

3542 VCO voltage controlled oscillator

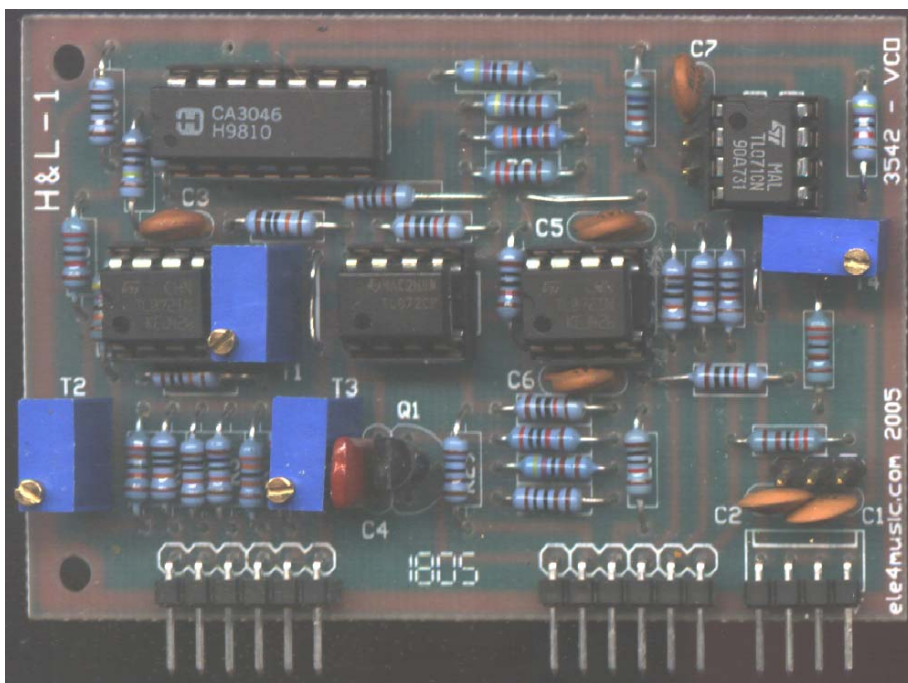
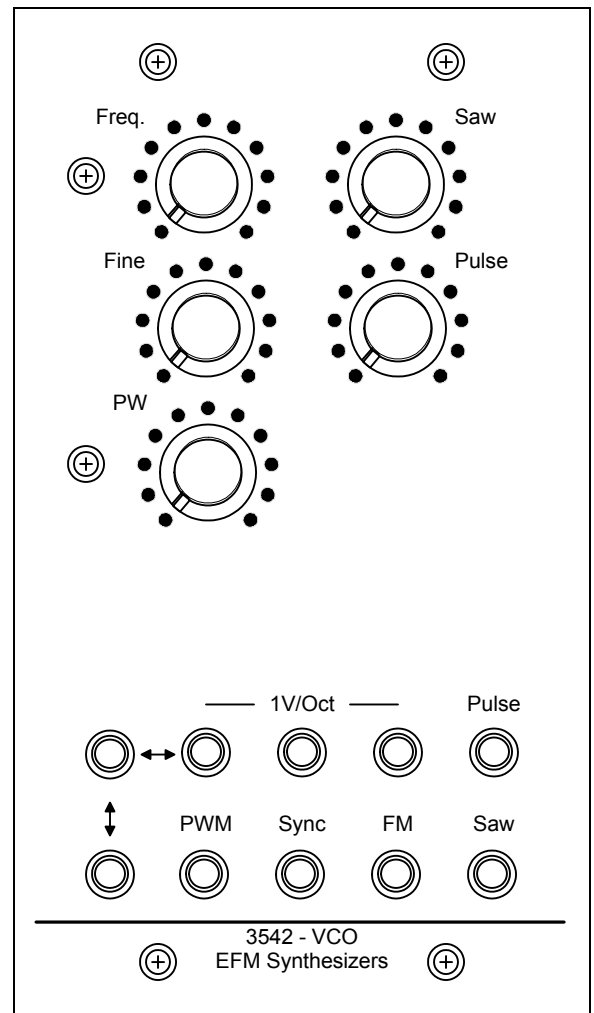
U2 and U1b from a linear voltage to exponential current source. As current flows from U2 (5,4,3) C4 starts to charge. When the voltage at the output of buffer (U3a) reaches the threshold level of the comparator (U4a) Q1 turns on and resets C4 and the cycle begins again. This oscillation forms a sawtooth waveform on the output of buffer (U3a)

The sawtooth waveform is applied to the non-inverting input of comparator U4b. U4b is biased through R25 so that it turns on as soon as the voltage starts to rise at the output of U3a. The output of U4b is a variable pulse waveform A voltage applied to U4b's inverting input changes the duty cycle altering the pulse width.

An external input on pin2 of U4a causes Q1 to reset whether U3a has reached the reset level or not. Oscillation occurs in sync with the controlling oscillator.

An FM input causes the oscillator center frequency to change with the signal amplitude or Frequency Modulates the exponential converter.

U5 and two transistors from U1 form a chip-heater. As current flows through R30 and U1 6,7,8 there are minor changes in voltage on the input of U5. The non-inverting input is set to match the init voltage on the input. When this is unequal the output of U5 goes maximum high and U1 9,10,11 turns on. U1 9,10,11is biased so that it runs hot heating the chip to a constant temperature.



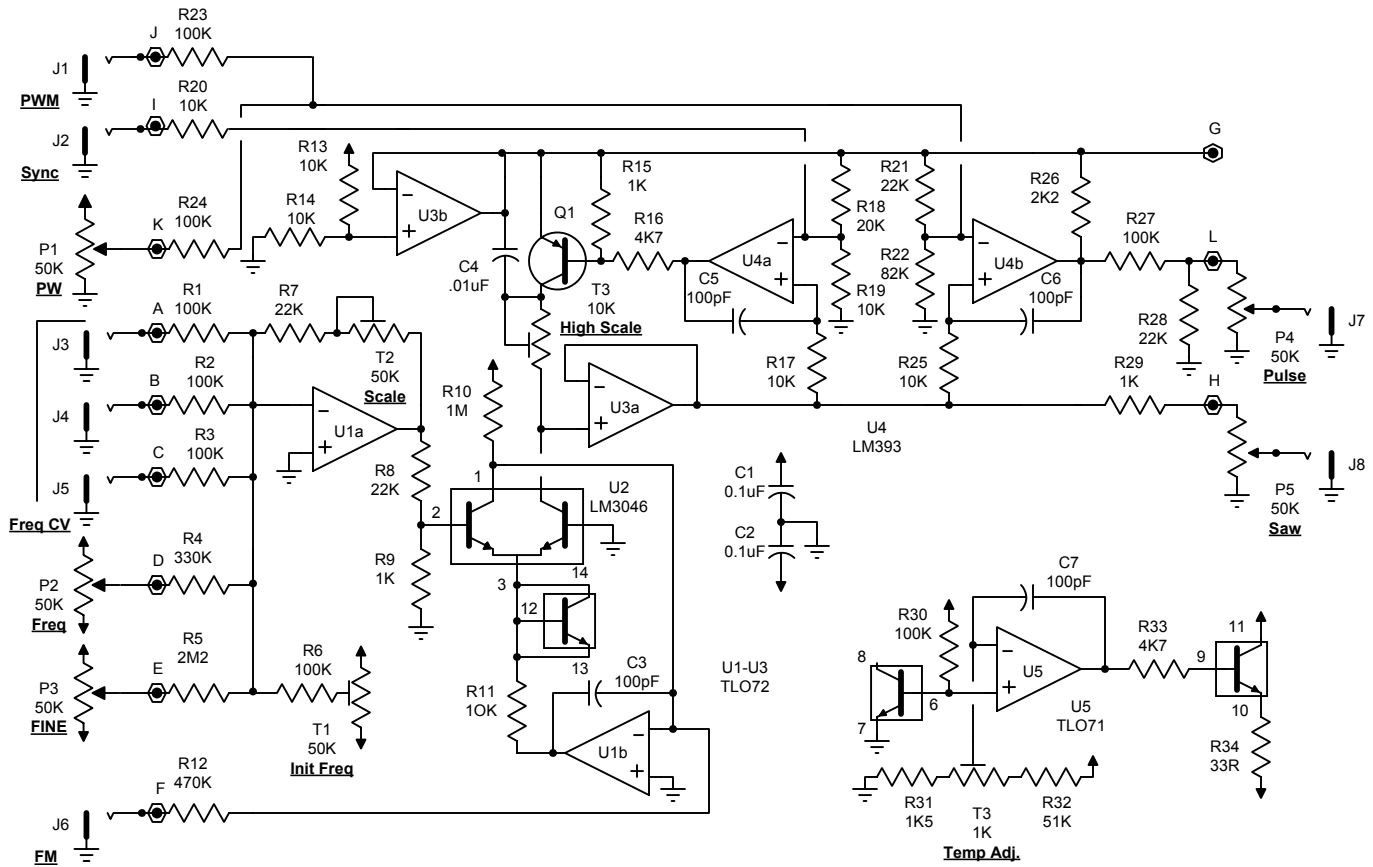
Setup

- Adjust T1 for Initial frequency.
- Adjust T2 for 1V/Oct.
- Adjust T3 for high octave scale
- Adjust T4 after a short warm up period so that the voltage on U5 Pins2,3 is equal. I have provided pads for a 2 pin header.

Mods

You may want to remove the heater control (U5 and T3) and use a tempco resistor. I have provided pads to strap a resistor across U2.

Pad-G gives access to the VCO voltage-ref. It's not hard at all to add a Tri output to this VCO but I ran out of room.....



Small Kit

PCB	PC Board	1
C1,2	0.1uF Ceramic	2
C3,5,6,7	100pF Ceramic	4
C4	.01uF Ceramic	1
R1,2,3,6,27,30,23,24,27,30	100K	6
R4	330K	1
R5	2.2M	1
R7,8,21,28,	22K	1
R9,15,29	1K	1
R10	1M	1
R11,13,14,17,19,20,25	10K	6
R12	470K	1
R14,20,22	10K	3
R16,33	4.7K	1
R18	20K	1
R22	82K	1
R26	2K2	1
R31	1.5K	1
R32	51K	1
R34	33	1
Q1	2N3906	1
U1,3	TLO72	2
U2	LM3046	1
U4	LM393	1

Full Kit

T1,2	50K Trimmer	2
T3	10K Trimmer	1
T4	1K Trimmer	1
P1,2,4,5	50K Pot	5
Knob		5
Jack	1/8"	10
L Bracket w/hardware		2
Header		1
Panel		1
Overlay		1

Errors

The Power-header is not connected to ground.

Scrape the solder-mask off just under the header and solder a resistor cutoff from the header to the large ground trace that runs along the rim of the board.

