

Drawn by: Ian Hartwig

Carnegie Mellon University

Sheet: /labio-rpi/

File: labio-rpi.sch

Title: Raspberry Pi Embedded Lab I/O

Size: A4

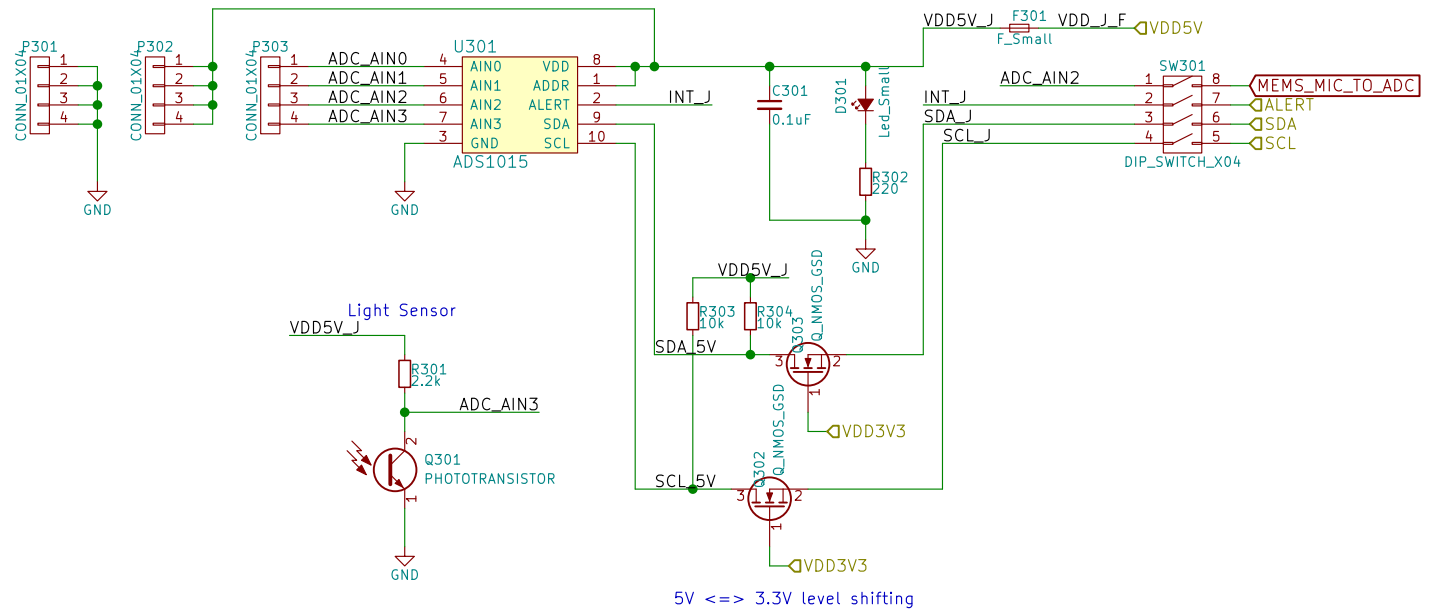
Date:

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12-bit (ADS1015) or 16-bit (ADS1115) ADC
with differential PGA and 4-channel mux.
7-bit addr: 0x73
5V VDD to safely sample RPi VBUS.



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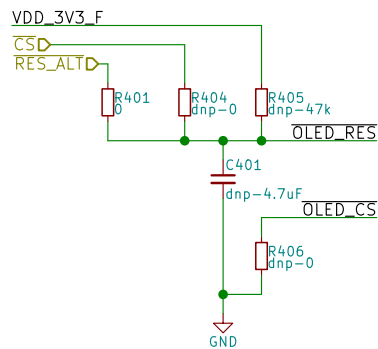
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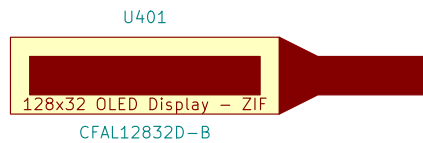
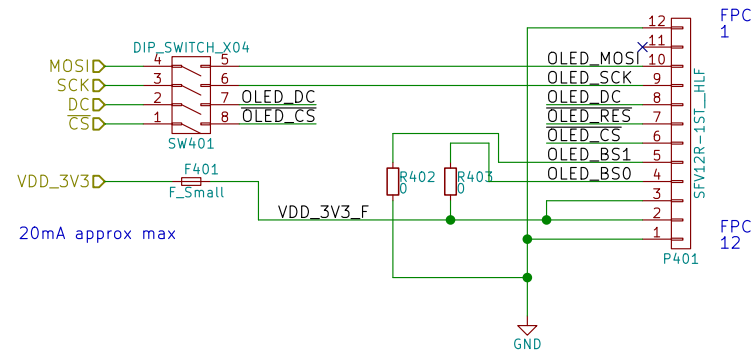
Id: 3/10

Backup options for OLED reset line
GPIO control on CS or alt or driven
from VDD with an RC delay > 110ms.



CFAL12832D-B* OLED Display
3-wire SPI mode.

Note: top side ZIF connector has pins reversed from FPC.



Interface				
Pin No	Sym	3 Wire SPI	4 Wire SPI	I2C
1	GND	GND	GND	GND
2	D2	NC	NC	SDA*
3	D1	SDA	SDA	SDA*
4	D0	CLK	SCLK	SCL
5	D/C#	NC	D/C	Vcc
6	RES#	RESET	RESET	RESET
7	CS#	GND	GND	GND
8	BS1	GND	GND	Vcc
9	BS0	Vcc	GND	GND
10	Vdd	Vcc**	Vcc**	Vcc**
11	Vbat	Vcc**	Vcc**	Vcc**
12	GND	GND	GND	GND

Microcontroller	Control lines defined by layout / code
+3.3v	Supply voltage
Ground	Supply ground
Notes:	
*	Tie D2 and D1 together
**	Okay to Tie Vdd and Vbat together

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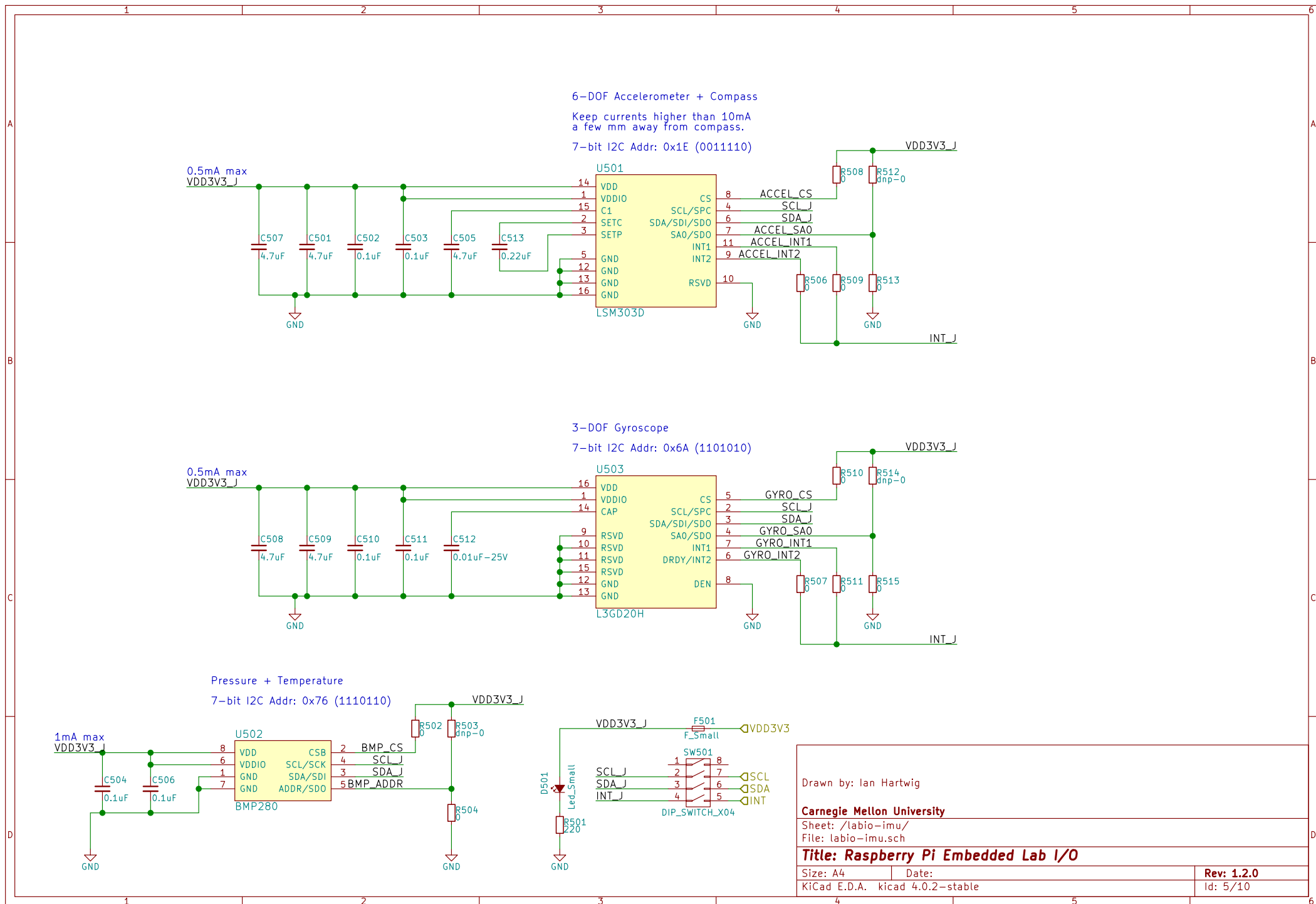
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2x DC Motors or 1x Bipolar Stepper Motor



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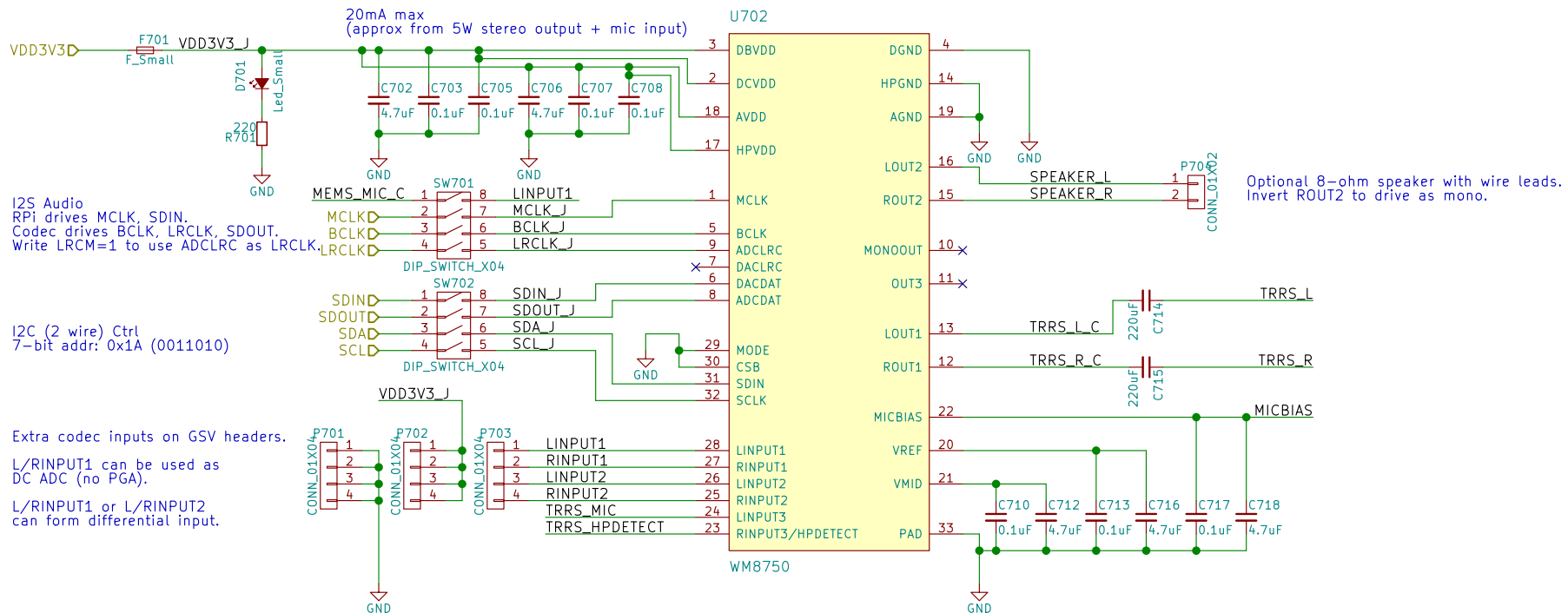
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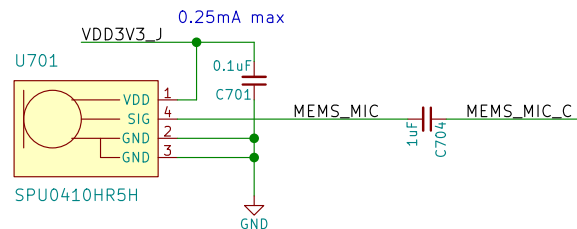
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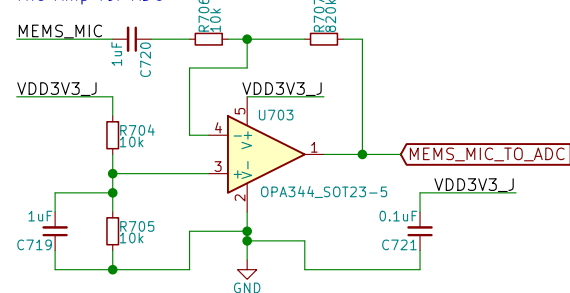
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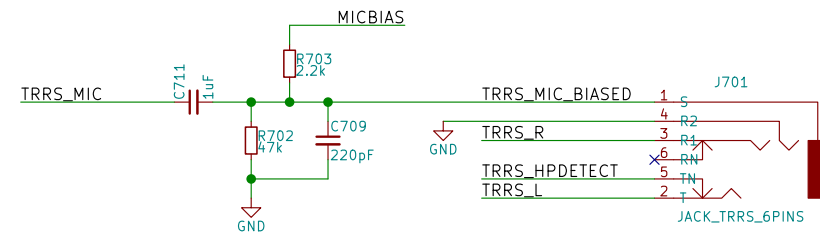
MEMS Microphone



Mic Amp for ADC



Headset mic bias
Suggested by WM8750BL datasheet (pg. 56).



TRRS headset connector
for typical smartphone headset.

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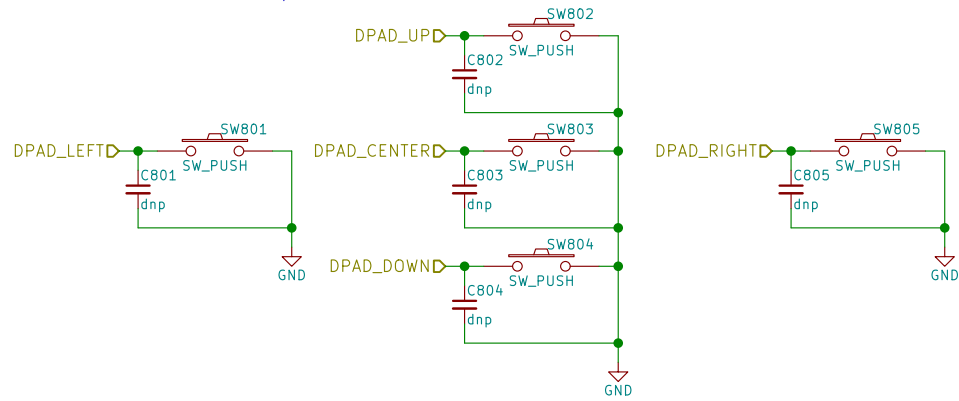
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D-Pad

Use RPi pull-ups.
Optional C for decoupling.
Individual IO lines for interrupts.



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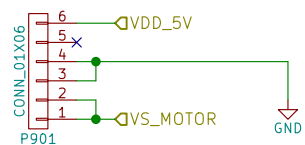
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External Power (Future)

Provides logic and motor power from power supply or battery pack with possible charging from USB (rpi) power.
2x motor power for current rating.



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RPi-like Mounting Holes

M3 for M3/no 4/M2.5 hardware.

H1001



hole

H1003



hole

H1004



hole

H1005



hole

H1007



hole

H1008



hole

H1009



hole

Heatsink Mounting

25x25mm with 30x30mm M3 holes

H1002



hole

H1006



hole

WiSE Lab

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