

TFT LCD MODULE

0.96 inch 80RGB*160DOTS

MODULE NUMBER: LY096X1608TBBIG11H13

REVISION: B

Customer:
Approved by

From: LiYuan Electronics Co.,Ltd.
Approved by

Notes:

1. Please contact LiYuan Electronics before assigning your product based on this module specification
2. The information contained herein is presented merely to indicate the characteristics and performance of our products. No responsibility is assumed by LiYuan Electronics for any intellectual property claims or other problems that may result from application based on the module described herein.

Revised History

Part Number	Revision	Revision Content	Revised on
LY096X1608TBBIG11H13	A	New	20191016
	B	修改厚度公差	20191206

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Revision History

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1. General Description

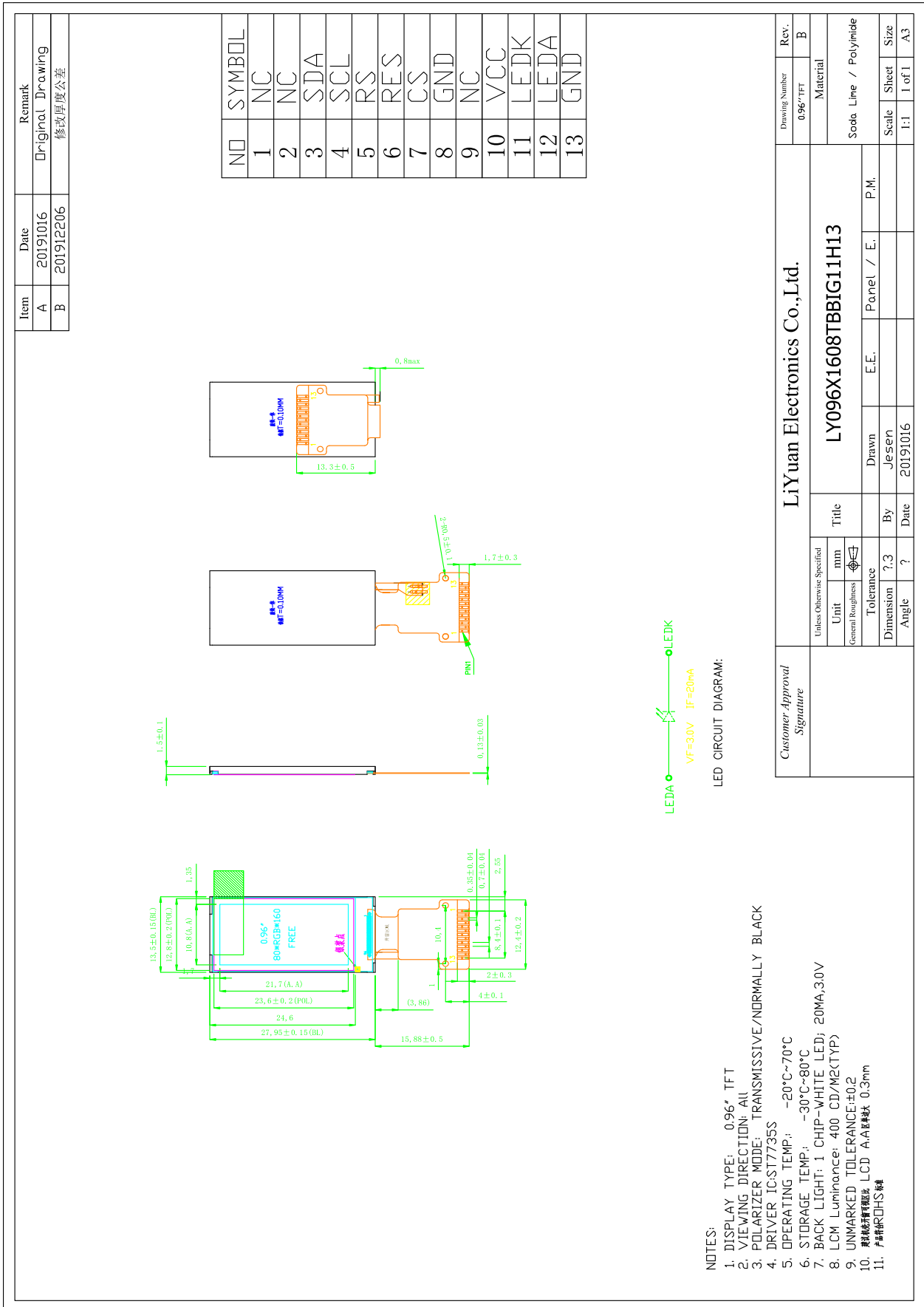
1.1 Description

LY096X1608TBBIG11H13 is a 80RGBX160 dot-matrix TFT LCD module. This module is composed of a TFT LCD Panel, driver ICs, FPC and a Backlight unit.

1.2 Features

NO.	Item	Contents	Unit
1	LCD Size	0.96 inch(Diagonal)	-
2	Display Mode	Normally black	-
3	Resolution	80(H)RGB x 160(V)	-
4	Dot pitch	0.135(H) x 0.1356(V) mm	-
5	Active area	10.8(H) x 21.7(V) mm	-
6	Module size	13.5(H) x 27.95(V) x1.5(D) mm	-
7	Color arrangement	RGB Vtertical stripe	-
8	Interface	4 Line SPI	-
9	Drive IC	ST7735S	-
10	Luminance(cd/m2)	400 (TYP)	
11	Viewing Direction	All View	
12	Backlight	1 White LED	
13	Operating Temp.	-20℃ ~ + 70℃	℃
14	Storage Temp.	-30℃ ~+ 80℃	℃
15	Weight	1.1	g

2.Mechanical Drawing

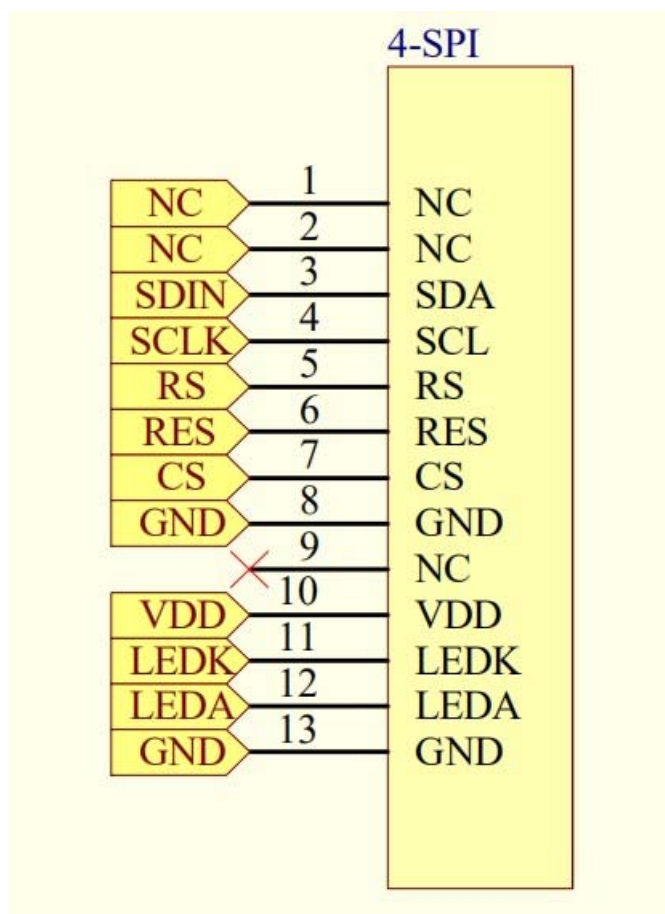


3. Pin Definition

FPC Connector is used for the module electronics interface.

NO.	Symbol	Description
1	NC	No Connect.
2	NC	No Connect.
3	SDA	SPI interface input/outpur pin.
4	SCL	This pin is used to be serial interface clock.
5	RS	Display data/command selection pin in 4-line serial interface.
6	RESET	This signal will reset the device,Signal is active low.
7	CS	Chip selection pin,Low enable,High disable.
8	GND	Power Ground.
9	NC	No Connect.
10	VDD	Power Supply for Analog
11	LEDK	LED Canthode
12	LEDA	LED Anode
13	GND	Power Ground.

Note:



4. Electrical Characteristics

4.1 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Supply Voltage (I/O)	VDD	-0.3	4.6	V	
Analog Supply Voltage	VDDIO	-0.3	4.6	V	
Logic Input Voltage	VIN	-0.3	VDD+0.3	V	
Operation Temperature	Top	-20	70	°C	
Storage Temperature	Tst	-30	80	°C	

4.2 Model Characteristics

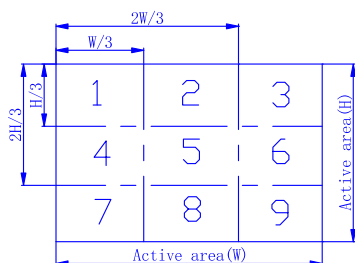
Parameter	Symbol	Min	TYP	MAX	Unit	Notes
Voltage for LED backlight	V _{bL}	2.9	3.0	3.1	V	
Supply Voltage for Logic	VDD	2.5	2.8	3.3	V	
Interface Operation Voltage	VDDIO	1.65	1.8	3.3	V	
Gate Driver High Voltage	VGH	10	-	15	V	
Gate Driver Low Voltage	VGL	-13	-	-7.5	V	
Operating Current for VDD	I _{DD}	--	2	3	mA	
Current for LED backlight	I _{bL}	15	-	20	mA	1 LED
Brightness	L _{br}	350	400	--	cd/m ²	
Sleep In Mode VDD	I _{dd}	--	15	30	uA	
Sleep In Mode VDDIO	I _{ddio}	--	5	10	uA	

1 Test condition is:

- a:Center point on active area
- b:Best Contrast

2 Uniform measure condition:

- a:Measure 9 point,Measure location is show below:
- b:Uniform=(Min brightness/Max.brightness)x100%
- c:Best Contrast.



5. Optical characteristics

Item	Symbol	Measuring Conditions		Min.	Typ.	Max.	Unit	Remark
Response Time	Tr+Tf	$\theta = 0^\circ$ $\phi = 0^\circ$	25 °C	-	30	40	ms	
Viewing Angle	θ	$\phi = 0^\circ$	25 °C	-	80	-	Deg	Note (b)
		$\phi = 180^\circ$	25 °C	-	80	-		
	θ	$\phi = 90^\circ$	25 °C	-	80	-		
		$\phi = 270^\circ$	25 °C	-	80	-		
Contrast Ratio	CR	-	25 °C		800	-	-	Note (c)
Color of CIE Coordinate	White	X	25 °C	0.304	0.306	0.308	-	-
		Y	25 °C	0.325	0.327	0.329		
	Red	X	25 °C	0.608	0.610	0.612		
		Y	25 °C	0.331	0.333	0.335		
	Green	X	25 °C	0.279	0.281	0.283		
		Y	25 °C	0.531	0.533	0.535		
	Blue	X	25 °C	0.144	0.146	0.148		
		Y	25 °C	0.136	0.138	0.140		
Transmittance (with polarizer)					5.09		%	

Note1:Definition of Response Time.(white-black)

The response time is defined as the time interval between the 10% and 90% amplitudes

6. Reliability

6.1 Contents of Reliability Tests

Item	Conditions	Criteria
High Temperature Operation	70°C, 120 hrs	The operational functions work.
Low Temperature Operation	-20°C, 120 hrs	
High Temperature Storage	80°C, 120 hrs	
Low Temperature Storage	-30°C, 120 hrs	
High Temperature/Humidity Operation	50°C, 85% RH, 120 hrs	
Temperature Cycling	-10°C ⇔ 25°C ⇔ 60°C ⇔ 25°C, 60mins/Cycle, 12 Cycles	

Note:

No moisture condensation is observed during tests.

Condition of image sticking test : 25°C±2°C.

6.2 Shock and Vibration

Test Item	Conditions
Packing Vibration	Frequency range 10~50HZ, Stroke: 1.0mm, sweep: 10~50Hz, X,y,z 2 hours for each direction

6.3 ESD

Test Item	Conditions
ESD	150pF , 330Ω , Contact: ±2KV,
	150pF , 330Ω , Air: ±4KV

7. Package Specifications

Item		Quantity	
Module		840	per Primary Box
Holding Trays	(A)	15	per Primary Box
Total Trays	(B)	16	per Primary Box (Including 1 Empty Tray)
Primary Box	(C)	1~4	per Carton (4 as Major / Maximum)

