L298 MOTOR DRIVER

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OVERVIEW

INTRODUCTION

The L298 Driver is a high voltage, high current dual ful bridge driver designed to accept standard TTL logic levels and drive inductive loads such relays, solenoids, DC and stepping motors. Two enable inputs are provided to enable or disable the device independently of the input signals. The emitters of the lower transistors of each bridge are connected together the corresponding external terminal can be used for the connection of an external sensing resistor.

FEATURES

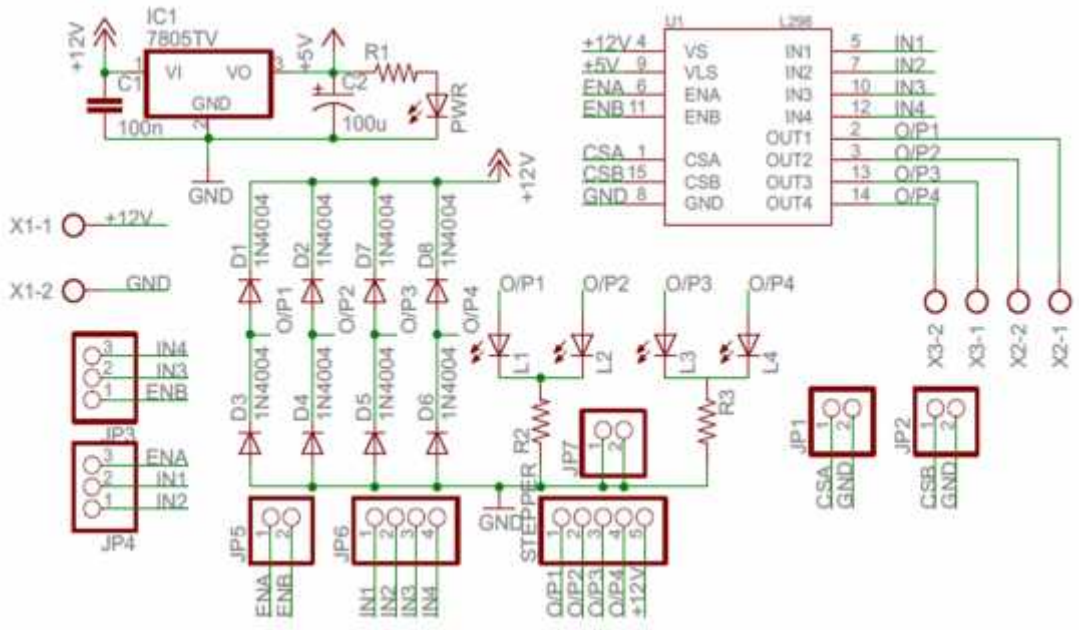
- Operating supply voltage up to 46 V
- .Total DC current up to 4 A
- .Low saturation voltage
- .Over temperature protection.
- .Logical "0" input voltage upto1.5 V (HIGH NOISE IMMUNITY)
- Two motor direction indicator LEDs
- An onboard user-accessible 5V low-dropout regulator
- Schottky EMF-protection diodes
- Screw-terminals for power and motor connections.
- High quality PCB FR4 Grade with FPT Certified.

APPLICATION

1. MCU controlled vehicle.
2. Wheel robots.

L298N IC

CIRCUIT DIAGRAM



SPECIFICATIONS

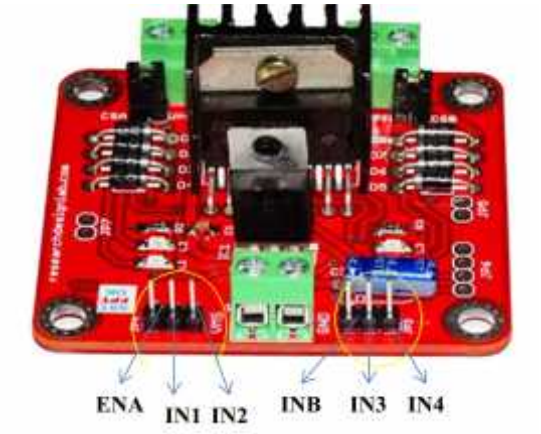
PARAMETER	VALUE
Operating Voltage	Up to 46v
DC Current	4A

PIN DETAILS

PIN	NAME	DETAILS
1	gnd	ground
2	+12v	Power supply input
3	IN1	Direction of motor 1
4	IN2	Direction of motor 1
5	ENA	Controlling motor 1
6	ENB	Controlling motor 2
7	IN3	Direction of motor 2
8	IN4	Direction of motor 2

WORKING

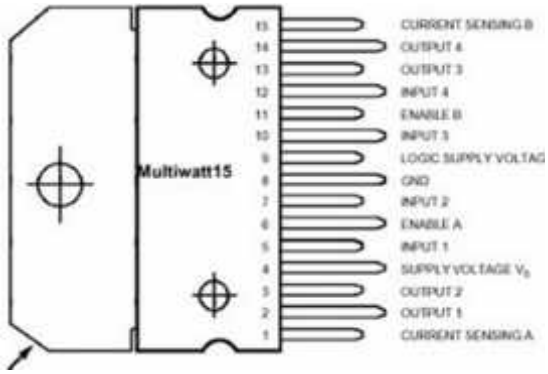
The L298 integrates two power output stages (A,B). The power output stage is a bridge configuration and its outputs can drive an inductive load in common or differential mode, depending on the state of the inputs. The current that flows through the load comes out from the bridge at the sense output : an external resistor (RSA, RSB.) allows to detect the intensity of this current.



INPUT STAGE

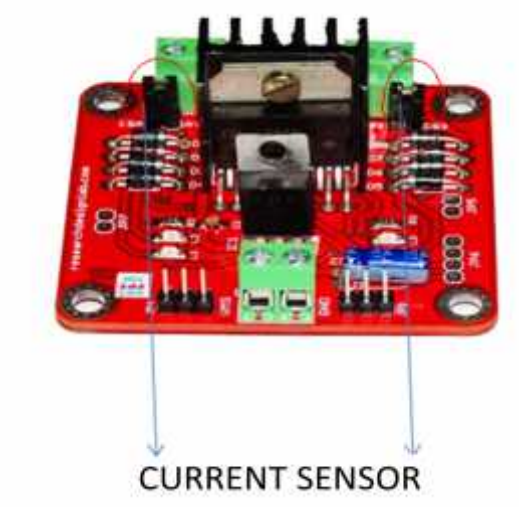
Each bridge is driven by means of four gates the input of which are In1 ; In2 ; EnA and In3 ; In4; EnB. The In inputs set the bridge state when The En input is high ; a low state of the En input inhibits the bridge. All the inputs are TTL compatible. A non inductive capacitor, usually of 100 nF, must be foreseen between both Vs and Vss, to ground, as near as possible to GND pin. When the large capacitor of the power supply is too far from the IC, a second smaller one must be foreseen near the L298. The sense resistor, not of a wire wound type, must be grounded near the negative pole of Vs that must be near the GND pin of the IC. Each input must be connected to the source of the driving signals by means of a very short path. Turn-On and Turn-Off : Before to Turn-ON the Supply Voltage and before to Turn it OFF, the Enable in-put must be driven to the Low state.

CURRENT SENSING



Pin 1,15 –current sensing A and B

Between this pin and ground is connected the sense resistor to control the current of the load.



L298 MOTOR DRIVER SCHEMATIC AND CODES

ATMEL

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ARDUINO CODE

L298 MOTOR DRIVER

```
/*
* Project name:
DC Moter
* Copyright
(c) Researchdesignlab.com
* Description:

* Test configuration:
MCU: ATMEGA328
Dev.Board: Arduino uno
Oscillator: 16 MHz
Software: Arduino
*/


int in1=2;
int in2=3; //pin connections from arduino to dc motor driver
int in3=4;
int in4=5;
```

```
void setup()
{
pinMode(in1,OUTPUT);
pinMode(in2,OUTPUT);
pinMode(in3,OUTPUT);
pinMode(in4,OUTPUT);
}

void loop()
{
digitalWrite(in1, LOW);
digitalWrite(in2,LOW); //motor1 is on and motor2 is off
digitalWrite(in3, HIGH);
digitalWrite(in4, HIGH);
delay(500); // delay of 500ms

digitalWrite(in1, HIGH);
digitalWrite(in2,HIGH);
digitalWrite(in3, LOW); //motor2 is on and motor1 is off
digitalWrite(in4, LOW);
delay(500); // delay of 500ms

digitalWrite(in1, HIGH);
digitalWrite(in2,LOW);
digitalWrite(in3, HIGH);
digitalWrite(in4, LOW);
delay(500); // delay of 500ms
digitalWrite(in1, LOW);
digitalWrite(in2,HIGH);
digitalWrite(in3, LOW);
digitalWrite(in4, HIGH);
delay(500); // delay of 500ms
digitalWrite(in1, LOW);
digitalWrite(in2,LOW);
digitalWrite(in3, LOW);
digitalWrite(in4, LOW);
```

```
delay(500); // delay of 500ms
}
```

PWM SPEED CONTROL OF DC MOTOR:

```
/*
* Project name:
PWM control of DC Motor
* Copyright
(c) Researchdesignlab.com
* Description:

* Test configuration:
MCU: ATMEGA328
Dev.Board: Arduino uno
Oscillator: 16 MHz
Software: Arduino
*/
int E1 = 5;                                    //Enable Pin
int IN1 = 3;
int IN2=4;
void setup()
{
  Serial.begin(9600);                          //Set Baud Rate
    pinMode(IN1, OUTPUT);
    pinMode(IN2, OUTPUT);
}
void loop()
{
  int value;
```

```
for(value = 0 ; value <= 255; value+=5)
{
  digitalWrite(IN1,HIGH);
  digitalWrite(IN2, LOW);
  analogWrite(E1, value);                    //PWM Speed Control
  Serial.println(value);
  delay(30);
}
}
```

RELATED PRODUCTS

DIY UNO PLAY BREAD BOARD

PIC PROJECT BOARD

ATMEL PROJECT BOARD