Emitter Followers

File: followers.kicad_sch

Push−Pull Amplifiers

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Saturated Switch

File: switch.kicad_sch

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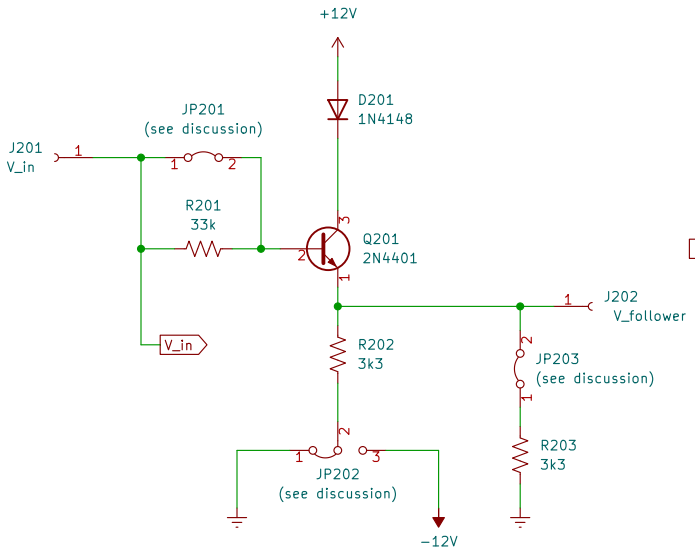
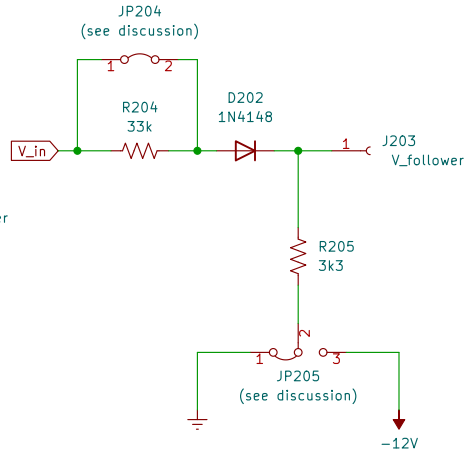


Emitter Follower Demonstration



Diode "follower"

Connect outputs to two channels of oscilloscope.
Provide 2Vpp sine wave at J101 from signal generator.

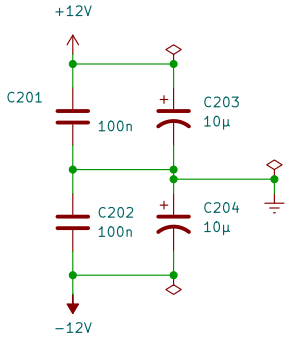
Begin with JP201, JP204 fitted, JP202 and JP205 to ground, JP203 not fitted. Observe that both circuits are half-wave rectifiers.

Switch JP202, JP205 to −12 volt supply. Observe that both circuits' outputs follow inputs, one diode drop below.

Remove JP201, JP204. Observe that both circuits now pull their outputs to about −11V and the amplitude is reduced 10×.

Oops — turn on the power supply. The transistor follower now returns to following the input.

Remove JP203 and gradually increase signal voltage, show clipping of negative peaks.



Power and Bypassing

Replicate bypass network once per demonstration circuit

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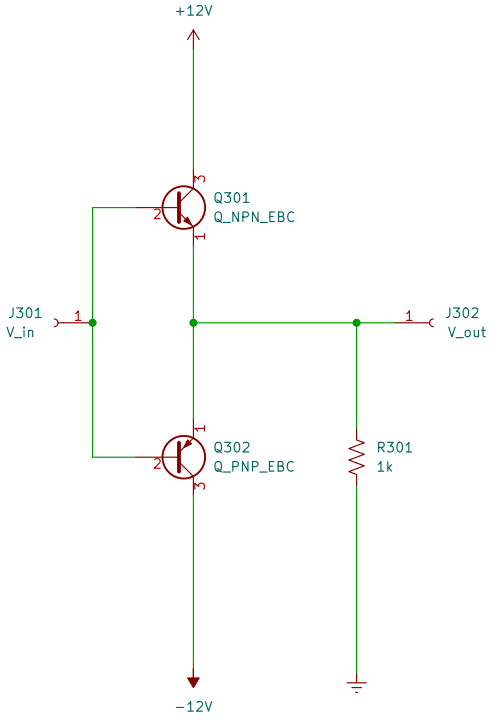
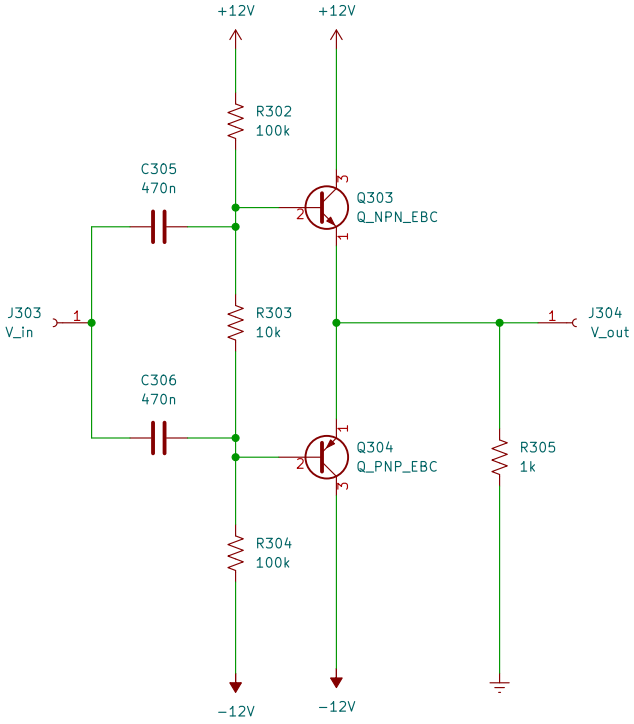
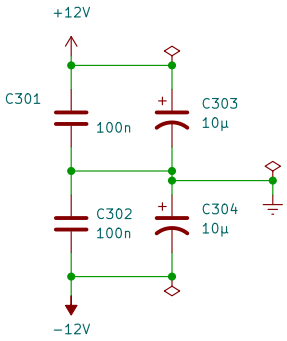


Push−Pull Amplifier
(1st attempt)



Push−Pull Amplifier
(reduced crossover distortion)



Power and Bypassing

Replicate bypass network once per demonstration circuit

Connect signal generator to J301, provide 2Vpp sine wave.
Connect oscilloscope to J301 and J302, observer crossover distortion.

Connect signal generator to J303, oscilloscope to J303 and J304.
Observe reduction in crossover distortion.

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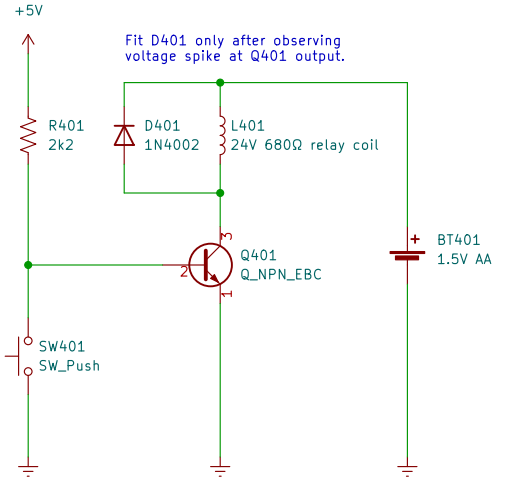
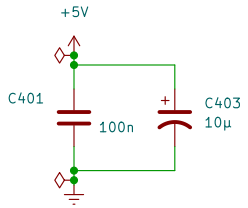


Saturated Switch

Connect scope to Q401's collector. Set to 20V/div (!) and positive edge triggering at a level of greater than +5V. Set sweep to NORM, not AUTO.

Operate SW401 until flyback transient is captured.

Fit D401. Adjust scope gain and trigger level, demonstrate that the huge inductive transient is avoided.



Power and Bypassing

Replicate bypass network once per demonstration circuit

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Saturated switch example
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