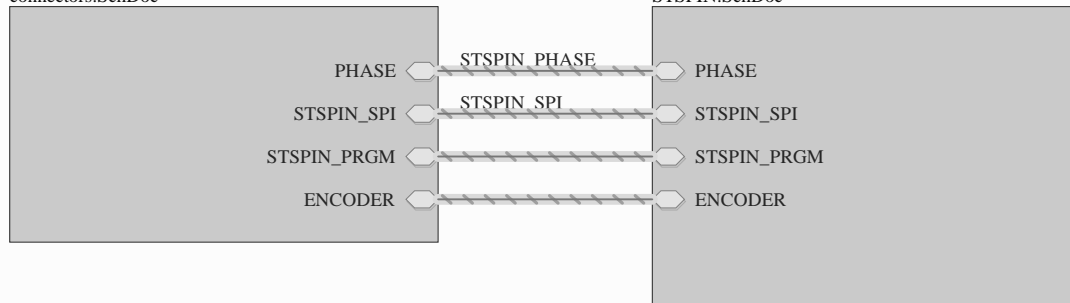


Power, Hall Sensor, Motor Connectors
connectors.SchDoc

STSPIN
STSPIN.SchDoc



▲ Isolator to isolate every signal going in and out of the motordriver chip.

Tri-state buffer was originally to allow the MISO to be driven on a large track (...need to talk to Henry to see if we actually need this).

Check the SPI timing of the STSPIN and evaluate the risk of propagation delay over the tri-state buffer.

We don't need demux for a 2-motor board, and we might not need tri-state buffer. Will still put footprint and add jumpers if we decide not to use tri-state.

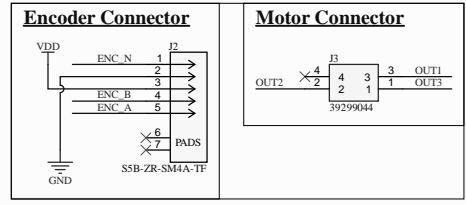
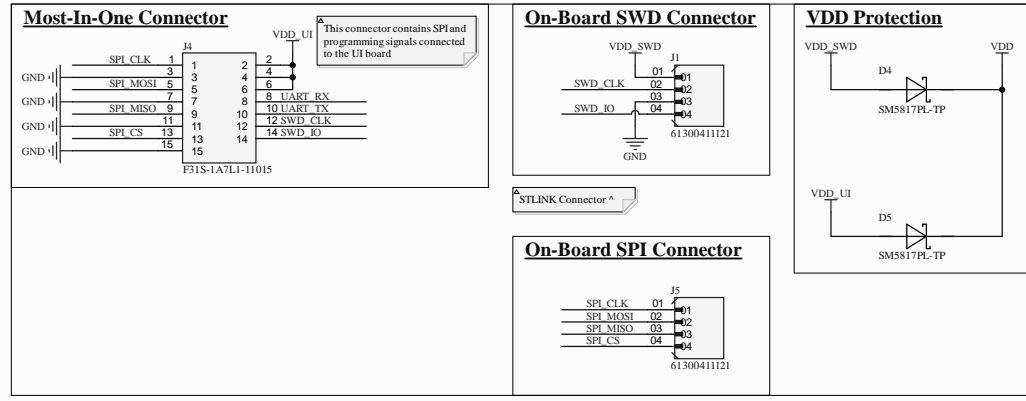
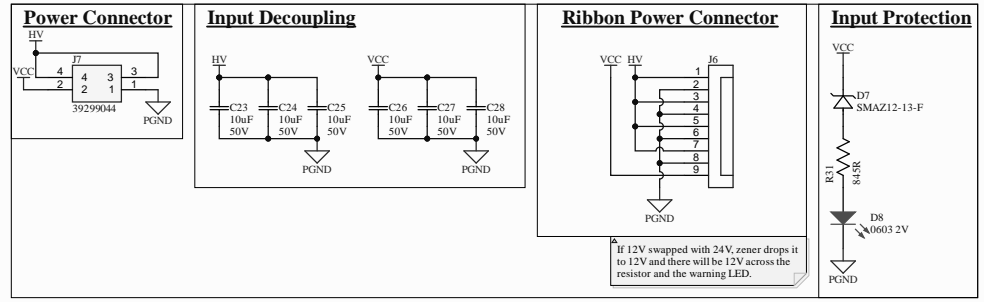
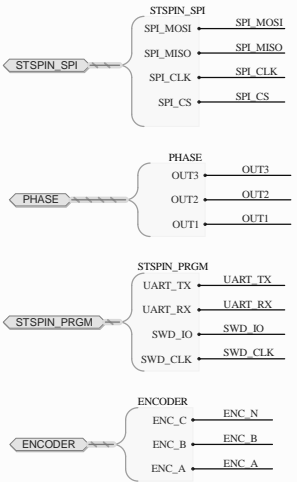
Will still have SPI bus from motors to Jetson, but will not route it on the PCB, just break out to jst and connect to Jetson if we want.

Use the current power connector, remove one port for the 5V and replace with 15V.

Title		
Size	Number	Revision
A		
Date:	2/07/2025	Sheet of
File:	C:\Users\...\root.SchDoc	Drawn By:

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH IS THE PROPERTY OF ALTUM LIMITED AND MAY BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

REVISION	DESCRIPTION	DATE	APPROVED

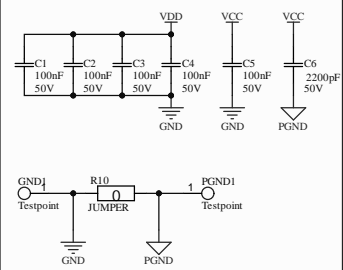


APPROVALS	DATE	PROJECT	Altium	
ENG: -				
DSN: -		PROJECT REVISION:	DOCUMENT REVISION:	DESIGN ITEM:
CHK: -		TITLE		
REFERENCE DOCUMENTS		*		
BOM:		SIZE	CAGE CODE	DWG NO.
ASSY DWG:		B		REV
FAB DWG:		SCALE:	FILENAME	SHEET 2 OF 4
PCB DWG:		connectors.SchDoc		

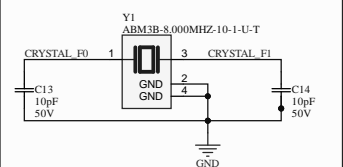
THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITHTH IS THE PROPERTY OF ALTUM LIMITED AND MAY BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

REV. NO.	REV. DATE	DESCRIPTION	DATE	APPROVED
1				

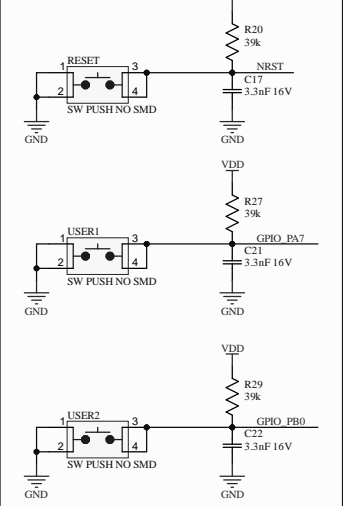
Decoupling + GNDs



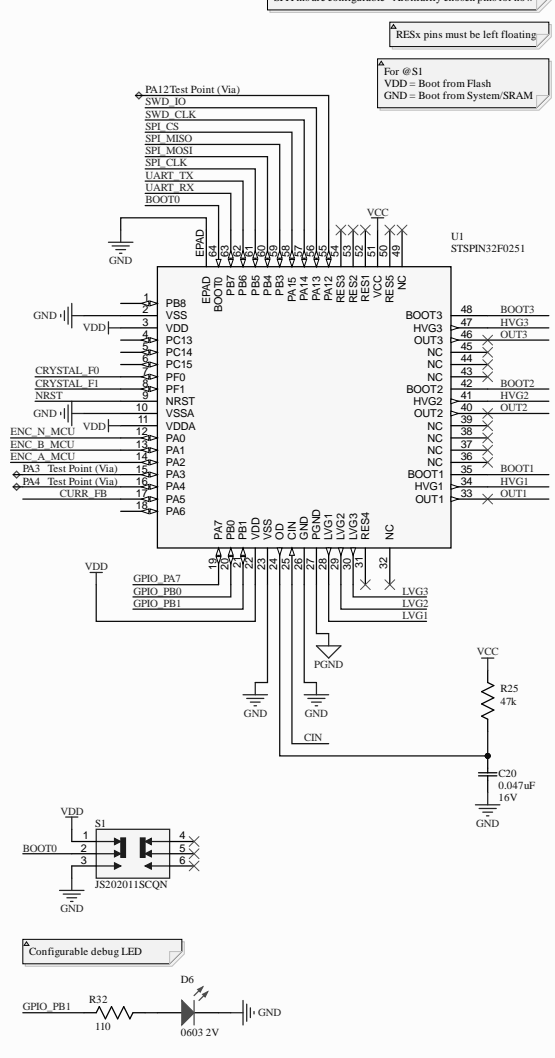
MCU Crystal



Buttons



STSPIN



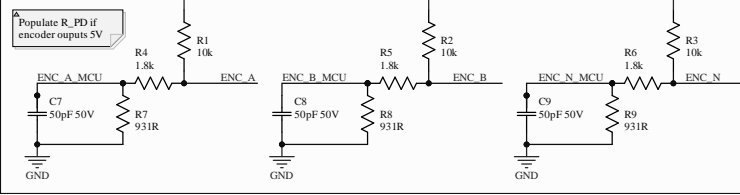
SPI Pins are configurable - Arbitrarily chosen pins for now

RESx pins must be left floating

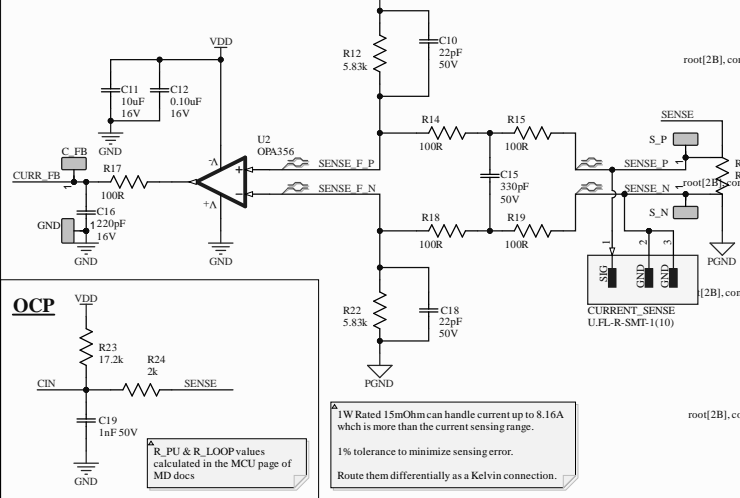
For @ S1
VDD = Boot from Flash
GND = Boot from System/ SRAM

Configurable debug LED

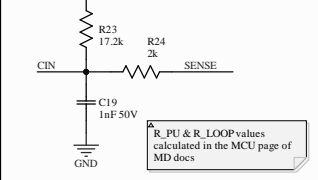
Encoder Biasing



Current Sensing

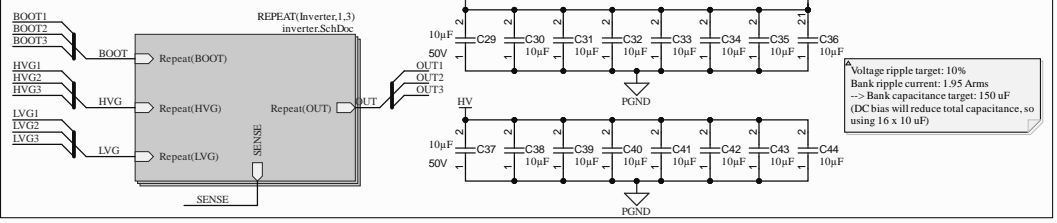


OCP

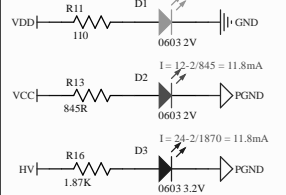


1W Rated 15mOhm can handle current up to 8.16A which is more than the current sensing range.
1% tolerance to minimize sensing error.
Route them differentially as a Kelvin connection.

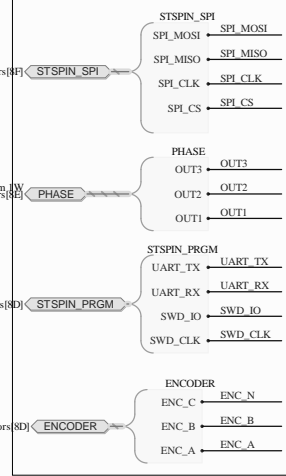
Inverter



LEDs



Harness + Port



APPROVALS	DATE	PROJECT
ENG: -		PROJECT REVISION: DOCUMENT REVISION: DESIGN ITEM:
DSN: Kenny Wakaba		
CHK: -		
REFERENCE DOCUMENTS		
BOM:		
ASSY DWG:	SIZE	CAGE CODE
FAB DWG:	B	DWG NO.
PCB DWG:	SCALE:	FILENAME

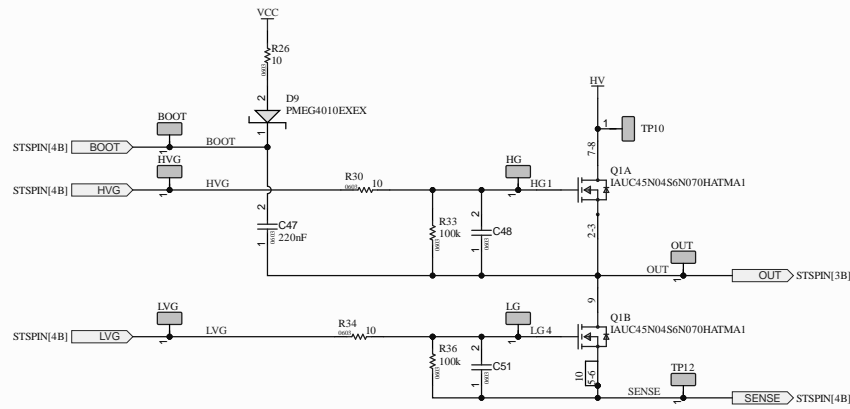


MCU, Current Sense, Misc

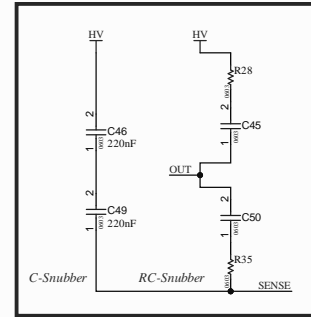
SIZE	CAGE CODE	DWG NO.	REV
B			
SCALE:	FILENAME	SHEET	OF
	STSPIN.SchDoc	3	4

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

8	7	6	5	4	3	2	1		
DWG NO: 10010001						REVISION	DESCRIPTION	DATE	APPROVED
						2			



Snubbers



A Snubber values TBD on the bench.
Use either C or RC snubber.
Low-side shunt resistor might affect snubber effectiveness.

APPROVALS	DATE	PROJECT	Altium	
ENG: -			PROJECT REVISION:	DESIGN ITEM:
DSN: -			TITLE	
CHK: -			*	
REFERENCE DOCUMENTS				
BOM:				
ASSY DWG:	SIZE	CAGE CODE	DWG NO.	REV
FAB DWG:	B			
PCB DWG:	SCALE:	FILENAME	inverter.SchDoc	SHEET 4 OF 4