

L293 Motor Driver

W. Durfee, Dec-01

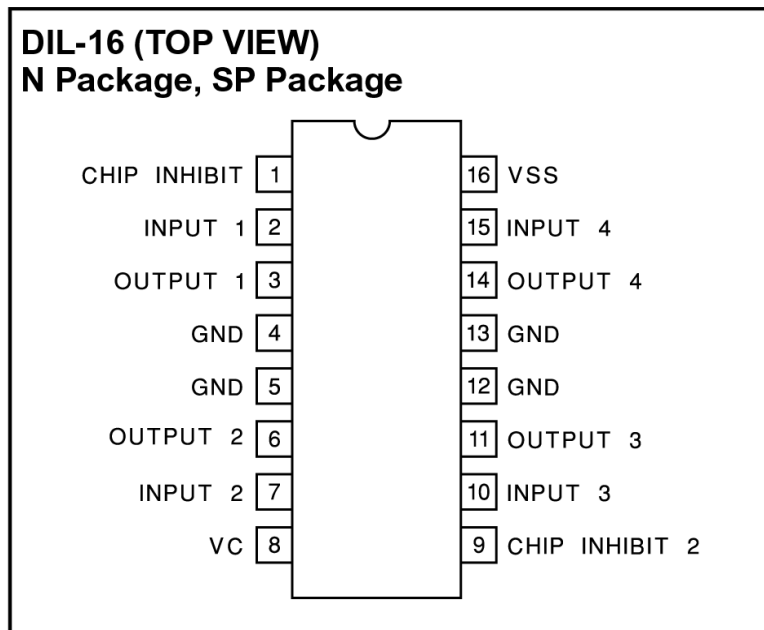
Modified A.Byres Sept 2006

The L293 is an integrated circuit motor driver that can be used for simultaneous, bi-directional control of two small motors. Small means small. The L293 is limited to 600 mA, but in reality can only handle much small currents unless you have done some serious heat sinking to keep the case temperature down. Unsure about whether the L293 will work with your motor? Hook up the circuit and run your motor while keeping your finger on the chip. If it gets too hot to touch, you can't use it with your motor.

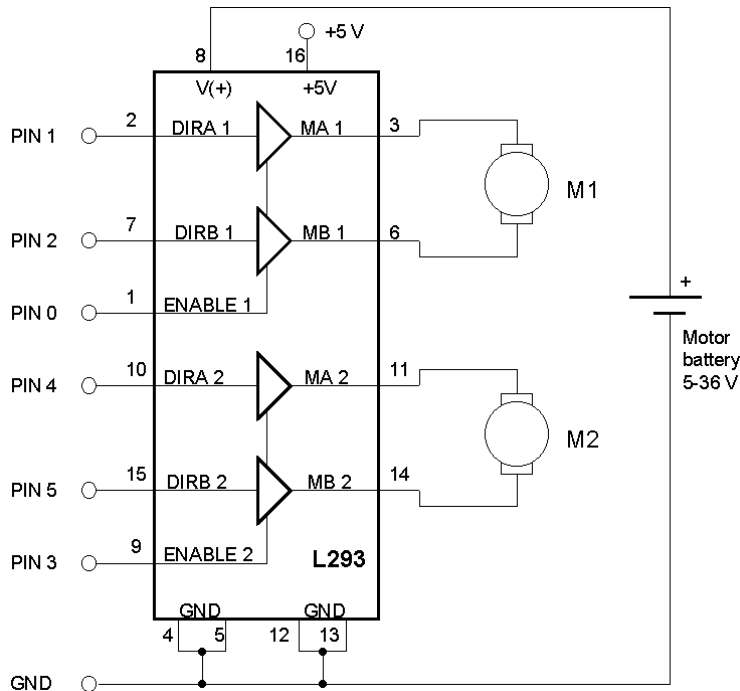
The L293 comes in a standard 16-pin, dual-in line integrated circuit package. For complete information, consult the Unirode L293 data sheet ([PDF file](#), 626Kb).

The pinout for the L293 in the 16-pin package is shown below in top view. Pin 1 is at the top left when the notch in the package faces up. Note that the names for pin functions may be slightly different than what is shown in the following diagrams.

CONNECTION DIAGRAMS



The following schematic shows how to connect the L293 to your motor and the PIC. Each motor takes 2 PIC pins.



This table assumes only one motor is connected to the PIC.

Here is a table describing the control pin functions. Note that the enable pin is always high when the motor runs so we can simply pull it high on the cct board and then it will not take up 2 extra PIC pins

ENABLE	DIRA	DIRB	Function
H	H	L	Turn right
H	L	H	Turn left
H	L/H	H/L	Fast stop
L	either	either	Slow stop

Notes

1. You can save on some Stamp pins by connecting the Enable pin to +5V and just using the direction pins to change directions and turn the motor on and off. That means you only need two PIC pins per motor. Put one pin high and the other low for one direction, reverse the state of the pins for the other direction and put both pins low to turn the motor off.
2. Remember to put your finger on top of the L293 when running the motor to see if it is getting too hot.
3. The L293 ground goes to both the battery minus and to the PIC GND.

4. The L293 has an automatic thermal shutdown which means the chip will stop working if it gets too hot.
5. You can also use the L293 to drive relays and solenoids. Just connect the relay coil or solenoid between one of the driver outputs (pins 3, 6, 11, or 14) and ground and turn it on or off with the control pin (pins 2, 7, 10, 15). This is handy because you could run one bidirectional motor and two relays using just 4 Stamp pins and a single L293.
6. The L293 is made by several companies. Use these links to get more information and other versions of the L293 data sheet: [Texas Instruments](#) (who bought Unitrode) and [STS Thomson](#) (who made the original part....I think)