3x AA Phone Battery Eliminator

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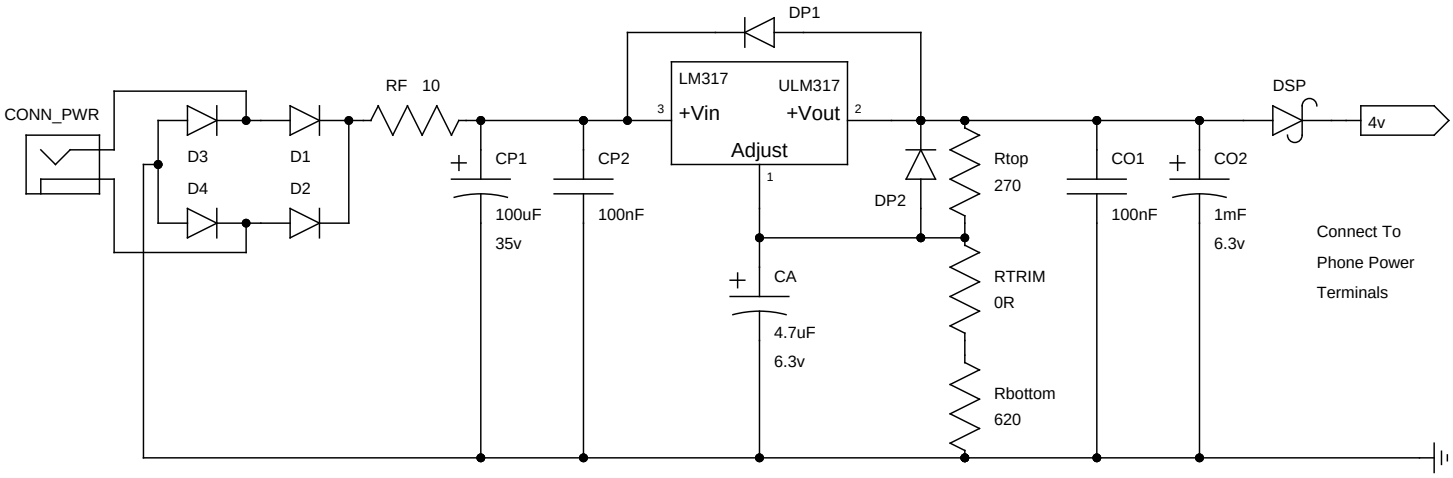

This is a simple 3x AA battery eliminator circuit for use with cordless telephones (but can be used with other low current devices). If parts are tightly packed together, the main circuit board will be about 1.5"x0.5".

This circuit has been designed for low noise and safety. Parts should not be removed. Rectifier and protection diodes are usually the 1n4007 variety. The DSP diode needs to be a low drop voltage schottky (protects from the phone charger putting reverse voltage into the circuit). Vout should not be higher than the phone's charging voltage as putting reverse voltage into the charger will damage it.

Power input can be AC or DC of any polarity up to 20v DC and 14v AC.

CO2 is generally a large value 6.3v rated capacitor that is wired loose in the battery case. It is used for current transients and if the input connector is a bit loose to carry the load for a fraction of a second. Multiple electrolytics can be wired in parallel if the battery compartment is large enough to hold them.

RTRIM is used to adjust the output voltage to account for various tolerances. For 3x AA batteries, Vout should not exceed 4.2v unloaded and should be higher than 3.6v fully loaded. A higher resistance RTRIM will raise the output voltage. It usually won't be more than 10−40 ohms. A multi−turn trim pot could be used, but it is generally better in this type of design to not have any moving parts. Bumping the output voltage up a little is also acceptable to account for DSP's voltage drop.
LM317 Vout = 1.25x(1+(Rbotom/Rtop))

Other LM317 resistor values: (Voltage: Rtop, Rbottom)
4.15: 220, 510
4.12: 270, 620
4.09: 330, 750
4.17: 390, 910
4.18: 470, 1100
4.15: 560, 1300
4.18: 680, 1600