# RASPBERRY PI ZERO POWER SENSOR HAT

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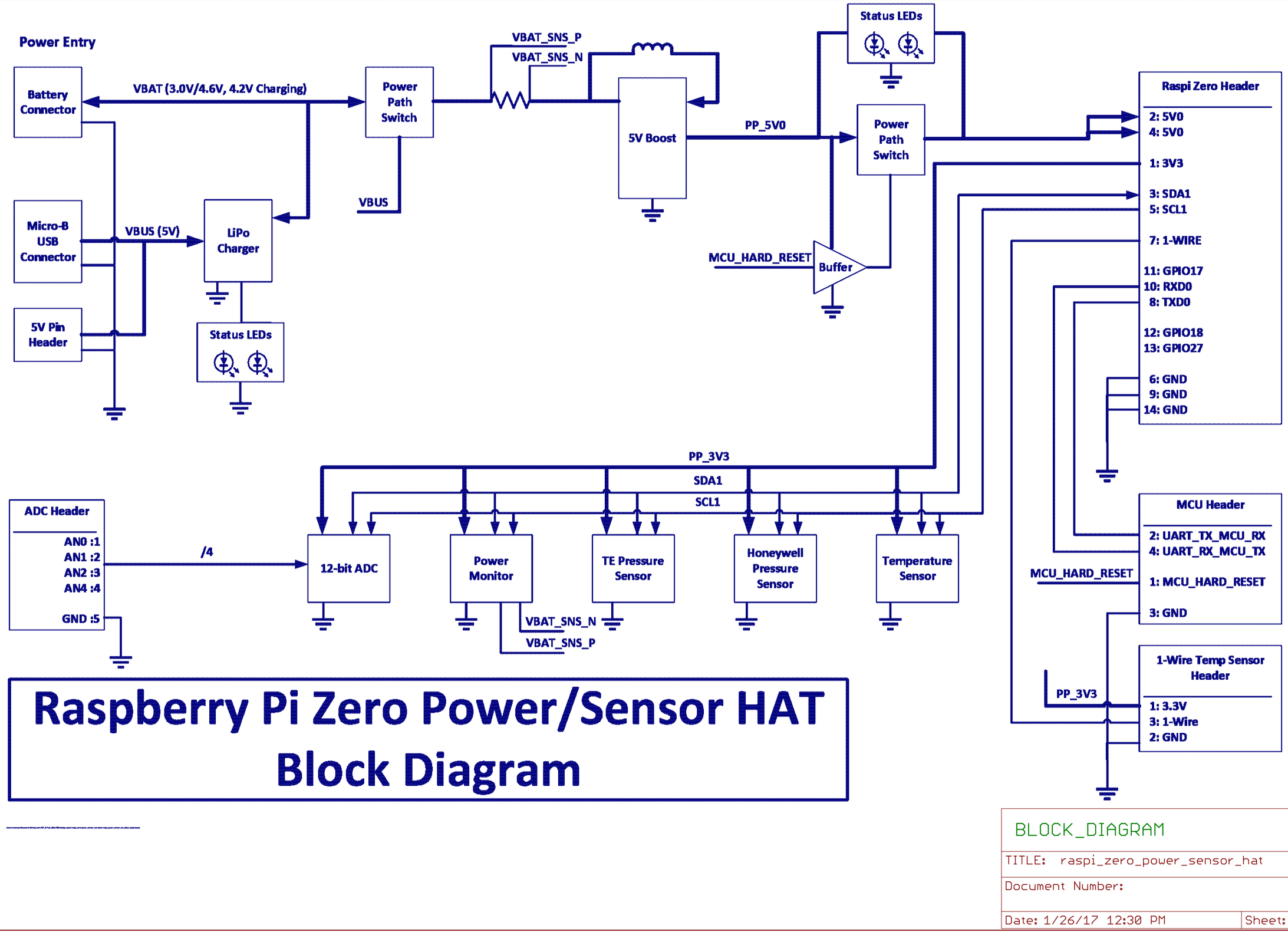


# Raspberry Pi Zero Power/Sensor HAT Block Diagram

BLOCK_DIAGRAM

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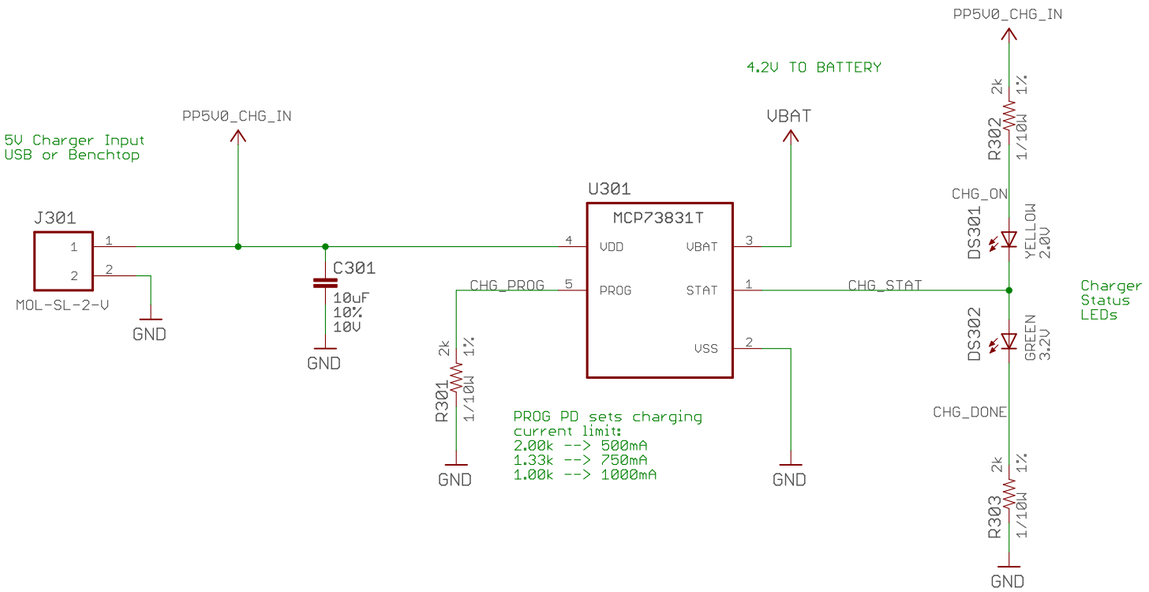
# LiPo Battery Charger and Reset Circuitry

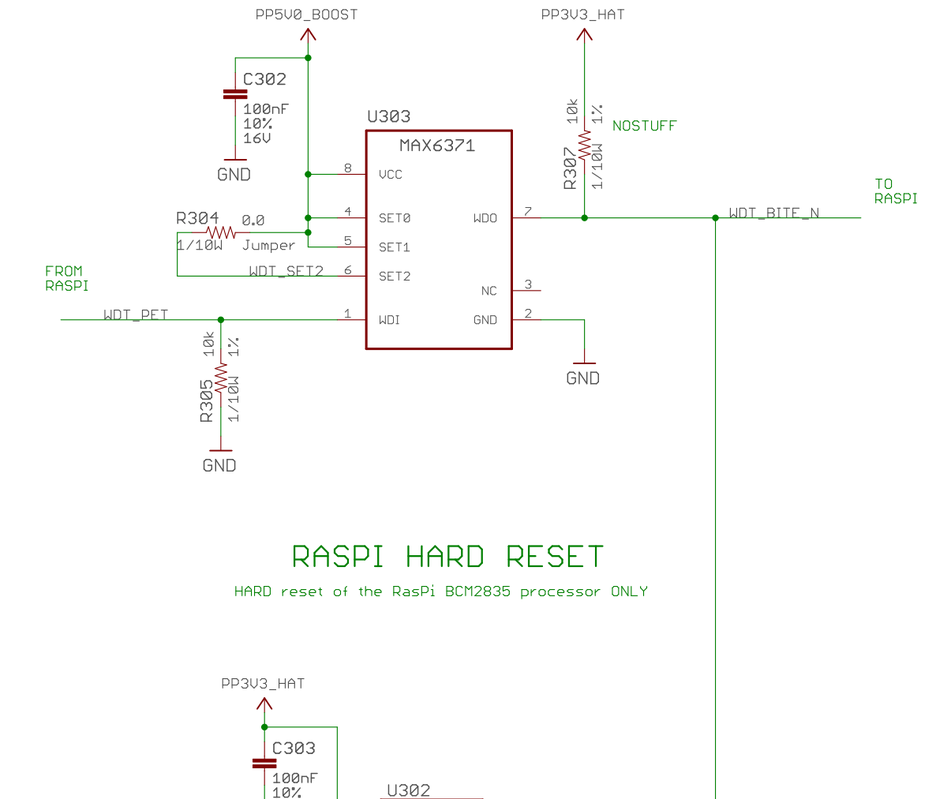
## 1-cell LiPo Battery Charger




## WATCHDOG TIMER

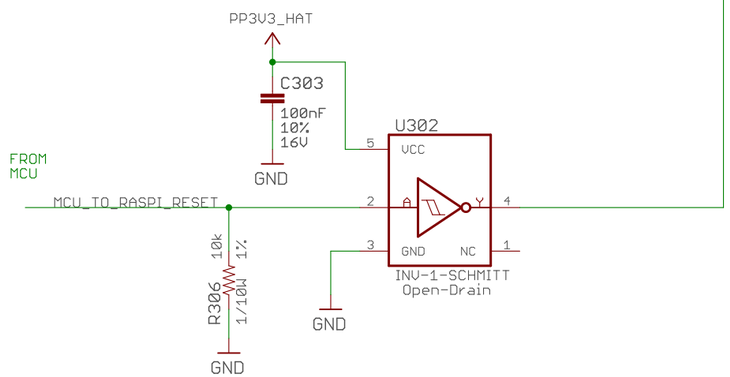
HARD reset of the RasPi BCM2835 processor ONLY
WDO is OD active low for at least 100us
Power-on delay is minimum of 60s

| SET2 | SET1 | SET0 | Mode |
|---|---|---|---|
| VCC | VCC | VCC | 60s timeout |
| GND | VCC | VCC | Disabled |




## RASPI HARD RESET

HARD reset of the RasPi BCM2835 processor ONLY

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| LIPO_CHARGER_AND_RESET | |
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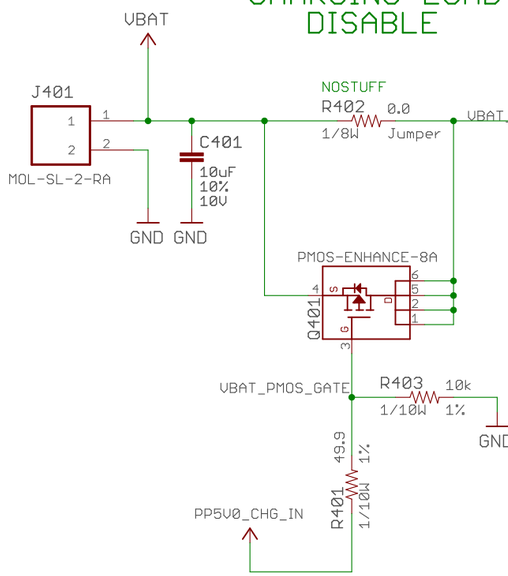
# POWER ENTRY, 5V BOOST, AND 3.3V LDO

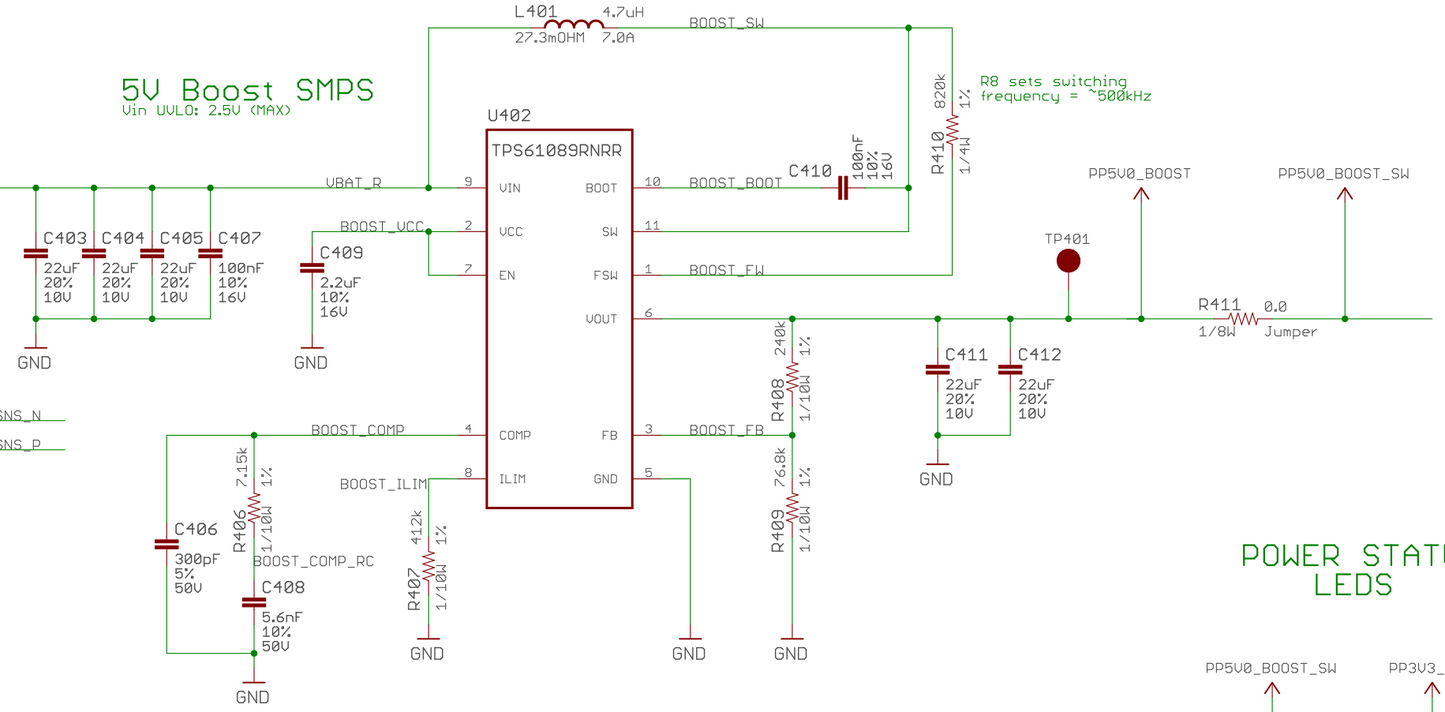
LiPo Battery: ~3.0V-4.2V
3xAA Battery: ~3.7V to 4.6V
Battery Current: ~400mA (AVG)
~775mA (PEAK)

## CHARGING LOAD DISABLE




## 5V Boost SMPS

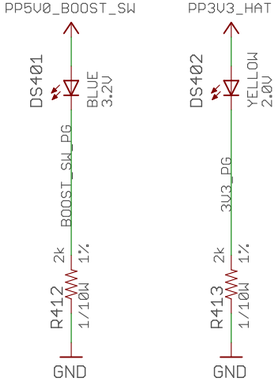
Vin UVLO: 2.5V (MAX)




System Current: ~250mA (AVG)
~500mA (PEAK)

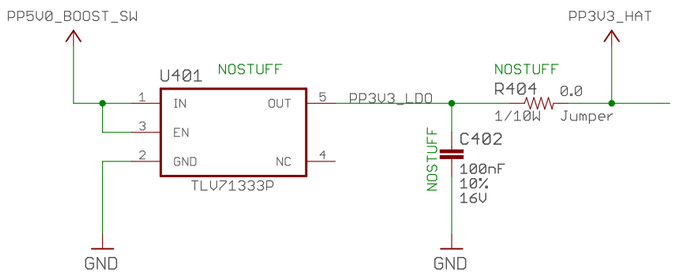
## POWER TO SYSTEM

## POWER STATUS LEDS




## 3.3V LDO (No RasPi Operation)

Placeholder for 3.3V rail supply if the board is used without a RasPi, since the RasPi supplies the 3.3V rail during operation

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| POWER_ENTRY_BOOST_LDO | |
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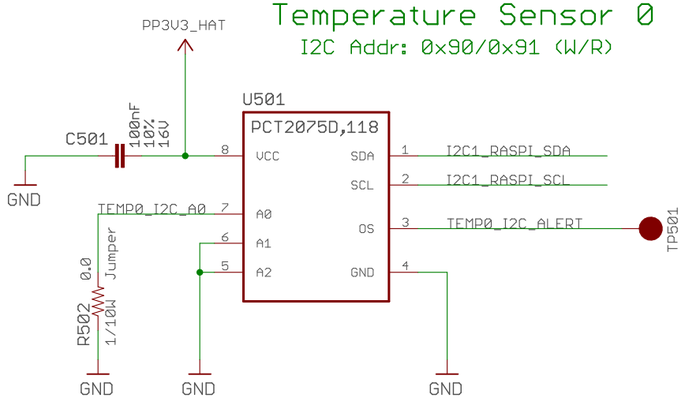
# SENSORS

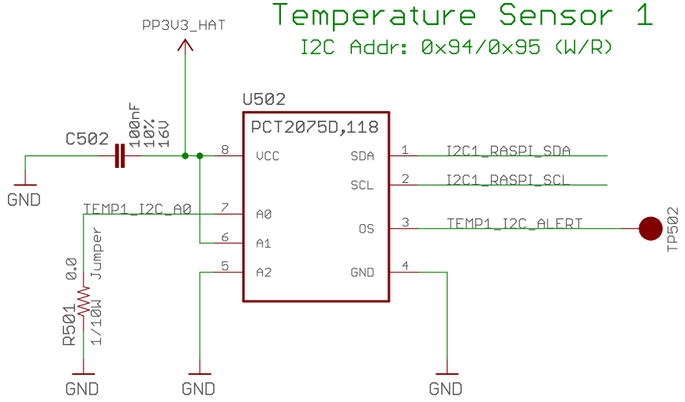
## Temperature Sensor 0

I2C Addr: 0x90/0x91 (W/R)



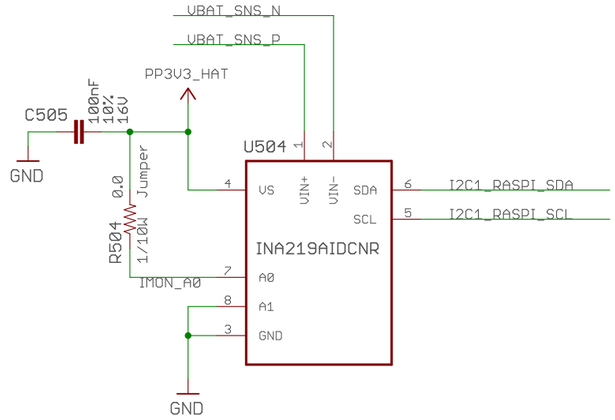

## Temperature Sensor 1

I2C Addr: 0x94/0x95 (W/R)




## Current/Voltage Sense Amp.

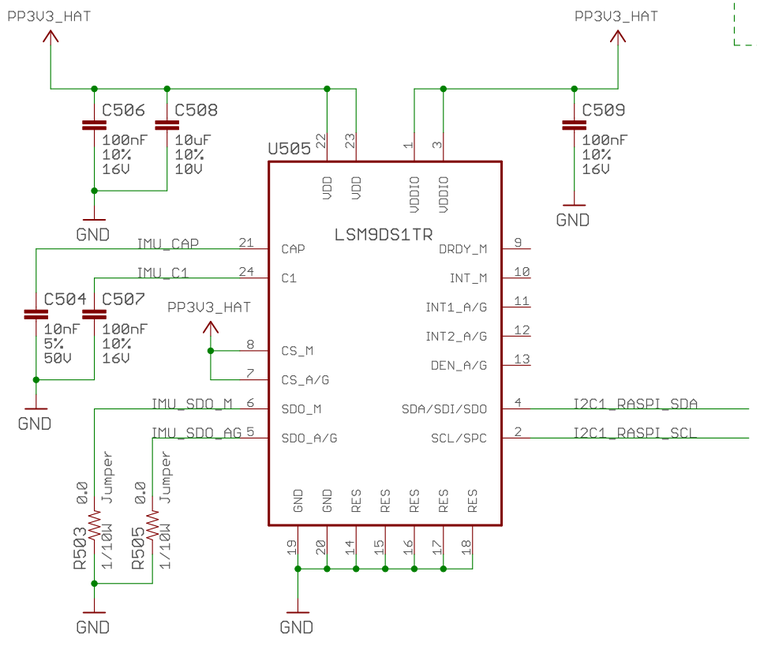
I2C Addr: 0x82/0x83 (W/R)




## IMU (Accel, Gyro, Mag)

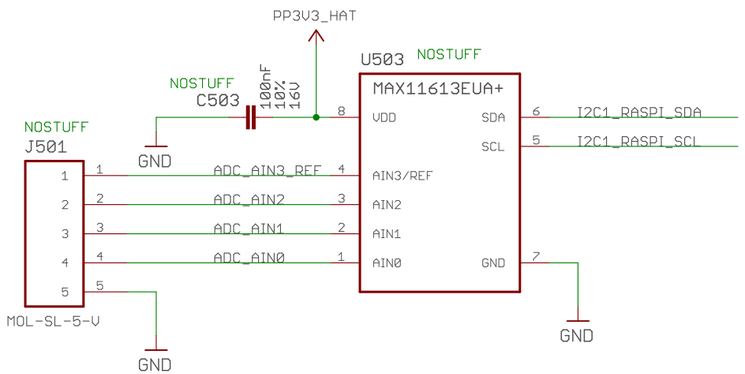
Accel/Gyro I2C Addr: 0xD4/0xD5 (W/R)

Mag I2C Addr: 0x38/0x39 (W/R)



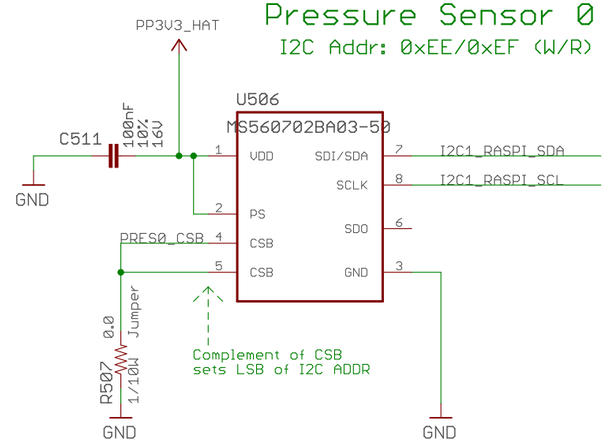

## 12-bit ADC

I2C Addr: 0x68/0x69 (W/R)



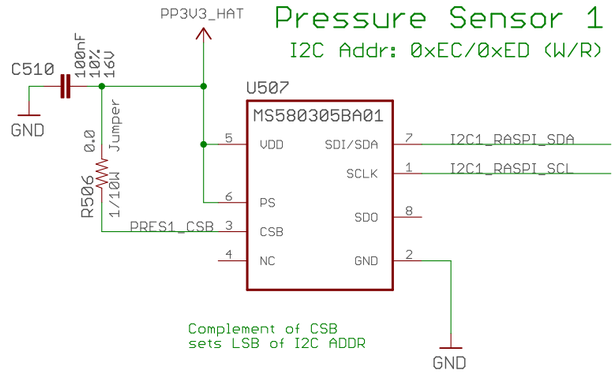

## Pressure Sensor 0

I2C Addr: 0xEE/0xEF (W/R)



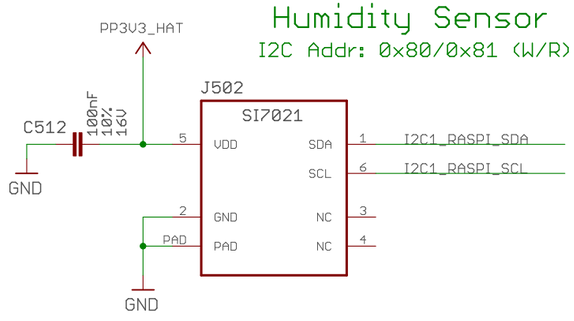

## Pressure Sensor 1

I2C Addr: 0xEC/0xED (W/R)




## Humidity Sensor

I2C Addr: 0x80/0x81 (W/R)

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| SENSORS | |
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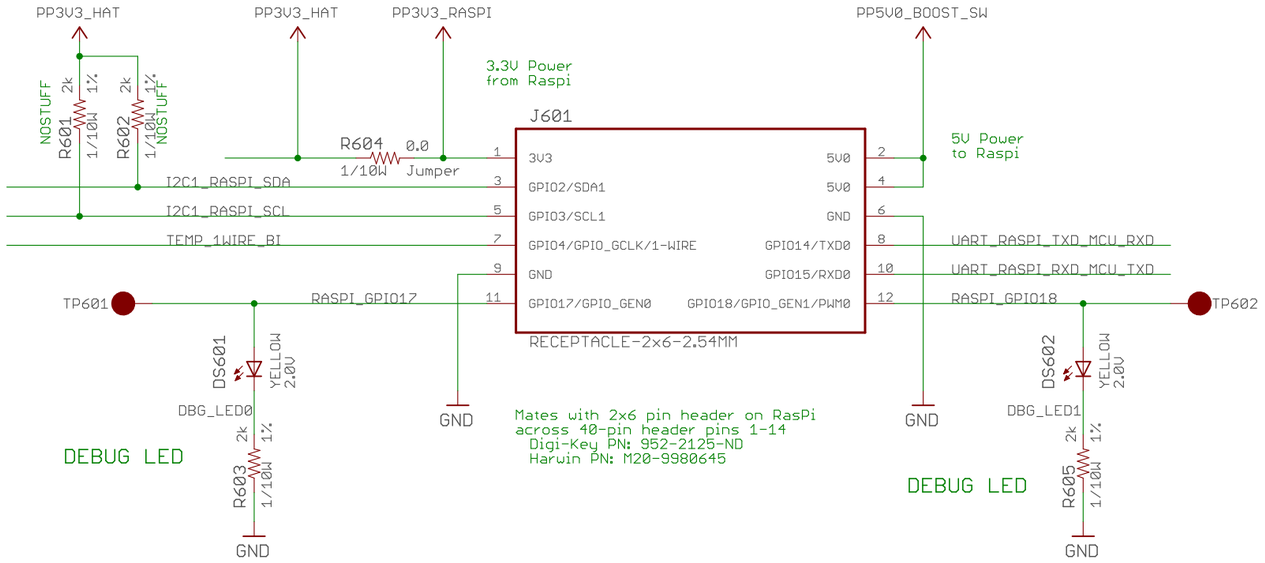
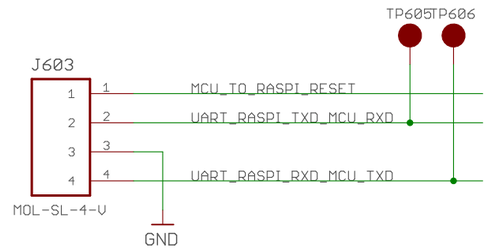
# HOST/RASPI CONNECTORS and MOUNTING

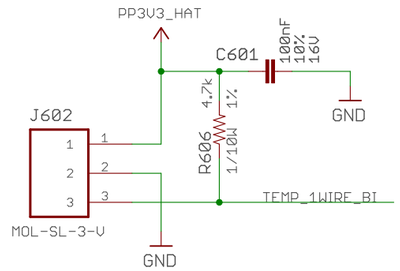
## RASPBERRY PI PWR/GPIO HEADER



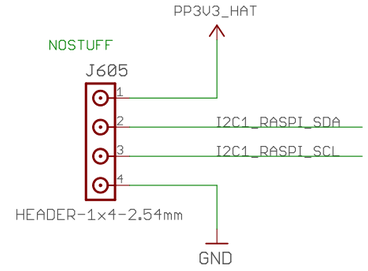

## HOST MCU CONNECTOR




## EXTERNAL TEMPERATURE SENSOR CONNECTOR




## I2C DEBUG HEADER




## RASPI ZERO HAT OUTLINE

Only using 3 mounting holes since the 2x6 pin connector stabilizes the upper left board quadrant.

This allows for easier routing of the boost output to the Pi's 5V0 pin.


## RASPI CAM MOUNTING HOLES

Mounting holes for the Raspi Camera

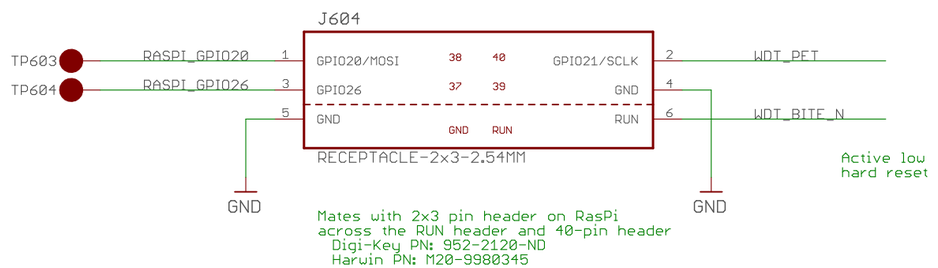
H601 2.2mm_drill_2.0mm_radius

H602 2.2mm_drill_2.0mm_radius

H603 2.2mm_drill_2.0mm_radius

H604 2.2mm_drill_2.0mm_radius

## RASPBERRY PI RESET/GPIO HEADER

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| PI_MCU_CONNECT_AND_MOUNTING | |
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