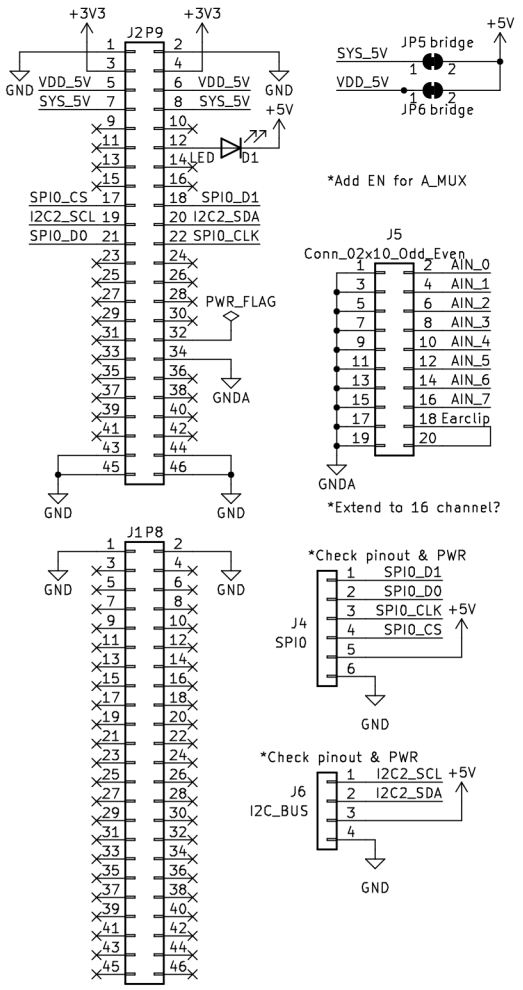
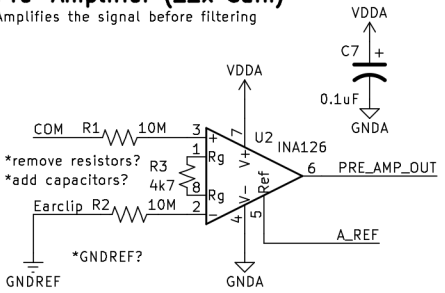
Connectors — BeagleBone Black [BBB]

Connections to BBB pins



Pre-Amplifier (22x Gain)

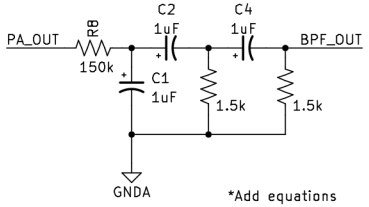
Amplifies the signal before filtering



G = 5 + (80kΩ / R3)
Vout = (COM − Earclip) * (5 + (80kΩ / 4k7Ω)) ???

Band-Pass Filter [BPF]

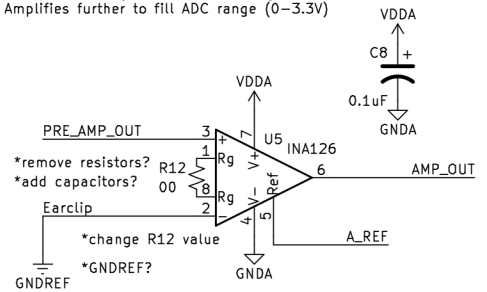
Filters frequencies between 1–106Hz



F_c = 1/(2pi * RC) ??

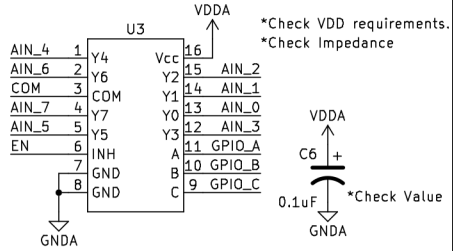
Amplifier (~1400x Gain)

Amplifies further to fill ADC range (0–3.3V)



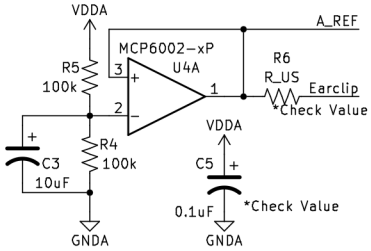
Analog Multiplexer [A_MUX]

16:1 Analog Multiplexer ???



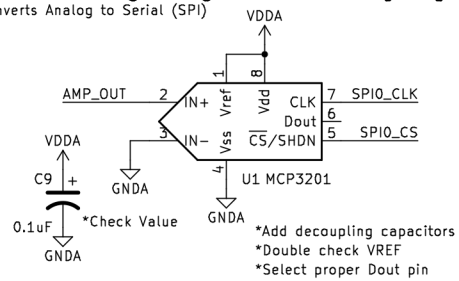
Driven Right Leg [DRL]

Sets the bias to 0.9V



12-bit Analog->Digital Converter [ADC]

Converts Analog to Serial (SPI)



MicroSD Card Reader (v0.2)

MicroSD slot for data logging

*Add MicroSD card reader
*Check SPI0–1 concurrent usage

Temperature Sensor (v0.3)

Measures ambient temp (used to adjust ADC)

*Add temperature detection

Accelerometer (v0.3)

TBD

*Add the MPU6050 or LMS9DOF IMUs

VDD->VDDA Filtering (v0.1)

Filters VDD to be used as VDDA

*Add 3.3 VDD to 3.3 VDDA filtering
No longer using BBB VDDA @ 1.8V, switching to 3.3V.

Real-Time Clock [RTC] (v0.2)

Used for accurate data logging

*Add RTC module

Martin McCorkle

Sheet:
File: Quron_Cape.kicad_sch

Title: Quron Cape 0.1

Size: A4	Date: 2024-11-20	**Rev: 0.1**
KiCad E.D.A.	kicad 7.0.1-3b83917a11~172~ubuntu22.04.1	Id: 1/1