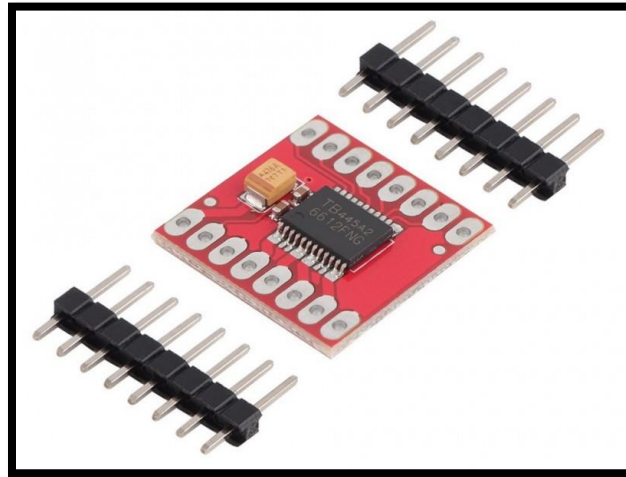


TB6612FNG DUAL DC STEPPER MOTOR DRIVER



Introduction:

The TB6612FNG Dual DC Stepper Motor Driver is a highly efficient and versatile integrated circuit designed to control two DC motors or one bipolar stepper motor. Developed by Toshiba, this motor driver module is engineered to provide precise and reliable motor control within a compact form factor. The TB6612FNG is equipped with dual H-bridge circuits, enabling bidirectional control of motors, making it ideal for a variety of robotics and automation projects. Its design incorporates low ON-resistance MOSFETs, minimizing power dissipation and optimizing energy efficiency. With a wide operating voltage range, typically from 2.7V to 5.5V, and a maximum continuous current of 1.2A per channel, the TB6612FNG is suitable for driving a range of motors. The inclusion of various protection features, such as overcurrent protection and thermal shutdown, enhances the module's robustness and reliability. Whether employed in hobbyist projects or more advanced applications, the TB6612FNG Dual DC Stepper Motor Driver stands out as a versatile and reliable solution for precise motor control in diverse electronic projects.

Features:

- Standby control to save power
- CW/CCW/short brake/stop motor control modes
- Built-in thermal shutdown circuit and low voltage detecting circuit
- All pins of the TB6612FNG broken out to 0.1" spaced pins
- Filtering capacitors on both supply lines

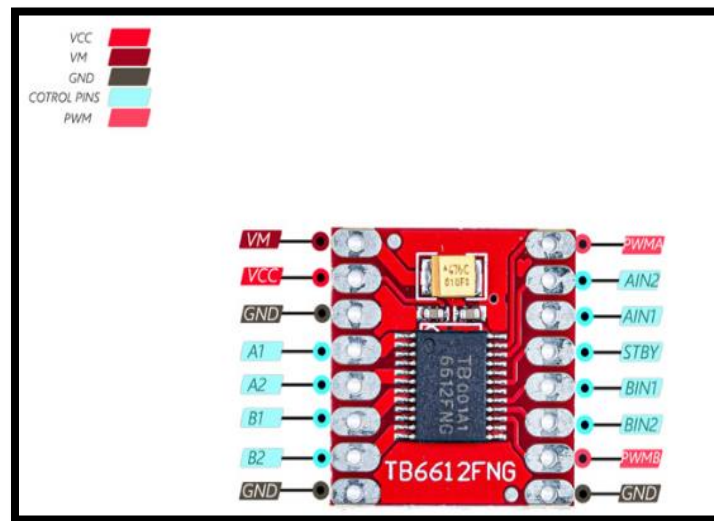
Objectives:

The TB6612FNG Dual DC Stepper Motor primary goal is to provide bidirectional control for two DC motors or one bipolar stepper motor.

Specifications:

- Power supply voltage: VM = 15V max, VCC = 2.7-5.5V
- Output current: Iout = 1.2A (average) / 3.2A (peak)
- Net weight: 5g
- Dimensions: 20mm x 20mm
- Color: Red

Pin description:



Pin No	Pin Name	Pin Description
1	VM	Motor Voltage
2	VCC	Module power supply
3	GND	Ground
4	A1	Motor A connection '+'
5	A2	Motor A connection '-'
6	B1	Motor B connection '+'
7	B2	Motor B connection '-'
8	GND	Ground
9	PWMA	PWM pin for Motor A for speed control
10	AIN1	Control signal for motor A
11	AIN2	Control signal for motor A
12	STBY	This pin must be HIGH to activate Standby
13	BIN1	Control signal for motor B
14	BIN2	Control signal for motor B
15	PWMB	PWM pin for Motor B for speed control
16	GND	Ground

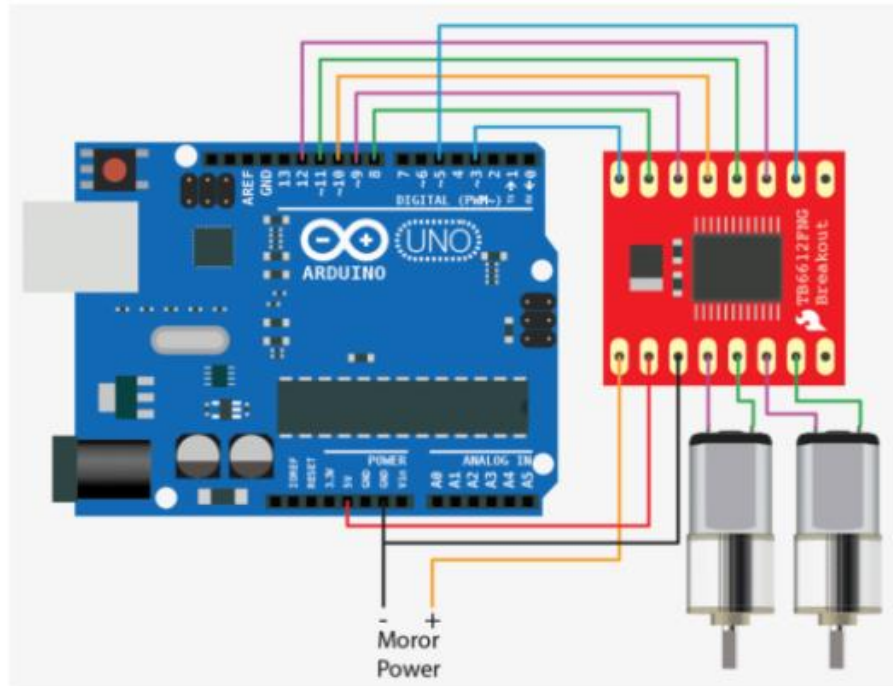
Project components required:

- Arduino Board
- TB6612FNG Dual DC Stepper Motor Driver Module
- 2x DC Motor
- 5V Power adapter
- Jumper wires
- Breadboard

Procedures:

Step 1: Wiring connections

Module Pin	Arduino Board/Motor/Power adapter
VM	VIN
VCC	5V
GND	GND
AI1	9
AI2	8
PWMA	3
BI1	11
BI2	12
PWMB	5
STBY	10
GND	GND
AO1	Motor A-
AO2	Motor A+
BO1	Motor B-
BO2	Motor B+



Connect the TB6612FNG motor driver to your Arduino board according to the wiring diagram provided above.

Step 2: Code

```
tb6612fng$
1 //motor A connected between A01 and A02
2 //motor B connected between B01 and B02
3
4 int STBY = 10; //standby
5
6 //Motor A
7 int PWMA = 3; //Speed control
8 int AIN1 = 9; //Direction
9 int AIN2 = 8; //Direction
10
11 //Motor B
12 int PWMB = 5; //Speed control
13 int BIN1 = 11; //Direction
14 int BIN2 = 12; //Direction
15
16 void setup() {
17   pinMode(STBY, OUTPUT);
18
19   pinMode(PWMA, OUTPUT);
20   pinMode(AIN1, OUTPUT);
21   pinMode(AIN2, OUTPUT);
22
23   pinMode(PWMB, OUTPUT);
24   pinMode(BIN1, OUTPUT);
25   pinMode(BIN2, OUTPUT);
26 }
27 void loop() {
28   //disable standby to make the motors run
29   digitalWrite(STBY, HIGH);
30   //set motor A and motor B speed, 0-255 255 being the fastest
31   analogWrite(PWMA, 200);
32   analogWrite(PWMB, 150);
33   //set motor A direction
34   digitalWrite(AIN1, LOW);
35   digitalWrite(AIN2, HIGH);
36   //set motor B direction
37   digitalWrite(BIN1, LOW);
38   digitalWrite(BIN2, HIGH);
39   delay(5000); //the two motors will spin in opposite direction for 5 seconds. motor A spins at full speed while motor b spins at half speed
40   //enable standby to make the motors stop spinning
41   digitalWrite(STBY, LOW);
42   delay(3000); //the two motors will stop spinning for 3 second
43
44 }
```

- Connect the Arduino to a PC and upload the program above.
- For five seconds, each motor will spin in a separate direction; motor A will spin at full speed and motor B at half speed. Both motors will then come to a standstill for three seconds before starting up again.

Conclusion:

In conclusion, the TB6612FNG Dual DC Stepper Motor Driver stands as a robust and versatile component for achieving precise motor control in a variety of electronic applications. With its dual H-bridge configuration, this motor driver facilitates bidirectional control of two DC motors or one bipolar stepper motor, making it well-suited for tasks ranging from robotics to automation projects. The TB6612FNG's design emphasizes energy efficiency through the integration of low ON-resistance MOSFETs, contributing to optimized performance in diverse settings. Moreover, the inclusion of protective features like overcurrent protection and thermal shutdown enhances the module's reliability and durability, safeguarding both the driver and connected motors. Its wide operating voltage range and compatibility with various motor types underscore its flexibility for different projects. Whether used in hobbyist endeavors or more complex applications, the TB6612FNG Dual DC Stepper Motor Driver proves to be an essential tool for achieving smooth and controlled motor movements. Its user-friendly nature, combined with its comprehensive feature set, positions it as a valuable asset for enthusiasts and engineers alike seeking efficient motor control solutions.