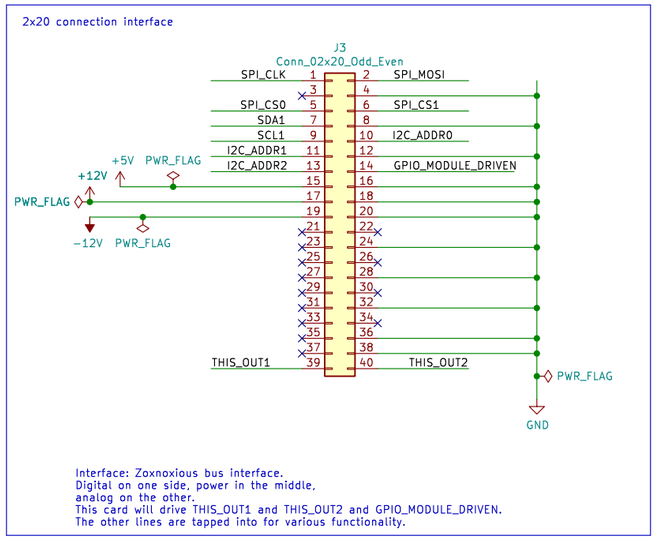
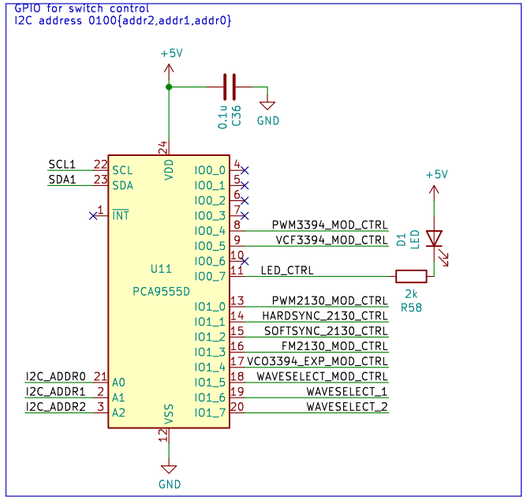
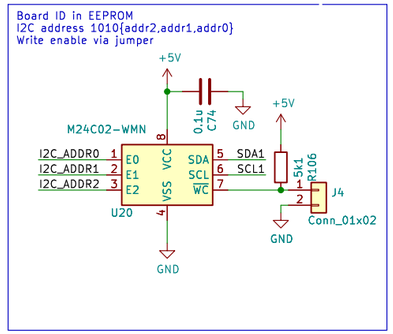
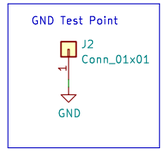
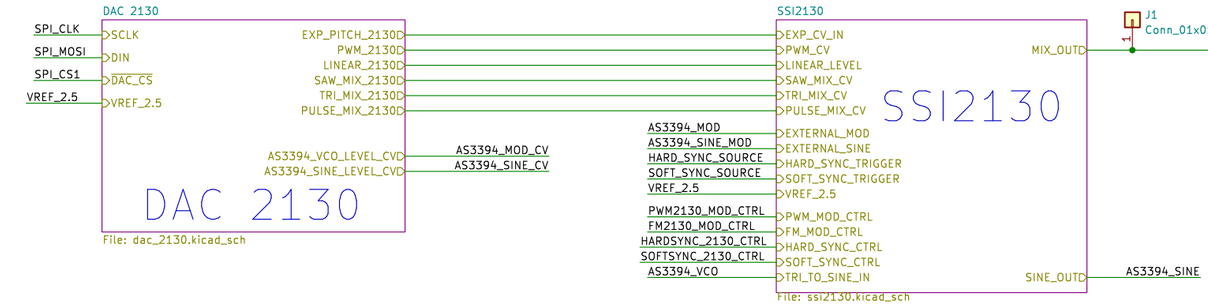
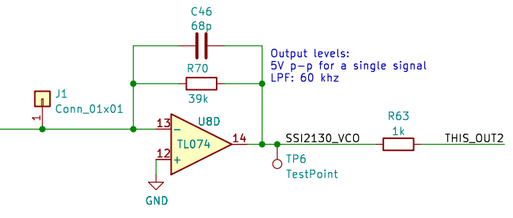


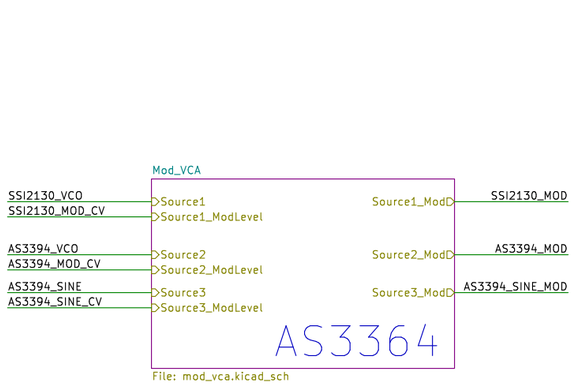


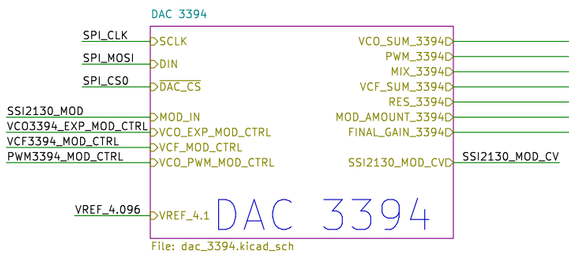


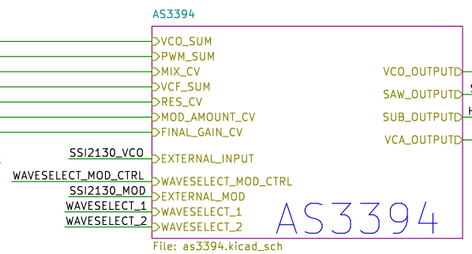


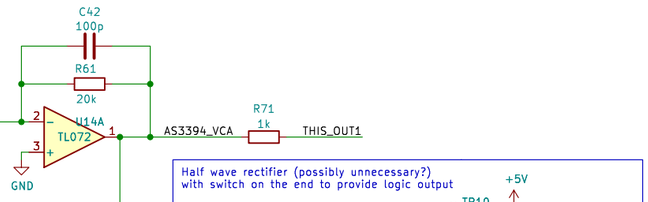


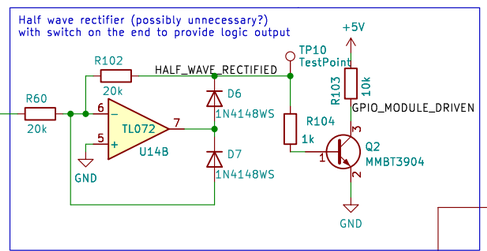


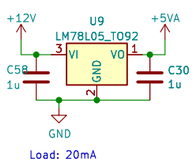


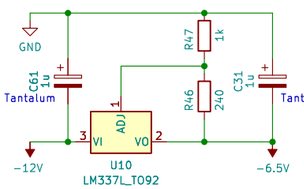


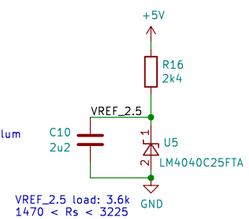


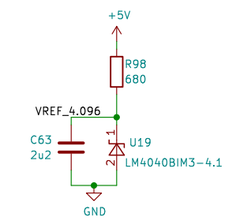


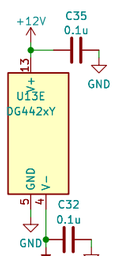






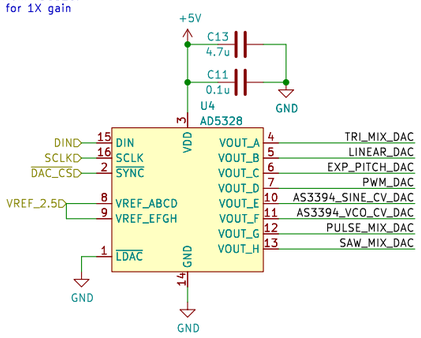






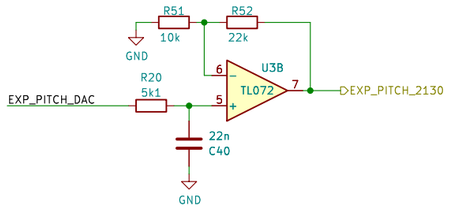
Zoxnoxious Engineering		
Sheet: /		
File: z5524.kicad_sch		
Title: Zoxnoxious SSI2130/AS3394		
Size: B	Date: 2023-08-27	**Rev: 0.2**
KiCad E.D.A. kicad 7.0.5-0		Id: 1/6

DAC: 2.5V Reference Voltage
Outputs at 1X gain from AD5328.
Vref impedance 45k for 1X gain

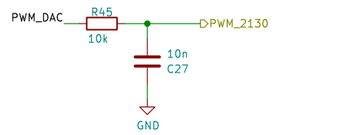


Sheet load:
Vref_2.5: 45k

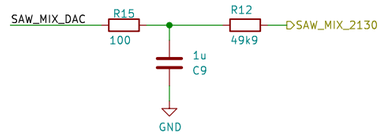
VCO Pitch: Gain 3.2 : 0 -- 8V
LPF @ 1.4 kHz



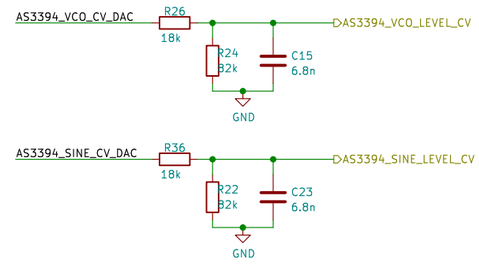
PWM: 1.6 cutoff freq
To be passively mixed with modulator signal for PWM input



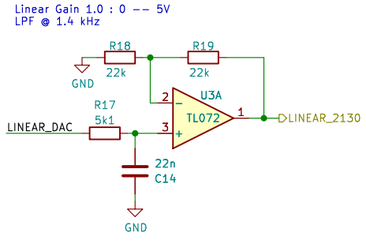
Mix DAC lines: ~1.6k cutoff frequency.
Follow with current input control resistors

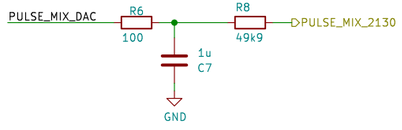


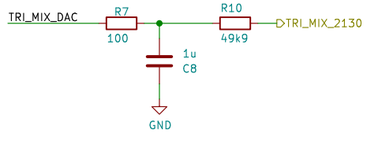
CV for AS3364 VCAs with max level 2.08V (or 1.93V typ)
Lowpass @ 1585 Hz

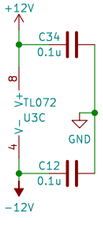


Linear Gain 1.0 : 0 -- 5V
LPF @ 1.4 kHz









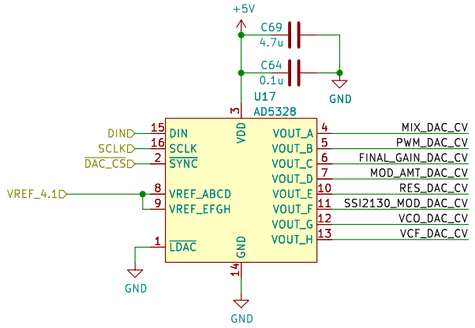
Zoxnoxious Engineering

Sheet: /DAC 2130/
File: dac_2130.kicad_sch

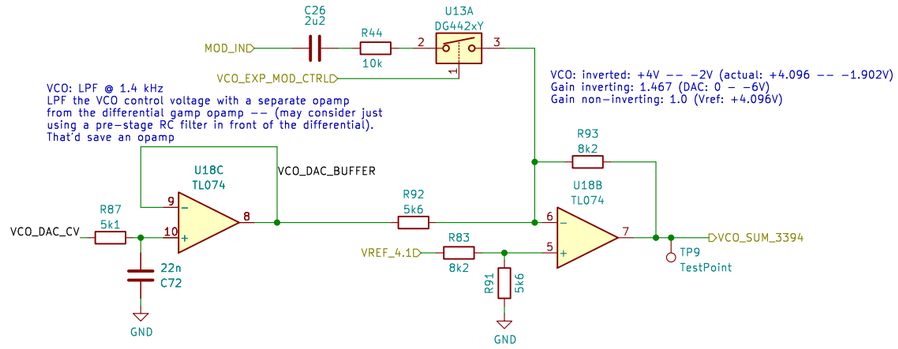
Title: Zoxnoxious SSI2130/AS3394

Size: B	Date: 2023-08-27	**Rev: 0.2**
KiCad E.D.A. kicad 7.0.5-0		Id: 2/6

DAC: 4.096V Reference Voltage
B grade spec'd, C, D grades of LM4040 are good 'nuff
Programming: set to 1X gain, so DAC lines are 0 – 4.096V

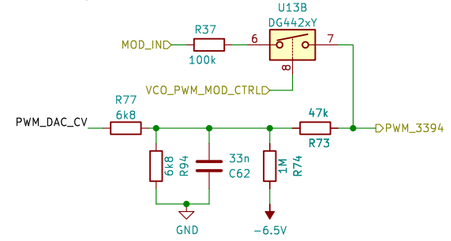


VCO: LPF @ 1.4 kHz
LPF the VCO control voltage with a separate opamp
from the differential gamp opamp -- (may consider just
using a pre-stage RC filter in front of the differential).
That'd save an opamp

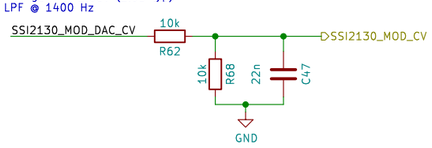


VCO: inverted: +4V -- -2V (actual: +4.096 -- -1.902V)
Gain inverting: 1.467 (DAC: 0 – -6V)
Gain non-inverting: 1.0 (Vref: +4.096V)

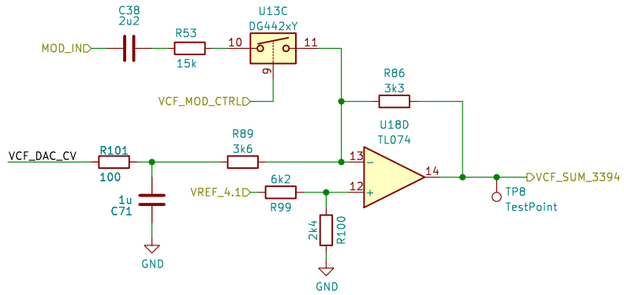
PWM Amount: -0.030V -- +2V
The slight negative to ensure DC at DAC 0 value
LPF @ 1.4 kHz
Passive mixing with modulation source



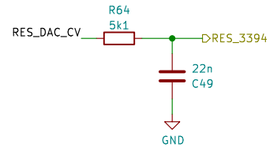
CV to AS3364 VCA:
Max gain at 2.08V (1.93 typ)
LPF @ 1400 Hz



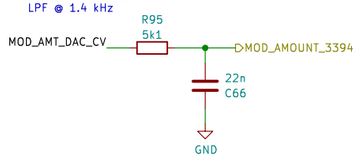
VCF: +2.2V -- -1.6V
Gain inverting: 0.92
Gain non-inverting: 0.53
This should give ~10 octaves from +20kHz to 23Hz
LPF @ 1600 Hz. The R101 and R89 values should be further apart...
Modulation resistor value: chosen a bit randomly



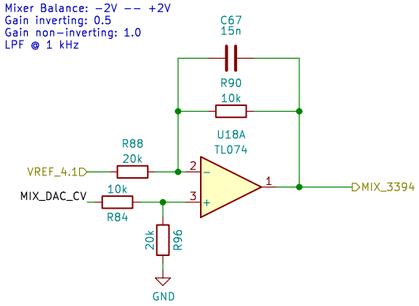
Resonance Amount: 0 -- 4.1V
LPF @ 1.4 kHz



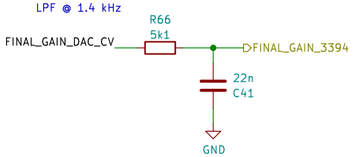
Modulation Amount: 0 – 4.1V
LPF @ 1.4 kHz



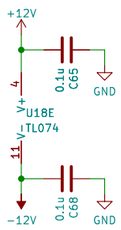
Mixer Balance: -2V -- +2V
Gain inverting: 0.5
Gain non-inverting: 1.0
LPF @ 1 kHz



Final Gain: 0 – 4.1V
LPF @ 1.4 kHz



Decoupling caps close to pins

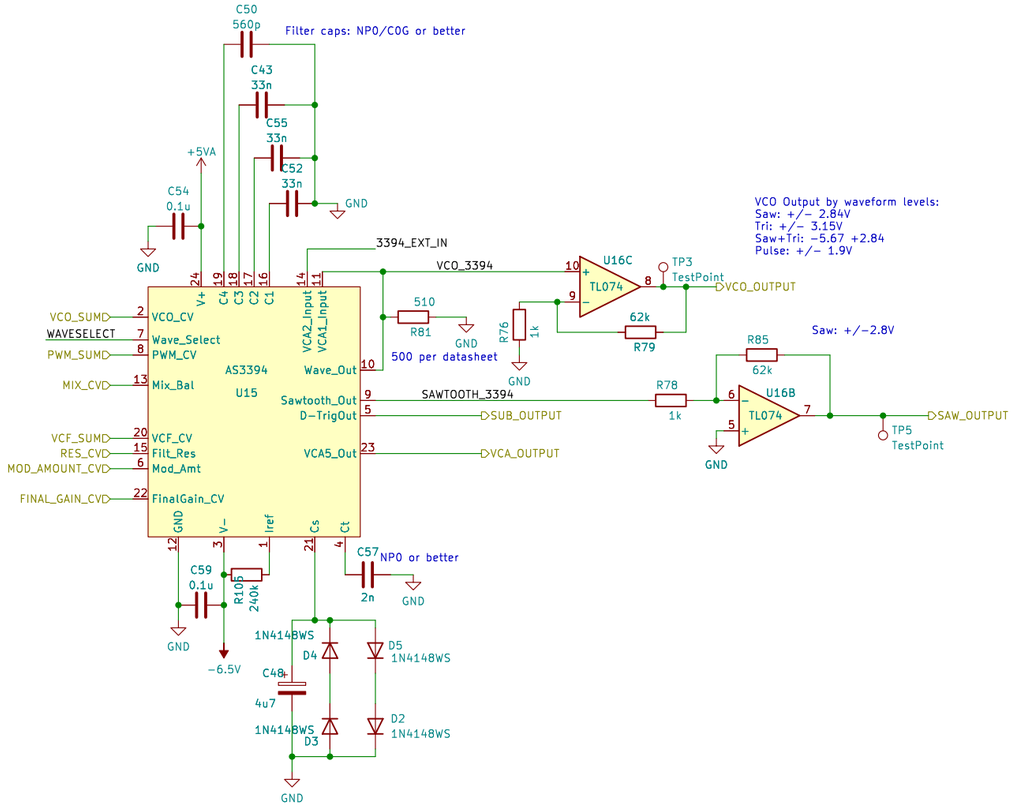


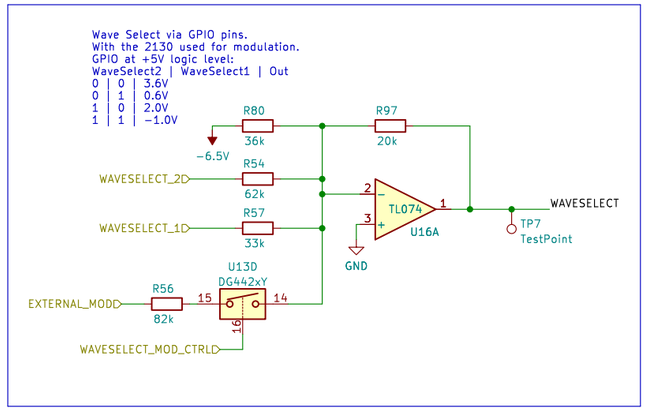
Filtering note:
AD5328 datasheet DC output impedance: 0.5 ohm
AS3394 input impedance: control inputs "high impedance", < 0.5 nA input current

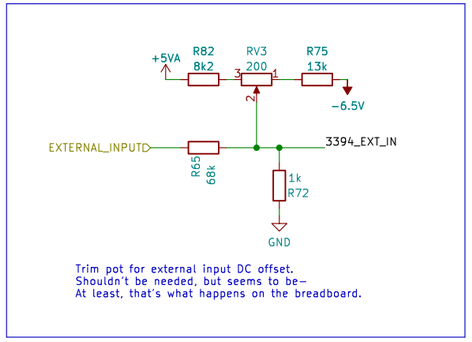
Passive mixing:
The 3394 is all voltage inputs, not current inputs.
Mod_In source impedance is very low (output from opamp)
Similar source impedance from all DAC lines
except PWM which has ~5k

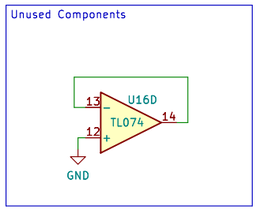
Sheet Load:
Vref 4.096: 45k || 13.8k || 8.6k || 20k ==> 3.8k

Zoxnoxious Engineering
Sheet: /DAC 3394/
File: dac_3394.kicad_sch
Title: Zoxnoxious SSI2130/AS3394
Size: B | Date: 2023-08-27 | Rev: 0.2
KiCad E.D.A. kicad 7.0.5-0 | Id: 3/6







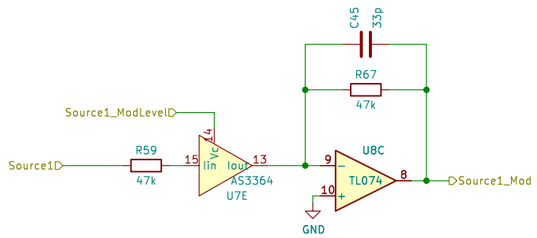


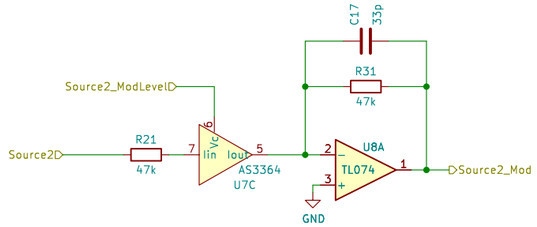
Zoxnoxious Engineering

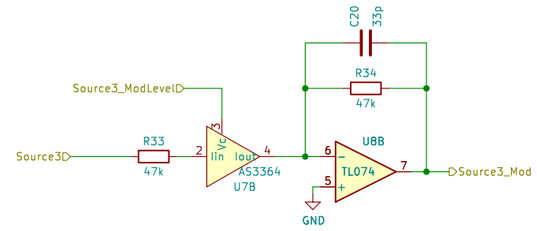
Sheet: /AS3394/
File: as3394.kicad_sch

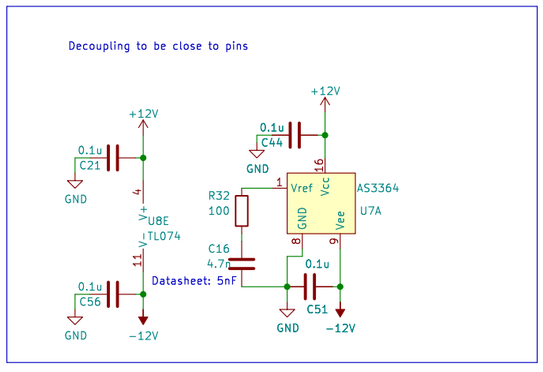
Title: Zoxnoxious SSI2130/AS3394

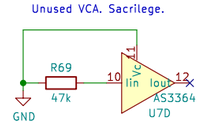
Size: B	Date: 2023-08-27	**Rev: 0.2**
KiCad E.D.A. kicad 7.0.5-0		Id: 4/6









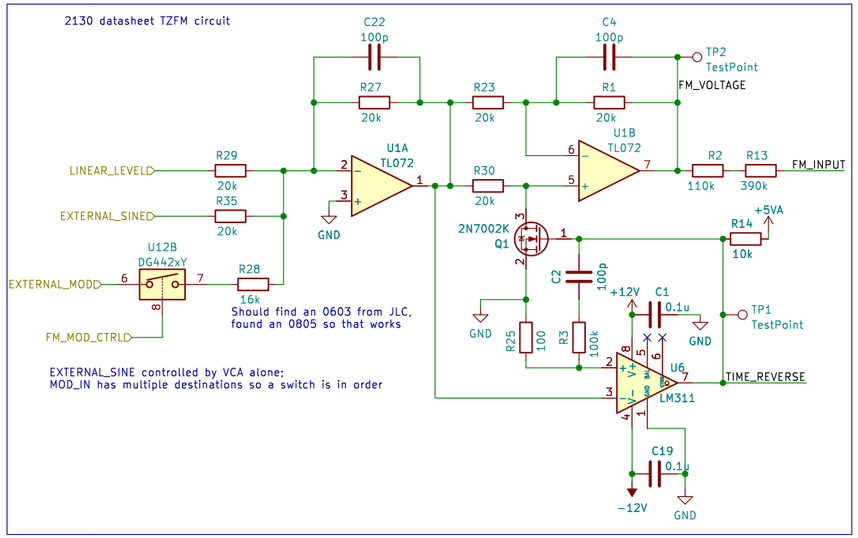


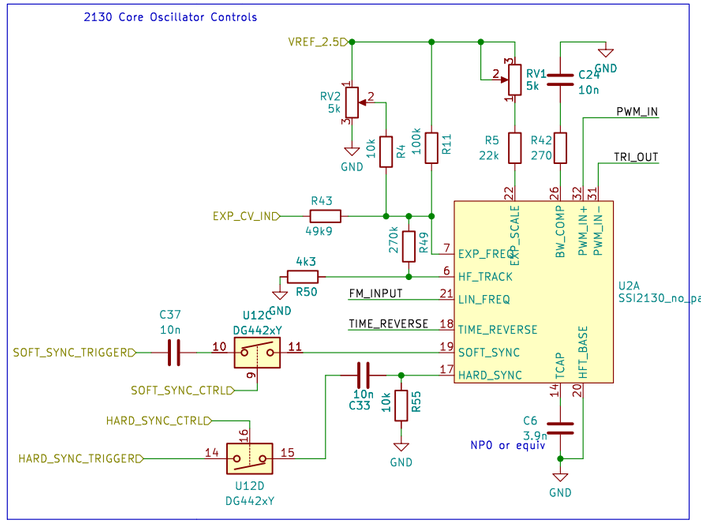
Zoxnoxious Engineering

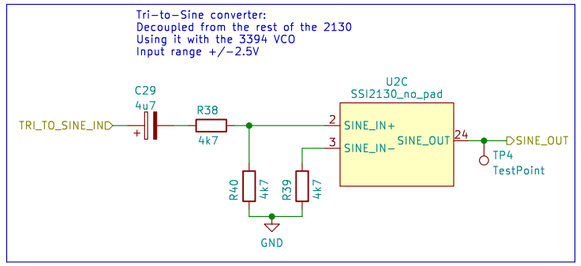
Sheet: /Mod_VCA/
File: mod_vca.kicad_sch

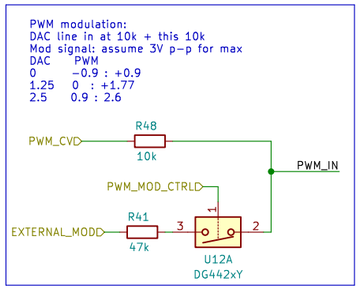
Title: Zoxnoxious SSI2130/AS3394

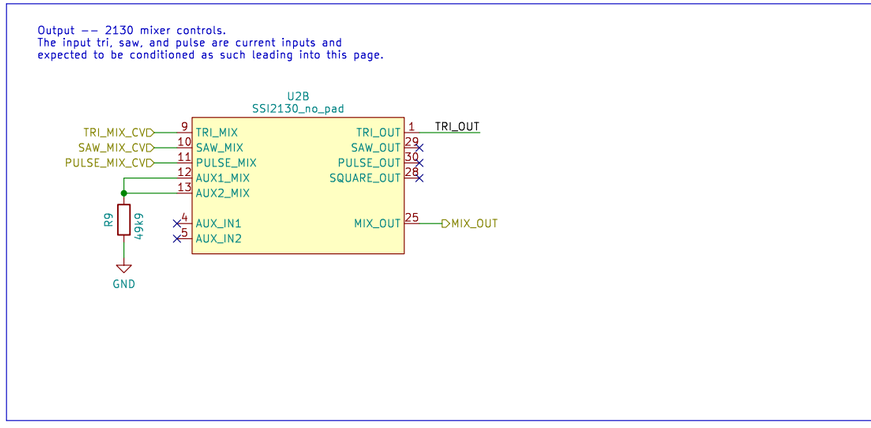
Size: B	Date: 2023-08-27	**Rev: 0.2**
KiCad E.D.A. kicad 7.0.5-0		Id: 5/6

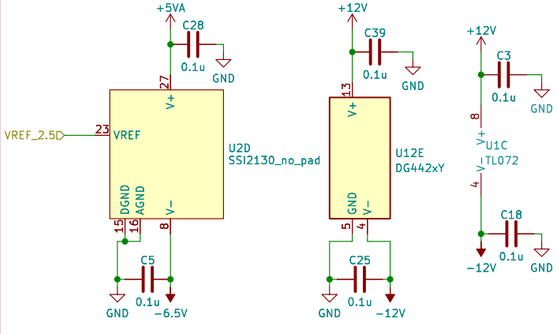












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Zoxnoxious Engineering		
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