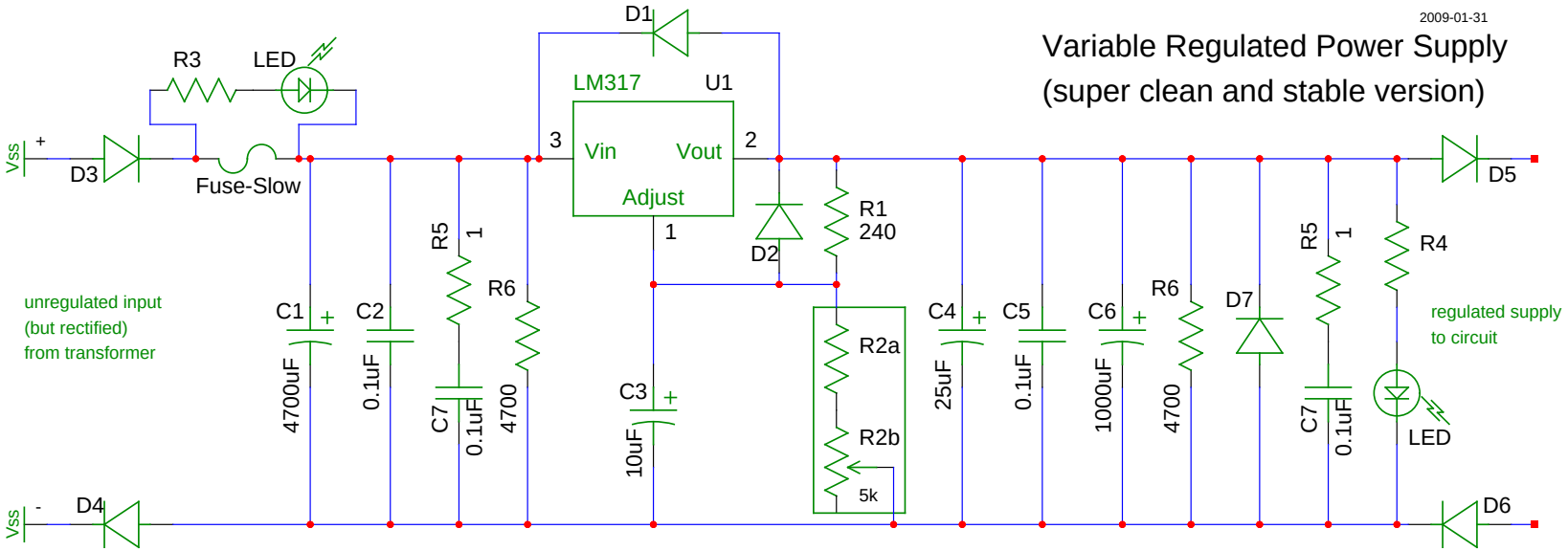

A heat sink typically 3x or larger than the LM317 is usually needed. For high current, go to 10x or larger and/or add fans.
LM338 or similar may replace LM317 (adjust resistors and capacitors accordingly, watch pin renumbering).
LM78XX (watch pin renumbering) may replace LM317 with the optional removal of C3, R1, and R2. The LM78XX series is not as quiet, though.
D1+D2 = capacitor discharge protection for LM317 (typically 1n4007). These are extremely recommended for long term preservation.
D3+D4+D5+D6 = optional paranoia against reversed power (like in battery charge or dual rail circuits, must be current rated).
D7 = optional power supply reversal and latch protection from some obscure loads (semi-common in dual rail and current boosted setups).
C1+C2 = input transient stabilization (especially from diode bridge) and induction filtering.
C1 may be smaller if the line has already been filtered or much larger for heavy variable loads. C1 is often multiple capacitors paralleled.
C3 = stabilizer and ripple rejection (10-47uF, larger is more, to a point). Ripple flows through the capacitor bypassing the resistor for variable gain.
C3 also creates slower turn on times. Delay = R1 * C3.
C4 = stabilizer and ring rejection (typically 25-100uF). This is often left out if C6 is in place.
C5 = filter out inductance of large caps, keeps impedance low as inductance rises (use ceramic or film, good for audio apps).
C6 = load transient rejection (100uF for small loads, large for heavy pulsed loads, may be quite large if needed). C6 is often multiple capacitors paralleled.
C6 should be increased in size if the amplifier oscillates under heavy loads (fans will often cause this).
C7+R5 = optional inductance snubber filters (transformers, inductors, big capacitors), typically: 1<R5<8 0.5-3watt, 0.01<C7<1uF (usually used on audio amps).
R6 = optional safety, drains large capacitors when voltage is removed, 1 watt recommended (can be larger for slower drain).
V[out] = V[fixed] * (1 + R2 / R1) + (I[adjust] * R2)
R2[assembly] = ((V[out] / V[fixed]) - 1) * R1
V[fixed] = 1.25v for LM317, I[adjust] is usually small and ignored.
R1 is usually 100-300 ohm. It is recommended that 10mA be sent to the Adjust pin to adequately drive it. R1+R2 is usually 1k or less.
If R1 stays constant and R2 is reduced, the output voltage is reduced.
R2a + R2b = R2 = normal R2 (as seen in other diagrams) and may be changed around (one or the other or both). Note that this is just a voltage divider.
Optional R2a sets the minimum voltage. R2a+R2b is usually less than 1k. Totally removing R2 will cause the regulator to output at V[fixed].
Variable R2 should be a multi-turn, sealed unit with gold plated contacts to avoid the voltage jumping around with eventual oxidation.
The variable resistor could replace R1+R2. One outer leg would be on Vout, the other outer leg would go to ground, and the middle leg would go to Adjust.
If a variable resistor is not desired, use one to get the V[out] resistance setting under load then replaced it with a fixed.
Remember that resistors in series just add together for a total resistance.
LED+R3 across the fuse will light up if the fuse has been blown. LED should be red for a warning color.
LED+R4 are optional but convenient to see if the circuit is live. R4 is 500ohm for ~5v, 1000ohm for ~12v.
Sometimes a 1-10ohm/5watt resistor is added in series after the fuse to help reduce incoming line noise (forms an RC low pass filter).
Also sometimes an inductor (100uH) is added to help damp HF noise and ripple. Care should be taken to design these as low as possible as it will increase input power impedance and reduce available peak current draw (usually not so good in audio amps).