

**WAMOD: vactrol PiLL** PLEASE READ EVERYTHING BEFORE STARTING and ask if you are not sure.

This is a simple circuit that is capable of making a wide variety of sounds. With a sequencer it can be used as a crude VCO, but fed other signals, such as from envelope generators and LFOs, it will sound like anything from a baboon with the squirts to a cheesy 80s video game laser cannon.

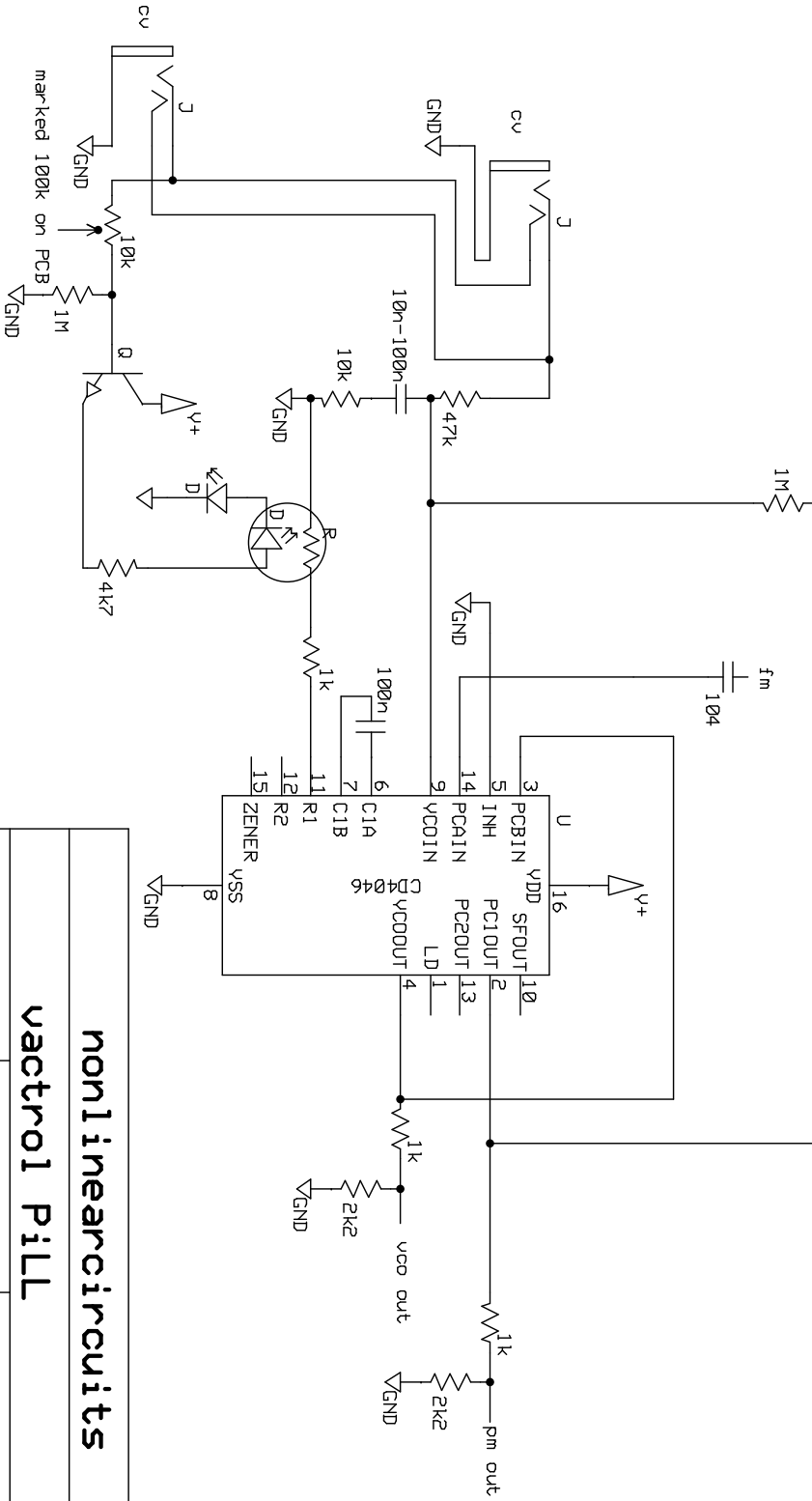
The name is drawn from the two main components that define the function and characteristics of the module. One is the vactrol which is a light controlled resistor, these have an interesting effect whereas there is always a time delay whilst the resistor changes its value – this is a good thing and has been exploited by many synth designers, notably Don Buchla. The PiLL is from a PLL – phase locked loop, this is a special purpose IC which contains number of subcircuits and usually used in radio and digital control circuits. It contains a VCO, logic gate and a phase detector = all fun stuff.

**Parts**

10R	1	or replace with a rectifier or schottky diode with at least 1A rating. Install with cathode (stripe) pointing towards edge of PCB
1k	3	
2k2	2	
4k7	1	
10k	1	
22k	2	vers.2 PCB
47k	1	
100k	1	vers.2 PCB
1M	2	
100nF	3	marked 104
10uF	1	be careful to insert +/- correctly
4046	1	PLL chip
BC547	1	NPN transistor
10 pin power connector	1	
16 pin socket	1	
vactrol	1	white dot indicates 'K'
3.5mm mono sockets	5	
LED	1	<b>NOT USED IF USING WHITE/GOLD PANEL. INSTALL LINK INSTEAD</b>

1. Install 10 pin power connector and 16 pin socket
2. sort out and install resistors (keep the cut-off resistor legs for step 6.
3. install capacitors, transistor & vactrol. If you have the white/gold panel, there is no hole for a LED, install a link instead.
4. Place sockets on the panel so that they line up with the holes on the PCB, the PCB will attach to the panel so the components are facing outwards.
5. Attach the PCB to the panel, make sure everything lines up nicely and the PCB is parallel with the panel (not on an angle)

6. Install wires to the ground tabs of the sockets, do not skip any sockets
7. Install 4046 chip in the correct direction.
8. test!
9. voila!



<b>nonlinear circuits</b>	
<b>vactrol PILL</b>	
Rev 2	
2/11/2014	Page # or name
andrewf	