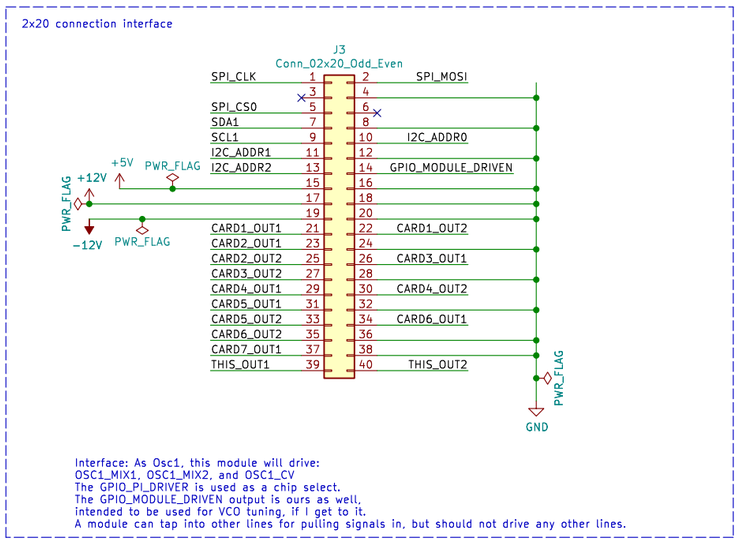
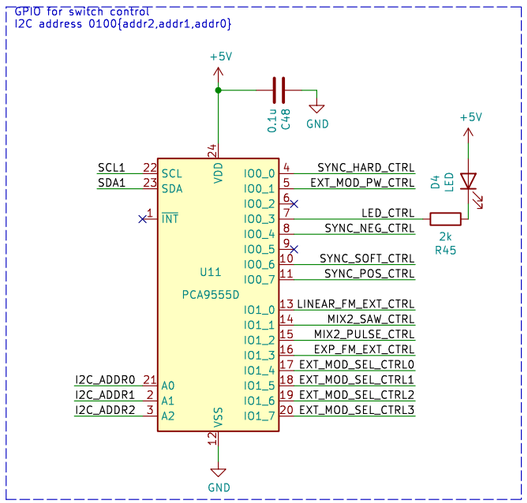
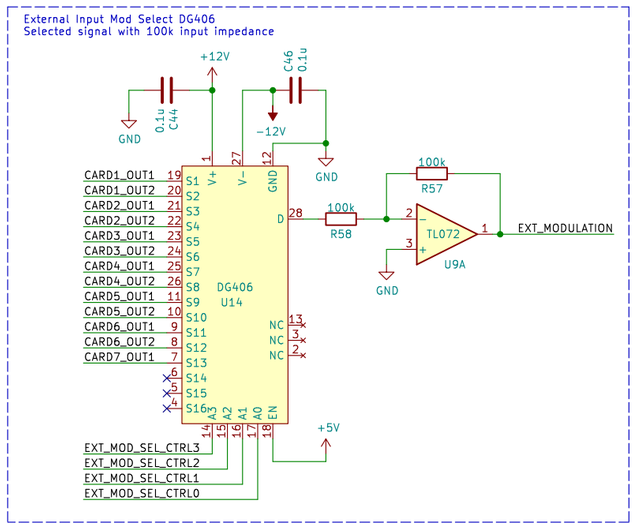
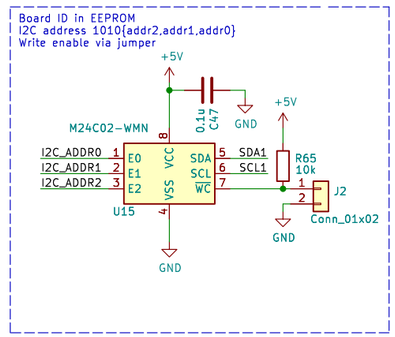
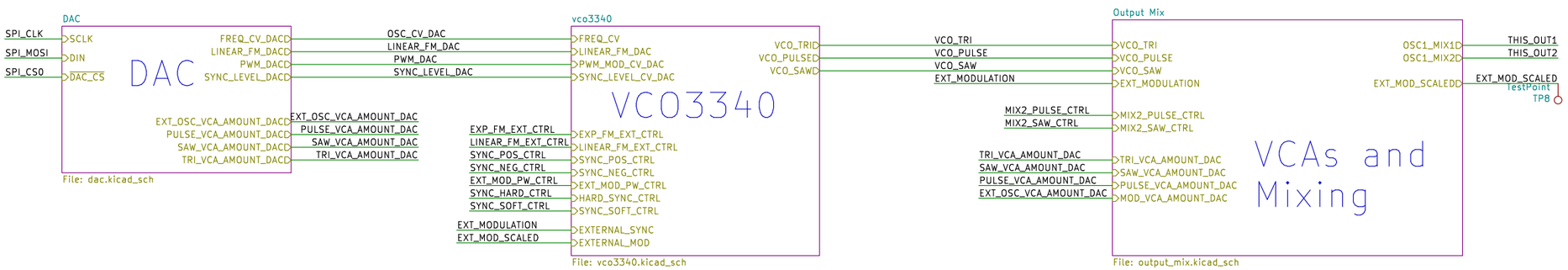
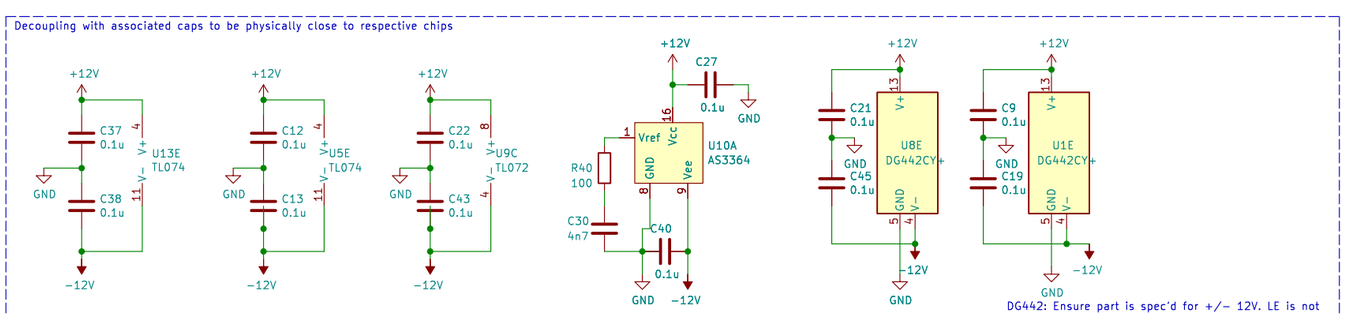


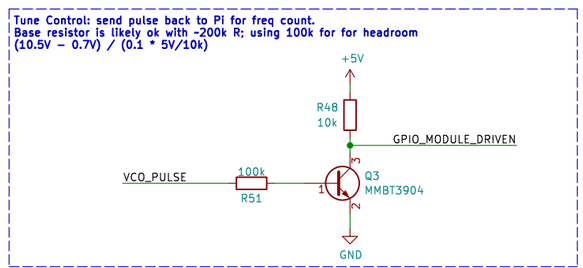


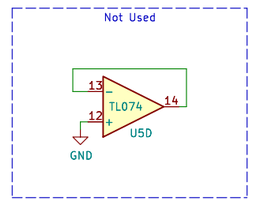


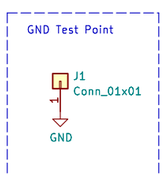


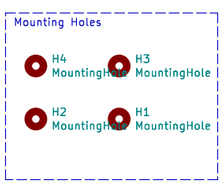












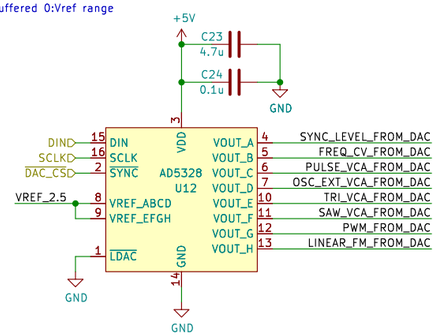
Zoxnoxious Engineering

Sheet: /
File: z3340.kicad_sch

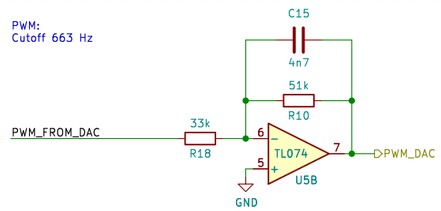
Title: Zoxnoxious 3340 Oscillator

Size: B	Date: 2024-07-15	**Rev: 0.8**
KiCad E.D.A. kicad 7.0.11		Id: 1/4

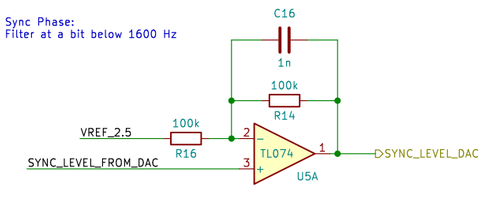
DAC: 2.5V Reference Voltage
Vref load: 45k
--> design for unbuffered 0:Vref range



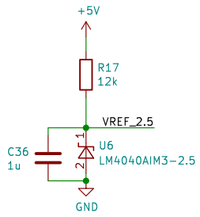
PWM:
Cutoff 663 Hz



Sync Phase:
Filter at a bit below 1600 Hz

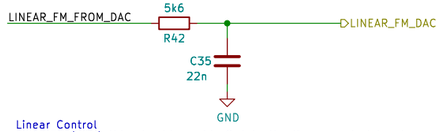


Voltage Ref @ 2.5V for DAC and VCO freq



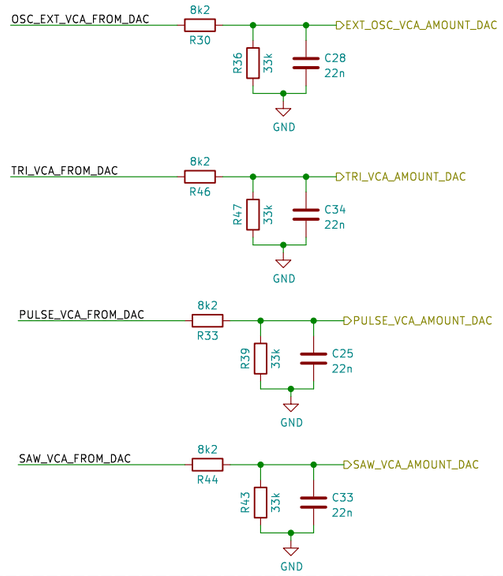
For current thru LM4040 of: 1000uA to 75uA
Given VREF_2.5 load of: (45k || 100k) 31k ==> 80uA
Target ~200uA through Rs ==> 12k R, 208uA, 0.5mW

Freq:
target 8 octave range.
Assumption: datasheet 100k input resistor gives 10uA/octave
For 2.5volts/8octaves ==> 2.5V/80uA = 31250R
Use 31k to ensure adequate range.
The Freq input R is this network; no input resistor on 3340 page
RC filter @ 1600 Hz



Linear Control
At 1.25V (50%) this should provide 8uA to the linear control input.
The input resistor is on this page; feed directly to linear input.
RC filter @ 1300 Hz

For all VCA lines:
Scaling for AS3364
RC filter with cutoff 400 Hz



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.

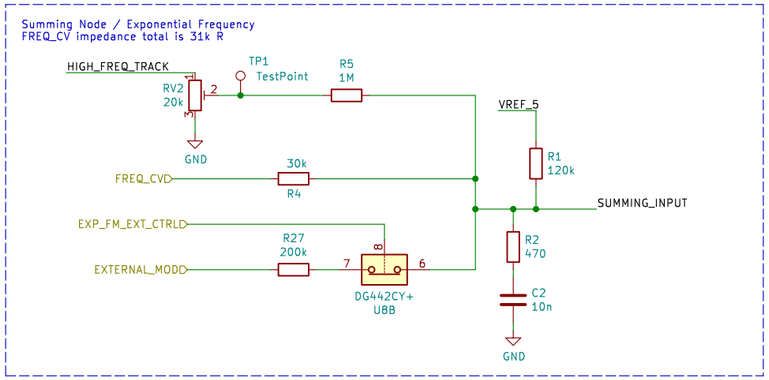
Sheet Vref Load: 45k || 100k ==> 31k

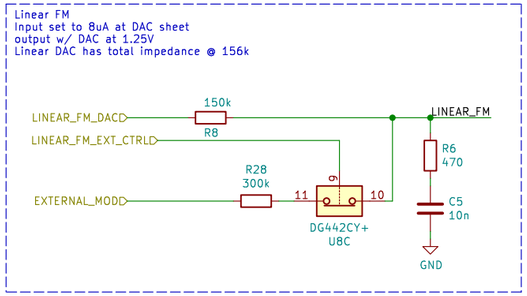
Zoxnoxious Engineering

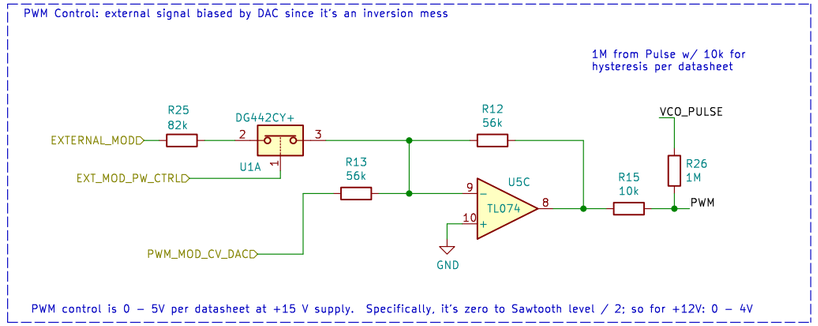
Sheet: /DAC/
File: dac.kicad_sch

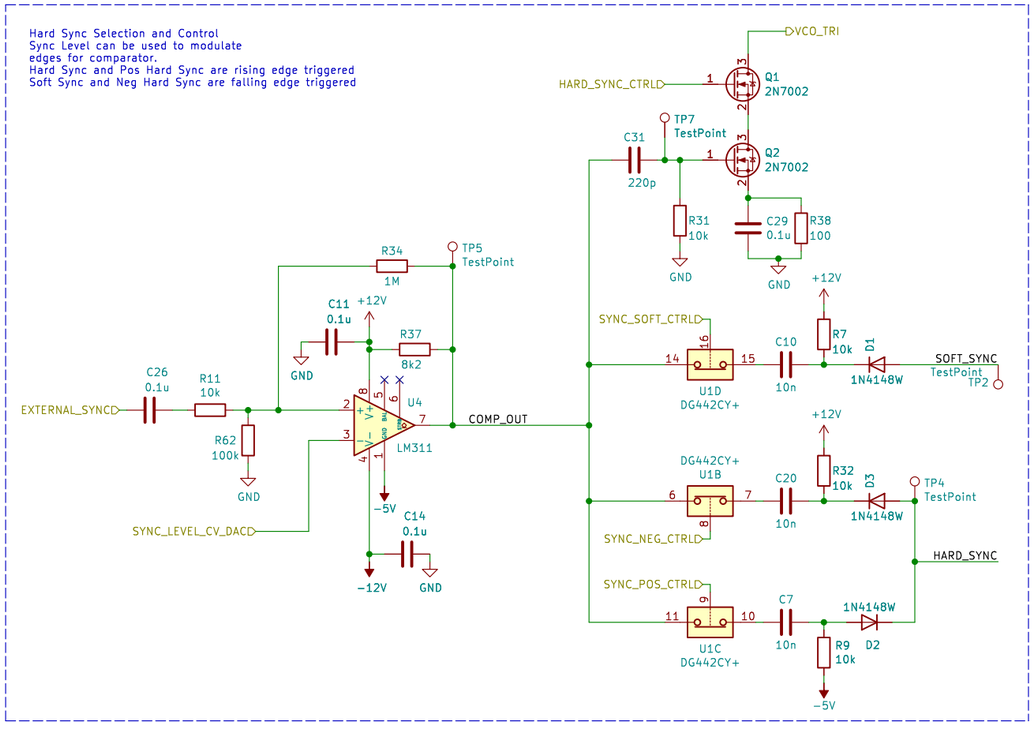
Title: Zoxnoxious 3340 Oscillator

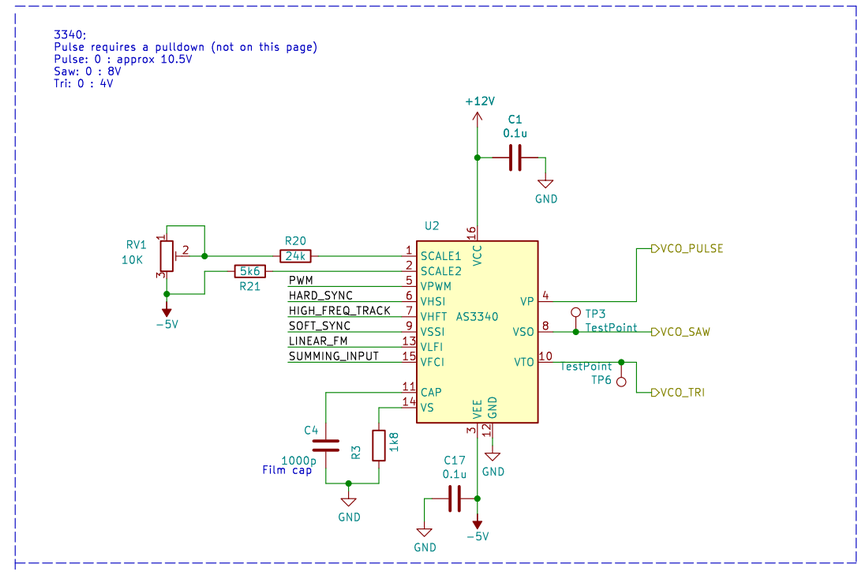
Size: B	Date: 2024-07-15	**Rev: 0.8**
KiCad E.D.A. kicad 7.0.11		Id: 2/4

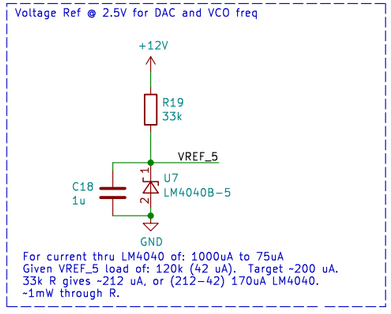


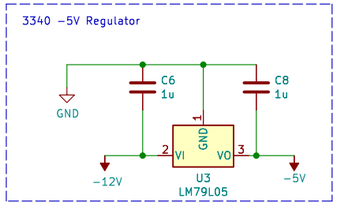












Sheet Vref load: 62k

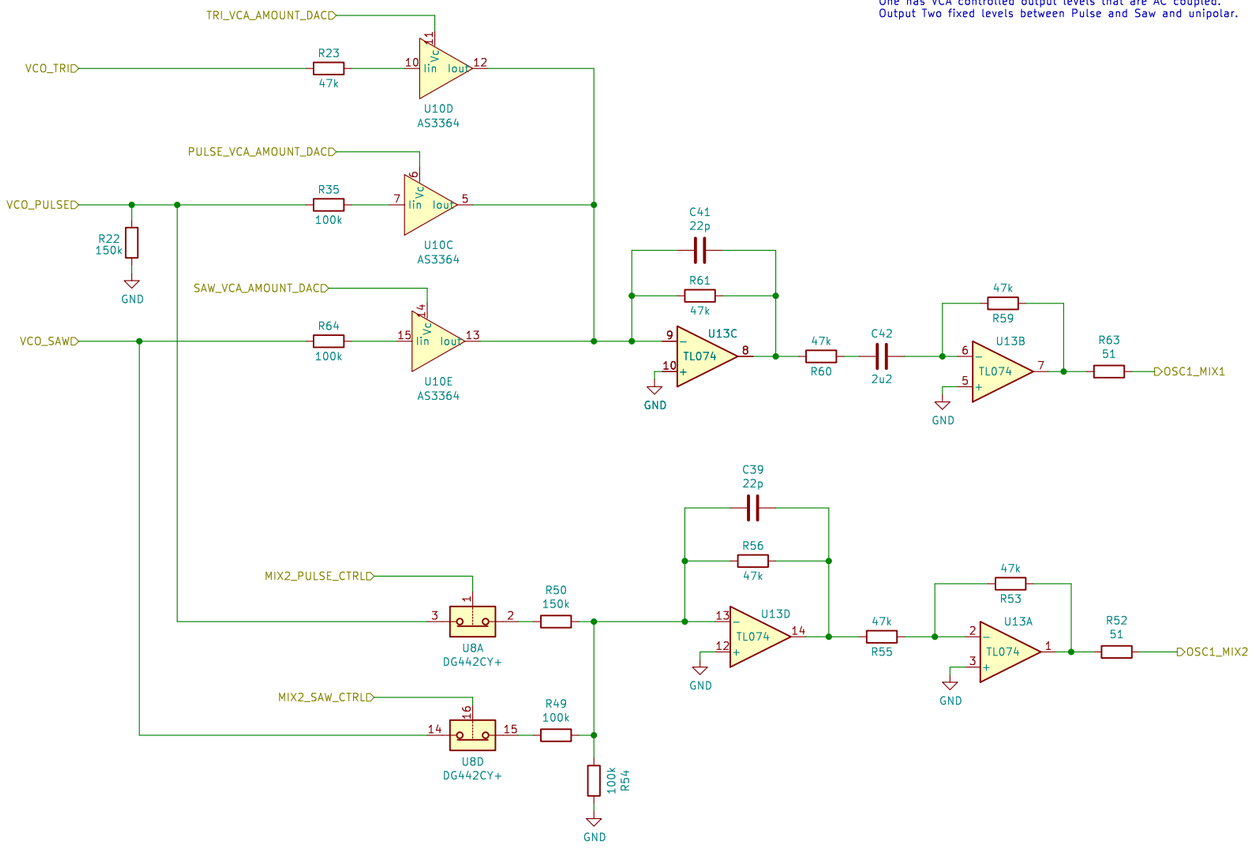
Zoxnoxious Engineering

Sheet: /vco3340/
File: vco3340.kicad_sch

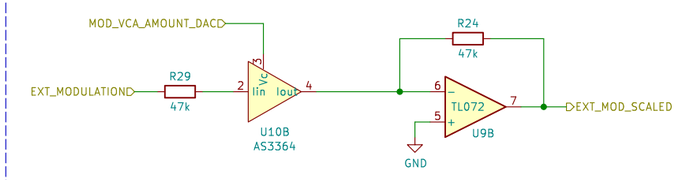
Title: Zoxnoxious 3340 Oscillator

Size: B	Date: 2024−07−15	**Rev: 0.8**
KiCad E.D.A. kicad 7.0.11		Id: 3/4

Output One and Two Scaling:
One has VCA controlled output levels that are AC coupled.
Output Two fixed levels between Pulse and Saw and unipolar.



External Modulation Scaling



Mix1: output is scaled by 2X this

Signal	Input Level	Output:	Offset	Low	High	Peak-to-Peak
Pulse	0 : 10.5		-1.1	-1.1	1.1	2.2
Saw	0 : 8		-0.4	-0.4	0.4	0.8
Triangle	0 : 3.5		AC	-1.7	1.7	3.5
Mix2						
Pulse	0 : 10.5		0.0	0.0	3.1	3.1
Saw1	0 : 8		0.0	0.0	3.8	3.8

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

Mix2:
Unipolar signals

Zoxnoxious Engineering	
Sheet: /Output Mix/	
File: output_mix.kicad_sch	
Title: Zoxnoxious 3340 Oscillator	
Size: B	Date: 2024-07-15
KiCad E.D.A. kicad 7.0.11	Id: 4/4

Rev: 0.8