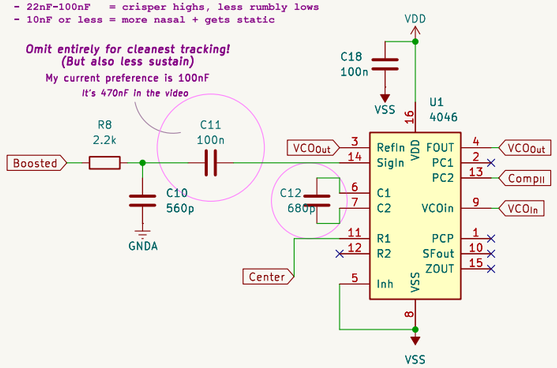
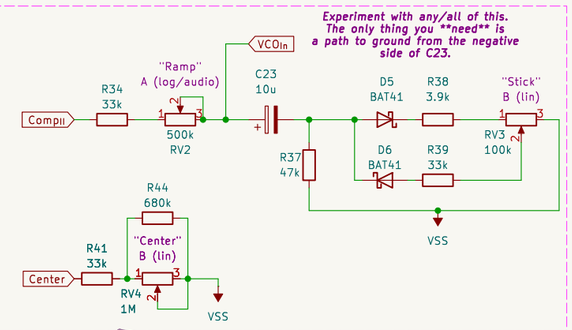
2. PLL + Control

- 470n = more rumble/glitch (less "charge up" after silence)
- 150nF - 330n = between 470nF and 100nF...
- 22nF-100nF = crisper highs, less rumbly lows
- 10nF or less = more nasal + gets static

Omit entirely for cleanest tracking! (But also less sustain)
My current preference is 100nF
It's 470nF in the video



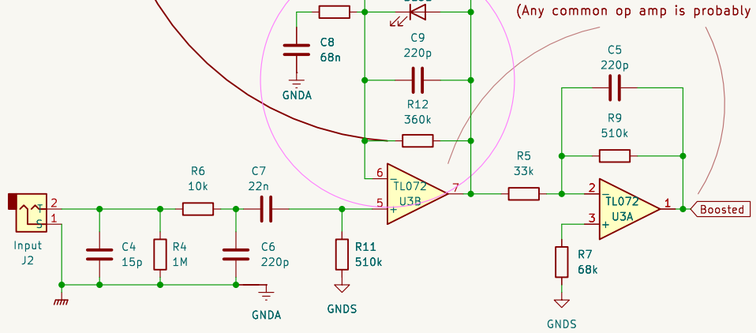
*Experiment with any/all of this. The only thing you **need** is a path to ground from the negative side of C23.*



1. Input + Boost

Doesn't have to be exact. "Big" is fine.
We just wanna make sure we smush the signal a bunch and cut off the high-highs.

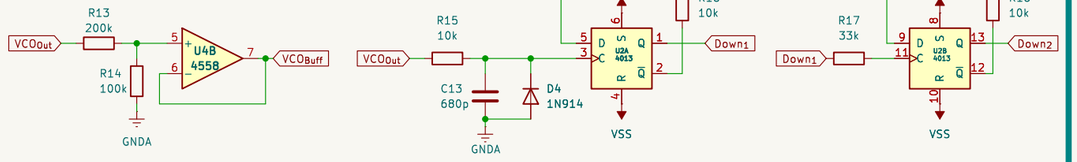
(Any common op amp is probably fine)



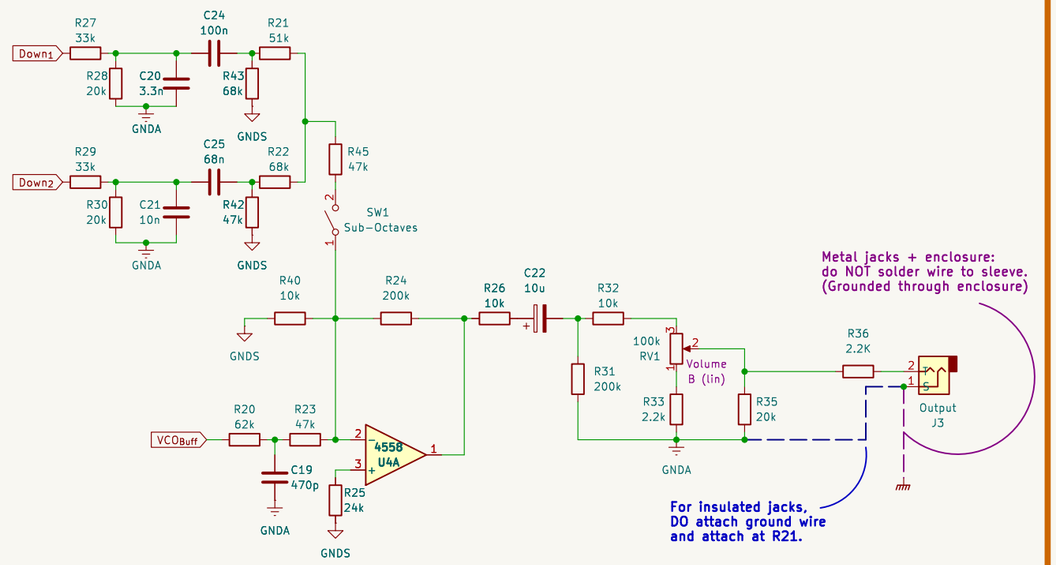
PLL Notes:

1. RV4 + RV2 make noise when:
   both up/down/full-opposite.
   (Only one extreme == usable).
   Play with sizes/ranges!
2. RV4 and C12 set the center frequency:
   If R4 gets smaller; make C12 bigger.
3. Increase R37 = less droop/slide/wah.
4. Fiddle with the diodes and stuff!
5. P.S. Signals ARE also at PC1/PCP, BTW.
6. When PCP = HIGH + PC1 = LOW 4+ times
   in a row: you are at frequency lock!
7. If you put a counter/divider between
   CompII out and VCOIn, the PLL will
   shift the frequency UP as much as the
   divider divides. Use one half of the
   CD4013 in the loop instead: octave up!

3. Octaves and VCO



4. Summing Stage & Output

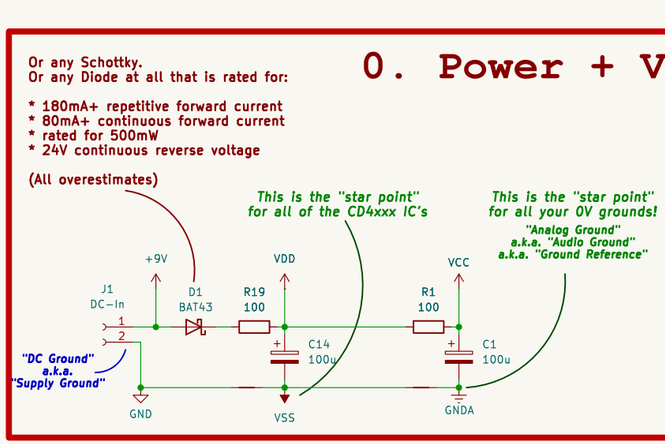


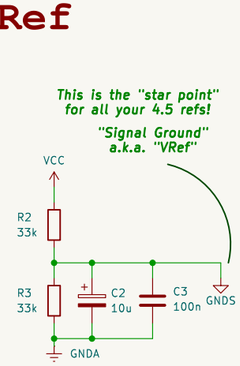
0. Power + VRef

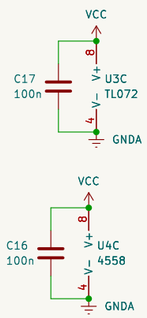
Or any Schottky.
Or any Diode at all that is rated for:

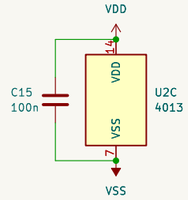
* 180mA+ repetitive forward current
* 80mA+ continuous forward current
* rated for 500mW
* 24V continuous reverse voltage

(All overestimates)









WARNINGS:

- LUNCHTIME HACK / ALPHA!
- Keep the volume low while experimenting. This circuit can produce very high or loud tones if adjusted live!
- Breadboard before you solder anything! This is hastily documented and NOT double checked! (Yet)

NOTES:

- Connect ground symbols at respective star grounds
- You can omit VSS and just use GNDA as audio ground
  (I think the signal will swamp out any noise anyway)
- Octave down is optional: just exclude CD4013
- This was another lunch hack: don't judge.
- Do hack!

FIX OPAMP ORIENTATION!!!
Patched F_fund --> VCO_buff
WARNING: HACK! NOT CHECKED FOR ERRORS (yet).
Pink Circles = Fiddle with these! (Fiddle with any)
Andrew T. Canaday (povins), D.B. Buchholz (QuickButterfly_4571)

Sheet: /
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Title: Olangrall's Sex Machine

Size: B	Date: 2025-01-20	**Rev: 0.0.6**
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