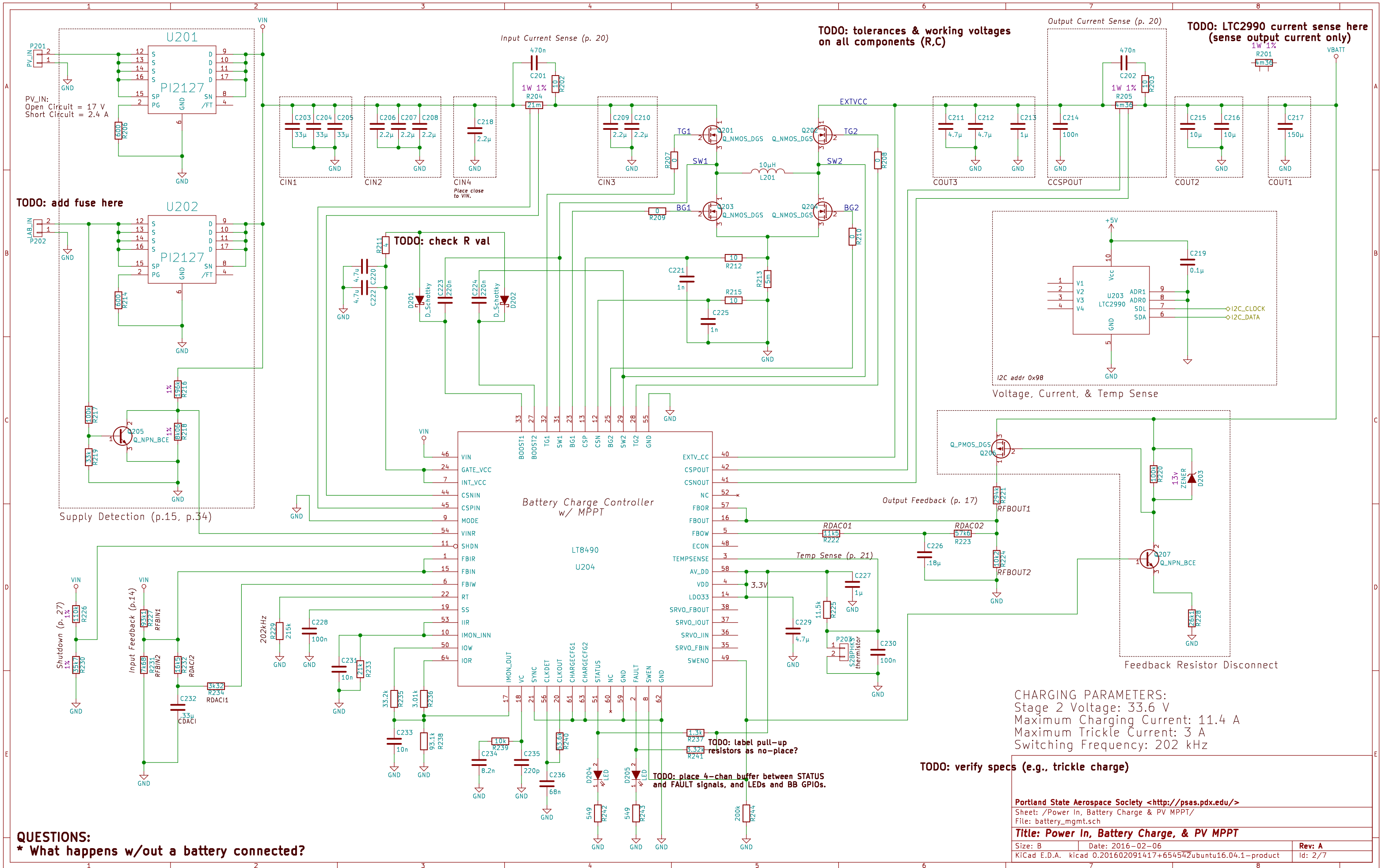


- TODO:
- * Finish wiring up sub-sheets.
 - * Bus entries need labels on both sides!
 - * Create style legend.
 - * Consistent style:
 - * No "embedded" multipliers in R vals.
 - * Add test points where appropriate.
 - * Esp. around SMD packages, parts w/ no exposed leads, etc.
 - * through-hole 2x1 pin header (1 to signal, other to gnd)

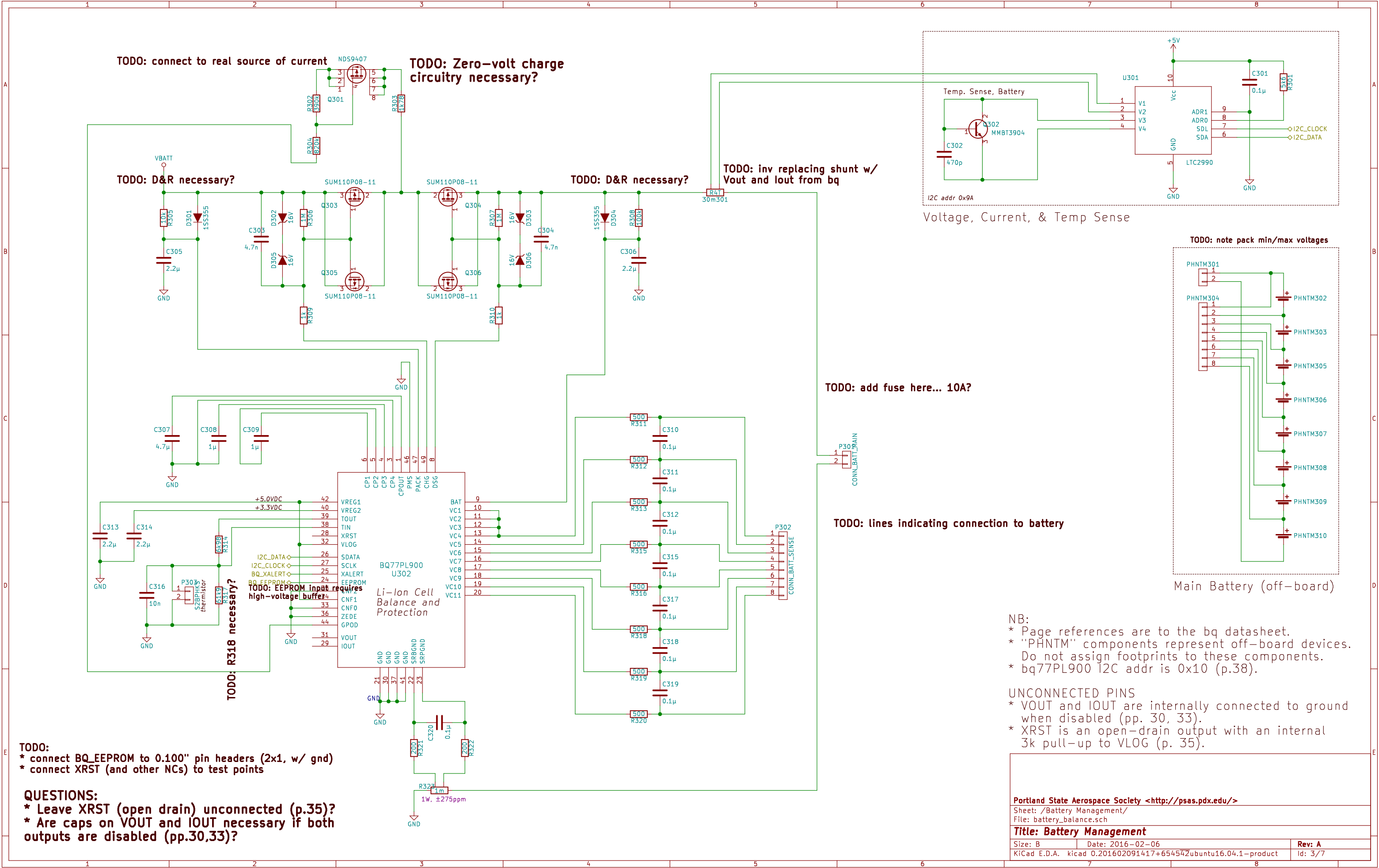
Notes:
* LTC3 is a single board represented on multiple sheets.



QUESTIONS:
* What happens w/out a battery connected?

CHARGING PARAMETERS:
Stage 2 Voltage: 33.6 V
Maximum Charging Current: 11.4 A
Maximum Trickle Current: 3 A
Switching Frequency: 202 kHz

TODO: verify specs (e.g., trickle charge)

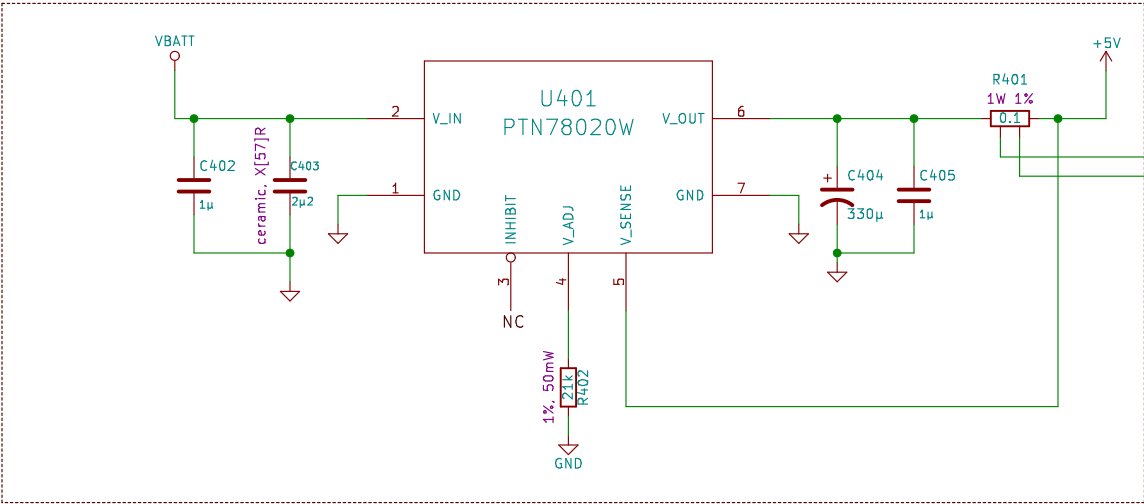


TODO:
* connect BQ_EEPROM to 0.100" pin headers (2x1, w/ gnd)
* connect Xrst (and other NCs) to test points

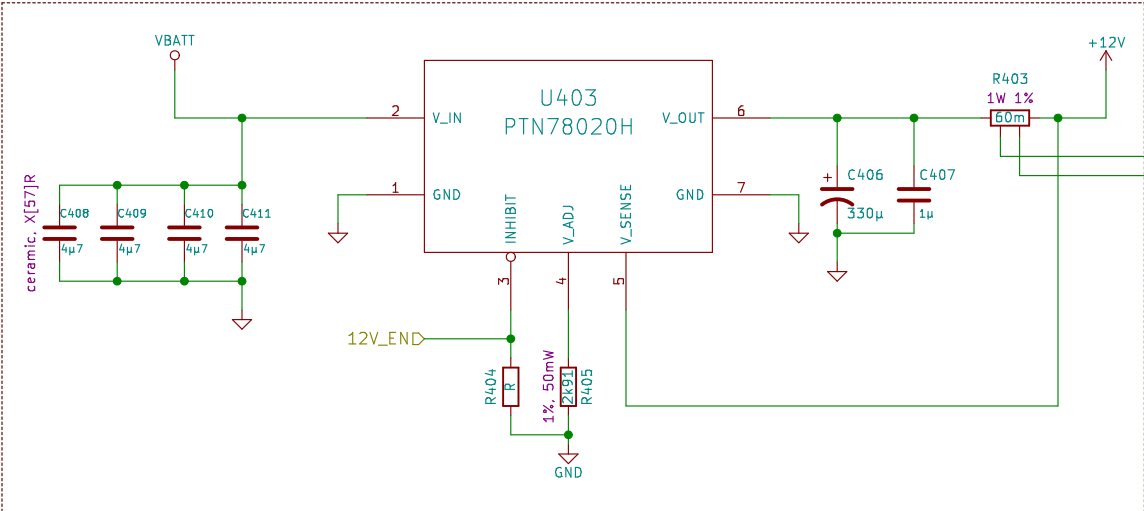
QUESTIONS:
* Leave Xrst (open drain) unconnected (p.35)?
* Are caps on VOUT and IOUT necessary if both outputs are disabled (pp.30,33)?

NB:
* Page references are to the bq datasheet.
* "PHNTM" components represent off-board devices. Do not assign footprints to these components.
* bq77PL900 I2C addr is 0x10 (p.38).

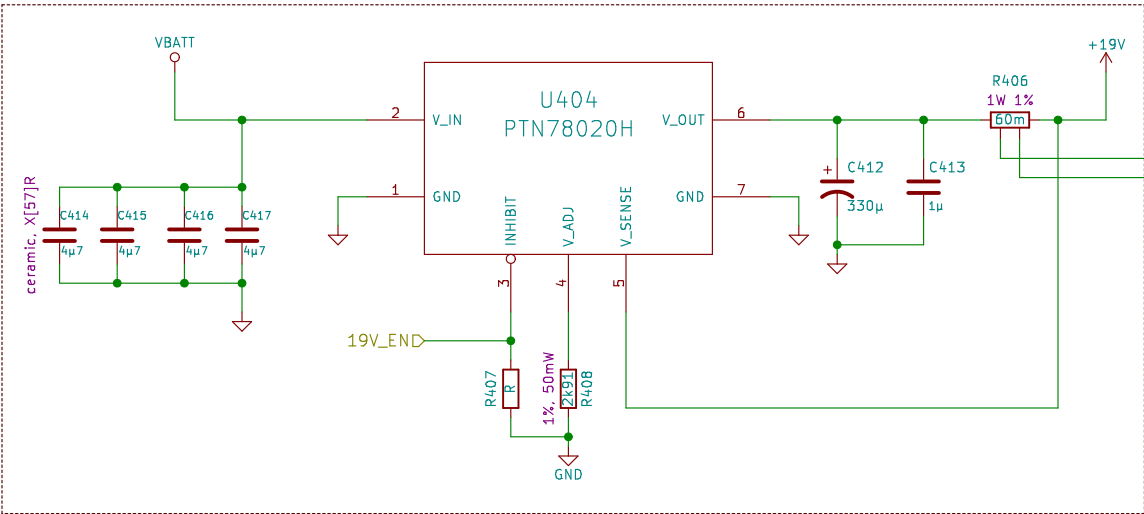
UNCONNECTED PINS
* VOUT and IOUT are internally connected to ground when disabled (pp. 30, 33).
* Xrst is an open-drain output with an internal 3k pull-up to VLOG (p. 35).



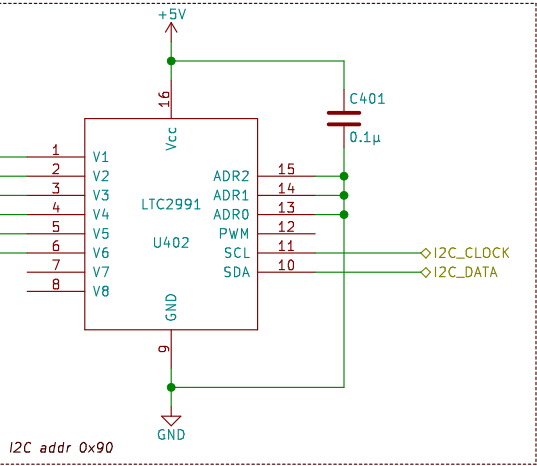
+5V DC Rail



+12V DC Rail



+19V DC Rail

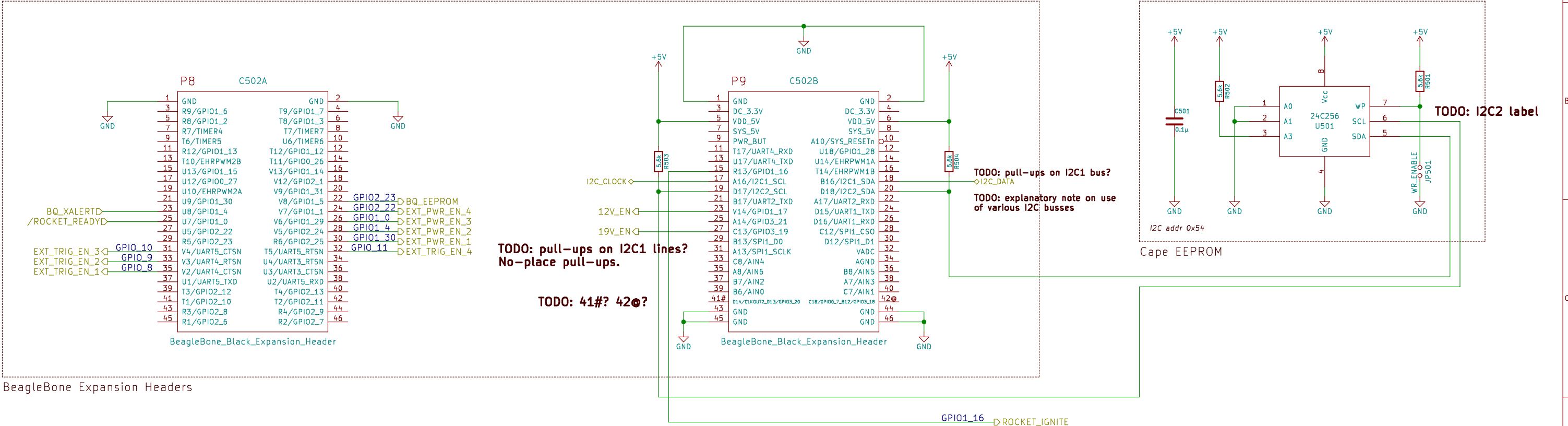


Voltage, Current, & Temp Sense

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

- NB:
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.

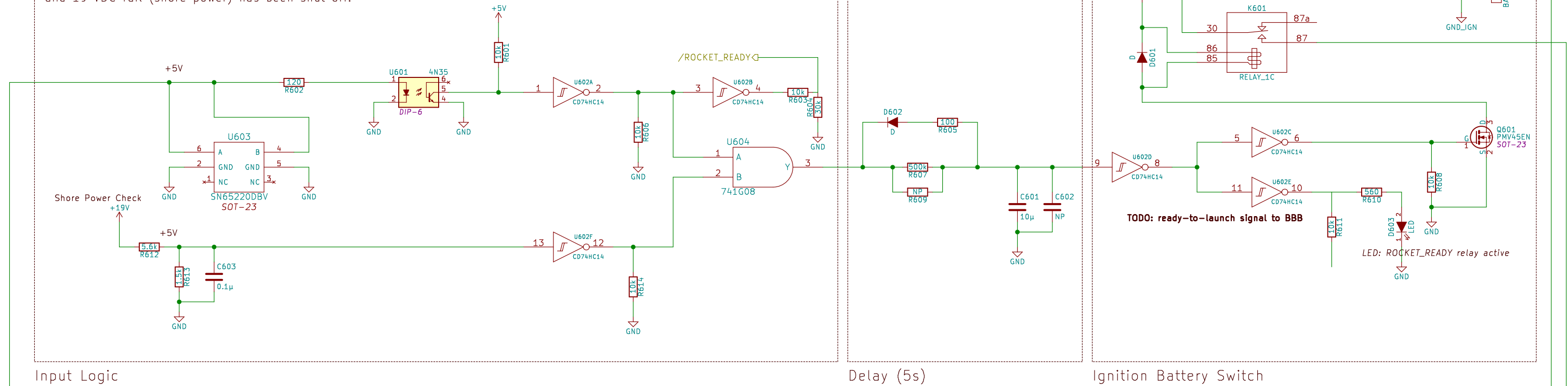
- TODO:
- * jumpers on all INHIBIT pins
 - * Values for converter enable pull-down resistors. Don't exceed the BB's low source max.!
 - * Capacitor values are minimums. Consider increasing these. Consult datasheet for more info.



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.

TODO:
* Umbilical connection state
* Ignition fuse state
* Table of I2C bus address assignments

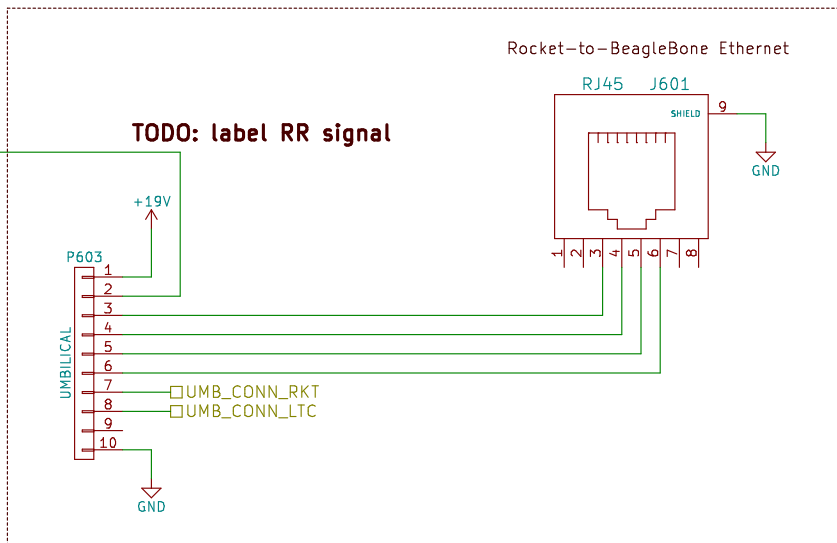
Ignition battery pack disconnected until flight computer has asserted ROCKET_READY and 19 VDC rail (shore power) has been shut off.



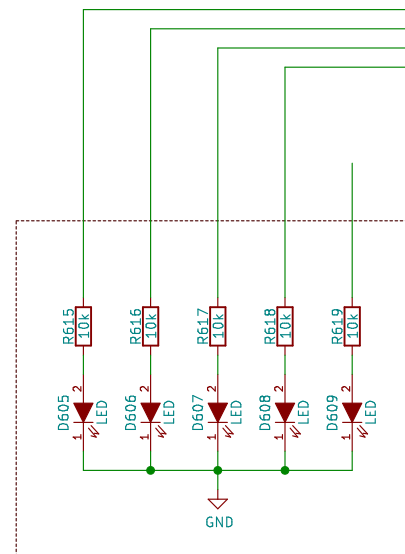
Input Logic

Delay (5s)

Ignition Battery Switch

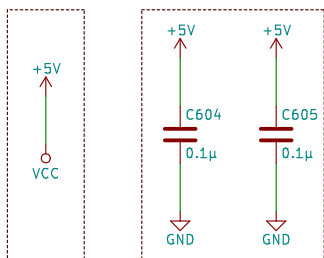


Rocket Umbilical



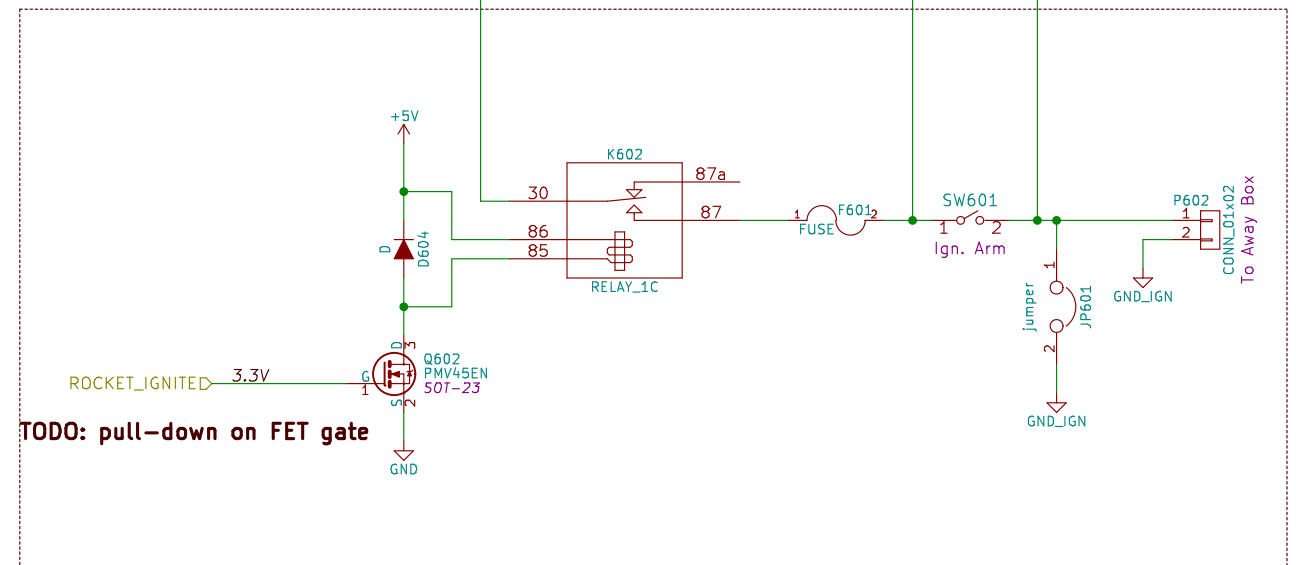
BAKERCON Indicator

- 1: Ign batt connected
- 2: RR asserted; power to ign relay
- 3: Ign relay closed; power to arm switch
- 4: Arm sw closed; power to shorting bar
- 5: Shorting bar removed; power to ign connector



VCC for CD74HC14

Bypass Capacitors (one per IC VCC)



Ignition Switch

- TODO:**
- * Select appropriate component values.
 - * Finish rocket umbilical connector.
 - * Verify Enet jack "adapter" wiring.
 - * Add umbilical connect sense lines circuitry.
 - * Label various LEDs.
 - * Divide all signals sent to BBB down to 3.3V
- QUESTIONS:**
- *Will 5v from schmidt fry BBB GPIO? Yes.

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Sheet: /Rocket Umbilical & Ignition Control/

File: rocket_interface.sch

Title: LTC3 Rocket Umbilical & Ignition Control

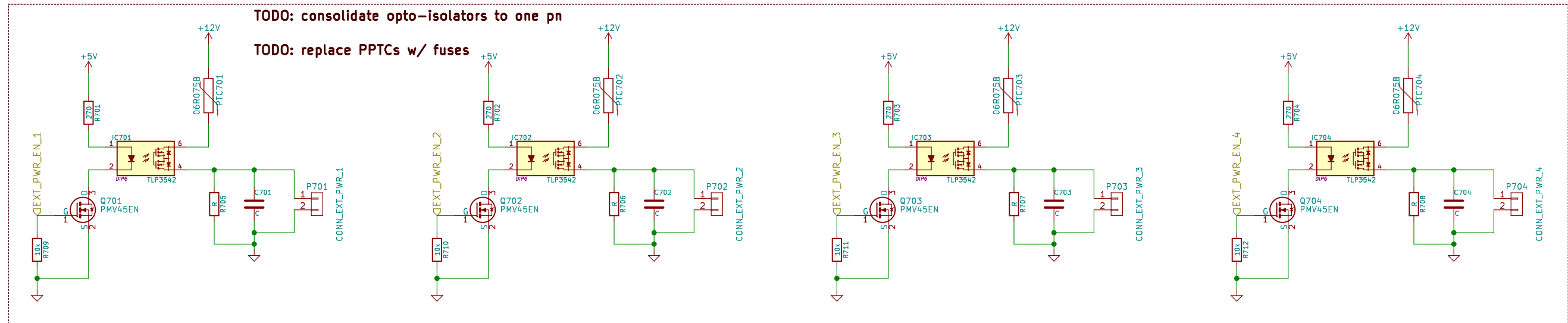
Size: B Date: 2016-02-06

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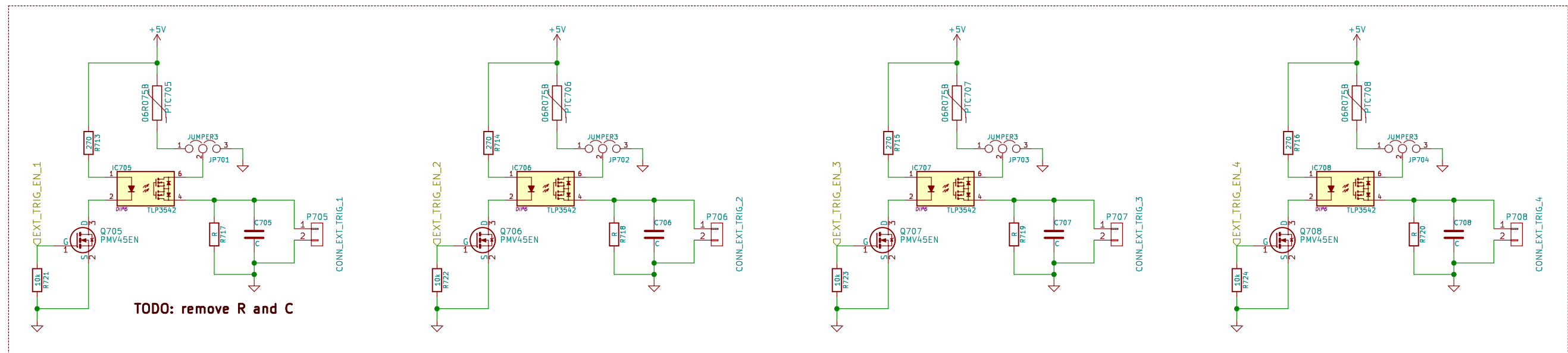
Rev: A

Id: 6/7

TODO: add manual push-button triggers on all outputs



External Device Power



External Device Triggers

TODO:

- * Determine values for bleeder resistor and filter capacitor on each output connector.
- * Pick new PolyFuses, 0.5–1.0A max.

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Sheet: /External Device Power & Triggers/

File: external_devices.sch

Title: LTC3 External Power & Triggers

Size: B

Date: 2016-02-06

Rev: A

Size: D	Date: 2016-02-08	Rev: A
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