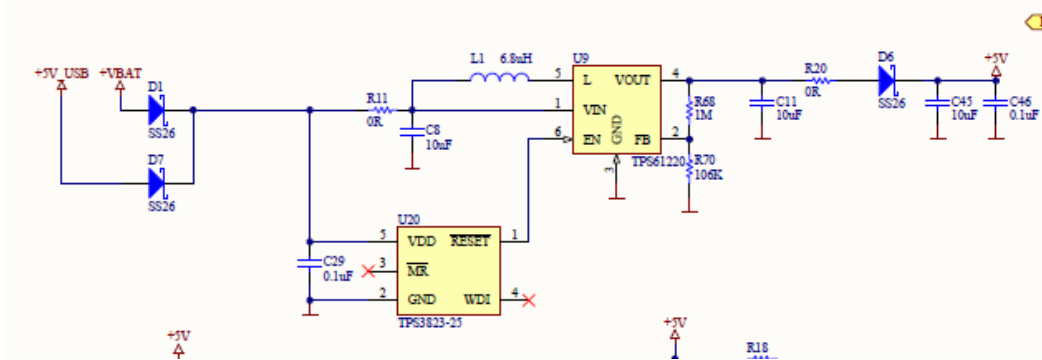


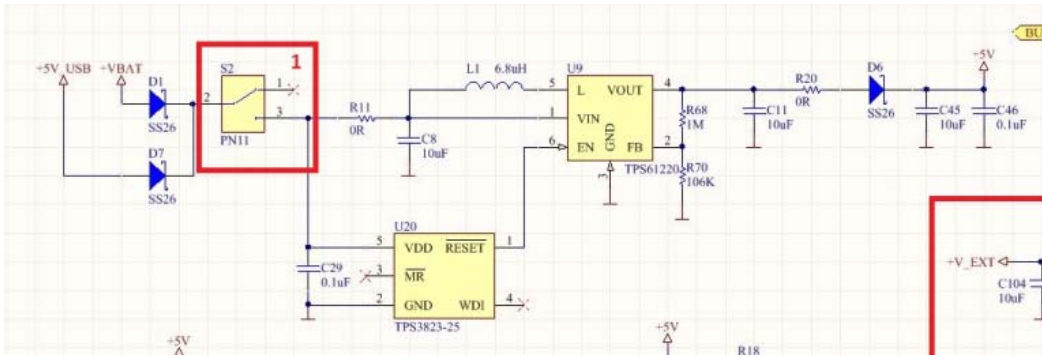
# Power Ripple with TPS61220DCKT IC REG BOOST SYNC ADJ SC70-6

We have a 6 layer board with the TPS61220DCKT to produce 5 volts for sensor power, backlight power, and other features. Our first design had no issues with the 5 volt power. We made a couple of modifications to the board and now have severe power ripple, and low power voltage (about 4.5 volts).

First design (U9 is the TPS61220DCKT)

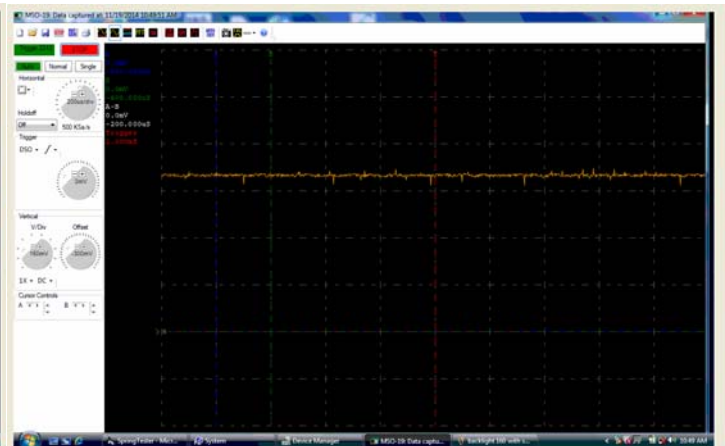
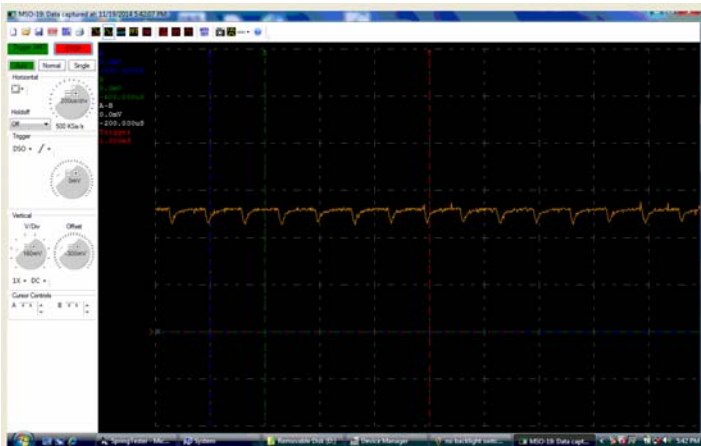


Second design (now with On/Off switch S2 to completely cut power)



Voltage low and severe ripple

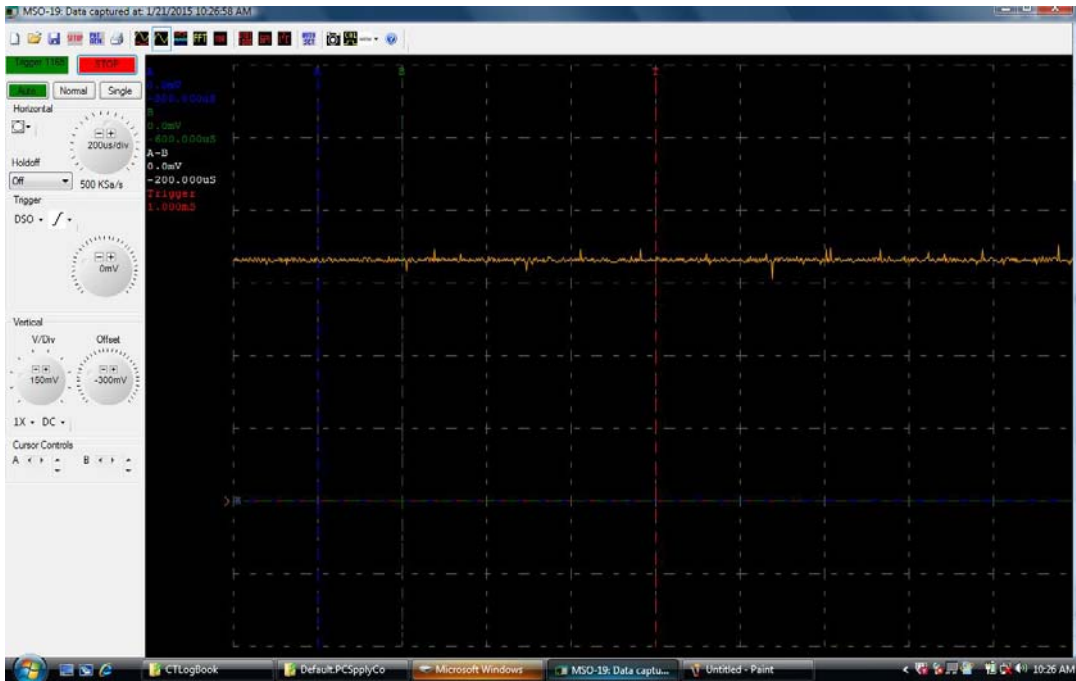
Voltage at 5 volts and fairly clean



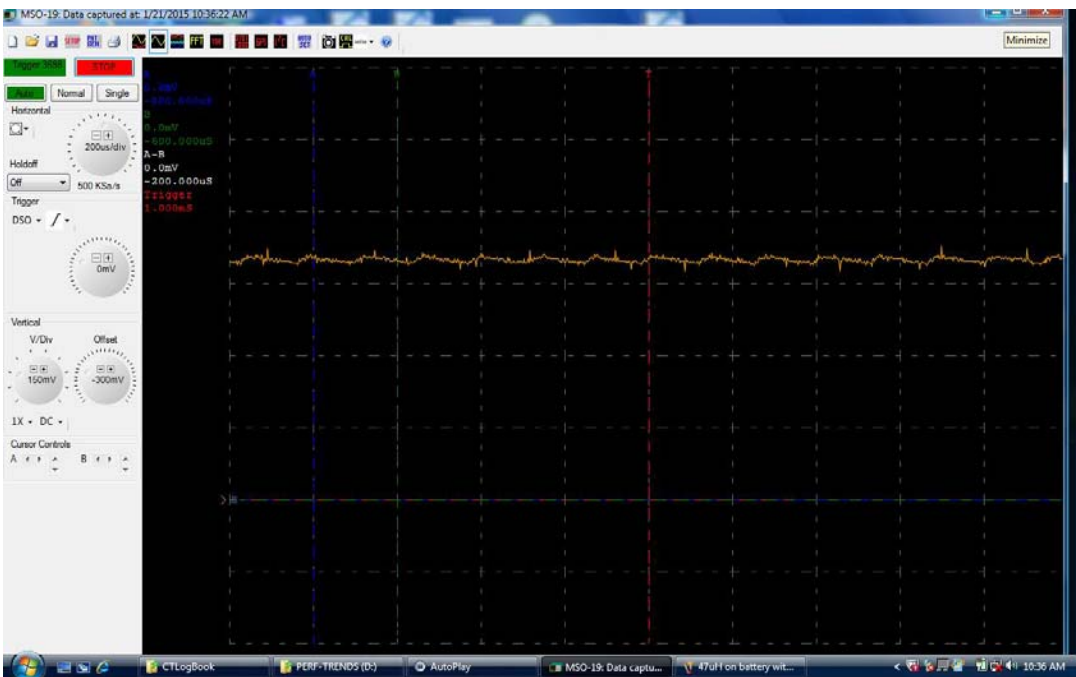
The voltage on the new boards can clean itself up by reducing the power demands (turn off back light) or reduce other power demands, all of which are well under 100 mA total. Also, just keeping on for some period of time (several minutes) also seems to fix the problem. The frequency of the ripple I figure to be about 7.5KHz.

The "fix" for the new boards was to replace the L1 6.8uH with a 47uH component. This fixed up the problem well when using battery power (typically 3.9 to 4.1 volts Li Ion battery). Ripple is nearly gone and voltage level is up to 5 volts. However, when using USB power, the voltage is still quite noisy, but better than before the 47uH.

### Battery power, power ripple minimum



### USB power, power ripple better than before, but still not good.



This DOES affect the data from analog sensors (like potentiometers) so it is critical to get this as clean as possible.

Do you have any suggestions for changing components or other design recommendations to clean up the power ripple?

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