

Voltage, Current, & Temp Sense



TODO:

- * Clean up zero-battery-volt charging circuitry.
- * Add symbol representing off-board battery pack.

QUESTIONS:

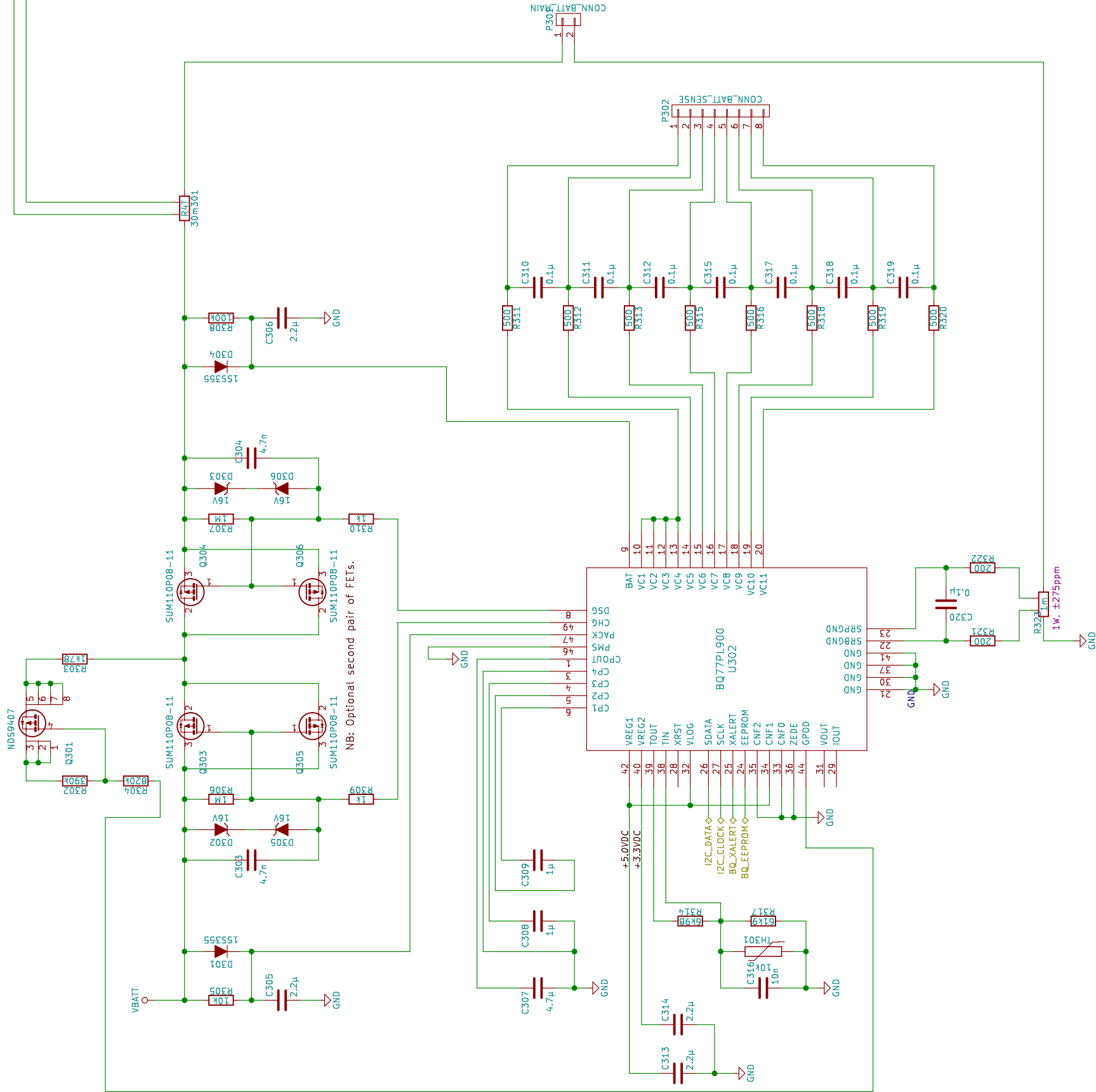
- * Leave X_{RST} unconnected (p.35)?
- * Leave G_{POD} unconnected (p.34)?
- * Are caps on V_{OUT} and I_{OUT} necce are disabled (pp.30,33)?

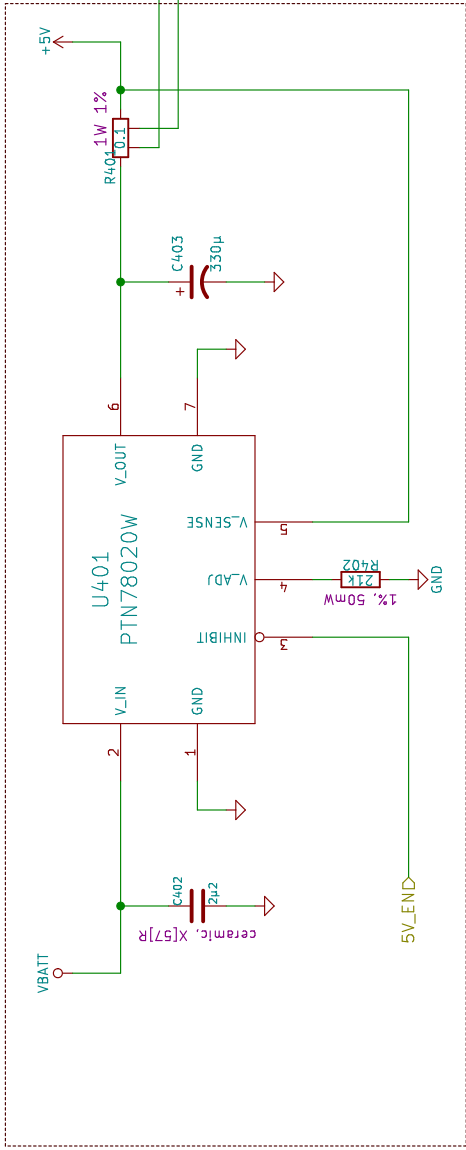
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- * Page references are to the bq datasheet.
- * bq77PL900 I2C addr 0x10

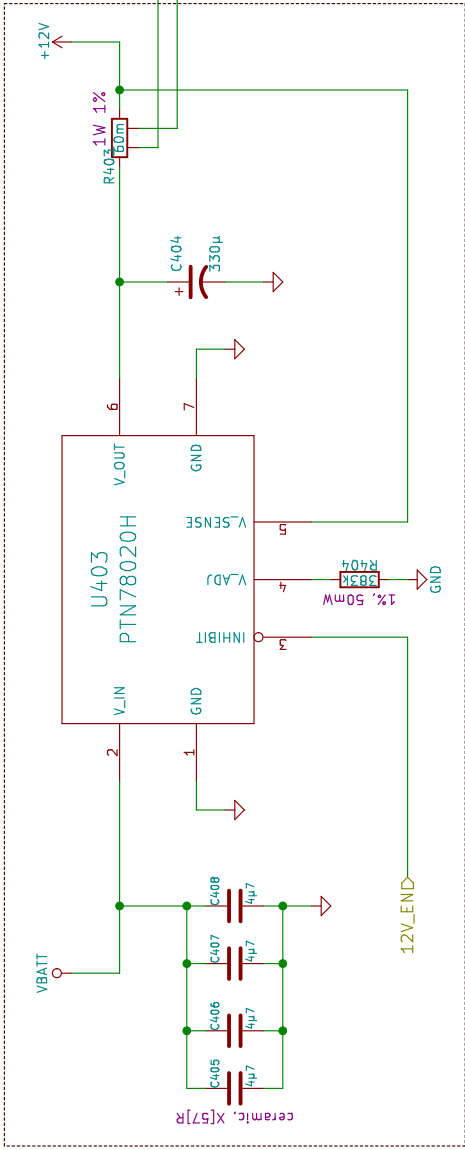
UNCONNECTED PINS

- * 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).

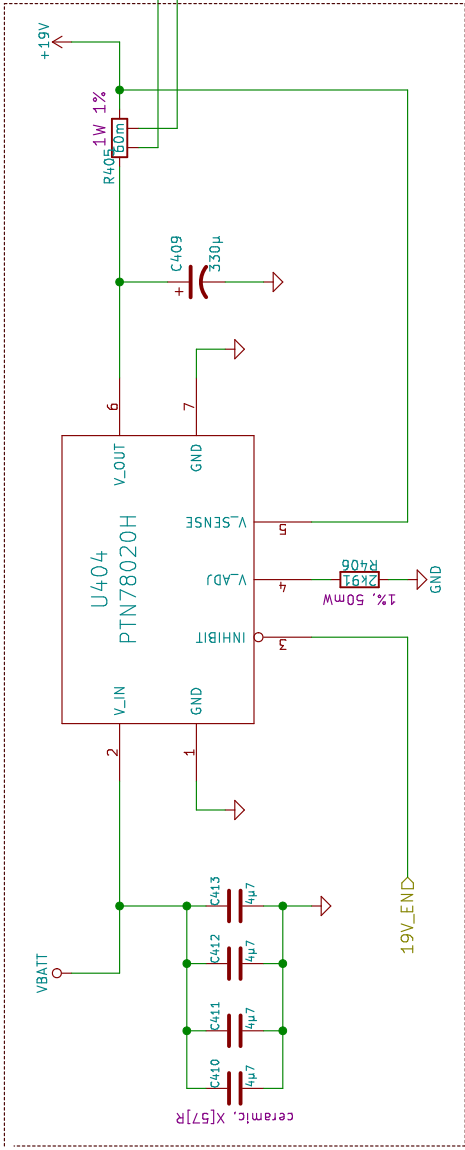




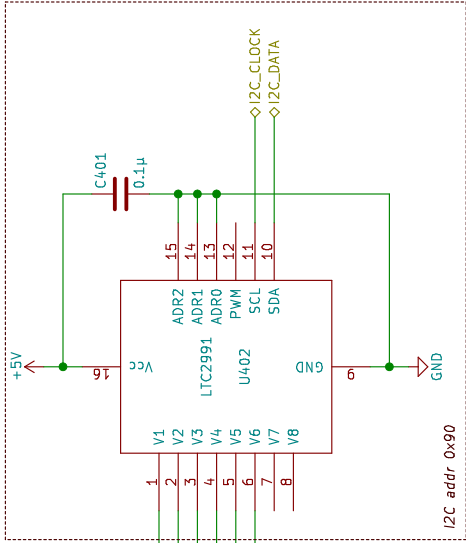
+5V DC Rail



+12V DC Rail



+19V DC Rail



Voltage, Current, & Temp Sense

Current Sense Resistors
full-scale voltage = 0.300 V
R_sense_max = 0.300/Imax
1 A = 300mΩ
3 A = 100mΩ
5 A = 60mΩ
10 A = 30mΩ

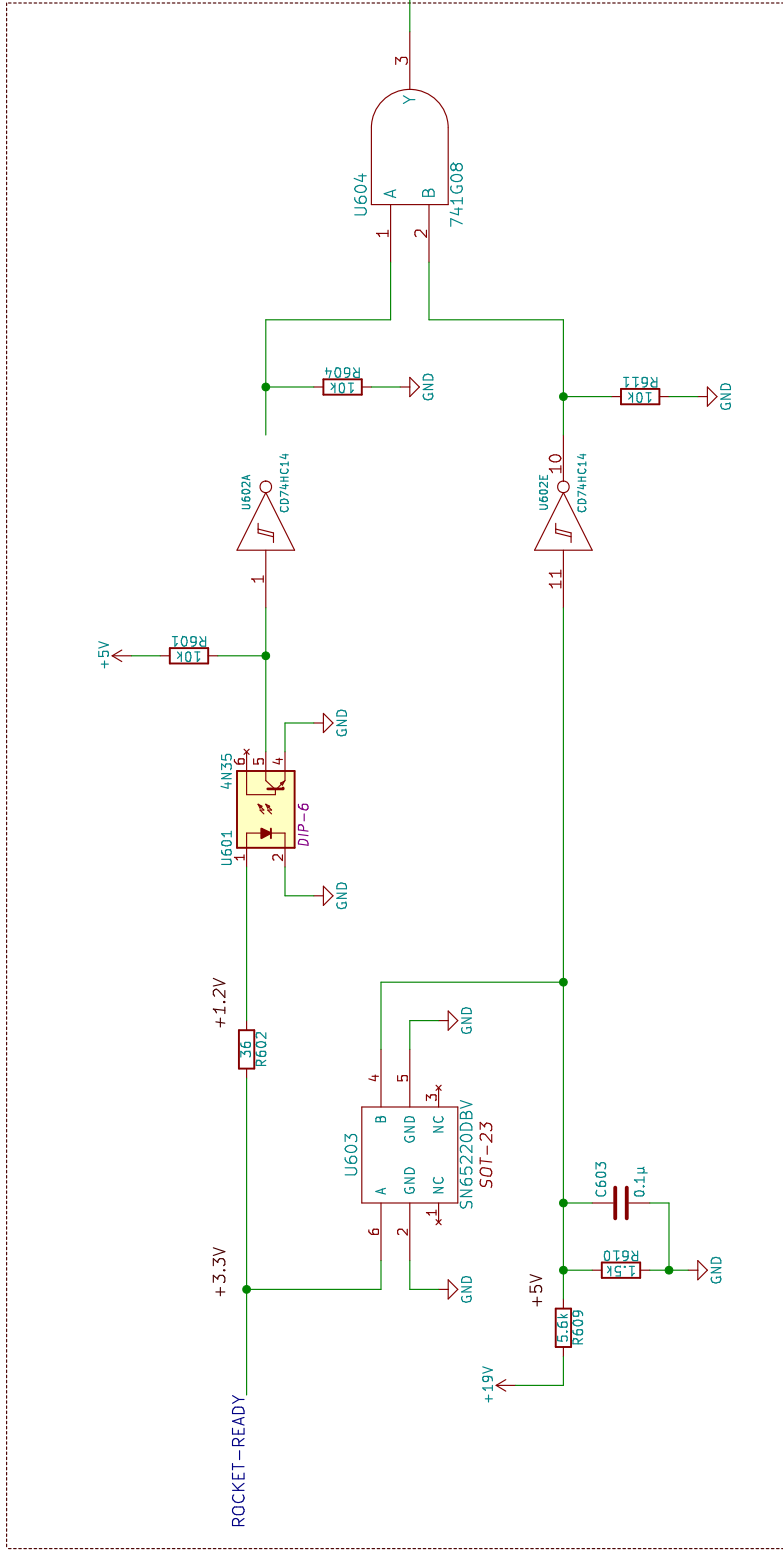
NB:

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.

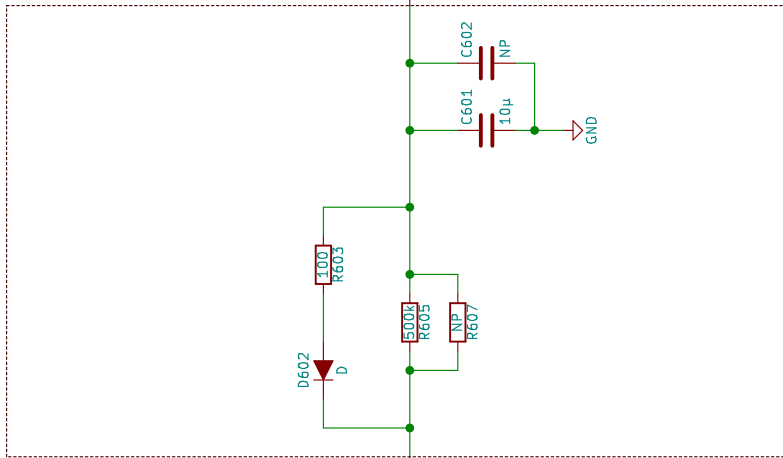
TODO:

- * Capacitor values are minimums. Consider increasing these. Consult datasheet for more info.

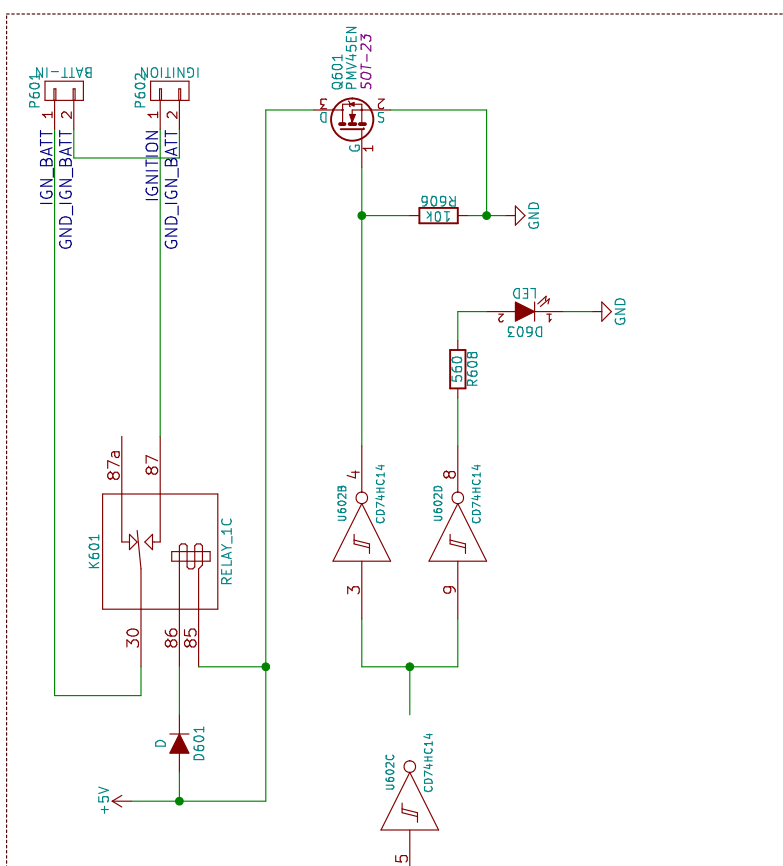
Portland State Aerospace Society <http://psas.pdx.edu/>							
Sheet: /DC-DC Converters/							
File: dcdc_converter.sch							
Title: LTC3 DC-DC Converters							
Size: B		Date: 2015-12-15		Rev: A		Id: 4/7	
KiCad E.D.A.		kicad 4.0.0rc1a=stable					



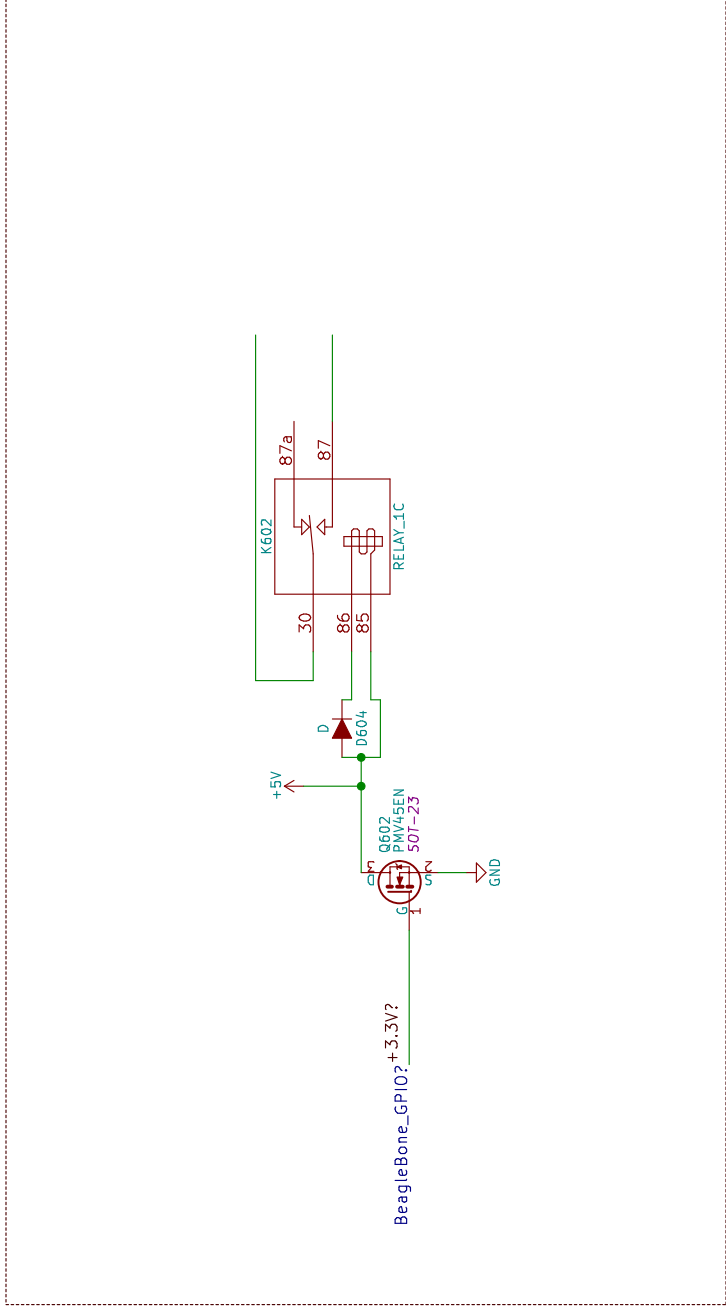
Input Logic



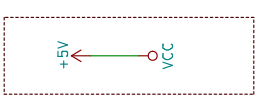
Delay (5s)



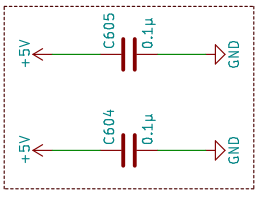
Ignition Battery Control



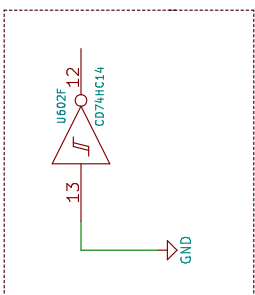
Igniter



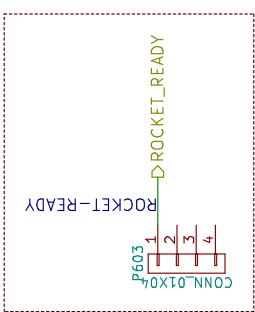
VCC for CD74HC14



Bypass Capacitors
(one per IC VCC)



Spare Schmitt Inverter

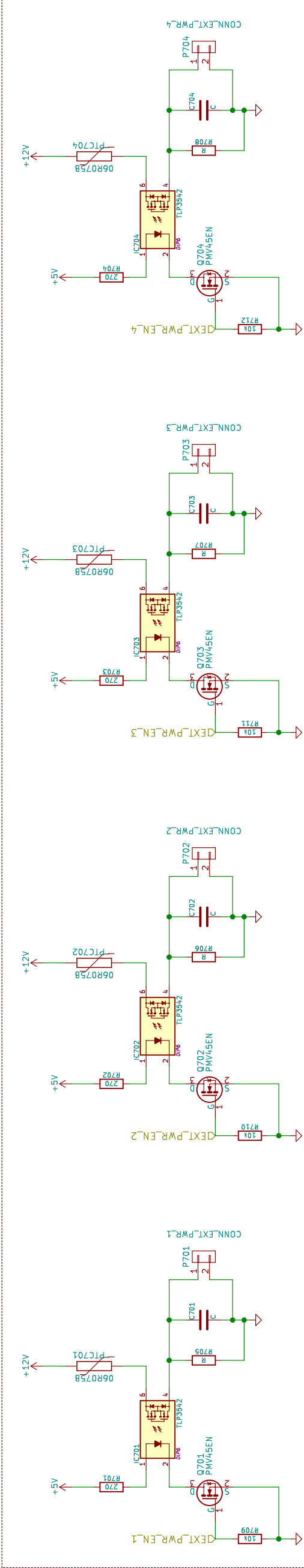


QUESTIONS:

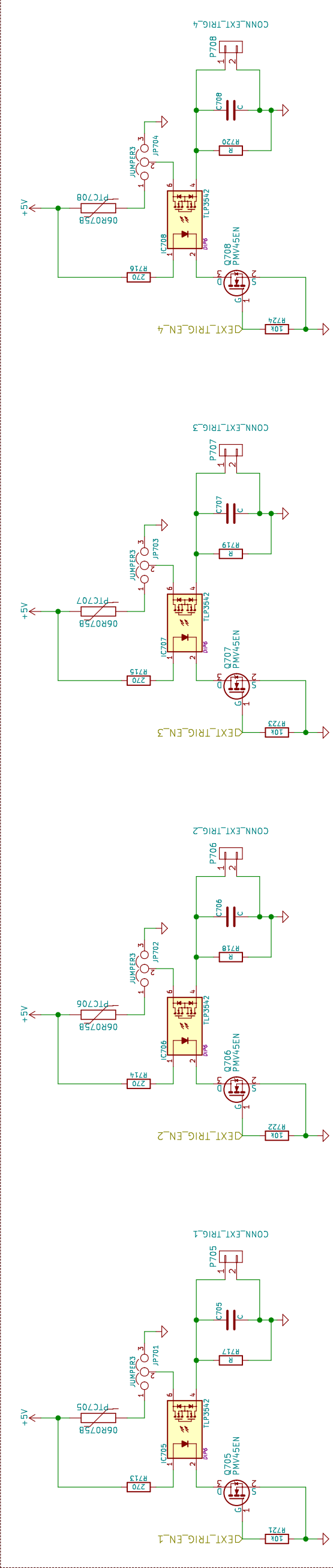
- * Does the "rocket ready" signal get sent over the rocket-to-LTC Ethernet link, or over a discrete wire?

TO DO:

- * Select appropriate component values.
- * Move TVS upstream of voltage dividers.
- * Remove R-R Connector?
- * Remove voltage clamp between RR and Vcc19?
- * Finish igniter circuitry
- * Add rocket umbilical connector.
- * Umbilical-to-Ethernet jack "adapter."



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.