

**Model Number:** TMC2100 TMC2130 TMC2208

**Name:** BIGTREETECH TMC2208 TMC2100 TMC2130 V1.1 Stepper Motor

**Color:** Black

**Item Type:** Driver

**Material:** PCB

**Feature:** Silent

**Color:** Black

**Version:** V1.1

**Function:** StepStick Mute Drive

**Microsteps:** 256

**Size:** 15 x 20mm

**Use:** for 3d printer parts

Place of Origin: Guangdong, China(Mainland)	Product Name : TMC2100 TMC2130 TMC2208 V1.0 Stepper Motor
Brand Name : BIQU	Application : 3d printer parts
Type : Stepper Motor Driver	Color : Black
Shipping Term :China post / E-packet /DHL Fedex TNT EMS UPS / and so on	

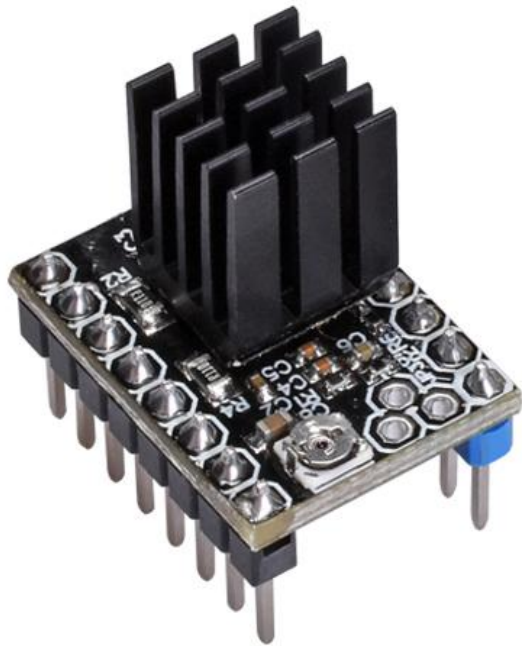


We are one of the largest manufacturers and exporters of 3D printer parts in China,has always been committed to improving the quality of various types of 3D printer and accessories. We have own 3D printer design, 3D printer motherboard R&D, printer hardware accessories and various CNC processing.

If you are a purchasing agent ,please contact us via [biqu3dprinter@hotmail.com](mailto:biqu3dprinter@hotmail.com)

Product information

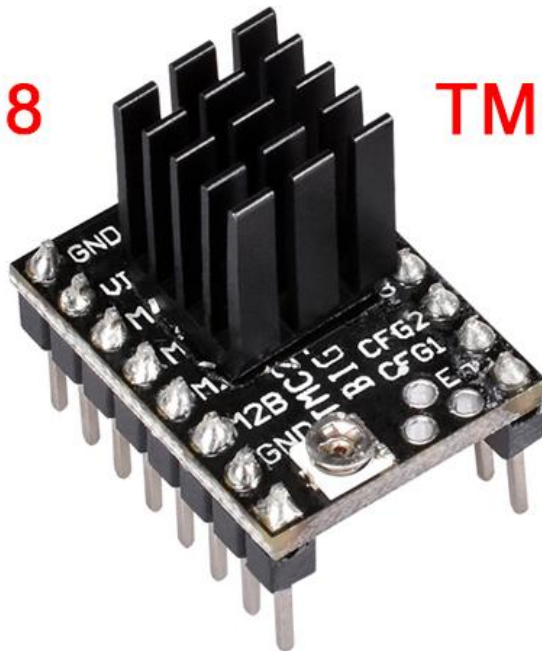




**TMC2208**



**TMC2130**



**TMC2100**

Parameter			
	TMC2100	TMC02208	TMC2130
			
Working Mode	Dir Step	Dir Step	Dir Step/ <b>SPI</b>
MicroPlyer	1/256	1/256	1/256
MicroPlyer Mode	Up to 256	1/2, 1/4, 1/8, 1/16,1/32	Up to 256
Driver Current	up to 1.7A	up to 2A	Up to 2A
Input Voltage	4.75-46V DC	4.75-36V DC	4.75-46V DC
Logical Voltage	3-5V	3-5V	3-5V
Decibel	< 10dB	< 10dB	< 10dB
RDson	$\geq 0.5\Omega$	$\leq 0.3\Omega$	$\geq 0.5\Omega$
StealthChop(quiet)	Yes	Yes	Yes
SpreadCyle	Yes	Yes	Yes

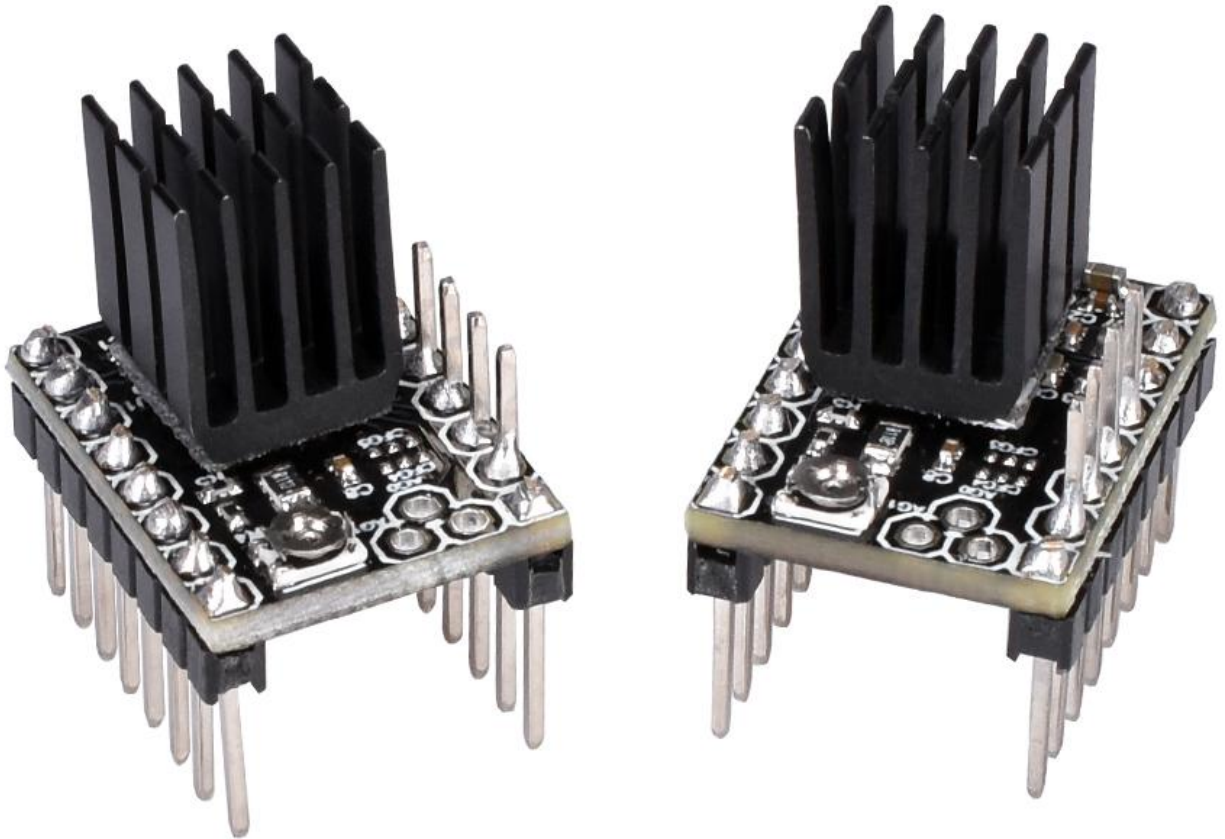
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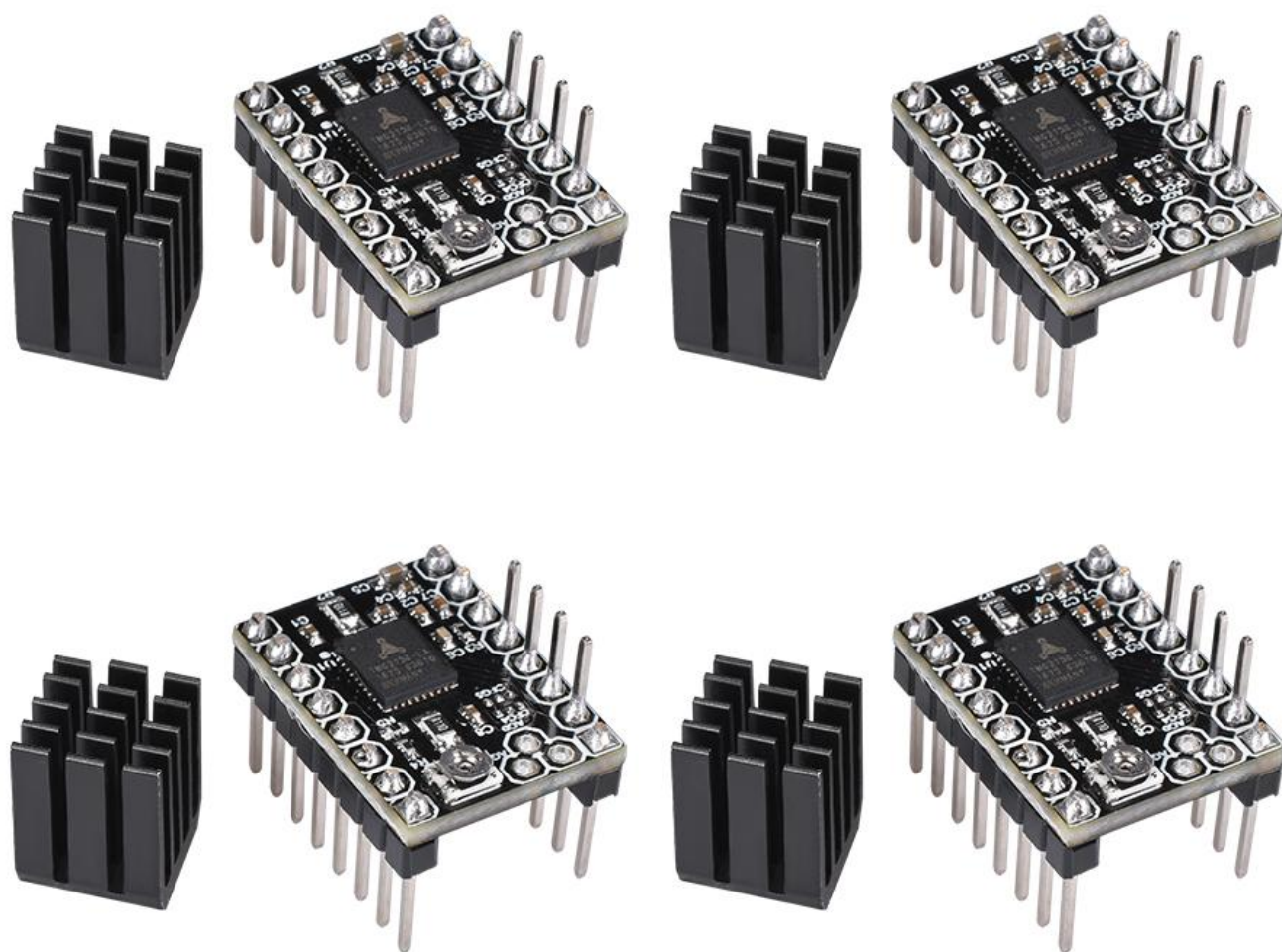
1. Adjust the potentiometer with a special ceramic screwdriver. Otherwise, the drive is easy to be damaged.
2. The heat sink on the drive block is stuck to the middle of the chip (the other driver is the same), otherwise, it is liable to be shortened in current with the next pin.

**Note: About TMC2130, its row master needle color has yellow and black. We will send it at random. Thank you!**

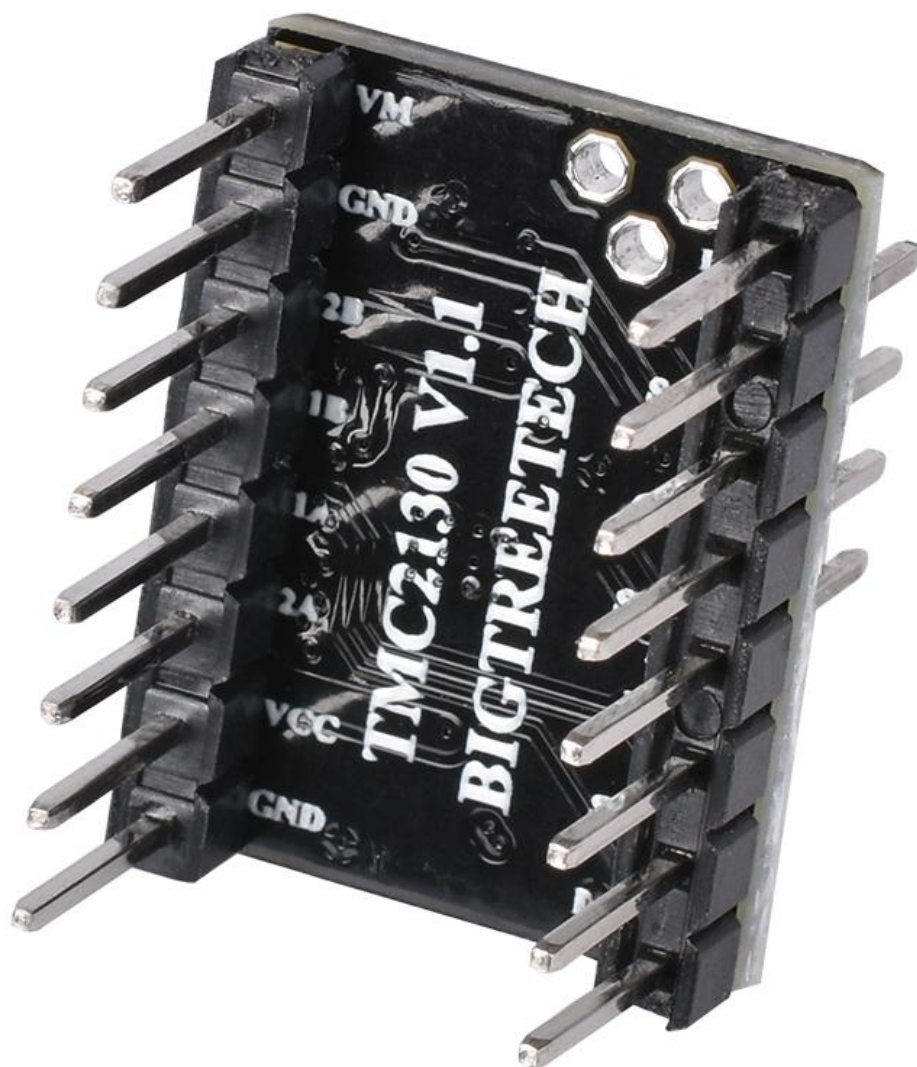


## TMC2130 V1.1 DIY (without cables)



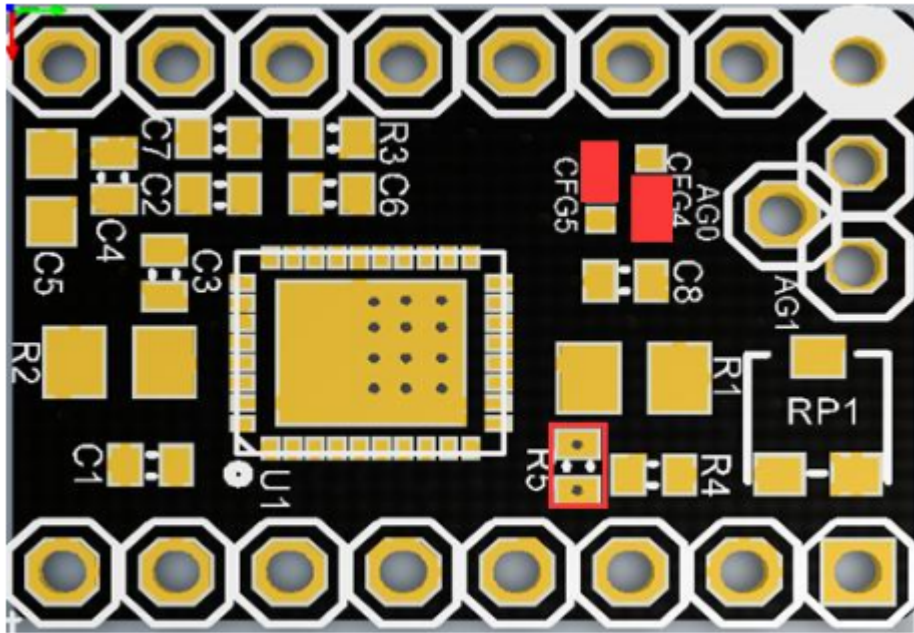








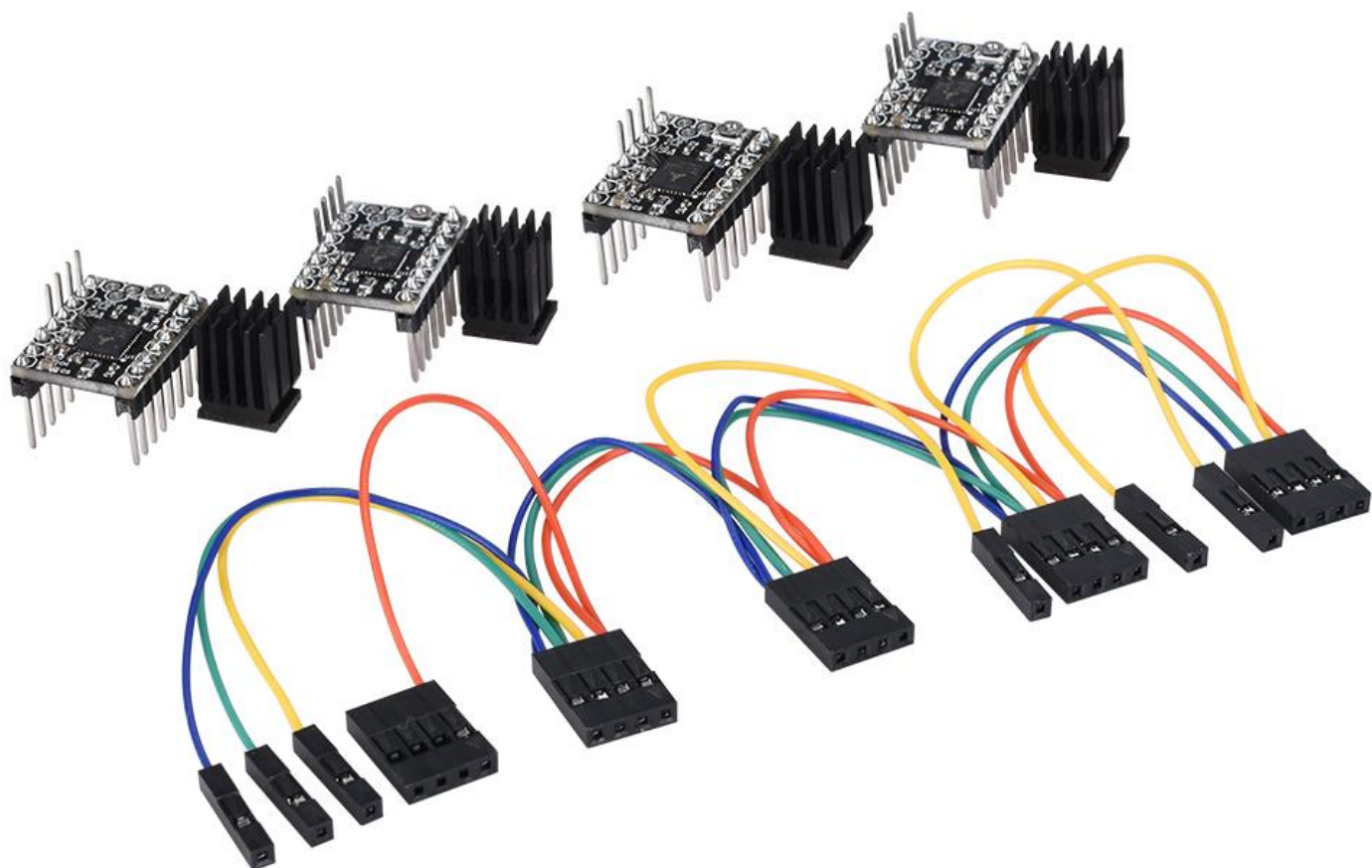
**This option is not wired and requires you to solder yourself when using SPI mode: **Welding method: welding CFG4 to GND, CFG5 to VCC** .**

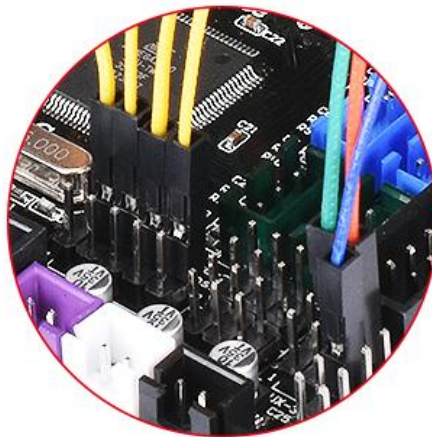
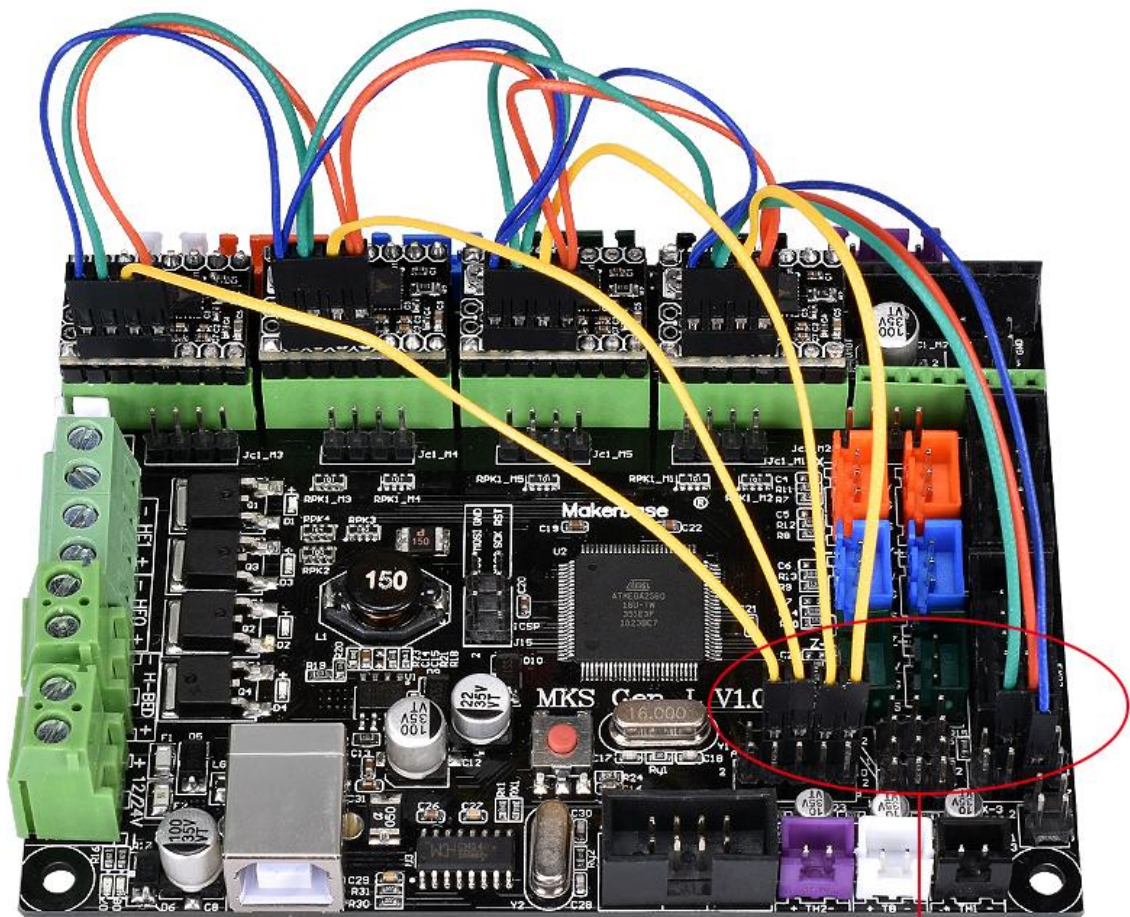


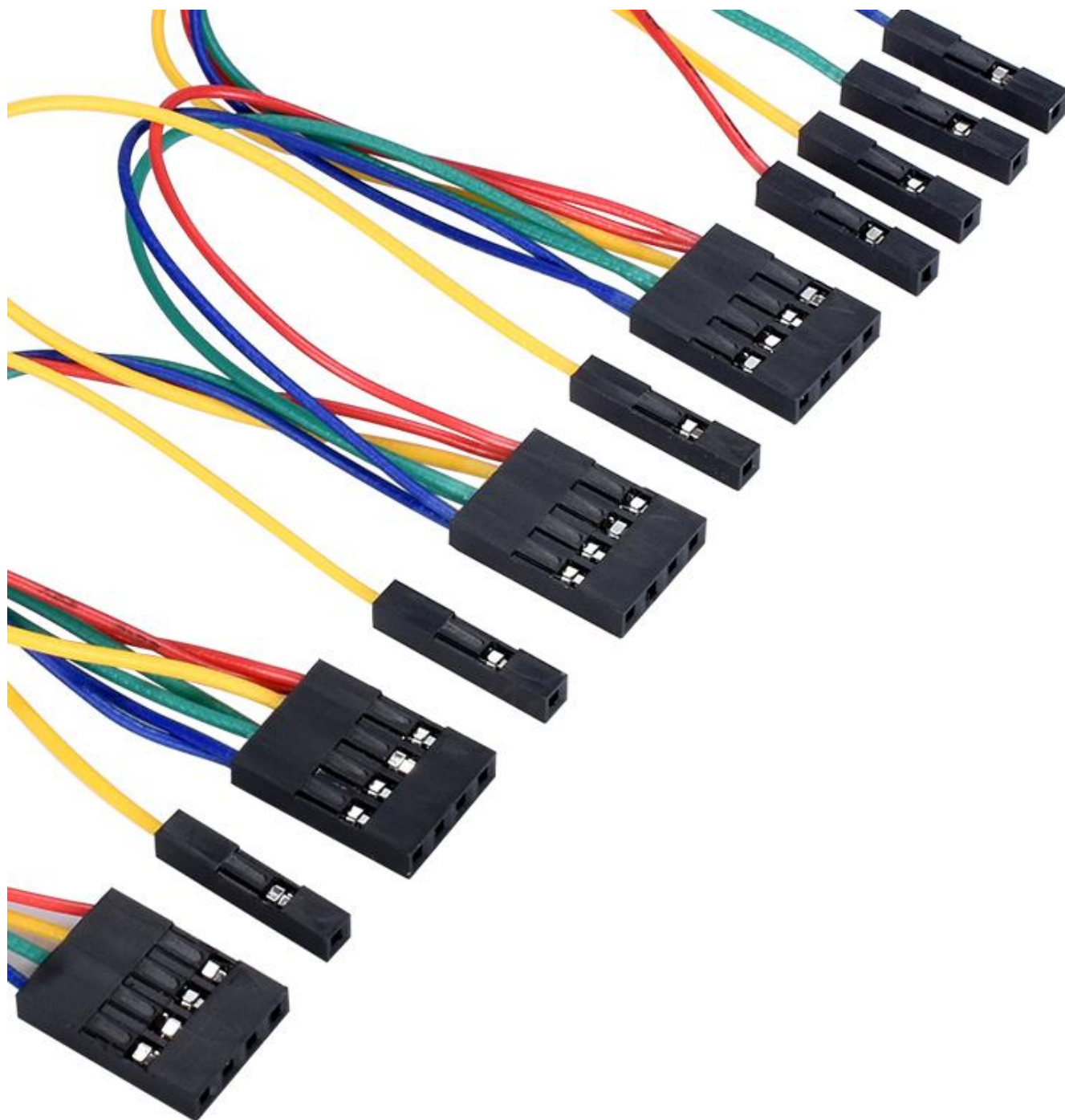
If you want to use the SPI model *conveniently*, we suggest you choose the kit , 4 PCS TMC 2130 V1.1 with wire option .

**TMC2130 V1.1SPI 4PCS + CABLES**

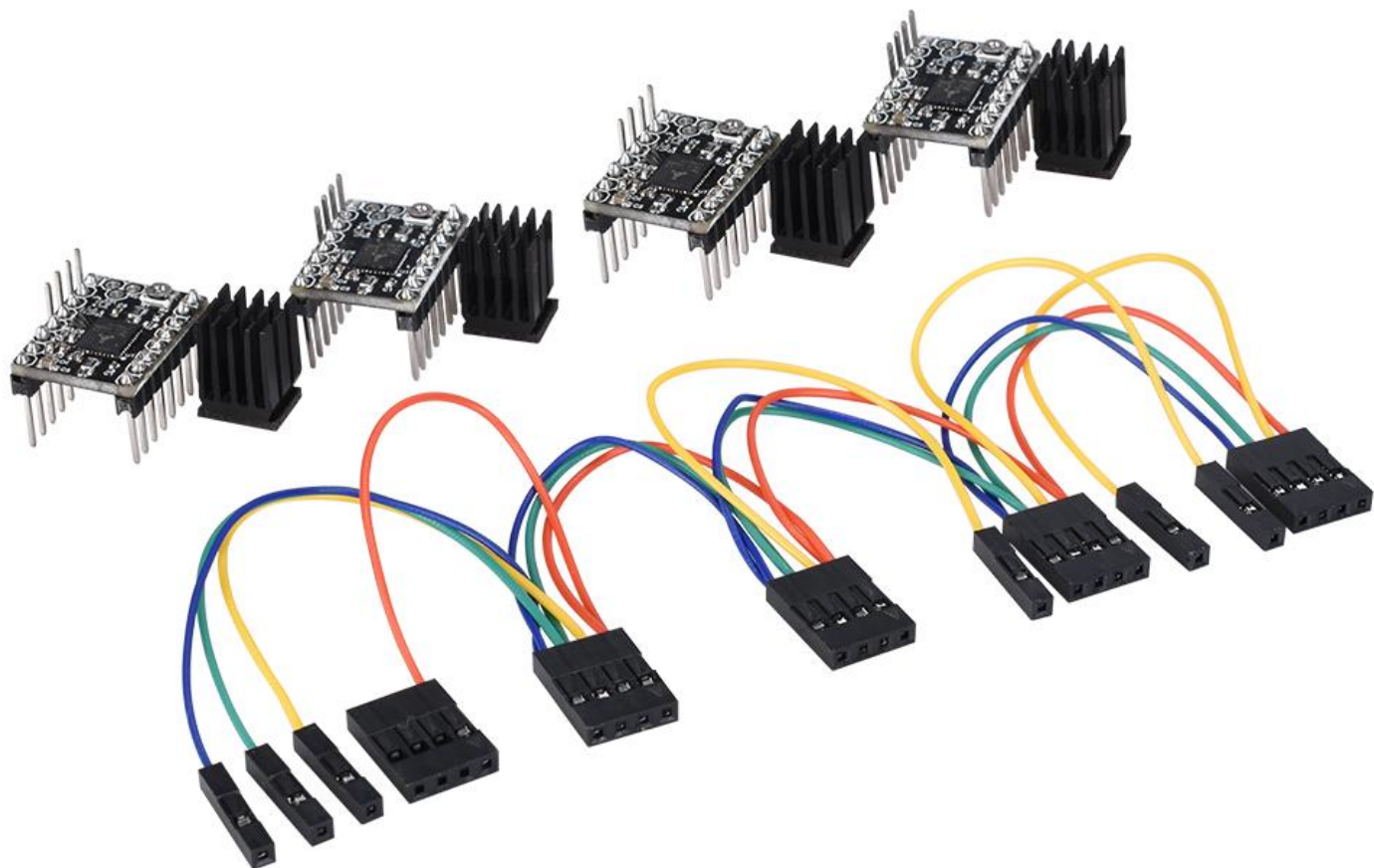






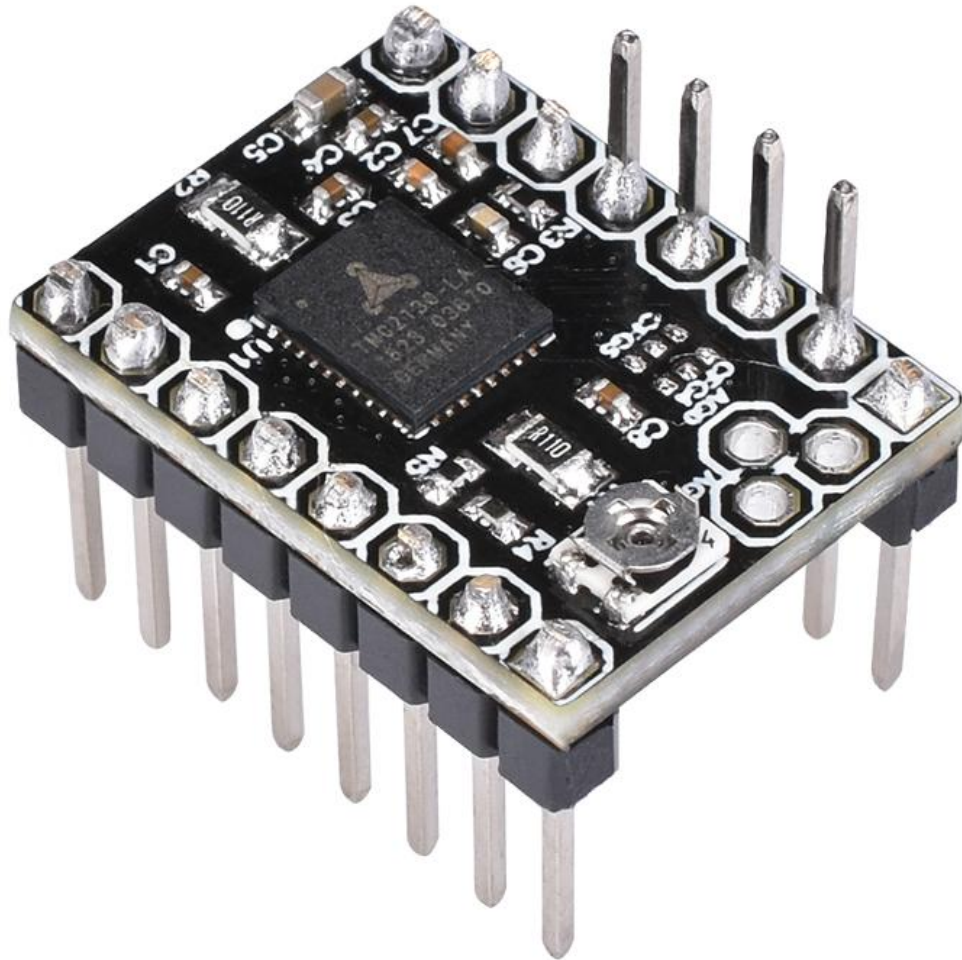












## TMC2130

### Features:

- Supports three control modes of STEP/DIR/SPI interface.
- Combined maximum efficiency and optimum motor torque operation without noise.
- High accuracy no sensor motor load detection
- High load driver will not lost step.

**The kit don't to modify something.**

### **Parameter:**

Configuration: CFG/SPI

microsteps: Up to 1/256

microPlyer: 1/256

Logic Voltage VI0: 3-5V

Motor Voltage : 5.5-46V

Motor Phase Current: 1.2A RMS, 2.5A Peak

### **Notice:**

This module is similar to TMC2100, which will generate a lot of heat energy when it working. Therefore, heat sink and heat dissipation fan must be added to cool it down during the use, which reduce the occurrence of losing steps and running deviation)

### **STP/ DIR/SPI model Usage**

#### **1.STP/ DIR Working Mode**

(1)Welding resistance at R5 position to make the driver STP/DIR working mode;

(2)Work mode selection: SDI (CFG1), SCK (CFG2)

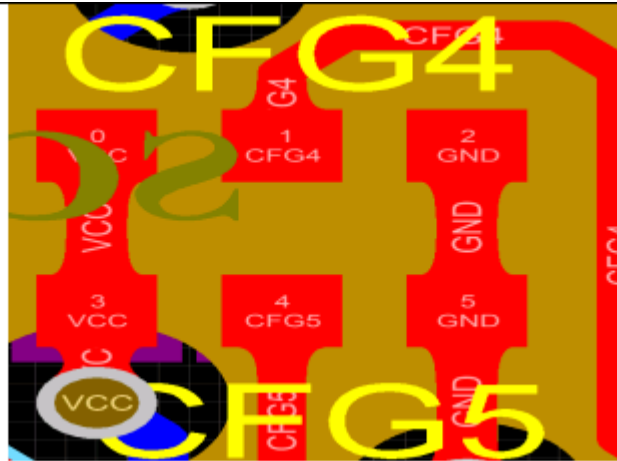
#### **Standalone Operation(SPI\_MODE=GND) STP/DIR MODE**

<b>CFG6/EN</b>				
GND -> Driver enable				
Vio -> Driver disable				
Open-> Driver enable with ramp down from 100% to 34% after about 3s				
<b>CFG2 CFG1 Steps Interpolation Chopper Mode</b>				
GND	GND	1	NO	spreadcycle
GND	Vio	2	NO	spreadcycle
GND	Open	2	Yes to 256	spreadcycle
Vio	GND	4	NO	spreadcycle
Vio	Vio	16	NO	spreadcycle
Vio	Open	4	Yes to 256	spreadcycle
Open	GND	16	Yes to 256	spreadcycle
Open	Vio	4	Yes to 256	stealthchop
Open	Open	16	Yes to 256	stealthchop

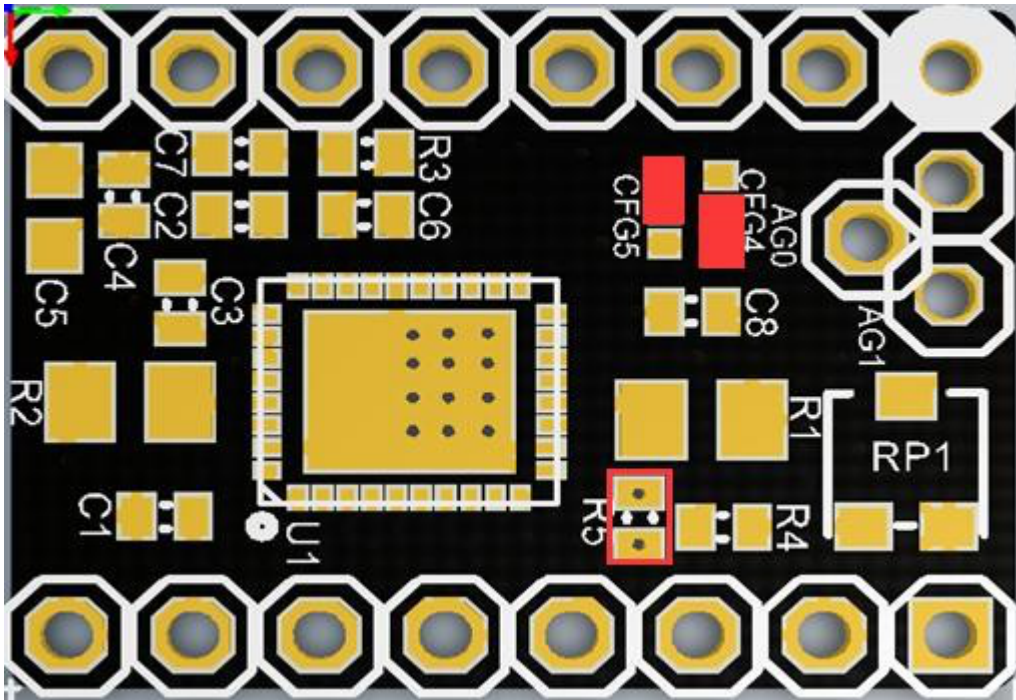
#### **2. SPI working mode wiring instructions:**

**Before wiring, you need to select the working mode of the driver module for hardware operation:**

**(1) Weld CFG4 and CFG5 as shown in the red area (i.e., CFG4 to GND, CFG5 to VCC); (spreadcycle mode can only be used with proper welding)**



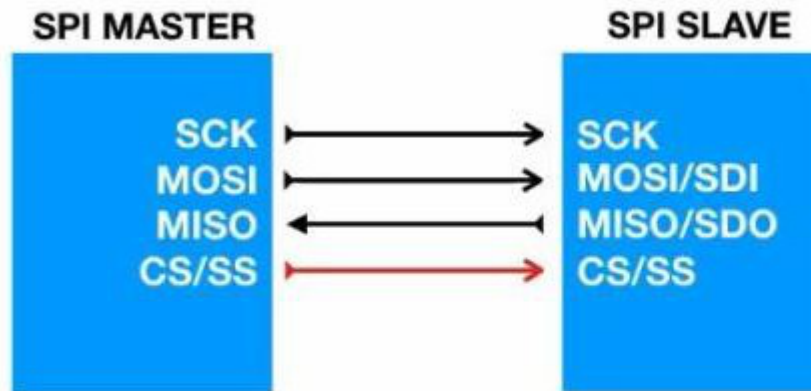
**Remove the resistance at the R5 position so that the driver is in SPI working mode.**



**The wiring diagram is shown as follows:**



# SPI Basics



**Three lines common to all the devices:**

MOSI (Master Out Slave In)

MISO (Master In Slave Out)

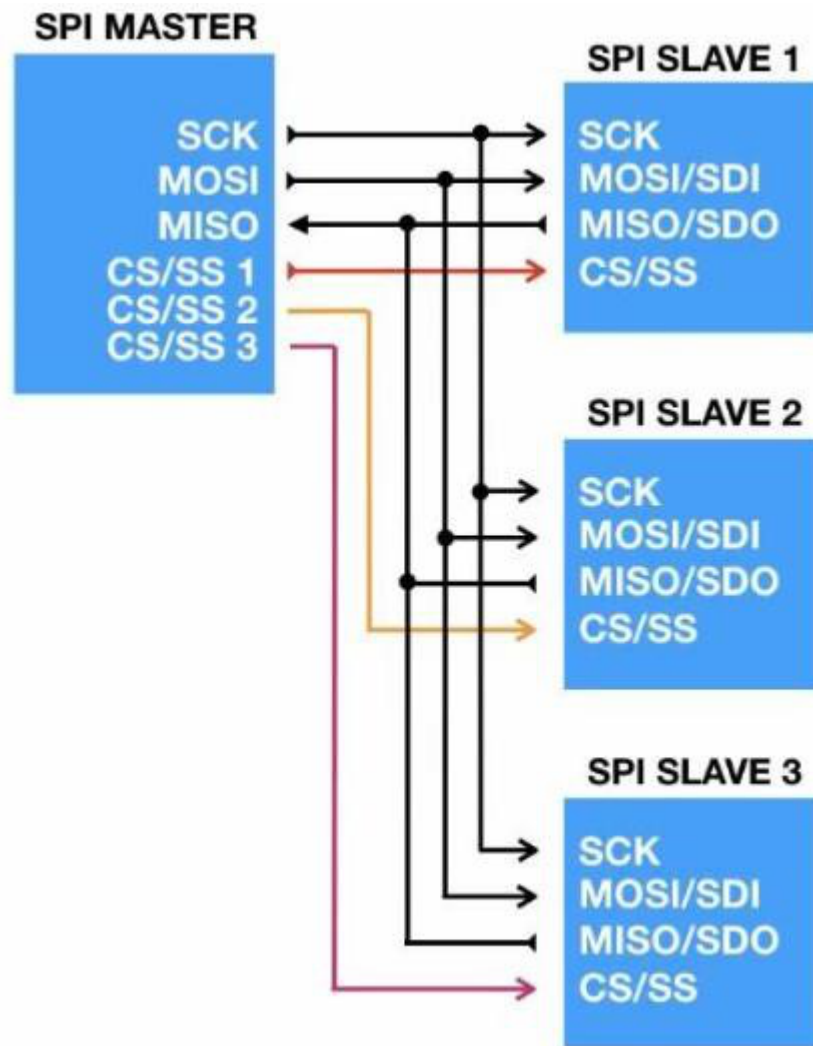
SCK (Serial Clock)

**One line specific for every device:**

SS (Slave Select) / CS (Chip Select)



The wiring diagram:



Find the AUX-3 expansion port on the board and connect to the corresponding pin:

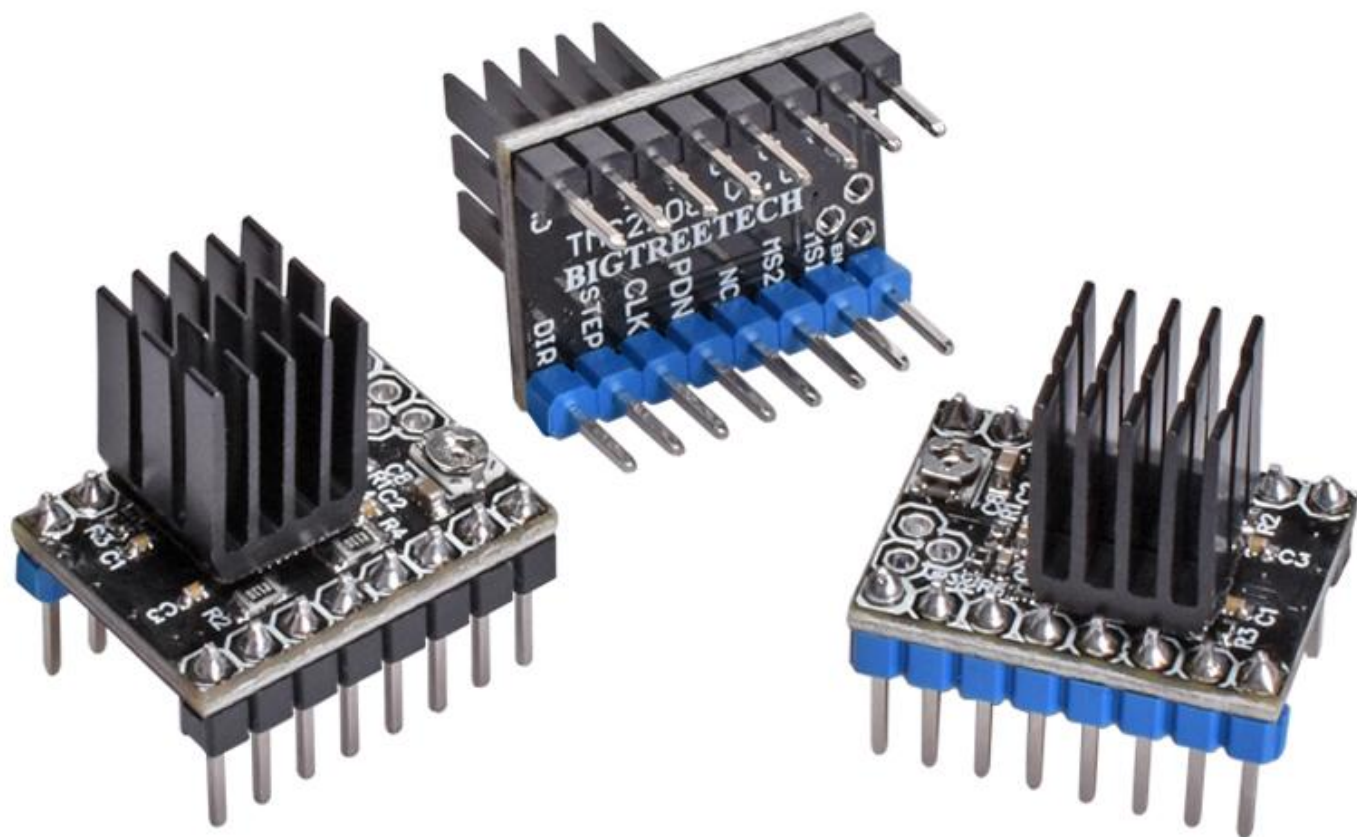
# AUX-3 / SPI

GND	SCK D52	MISO D50	5V
NC	D53	MOSI D51	D49

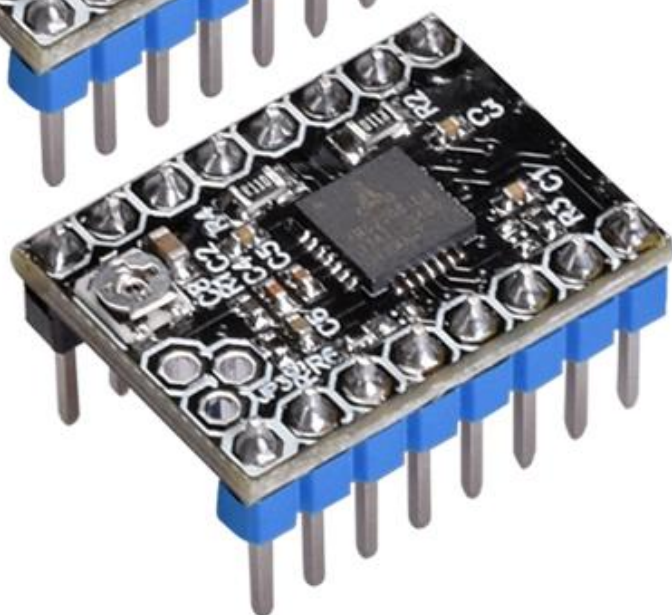
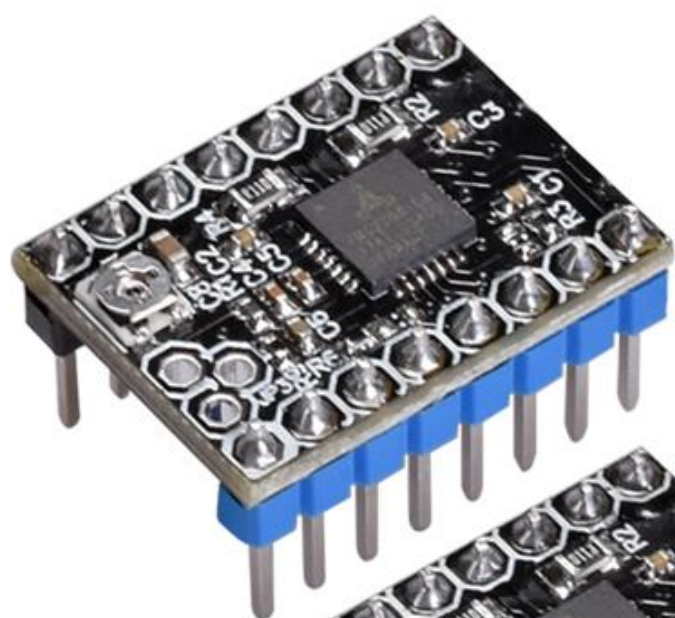
## Attention:

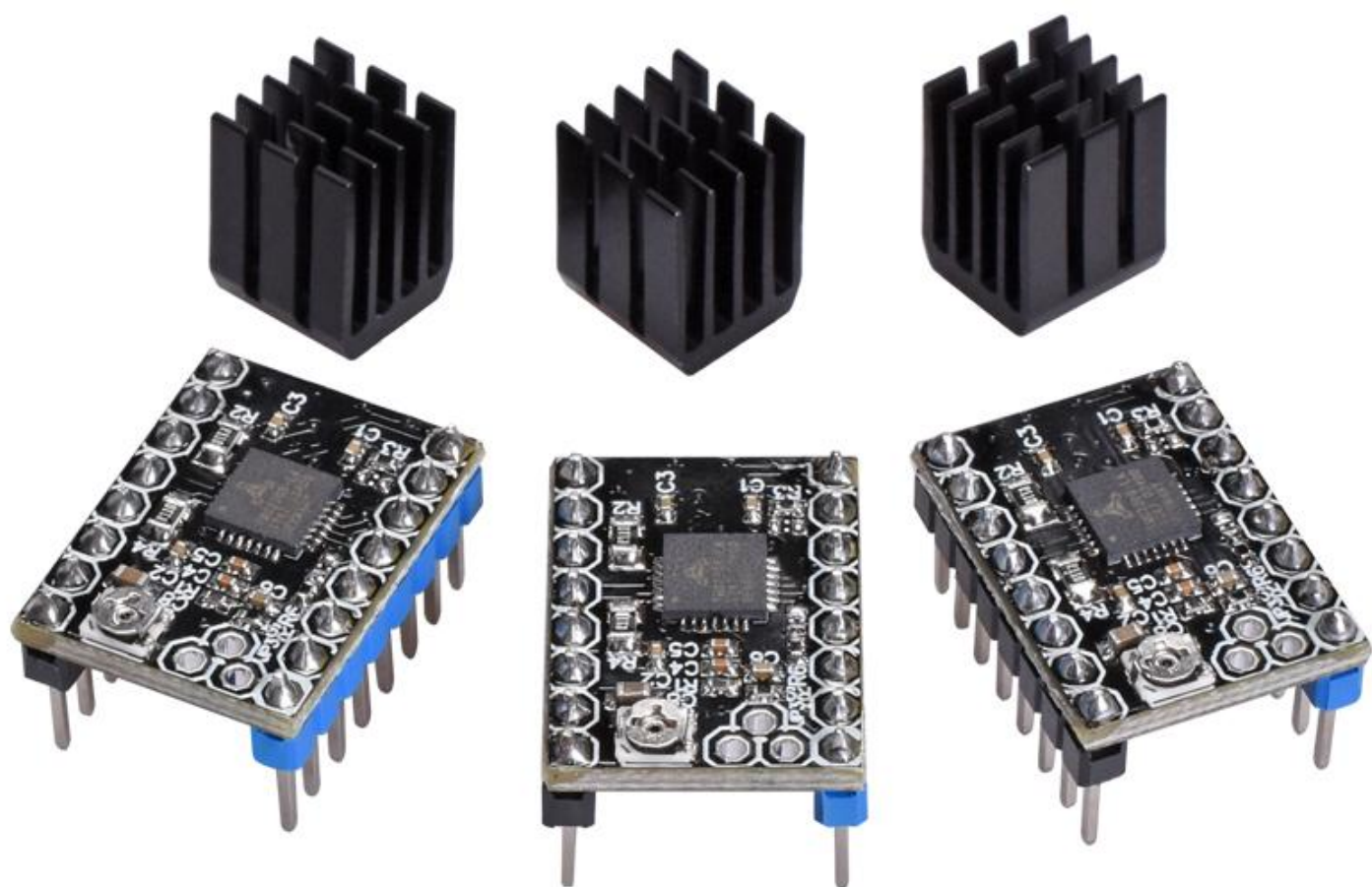
1. When choosing SPI working mode, please use soldering iron carefully to prevent scalding hands. When you have finished processing, you should carefully observe whether there is residual tin residue in the module. You must clean it up to prevent it from causing the module to short circuit and burn down.
2. When you connect, please pay attention to the line sequence and IO port. The wrong connection will directly cause the driver to fail to work. Please connect carefully to the above drawing.
3. When you insert the driver into the motherboard, you should be careful to see the driver direction clearly. And must not insert the driver backwards to prevent the drive from burning.
4. The driver must do a good job of heat dissipation before working (heat sink + cooling fan) to prevent the driver from working abnormally.

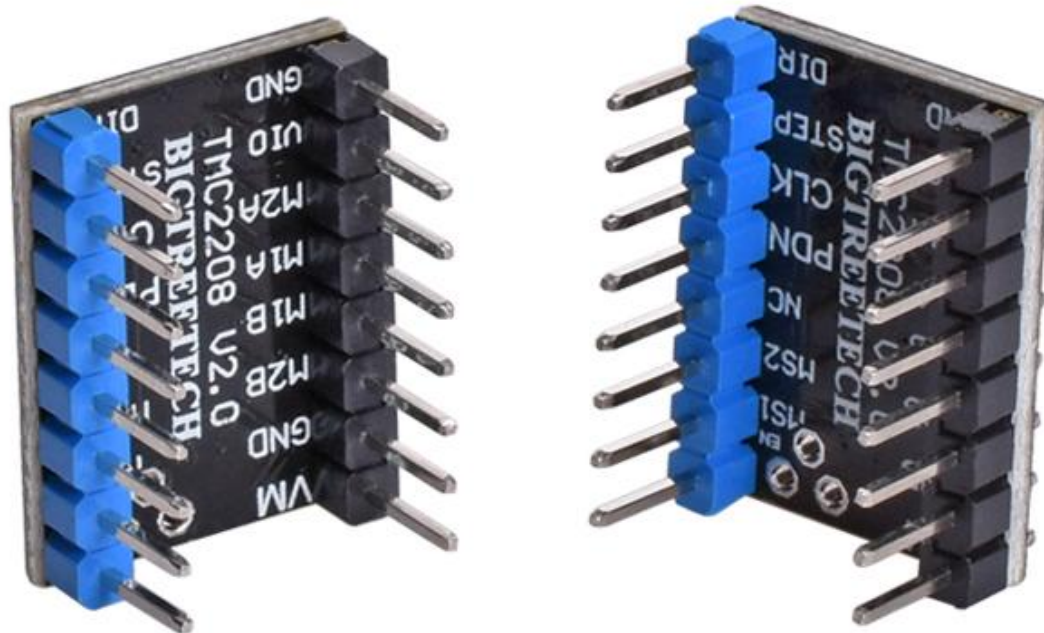
**TMC2208**











## TMC2208

TMC2208 single-axis stepper motor drive chip, power tube built-in drive current 1.4A peak current 2A, voltage range 4.75V-36V, 256 subdivision; with patented technology spreadCycle™ high chopper frequency, dcStep™, stallGuard2™ stall detection technology, CoolStep™ current dynamic adjustment technology, can save 70% of the energy, StealthChop mute technology.

Flexible microPlyer interpolation unit, the component can provide up to 256 microstep / step resolution, even in the pulse rate is limited system can still be perfect to achieve sinusoidal control; As stealthChop fine music technology is widely used in 3D printing, so These components are also designed to be compatible with existing 3D printer electronics,

eliminating the need for costly redesign. Both components have pulse / direction input, can be completely independent operation. The configuration is implemented via digital input.

Can replace the original TMC2100 ,lower heat, especially for the 3D printing market!!!

**Parameter:**

Configuration: CFG or UART

microsteps: Up to 1/256

microPlyer: 1/256

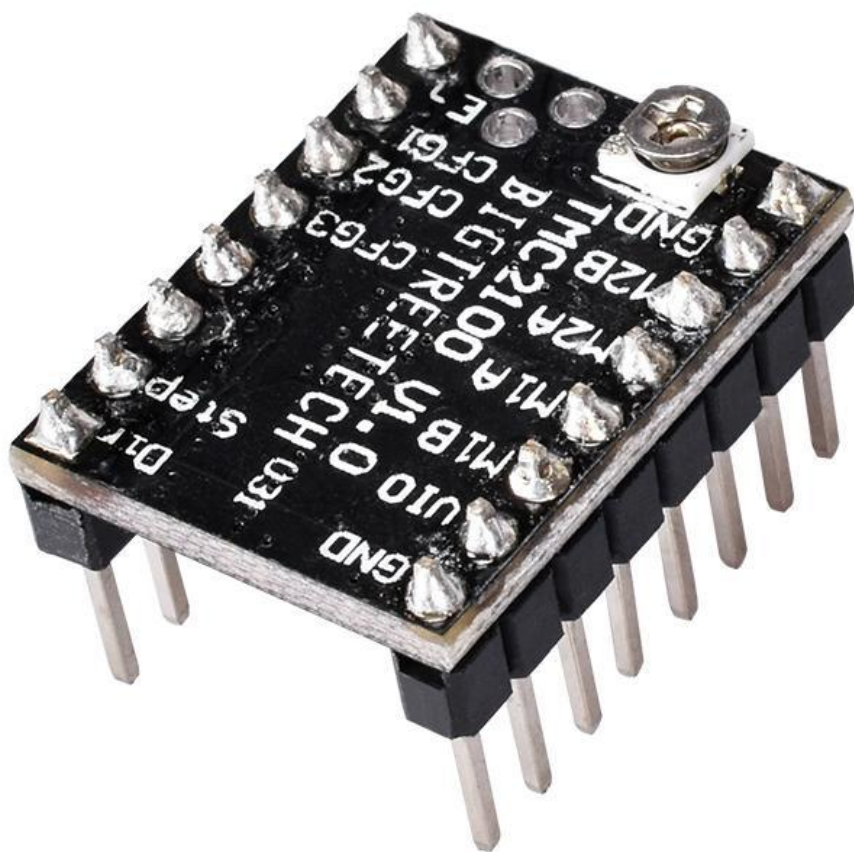
Logic Voltage VI0: 3-5V

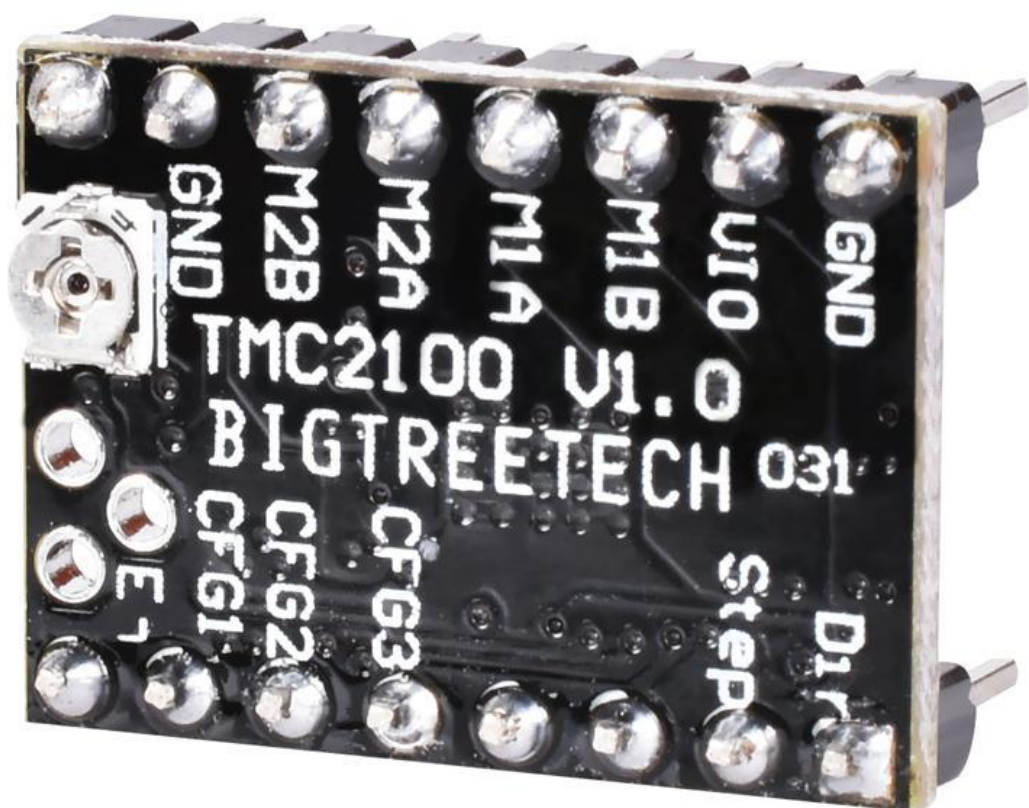
Motor Voltage : 5.5-36V

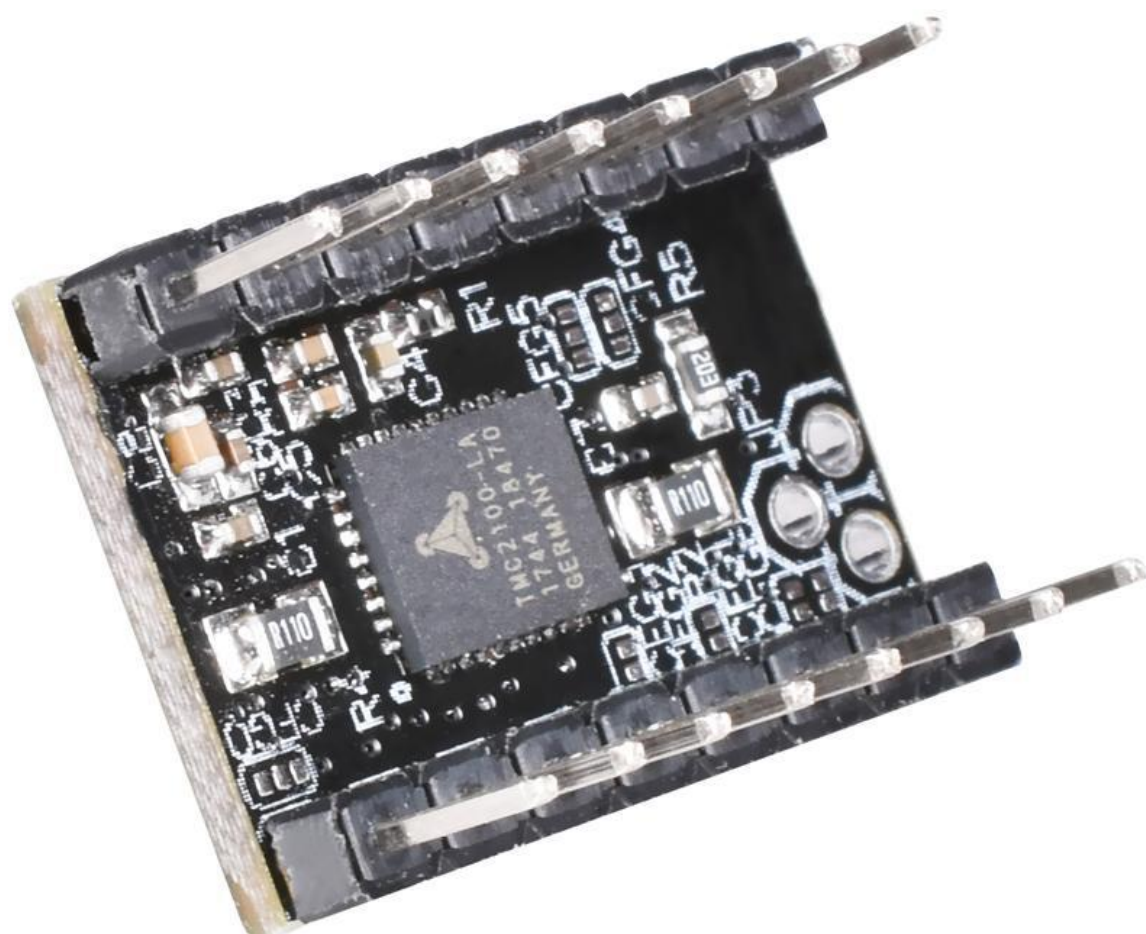
Motor Phase Current: 1.2A RMS, 2.0A Peak

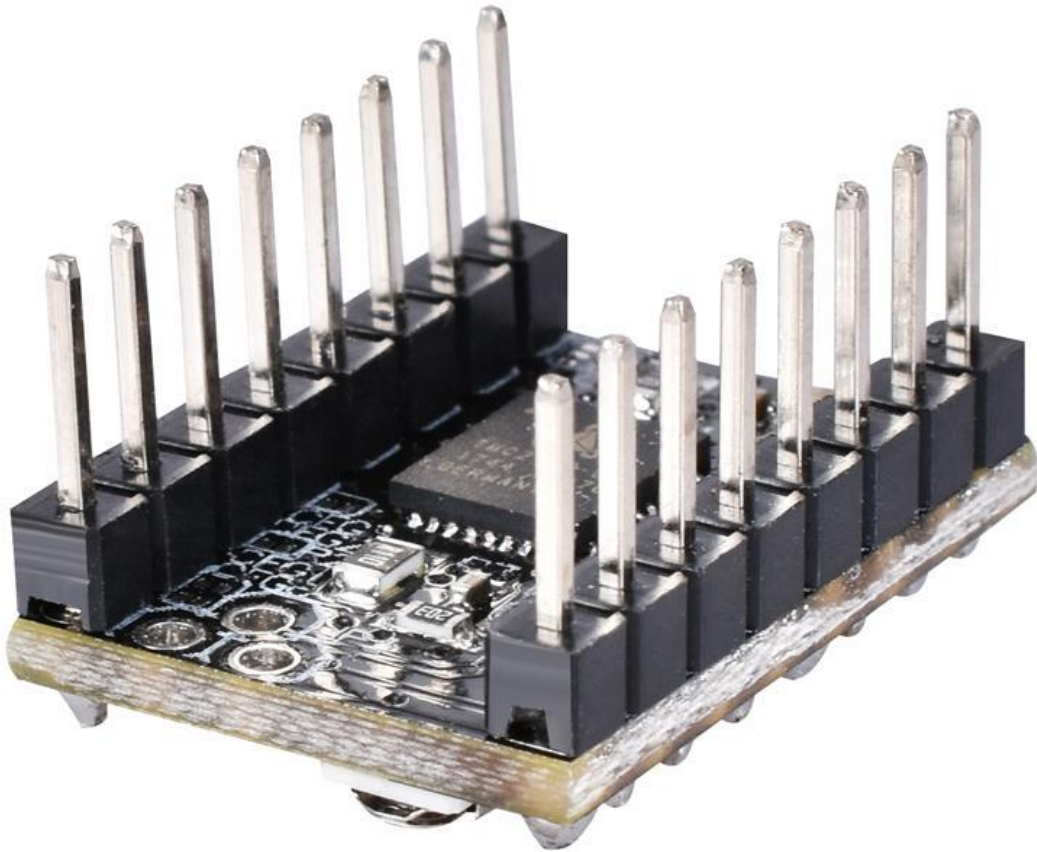
**TMC2100**











## **TMC2100**

Drive current algorithm and regulation:

- The drive current algorithm:  $i = V_{ref} * 1.9 / 2.5$ , the default  $V_{ref}$  about 0.65v, so the default current 0.5A, the maximum current 1A
- $V_{ref}$  measures Gnd and potentiometer middle end voltage
- When measuring voltage must not connect the motor, or easy to burn drive

- Measuring voltage should be connected to power, do not just connect the USB power supply.