SPECIFICATION FOR LCD MODULE

REV

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Customer : _____

Product Model: FRD240A89

Designed by	Checked by	Approved by
Liujingxiang		

Final Approval by Customer

☐ OK

☐ NG，Problem survey:

Approved By _____

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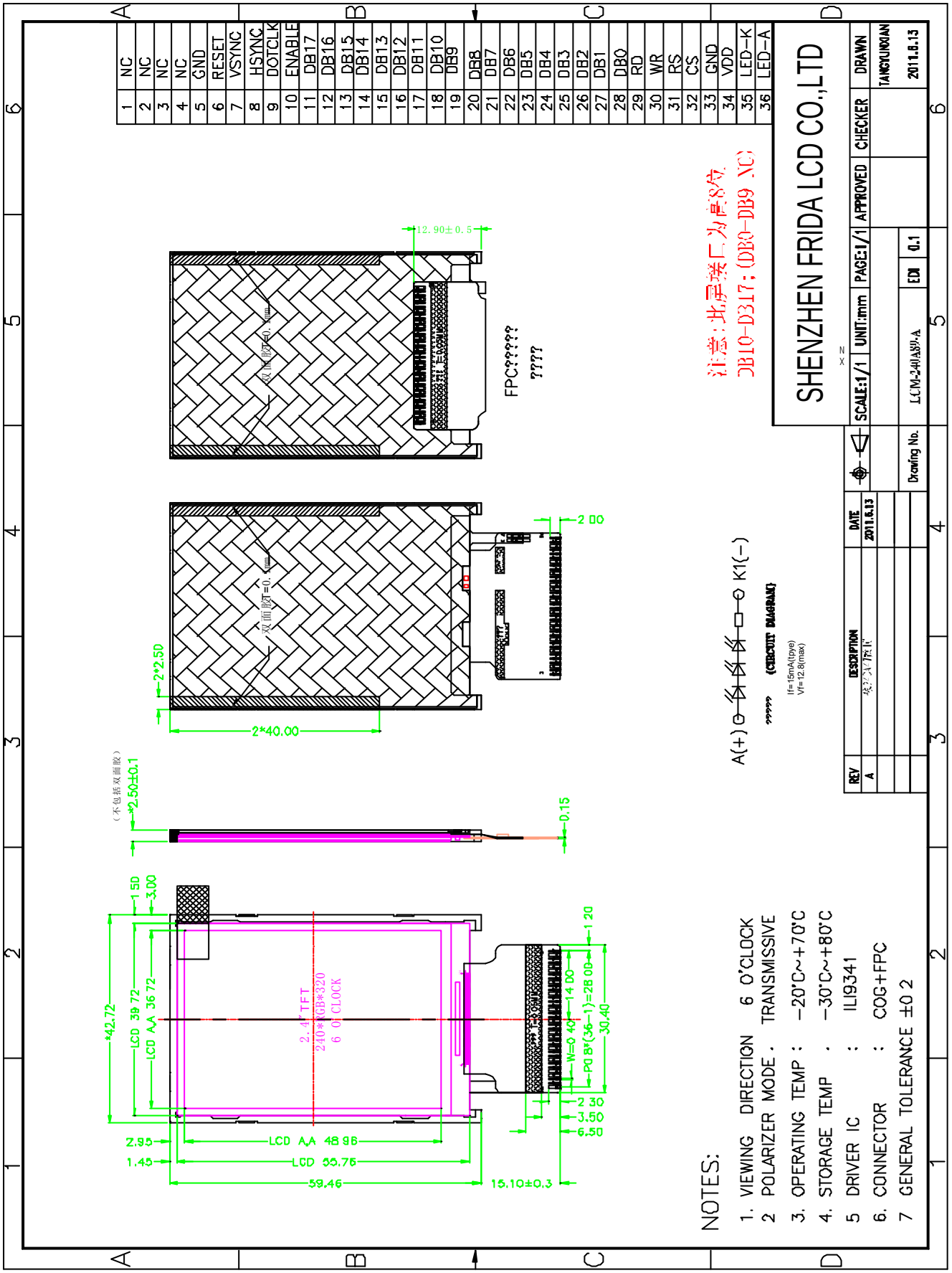
Item	Contents	Unit	Note
LCD Type	TFT	-	
Display color	262K		1
LCD Duty	-	-	
LCD Bias	-	-	
Viewing Direction	6:00	O'Clock	
Viewing Area(W×H)	-	mm	
Active Area(W×H)	36.72 (H) ×48.96(V) mm	mm	
Number of Dots	240(H) X3(RGB)×320(V) Dots	mm	
Dot Pitch(W×H)	0.153*0.153	mm	
Controller	ILI9341	-	
VDD	3	V	
Outline Dimensions	42.72(W)×59.46(H)×2.5(D)	mm	
Backlight	LED(white)	-	
Operating Temperature	-20～+70℃	-	
Storage Temperature	-30～+80℃	-	
Weight	TBD	g	2
Data Transfer	8bit	-	
Polarizer Mode	Transmissive/Negative	-	

Note 1: Color tune is slightly changed by temperature and driving voltage.

Note 2:TBD- To Be Determined.

2. Outline Drawing



3. Absolute Maximum Ratings(Ta=25℃)

Item	Symbol	Min.	Max.	Unit	Remark
Analog power supply	V_{CI}	-0.3	+4.6	V	
Logic input voltage	V_{DD}	-0.3	+4.6	V	
Operating temperature (Ambient)	T_{opr}	-20	+60	℃	
Storage temperature (Ambient)	T_{stg}	-30	+70	℃	

Note 1: If the module exceeds the absolute maximum ratings, it may be damaged permanently. Also, if the module operates with the absolute maximum ratings for a long time, the reliability may drop.

Note 2: All the measurements should be operated with driver IC and experimental FPC mounted.

4. Electrical Specifications and Instruction Code

4.1 Electrical characteristics (Ta=25℃)

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Note
Logic Power supply		VDD	Ta=25℃	2.5	2.8	3.3	V	1
Input Voltage	H	V_{IH}		$0.8V_{DD}$	-	V_{DD}	V	
	L	V_{IL}		0	0	$0.2V_{DD}$	V	
Output Voltage	H	V_{OH}	I_{OH} = -1.0mA	$0.8V_{DD}$	-	-	V	
	L	V_{OL}	I_{OL} = +1.0mA	-	-	$0.2V_{DD}$	V	
Current Consumption		I_{CC1}	Normal mode	18		23	mA	2
		I_{CC2}	Stand-by mode	-	-	-	mA	

Note 1: The operations are guaranteed under the recommended operating conditions only. These operations are not guaranteed if a quick voltage change occurs during operation. To prevent noise, a bypass capacitor must be inserted into the line close to the power pin.

Note 2: All the measurements should be operated with driver IC and experimental FPC.

4.2 LED backlight specification

Item		Symbol	Condition	Min	Typ	Max	Unit	Note
Forward voltage		V_f	I_f=15mA	3.0	3.2	3.4	V	
Reverse voltage		V_r					V	
Forward current	Normal	I_{pn}	4-chip		60		mA	
	Dimming	I_{pd}						
Reverse Current		I_r	V_r=4V			15	μA	
Uniformity			I_f=15mA	80%	85%			

4.3 Interface Signals

Pin No.	Symbol	I/O	Function
1-4	NC		
5	GND		
6	RESET		
7	VSYNC		
8	HSYNC		
9	DOTCLK		
10	ENABLE		
11-28	DB17-DB0		
29	RD		
30	WR		
31	RS		
32	CS		
33	GND		
34	VDD		
35	LED-K		
36	LED-A		

5. Reliability

No.	Test Item	Test condition	Criterion
1	High Temperature Storage	80℃±2℃96H Restore 4H at 25℃	1. After testing, cosmetic defects should not happen. 2.Total current consumption should not be over 10% of initial value.
2	Low Temperature Storage	-30℃±2℃ 96H Restore 4H at 25℃	
3	High Temperature Operation	70℃±2℃ 48H Restore 4H at 25℃	
4	Low Temperature Operation	-20℃±2℃ 48H Restore 4H at 25℃	
5	High Temperature /Humidity Storage	40℃±2℃ 90%RH 48H	
6	Temperature Cycle	-30℃←→25℃←→80℃ 5min 30min ←→25℃ , 5min after 10cycle, Restore 4H at 25℃	
7	Vibration Test (package state)	10Hz~150Hz, 100m/s2, 120min	Not allowed cosmetic and electrical defects.
8	Shock Test (package state)	Half- sine wave, 300m/s2, 18ms	
9	Atmospheric Pressure Test	25kPa 16H Restore 2H	

6. Precautions for Use of LCD Modules

6.1 Handling Precautions

6.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

6.1.2 If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

6.1.3 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

6.1.4 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

6.1.5 If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

— Isopropyl alcohol

— Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer.

Especially, do not use the following:

— Water

— Ketone

— Aromatic solvents

6.1.6 Do not attempt to disassemble the LCD Module.

6.1.7 If the logic circuit power is off, do not apply the input signals.

6.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

a. Be sure to ground the body when handling the LCD Modules.

b. Tools required for assembly, such as soldering irons, must be properly ground.

c. To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

d. The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

6.2 Storage precautions

6.2.1 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

6.2.2 The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ～ 40℃

Relatively humidity: ≤80%

6.2.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

6.3 The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.