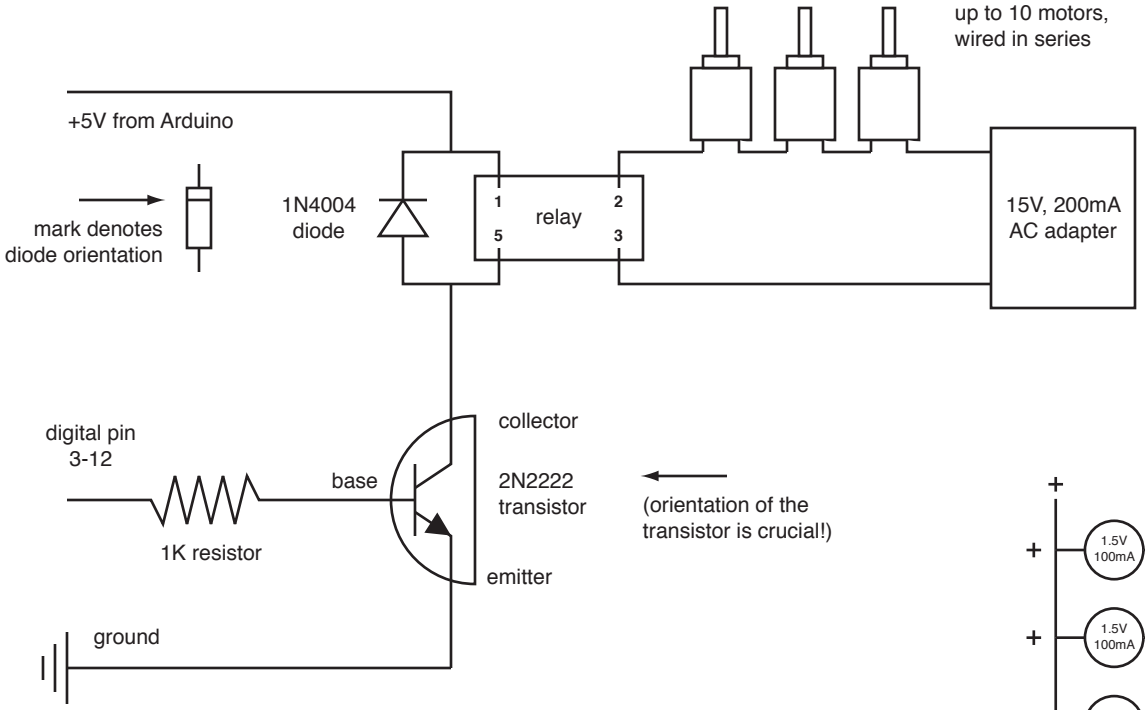

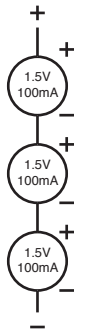

BASIC RELAY CIRCUIT
(or how to control big stuff with small stuff)
2009

This basic circuit uses a resistor, transistor, and diode (parts costing under 20 cents each) and a relay to turn on and off things powered by high voltage or current (like lamps or anything plugging into the wall).

The resistor (impedes electrical flow) and transistor (essentially a switch) allow the Arduino to actually turn things on and off while the diode prevents electricity from flowing backwards into the board.

The relay itself is like a big electro-magnetic switch. A small amount of electricity (in this case 5V) triggers the switch. Since the relay is only a mechanical, not electrical, connection, there is no risk of your wall-powered device ruining your little Arduino.

The motors, in our case, are wired in series so that the voltage is added (1.5V for each motor) but the current stays the same (approx. 150mA). See sidebar for an explanation of series and parallel circuits.

PARALLEL CIRCUIT
In this circuit, + is connected to +, - to -. The voltage required is that of a single component, the current is added.

In this example, 1.5V at 300mA is required.

SERIES CIRCUIT
In this circuit, + is connected to -. The voltage required is added, the current stays the same.

In this example, 4.5V at 100mA is required