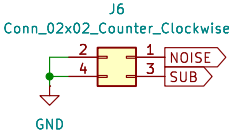
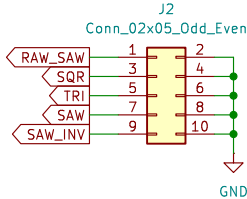
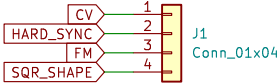
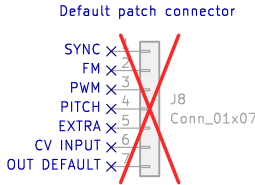
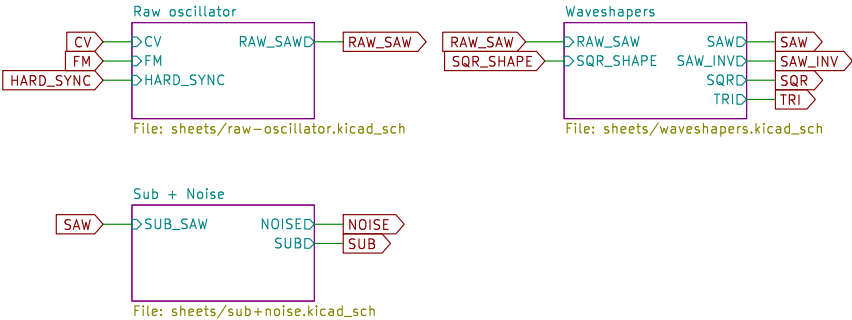


Raw oscillator & wave shaping

I/O



Shielding pairs  
DO NOT GROUND ON UI BOARD!

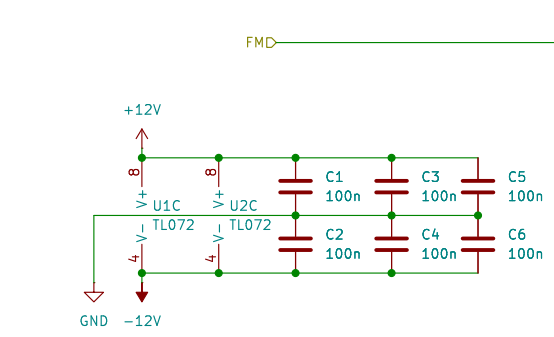
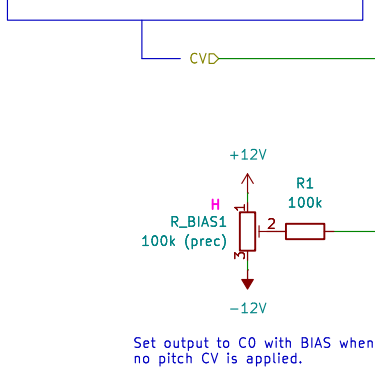
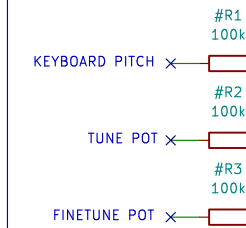
Power



- H1 MountingHole
- H2 MountingHole
- H3 MountingHole
- H4 MountingHole

Shmørergh		
Sheet: /		
File: vco-core.kicad_sch		
Title: Moduleur VCO core		
Size: A4	Date: 2026-02-21	Rev: v1.0
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CV inputs can be anything summed passively with resistors.  
**ALL INPUTS MUST HAVE AN INPUT RESISTOR!**  
 For 1V/oct, use 100k



The following temperature compensation setups are supported in the schematics.  
 V1 uses a 1206 SMD component (PTS120602B100RP100), V2 uses a THT NTC component (NTCLE203E3103FB0). Both works pretty much the same, they're here as a fallback for potential components shortage.

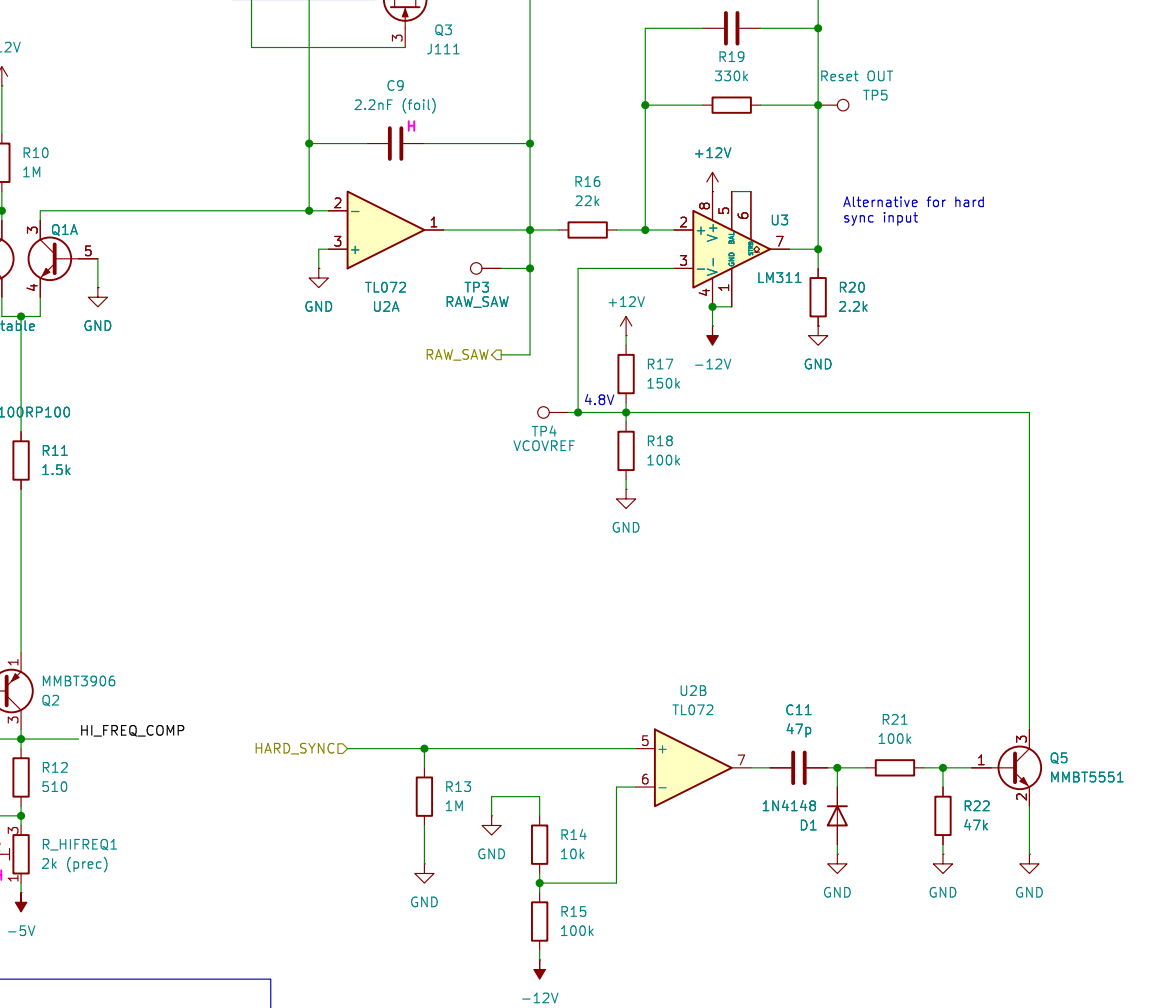
X: don't place component  
 Short: short component  
 Use multi-turn precision trimmers.

Temperature compensation options:

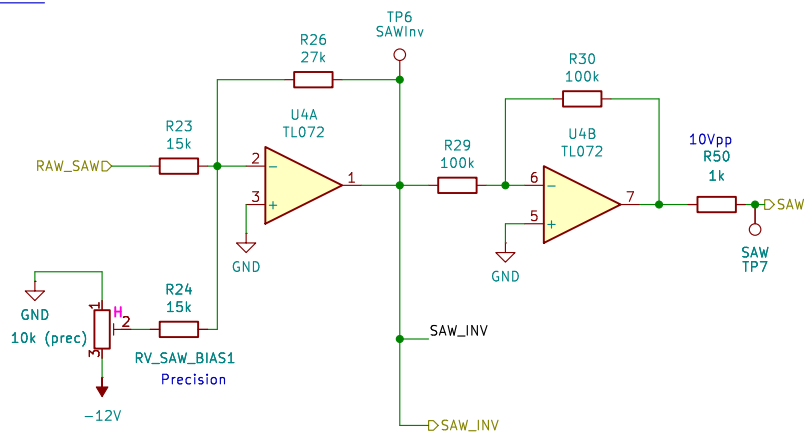
	R_FB	R_W1	R_D1	TH1	R_D2	R_D3	TH2	R_W2
V1:	91k	20k	Short	X	6.2k(50ppm)	4.22(50ppm)	PTS120602B100RP100	X
V2:	22k	Short	11k	NTCLE203E3103FB0	27k	2.7k	X	500ohm

Tuning:  
 0. Connect a tuner and a keyboard. Play the C1 note.  
 1. Turn Hi-Freq all the way down so there's no compensation: Play a very high pitch note and start turning the trimpot so that the pitch is going down. Once it doesn't go lower then you "turned off" high freq compensation.  
 2. Use R\_BIAS to set the frequency to C1 (32.703Hz)  
 3. Play C4 and use R\_BIAS to set the frequency to C4 (261.63Hz)  
 4. Play C1 and use R\_WIDTH to tune it to 32.703Hz) LOOP 3 + 4  
 5. When C1 and C4 are in tune, play higher octave C's and use R\_HIFREQ to adjust tuning for them.  
 If needed, repeat steps 3 and 4 for other note pairs.

ONLY ONE OF THESE J111's SHOULD BE SOLDERED.  
 Q3 is a THT footprint for J111 to provide alternative to SMD.

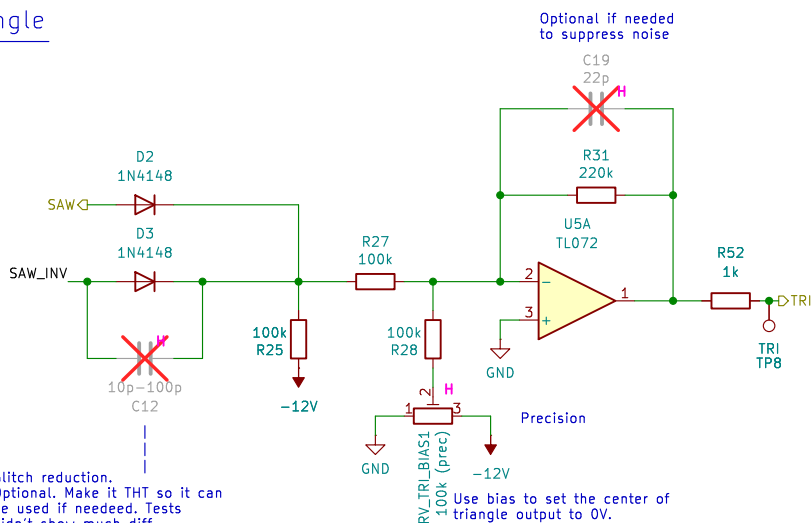


## Sawtooth



Use BIAS to set the sawtooth output exactly to oscillate around 0V. This is critical for a nice triangle wave.

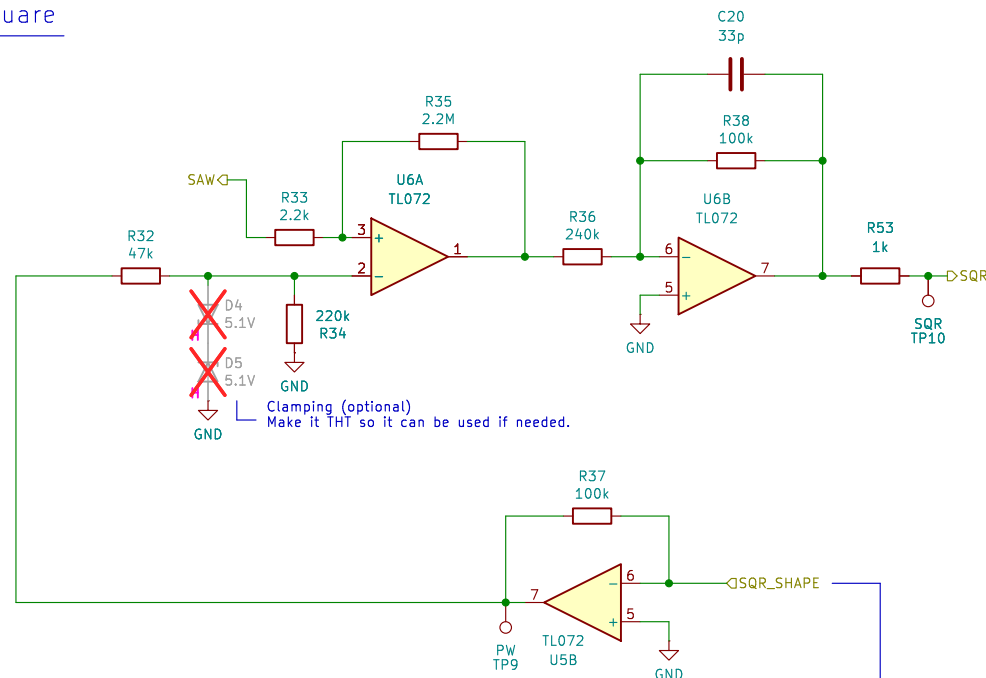
## Triangle



Glitch reduction. Optional. Make it THT so it can be used if needed. Tests didn't show much diff.

Use bias to set the center of triangle output to 0V.

## Square



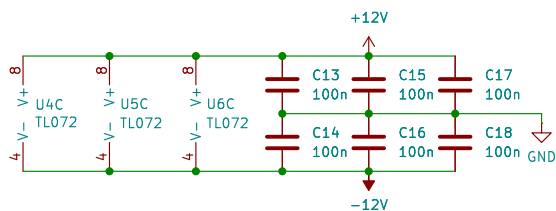
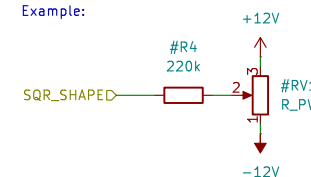
### Square pulse width

Connect any number of CV inputs through input resistors to set the pulse width with a CV on SQR\_SHAPE. Use the following CV values:

0V/GND: 50%  
-5.5V: 5%  
+5.5V: 95%

Set the input resistors so that the CV mixer's output value is between -/+5.5.

Example:



Shmøergh

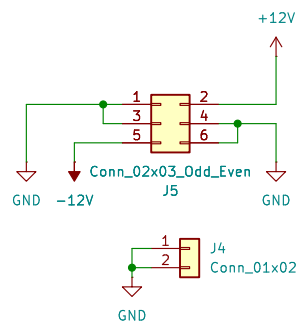
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Title: **Moduleur VCO core**

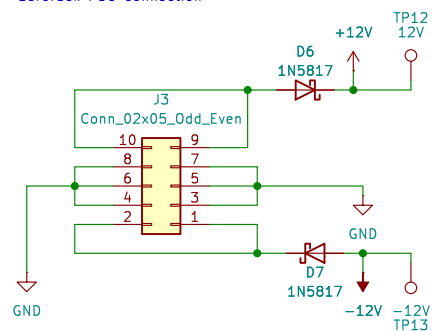
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Rev: **v1.0**  
Id: 3/5

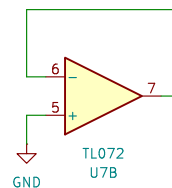
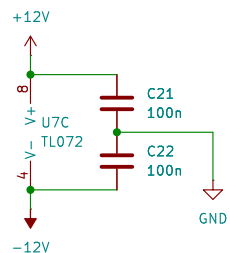
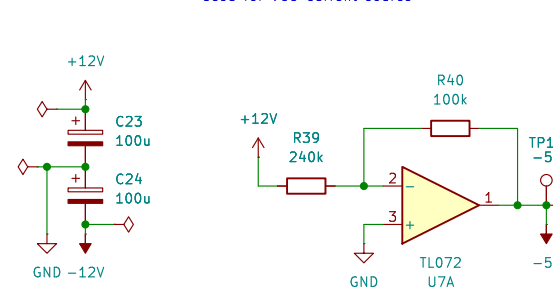
UI power connection



Eurorack PSU connection



Used for VCO current source



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File: power.kicad\_sch

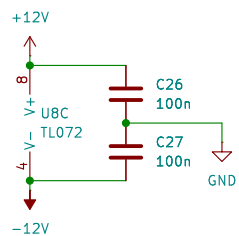
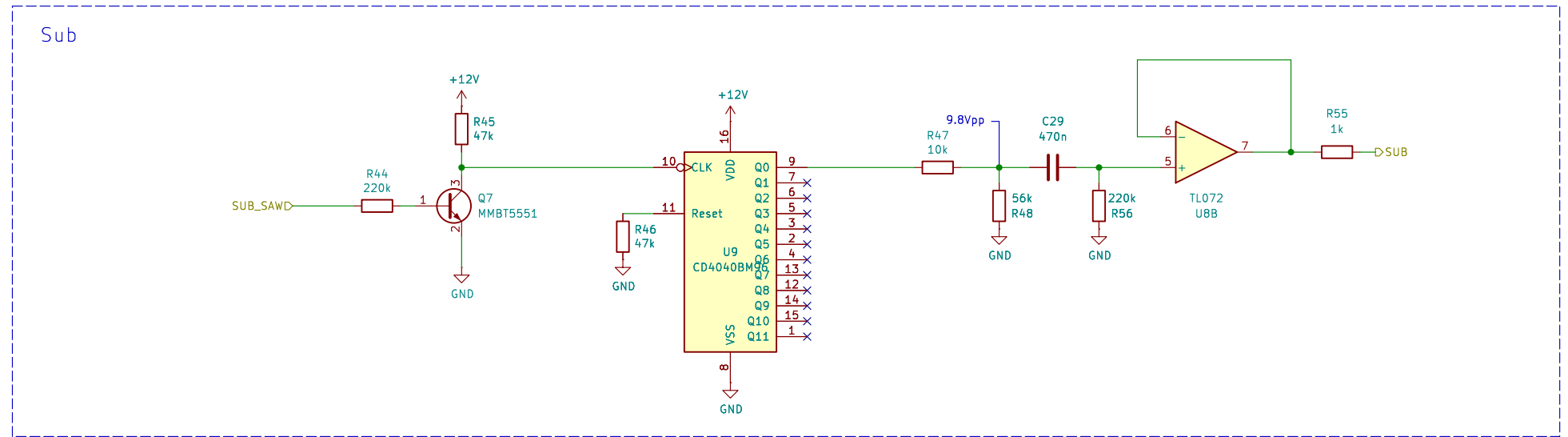
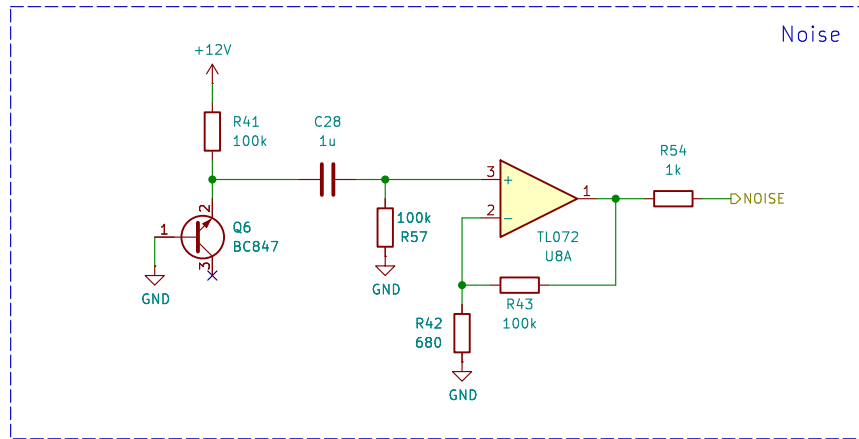
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**Rev: v1.0**

Id: 4/5



Shmørergh

Sheet: /Sub + Noise/

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**Title: Moduleur VCO core**

Size: A4

Date: 2026-02-21

Rev: v1.0

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Id: 5/5