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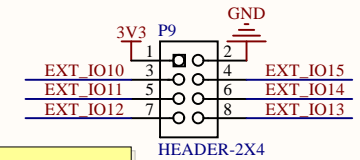
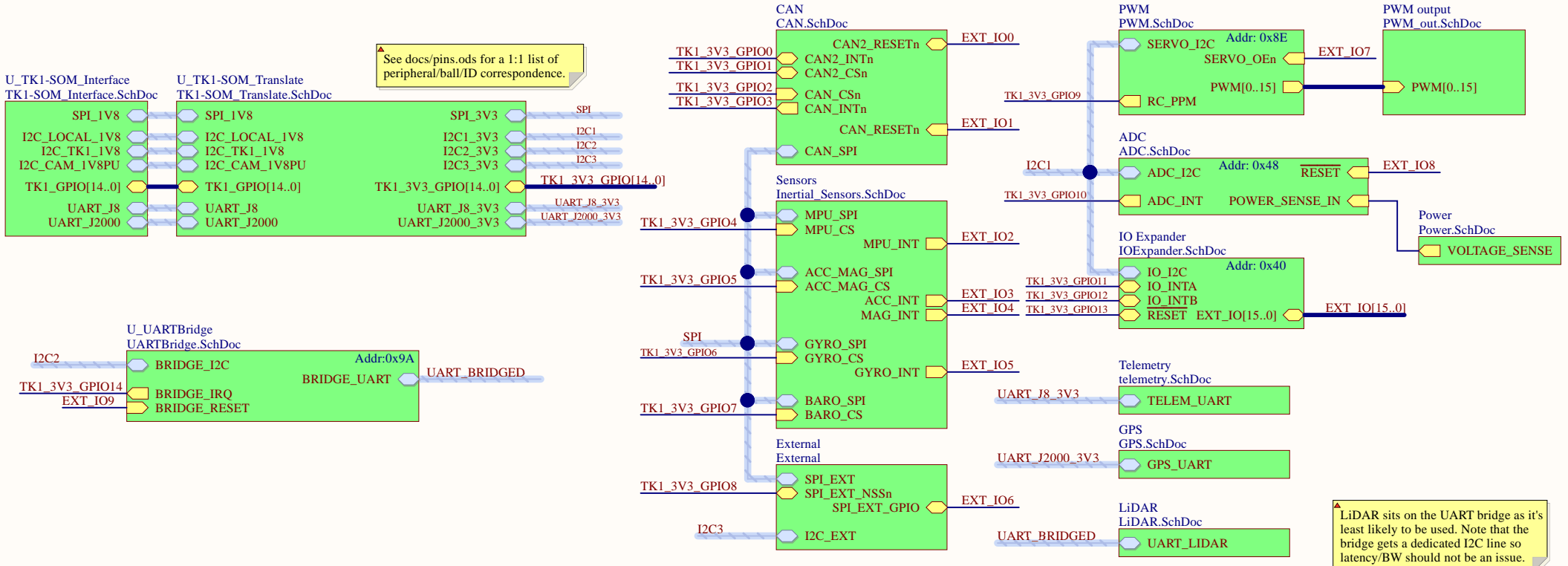
D

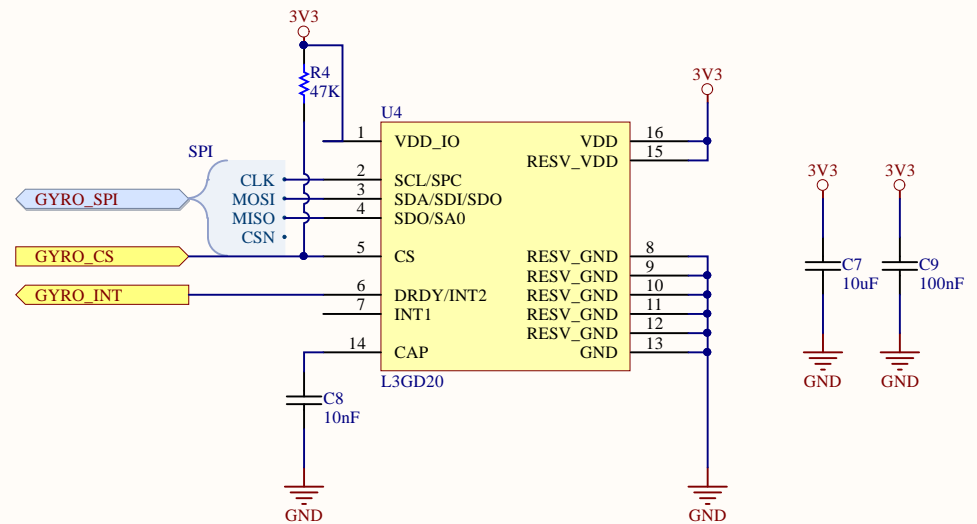
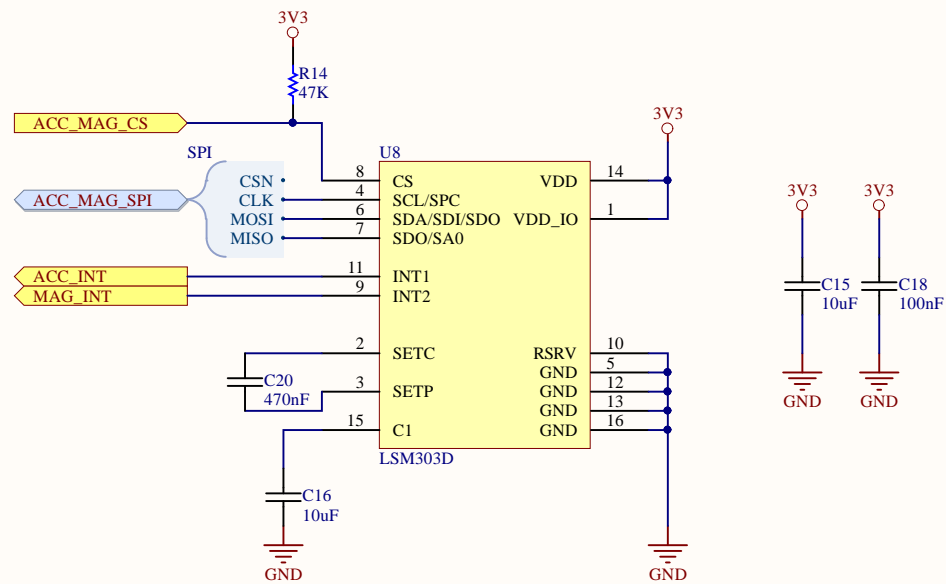
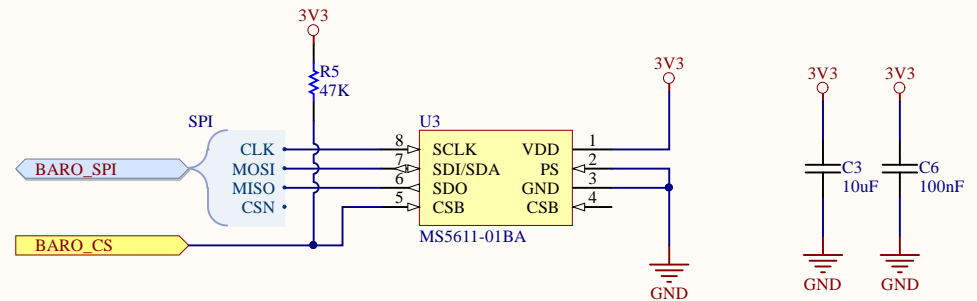
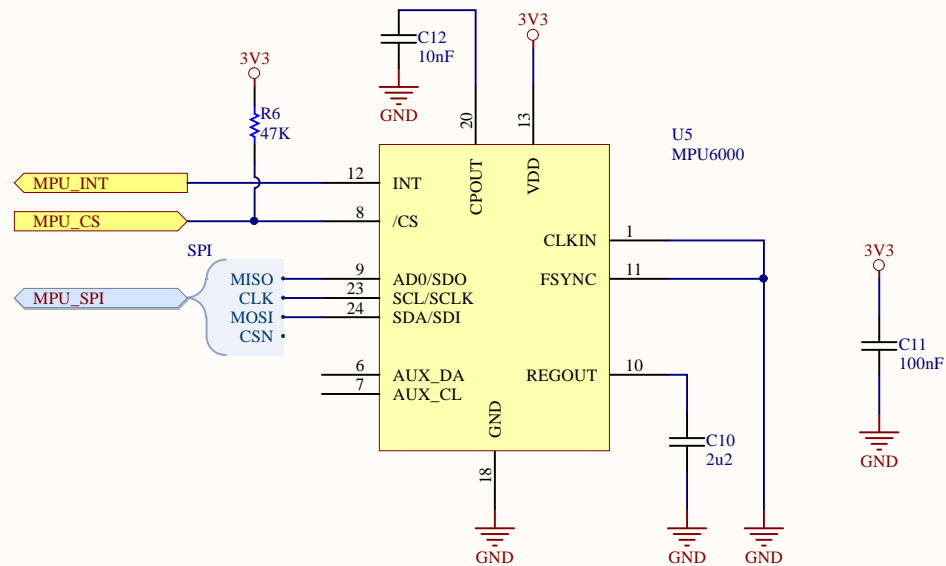
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Title: Inertial Sensors

Size: A4

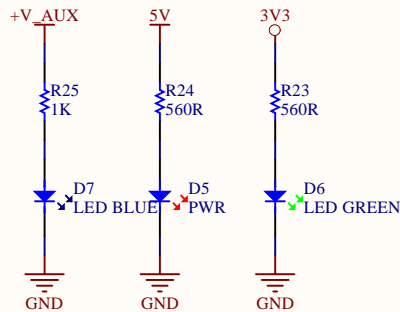
Revision: 1

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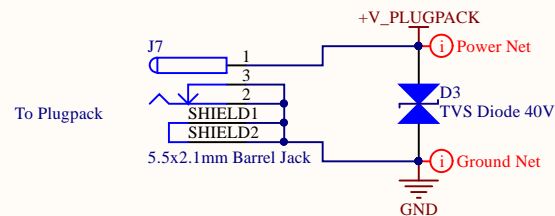
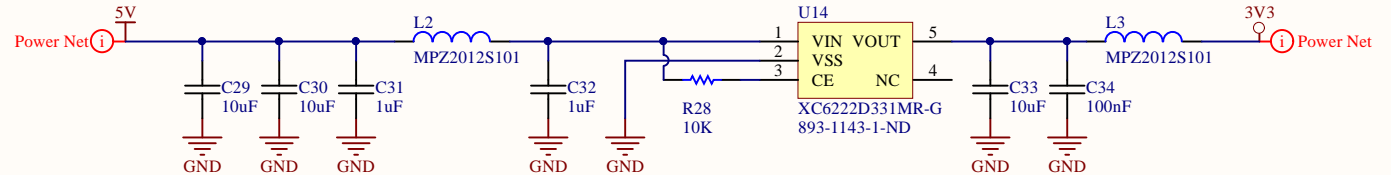
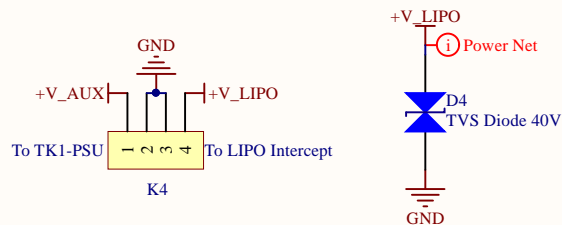
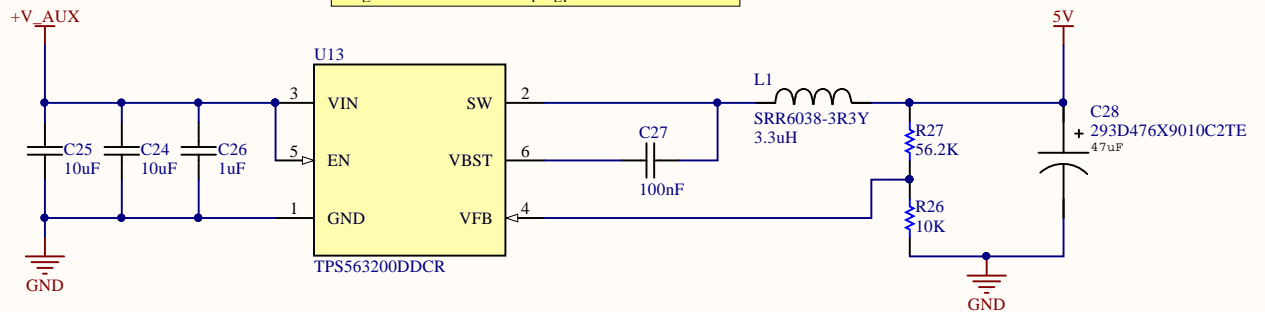
File: Inertial_Sensors.SchDoc



These are ordered left-right by causality (if V_AUX dies, everything should die)



This switchmode converter used in favour of abusing PX4's power module so that we can operate the daughterboard & TK1 on a plugpack as well as batteries



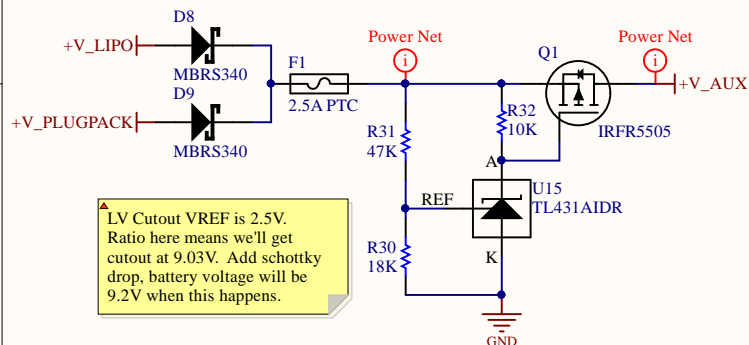
POWER TOPOLOGY

All power is drawn directly from a plugpack (+V_PLUGPACK) or lipo batteries (+V_LIPO), whichever is connected. If both are connected, power will only be drawn from the plugpack.

Fused & polarity protected but unconditioned power (+V_AUX) is supplied directly to the TK1-SOM, straight from either V_PLUGPACK/V_LIPO. There is a low-voltage cutout that will shut off all power if either fall below 9V.

+V_AUX is brought out as VOLTAGE_SENSE, which allows the battery potential to be measured. This is scaled 0-3.3V where 3.3V is 51.8V. (50mV steps w/10-bit ADC) This is to match common voltage sense boards like the AttoPilot 90A.

The Pixhawk is supplied with 5V and a voltage sense line from this daughterboard. The main difference between this board and previous revisions is that the 6-pin power module output connector on the quadcopter should NOT be connected to anything.

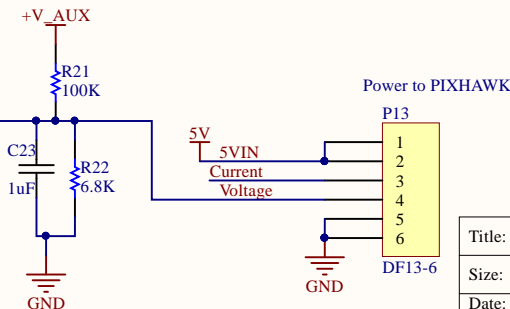


LV Cutout VREF is 2.5V. Ratio here means we'll get cutout at 9.03V. Add schottky drop, battery voltage will be 9.2V when this happens.

0-3.3V = 0-51.8V

VOLTAGE_SENSE

Note that this will read >> 11.1V when on plugpack, so can be used to determine the power source



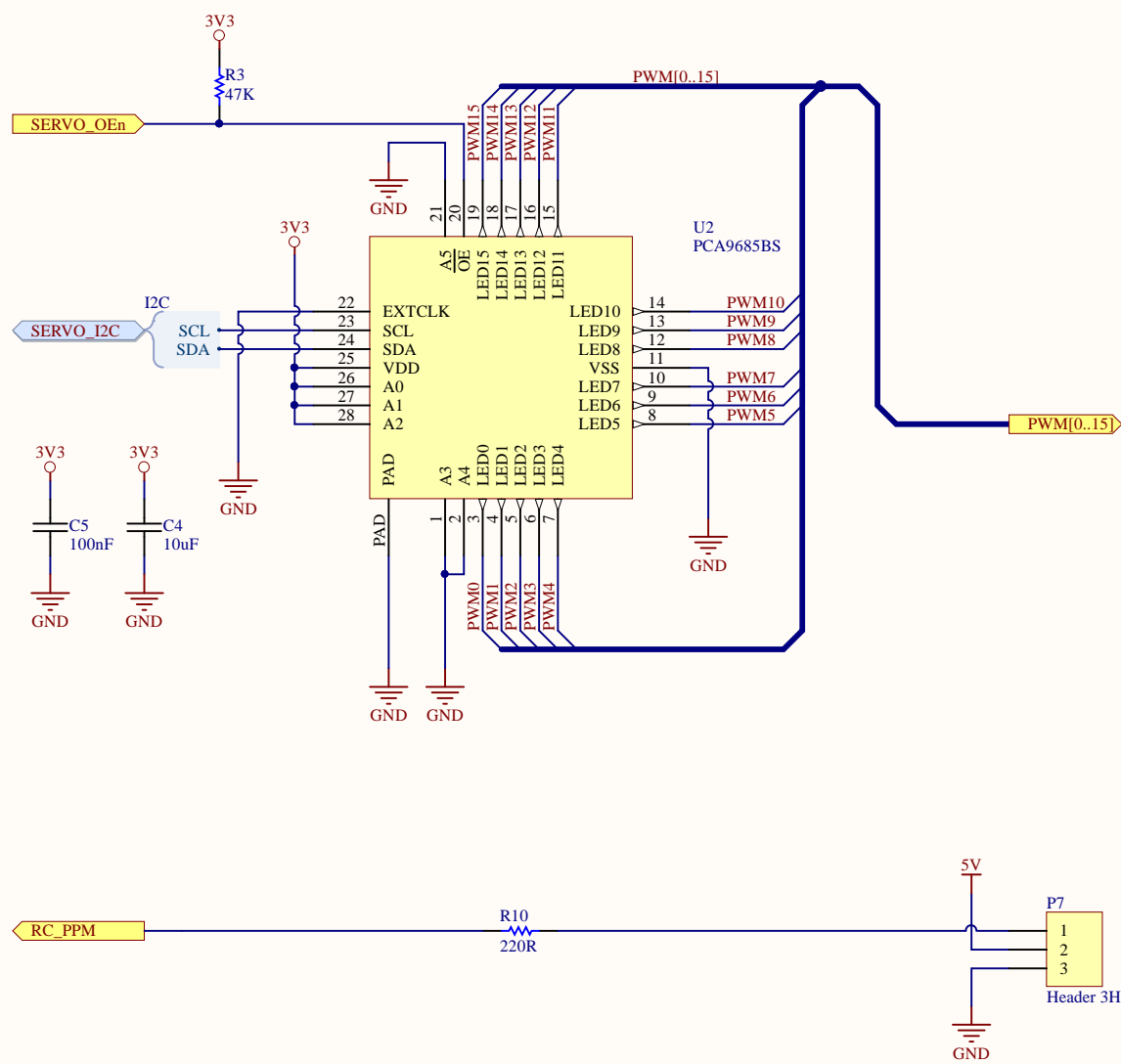
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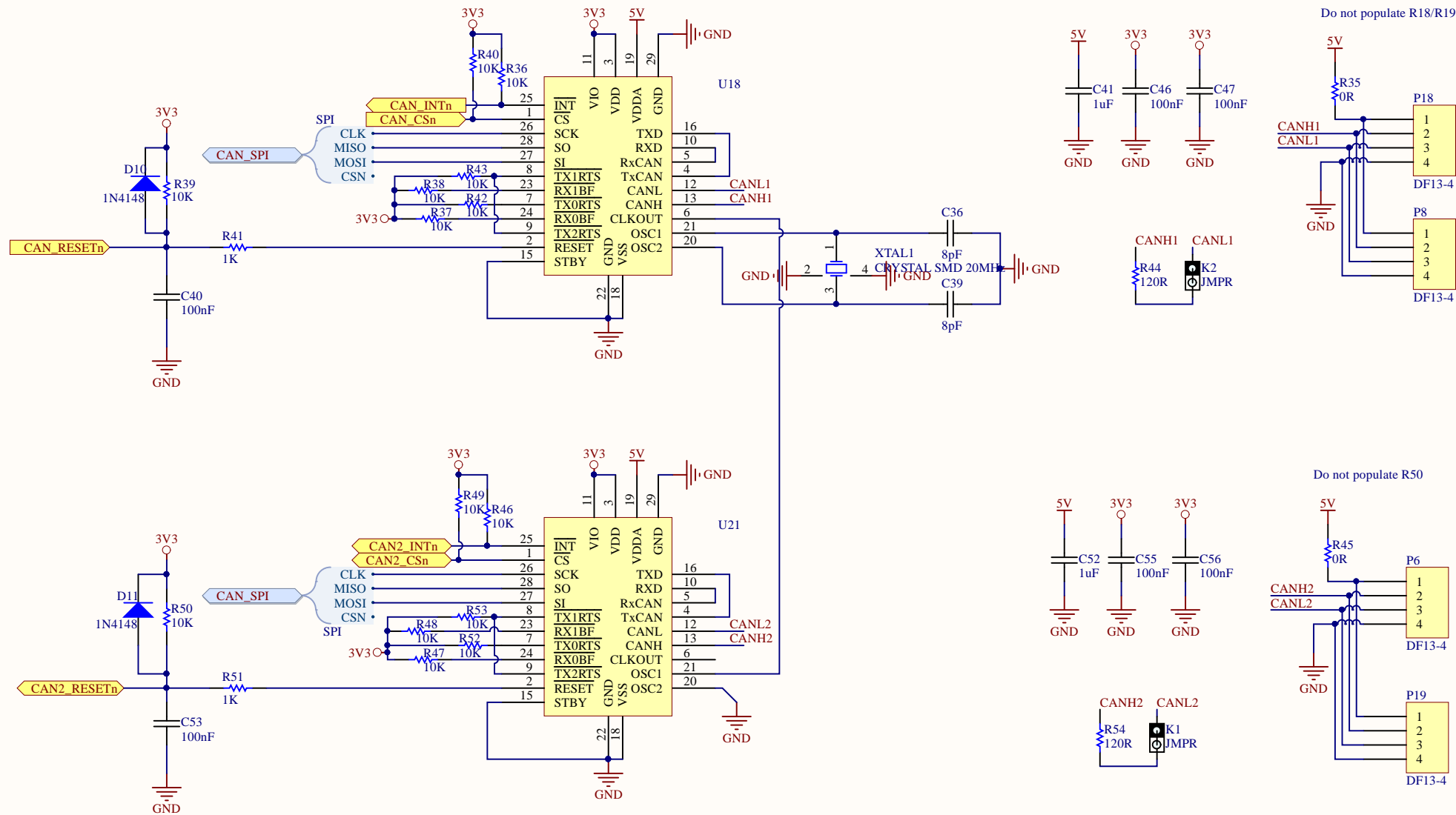
Size: A4 Revision: 1

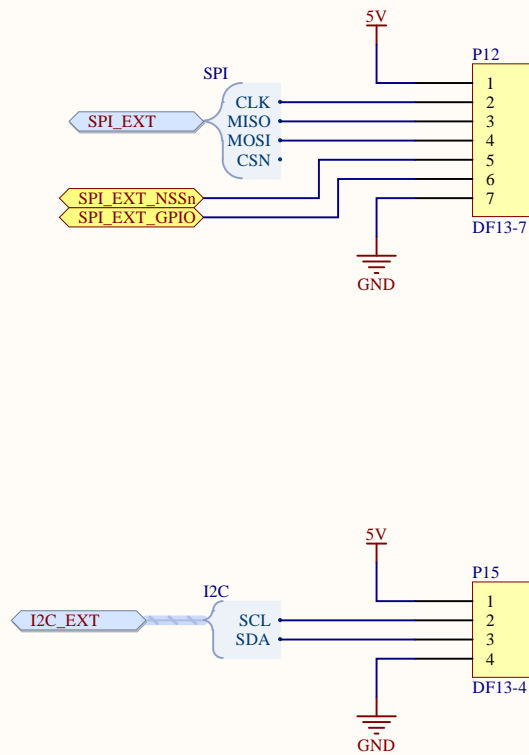
Date: 30/01/2017 Sheet: 3 of 15

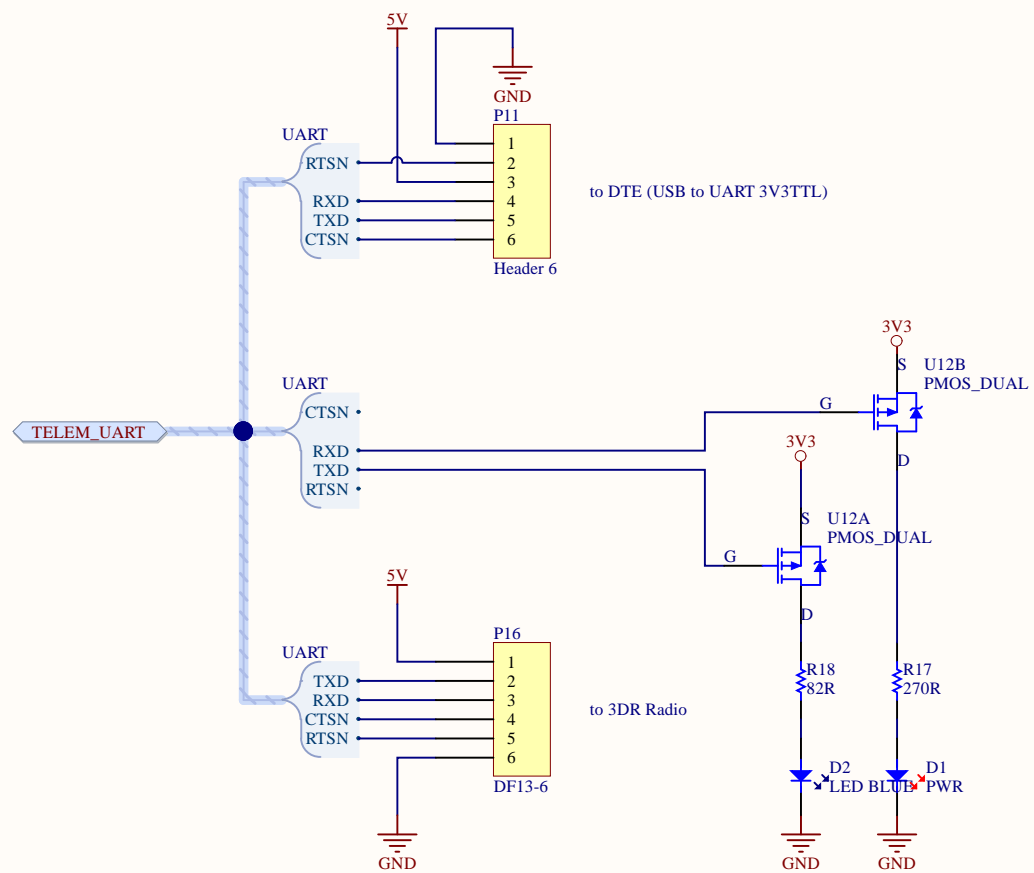
File: Power.SchDoc

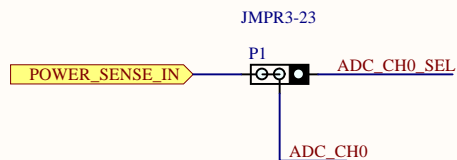
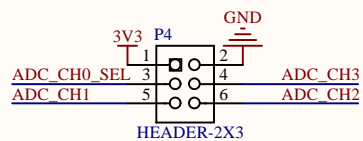
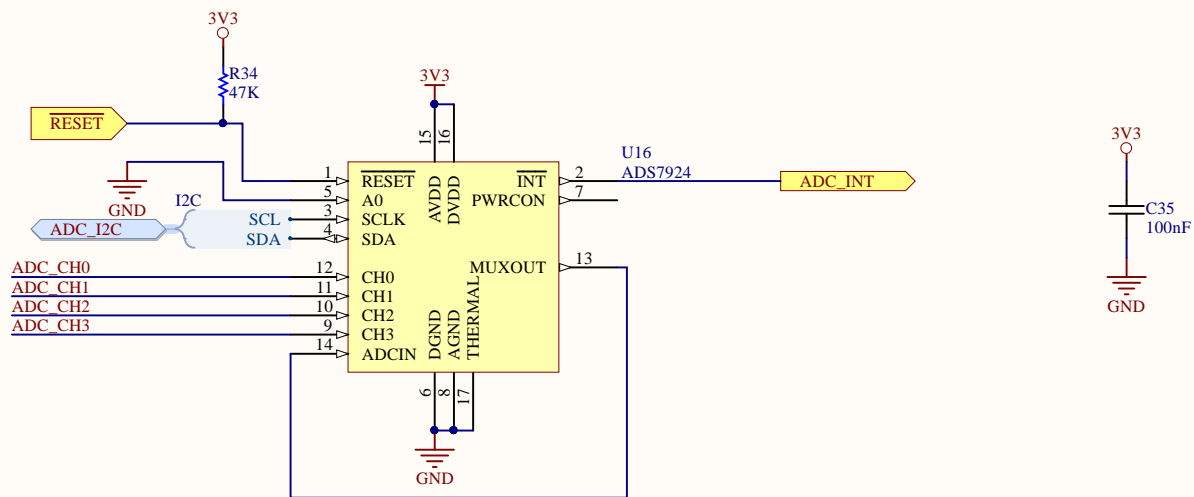


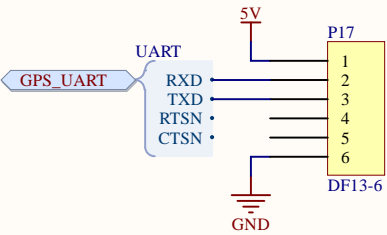


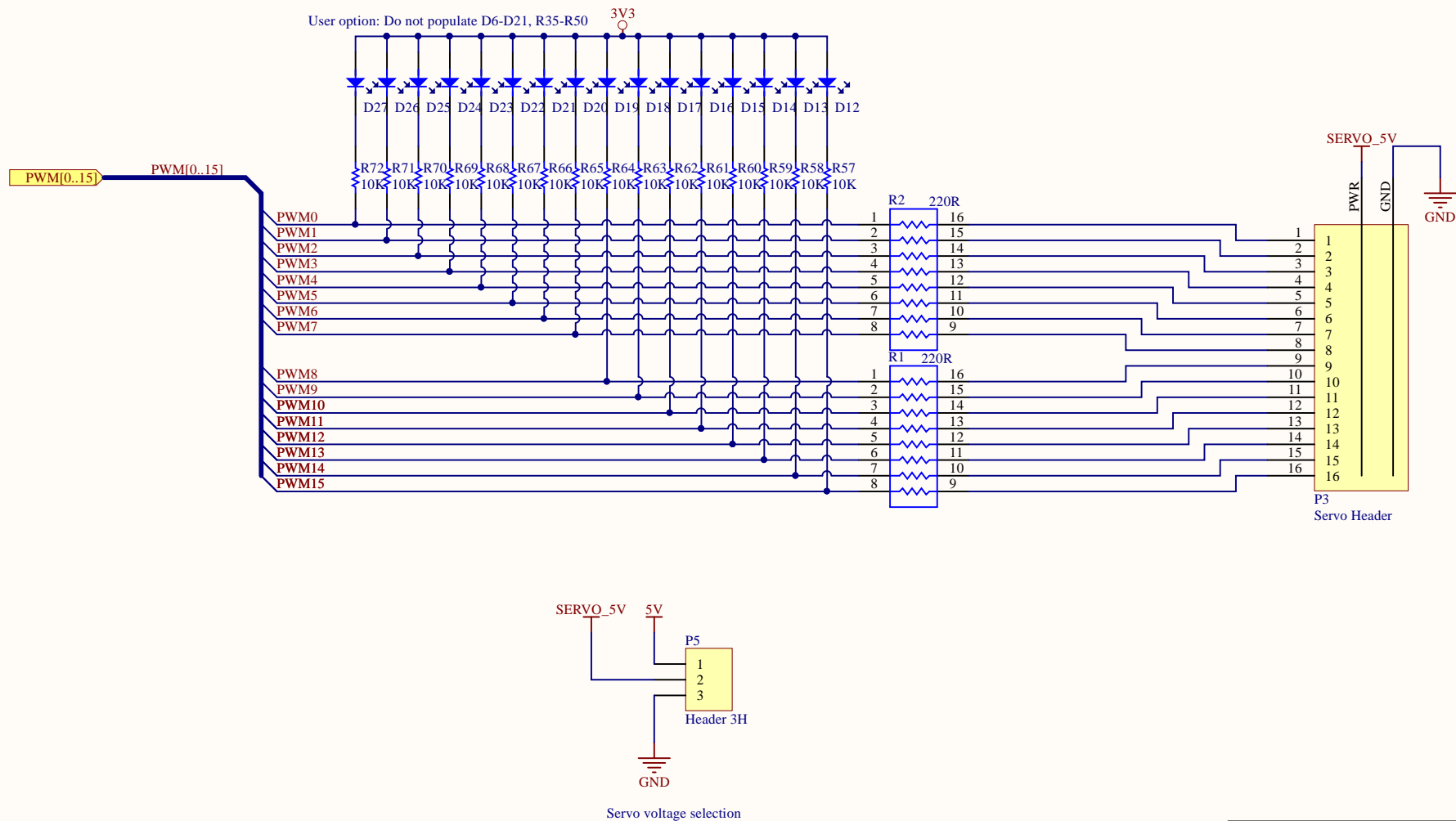






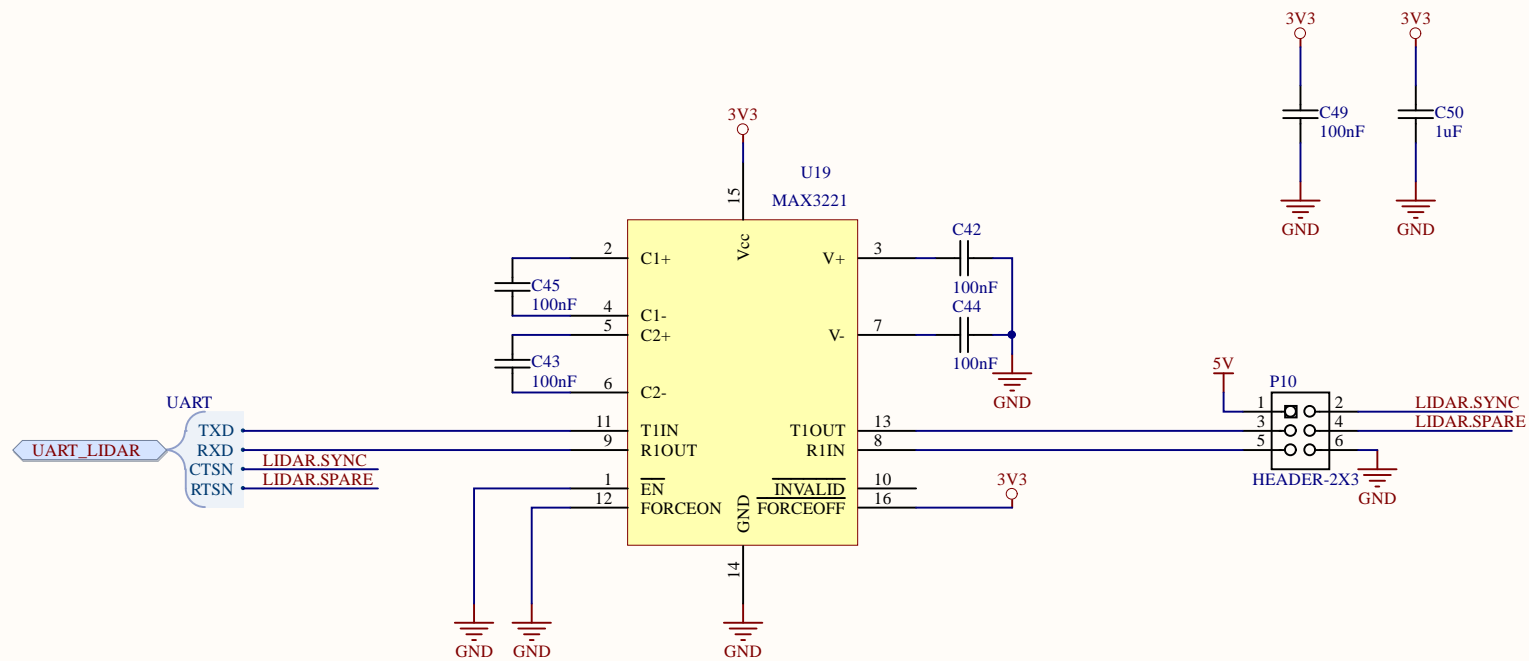


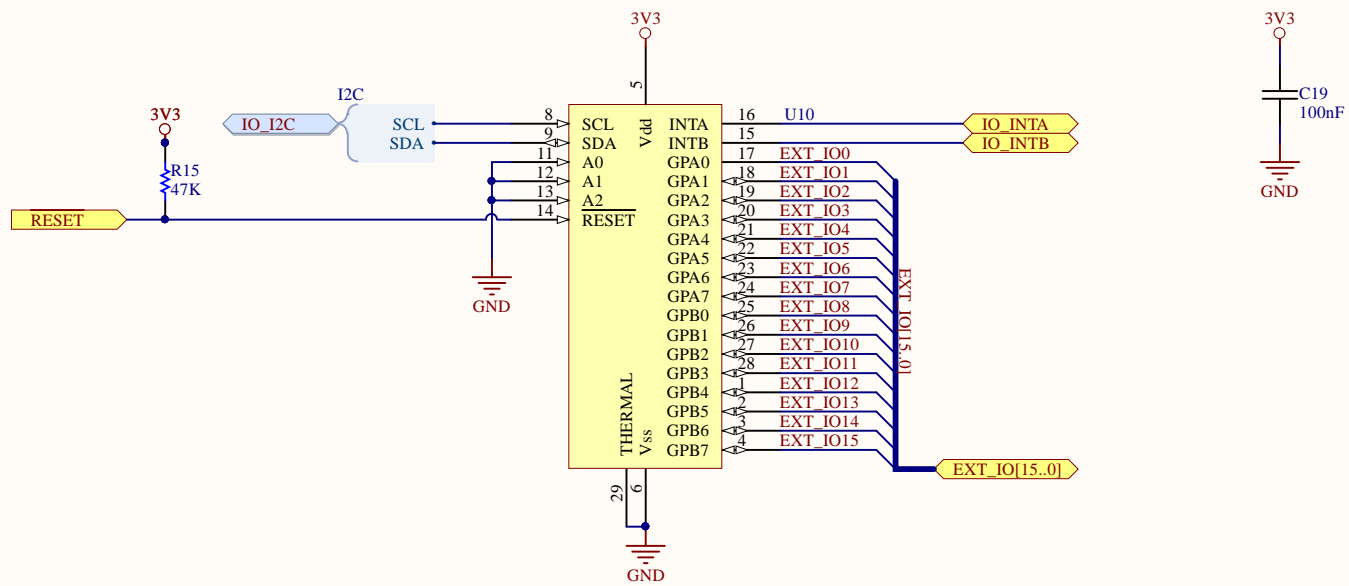




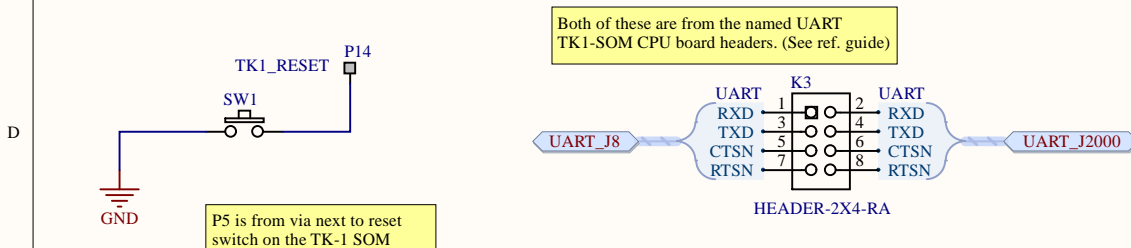
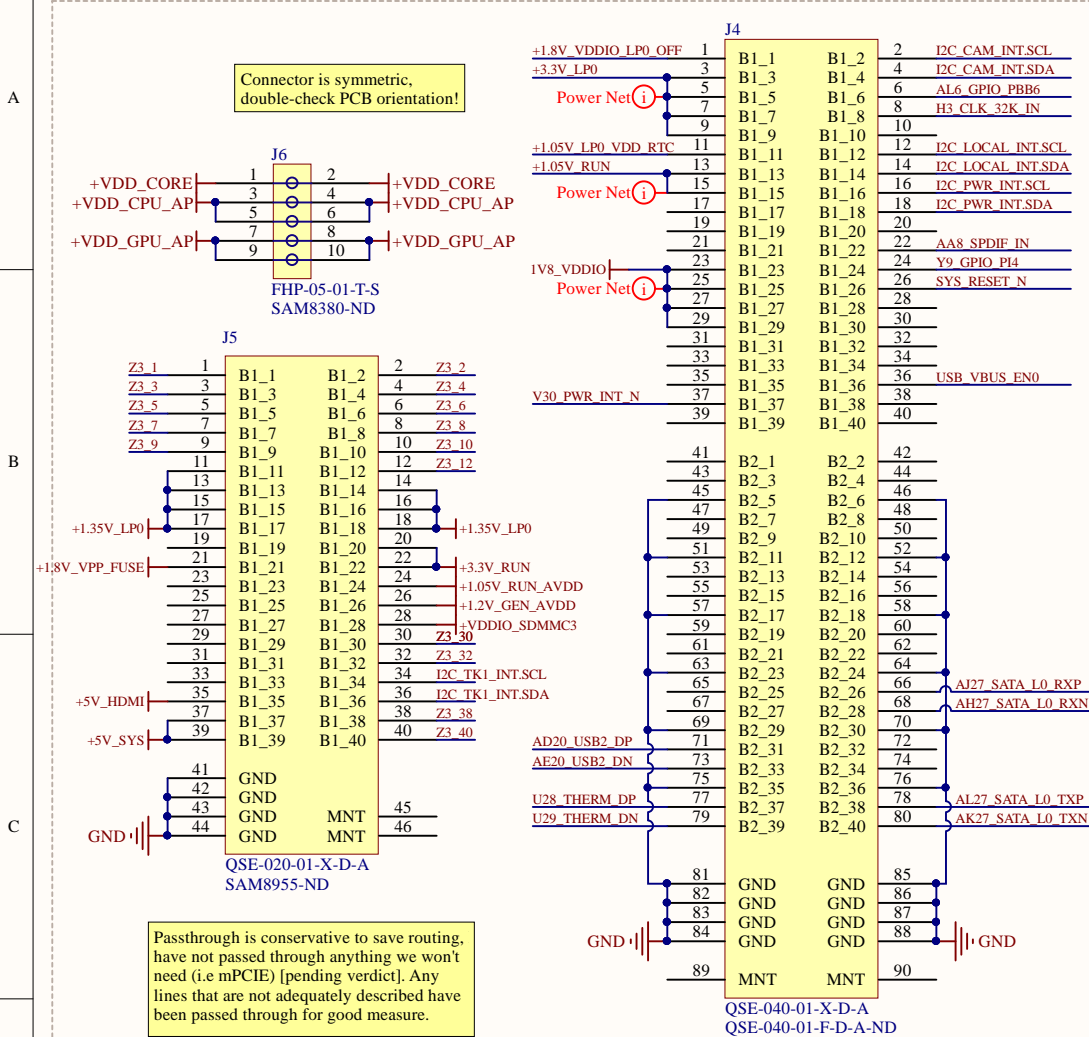
Title: PWM output	
Size: A4	Revision: 1
Date: 30/01/2017	Sheet: 10 of 15
File: PWM_out.SchDoc	



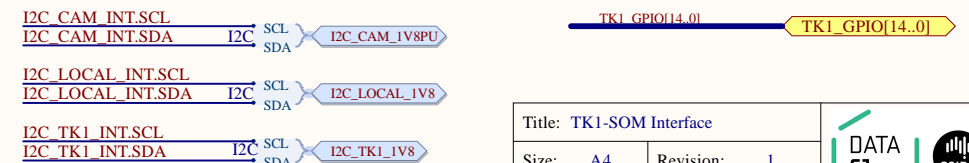
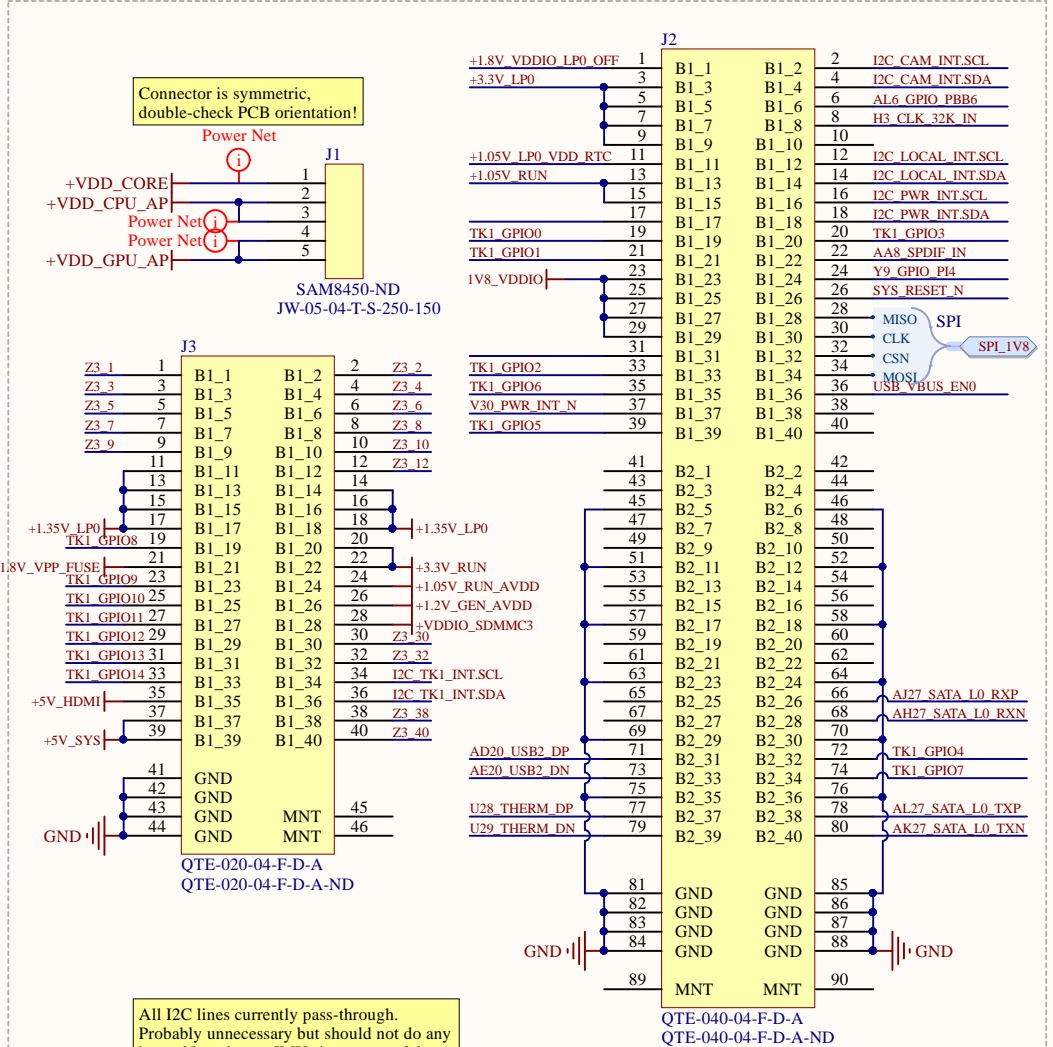




TK1-SOM PSU



TK1-SOM CPU/GPU



Title: TK1-SOM Interface	
Size: A4	Revision: 1
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File: TK1-SOM Interface.SchDoc	



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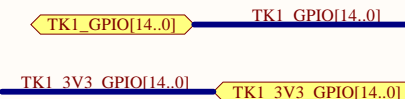
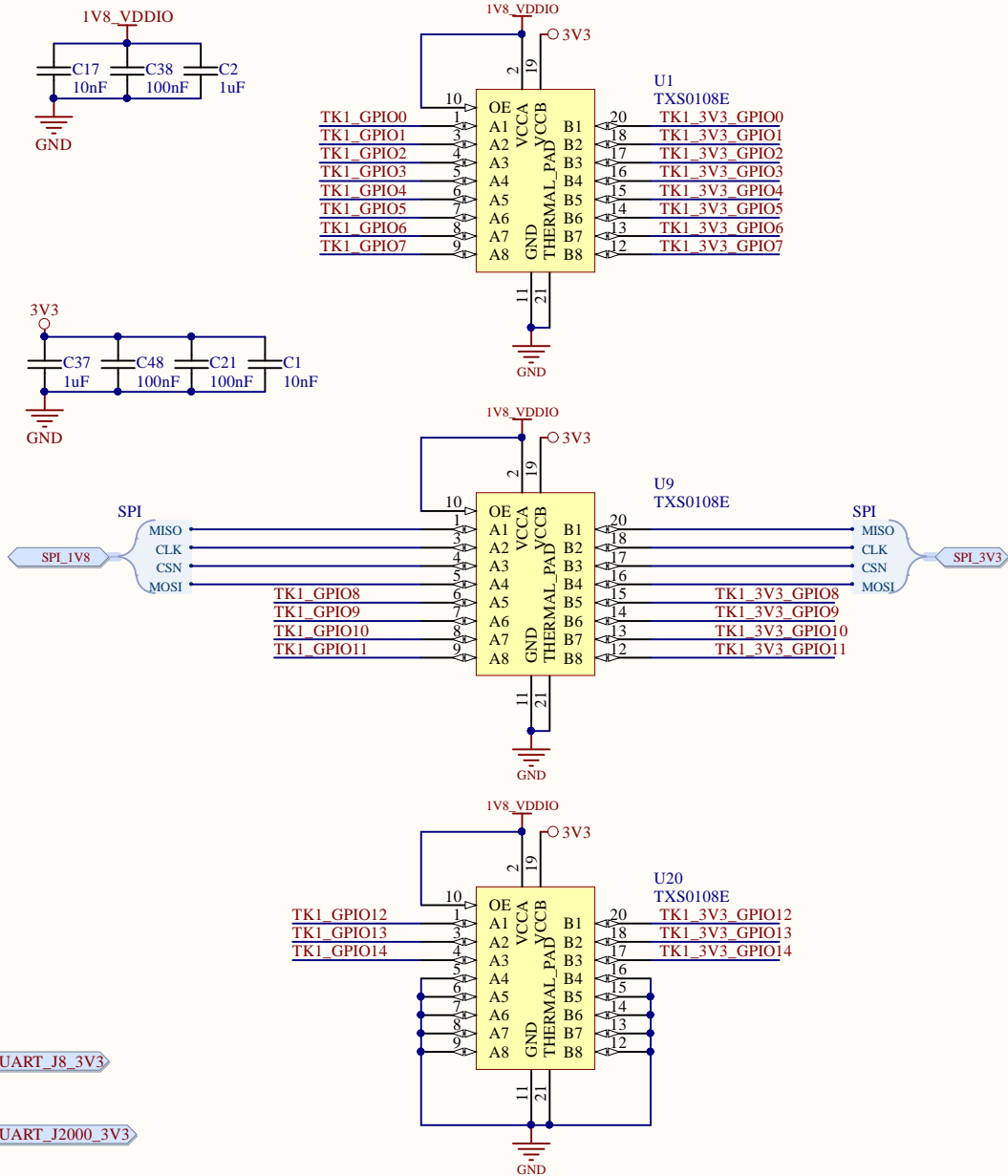
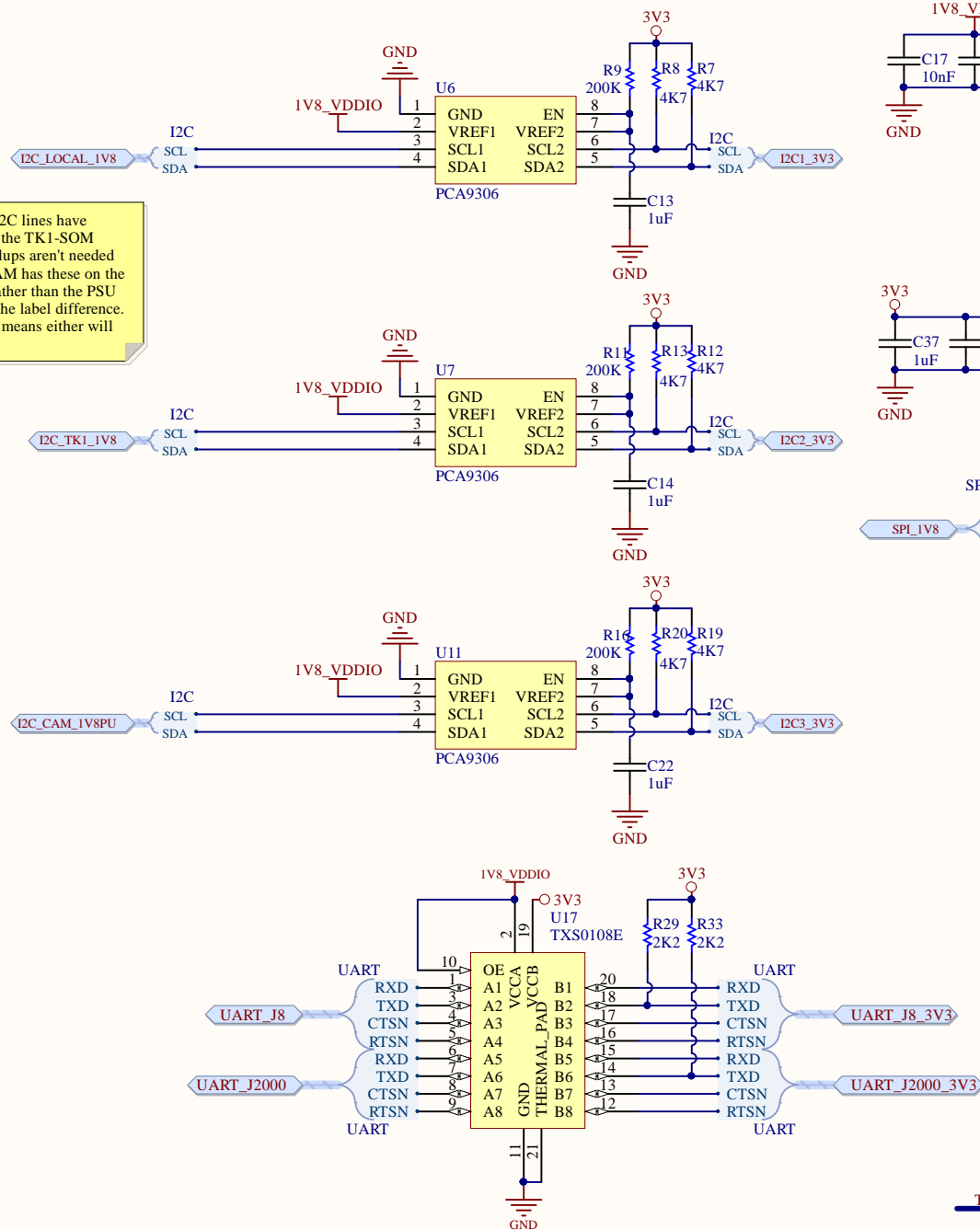
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All of these I2C lines have pullups from the TK1-SOM board, so pullups aren't needed here. I2C_CAM has these on the CPU board rather than the PSU board hence the label difference. (passthrough means either will work)



Title: TK1-SOM Level Translators	
Size: A4	Revision: *
Date: 30/01/2017	Sheet: 14 of 15
File: TK1-SOM_Translate.SchDoc	



