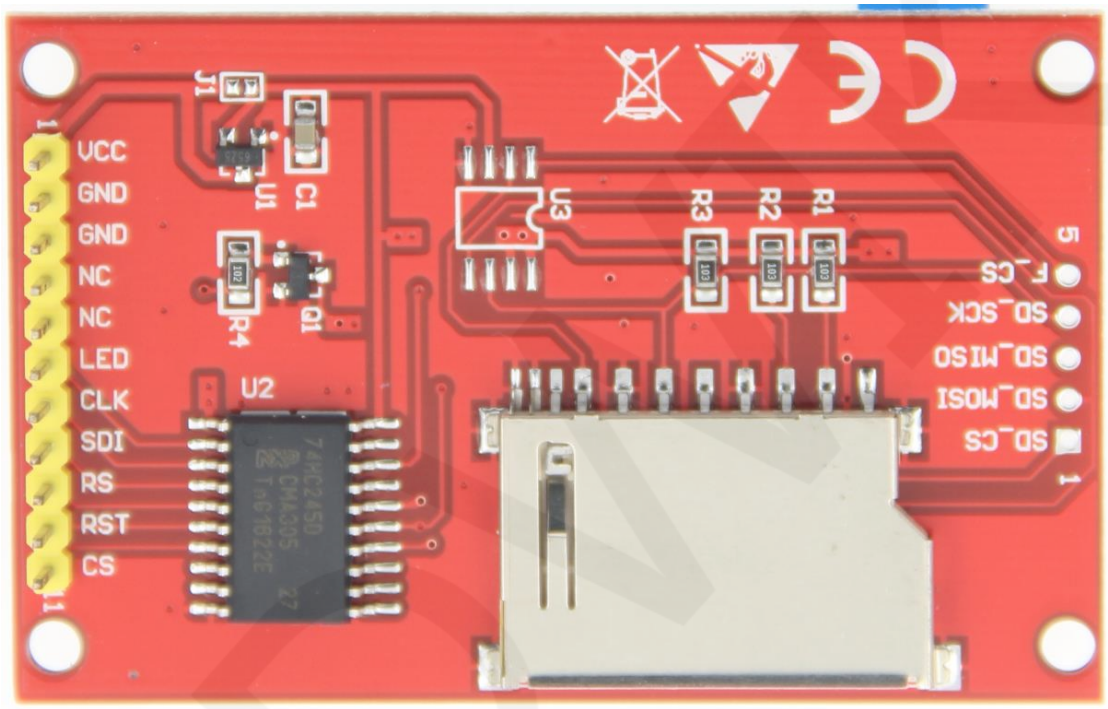
Test platform introduction:

Development board: STC89/STC12 development board

MCU ： STC89C52RC、STC12C5A60S2

Crystal frequency : 12MHZ

Wiring instructions:



Picture1. Pin silkscreen picture

STC89C52RC and STC12C5A60S2 microcontroller test program wiring instructions			
Number	**Module Pin**	**Corresponding to STC89/STC12 development board wiring pin**	**Remarks**
1	**VCC**	5V/3.3V	LCD power supply positive pin
2	**GND**	GND	LCD Power ground pin pin
3	**GND**	GND	LCD Power ground pin pin
4	**NC**	no need to connect	Not defined, reserved

5	**NC**	no need to connect	Not defined, reserved
6	**LED**	P32	LCD backlight control signal (high level lighting, if you do not need control or use STC89C52RC, please connect 5V/3.3V)
7	**CLK**	P17	LCD SPI bus clock pin
8	**SDI**	P15	LCD SPI bus write data pin
9	**RS**	P12	LCD data / command selection control pin (low level: command; high level: data)
10	**RST**	P33	LCD reset control pin (reset at low level)
11	**CS**	P13	LCD chip select control pin (enabled at low level)

Description:

1. When manually wiring, reduce the occupied IO port of the development board as follows:
   A. When the SPI multiplexed chip is not selected, ground the **CS** pin of the module to save 1 IO port;
   B. When the backlight is not needed, connect the module **LED** pin to 5V or 3.3V, saving 1 IO port;
   C. Connect the **RST** pin of the module to the reset end of the MCU to save 1 IO port;
2. Short-circuit the J1 pad on the PCB backplane, then **VCC** is connected with 3.3V voltage at this time. Never connect it to 5V, it will burn out;
3. After the module **VCC** and **GND** are connected, the **LED** pin is connected to 3.3V/5V or high level, and the backlight is normally lit to prove that the backlight is normal;

Demo function description:

1. This set of test program procedures is applicable to the STC89C52RC and STC12C5A60S2 platforms;

2. This set of test program uses the software SPI and hardware SPI function of the single-chip platform (STC89C52RC only software SPI function);
3. When using the software SPI function or the hardware SPI function, the wiring pin definition is the same, but the initialization is different;
4. Please follow the above wiring instructions to find the corresponding development board and MCU for wiring;
5. STC89C52RC microcontroller RAM is only 25KB, so only a simple brush test, other test items can not be tested;
6. This set of tests supports display switching in four directions. For details, see the display direction switching instructions.
7. STC12C5A60S2 microcontroller test program contains the following test items:
   A. The main interface displays the test;
   B. simple brush test;
   C. rectangular drawing and filling test;
   D. circular drawing and filling test;
   E. triangle drawing and filling test;
   F. English display test;
   G. Chinese display test;
   H. picture display test;
   I. rotating display test;

Display direction switching instructions:

Find the macro definition USE_HORIZONTAL in lcd.h as shown below:

```
//////////////////////////////////////用户配置区///////////////////////////////////
#define USE_HORIZONTAL      0//定义液晶屏顺时针旋转方向  0-0度旋转，1-90度旋转，2-180度旋转，3-270度旋转
```

USE_HORIZONTAL 0 //0° Rotate

USE_HORIZONTAL 1 //90° Rotate

USE_HORIZONTAL 2 //180° Rotate

USE_HORIZONTAL 3 //270° Rotate