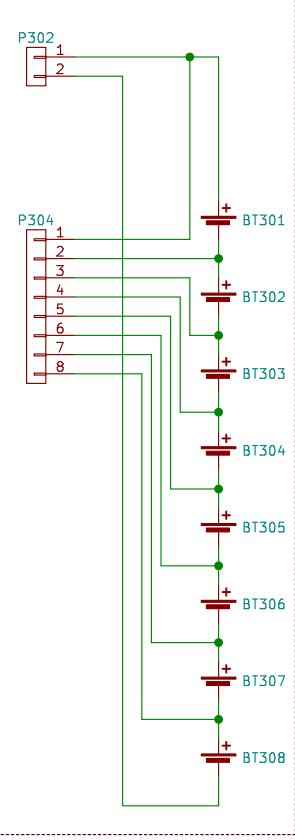


Voltage, Current, & Temp Sense



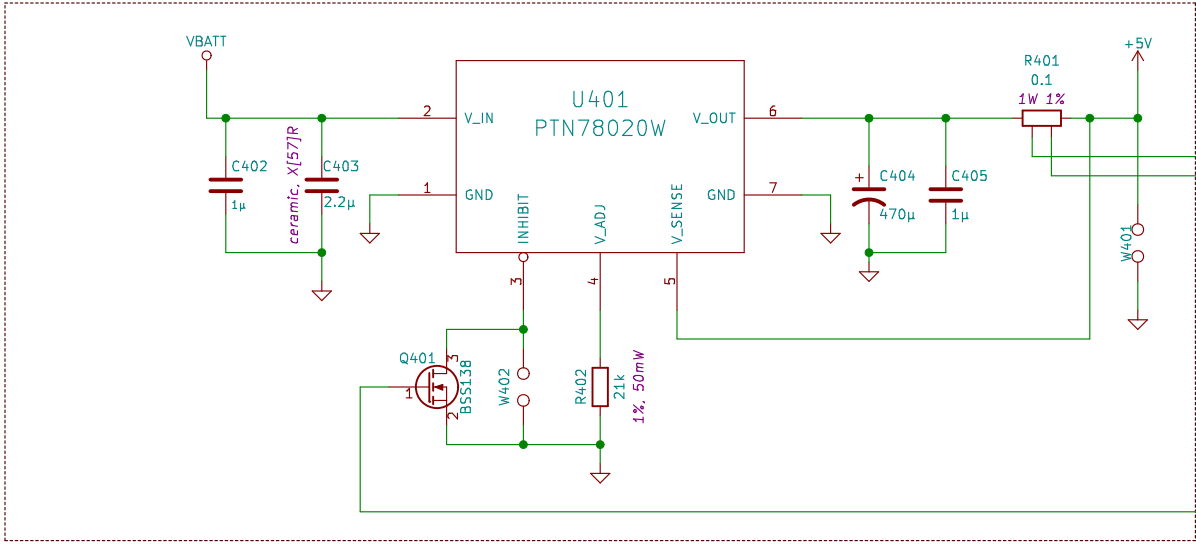
Main Battery

* Off-Board
* Voltage Min/Max: 25.6/33.6

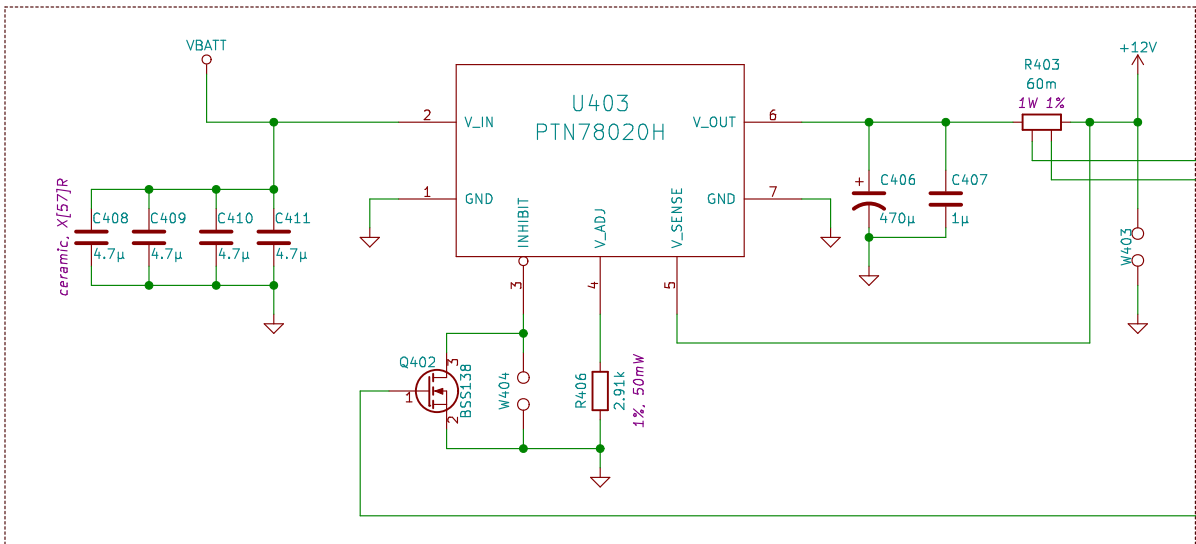
- NOTES:
- * Page references are to the bq datasheet.
 - * Do not assign footprints to off-board components.
 - * bq77PL900 I2C addr is 0x10 (p.38).
 - * D301 and D304 are used to peak detect transients, and may not be necessary. Include footprints on PCB, but do not place parts.

UNCONNECTED PINS

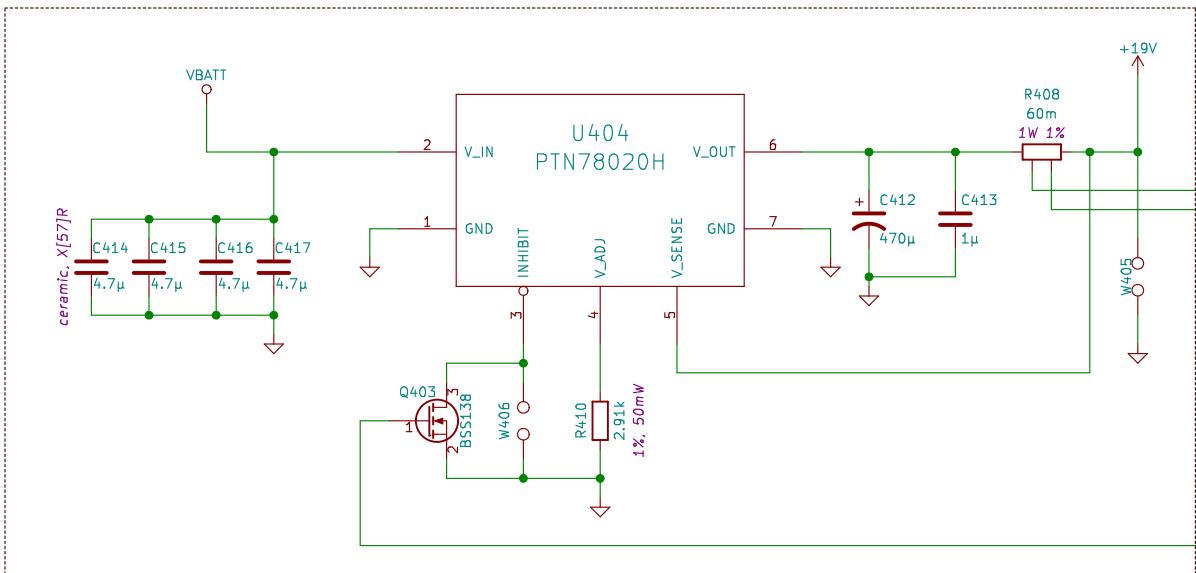
- * VOUT and IOUT are internally connected to ground when disabled (pp. 30, 33).
- * Xrst is an open-drain output with an internal 3k pull-up to VLOG (p. 35).



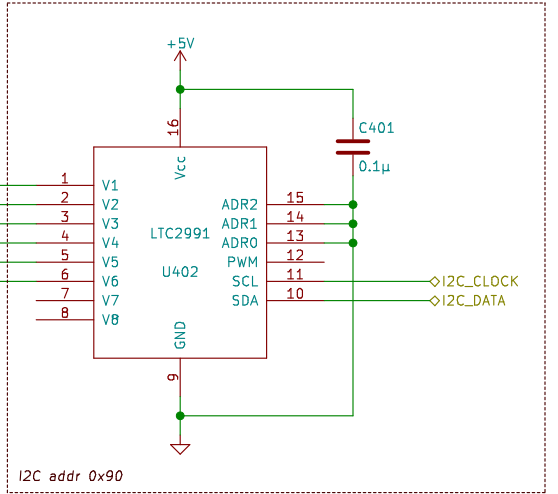
+5V DC Supply



+12V DC Supply

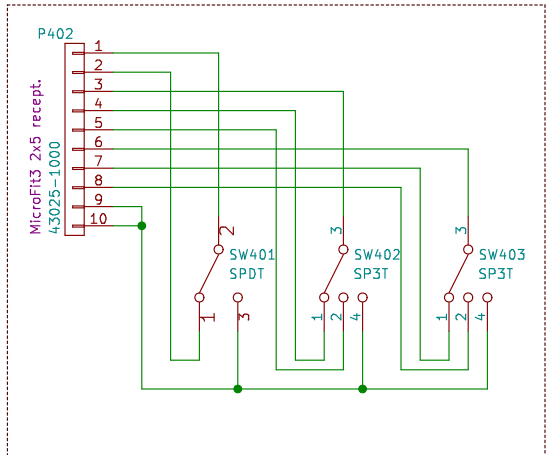
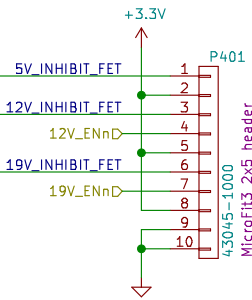


+19V DC Supply



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 R_{set} resistors as close to package pins as possible.
3. Ceramic (C_{in}) 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.

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

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

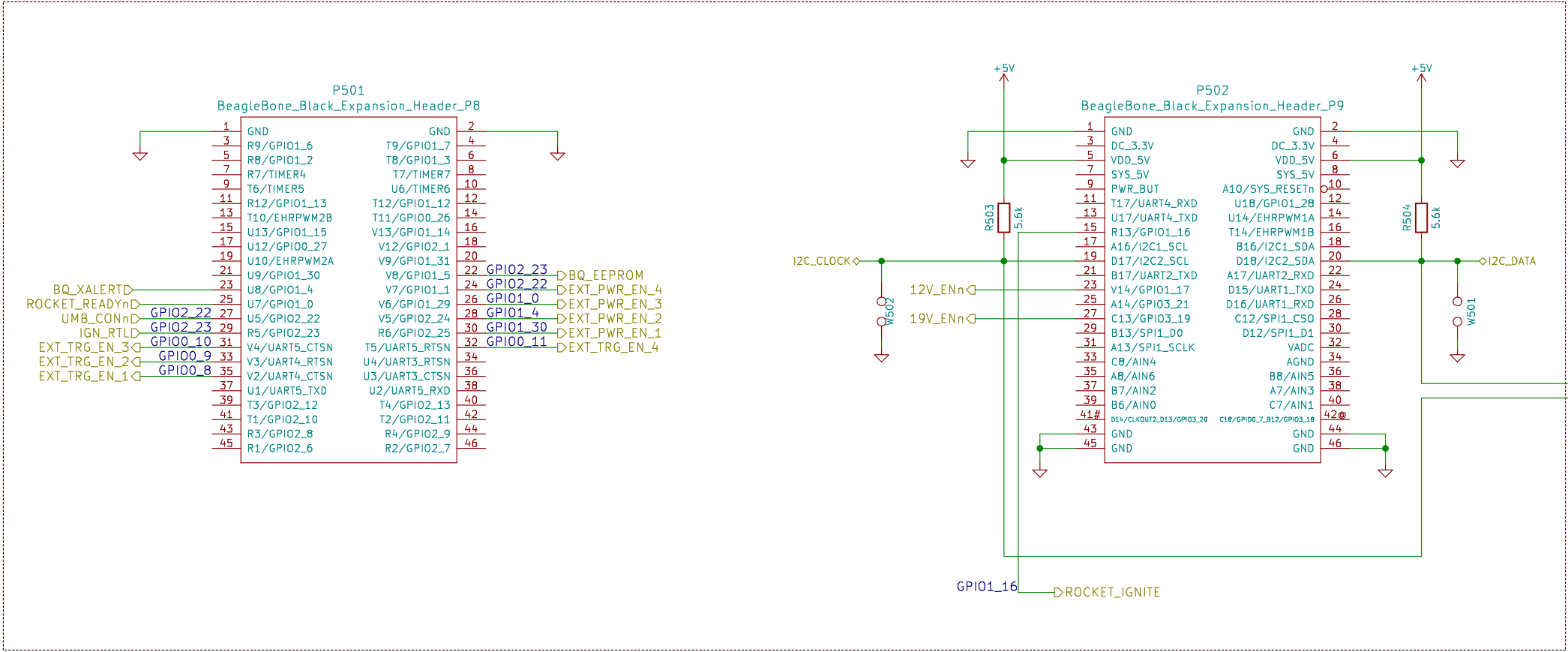
Title: LTC3 DC-DC Converters

Size: B Date: 2016-05-07

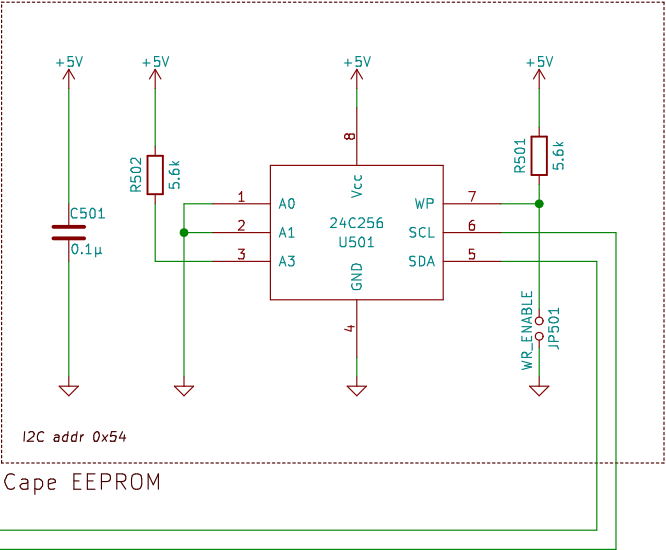
KiCad E.D.A. kicad 4.1.0-alpha+201605071002+677644ubuntu16.04.1

Rev: A

pdcdy2B



BeagleBone Expansion Headers

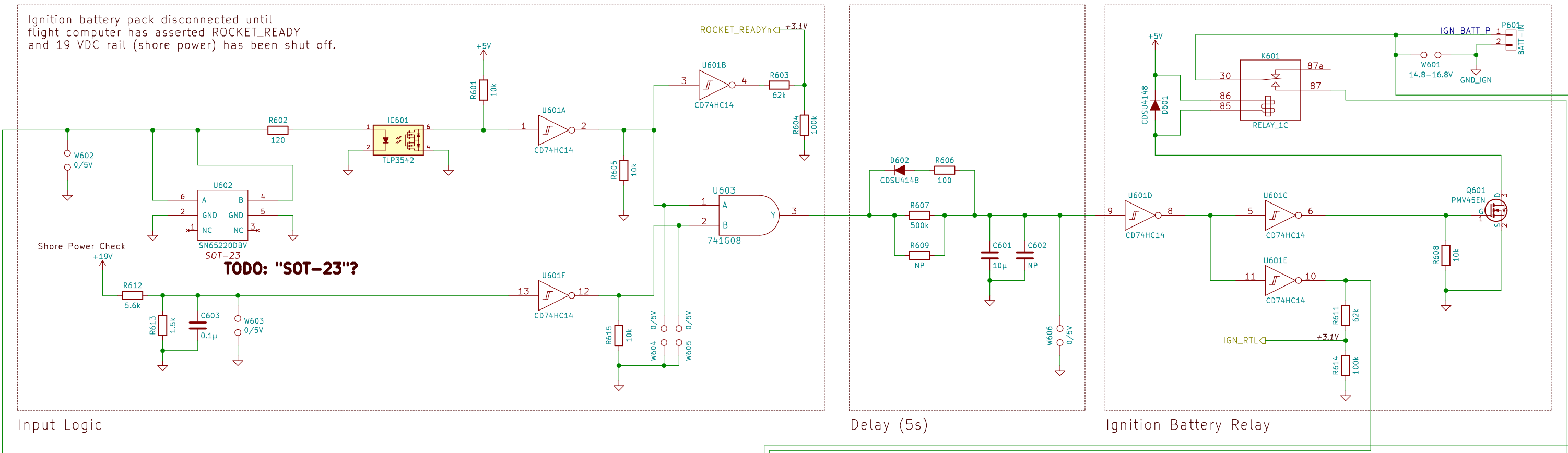


I2C Devices				
ADDR	Part	Type	Location	
0x10	U203	BQ77PL900	B/PM	
0x54	U501	EEPROM	BBB	
0x90	U402	LTC2991	DC-DC	
0x98	U203	LTC2990	Power In	
0x9A	U301	LTC2990	B/PM	

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.

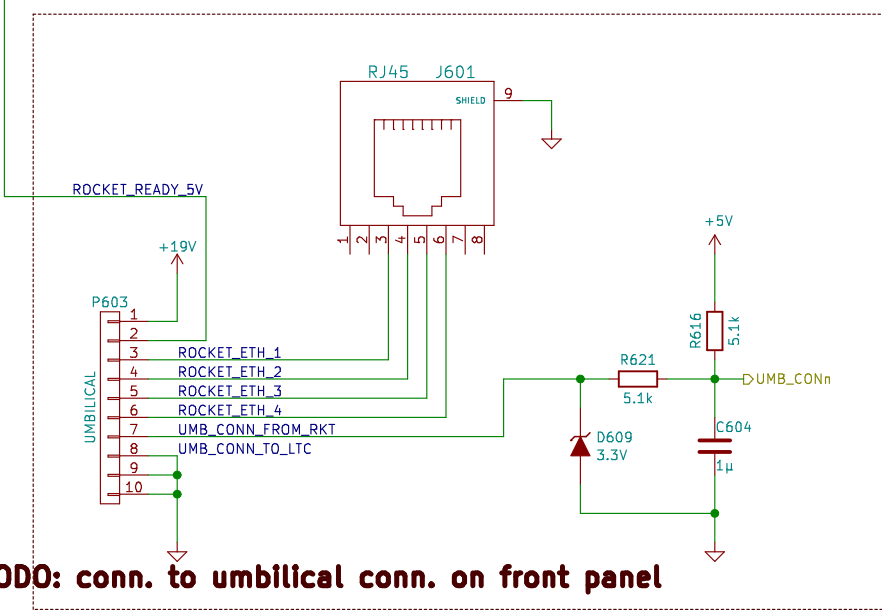
Ignition battery pack disconnected until flight computer has asserted ROCKET_READY and 19 VDC rail (shore power) has been shut off.



Input Logic

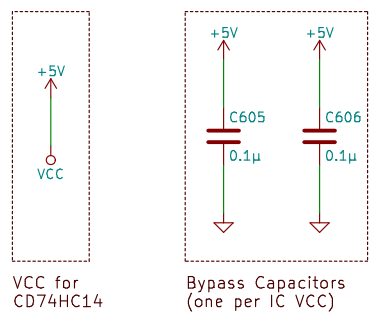
Delay (5s)

Ignition Battery Relay



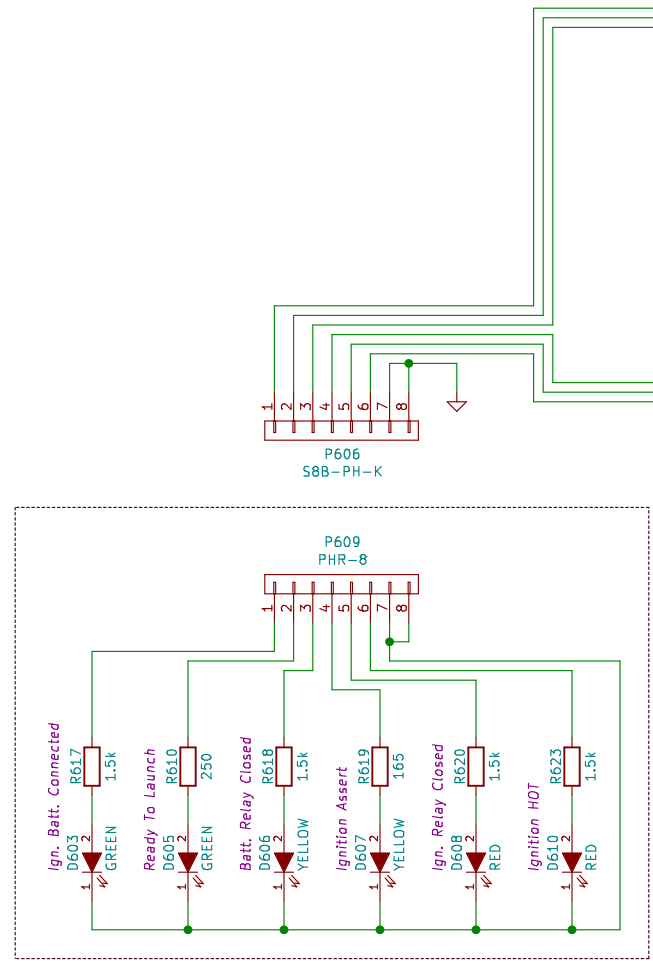
TODO: conn. to umbilical conn. on front panel

Rocket Umbilical
Rocket-to-BeagleBone Ethernet

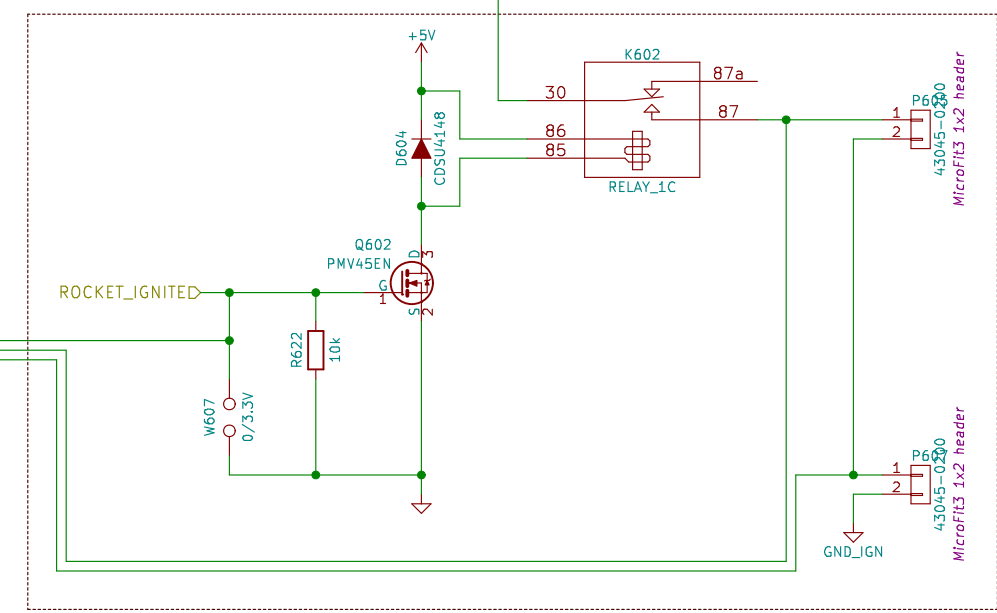


VCC for CD74HC14

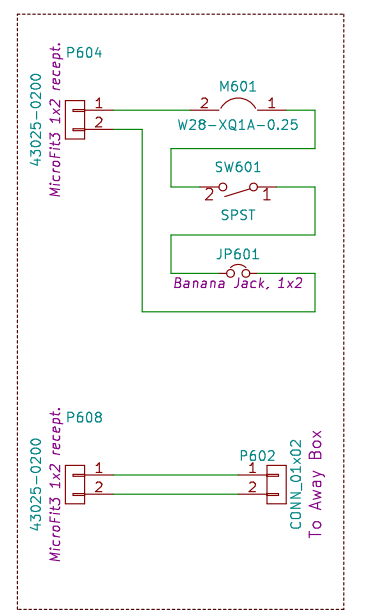
Bypass Capacitors
(one per IC VCC)



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



Rocket Ignition Relay



Breaker, Arming Switch,
Shorting Bar, & Ign. Jack
(front panel)

