

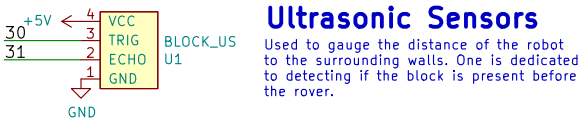
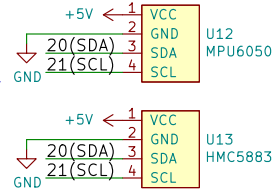
Bluetooth

Used for communicating with the computer to assist in navigation.
Connected by Serial2.

Navigation Sensors

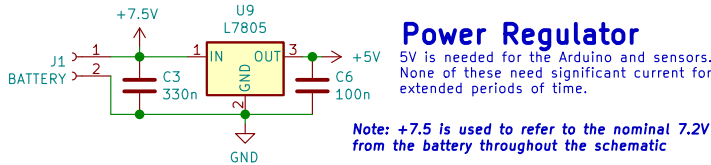
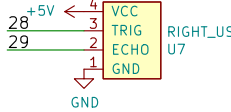
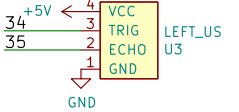
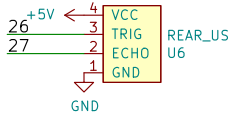
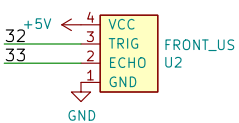
Used to help maintain the course of the robot. HMS5883L is a compass that will be used to monitor the direction the robot faces, MPU6050 will be used to monitor translational and rotational accelerations and derive speed.

Both are on the I2C bus from the Arduino.



Ultrasonic Sensors

Used to gauge the distance of the robot to the surrounding walls. One is dedicated to detecting if the block is present before the rover.



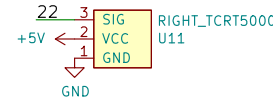
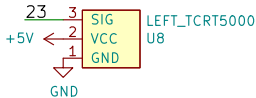
Power Regulator

5V is needed for the Arduino and sensors. None of these need significant current for extended periods of time.

Note: +7.5 is used to refer to the nominal 7.2V from the battery throughout the schematic

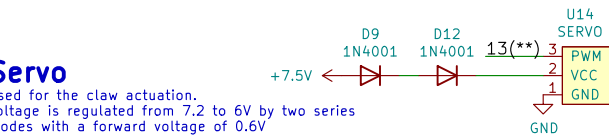
Line Follow Sensors

Used to pick up the grid on the ground

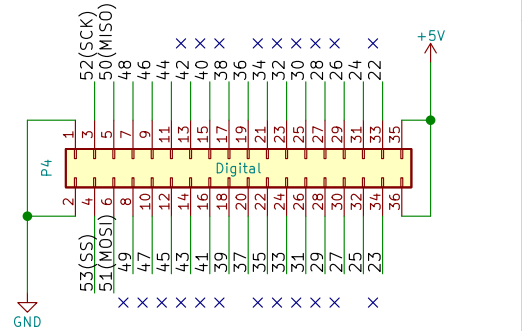
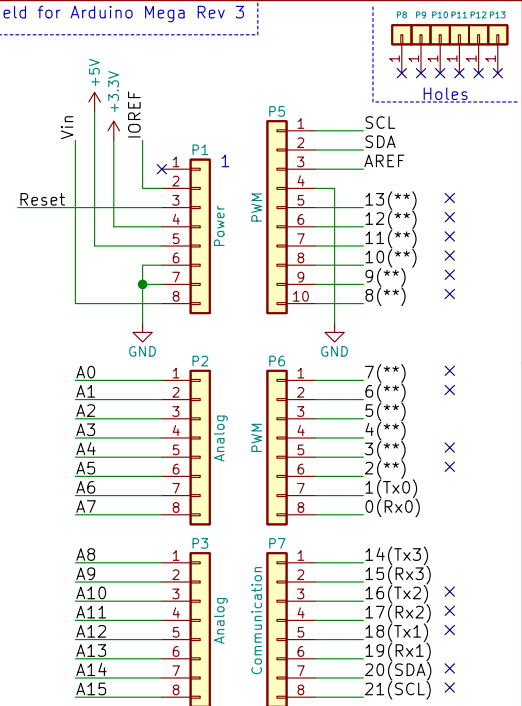


Servo

Used for the claw actuation. Voltage is regulated from 7.2 to 6V by two series diodes with a forward voltage of 0.6V



Shield for Arduino Mega Rev 3

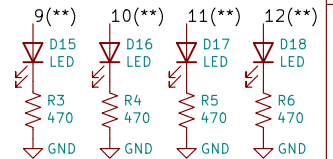


Note: crosses adjacent to pins denote pins used in the design

Status LEDs

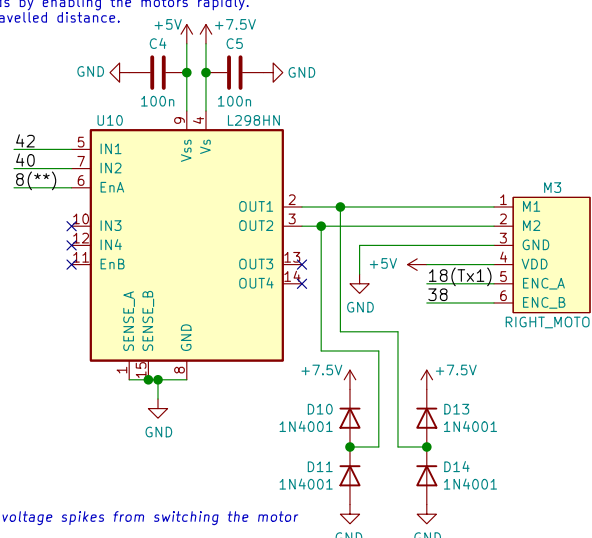
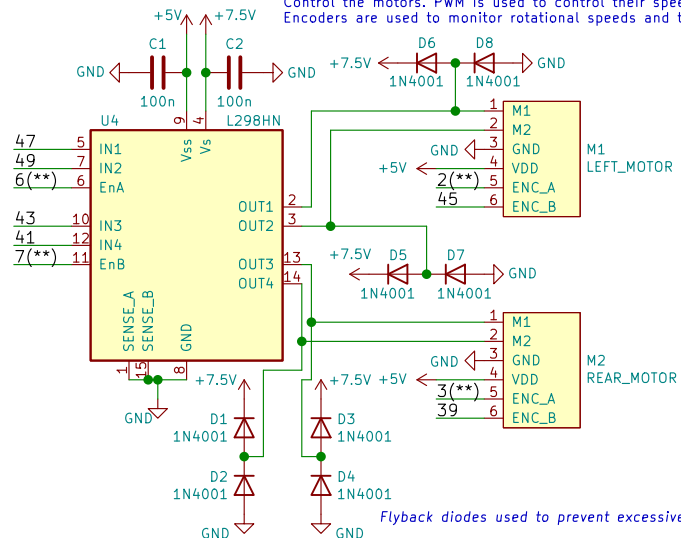
Used to indicate rover progress.

E.g. block found.



Motor Controllers

Control the motors. PWM is used to control their speeds by enabling the motors rapidly. Encoders are used to monitor rotational speeds and travelled distance.



Flyback diodes used to prevent excessive voltage spikes from switching the motor

MIE444 Proposed Design
Centered around Arduino Mega
Drive system is holonomic, using omni wheels
Primary method of localization is ultrasonic sensors

Title: SkrtBot Circuitry

SB, MG, & CK	Date: 2020-10-14	Rev: 3
	Size: USLetter	Sheet: 1/1