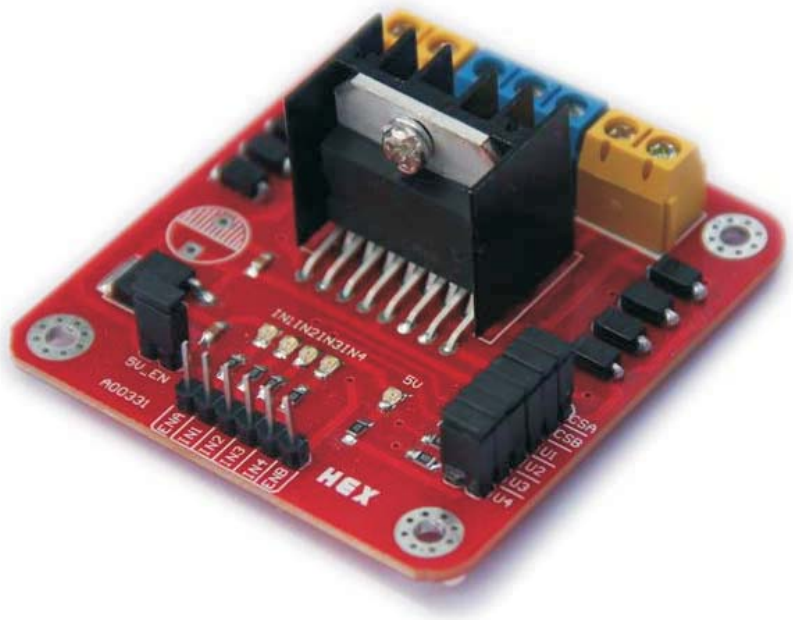
# L298 Dual H-Bridge Motor Driver

## User's Guide



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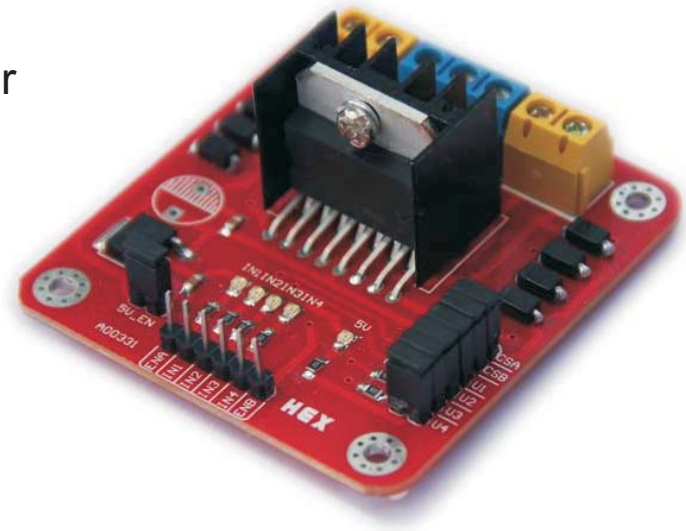
## Overview

The Motor Shield is based on the L298, which is a dual full-bridge driver designed to drive inductive loads such as relays, solenoids, DC and stepping motors. It lets you drive two DC motors , controlling the speed and direction of each one independently.

## Summary

Operating Voltage 4V to 35V
Motor controller L298N, Drives 2 DC motors or 1 stepper motor
Max current 2A per channel or 4A max
Free running stop and brake function
Chip: ST L298N
Logic power supply:5v
Max power:25w
Weight: 35g
Size:55mm x 60mm x 30mm
Storage temperature:-25 to +135



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User's Guide

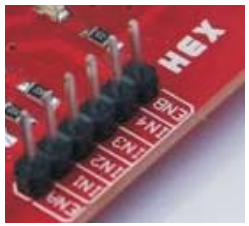
CSA: Between this pin and ground is conncted the sense resistor to control the current of the load.
Enable-------- Ignore current detection function
CSB: Between this pin and ground is conncted the sense resistor to control the current of the load.
Enable-------- Ignore current detection function


Logic power indicator


5V-EN: Enable----78M05 worked ,output DC 5V
Disable----78M05 do not work . Need input DC 5V
The module need DC 5V always, for logic supply.


5V_EN:
Enable: [5V] can output DC 5V.
Disable:[5v] need input DC 5V.

The pull-up resistor enabled.
U1---Enable In1 pull-up resistor [10k].
U2---Enable In2 pull-up resistor [10k].
U3---Enable In3 pull-up resistor [10k].
U4---Enable In4 pull-up resistor [10k].



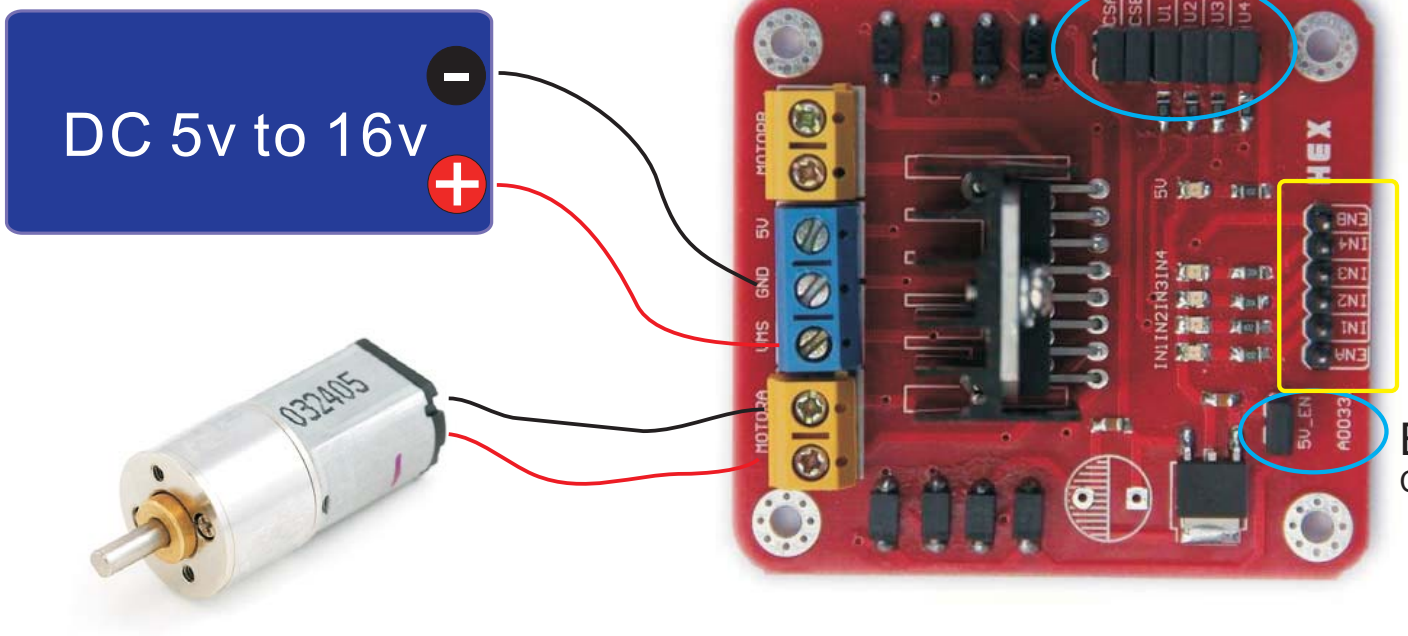

IN1 IN2 :TTL Compatible Inputs of the Bridge A
In3 In4 :TTL Compatible Inputs of the Bridge B.

ENA ENB:TTL Compatible Enable Input: the L state disables the bridge A(enable A) and/or the bridge B (enable B).

# L298 Dual H-Bridge Motor Driver

User's Guide

DC brush motor




Channel A:
IN1---5V IN2---GND Forward
IN1---GND IN2--5V Reverse
ENA---5V channel A enable
ENA---GND channel A disable
ENA---PWM adjust speed

**Enable**
Chip 78M05 provides 5v logic supply

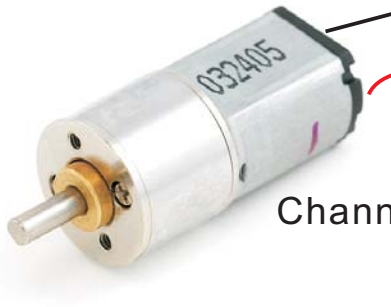
# L298 Dual H-Bridge Motor Driver

User's Guide

DC brush motor

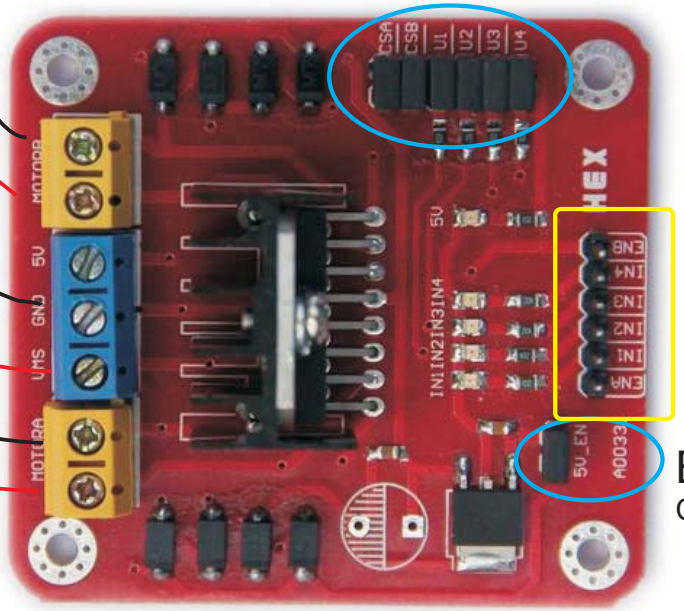

Channel B

DC 5v to 16v




Channel A

All enable



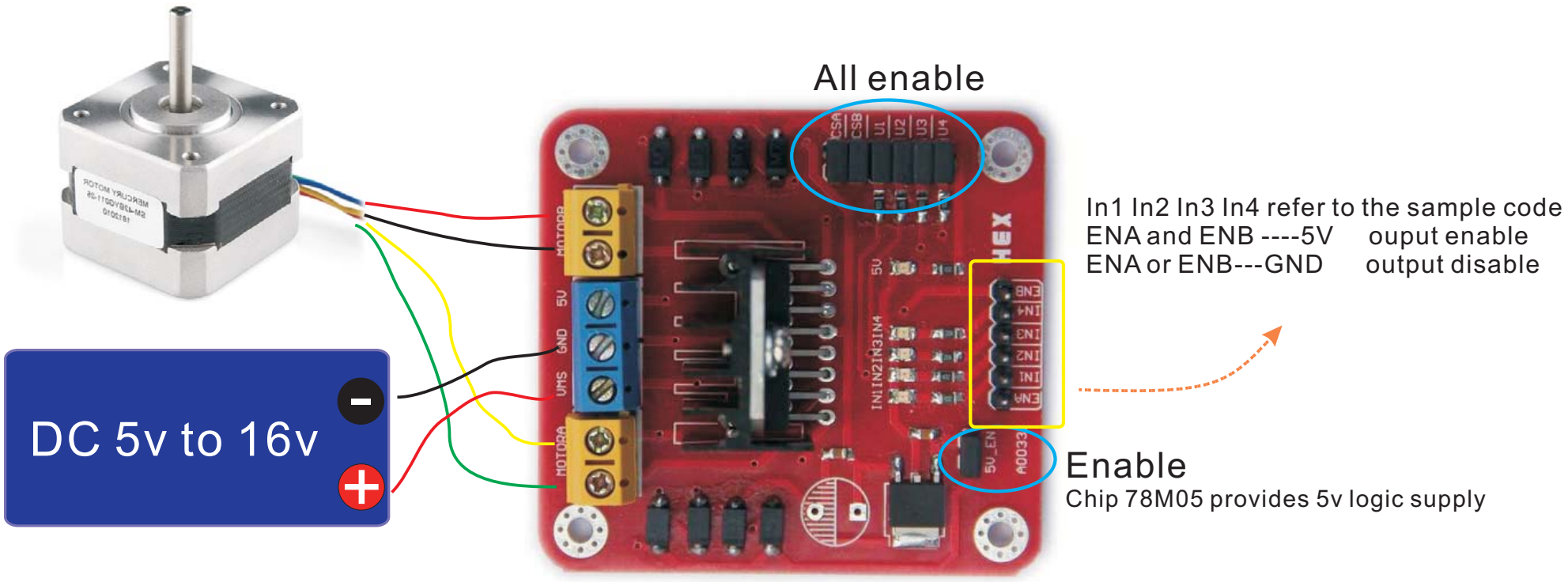

Channel A:
IN1---5V IN2---GND Forward
IN1---GND IN2--5V Reverse
ENA---5V channel A enable
ENA---GND channel A disable
ENA---PWM adjust speed

Channel B:
IN3---5V IN4---GND Forward
IN3---GND IN4--5V Reverse
ENB---5V channel B enable
ENB---GND channel B disable
ENB---PWM adjust speed

Enable

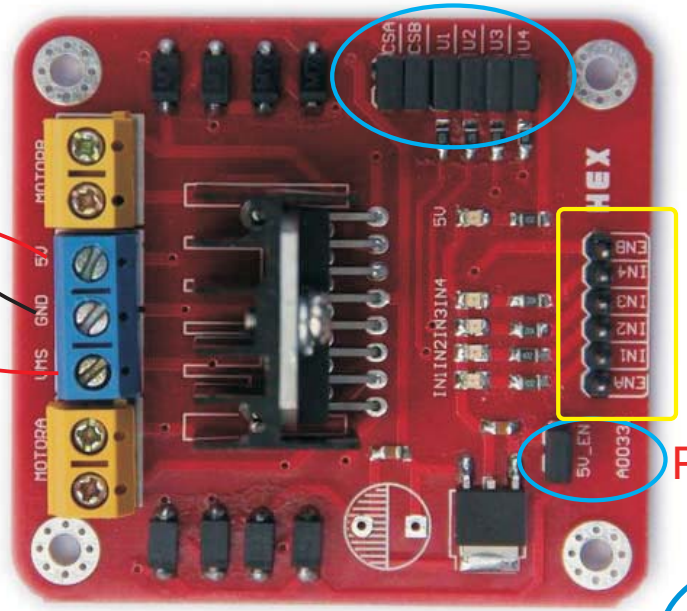
Chip 78M05 provides 5v logic supply

## Stepper motor



## Motor powered with DC 4V to 5.5V

DC 4v to 5.5v




Channel A:
IN1---5V IN2---GND Forward
IN1---GND IN2--5V Reverse
ENA---5V channel A enable
ENA---GND channel A disable
ENA---PWM adjust speed

Please disable the jumper。

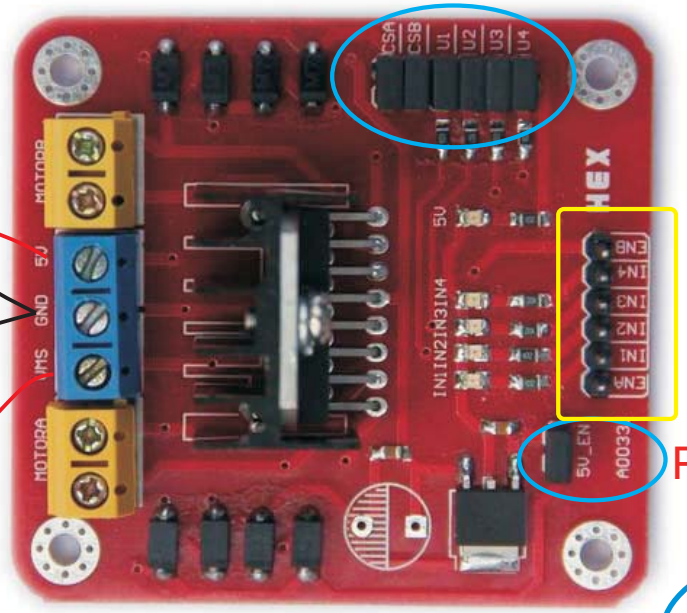
The chip 78M05 will not work good when the supply voltage lower than 5v. Then need a separate 5V logic supply

## Motor powered with DC 16V to 35V

DC 5V

DC 16v to 35v

All enable



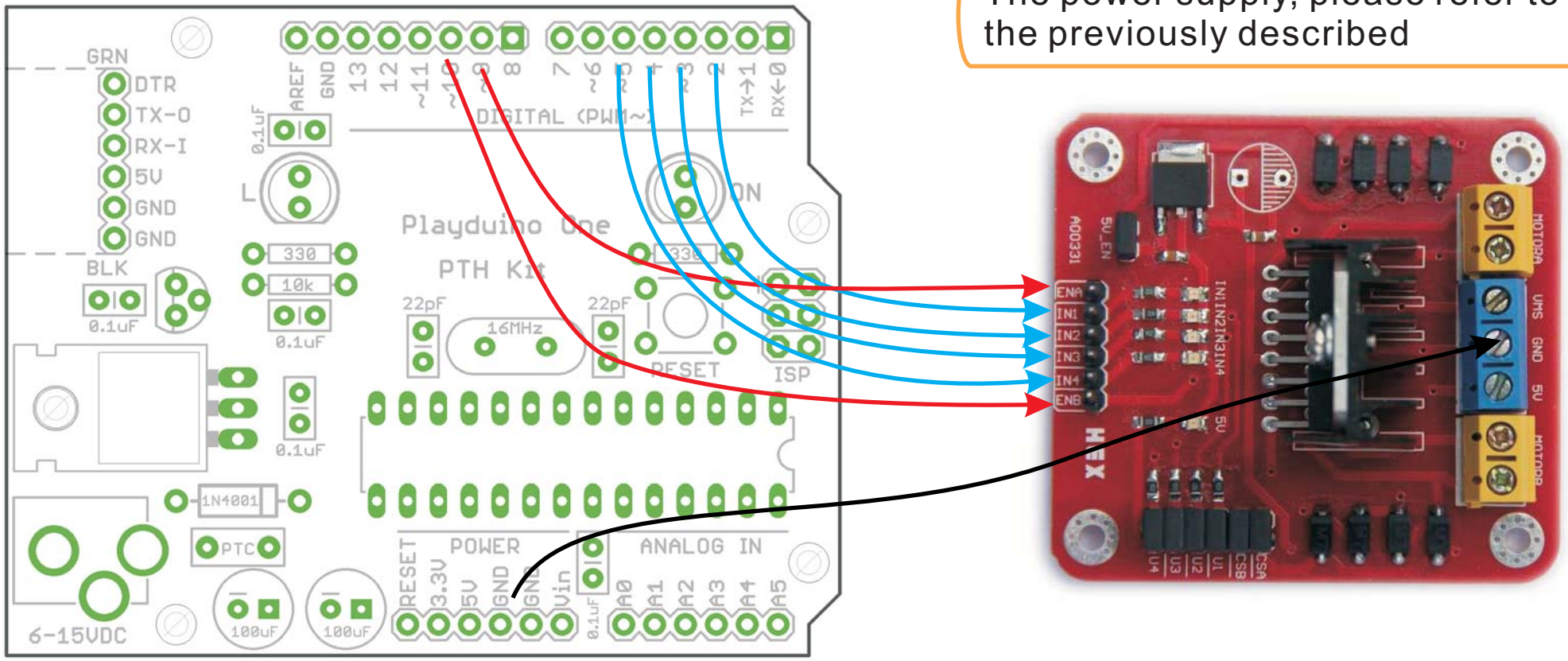

Channel A:
IN1---5V IN2---GND Forward
IN1---GND IN2--5V Reverse
ENA---5V channel A enable
ENA---GND channel A disable
ENA---PWM adjust speed

Please disable the jumper。

The chip 78M05 will be serious heat when the supply voltage exceeds 16V. Then need a separate 5V logic supply

# Connect with Arduino

The power supply, please refer to the previously described




If you need to adjust the motor speed , you need to load a PWM signal on the red line

# Example Code :

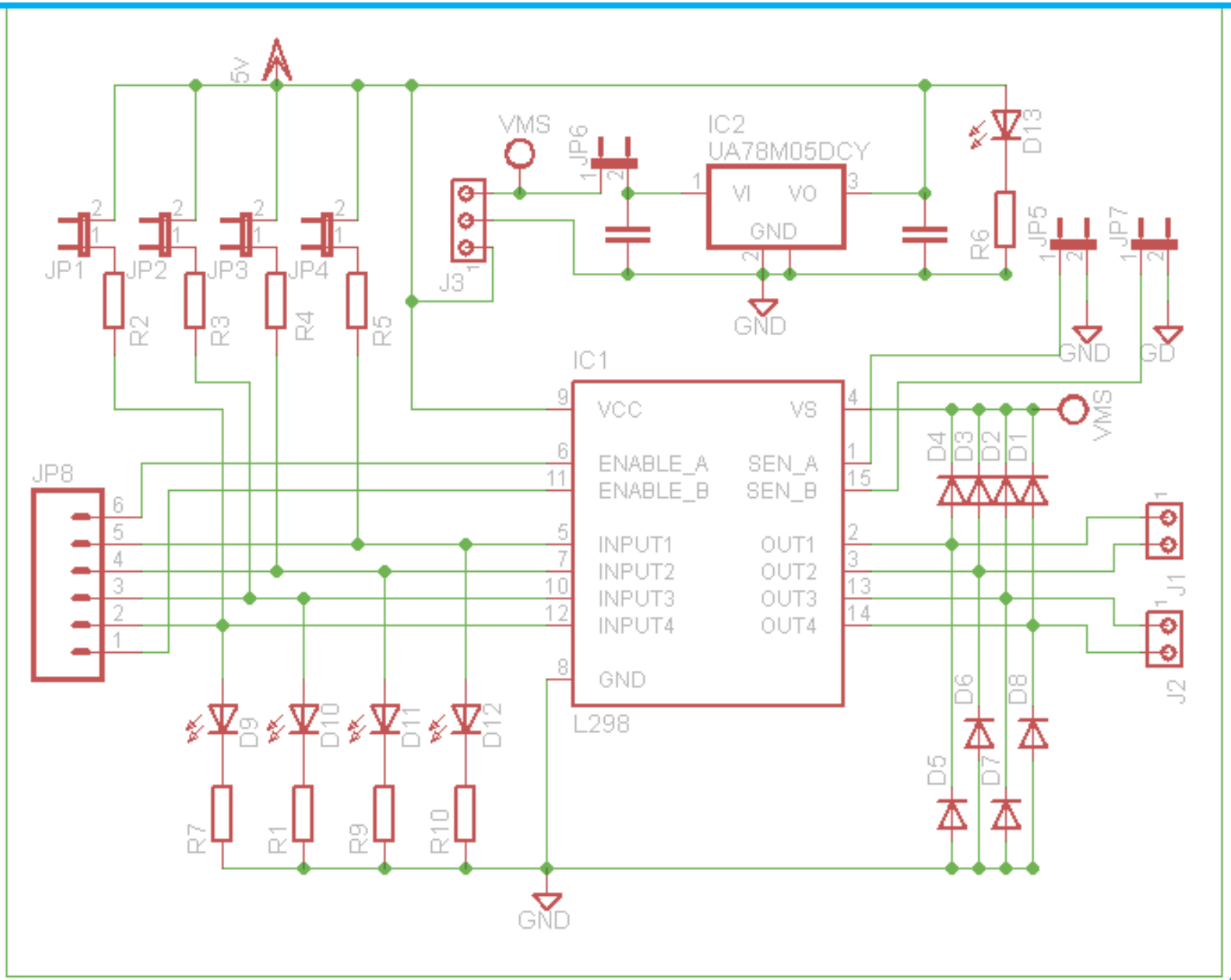
## Platform:Arduino
## Target:4-wire 2 -phase stepper motor

```
#include <Stepper.h>
//ENA--9  IN1--2  IN2--3  IN3--4  IN4--5  ENB--10
// change this to the number of steps on your motor
#define STEPS 200
// create an instance of the stepper class, specifying
// the number of steps of the motor and the pins it's
// attached to
Stepper stepper(STEPS, 2, 3, 4, 5);
void setup()
{
 stepper.setSpeed(300);
 pinMode(10, OUTPUT);
 pinMode(9, OUTPUT);
}
void loop()
{
digitalWrite(8, HIGH);
digitalWrite(9, HIGH);
stepper.step(50);
delay(500);
stepper.step(-50);
delay(500);
stepper.step(200);
delay(500);
stepper.step(-200);
delay(500);
}
```

## Platform:Arduino
## Target:2-wire DC brush  motor

```
// motor A
int dir1PinA = 2;
int dir2PinA = 3;
int speedPinA = 9;
// motor B
int dir1PinB = 4;
int dir2PinB = 5;
int speedPinB = 10;
unsigned long time;
int speed;
int dir;
void setup() {
  pinMode(dir1PinA, OUTPUT);
  pinMode(dir2PinA, OUTPUT);
  pinMode(speedPinA, OUTPUT);
  pinMode(dir1PinB, OUTPUT);
  pinMode(dir2PinB, OUTPUT);
  pinMode(speedPinB, OUTPUT);
  time = millis();
  speed = 0;
  dir = 1;
}
void loop() {
  analogWrite(speedPinA, speed);
  analogWrite(speedPinB, 255 - speed);
  // set direction
  if (1 == dir) {
    digitalWrite(dir1PinA, LOW);
    digitalWrite(dir2PinA, HIGH);
    digitalWrite(dir1PinB, HIGH);
    digitalWrite(dir2PinB, LOW);
  } else {
    digitalWrite(dir1PinA, HIGH);
    digitalWrite(dir2PinA, LOW);
    digitalWrite(dir1PinB, LOW);
    digitalWrite(dir2PinB, HIGH);
  }
  if (millis() - time > 5000)  {
    time = millis();
    speed += 20;
    if (speed > 255) {
      speed = 0;
    }
    if (1 == dir) {
      dir = 0;
    } else {
      dir =1;
    }
  }
}
```

## Schematic:


5V
VMS
JP6
IC2
UA78M05DCY
VI
VO
GND
D13
R6
JP5
JP7
JP1
JP2
JP3
JP4
J3
R2
R3
R4
R5
IC1
VCC
VS
ENABLE_A
ENABLE_B
SEN_A
SEN_B
INPUT1
INPUT2
INPUT3
INPUT4
OUT1
OUT2
OUT3
OUT4
GND
L298
JP8
D4
D3
D2
D1
J1
J2
D6
D8
D5
D7
D9
D10
D11
D12
R7
R1
R9
R10