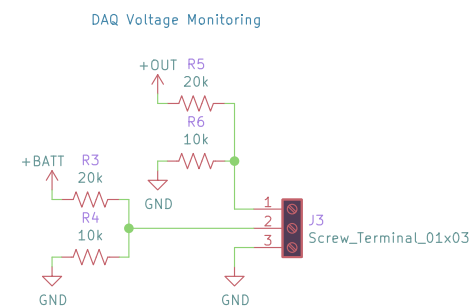


For 12V:
 $SETFS = 442 / (12 \times 3 - 1) = 12.63$
 $SET = 5 \times 12 = 60$

For 10V:
 $SETFS = 442 / (10 \times 3 - 1) = 15.24$
 $SET = 5 \times 10 = 50$

For 5V:
 $SETFS = 442 / (5 \times 3 - 1) = 31.57$
 $SET = 5 \times 5 = 25$



Sheet: /
 File: power_board.sch

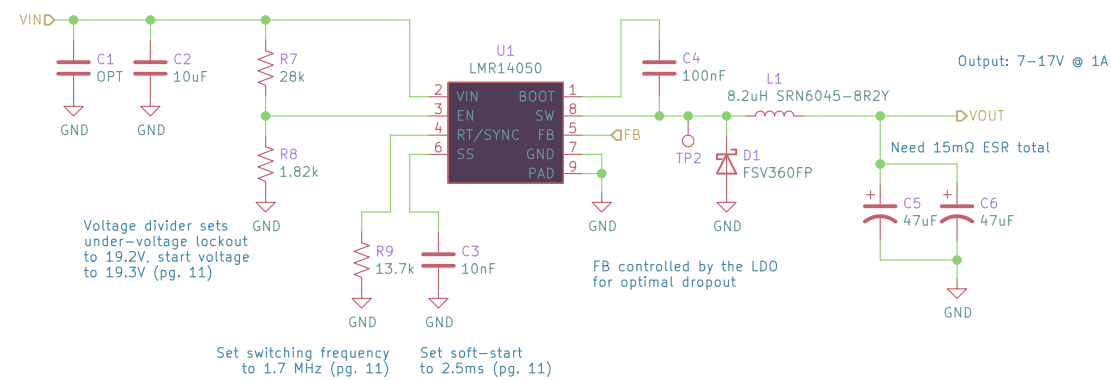
Title: DAQ Power Board

Size: A4 Date:
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Rev:
 Id: 1/3

Variable buck regulator. Most values taken from [webench.ti.com](https://www.ti.com/lit/ds/symlink/lmr14050.pdf) for 17V 1A out.
<https://www.ti.com/lit/ds/symlink/lmr14050.pdf>

Input: 19.2–25.2V (24V nominal)



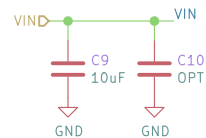
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Title:

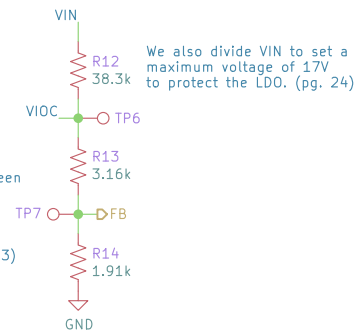
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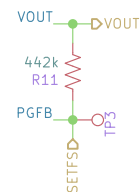
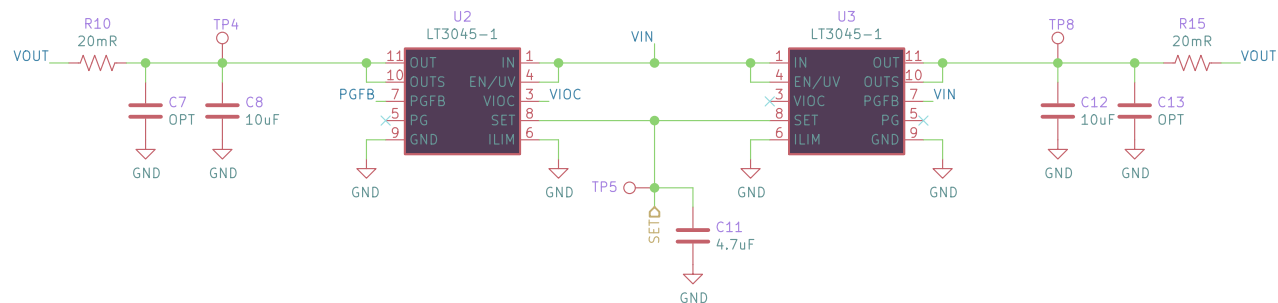


VIOC is driven to the difference between the set voltage and VOUT. We want VIOC=2V so we divide such that $2V \rightarrow 0.75V$, the switching threshold for the buck converter, and use it as the buck converter's feedback. (pg. 23)



Parallel two LD0s for 1A output. (pg. 22)

<https://www.analog.com/media/en/technical-documentation/data-sheets/30451fa.pdf>



When PGFB is below 300mV fast startup is enabled. SETFS is a resistor to ground which should divide VOUT such that PGFB reaches 300mV at 90% of the desired VOUT. (pg. 21)

$$R(k\Omega) = 442 / (3 \cdot VOUT - 1)$$

A resistor between SET and GND sets the output voltage based on a 200uA current source (two LD0s).

$$R(k\Omega) = 5 \cdot VOUT$$

Sheet: /ldo/
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Size: A4
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Date:
Rev: Id: 3/3