

Topics that were created at the Texas Instruments forum related to these power supplies.

POSITIVE POWER SUPPLY

Schematic:

TO BE DONE

Layout:

TO BE DONE

NEGATIVE POWER SUPPLY

Schematic:

TO BE DONE

Layout:

TO BE DONE

LC FILTER

At 5V it is around 8.4uF the effective capacitance of the 22uF/16V0805, based on the specs of the part number CLJ1A220MCL80C from Samsung

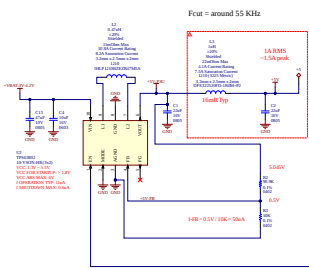
$$F_{cut} = 1 / (2 * \pi * s_{qf} (L * C_{effective})) / 1000 [kHz]$$

$$F_{cut} = 1 / (2 * \pi * s_{qf} (1uH * 8.4uF)) / 1000 [kHz]$$

$$F_{cut} = 1 / (2 * \pi * s_{qf} ((1*10^{-6}) * (8.4*10^{-6}))) / 1000 [kHz]$$

Fcut ≈ around 55 KHz

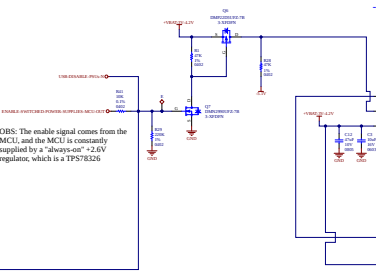
+5V POWER SUPPLY



The feedback resistor network values were reduced by a factor of ten to improve the regulator's overall stability and noise immunity. Lower impedance in the feedback loop minimizes the influence of parasitic capacitance and coupled EMI, resulting in cleaner feedback sensing and faster transient response. Although this slightly increases the static current through the divider (around 60uA with 0.6V reference and 10K resistor), the impact on total power consumption is negligible while providing significantly better robustness and EMC performance.

Also, the resistors were reduced because these power supplies will not be operating all the time.

LEVEL SHIFTER



-5V POWER SUPPLY

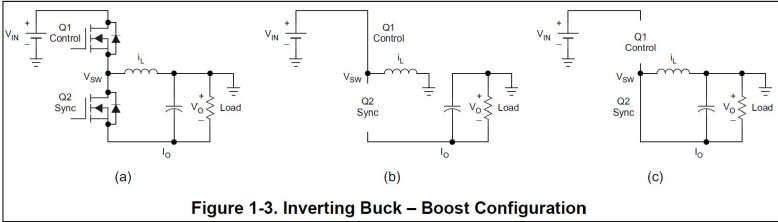
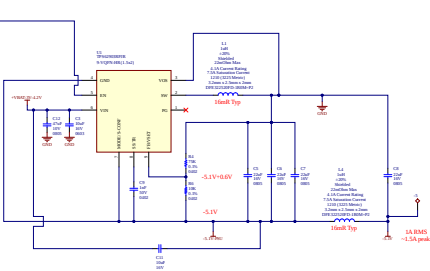
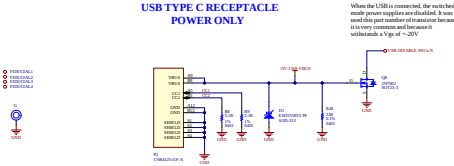


Figure 1-3. Inverting Buck – Boost Configuration

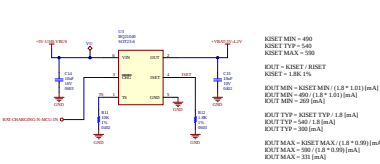
Texas Instruments Application Note:

https://www.ti.com/lit/an/slvafb4/slvafb4.pdf?ts=1761362237763&ref_url=https%253A%252F%252Fwww.ti.com%252Fproduct%252FTPS62903

USB TYPE C RECEPTACLE
POWER ONLY



BATTERY CHARGER @ ~300mA



BATTERY CONNECTOR

