* Teensy 4.0 doesn’t have on-board power management for switching between battery and usb power
  + I risk damaging usb ports in my computer if I have usb power and battery power plugged into the teensy at the same time
  + To fix this, we can cut the trace between the two 5V pads on the teensy to separate usb power from battery power.
  + The board will be powered through battery power, but will have comms through usb (for uploading software, etc.)
* Because we are using breakout boards for most of the modules, most of the boards have built-in voltage regulators, level shifting, and internal noise mitigation.
  + We don’t need to integrate pull-up or pull-down resistors or decoupling capacitors because most of it is already built in
  + These are plug and play or voltage driven meaning all I need to do is input the correct voltage and the devices will function properly
  + This makes my flight computer much simpler to build
* Teensy 4.0 doesn’t have a linear voltage regulator to drop input voltage from higher sources (9-12V) down to 5V
  + Need to input 5V meaning there will need to be a voltage regulator in our circuit
* Teensy 4.0 has a 3.3V out pin which allows at a maximum of 250mA
  + Almost all of the peripherals and sensors require 3.3V input and the total maximum current pulled through those devices at once exceeds 250mA
  + We will need a 3.3V source somewhere else in the circuit, which could also come from a 3.3V regulator
* We need a battery that is lightweight, high enough voltage (>5V, ideally more to account for voltage drop), and high enough current rated
  + The e-match circuit will pull significant current (~2A), so the battery must be able to pull that plus more at a minimum
  + 9V batteries don’t provide much current (500mA), even connecting them in parallel or in series only increases their total voltage or the amp-hour capacity
* The pyrotechnic igniter circuit requires a MOSFET over a relay because relays have mechanical switches in them which could accidentally be triggered by vibrations in the rocket
* The igniter circuit needs a bulk capacitor in parallel with the battery to mitigate voltage drop when igniter pulls significant current
  + Sensors and other peripheral devices will still be active during parachute deployment and we don’t want the voltage regulator to drop past it’s minimum voltage requirement
* Igniter circuit needs a pull-down resistor to prevent accidental triggering
  + The MOSFET gate can build up a small amount of capacitance containing charge that could cause the MOSFET to turn on unexpectedly
  + Pull-down resistor forces the gate to ground, keeping it off
  + Gate resistor between the MOSFET gate and GPIO pin on the Teensy is needed to prevent inrush current