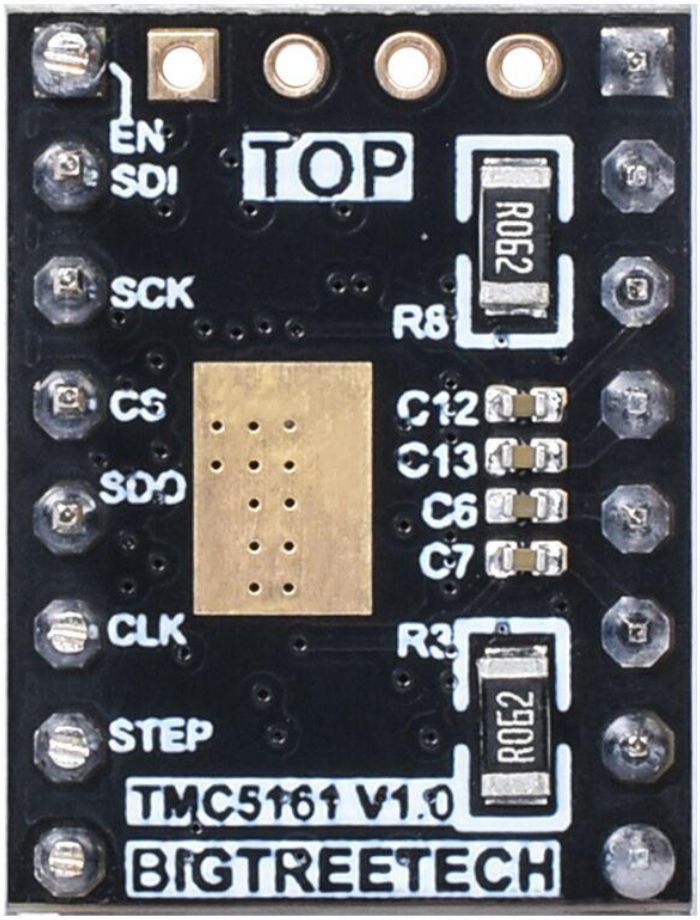
Shenzhen Bigtree techonlogy Co.,LTD
BIG TREE TECH

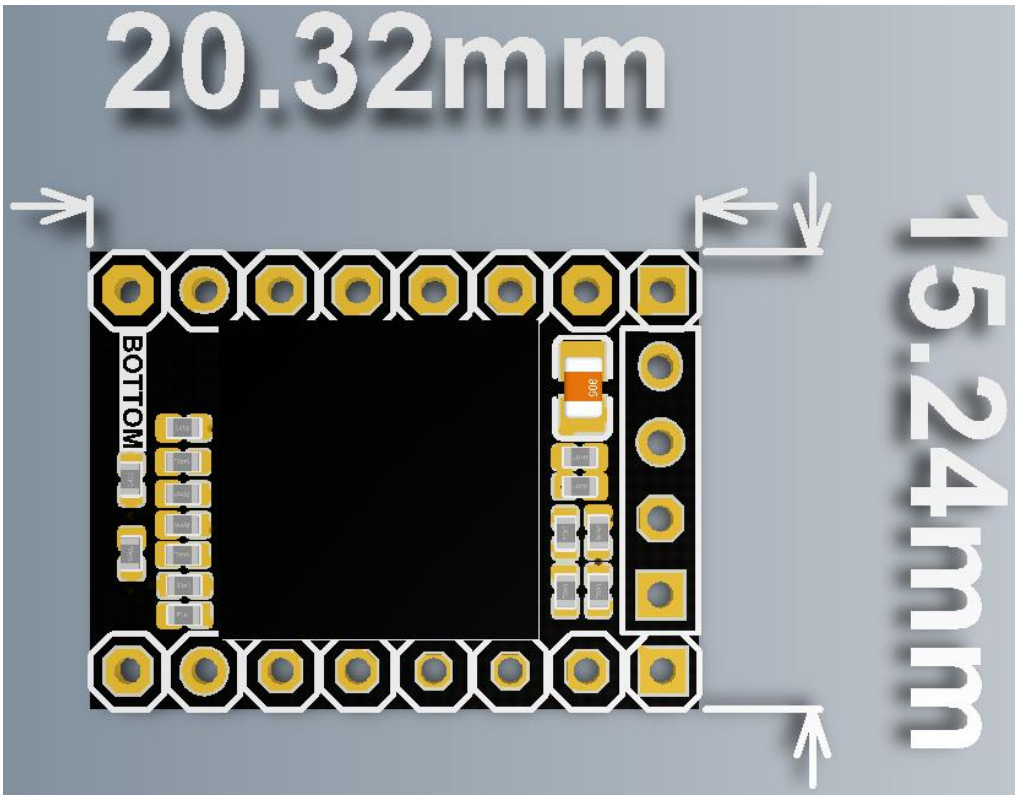
BIGTREETECH

TMC5161 V1.0

Stepping motor driving module



I. Dimensional parameters



Product Advantages

Support 2-Phase stepping motor

Rated current: 3.5A rms

Voltage input: 12/24V DC

Low $R_{DS(ON)}$: Integrated 45mΩ MOSFET, not easy to heat up

SPI working mode

Encoder expansion port

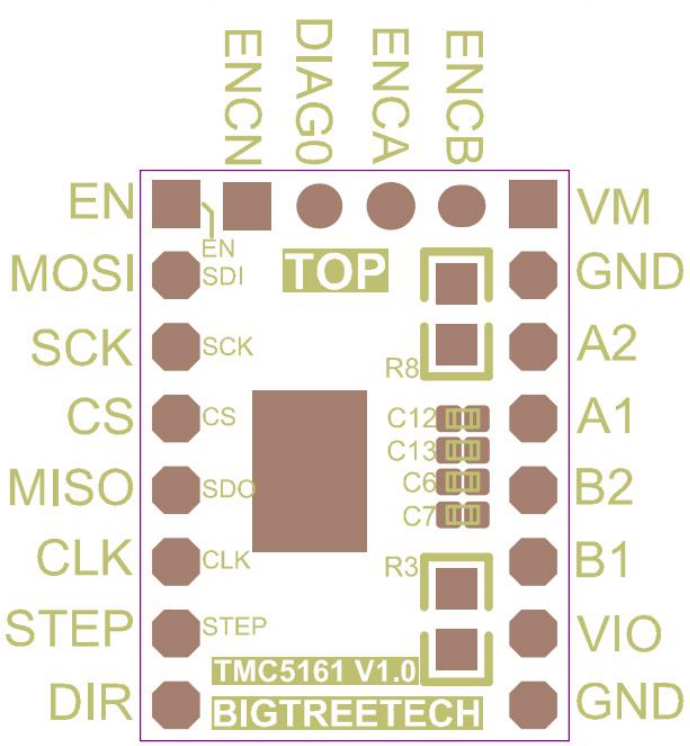
Support 256 microsteps

SpreadCycle (highly dynamic motor control chopper)

StealthChop (ultra-quiet technology)

CoolStep (current dynamic control)

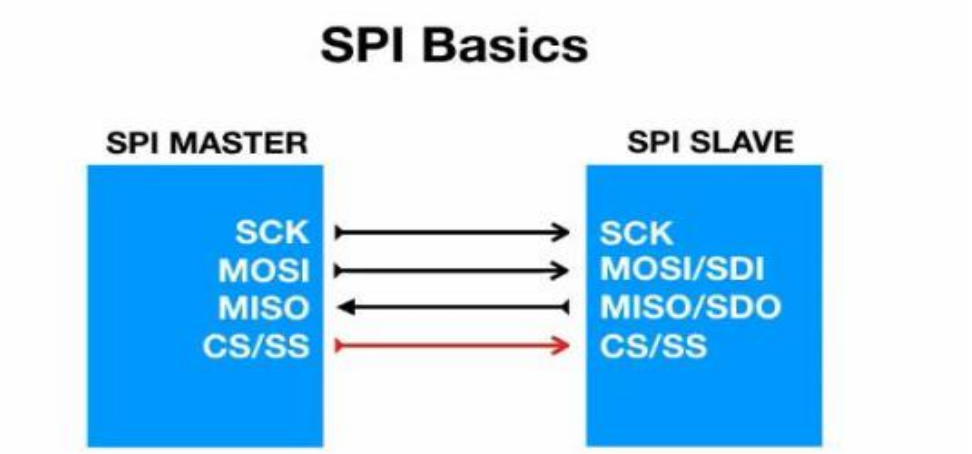
Pin diagram



Grade	Function	Grade	Function
EN	Enabled	VM	Motor operating voltage input
SDI	SPI-MOSI	GND	power ground
SCK	SPI-SCK	A2	Phase A
CS	SPI-CS	A1	Phase A
SDO	SPI-MISO	B2	Phase B
CLK	clock input	B1	Phase B
STEP	impulse input	VIO	Logical voltage input
DIR	impulse input	GND	digital ground

II. Description of SPI working mode

The wiring information



Three lines common to all the devices:

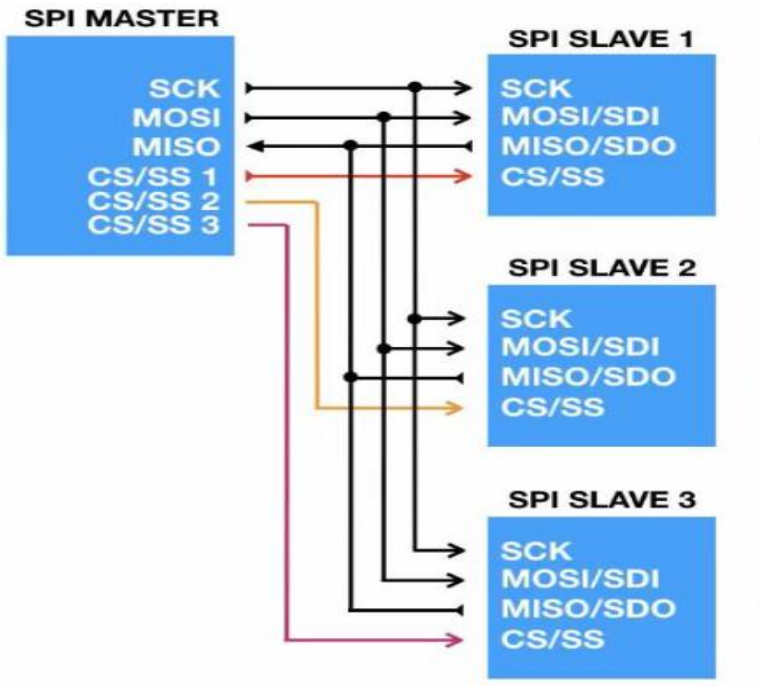
MOSI (Master Out Slave In)

MISO (Master In Slave Out)

SCK (Serial Clock)

One line specific for every device:

SS (Slave Select) / CS (Chip Select)



III. Firmware editing instructions

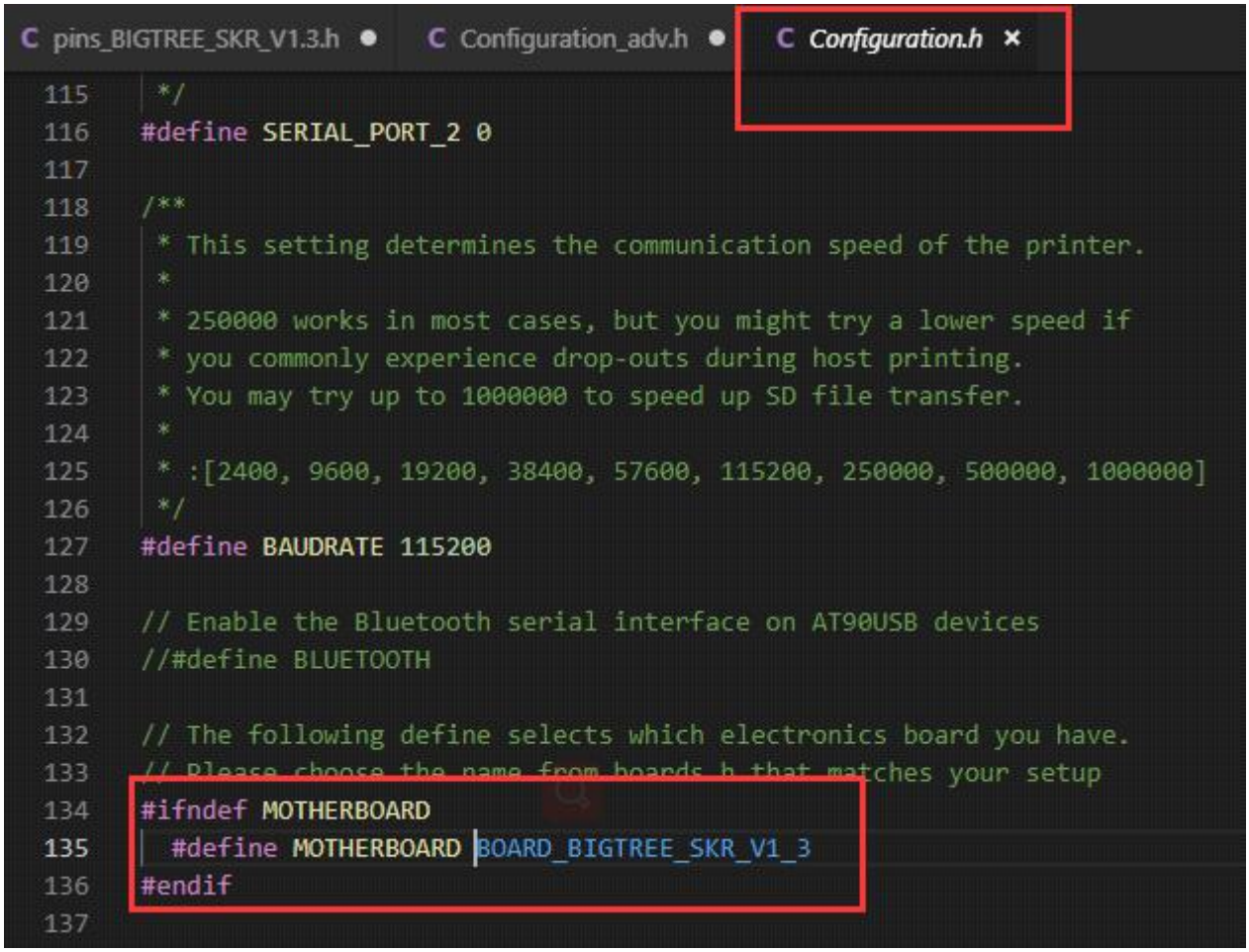
Product files download:

https://github.com/bigtreetech

Firmware: Marlin-2.0

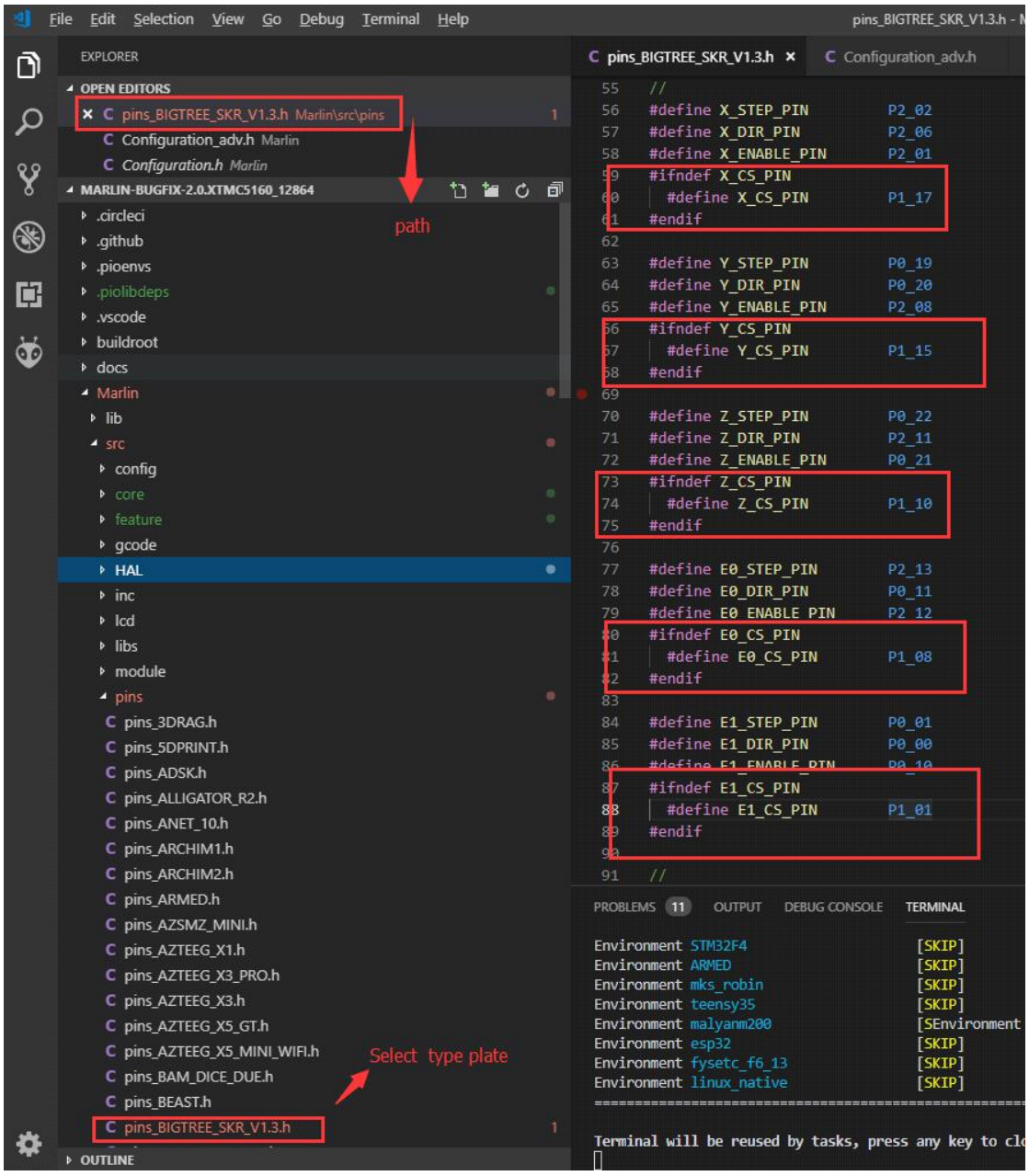
BIGTREETECH SKR V1.3 as example: (same as TMC5160)

1、Find and open the "Configuration.h" file in the marlin 2.0 firmware, then find "#define MOTHERBOARD XXXXXX", "XXXXXX" is the model of the board you are using.

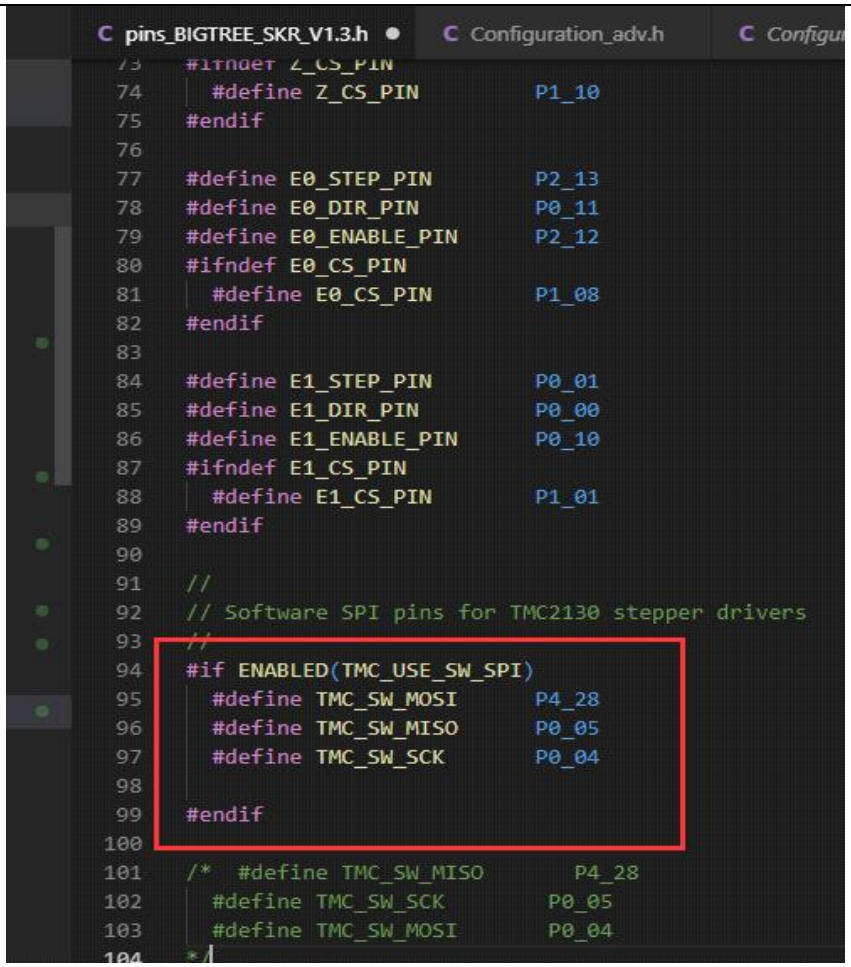


2. In the folder Marlin\src\pins , find the "pins_xxxxxx.h" file for your board (xxxxxx stands for board model), then find

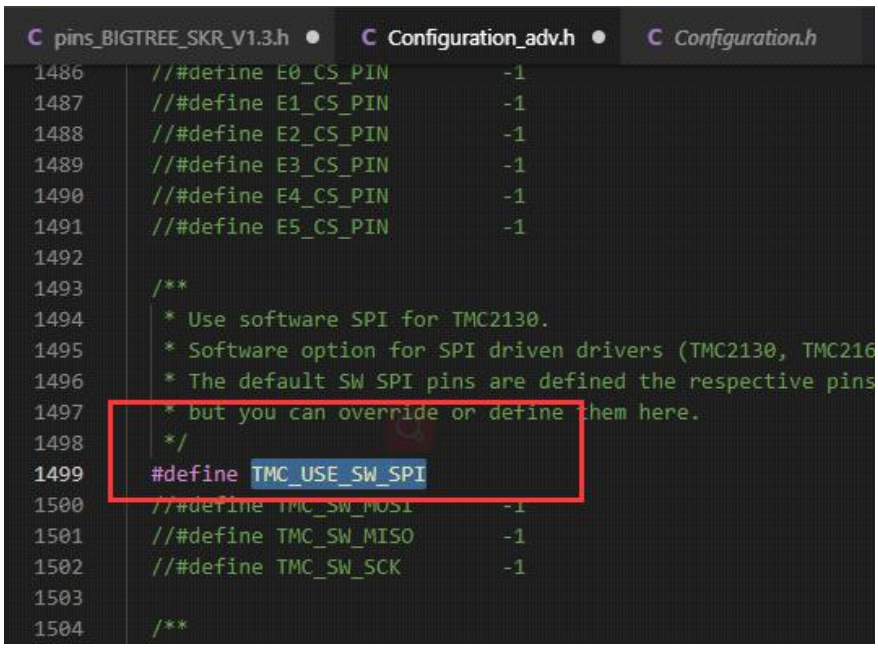
"X_CS_PIN", "Y_CS_PIN", "Z_CS_PIN", "EO_CS_PIN", etc. in the file, modify the following pins to the pins you use on your board.



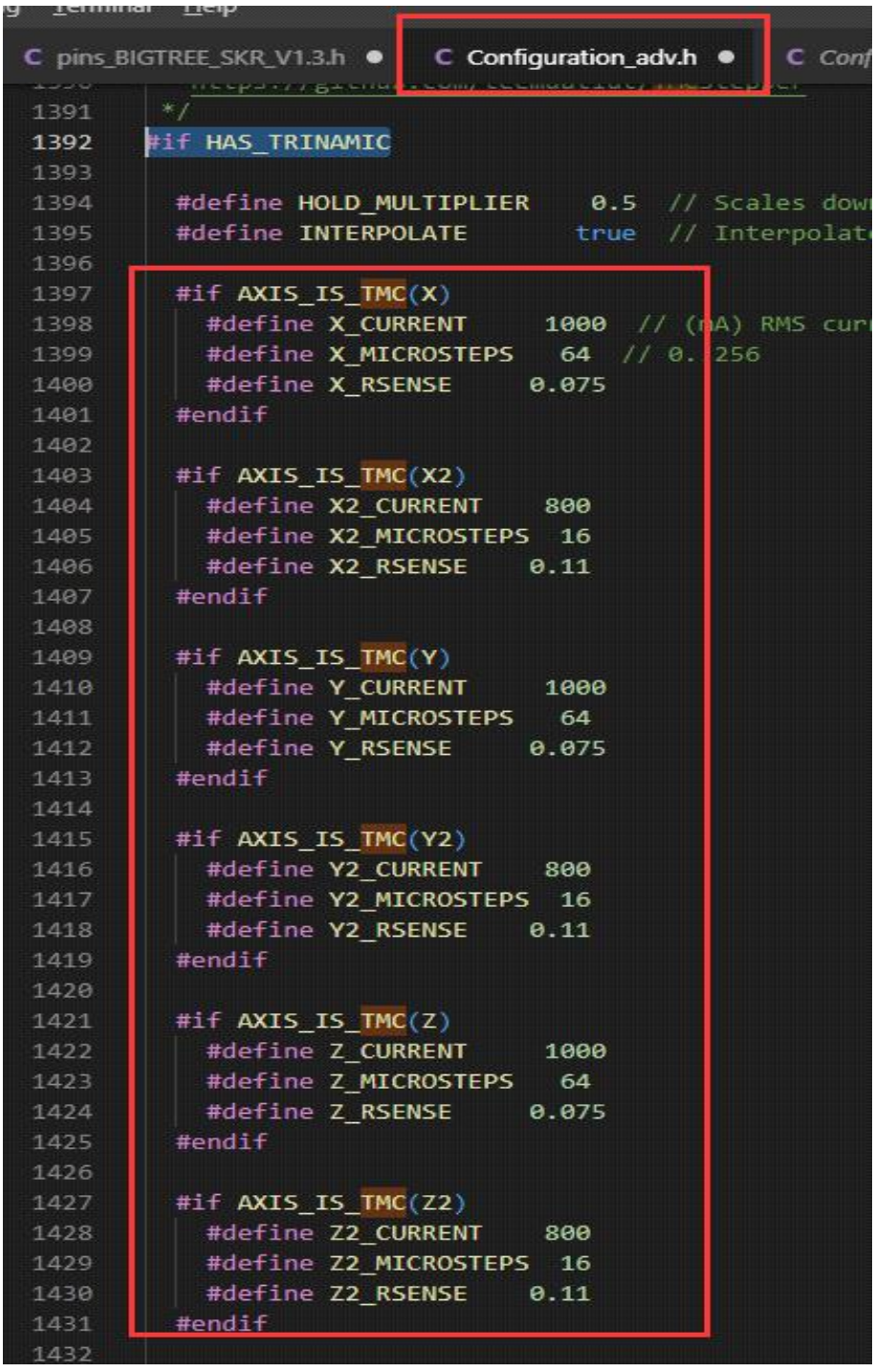
3. Find "#define TMC_SW_MOSI XXX" "#define TMC_SW_MISO XXX" "#define TMC_SW_SCK XXX" in the file in step 2 then change "XXX" to the pin you use.



4. Find and open "Configuration_adv.h", then find "#define TMC_USE_SW_SPI", remove the mask“//”



5.In the "Configuration_adv.h" file, find "#define X_CURRENT", "#define X_MICROSTEPS" and "#define X_RSENSE" to modify the parameters (the axes used need to be modified), and the Rsense of the used axis should be changed into "0.060".



6.After firmware debugging, compile and flash on the motherboard, open the software Pronterface in computer, connect to the motherboard to view the TMC5161 driver running status of each SPI mode.

IV. Notes

1. Pay attention to the line sequence and I/O port when connecting, the wrong line will directly make the driver can not work, please carefully connectthe driver according to the pin diagram;

2. When inserting the drive into the motherboard, pay attention to the driving direction, can not be plugged in reverse, to prevent the drive from burning down;

3. Before driving work, we must make sure that heat dissipation can work to prevent driving abnormal work;

4. Before installing the drive, make sure the power supply was disconnected to prevent the drive from burning down;

5. Do not plug and pull the module to avoid damage;

6. When installing the heat sink, please pay attention to the gap between the heat sink and pins to prevent short-circuited phenomenon.

If you encounter problems in use, welcome to contact us, we will carefully answer for you; if you have any good comments or suggestions on our products, you are also welcome to give us back, we will also carefully consider your comments or suggestions, thank you for choosing BIGTREETECH products, thank you!