

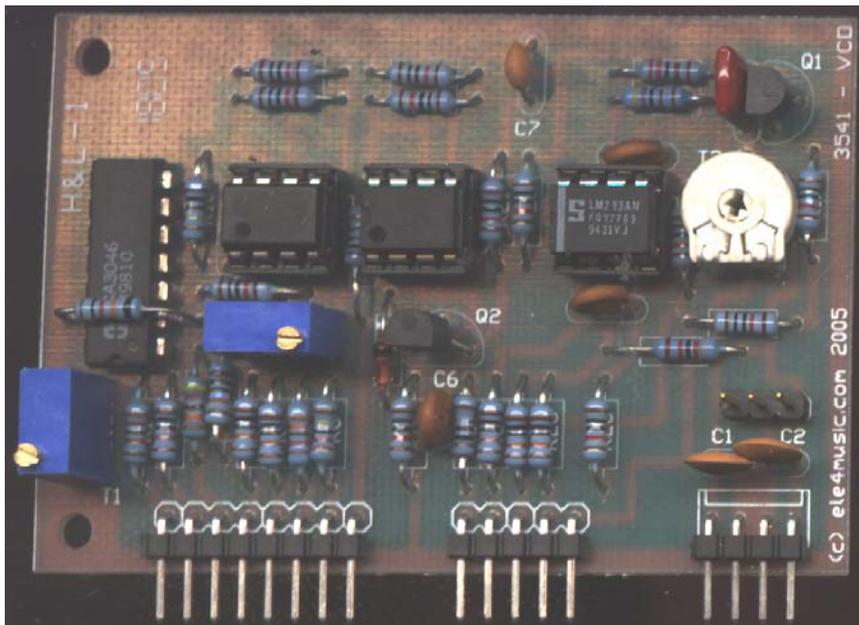
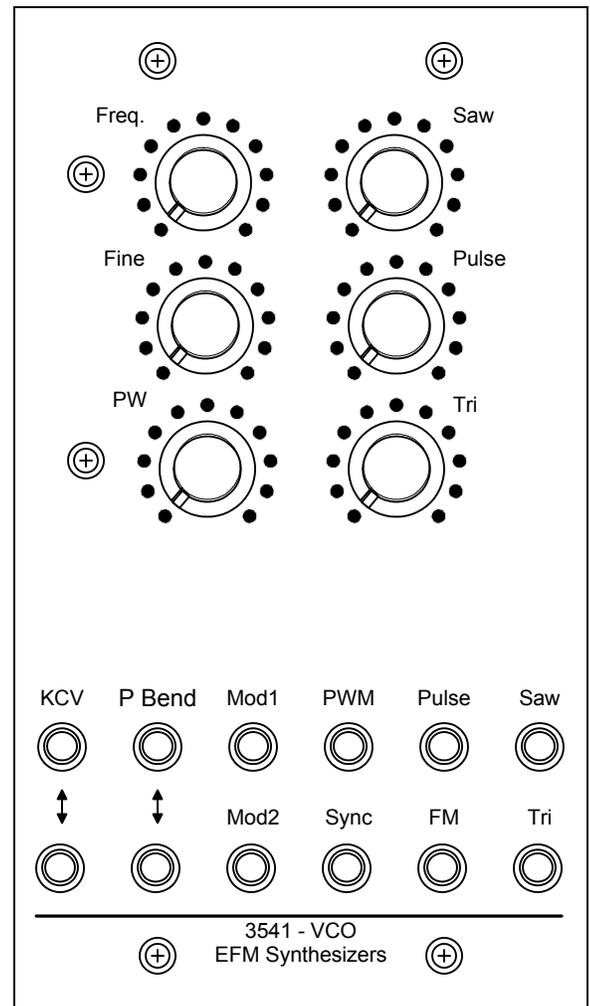
**3541 VCO voltage controlled oscillator**

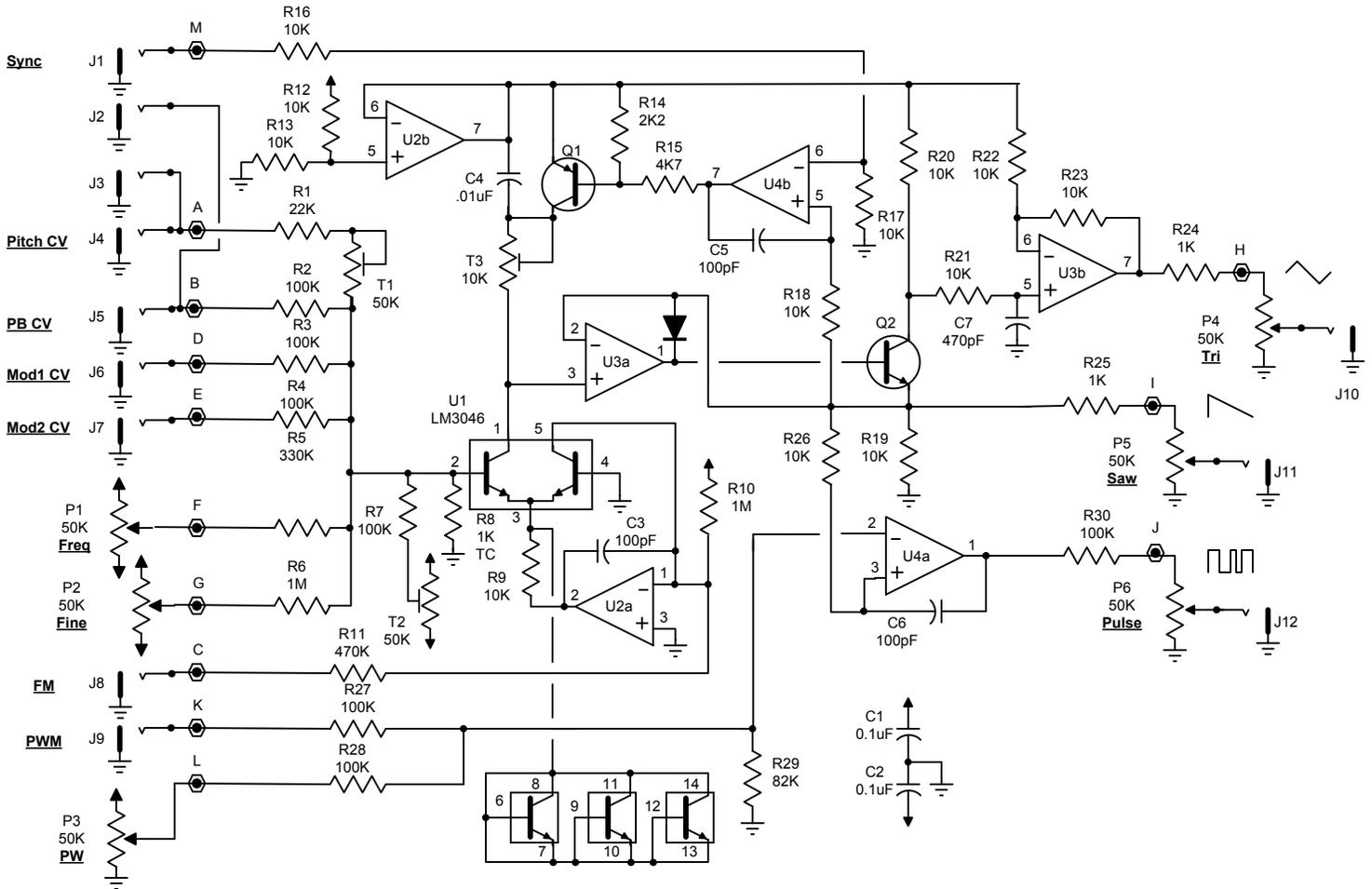
U1 and U2a from a linear voltage to exponential current source. C4 starts to charge. When the voltage at the output of buffer (U3a) reaches the threshold level of the comparator (U4b) Q1 turns on and resets C5 and the cycle begins again. This oscillation forms a sawtooth waveform on the output of buffer (U3a)

The sawtooth waveform is applied to the base of Q2. The oscillator is setup to reset at 1/2 the supply voltage by using U2b as a voltage regulator to lower the supply rail. This causes a ramp to form on pin7 of U2b. Q2 is a phase splitter and U3b combines the signals to form a triangle waveform. The sawtooth waveform is also applied to the non-inverting input of comparator U4a. U4a is biased through R29 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 U4a's inverting input changes the duty cycle altering the pulse width.

An external input on pin6 of U4b 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.





**Small Kit**

C1,2	0.1uF Ceramic	2
C3,5,6	100pF Ceramic	3
C4	0.01uF Ceeramic	1
C7	470pF Ceramic	1
R1	22K	1
R2,3,4,7,27,28,30	100K	7
R5	330K	1
R6	2M2	1
R10	1M	1
R8	1K Tempco	1
R9,12,13,16,17,18,19, 20,21,22,23,26,	10K	12
R11	470K	1
R14	2K2	1
R15	4K7	1
R24,25,	1K	2
R29	82K	1
Q1	2N3906	1
Q2	2N3904	1
U1	LM3046	1
U2,3	TLO72	2
U4	LM393	1

**Full Kit**

P1-6	50K	6
Knob		6
T1,T2	50K 10T Trim	2
T3	10K 10T Trim	1
J1-12	1/8 Mini Jacks	12
L Bracket w/hardware		2
Header		1
Panel		1
Overlay		1

