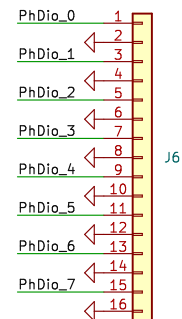


Headers to external photodiodes



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

Image reflects a negative V<sub>out</sub>, 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<sub>F</sub> and buffer capacitor accordingly

Sheet: /CRNR PHOTODIODES/  
File: Photodiode\_circuit.kicad\_sch

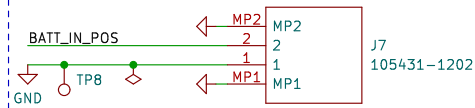
#### Title:

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

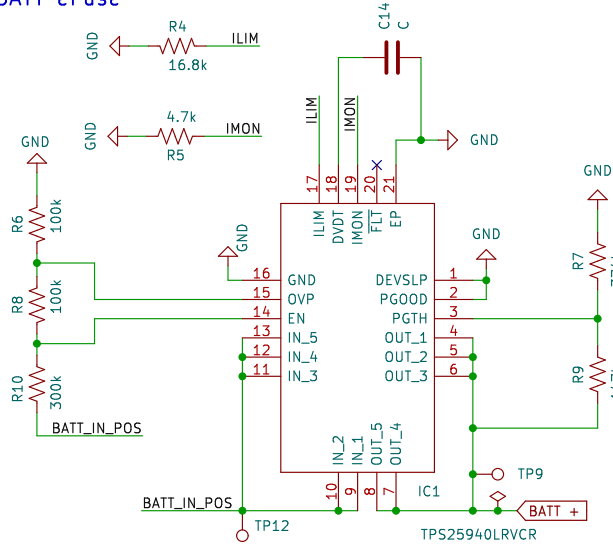
Date:

Rev:  
Id: 2/5

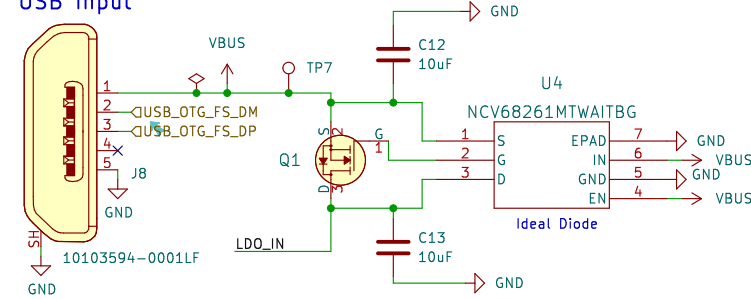
### Input from Battery System



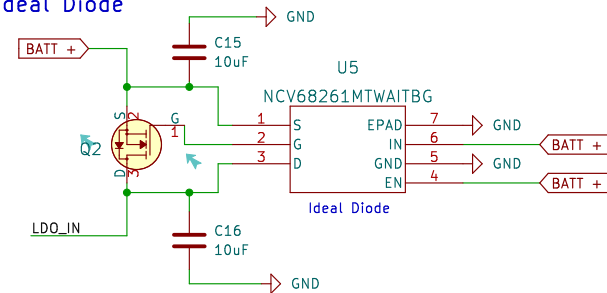
### BATT eFuse



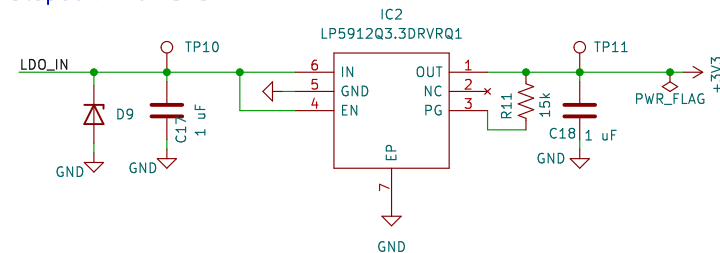
### USB Input



### 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)

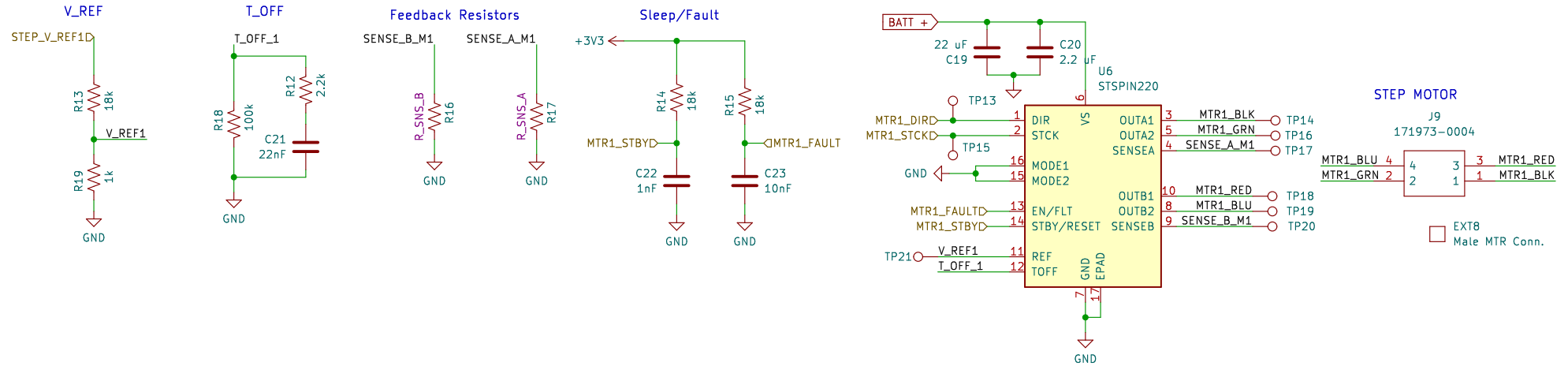
Date:

Rev:

Id: 4/5

## MOTOR 1

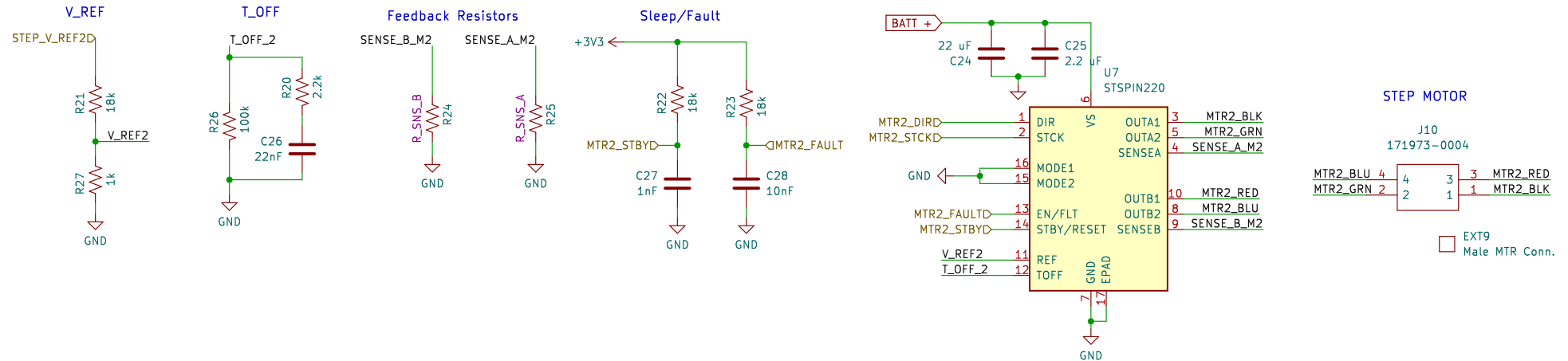
### DRIVER IC



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. R\_SNS 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:

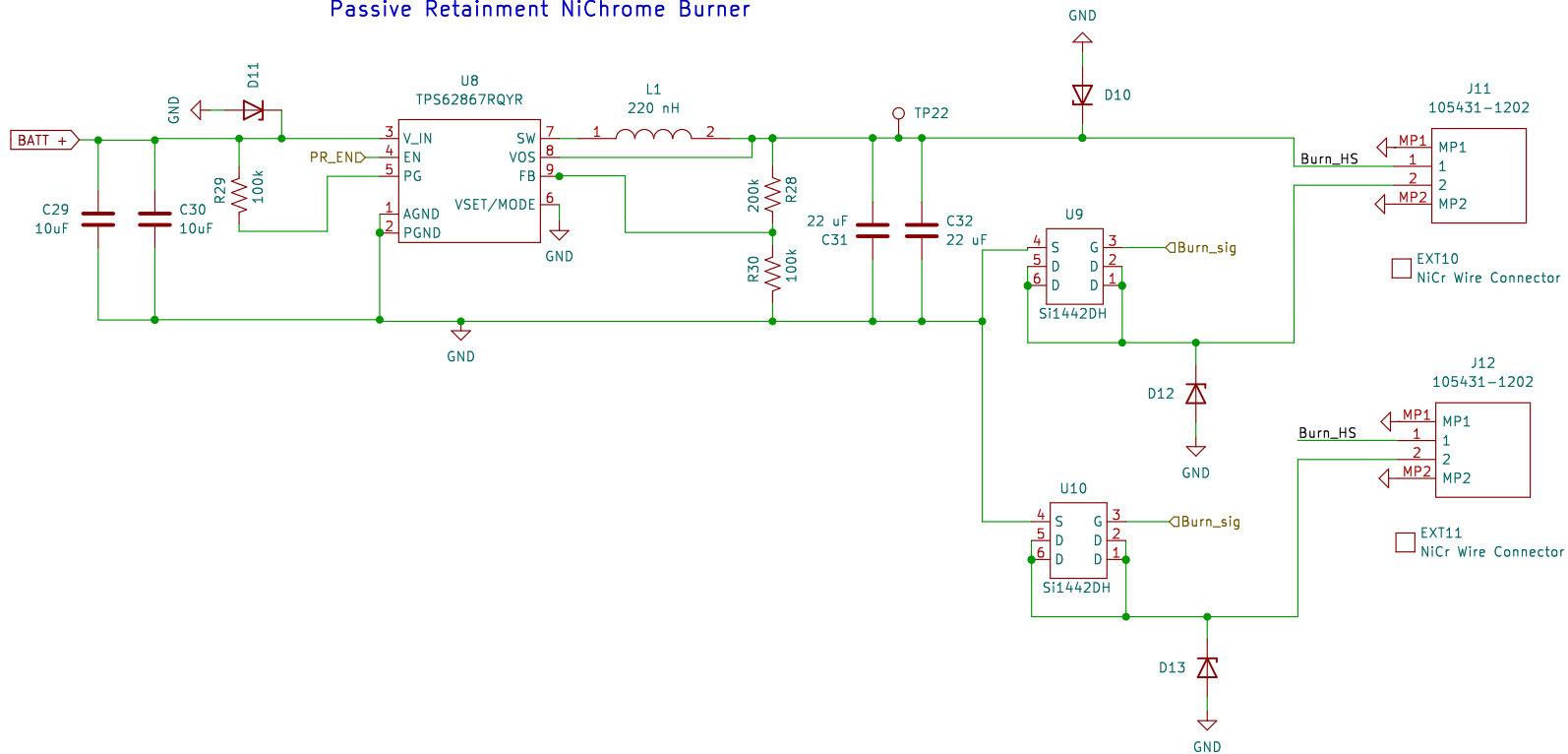
Size: A4  
KiCad E.D.A. kicad (6.0.11-0)

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