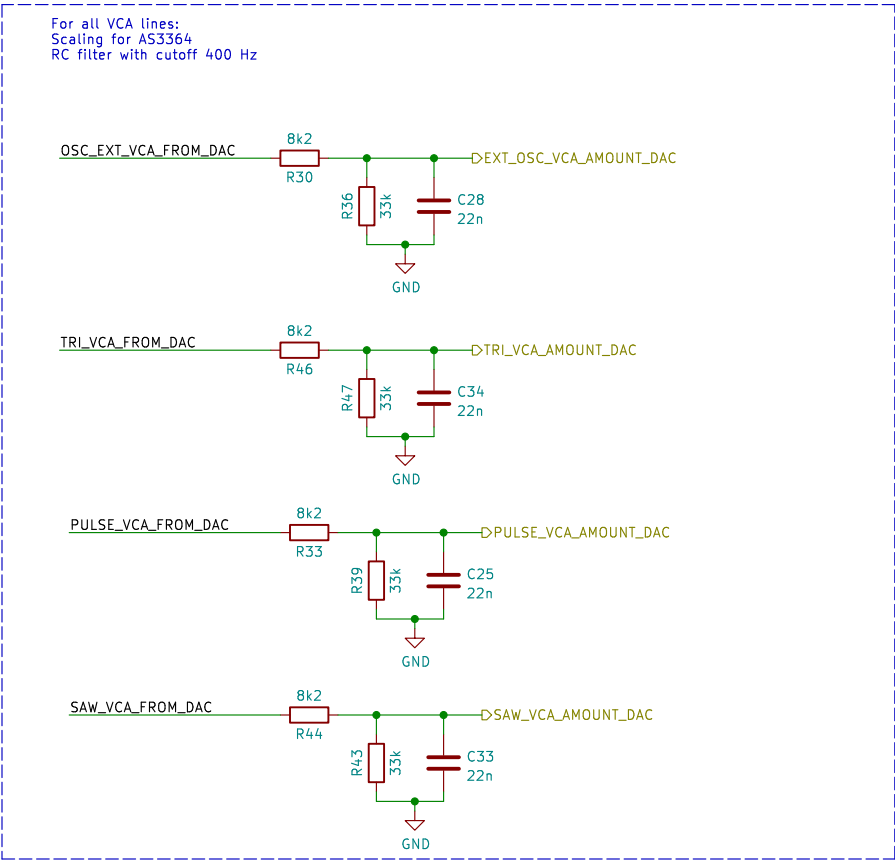
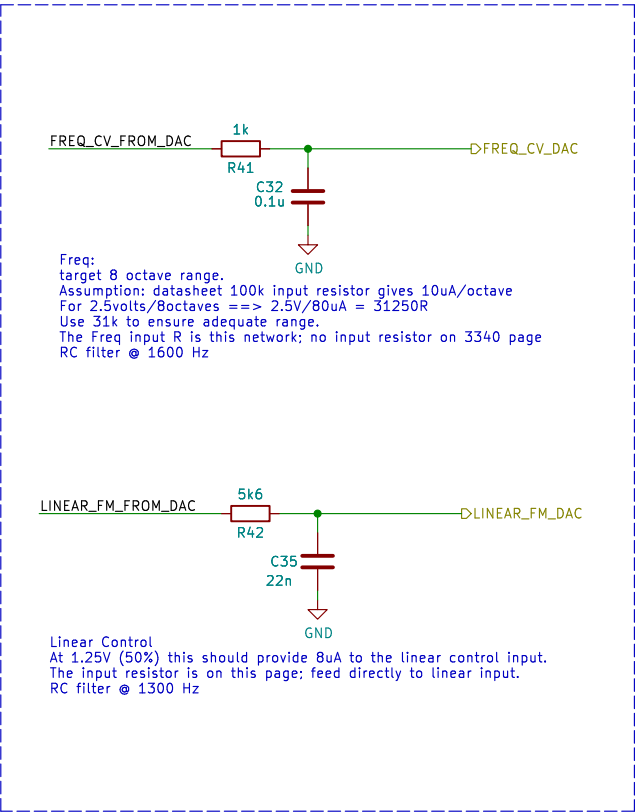
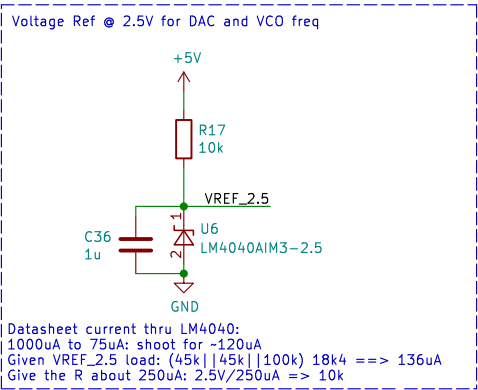
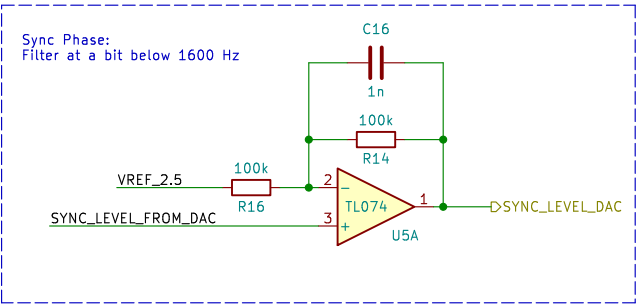
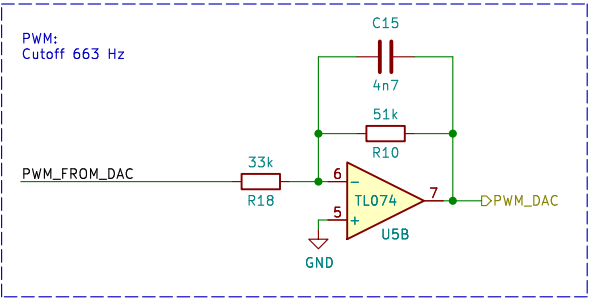
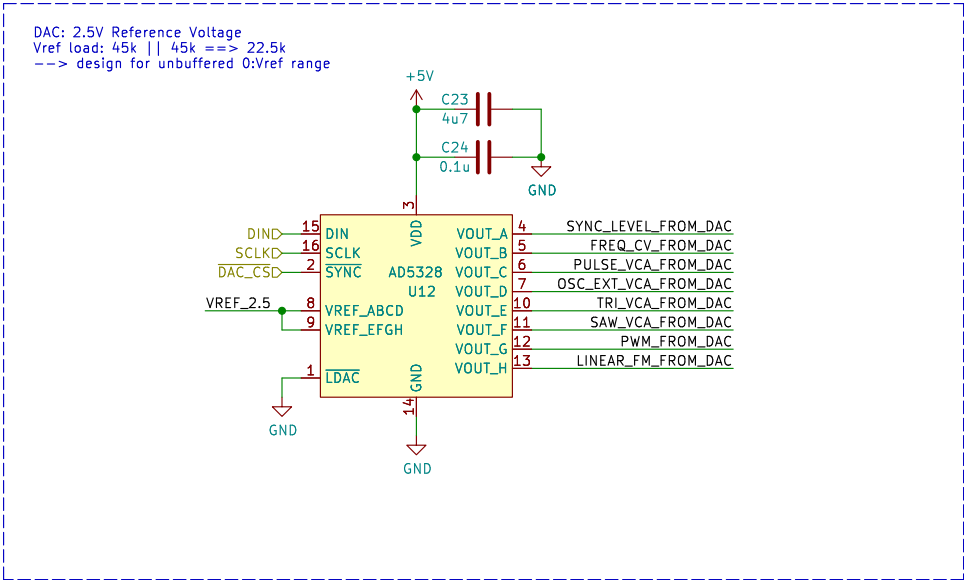


**Zoxnoxious Engineering**  
Sheet: /  
File: z3340.kicad\_sch  
**Title: Zoxnoxious 3340 Oscillator**

Size: B	Date: 2025-02-06	Rev: 0.9
KiCad E.D.A.	kicad 7.0.11	Id: 1/4



DAC Output Levels:

FREQ\_CV\_DAC: 0 : 2.5V  
LINEAR\_FM\_DAC: 0 : 2.5V  
EXT\_OSC\_VCA\_AMOUNT: 0 : 2V  
PULSE\_VCA\_AMOUNT\_DAC: 0 : 2V  
SAW\_VCA\_AMOUNT\_DAC: 0 : 2V  
TRI\_VCA\_AMOUNT\_DAC: 0 : 2V  
PWM\_DAC: 0 : -3.86V  
SYNC\_LEVEL\_DAC: -2.5V : 2.5V

Simple RC filtering for reconstruction. VCA related lines  
set to a lower level to prevent clicks in audio path.  
Designed for a sampling rate around 4 kHz.

Sheet Vref Load: 45k || 100k ==> 31k

Zoxxnoxious Engineering

Sheet: /DAC/

File: dac.kicad\_sch

Title: Zoxxnoxious 3340 Oscillator

Size: B

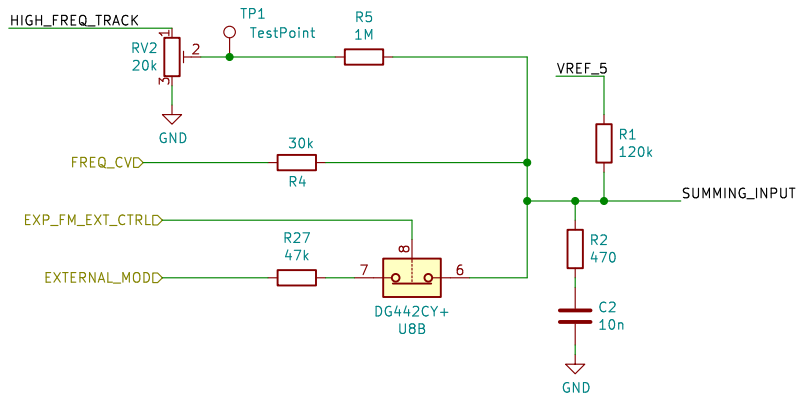
Date: 2025-02-06

Rev: 0.9

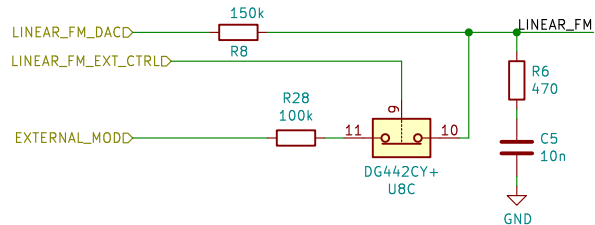
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Id: 2/4

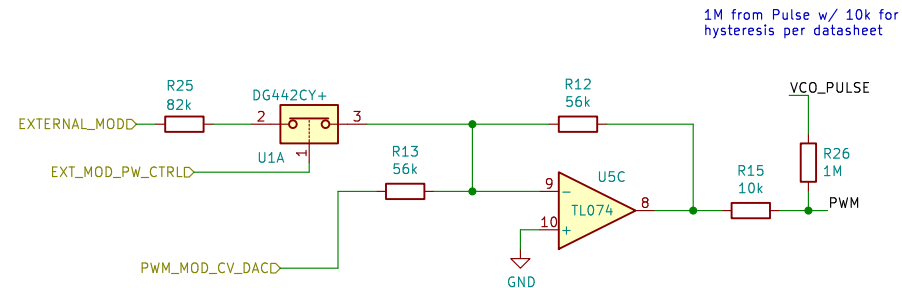
Summing Node / Exponential Frequency  
FREQ\_CV impedance total is 31k R



Linear FM  
Input set to 8uA at DAC sheet  
output w/ DAC at 1.25V  
Linear DAC has total impedance @ 156k

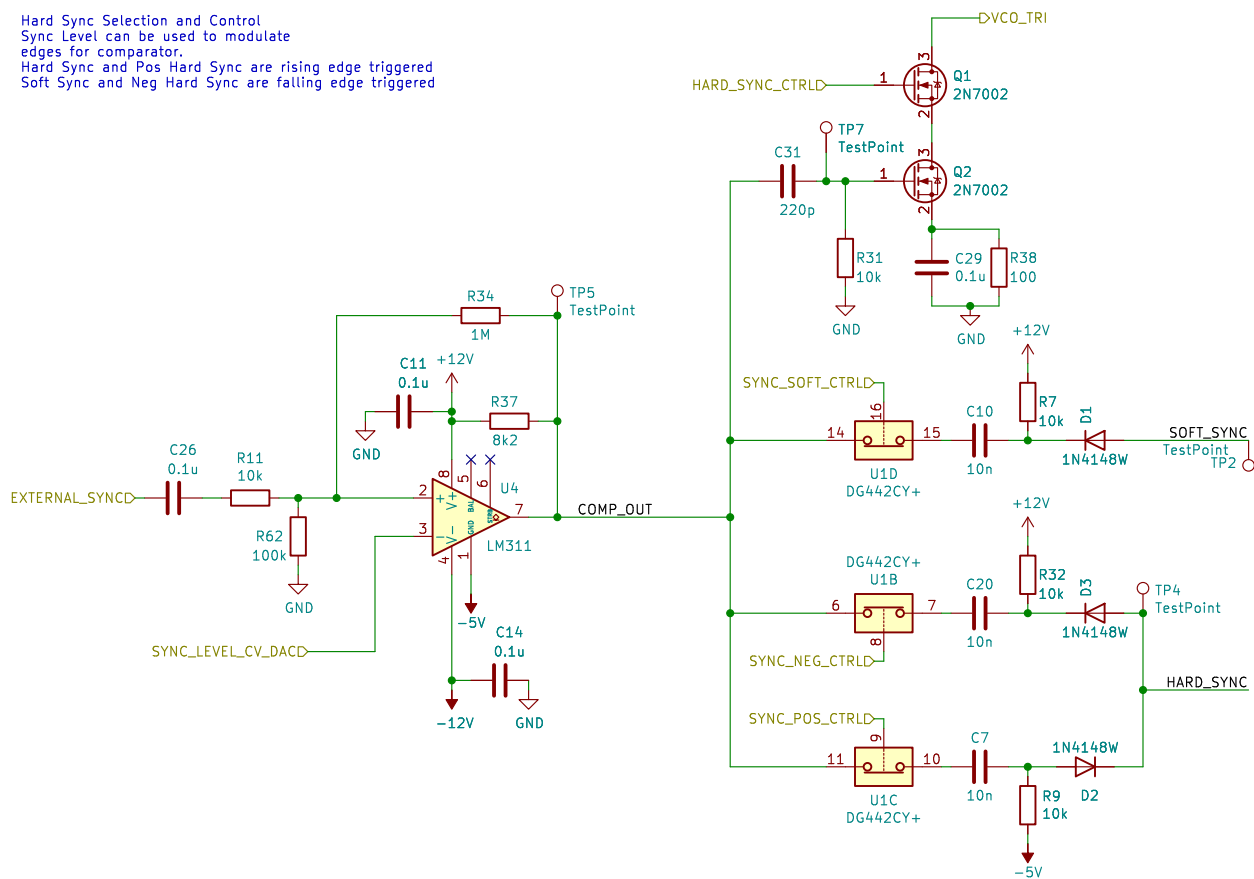


PWM Control: external signal biased by DAC since it's an inversion mess

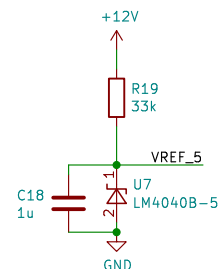


PWM control is 0 – 5V per datasheet at +15 V supply. Specifically, it's zero to Sawtooth level / 2; so for +12V: 0 – 4V

Hard Sync Selection and Control  
Sync Level can be used to modulate  
edges for comparator.  
Hard Sync and Pos Hard Sync are rising edge triggered  
Soft Sync and Neg Hard Sync are falling edge triggered

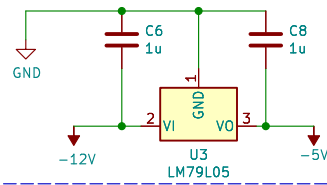


Voltage Ref @ 2.5V for DAC and VCO freq

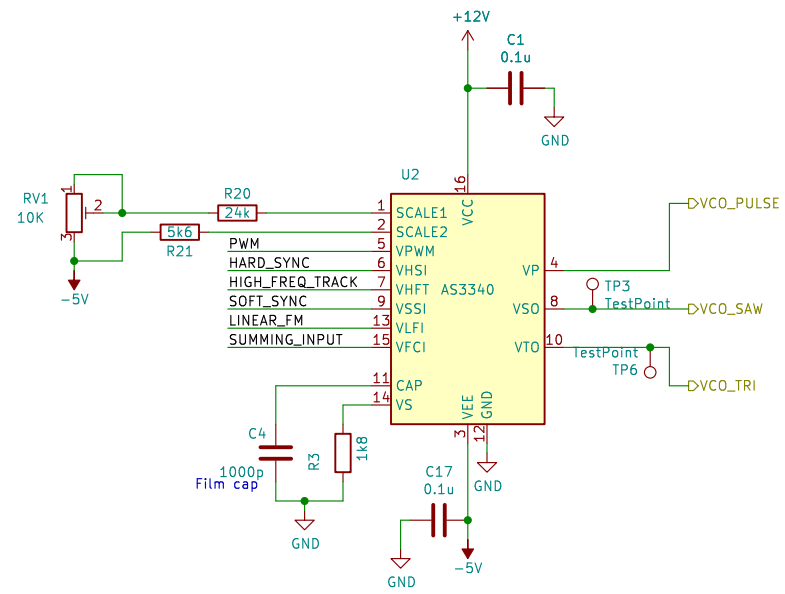


For current thru LM4040 of: 1000uA to 75uA  
Given VREF\_5 load of: 120k (42 uA), Target ~200 uA.  
33k R gives ~212 uA, or (212-42) 170uA LM4040.  
~1mW through R.

3340 -5V Regulator



3340:  
Pulse requires a pulldown (not on this page)  
Pulse: 0 : approx 10.5V  
Saw: 0 : 8V  
Tri: 0 : 4V



Sheet Vref load: 62k

Zoxnoxious Engineering

Sheet: /vco3340/

File: vco3340.kicad\_sch

Title: Zoxnoxious 3340 Oscillator

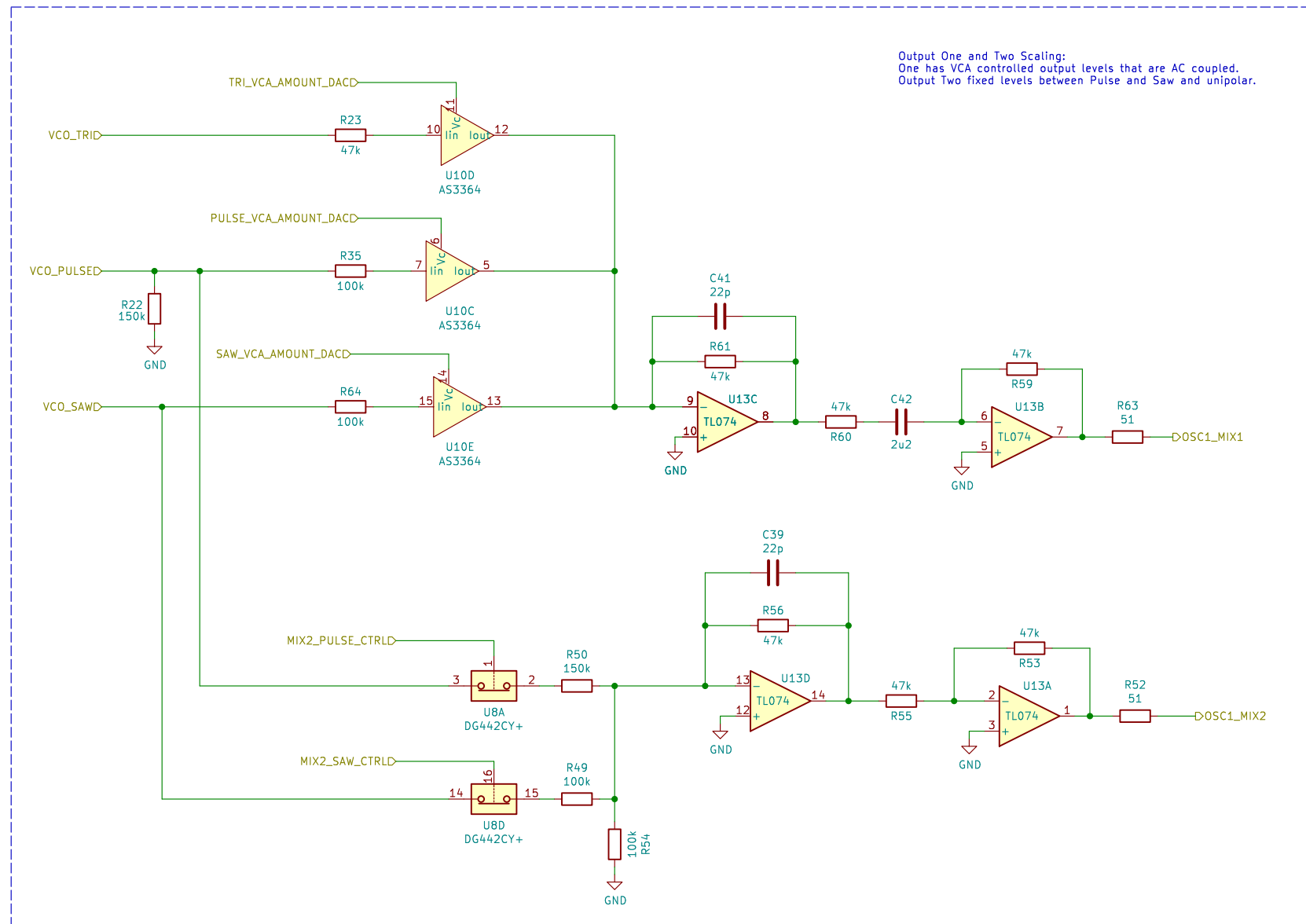
Size: B

Date: 2025-02-06

Rev: 0.9

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Id: 3/4



Mix1:  
Offsets center roughly around 0V  
Pulse: offset via control voltage  
Saw, Tri: AC coupled

Mix2:  
Unipolar signals

