE
PREPARED BY		
CHECKED BY		
APPROVED BY		

CUSTOMER	INITIAL	DATE
APPROVED BY		

REVISION STATUS

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1. General Description

* DESCRIPTION

PY101BDGS40M25F106 is a color active matrix TFT (Thin Film Transistor) 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 x 1280 pixels, and can display up to 16.7M colors.

* Features

- Low Input Voltage: IOVCC: 1.65~3.3V;VCC: 2.5~3.3V
- Display Colors of TFT LCD: 16.7M colors
- Interface: MIPI
- Internal Power Supply Circuit.

General Information Items	Specification	Unit	Note
	Main Panel		
Display area(AA)	135.36(H) x 216.576(V)	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) ×0.11692(V)	mm	-
Viewing angle	FREE	o'clock	-
Drive IC	ILI9881C-0H	-	-
Display mode	Normally Black	-	-
Operating temperature	-10 ~ +60	°C	-
Storage temperature	-20 ~ +70	°C	-

Mechanical Information

Item		Min.	Typ.	Max.	Unit	Note
Module size	Horizontal(H)	-	143	-	mm	±0.2
	Vertical(V)	-	228.61	-	mm	±0.2
	Depth(D)	-	2.6	-	mm	±0.2
Weight		-	TBD	-	g	-

2. MECHANICAL SPECIFICATION

4. ELECTRICAL CHARACTERISTICS

4.1 ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Values		Unit	Remark
		Min	Max.		
Supply Voltage for Logic circuit	VDDIO	1.7	3.0	V	
Supply Voltage for analog circuit	Vcc	3.0	3.6	V	

4.2 DC ELECTRICAL CHARACTERISTICS

4.2.1 POWER SPECIFICATION

INPUT POWER SPECIFICATIONS ARE AS FOLLOWS:

THE POWER SPECIFICATION ARE MEASURED UNDER 25°C AND FRAME FREQUENCY UNDER 60HZ

Typical Operating Conditions (Ta=25°C)

Item	Parameter	Values			Unit	Remark
		Min	Typ	Max.		
VCI	Vcc	3.0	3.3	3.6	V	
VDD3	Iovcc	1.7	1.8	3.0	V	
TFT Gate ON Voltage	Pixel turn on voltage	14	15	16	V	
TFT Gate OFF Voltage	Pixel turn off voltage	-14	-13	-12	V	
VSP	Negative AVEE voltage	4.8	5	6	V	
VSN	Postive AVDD voltage	-6	-5	-4.8	V	

4.2.2 BACKLIGHT UNIT (GND=0V)

Item	Symbol	Values			Unit	Remark
		Min	Typ	Max.		
Forward supply Voltage	Vf	11.2	12.6	13.2	V	
Forward supply Current	If	-	140	-	mA	
LCM Luminance	Lv	250	280	-	cd/m2	Ib=140mA
Uniformity	/	75	80		%	-

5. OPTICAL CHARACTERISTICS

The optical characteristics are measured under stable conditions at 25°C (Room Temperature) :

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
Viewing Angle	θ_R	Horizontal (Right) CR = 10 (Left)	80	85	-	degree	1, 4
	θ_L		80	85	-		
	ϕ_H	Vertical (Upper) CR = 10 (Lower)	80	85	-		
	ϕ_L		80	85	-		
Transmittance	%		4.63%	5.45%	NA		C-light
Response Time	T_{RT}	Rising + Falling	-	30	35	msec	1, 3
Color / Chromaticity Coordinates	Red	Rx		0.630		-	C-light
		Ry		0.335			
	Green	Gx		0.288			
		Gy		0.584			
	Blue	Bx		0.132			
		By		0.175			
	White	Wx		0.316			
		Wy		0.369			
NTSC	%		-	56.5	-		

*Note (1) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

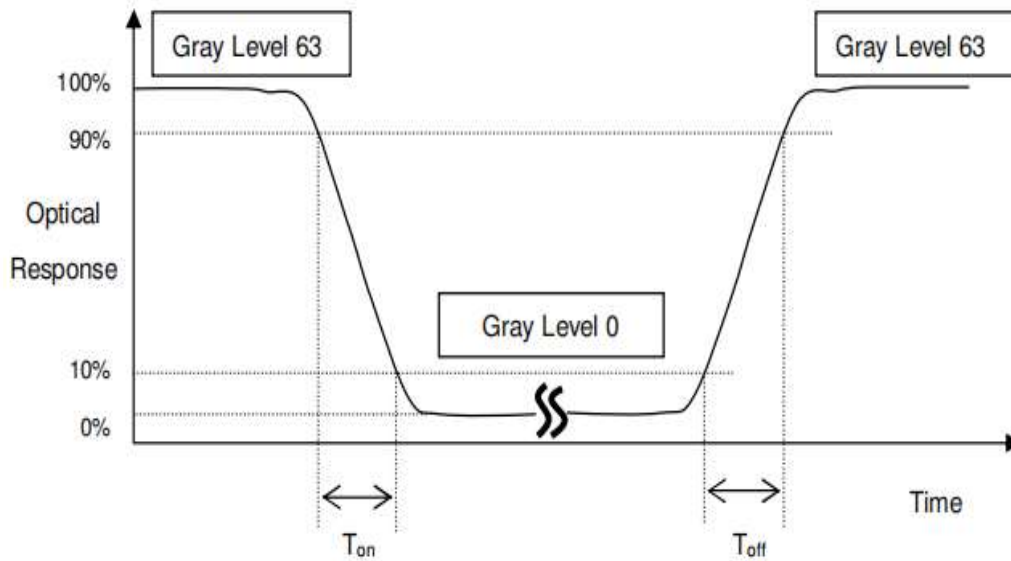
L63: Luminance of gray level 63

L 0: Luminance of gray level 0

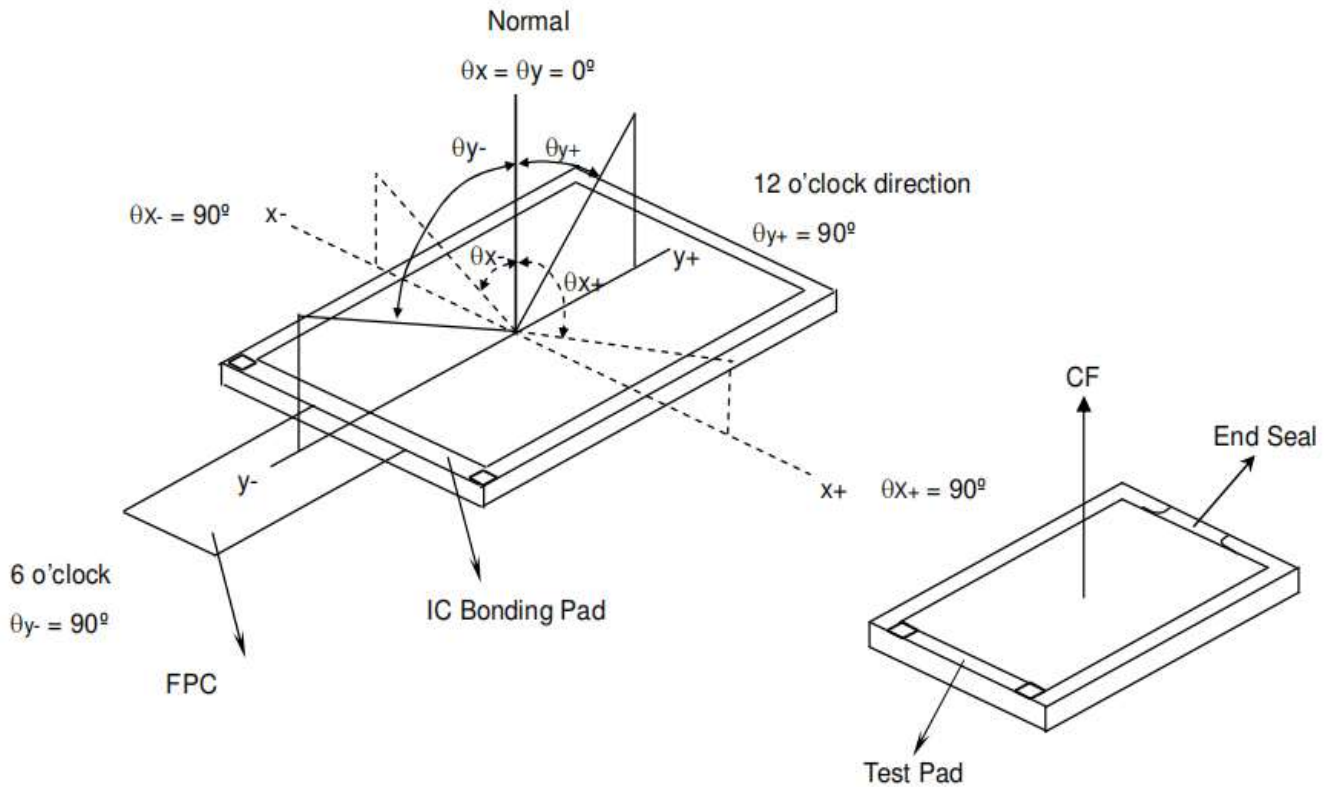
$$CR = CR (5)$$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (5).

*Note (2) Definition of Response Time (T_{on} , T_{off}):

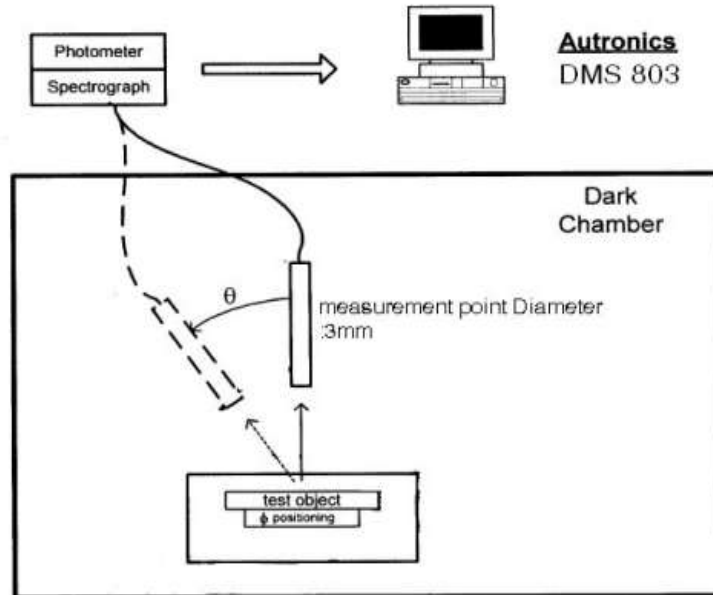


*Note (3) Definition of Viewing Angle

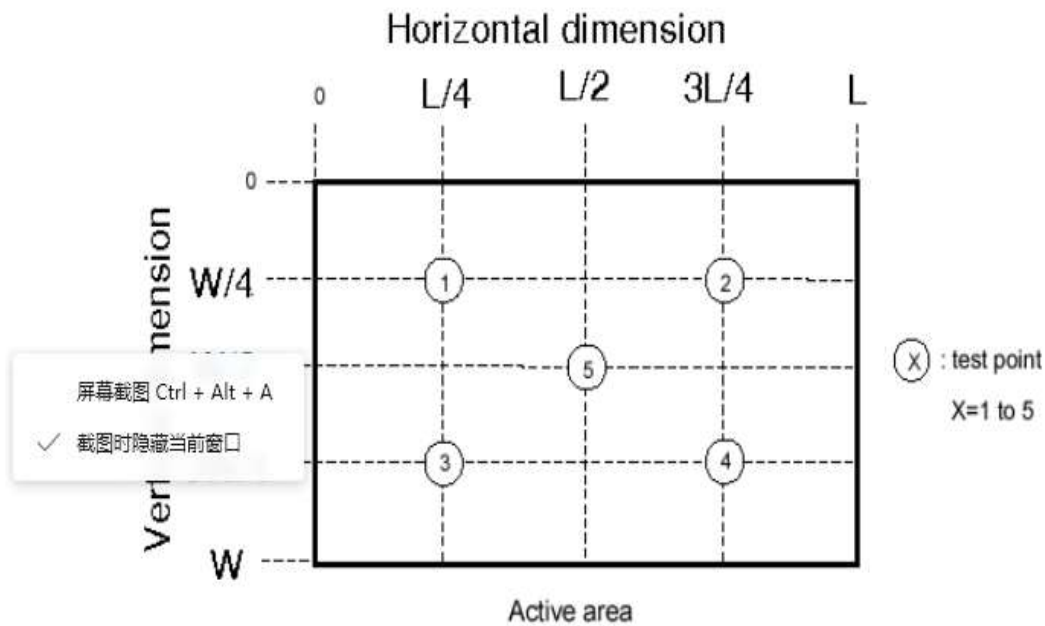


*Note (4) Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



*Note (5)

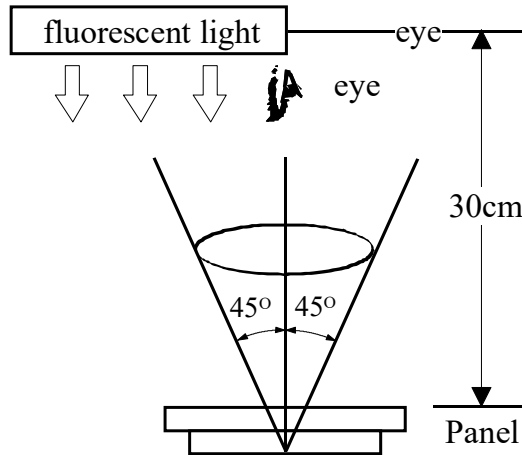


屏幕截图 Ctrl + Alt + A
✓ 截图时隐藏当前窗口

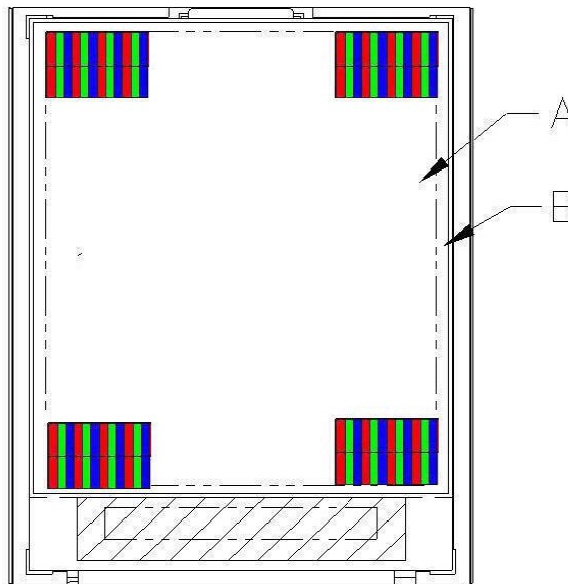
6. QUALITY SPECIFICATIONS

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.



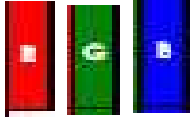
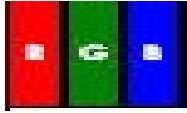
6.2 DEFINITION OF AREA



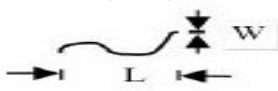
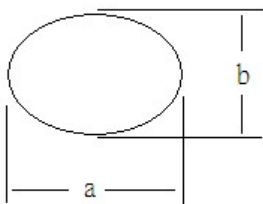
A Area : Viewing area.

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.  <p style="text-align: center;">Sub Pixel (Dot)</p> <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  <p style="text-align: center;">Pixel</p> <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>$N \leq 1$</p> <p>$N \leq 0$</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>	$N=0$

NO	Item	Acceptable specification	Judgment Criterion
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3	Cosmetic Inspection	3-1 Blemish: Line shapes of defect			
		Length	Width	Acceptable number	Mini. space
		---	$W \leq 0.03$	Ignore	5 m m
$L \leq 2.5$	$0.03 < W \leq 0.05$	3			
$L \leq 2.5$	$0.05 < W \leq 0.1$	2			
		--	$W > 0.1$	Not allowed	---
		<p>L: length(mm) W: width(mm)</p> 			
		3-2 Blemish: dot shapes of defect.			
		Dimension	Acceptable number	Mini. Space	
		$\Phi \leq 0.10$	Ignore	---	
		$0.10 < \Phi \leq 0.25$	2	10 m m	
		$0.25 < \Phi \leq 0.3$	1		
		$\Phi > 0.3$	0	---	
		3-3 Polarizer Bubble			
		Dimension	Acceptable number	Mini. Space	
		$\Phi \leq 0.20$	Ignore	---	
		$0.20 < \Phi \leq 0.30$	2	15 m m	
		$\Phi > 0.30$	0	---	
		Foreign Substances			
				$\Phi = (a+b)/2$	

NO	Item	Acceptable specification	Judgment Criterion
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3	Cosmetic Inspection	3-4 Scratch <ul style="list-style-type: none"> ● Sensate scratch not allowed. ● Impassive scratch as below. 			Unit:mm Mini. space 5 m m ---
		Length	Width	Acceptable number	
		-----	$W \leq 0.03$	Ignore	
		$L \leq 2.5$	$0.03 < W \leq 0.05$	3	
		$L \leq 2.5$	$0.05 < W \leq 0.1$	2	
		----	$0.1 < W$	Not allowed	
		$L > 2.5$	----	Not allowed	
4	Package	4-1 Mixed product types 4-2 Shipping q'ty should be the same as "shipping notice form" q'ty. 4-3 Outer box can't broken.			N=0

7. RELIABILITY

Test Item	Test Condition
High Temperature Operation	60°C for 24 hours
Low Temperature Operation	-10°C for 24 hours
High Temperature Storage	70°C for 24 hours
Low Temperature Storage	-20°C for 24 hours
High Temperature Operation Humidity Operation	50°C, 90%RH for 48 hours
Thermal Shock	-10° storage one hour, rise to 60° within 15s, high temperature one hour, drop to 30° within 15s, circulate 10 repeatedly
Vibration Test (No Operation)	Frequency: 10-55Hz Amplitude:1.0mm Sweep Time: 11min Test Period: 6 Cycles for each direction of X, Y, Z
Static electricity test	Touch 6KV, air touch 8KV

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.

8.4 WARRANTY

The period is within twelve months since the date of shipping out under normal using and storage conditions.