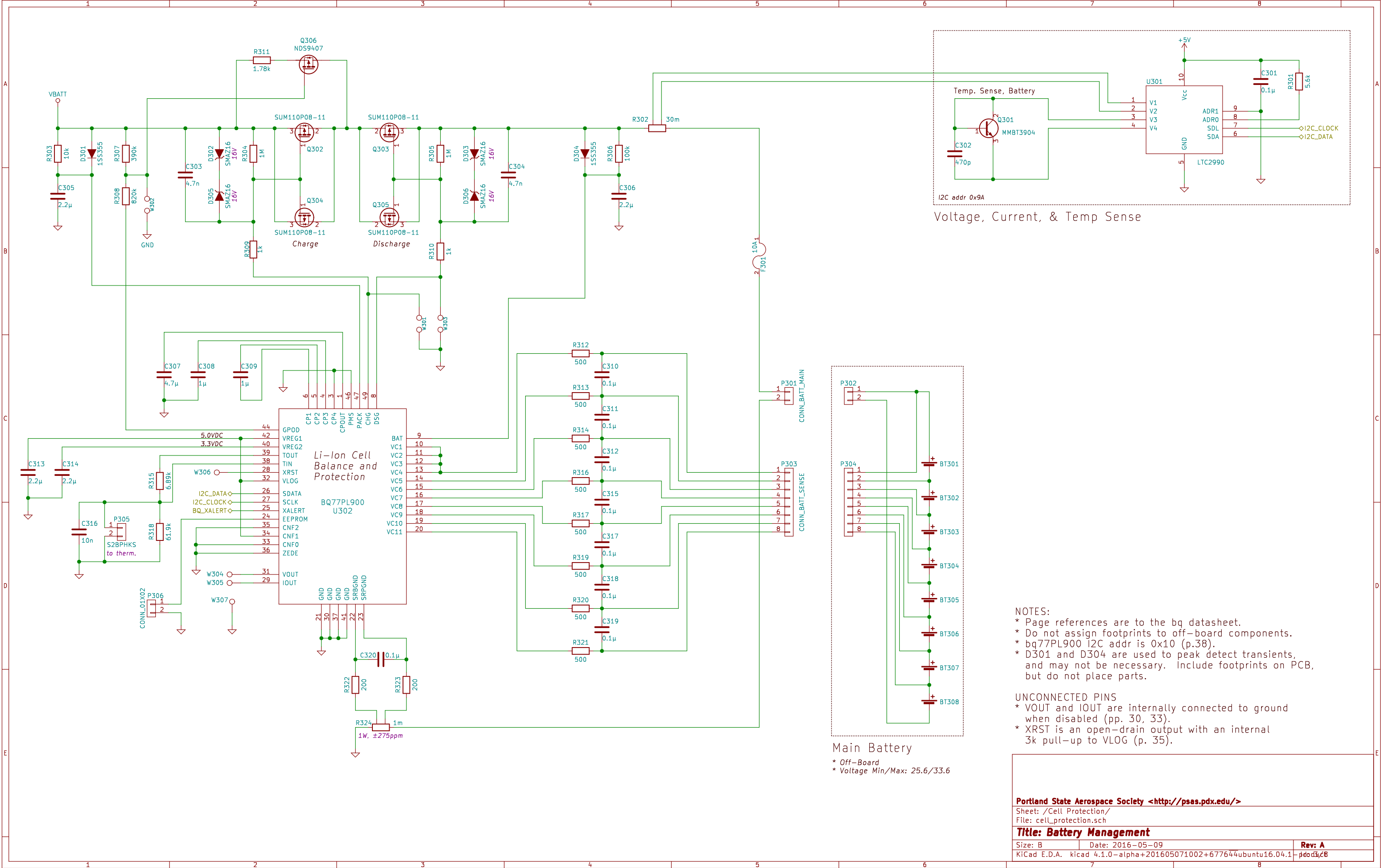


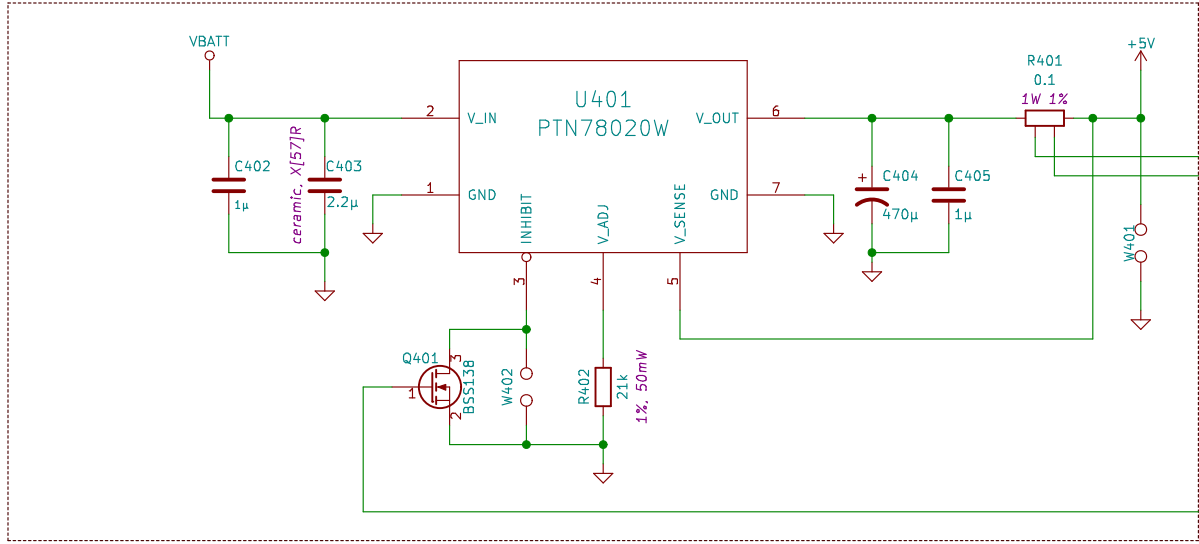
Portland State Aerospace Society <<http://psas.pdx.edu/>>

Sheet: /Power In, Charge Controller/
File: power_in_charge_controller.sch

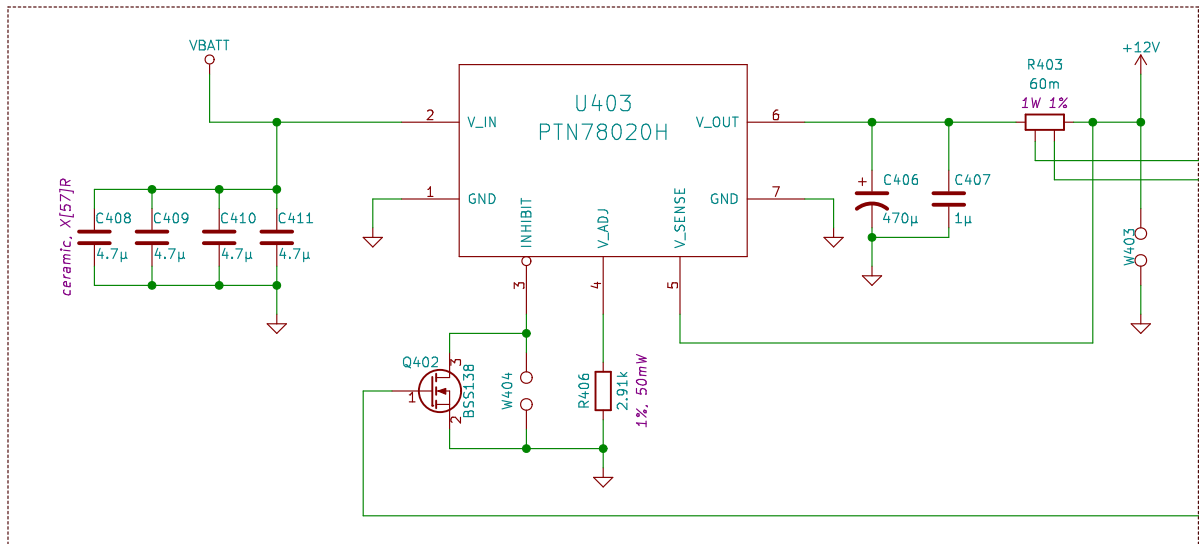
Title: Power In, Battery Charge, & PV MPPT

Size: B	Date: 2016-05-09	Rev: A
KiCad E.D.A. kicad 4.1.0-alpha+201605071002+677644ubuntu16.04.1-pdo2,2B		

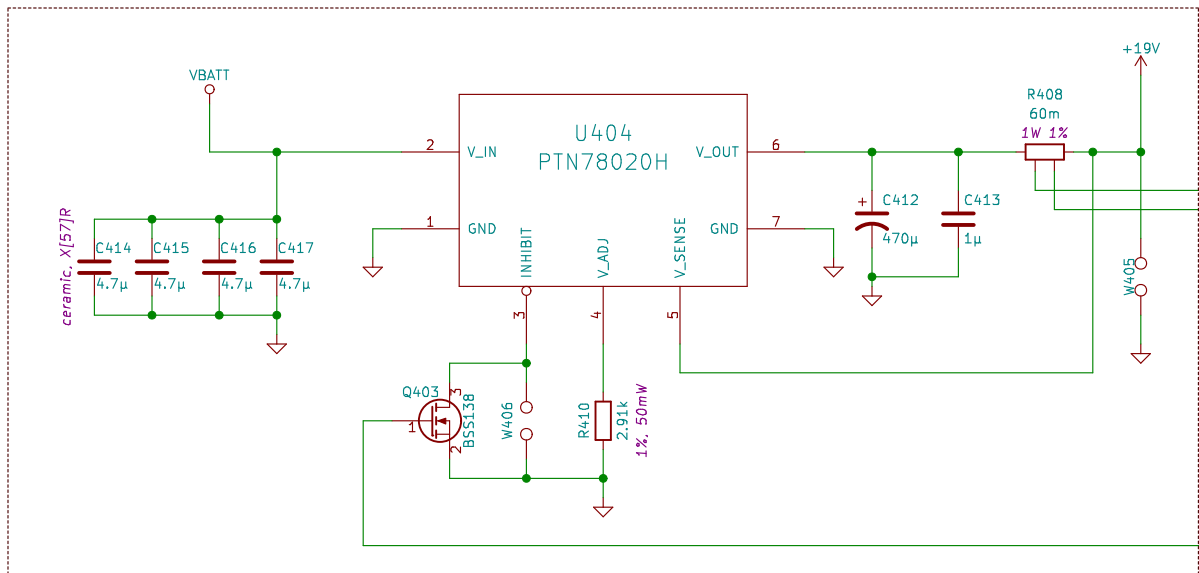




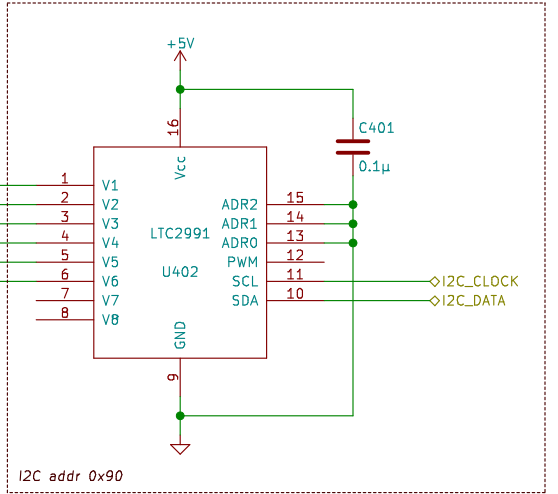
+5V DC Supply



+12V DC Supply

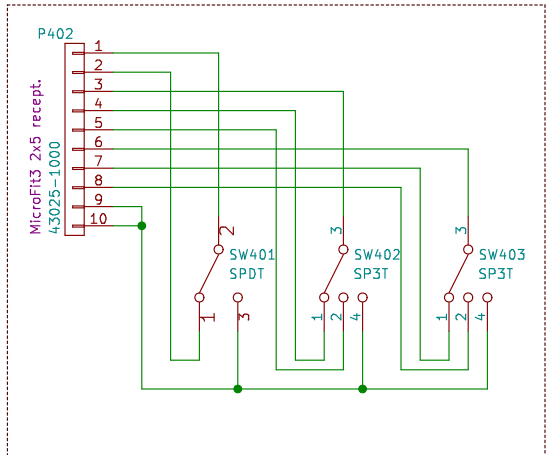
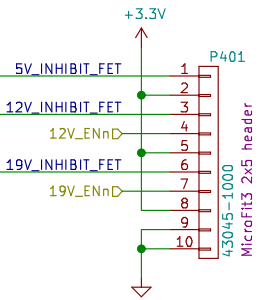


+19V DC Supply



Voltage, Current, & Temp Sense

Current Sense Resistors
full-scale voltage = 0.300 V
 $R_{sense_max} = 0.300/I_{max}$
1 A = 300mΩ
3 A = 100mΩ
5 A = 60mΩ
10 A = 30mΩ



Manual Override Switches, Front Panel
Toggle 5V converter's INHIBIT FET between +3.3V and ground. Toggle 12V and 19V converters' INHIBIT FET between the BeagleBone, +3.3V, or ground.

NB: The 5V converter supplies the BeagleBone. We don't want the BB to be able to commit suicide, thus it does not get a connection to the 5V converter's INHIBIT FET.

NOTES

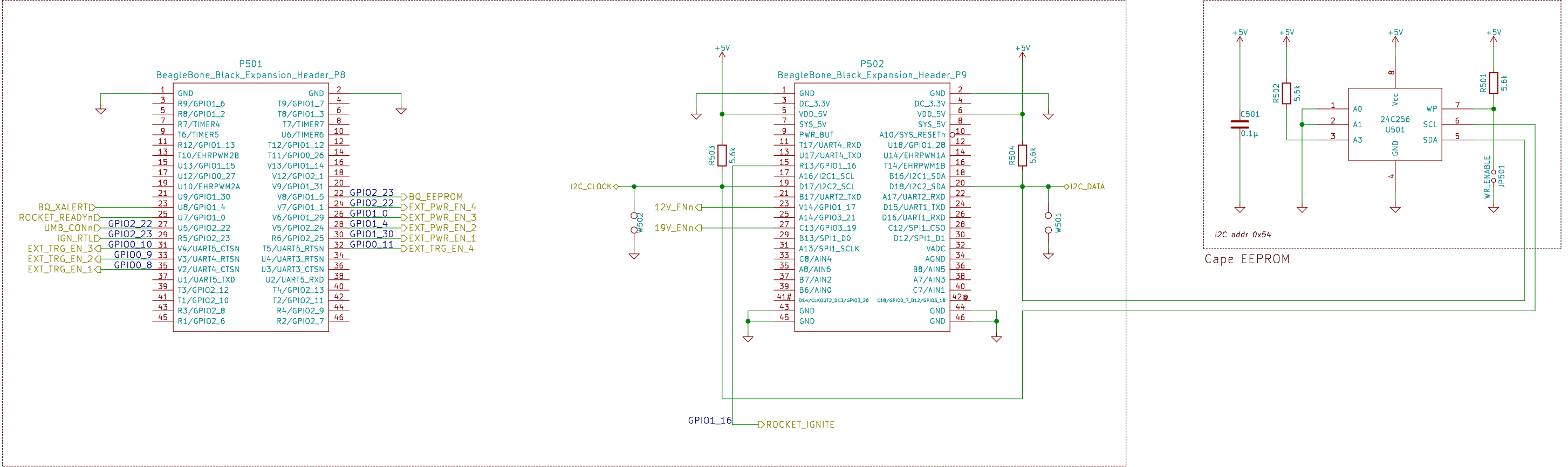
1. V_sense should connect as close as possible to the largest load on the given power rail.
2. Place Rset resistors as close to package pins as possible.
3. Ceramic (Cin) capacitors should be located within 0.5 in of the input pins.
4. We may need heat sinks on the converters. The datasheet indicates a range of 2W to 5W of power dissipation given our specs.
5. Pay attention to the datasheet's recommendations regarding capacitor selection.

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Sheet: /DC-DC Converters/
File: dcdc_converter.sch

Title: LTC3 DC-DC Converters

Size: B	Date: 2016-05-09	Rev: A
KiCad E.D.A. kicad 4.1.0-alpha+201605071002+677644ubuntu16.04.1-pdoddyzB		



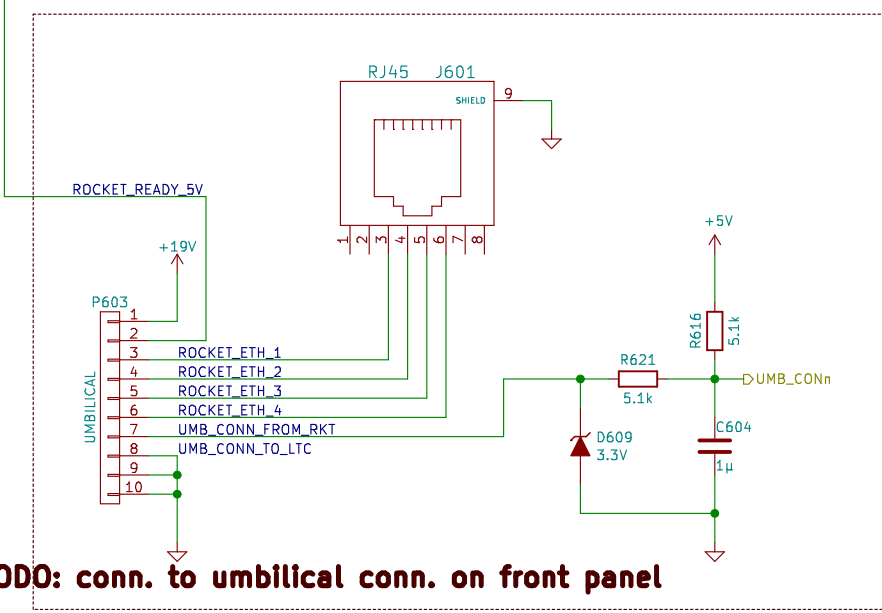
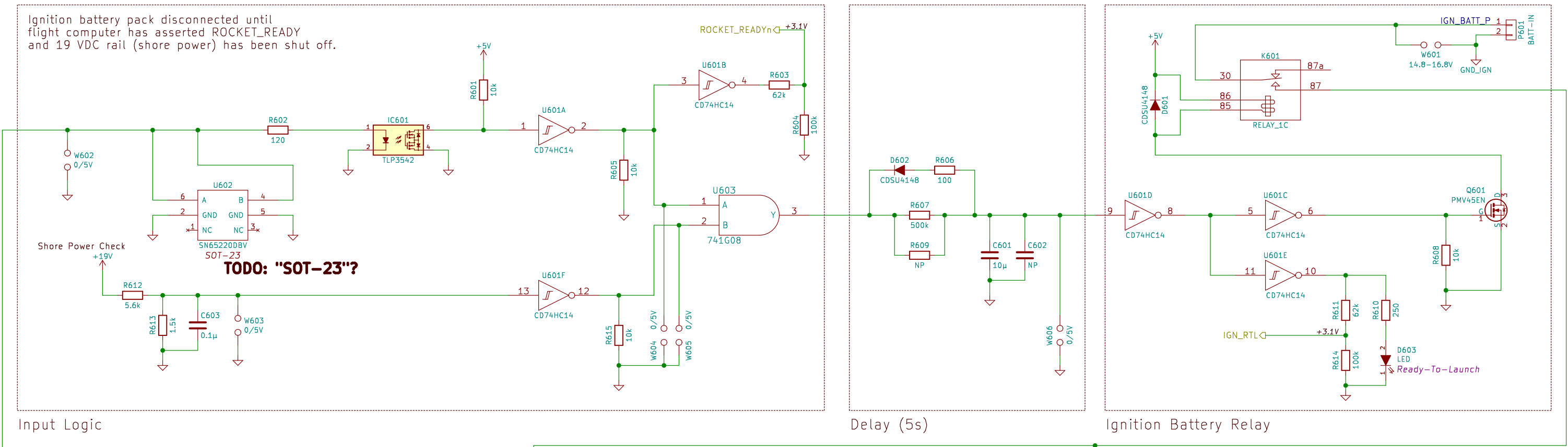
BeagleBone Expansion Headers

I2C Devices			
ADDR	Part	Type	Location
0x10	U203	BQ77PL900	B/PM
0x54	U501	EEPROM	BBB
0x90	U402	LTC2991	DC-DC
0x98	U203	LTC2990	Power In
0x9A	U301	LTC2990	B/PM

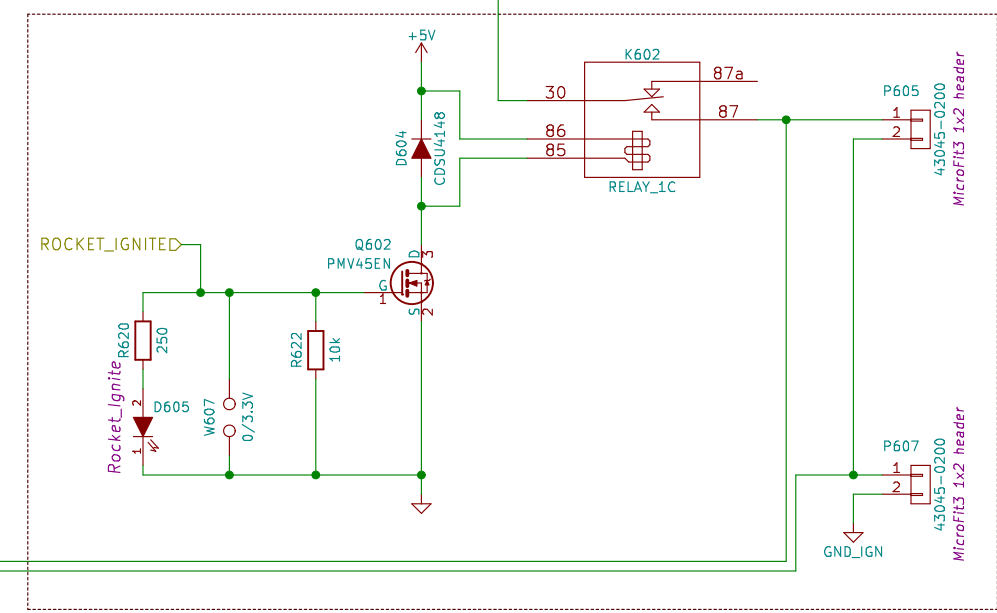
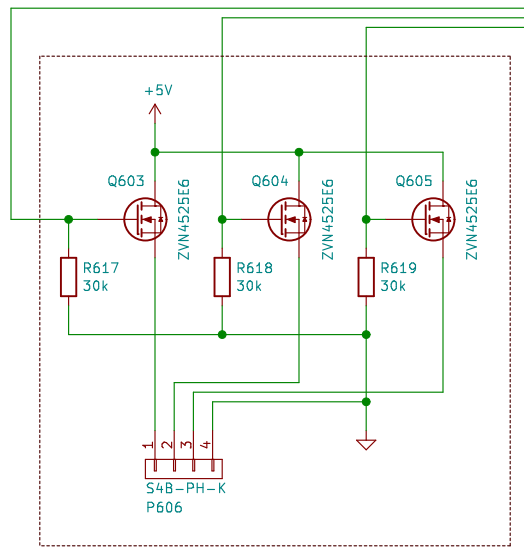
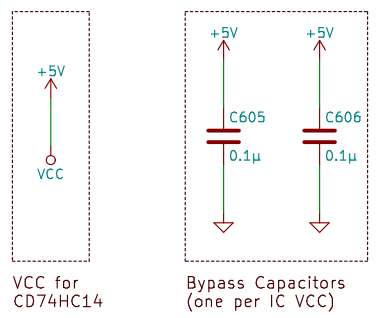
NOTES:

- * Do NOT change ROCKET_IGNITE, pin default reset state is High-Z w/ pulldown resistor. Other pins can be configured in EEPROM at boot time.
- * All I2C devices on LTC3 are slaves. The BBB is the only master so the LTC will not need arbitration.

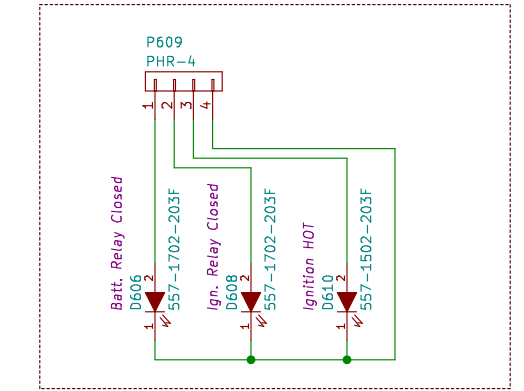
Ignition battery pack disconnected until flight computer has asserted ROCKET_READY and 19 VDC rail (shore power) has been shut off.



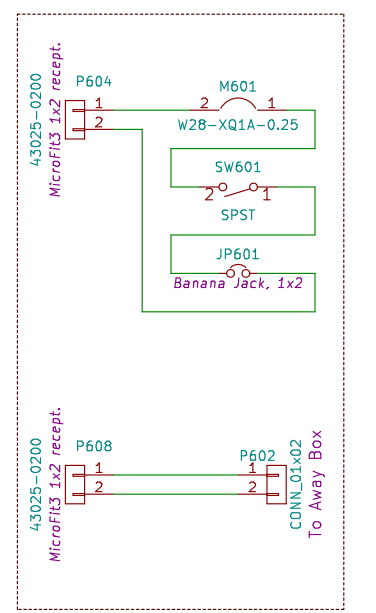
Rocket Umbilical
Rocket-to-BeagleBone Ethernet



Rocket Ignition Relay



BAKERCON Hazard Gauge
(super-bright LEDs, exterior panel)



Breaker, Arm Switch,
Shorting Bar, &
Ignition Connector
(front panel)

TODO: find out if Dialight 557 LED indicators require current-limiting resistor

