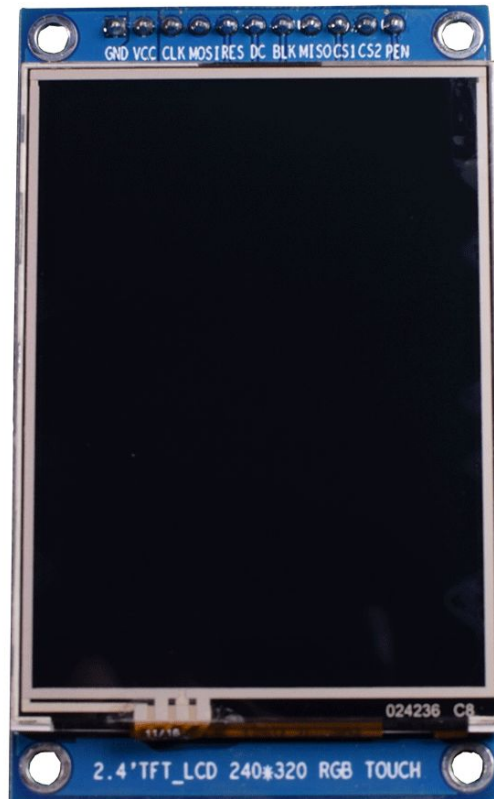


DisplayModule



DM-TFT24-363
2.4" 240x320 TFT LCD DISPLAY MODULE
WITH RESISTIVE TOUCH - SPI

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1 Revision History

Date	Changes
2018-07-17	First release

2 Main Features

Item	Specification	Unit
Size	2.4	Inch
Resolution	240(RGB) x320	pixel
Module Dimension	43.00 x 72.26 x 3.75	mm
TFT Controller IC	ILI9341	-
Touch IC	XPT2046	
Interface	4 wire SPI	-
Dot Pitch	0.153 x 0.153	mm
View Direction	12 o'clock	
Weight	TBD	g

3 Pin Description

3.1 TFT LCD

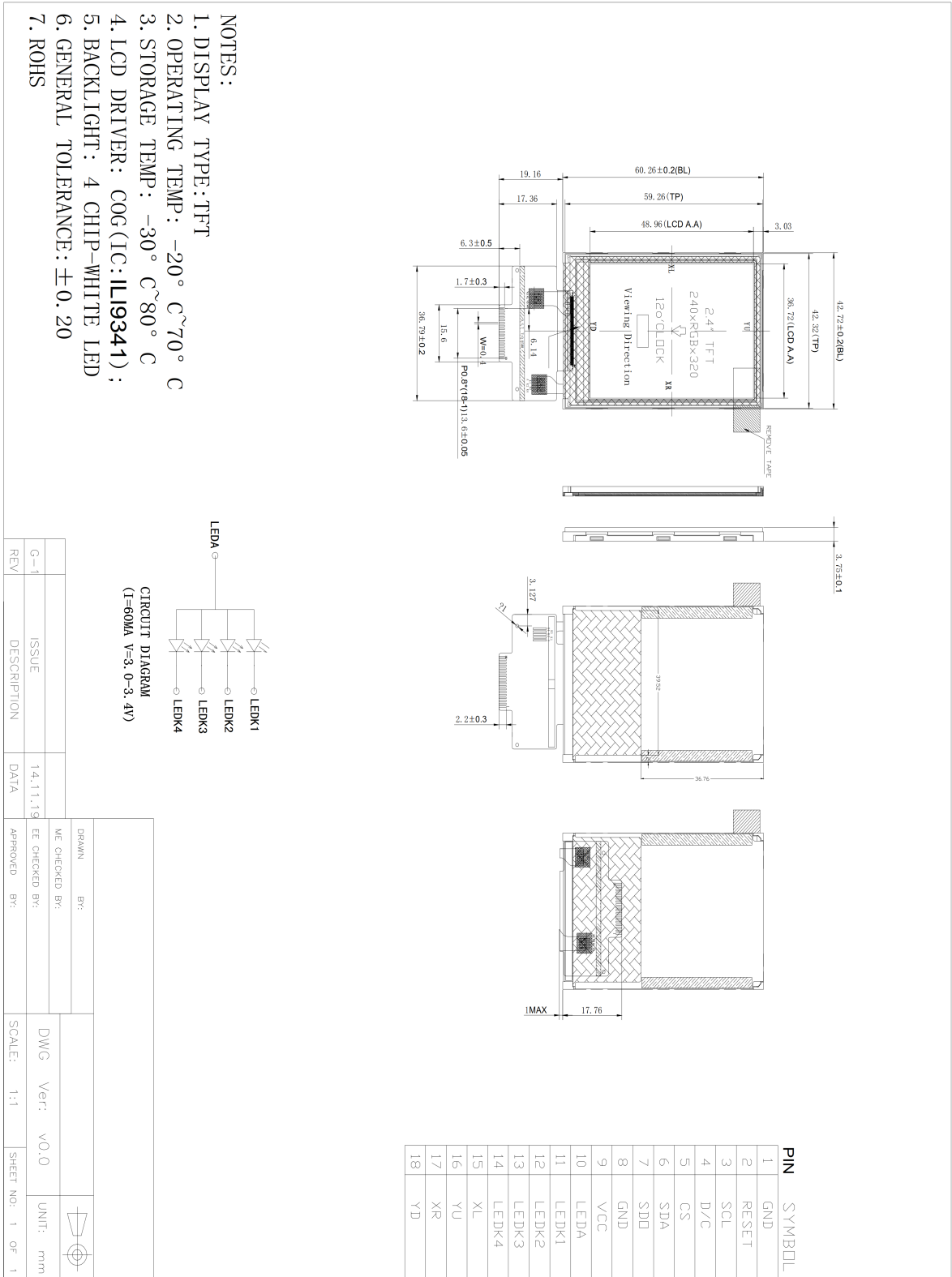
No.	Symbol	Description
1	GND	Ground
2	Reset	LCM Reset pin Signal is active low
3	SCL	This pin is used serial interface clock in 4-wire 8-bit serial data interface. If not used, this pin should be connected to IOVCC or GND
4	D/C	4-line system (D/CX): Serves as command or parameter select. Fix to IOVCC level when not in use.
5	CS	Chip select pin (low enable)
6	SDA	Serial input signal. The data is applied on the rising edge of the SCL signal. If not used, fix this pin at IOVCC or GND
7	SDO	Serial output signal. The data is outputted on the falling edge of the SCL signal. If not used, open this pin
8	GND	Ground
9	VCC	Power supply for LCM (2.8V-3.3V)
10	LEDA	Anode of Backlight (3.0V-3.4V Typical:3.2V)
11	LEDK1	Cathode of Backlight
12	LEDK2	Cathode of Backlight
13	LEDK3	Cathode of Backlight
14	LEDK4	Cathode of Backlight
15	XL	Touch panel control pin
16	YU	Touch panel control pin
17	XR	Touch panel control pin
18	YD	Touch panel control pin

3.2 Module interface

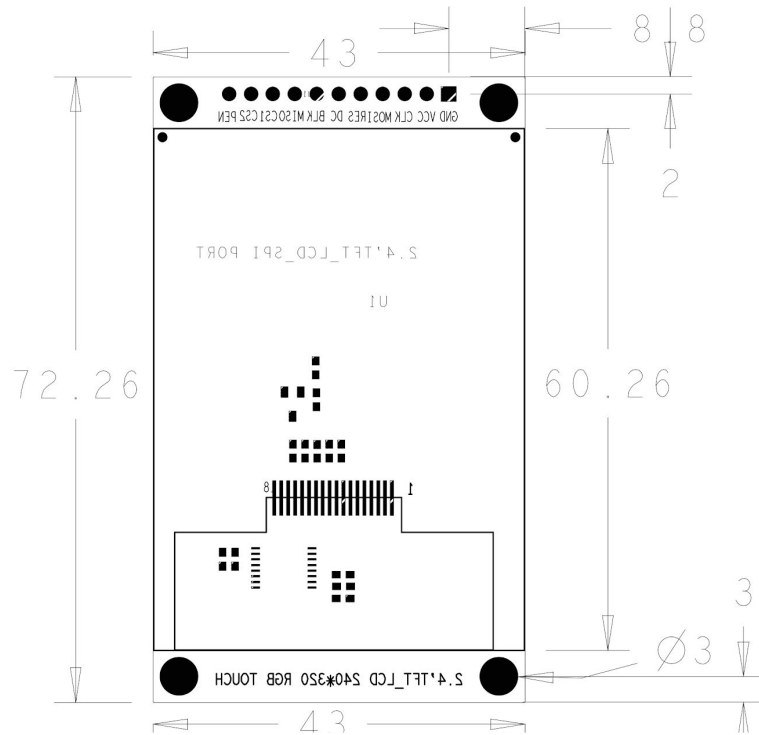
No.	Symbol	Description
1	GND	Ground
2	VCC	Power supply for LCM (2.8V-3.3V)
3	CLK	Clock
4	MOSI	Data input
5	RES	Reset
6	DC	Data/command select
7	BLK	Backlight power input pin. No connection can work also. Active to low or connect to Ground to close backlight
8	MISO	Data output pin ,No connection if no need to read LCD info. Use to read touch signal in touch display
9	CS1	LCD select
10	CS2	Touch IC select
11	PEN	Touch interrupt pin

4 Mechanical Drawing

A LCD



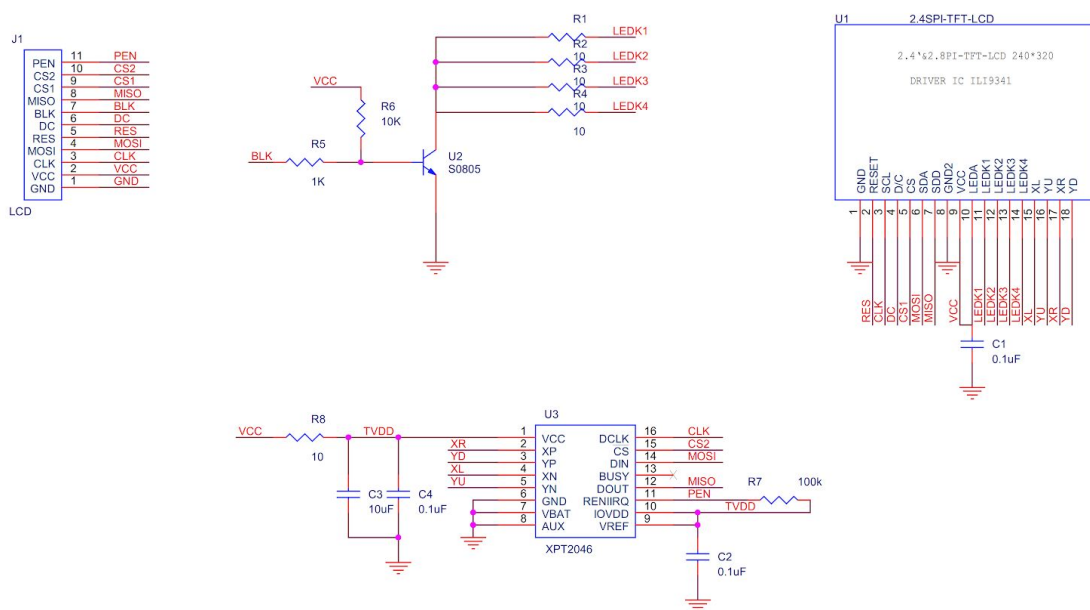
B Module



5 Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Voltage	VCC		2.7	2.8	3.3	V
I/O Digital Voltage	IOVCC		1.8		3.3	
Low Level Input Voltage	V_{IL}		GND		$0.3 \cdot IOVCC$	V
High Level Input Voltage	V_{IH}		$0.7 \cdot IOVCC$		IOVCC	V
Operating Temperature	TOP	Absolute Max	-20		+70	°C
Storage Temperature	TST	Absolute Max	-30		+80	°C
LED Forward Voltage	Vf	3.0	3.2	3.4	V	

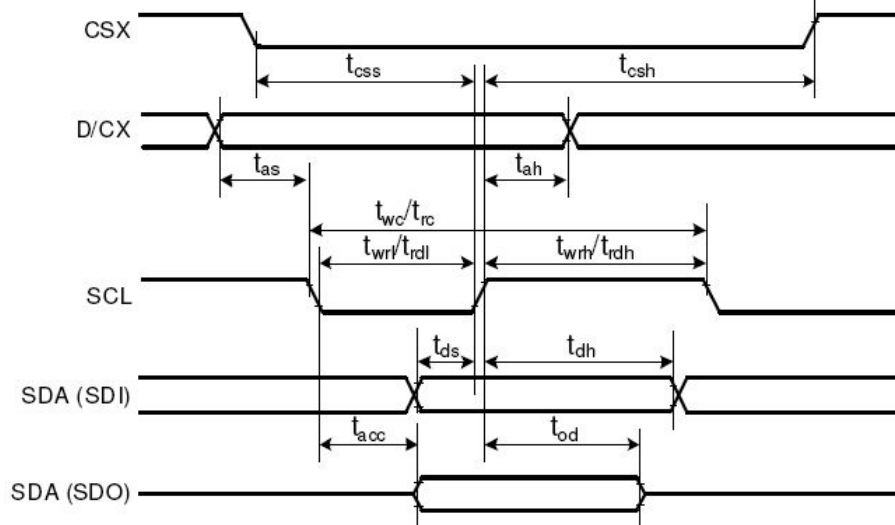
6 Module schematic



7 Timing Characteristics

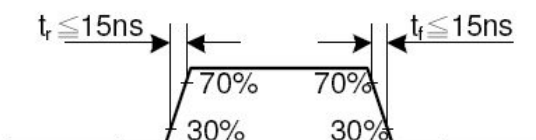
7.1 SPI

18.3.4 Display Serial Interface Timing Characteristics (4-line SPI system)

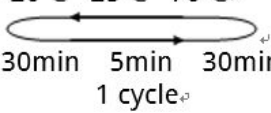


Signal	Symbol	Parameter	min	max	Unit	Description
CSX	t_{css}	Chip select time (Write)	40	-	ns	
	t_{csh}	Chip select hold time (Read)	40	-	ns	
SCL	t_{wc}	Serial clock cycle (Write)	100	-	ns	
	t_{wrh}	SCL "H" pulse width (Write)	40	-	ns	
	t_{wrl}	SCL "L" pulse width (Write)	40	-	ns	
	t_{rc}	Serial clock cycle (Read)	150	-	ns	
	t_{rdh}	SCL "H" pulse width (Read)	60	-	ns	
	t_{rdl}	SCL "L" pulse width (Read)	60	-	ns	
D/CX	t_{as}	D/CX setup time	10	-		
	t_{ah}	D/CX hold time (Write / Read)	10	-		
SDA / SDI (Input)	t_{ds}	Data setup time (Write)	30	-	ns	
	t_{dh}	Data hold time (Write)	30	-	ns	
SDA / SDO (Output)	t_{acc}	Access time (Read)	10	-	ns	For maximum CL=30pF
	t_{od}	Output disable time (Read)	10	50	ns	For minimum CL=8pF

Note: $T_a = 25\text{ }^\circ\text{C}$, $V_{DDI}=1.65\text{V to }3.3\text{V}$, $V_{CI}=2.5\text{V to }3.3\text{V}$, $AGND=VSS=0\text{V}$



8 Reliability

Test Item	Content of Test	Test Condition	Note
High Temperature Storage	Endurance test applying the high storage temperature for a long time.	80°C 200hrs	2
Low Temperature Storage	Endurance test applying the high storage temperature for a long time.	-30°C 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70°C 200hrs	-
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20°C 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60°C,90%RH max, for 96hrs under no-load condition excluding the polarizer. Then taking it out and drying it at normal temperature.	60°C,90%RH 96hrs	1,2
Thermal Shock Resistance	The sample should be allowed stand the following 10 cycles of operation. 	-20°C/70°C 10 cycles	-
Vibration Test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude: 15mm; Vibration: 10~55Hz; One cycle 60 seconds to 3 directions of X, Y, Z, for each 16 minutes.	3
Static Electricity Test	Endurance test apply the electric stress to the terminal.	VS=800V, RS=1.5kΩ, CS=100pF, 1 time.	-

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal. Temperature and humidity after remove from the rest chamber.

Note3: Test performed on product itself, not inside a container

9 Warranty and Conditions

<http://www.displaymodule.com/pages/faq>