

VCO4 voltage controlled oscillator

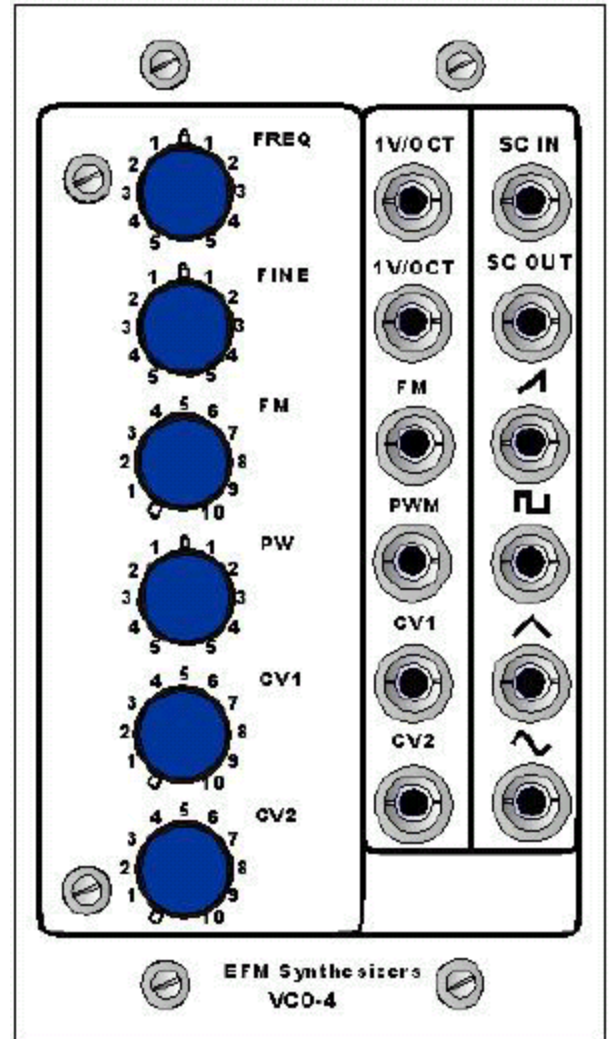
U1 and U2 from a linear voltage to exponential current sink. As current flows from the +V source C4 starts to charge. When the voltage at the output of buffer (U3b) reaches the threshold level of the comparator (U4a) it turns on. This turns Q2 on and resets C4 then the cycle begins again. This oscillation forms a sawtooth waveform on the output of buffer (U3b)

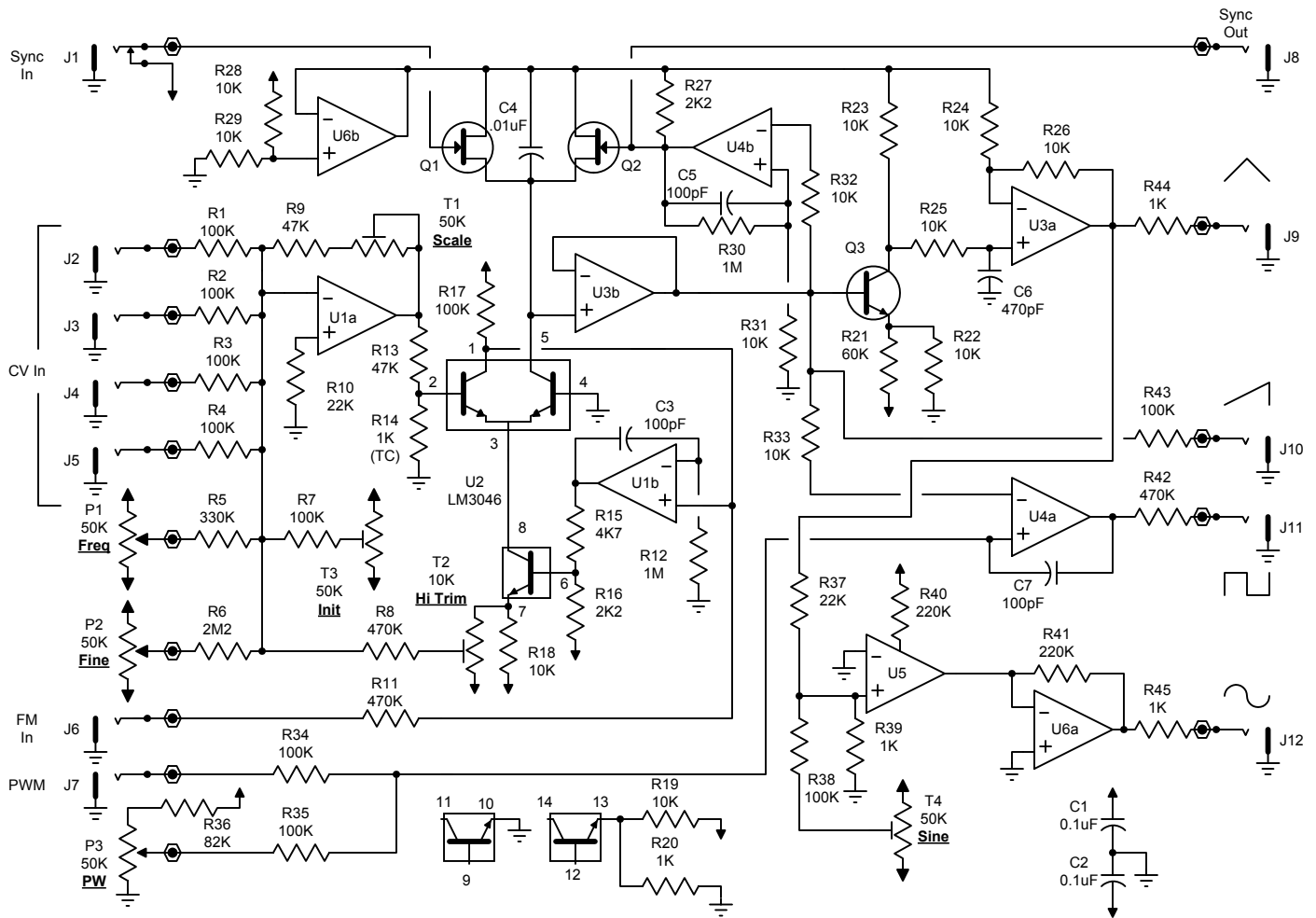
The sawtooth waveform is applied to the base of Q3. Q3 is a phase splitter and U3a combines the signals to form a triangle waveform. The sawtooth waveform is also applied to the non-inverting input of comparator U4a. The output of U4a is a variable pulse waveform A voltage applied to U4a's non-inverting input changes the duty cycle altering the pulse width. The Sine output is formed by overdriving the input of Operational Transconductance Amplifier U5.

An external input on the gate of the synchronization transistor (Q1) resets C4 regardless of whether U4b is on. 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.

The biggest mistake most people make when building the VCO4 is installing Q1 without connecting the base to -V. The VCO will not run unless the base is connected to -V.





Small Kit

C1,2	0.1uF	-2
C3,5,7	100pF	-3
C6	470pF	-1
C4	.01uF	-1
U1,3,6	LF353 / TLO72	-1
U5	CA3080	-1
U2	LM3046	-1
U4	LM393	-1
R1,2,3,4,5,7,17, 33,34,35,38,43	100K	-12
R6,12,30	1M	-3
R8,11,42	470K	-3
R9,13	47K	-2
R10,37	22K	-2
R14	1K TC	-1
R39,45,20,44	1K	-2
R16,27	2.2K	-2
R18,19,22,23,24,25, 26,28,29,31,32	10K	-11

R15	4.7K	-1
R21	(27K + 33K)	-1
R36	82K	-1
R40	220K	-1
R41	39K	-1
Q1,2	J112	-2
Q3	2N3904	-1

Full Kit

T1,3,4	50K	-3
T2	10K	-1
P1-6	50K	-6
Knobs		-6
Jack 1/8		-12
Power Connector		-1
L-Bracket		-2
Panel		-1
Overlay		-1

