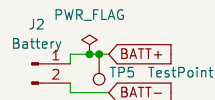
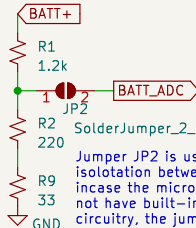


Battery Connector



This is the battery connected to the pin headers.

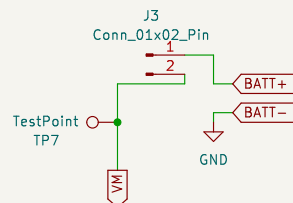
Battery voltage sensing



This is a voltage divider that senses the battery voltage and takes the output to the microcontroller.

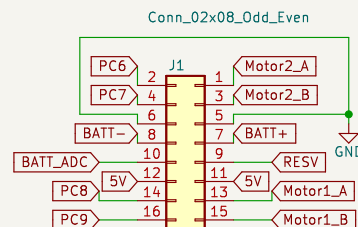
Jumper JP2 is used to provide isolation between J1 Pin 10, incase the microcontroller does not have built-in battery sensing circuitry, the jumper will be soldered.

Logic and Motor Supply



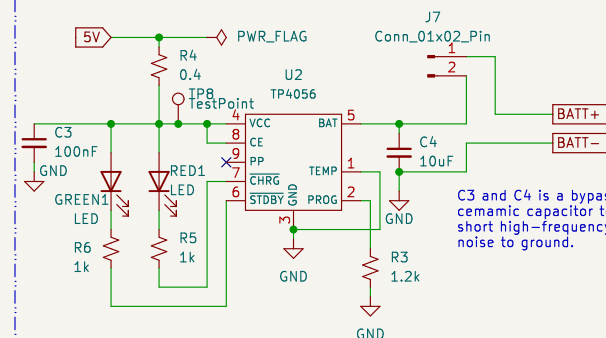
The battery input is connected to a jumpers(pin headers). The jumpers(pin headers) act as a switch between the motor driver IC. When the header cap is on, the motor driver IC draws in power. When there is no header cap, the motor driver IC draw no power.

Pin-head Connection



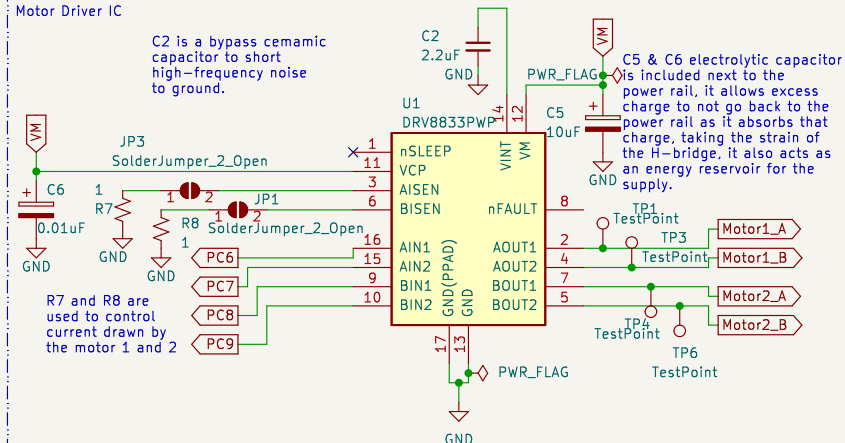
This is the pin-header connector, where all the output from other sections become inputs. This pin header provided interfacing between power subsystem and motherboard.

Charging module



The charging module used is an IC that takes in 5V USB input and outputs a charging voltage of 4.2V. As expected, the output voltage must be higher than the battery voltage (3.7V) to enable the battery to charge. It has 2 LEDs to indicate the charging state. The J7 pin header is used to provide disconnection between charging module and the battery.

Motor Driver IC



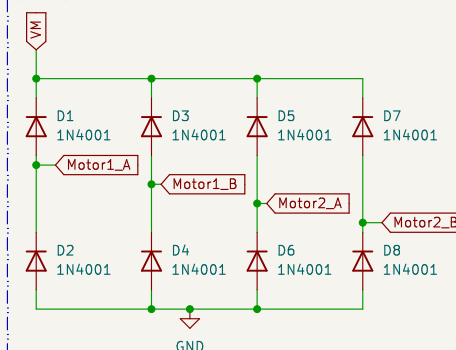
C2 is a bypass ceramic capacitor to short high-frequency noise to ground.

C5 & C6 electrolytic capacitor is included next to the power rail, it allows excess charge to not go back to the power rail as it absorbs that charge, taking the strain of the H-bridge, it also acts as an energy reservoir for the supply.

R7 and R8 are used to control current drawn by the motor 1 and 2

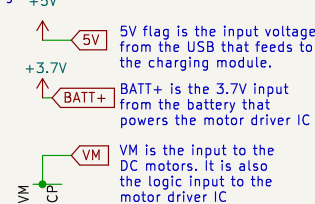
The DRV8833PWP provides a dual H-bridge driver to drive two DC motors with internal shutdown functions. Jumper JP1 and JP3 are used to provide an open connection between R7 and Pin 3, R8 and Pin 6. These pins are for current control to the motor, the amount of current drawn by each motor is determined by the value of R7 and R8.

Back-EMF Protection



*This is to illustrate what the flyback diodes look like. The DRV8833PWP has an built in flyby diode. These protect the IC from being damaged by the inductive load(Motors) when they stop, and voltage spikes.

Flags +5V



5V flag is the input voltage from the USB that feeds to the charging module.

BATT+ is the 3.7V input from the battery that powers the motor driver IC

VM is the input to the DC motors. It is also the logic input to the motor driver IC

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Sheet:

File: PowerSchematic.kicad_sch

Title: Power Circuit Schematic

Size: A4

Date: 2024-04-17

KiCad E.D.A. eeschema (7.0.0)

Rev: 3

Id: 1/1