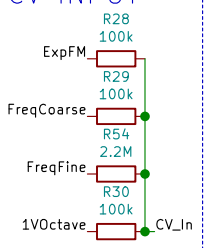
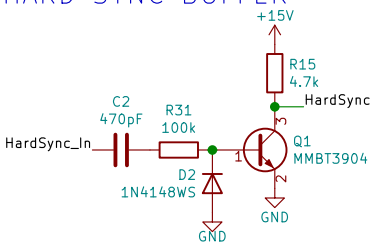
INPUT

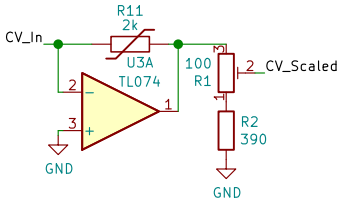
CV INPUT



HARD SYNC BUFFER



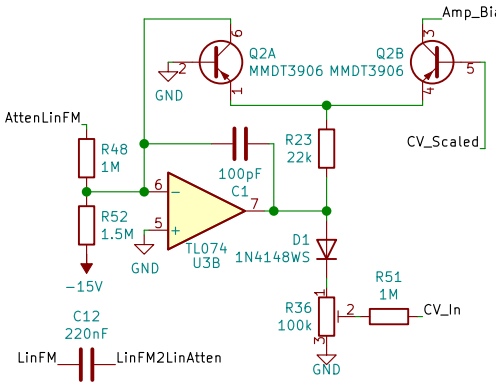
CV AMPLIFIER/TEMP COMPENSATION



CV inputs are summed and fed to this inverting amplifier for scalar adjustment.
The scaling factor is set by R11, a 2kΩ +3500ppm/Ω thermistor (TempCo).
This compensates for temperature fluxuations to keep the VCO in tune.

[Hal Chamberlin, _Musical Applications of Microprocessors_ 2nd ed.,
Ch.6, Pg. 187–8, "Linear Control Input"]

EXPONENTIAL CONVERTER



Converts the CV inputs to an exponentially proportional current which controls the gain of the oscillator cores OTA. Q2 and Q3 form a long-tailed pair, with the rest of this blocks circuitry belonging to its current source and HF trimmer.

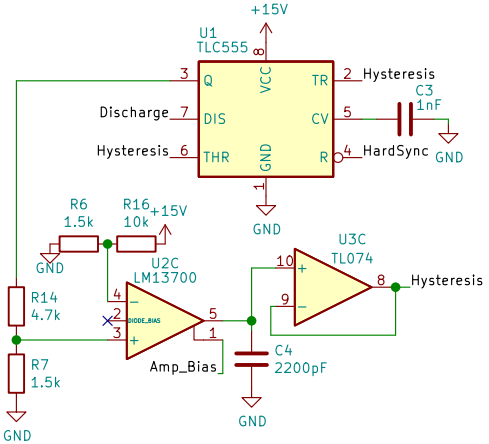
Linear frequency modulation is achived by varying the current to the LTP.
This can be seen in the equation for output current (See Xonik – Synth Theory):

I_(Amp_Bias) = I_(current source) * e^(−V_(CV_Scaled) / V_(T)),

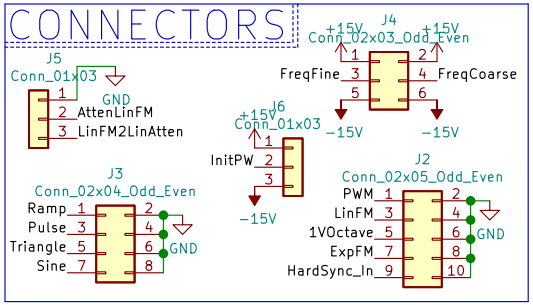
where Q3's output current is directly proportional to the current supplied by the LTP's current source, but follows an exponential curve relative to the CV.

[René Schmitz, A tutorial on exp convertors and temp compensation,
www.schmitzbits.de/expo_tutorial/index.html;
North Coast Synthesis Ltd., Exponential converters and how they work,
northcoastsynthesis.com/news/exponential-converters-and-how-they-work/;
Xonik Devices, Synth Theory, www.xonik.no/]

OSCILLATOR CORE



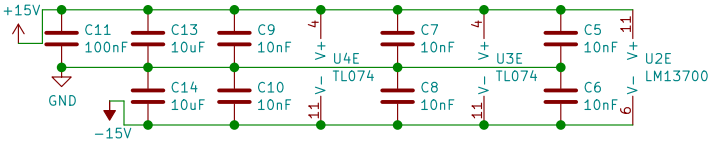
CONNECTORS



POWER

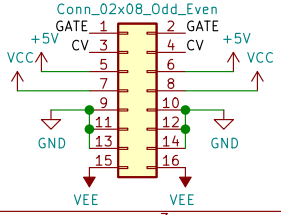
FLAGS

BYPASS CAPACITORS

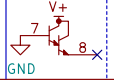


POWER INPUT

Doepfer 16-pin,
2.54mm-pitch,
±15V+5V.

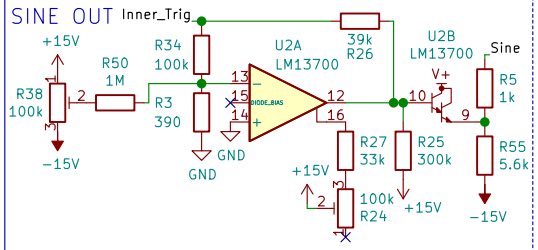


OTA Buffer
(not used)
U2D
LM13700

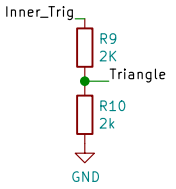


OUTPUT SHAPING

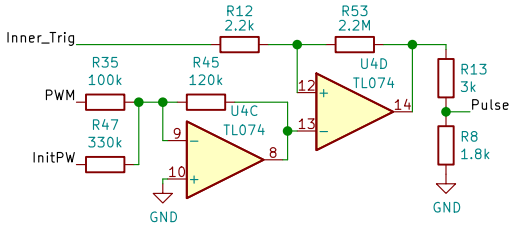
SINE OUT



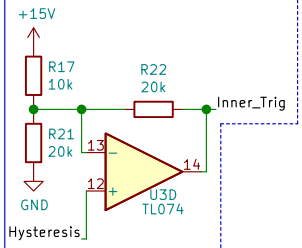
TRIANGLE OUT



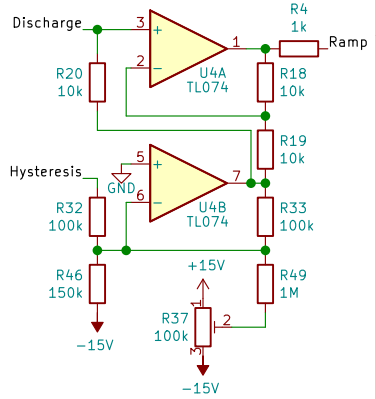
PULSE (SQUARE) OUT



INTERNAL TRIANGLE



RAMP (SAWTOOTH) OUT



Nathan Schmidt

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Title: Thomas Henry 555 VCO

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