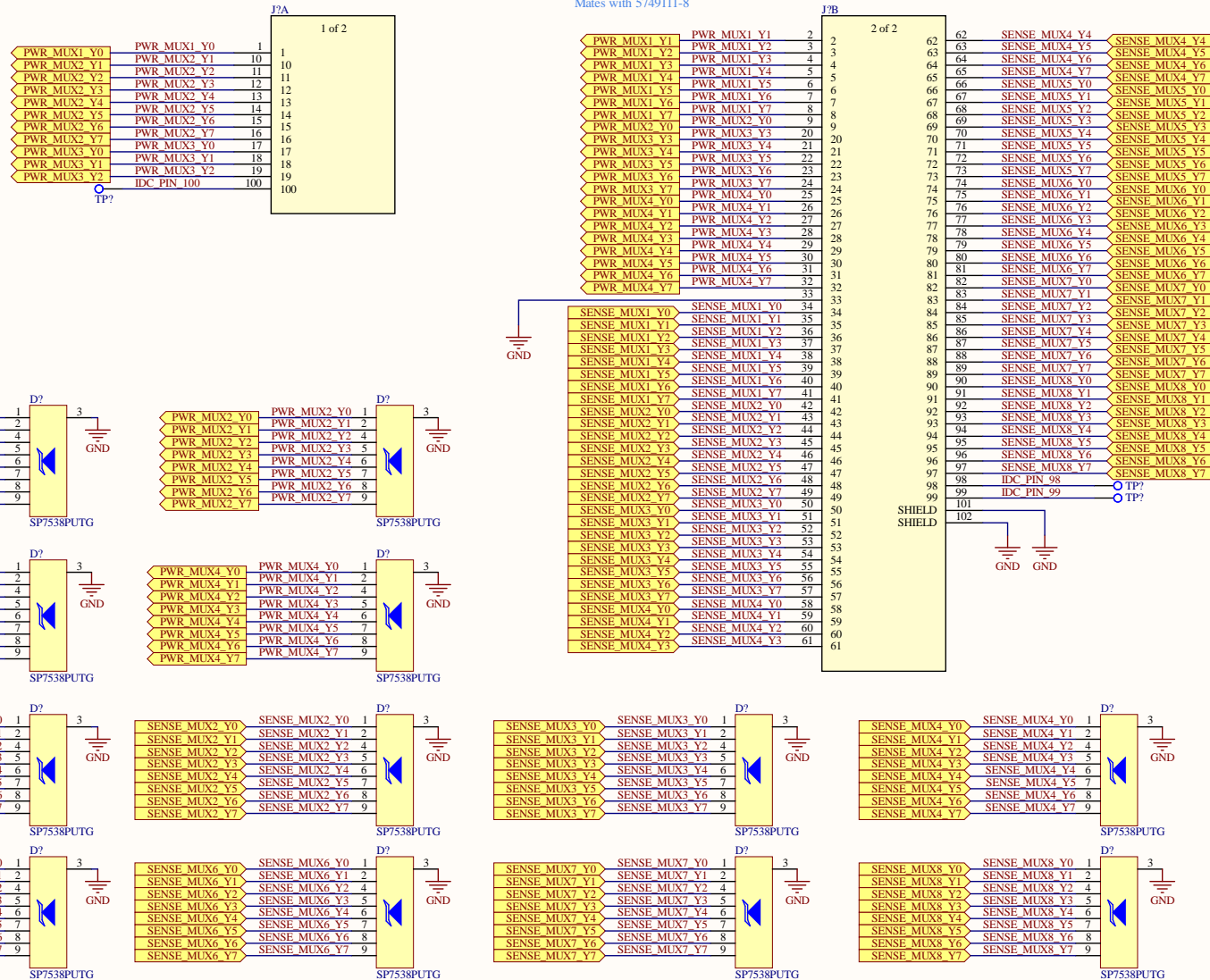


Title <i>POWER_MCU.SchDoc</i>			* * * *
Size: B	Number:*	Revision:*	
Date: 1/22/2022	Time: 5:19:37 AM	Sheet 1 of *	
File: C:\Users\User\Documents\matrics\Electrical\MLB_REV1\POWER_MCU.SchDoc			



Mat Cabling Connector

Mates with 5749111-8



Title: MAT_CABLING_CONNECTOR.SchDoc			
Size: B	Number: *	Revision: *	*
Date: 1/22/2022	Time: 5:19:38 AM	Sheet: * of *	*
File: C:\Users\User\Documents\matrics\Electrical\MLB_REV1\MAT_CABLING_CONNECTOR.SchDoc			



Audio Sensing

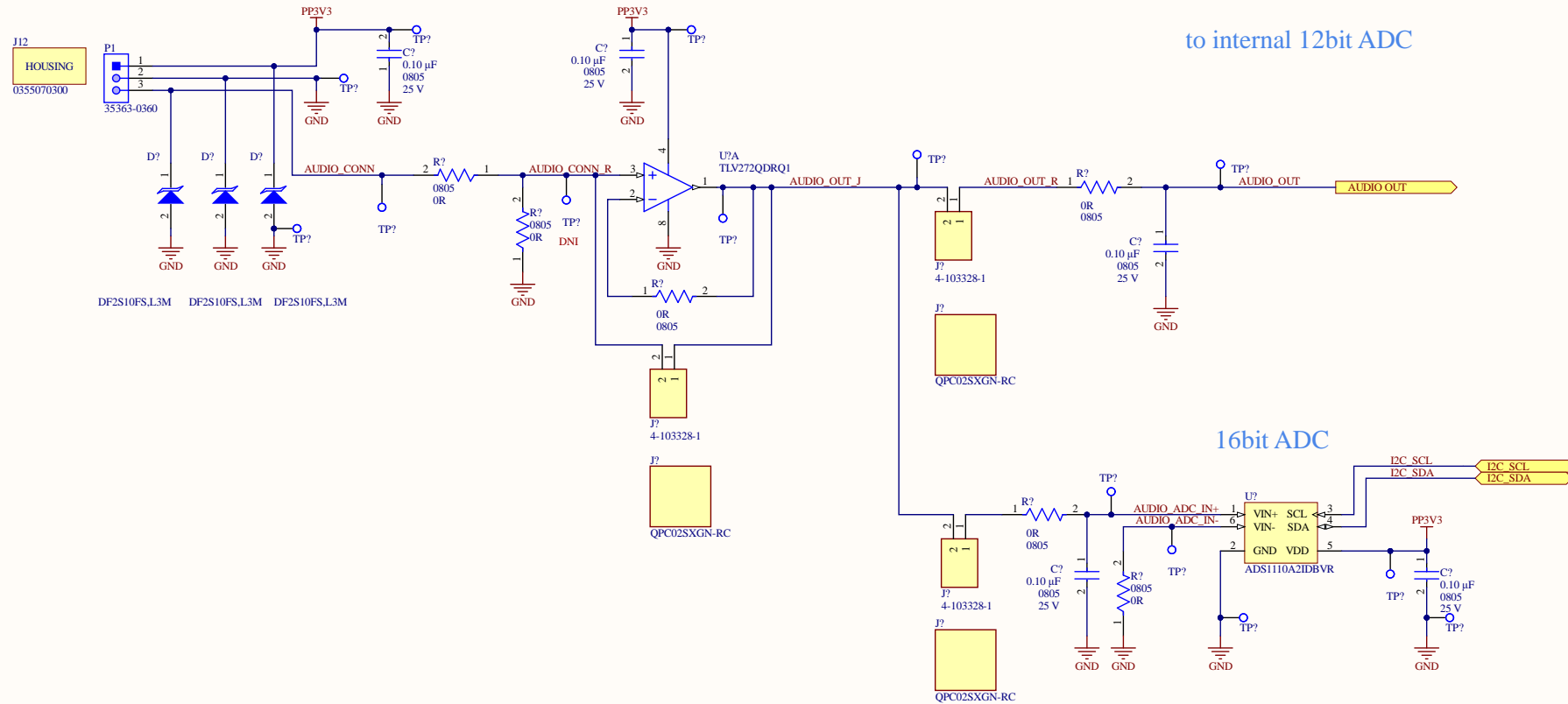
Electret Microphone

Electret Microphone Adafruit:
<https://www.adafruit.com/product/1063>

Buffer

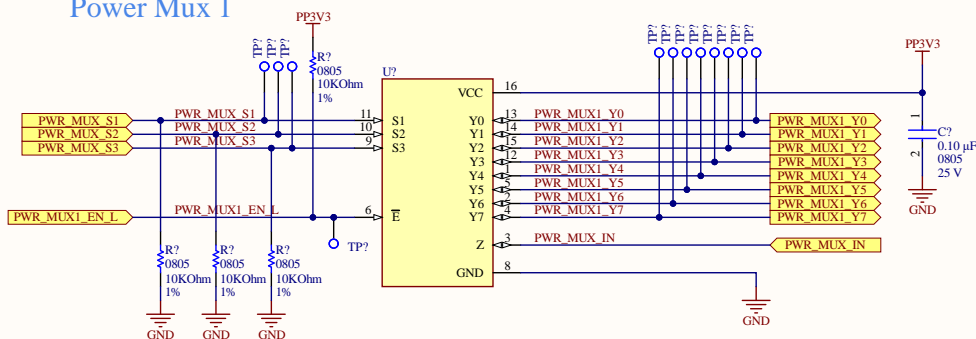
to internal 12bit ADC

16bit ADC

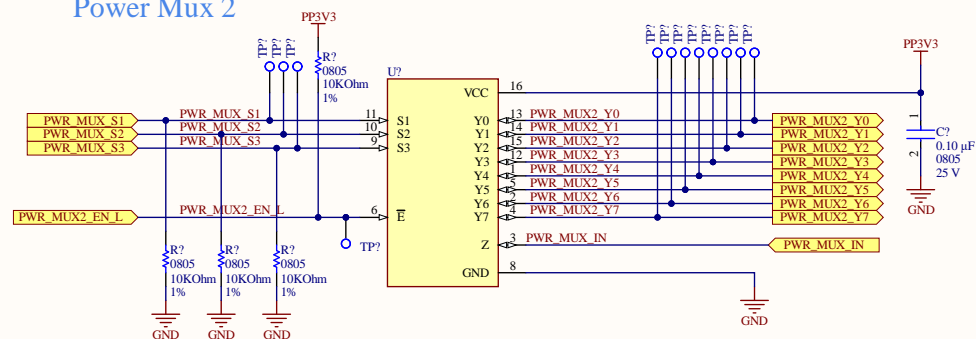


The power demuxes share select lines and input signals. The operational mux is selected using the individual enable signals.

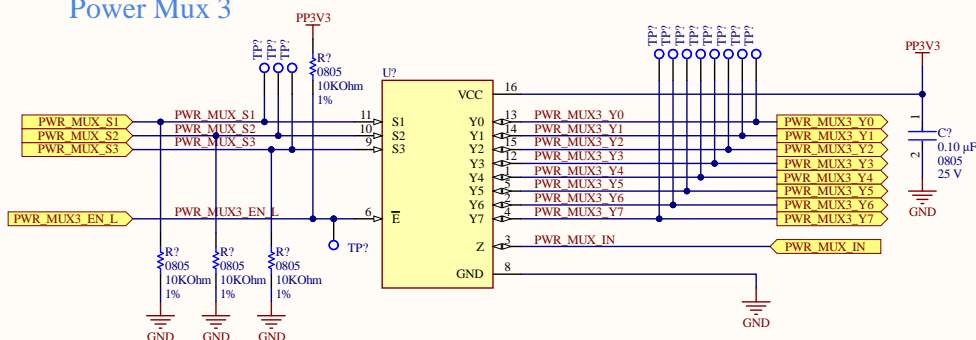
Power Mux 1



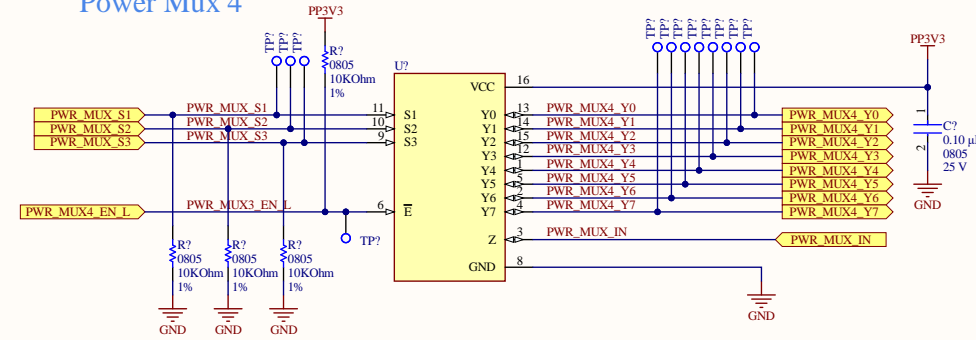
Power Mux 2




Power Mux 3

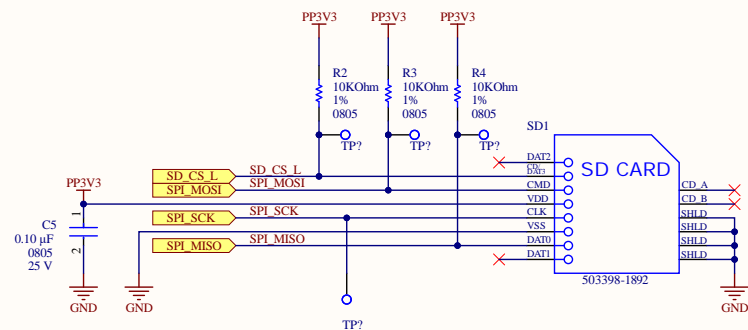


Power Mux 4

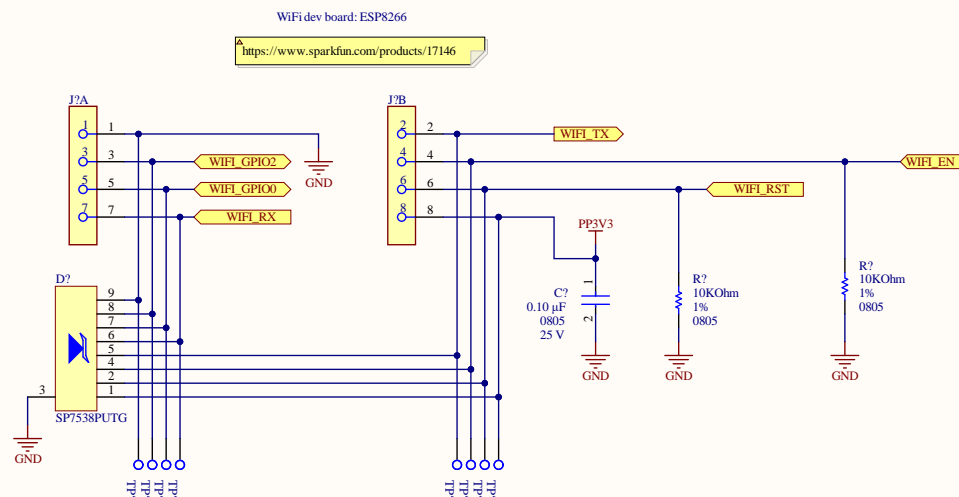


Title POWER_MUXES.SchDoc			
Size: B	Number: *	Revision: *	
Date: 1/22/2022	Time: 5:19:38 AM	Sheet * of *	
File: C:\Users\User\Documents\matrics\Electrical\MLB_REV1\POWER_MUXES.SchDoc			

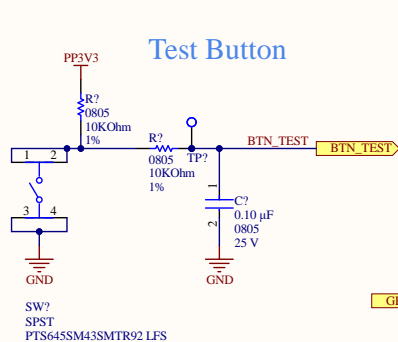
SD Card



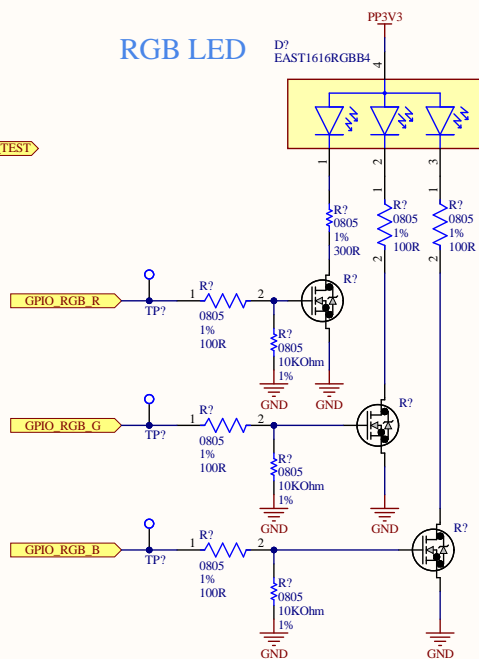
WiFi Shield Headers



Support

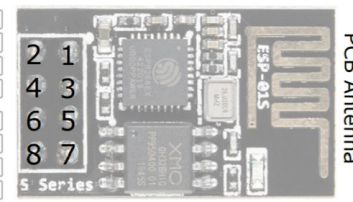


RGB LED




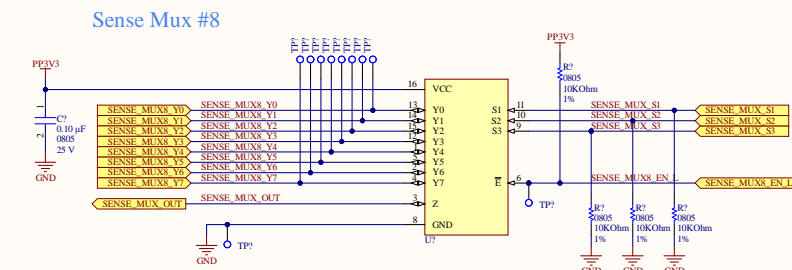
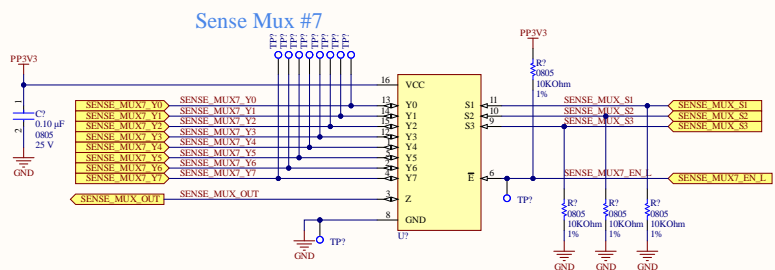
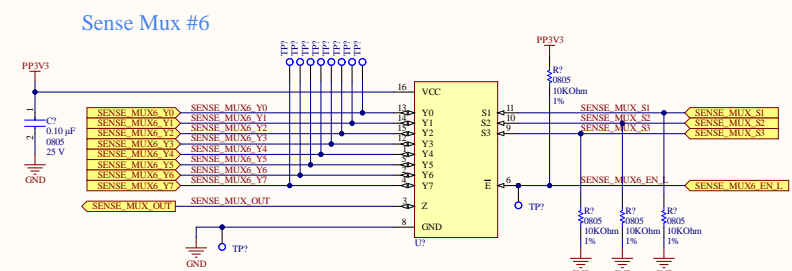
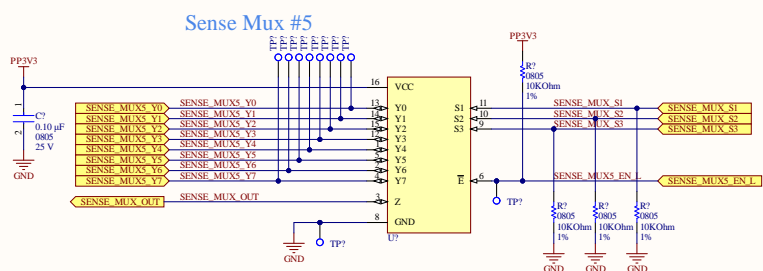
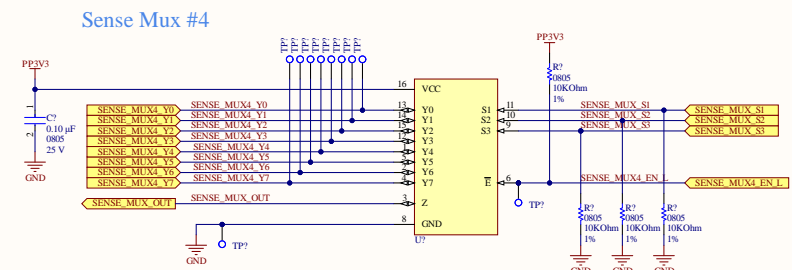
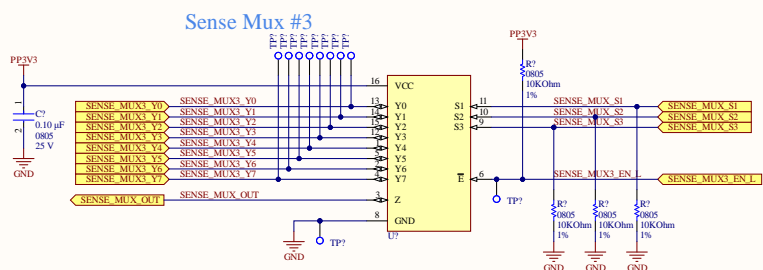
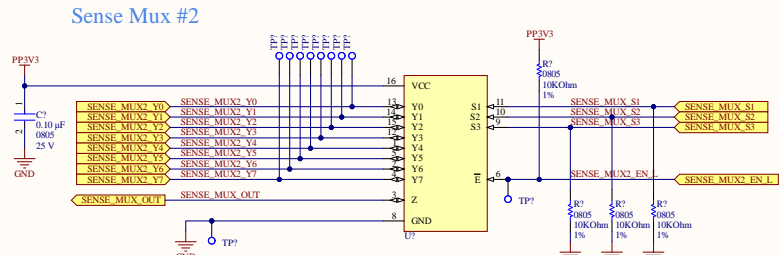
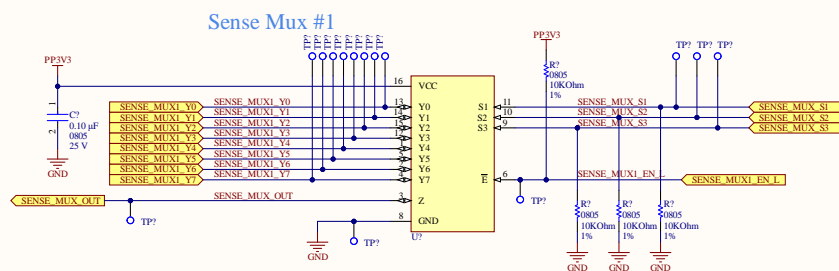
RGB LED Calc:
Pin1, R = $(3.3-2.8)/0.005 = 100$ Ohms
Pin2, R = $(3.3-2.8)/0.005 = 100$ Ohms
Pin3, R = $(3.3-1.8)/0.005 = 300$ Ohms

D7	GPIO1	TX	2- TX0
		Chip Enable	4- CHPD
		Reset	6- RST
		3.3V	8- 3V
		GND	1- GND
	D2/SDA	GPIO2	3- GPIO
	D0	GPIO0	5- GPIO
D8	GPIO3	RX	7- RX1



Communication Headers

Title <i>SD_CARD_WiFi.SchDoc</i>			
Size: B	Number: *	Revision: *	
Date: 1/22/2022	Time: 5:19:38 AM	Sheet * of *	
File: C:\Users\User\Documents\matrics\Electrical\MLB_REV1\SD_CARD_WiFi.SchDoc			



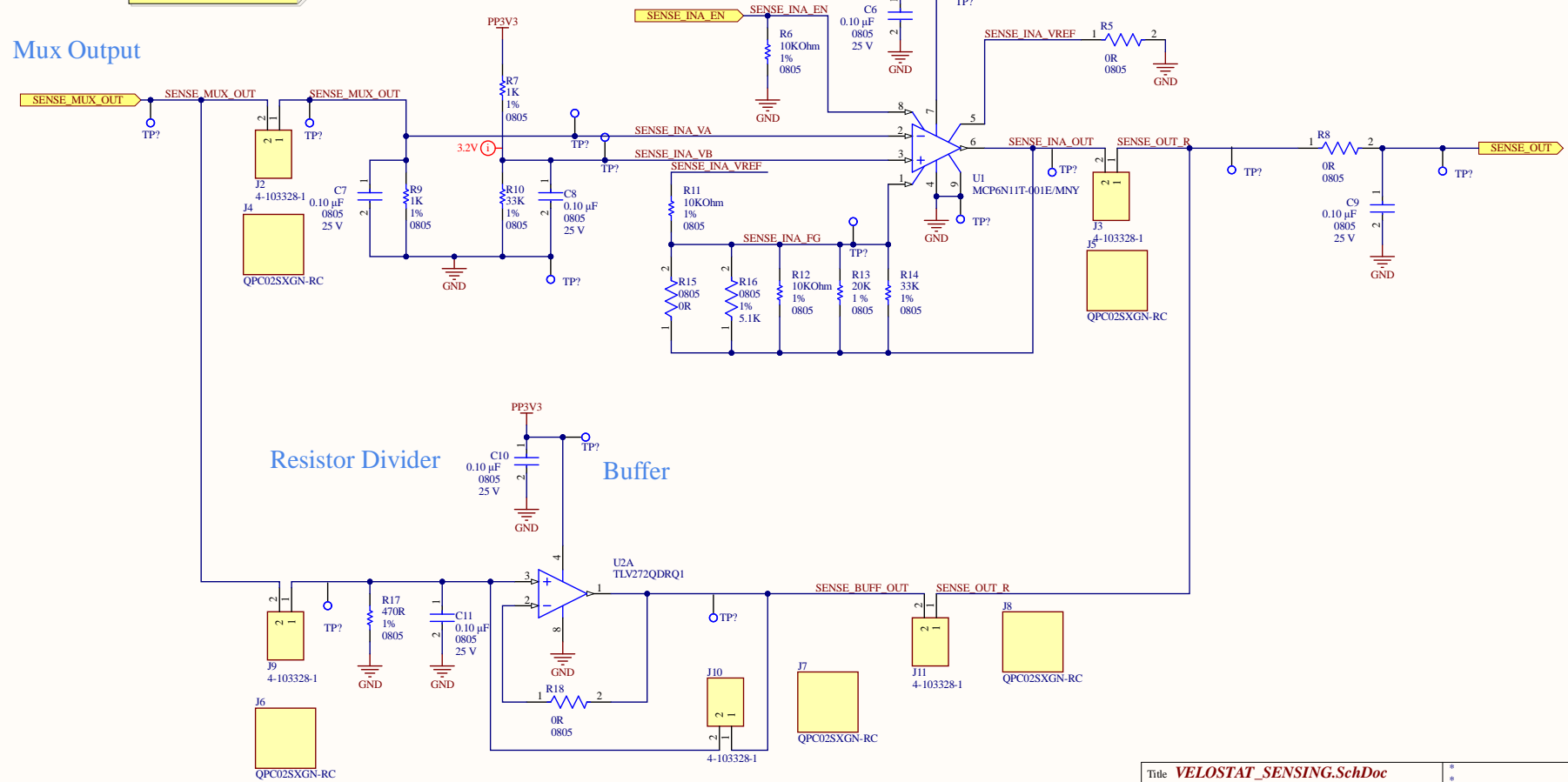
Velostat Resistance Measurement Circuitry

Calculations:
https://docs.google.com/spreadsheets/
d/1_k4NS1xzNff5wRNssyNoAdTZ
4fm0nBy5KYFbVeuWY/edit?usp=sha
ring (PCB sheet)

Wheatstone Bridge

Instrumentation Amplifier

Mux Output



Title	VELOSTAT_SENSING.SchDoc		*
Size	B	Number:*	*
Date:	1/22/2022	Time: 5:19:38 AM	Sheet * of *
File:	C:\Users\User\Documents\matrics\Electrical\MLB_REV1\VELOSTAT_SENSING.SchDoc		*



Component	Description	Designator	Footprint	Label	Quantity
C080510M03ACTU	Cap CER 0.1uF 25V 10% X7R MFG	C3, C4, C7, C8, C9, C10, C11, C2	FP-C0805C-0N-MFG	CMP-2001-00302-2	27
CL12101K0C0NNC	CL121 Series 1000pF 50V ±10% Tolerance EPR Multilayer Ceramic Chip Capacitor	C7	FP-CL12-IPC_A	CMP-2000-00017-2,1	5
CL121010K0FNNE	CL121 Series 1000pF 10V ±10% Tolerance X7R Multilayer Ceramic Chip Capacitor	C7	FP-CL12-IPC_A	CMP-13271-00306-1	2
GCM2195C2E140B120	Ceramic Capacitor High-Rel. 200VDC 10G 0805 Paper T/R	C7	FP-GCM219-0_15-IPC_C	CMP-06025-02693-1	2
GRM218R102J46M51L	Chip Multilayer Ceramic Capacitors for General Purpose, 0805, 20uF, 10V, 10%, 10V	C7	FP-GRM218-0_15-MFG	CMP-2000-00340-2	2
GRM218R71A016A073K	Chip Multilayer Ceramic Capacitors for General Purpose, 0805, 10uF, X7R, 15V, 10%, 10V	C7	FP-GRM218-0_15-IPC_A	CMP-06025-00813-1	2
HP310F513M	1x8 08050 8000M PFC	D7	DCM100A00N	DF310F513M	4
IA011416R0B04	1.0 0.0000 CLEAR 400m	D7	FP-IA011416R0B04-MFG	CMP-01044-00009-1	1
MM320V2511G	Linear Voltage Regulator, 300-mW, Tight Tolerance Portfolio, 2-Pin SOD-323 Pb-Free, Tape and Reel	D7	ONSG-SOD-323-2-47T-2_V	MM320V2511G	1
9P750P4UG	FDS Suppressor TPS Pin-to-Pin 25V 0-Pin UDFN V/A	D7	9P750P4UG	9P750P4UG	12
9P6-8170-10T	Single Conv. 2-V, 40 to 80-dB, 2-Pin SMD (0805), Reel, Tape and Reel	D07	DIAL-0805-2_V	CMP-2000-05455-1	1
AZ1117H-3.3T8G1	Linear Voltage Regulator IC Positive Fixed 1 Output 1A SOT-223	C7	SOT223P000170-4N	AZ1117H-3.3T8G1	1
4-103326-1	Connector Header Through Hole 2 position		TE,4-103326-1	4-103326-1	13
QPC0200N-RC	CONN JUMPER MOSFET/NO-100T G200	H, H6, H6, J7, J8, J7, G200	FP-QPC0200N-RC-MFG	CMP-20466-00001-1	9
Q500-0300	No Description Available			Q500-0300	1
1-78780-0	CONN PLUGGER SUB-D 15POS 1.27mm	D7	CONN100_1_787800-B_TTC	1-787800-0	2
1220-15-0300-00	Through Hole Right Angle DC Power Jack, 5 A, 2.5 mm Center Pin, 3 Position, 45 to 85-dB, Reel, Bulk	D7	CNC_7x0x15_MFG	1220-15-0300-00	2
P3-102BH	Through Hole Right Angle DC Power Jack, 5 A, 2.5 mm Center Pin, 3 Position, 45 to 85-dB, Reel, Bulk	D7	CLB-P3-102BH_V	CMP-2000-04901-1	1
PP104209N-RC	CONN JUMPER MOSFET/1-17N PCB	D7	FP-PP104209N-RC-MFG	CMP-25468-00004-1	2
35363-0360	Mini-Header, Pin 0.2 mm, 1 x 3 Position, Height 3.5 mm, Tail Length 2.2 mm, 40 to 120-dB, Reel, Bulk	F1	MOLX-35363-0360_V	CMP-2000-05095-1	1
AD2423	AD2423 1-P Channel	D7	SOT1P080X125_3N_A01A23		1
RC0805FR-0710K	Chip Resistor, 10 Ohm, ±1%, 0.125 W, 55 to 155-dB, 0805 (2012 Metric), Reel, Tape and Reel	R2, R3, R4, R6, R11, R12, R7	RES20130A0509L1-0700	CMP-1659-00013-4	16
RMCF0805270800	RES 0 OHM JUMPER 0805-0805	R5, R6, R15, R16, R7	FP-RMCF0805-MFG	CMP-26527-000017-1	13
RC0805FR-0718L	Chip Resistor, 1.8 Ohm, ±1%, 0.125 W, 55 to 155-dB, 0805 (2012 Metric), Reel, Tape and Reel	R7, R8, R7	RES20130A0509L1-0700	CMP-2100-02671-1	3
ERI4GEY333V	20K 0.125W 1% 0805 SMD	R10, R14	RES2013070404L120-020	CMP-2001-00401-1	2
20K 1% 08052012J	20K 0.125W 1% 0805 SMD	R13	RES08052012_JN	CMP-1013-00455-1	1
CRW0805SR10P0EA	RES Thin Film Chip Resistor AEC-Q200 Compliance	R16	FP-CRW0805-43-MFG	CMP-2001-04024-2	1
RC0805FR-07470R	Chip Resistor, 470 Ohm, ±1%, 0.125 W, 55 to 155-dB, 0805 (2012 Metric), Reel, Tape and Reel	R17	RES20130A0509L110-0700	CMP-2000-04961-1	1
CRW08051909KTA	RES Thin Film Chip Resistor AEC-Q200 Compliance	R7	RES2013050009R2-0700	CMP-2001-04966-1	53
ERH6NF220V	Chip Resistor, 220 Ohm, ±1%, 0.125 W, 55 to 155-dB, 0805 (2012 Metric), Reel, Tape and Reel	R7	RES2013070404L2-0200	CMP-2001-00044-1	2
ERI46NF3000V	Chip Resistor, 300 Ohm, ±1%, 0.125 W, 55 to 155-dB, 0805 (2012 Metric), Reel, Tape and Reel	R7	RES2013070404L130-0200	CMP-2001-00110-5	1
ERI46NF5100V	Chip Resistor, 510 Ohm, ±1%, 0.125 W, 55 to 155-dB, 0805 (2012 Metric), Reel, Tape and Reel	R7	RES2013070404L2-0200	CMP-2001-00216-1,1	2
RC0805FR-0733R	Chip Resistor, 33 Ohm, ±1%, 0.125 W, 55 to 155-dB, 0805 (2012 Metric), Reel, Tape and Reel	R7	RES20130A0509L1-0700	CMP-1659-00015-4	4
HC700BMT116	No Description Available	R7	TRANS_HC700BMT16-K07V	HC700BMT116	3
RMCF0805FC1M00	100K 0.125W 1% 0805 Thin Film Chip Resistor AEC-Q200 Compliance	R7	FP-RMCF0805-MFG	CMP-26527-004118-1	1
RMCF0805F1100R	100K 0.125W 1% 0805 Thin Film Chip Resistor AEC-Q200 Compliance	R7	FP-RMCF0805-IPC_A	CMP-26527-001731-1	6
SW-SPST	Single-Pole, Single-Throw Switch	D7		SW-SPST	1
S03398-1892	Micro DC Connector, Pitch 1.1 mm, 8 Position, Height 1.4 mm, 25 to 85-dB, 0805, Tape and Reel	D01	MOLX-S03398-1892_V	CMP-2000-05621-1	1
PT54453AK3AMTP02LPS	Switching Regulator IC, Buck, 40V, 0.5A, 1.2V	DW07	FP-PT54453AK3AMTP02LPS-MFG	CMP-2000-05140-2	2
RCU-OC	Natural PFC Test Point Plating Surface Mount Mounting Type	TP7	TP-195X10	RCU-OC	186
RCFPA11T-00LEARNY	None	D7	TDRN-5M88	CMP-01087-00751-2	1
TI1073C08021	Automotive Catalog 150uA V _{IC} , 3-MHz Rail-to-Rail Output Operational Amplifier, 2.7 to 14 V, 40 to 120-dB, 4-pin SOT-23, Green (RoHS & no Sb/Br)	U2, U7	00008A_N	CMP-0073-02913-3	2
ADS1110A020BRV	1k-Bit Delta Sigma ADC with Internal Reference, PGA and Oscillator, I2C Serial Interface, 40 to 85-dB, 4-pin SOT-23 (2006), Green (RoHS & no Sb/Br)	U7	TI-080AL_M	CMP-0005-00270-2	1
NICL405IPW110	1-Channel IC Switch 0.1-100MHz 1.1VDC	U7	02P0P0400110-100-040500N	NICL405IPW110	12
STM32L150R8T6A	ARM Cortex-M3 32-bit MCU, 128-KB Flash, 1-KB Internal RAM, 51 KHz, 4-pin LQFP, 40 to 85-dB, Tray	U7	STM1-LQFP64_1	CMP-0236-00055-2	2
	Crystal 20MHz 4-pkg (Tape)	F7	XTAL_FCS-246-9-338-CRY-1R	FCS-246-9-338-CRY-1R	1