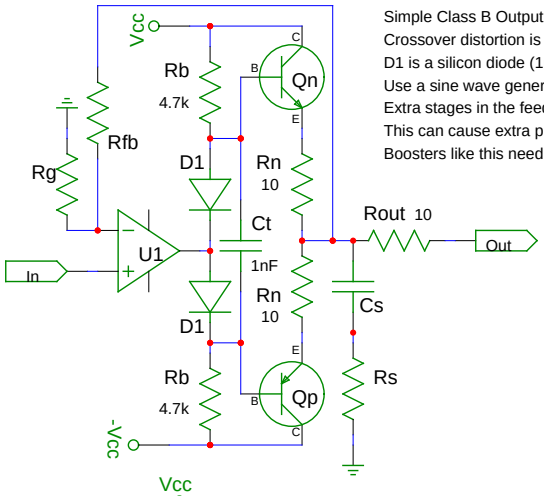
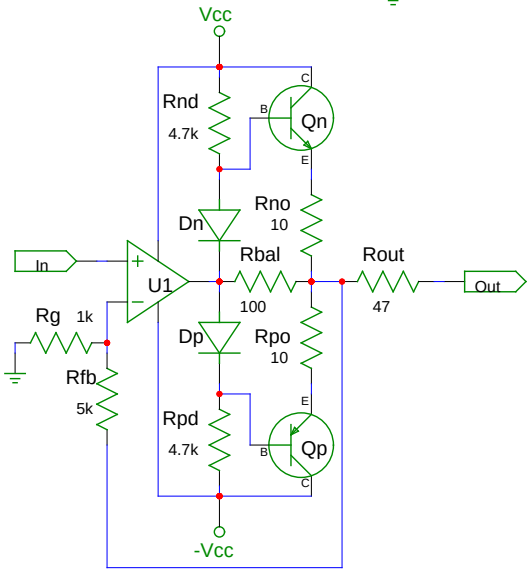
Boosted Output Op Amps (1)

2008-02-05

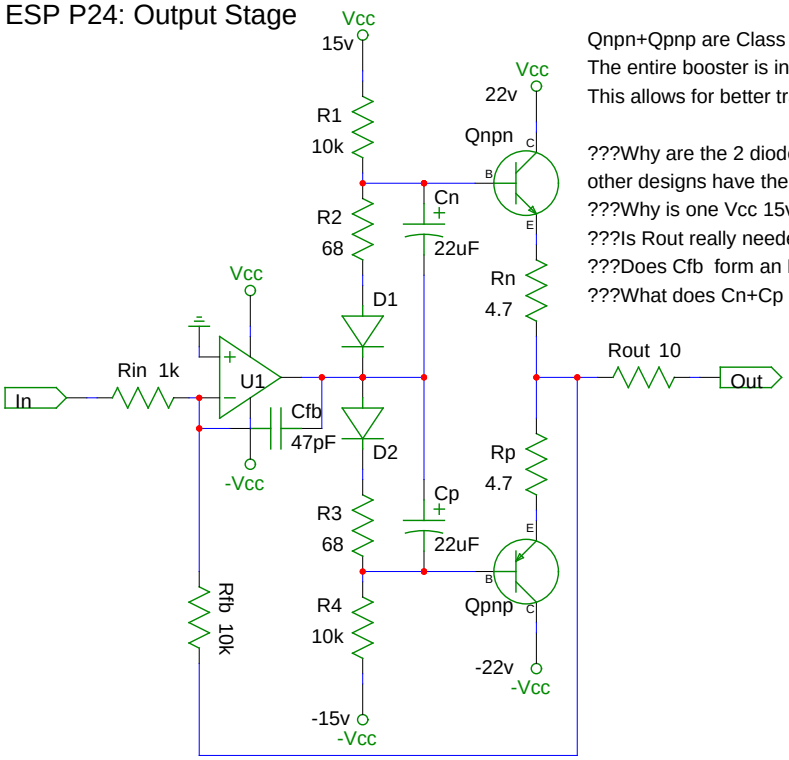


Simple Class B Output Boosters.
Crossover distortion is minimal in this setup.
D1 is a silicon diode (1n4148) and is used for the voltage drop matching (fixed bias).
Use a sine wave generator to look for crossover distortion (increase bias until it disappears).
Extra stages in the feedback loop should be done with care.
This can cause extra phase shifts that may lead to HF instability.
Boosters like this need exceptionally clean power rails to keep noise out.



Class B Buffer Feed Forward Design (Low Crossover Distortion).
Rbal allows the op amp to drive the headphones directly during transistor cut off times.
This reduces Class B crossover distortion.
The entire transistor buffer is in the feedback loop to help lower distortion even more.
Signal swapping between the op-amp and transistors will present a varying impedance to the headphones. This usually isn't a big deal at these levels.
Rno+Rpo act as minimal feedback but also increase output impedance.
Diodes used are 1n4148. Transistors: BC337+BC327, BD139+BD140.
Boosters like this need exceptionally clean power rails to keep noise out.

ESP P24: Output Stage



Qnpn+Qpnp are Class AB, 80mA, and will need a heat sink.
The entire booster is in the op amp feedback loop.
This allows for better tracking by the op amp (less distortion).

???Why are the 2 diodes in the middle of the output when other designs have them back to back???
???Why is one Vcc 15v and the other 22v???
???Is Rout really needed???
???Does Cfb form an RC filter similar to Rfb+Cfb???
???What does Cn+Cp do? Diode V drop stabilization???