issues

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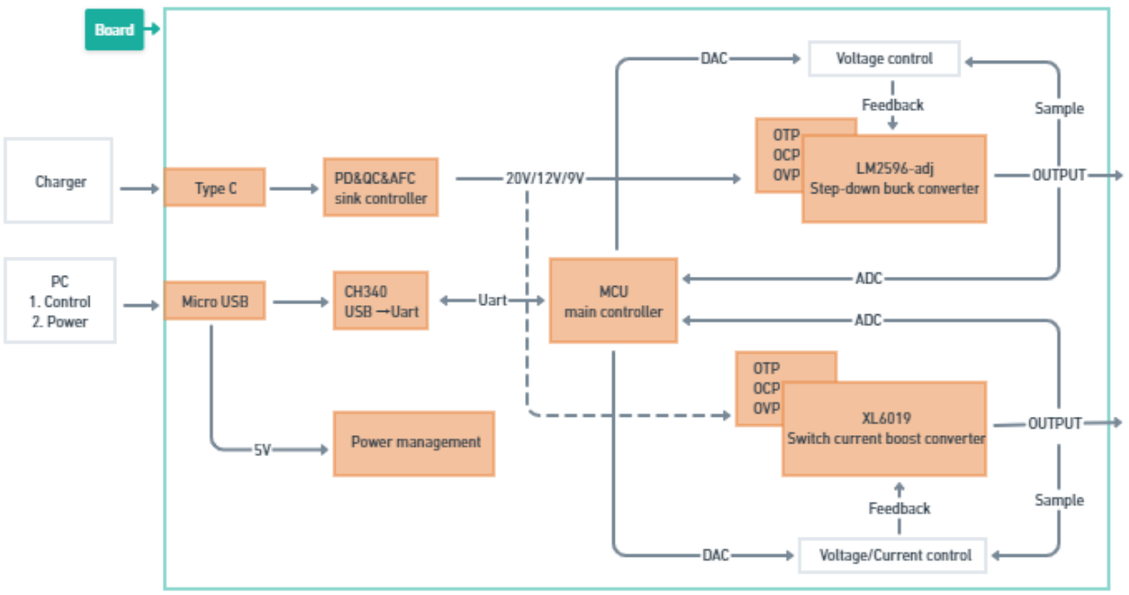
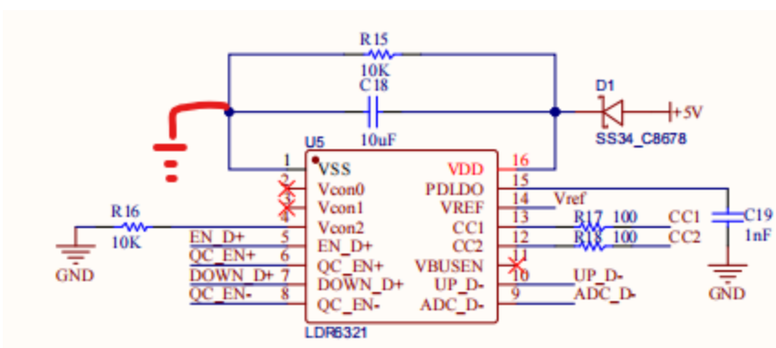
High level Diagram



First version PCB issue

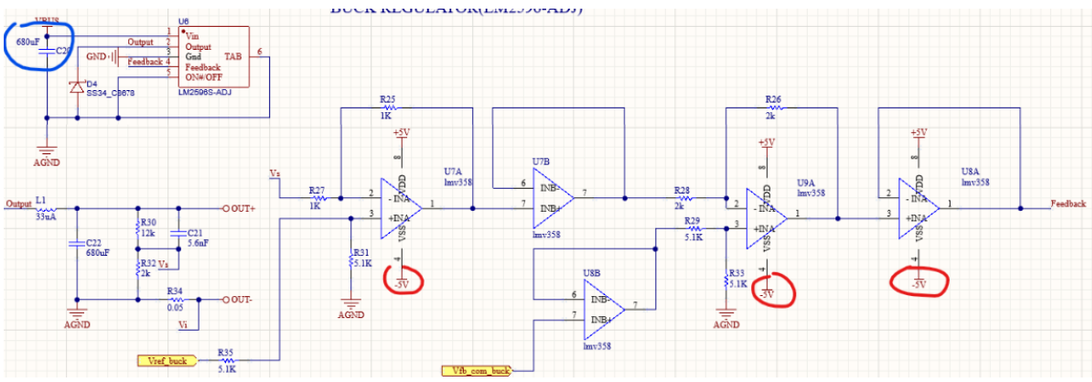
https://s3-us-west-2.amazonaws.com/secure.notion-static.com/0b1c77ef-a961-40f8-bd5d-b0e6bd029474/Portable_power_supply_v1.pdf

- Front-end power delivery design



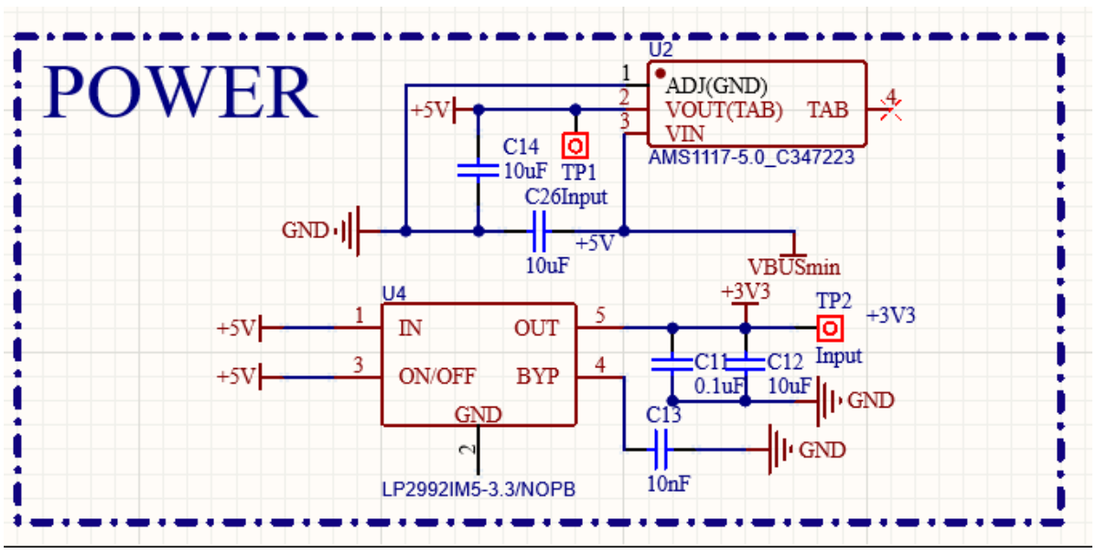
- I missed a connection to Vss [supposed to be connected to the ground], I used jumper wire connected to the GND, I plugged the quick charger to the TYPE-C input but still cannot get >5V at the output.

- Buck converter design



  - Red one: I missed the -5V generation
  - Blue one: wrongly use 0805 packages for the 680uF, in the implementation, I used 10uF instead, and that one smells badly when I plugged the charger in, so I stopped.

- Power supply for ICs



  - Wrongly fed voltage from Micro USB to **AMS1117-5.0 (Which requires at least 7.0V to get a steady 5V supply).**
  - -5V generation missed

My separated design

Buck

https://s3-us-west-2.amazonaws.com/secure.notion-static.com/c86e44b0-a0ac-46b0-ba5c-6070963758a2/Test_Board_Buck_converter.pdf

- LM2596 DATASHEET

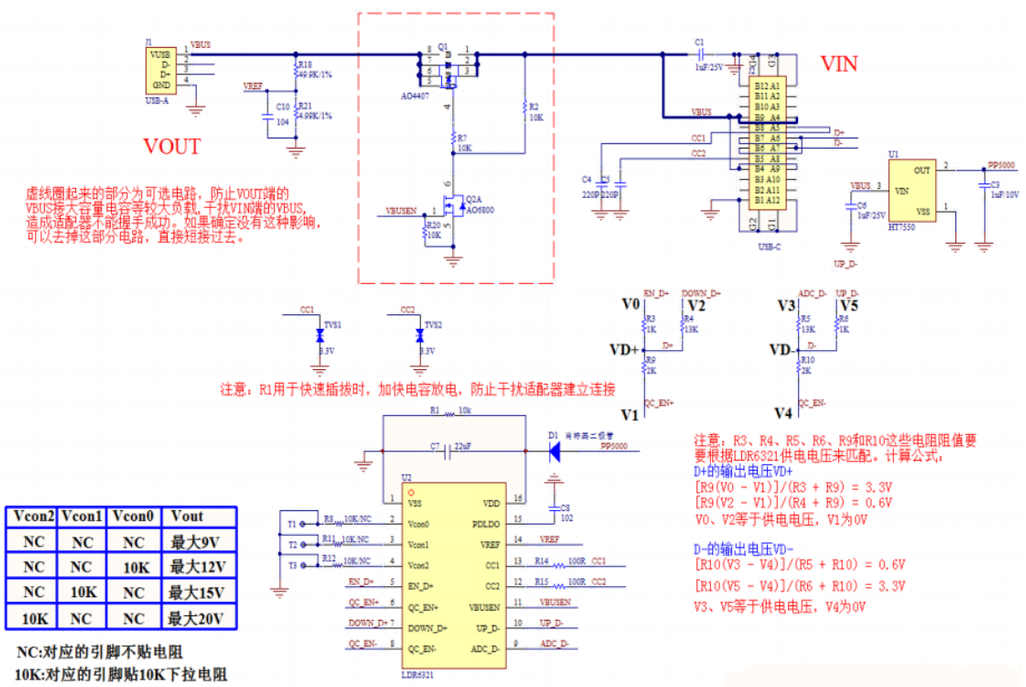
https://www.ti.com/lit/ds/symlink/lm2596.pdf?ts=1638487142386

- For the 470uF/50V ones, use aluminum electrolytic capacitors instead
- -5V power supply added

Front-end Power delivery

https://s3-us-west-2.amazonaws.com/secure.notion-static.com/1e564cb2-f0dd-466a-bfd4-d75d4b10644e/Power_delivery_test.pdf

- Reference circuit[from datasheet]



Vcon2	Vcon1	Vcon0	Vout
NC	NC	NC	最大9V
NC	NC	10K	最大12V
NC	10K	NC	最大15V
10K	NC	NC	最大20V

NC:对应的引脚不贴电阻
10K:对应的引脚贴10K下拉电阻

- GND added

Control

TBC

Boost

TBC

My questions

- I’m not sure about my design for the Current adjustment.
- input/output Capacitor (the value as well as the package) selection of buck/boost converter.
    - 100uF , 220uF, 470uF, 680uF, and the tolerance voltage.
- DAC selection, use DAC ic, or continue with the on embedded in STM32?
- Any other questions/issues based on the separate ones?