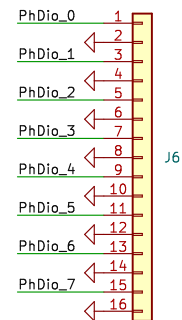


Headers to external photodiodes



- ☐ EXT4
Male Connector
- ☐ EXT5
Photodiodes (8)

Image reflects a negative V_{out}, though in circuit photodiode polarity should be reversed

Schematic Notes

- DNS = Do Not Solder. These photodiodes are not implemented at this time, though functionality is implemented to the board for future uses
- Example attitude determination photodiodes are SFH 203 P, and supporting circuitry designed around those. Please adjust R_F and buffer capacitor accordingly

Sheet: /CRNR PHOTODIODES/
File: Photodiode_circuit.kicad_sch

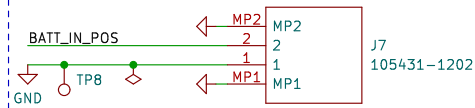
Title:

Size: A4
KiCad E.D.A. kicad (6.0.11-0)

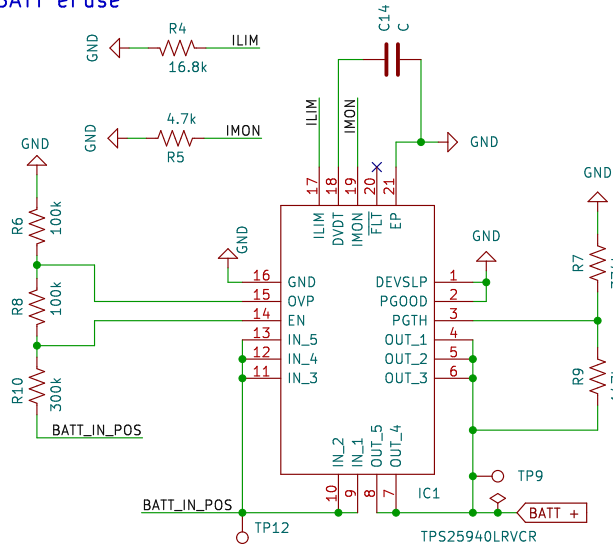
Date:

Rev:
Id: 2/5

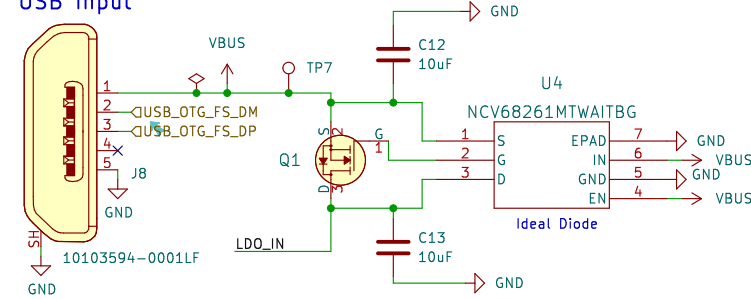
Input from Battery System



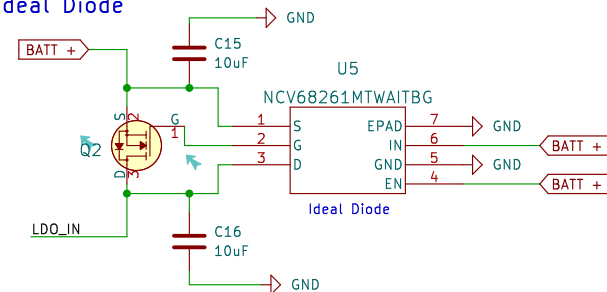
BATT eFuse



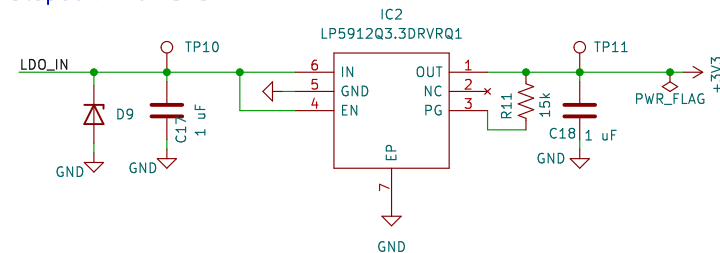
USB Input



BATT Ideal Diode



Stepdown for 3V3



EXT6 PWR Banana Plugs
EXT7 Power Male Connector

Schematic Notes

- NCV68261 is an ideal diode used to prevent current injection into USB or battery source
- Mimics common two source voltage input selection circuit of having a series diode on each line w/o voltage drop
- BATT+ ranges 3.6V to 4.2V depending on SOC
- Most of the health/current information of the eFuse has been neglected since there is no supervisor MCU
- eFuse designed to have overvoltage lockout at 4.95V and undervoltage lockout at 2.5V, though UVLO unnecessary
- The ideal diode circuit for the battery input could perhaps be deleted since the eFuse accomplishes the same purpose, but it was left so that battery outputs such as stepper motors and passive retainment cannot be attempted with only USB power

Sheet: /USB and MCU LDO/
File: usb_MCU_LDO.kicad_sch

Title:

Size: A4
KiCad E.D.A. kicad (6.0.11-0)

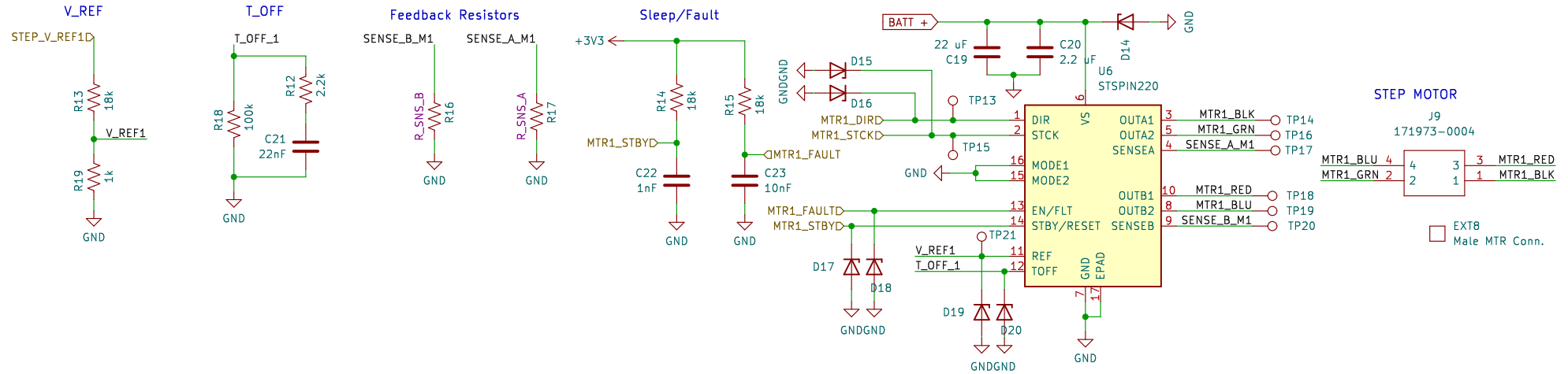
Date:

Rev:

Id: 4/5

MOTOR 1

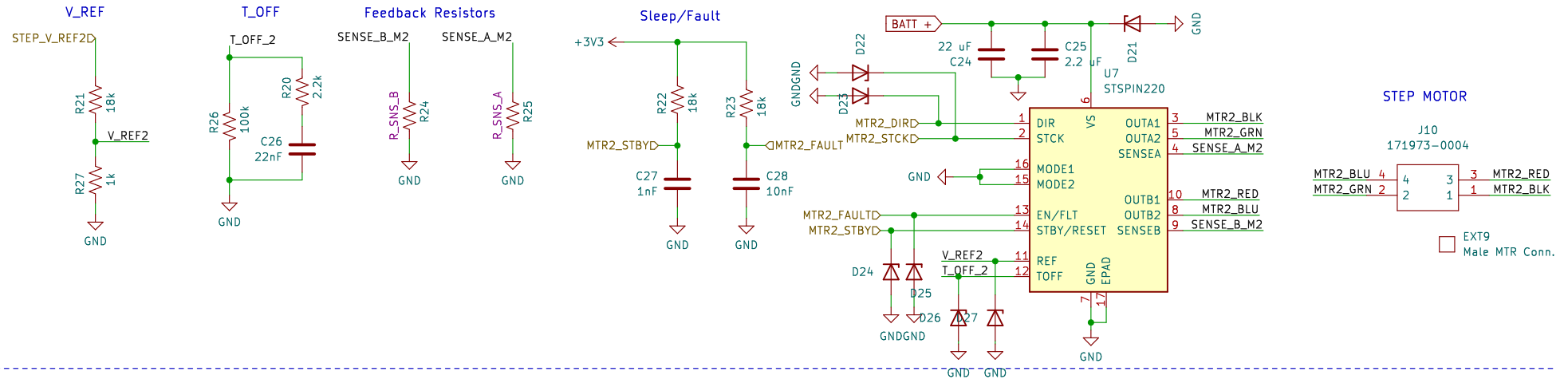
DRIVER IC



Identical Frequency- Necessary to ensure identical movement?

MOTOR 2

DRIVER IC



SCHEMATIC NOTES

- Designed for use with Pololu S20STH30-0604A
- Chosen to use EN pullup instead of MCU enable control
- MODE1 and MODE2 grounded since only full stepping is used
- Vref/RSNS chosen for max current of 0.6A/phase, though this is likely more current than necessary. RSNS and V_ref can be changed if only significantly lower current is used
- Vref set at constant 0.19 volts since no microstepping takes place
- Motor current is set by PWM through V_REF pin. 100% Duty cycle represents I_max motor can handle (0.6A)
- MCU_STBY is the stepper sleep toggle used to reduce power when motors stationary

Sheet: /Steppers /
File: Bipolar_Steppers.kicad_sch

Title:

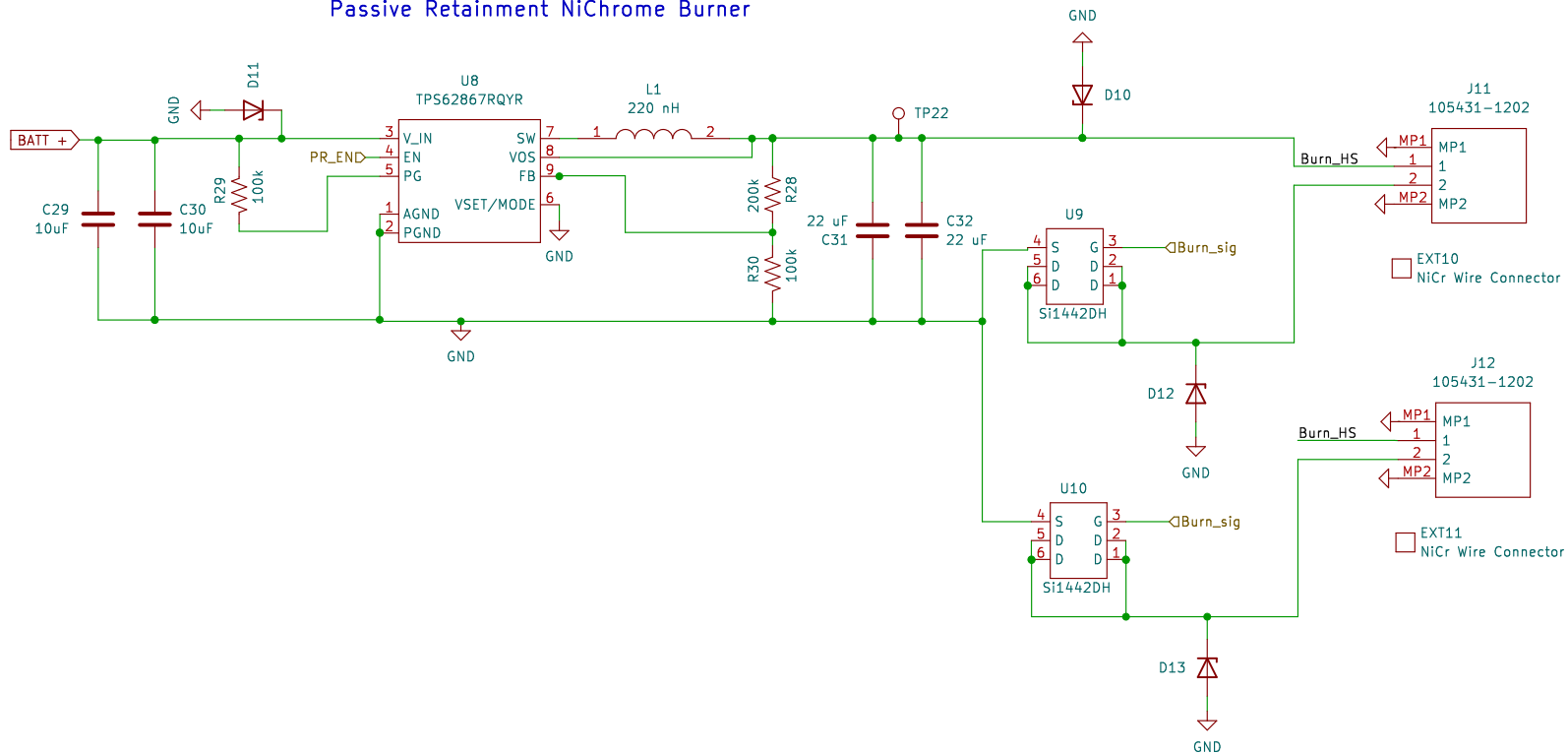
Size: A4
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Date:

Rev:

Id: 5/5

Passive Retainment NiChrome Burner



Sheet: /Passive Retainment/
File: Passive_retainment.kicad_sch

Title: PASSIVE RETAINMENT

Size: A4
KiCad E.D.A. kicad (6.0.11-0)

Date:
Rev: Id: 5/5