MSP2833&MSP2834

2.8inch IPS TFT SPI Display Module Specification

REV	Record	Date
V1.0	First Release	Jun-01-2023

CONTENTS

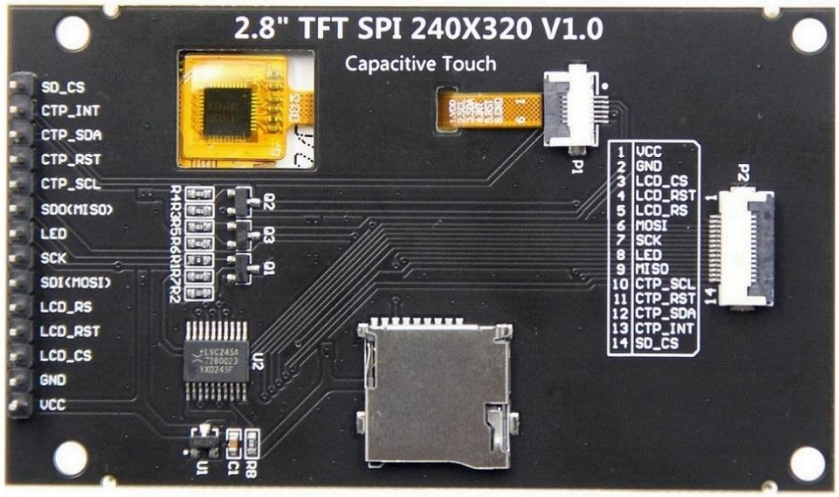
1. GENERAL DESCRIPTION

1.1. Product Introduction

MSP2833 and MSP2834 are two 2.8-inch IPS color LCD display modules, with MSP2833 without a touch screen and MSP2834 with a capacitive touch screen. The display module adopts a 4-wire SPI interface, which only requires 5 IOs to achieve display. The 240x320 standard definition resolution can be applied to various products that require screen display function.

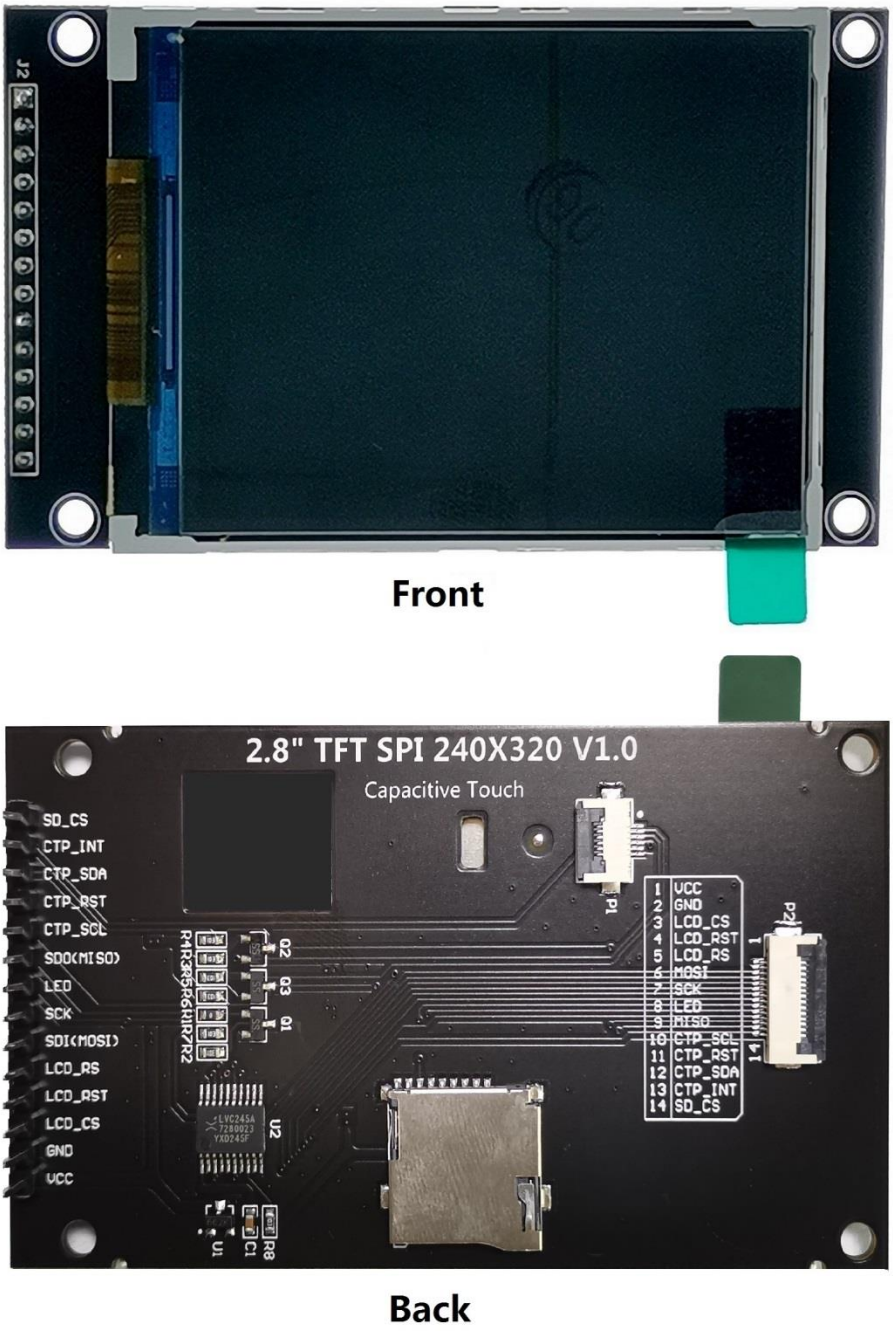
1.2. Image

Front



Back

Picture 1 MSP2833 (with touch screen) product



Picture 2 MSP2834 (without touch screen) product

1.3. Accessory List

Configure a 14P reverse FPC cable with a length of 30cm and a spacing of 0.5mm.

Picture 3 14P reverse FPC cable

2. PRODUCT FEATURES

2.1. Feature Description

- 2.8 “ color screen with 240x320 resolution of 65K colors and rich display colors
- The upgrade adopts IPS full view panel, with good visual angle
- On board level conversion circuit, compatible with 5V and 3.3V MCU
- Adopting a 4-wire SPI serial bus to save I/O pins
- Optional capacitive touch/no touch function for modules
- Module input supports 2.54 pin interface and FPC extension interface
- Equipped with micro TF card slot for easy storage expansion
- Provide rich example learning programs (ESP32/STM32/ UNO/C51/CH32)
- Provide low-level driver technical support, and update WIKI information online
- Multiple tests for module aging can meet military level standards, supporting long-term stable work

3. PRODUCT PARAMETERS

3.1. TFT Parameters

Item	Parameters	Unit
Panel Size	2.8	inch
Panel Type	IPS	-
Resolution	240xRGBx320	pixels
Active Area	43.20(W)x57.60(H)	mm
Number of Colors(Max)	262K	-
Driver IC	ILI9341V	-
Display Interface	4-Line SPI	-
Pixel Size	0.153(H)x0.153(V)	mm
View Angle	ALL 0’ CLOCK	deg
Brightness(TYP)	280	cd/m^2
Backlight Type	White LED*4	-
Operation Temperature	-30~80	˚C
Storage Temperature	-30~80	˚C

3.2. Touch Screen Parameters

Item	Parameters	Unit
Touch Active Area	2.8	inch
Touch Screen Type	Capacitive Touch Screen	-
Touch Screen Resolution	240x320	pixels
Driver IC	FT6336G	-
Touch Screen Visual Area	43.60±0.15(W)x58.05±0.15(H)	mm
Communication Interface	IIC	-
Material	G+F	-
Operation Temperature	-20~70	℃
Storage Temperature	-30~80	℃

3.3. Size Parameters

Item	Parameters	Unit
TFT Outline Size	50.0±0.2(W)x69.20±0.2(H)x2.30±0.1(D) (Excluding cables and adhesive backing)	mm
Touch Screen Outline Size	50.0±0.1(W)x69.20±0.1(H)x1.0±0.1(D) (Excluding cables and adhesive backing)	mm
Module Outline Size	Have Touch Screen: 50.0(W)x86.0(H)x12.78(D) (including Pin Header) NO Touch Screen: 50.0(W)x86.0(H)x14.28(D) (including Pin Header)	mm

3.4. Electrical Parameters

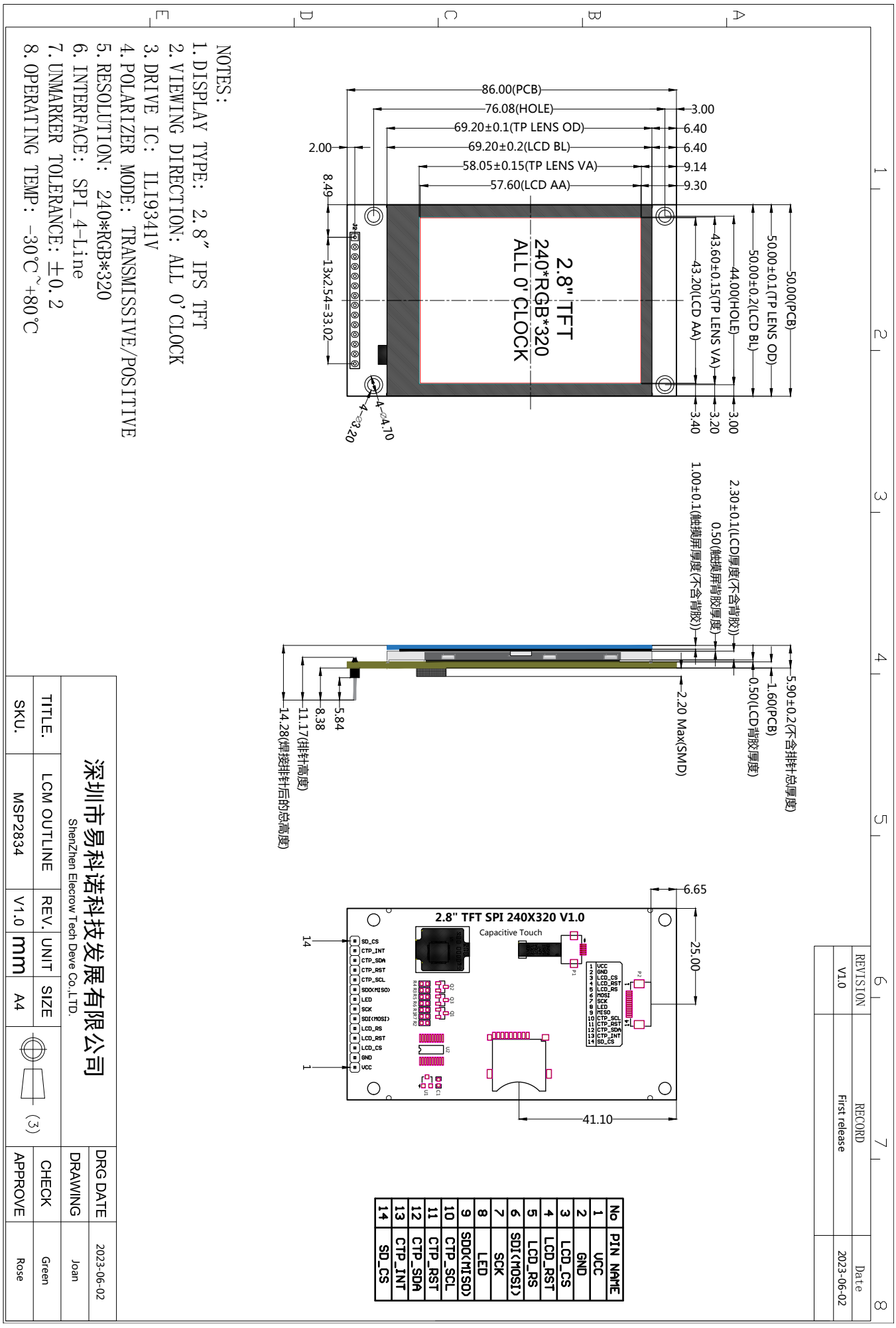
Item	Parameters	Unit
Working Voltage	5.0	V
Backlight Current	80	mA
Power	0.4	W

3.5. Other Parameters

Item	Parameters	Unit
SKU	NO Touch Screen : MSP2833 Have Touch Screen : MSP2834	-
Interface	14 Pin 2.54mm Header and 0.5mm FPC	-
Weight(including package)	MSP3525:39 MSP3526: 47	g

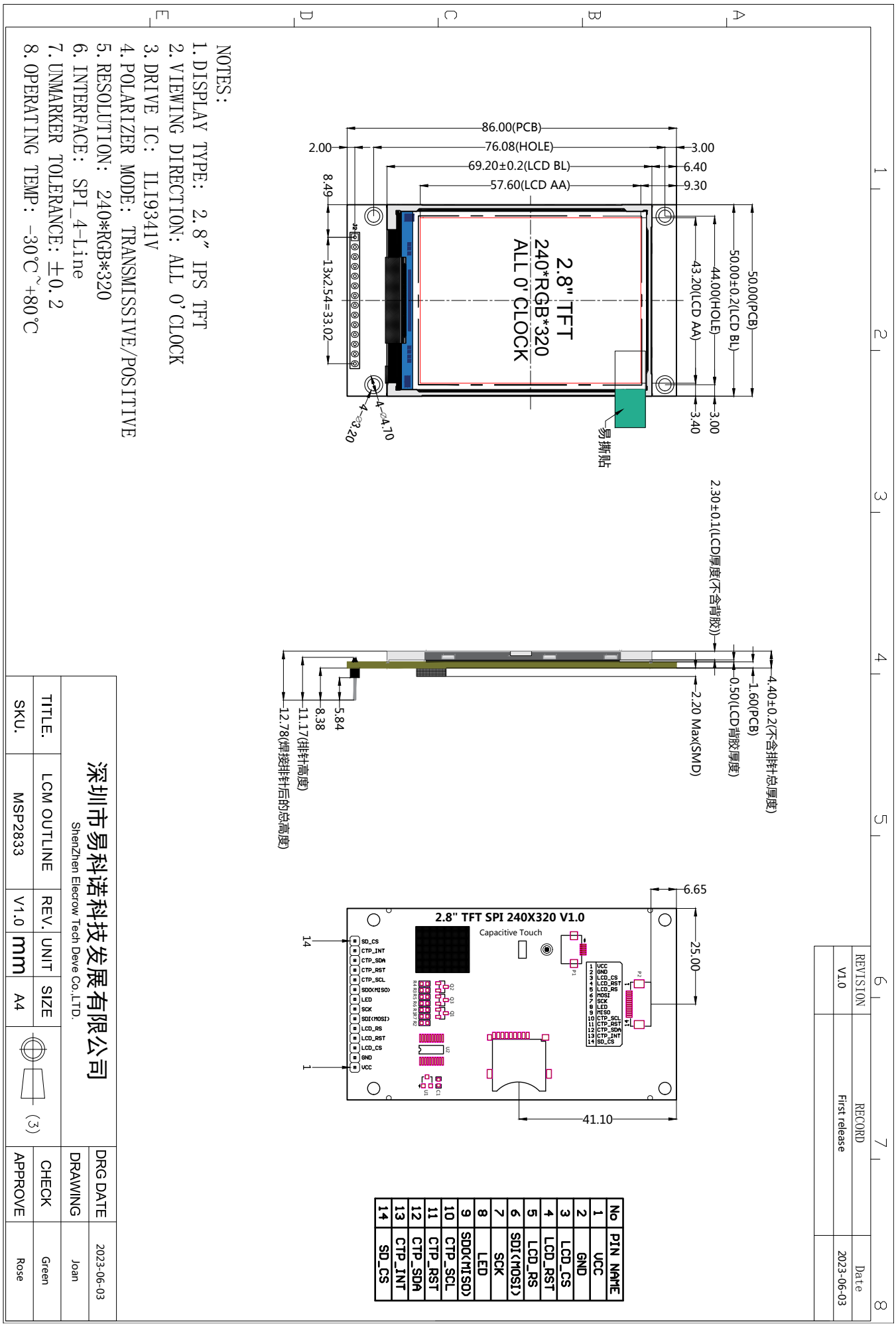
4. PRODUCT OUTLINE DRAWING

4.1. MSP2834(with Touch Screen) Outline Drawing



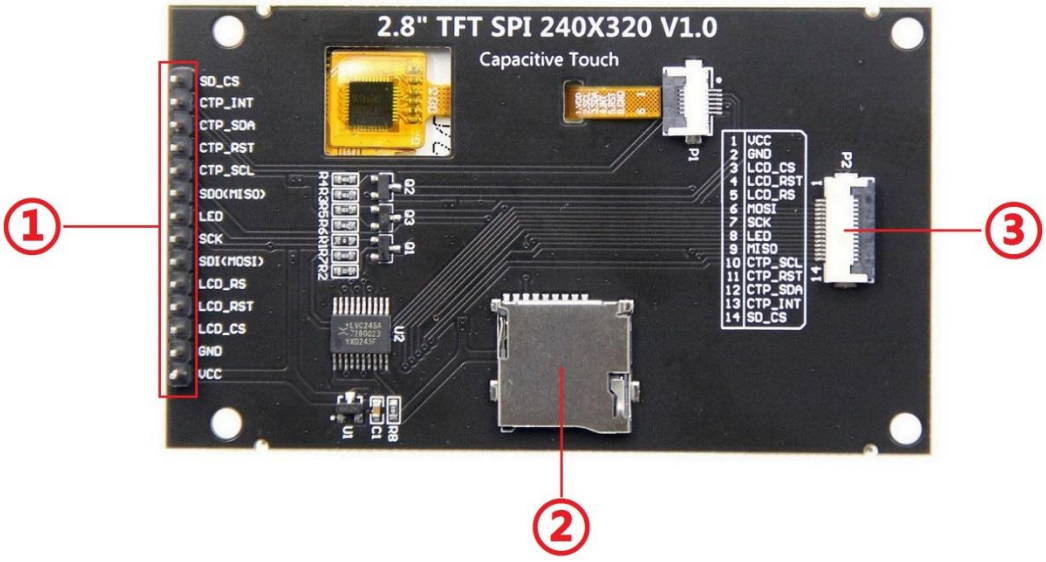
No	PIN NAME
1	VCC
2	GND
3	LCD_CS
4	LCD_RST
5	LCD_RS
6	SDI(MOSI)
7	SCK
8	LED
9	SDO(MISO)
10	CTP_SCL
11	CTP_RST
12	CTP_SDA
13	CTP_INT
14	SD_CS

4.2. MSP2833(without Touch Screen) Outline Drawing



5. PRODUCT INTERFACE

5.1. Interface Function Description



Picture 4 Product Interface

Number	Interface	Function Description
①	**14 Pin Header**	2.54mm spacing row pins, module signal input pins
②	**Micro SD Slot**	Insert a Micro SD card to expand storage space, such as storing big data content such as fonts and images
③	**14P FPC**	0.5mm FPC terminal, used for module signal input with the same function as ①

5.2. Pin Function Description

Module Pin	Pin Function Description
VCC	power positive
GND	Power ground
LCD_CS	LCD selection control signal, Low level active
LCD_RST	LCD reset control signal, Low level reset
LCD_RS	LCD command / data selection control signal High level: data, low level: command
SDI(MOSI)	SPI bus write data signal(SD card and LCD screen used together)

SCK	SPI bus clock signal(SD card and LCD screen used together)
LED	LCD backlight control signal (If you need control, please connect the pins. If you don't need control, you can skip it)
SDO(MISO)	SPI bus read data signal (SD card and LCD screen used together)
CTP_SCL	Capacitive touch screen IIC bus clock signal (modules without touch screens do not need to be connected)
CTP_RST	Capacitor touch screen reset control signal, low-level reset (modules without touch screens do not need to be connected)
CTP_SDA	Capacitive touch screen IIC bus data signal (modules without touch screens do not need to be connected)
CTP_INT	Capacitor touch screen IIC bus touch interrupt signal, when generating touch, input low level to the main control (modules without touch screens do not need to be connected)
SD_CS	SD card selection control signal, low level active (without SD card function, can be disconnected)

6. PRECAUTIONS

6.1. Safe Use of Products

- Do not use violence to press or hit the screen to avoid damaging it
- Do not use hard objects to scratch the screen to avoid scratching it
- Do not place heavy items on the product to avoid crushing the screen
- Please keep the product clean and do not drip water or oil on the screen
- Please use a clean, soft, and dry cloth to wipe the screen, and do not spray water or cleaning agents directly onto the screen
- Do not disassemble the product randomly to avoid damaging the screen or wiring
- Do not place the product in a high temperature and humidity environment
- Please place the product facing upwards in a stable place to prevent it from falling and damaging the product
- Please use the correct voltage to connect to the product to avoid damage due to high voltage
- When using the product, do not touch the components or pins with wet hands to avoid causing short circuits and damaging the product
- When the product is not in use for a long time, please unplug the power supply

6.2. Frequently Asked Questions FAQ

- **Question 1: After receiving the product, there is no response from the wiring and the screen does not light up**

Analysis:

Due to the fact that this module is an IPS display panel, only connecting to the power supply will not emit white light. It is recommended to first connect only three pins (VCC connected to 5V/3.3V, GND grounded, LED pin connected to 5V/3.3V). At this time, when observing from the vicinity of the LCD screen pin array, it is normal to see that there is an internal light bead lit up, indicating that the backlight is normal.

If the backlight still does not respond according to the above operation, it is speculated that there may be a hardware circuit malfunction.

- **Question 2: After receiving the product, the wiring test has a bright back, but there is no display screen**

Analysis:

Backlit indicates that the power supply is connected correctly and there is no short circuit phenomenon, but if the screen needs to be displayed normally, SPI communication needs to be completely normal, including factors such as correct matching of SPI signal wiring and program burning, and normal operation of the microcontroller.

It is recommended to use the demo program we have tested for the first time. The program should not be modified and try to find the same microcontroller development board for testing as much as possible. This can eliminate the factor of dim dots caused by program modifications. At this time, it is also important to pay attention to whether the demo compilation and download prompt is successful, whether the development board is running normally, and whether the wiring is wired according to program requirements.

If the demo does not match your microcontroller and must be modified to run, it is recommended to use the_ Example modification test for SoftWare suffix

words, which will be more effective than_ HardWare is more likely to succeed.

If the picture still cannot be displayed normally after many times of tossing and turning according to the above steps, use the necessary tools such as multimeter/oscilloscope/Logic analyzer to analyze and test the signal, and contact our technicians for help.

- **Question 3: The product can display normally, but there is no response to touch**

Analysis:

The display bus designed in this module is separate from the touch bus, which means that a normal display does not mean that the touch driver bottom layer is normal, and the physical wiring between the two is not related.

The capacitive touch circuit of this module adopts the I2C communication bus, and the hardware can also observe whether there are signs of damage to the touch cable, whether the P1 touch seat is in place, and other factors to rule out the possibility of hardware damage; In terms of software, it is recommended to first use the test demo we provide for testing and wire according to the wiring requirements, in order to troubleshoot problems using the elimination method.

- **Question 4: The product can display, but the backlight brightness fluctuates and is unstable**

Analysis:

The backlight circuit of this module is driven by a transistor. The LED pin inputs a high level to light up the backlight, and a low level to turn off the backlight. The PWM signal can also be input through the LED pin to achieve dimming purposes; If the LED pin is suspended without any treatment, an unstable state will occur, which means that the LED pin will be very dark when touched by hand. It is necessary to configure the LED pin with a stable level output to ensure stable and normal backlight.

- **Question 5: What if there is no example in the demo that my microcontroller is suitable for**

  Analysis:

  As is well known, there are over ten thousand types of microcontroller models, and the development boards derived from them are countless. Our demo is configured with examples of the ESP32/STM32/CH32/C51/AruinoUNO platform by default, and each example will only be released after being tested and certified. All source code is free and open-source learning, and is mostly written in pure C language, making it convenient for customers to transplant to their own microcontroller platform; If you cannot find a directly usable example in the demo, you need to refer to our code and transplant it yourself. If necessary, you can also purchase our test board to test the screen first to determine its quality and increase confidence; Our company provides low-level driver technical support. Welcome to communicate, exchange, and learn!