Teensy Breakout for Assad Lab

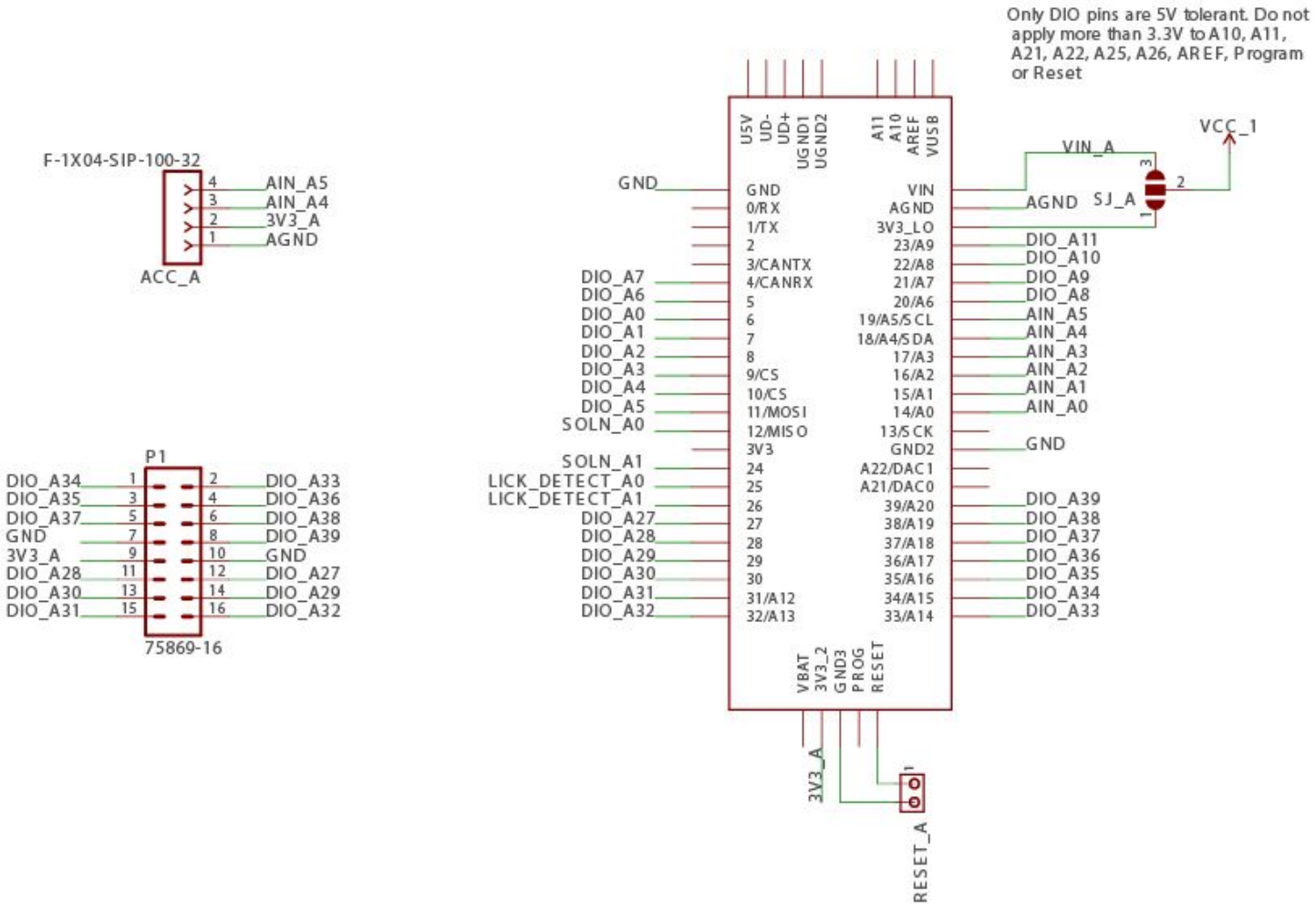
Alpha 1a (6/2018)

Name	Value	Package	Description	Part Number	Notes
CIN	1 u	C-USC0805K		0805	LDO Cap
COUT	2.2 uF	CPOL-USE2.5-5		E2,5-5	LDO Cap 2.2 uF min. Tantalum or aluminum electrolytic. No low ESR or ceramic
D1, D2, D3, D4		SMB	Fast recovery Schottky diode	MBRS360BT3GOSCT-ND	Flyback diode for coils
R1-R12, R27-R40, R55, R56	100	1206			LED current limit
R13, R18, R41, R46	10k	0805			Lick hysteresis 1%
R14-R16, R19-R21, R42-R44, R47-R49	1k	0805			Lick hysteresis 1%
R17, R22, R45, R50	10M	0805			Lick pull-up
R23, R24, R51, R52	500	1206			FET gate drive
R25, R26, R53, R54	50k	1206			FET gate pull-down
IC1, IC2, IC3, IC4	SN74LS06	14-SOIC	Hex Inverter open collector	296-14876-1-ND	Indicator LED driver (might not work from lower voltage VCC!!!)
U1, U2	LP339D	14-SOIC	Comparator	296-14609-1-ND	
T1, T2, T3, T4	NCV8406	SOT-223	Low side driver transistor with protection	NCV8406ASTT1GOSCT-ND	
J1			Power Jack 2.1mm		Sparkfun
			BNC straight connector	A32262-ND	
U3	5V	SOT-223	MIC5209 LDO regulator	576-1276-ND	
	~~5V~~	~~SOT-223~~	~~MIC5239 LDO regulator (30V, 500mA)~~	~~MIC5239-5.0YS-TR~~	
	~~5V~~	~~SOT-223~~	~~LM2940 LDO regulator (26V, 1A)~~	~~LM2940IMPX-5.0/NOPBCT-ND~~	~~Has over current, over temp and reverse polarity protection. Requires 22uF or larger Cout for stability~~

Teensy 3.5 Pin	Board Name	Notes	Teensy 3.5 Pin	Board Name	Notes
4	DIO_7	Digital BNC	23	DIO_11	Analog/Digital BNC
5	DIO_6	Digital BNC	24	SOLN_1	Not broken out
6	DIO_0	Digital BNC	25	LICK_DETECT_0	Not broken out
7	DIO_1	Digital BNC	26	LICK_DETECT_1	Not broken out
8	DIO_2	Digital BNC	27	DIO_27	Digital IDC connector
9	DIO_3	Digital BNC	28	DIO_28	Digital IDC connector
10	DIO_4	Digital BNC	29	DIO_29	Digital IDC connector
11	DIO_5	Digital BNC	30	DIO_30	Digital IDC connector
12	SOLN_0	Not broken out	31	DIO_31	Analog/Digital IDC
14	AIN0	Analog/Digital BNC	32	DIO_32	Analog/Digital IDC
15	AIN1	Analog/Digital BNC	33	DIO_33	Analog/Digital IDC
16	AIN2	Analog/Digital BNC	34	DIO_34	Analog/Digital IDC
17	AIN3	Analog/Digital BNC	35	DIO_35	Analog/Digital IDC
18	AIN4	Header for Acc.	36	DIO_36	Analog/Digital IDC
19	AIN5	Header for Acc.	37	DIO_37	Analog/Digital IDC
20	DIO_8	Analog/Digital BNC	38	DIO_38	Analog/Digital IDC
21	DIO_9	Analog/Digital BNC	39	DIO_39	Analog/Digital IDC
22	DIO_10	Analog/Digital BNC			

Legend

Front Panel, digital ground
Front Panel, analog ground
Board 16-pin connector
Not broken out



Jumpers:

SJ1 – Connects the onboard voltage regulator to the VCC1 line. VCC1 powers the buffer circuits, lick detection and Teensy A (left side components). If the Teensys are powered by USB, SJ1 should be left open. The purpose of this jumper is to allow a separate voltage regulator to be used if more current is needed than what's available from the Teensy directly.
Default condition: Leave jumper unsoldered.

SJ_A and SJ_B – These are three way jumpers, for Teensy A and Teensy B, respectively. They connect VCC1 or VCC2 to either the respective Vin or 3V3 lines on each Teensy. If a 3.3V regulator is used on the PCB, these jumpers allow the Teensy internal regulator to be bypassed and power the circuitry directly.
Default condition: Bridge the middle terminal to VIN.

VCC1_VCC2 – Connect the power rails for the left and right side of the board. When using two Teensys and each one is plugged in with a USB cable, this jumper can be left open. If power is delivered from the on-board regulator, the jumper should be closed.
Default condition: Leave jumper unsoldered

If Teensys get power from the board (either via Vin or 3V3), there is a trace that must be cut on each Teensy.