

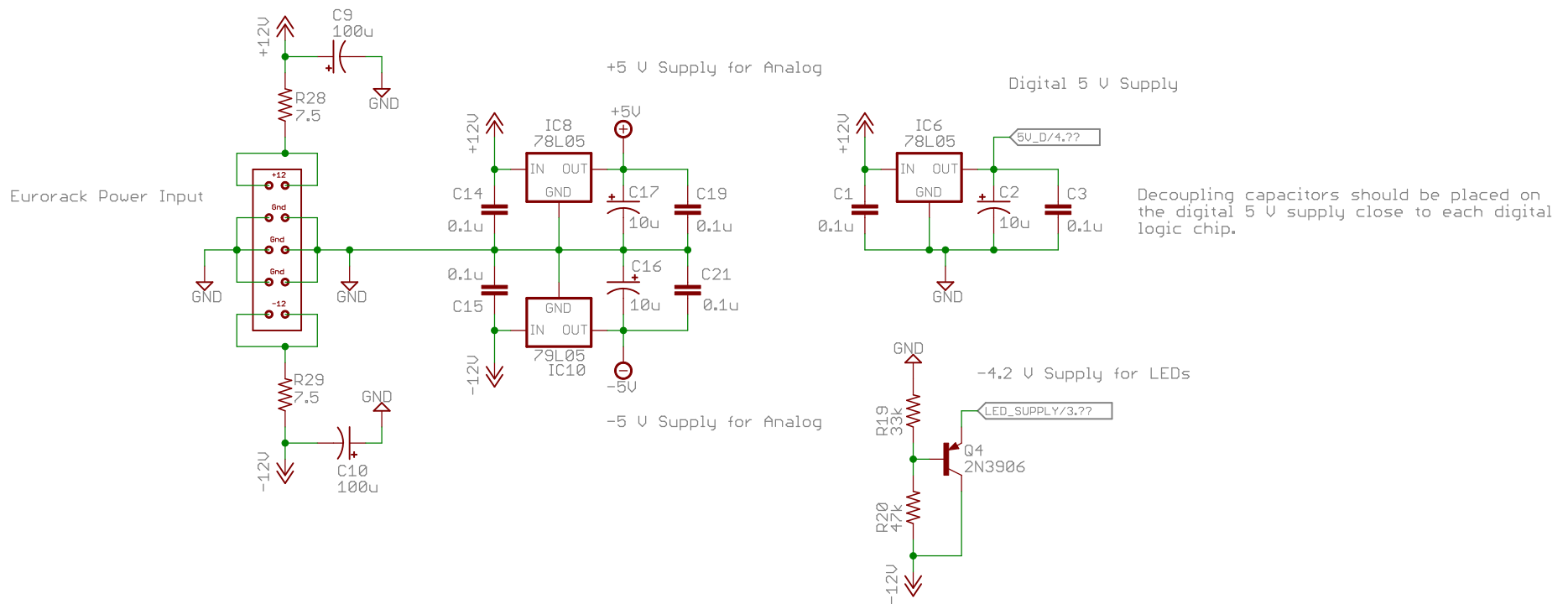
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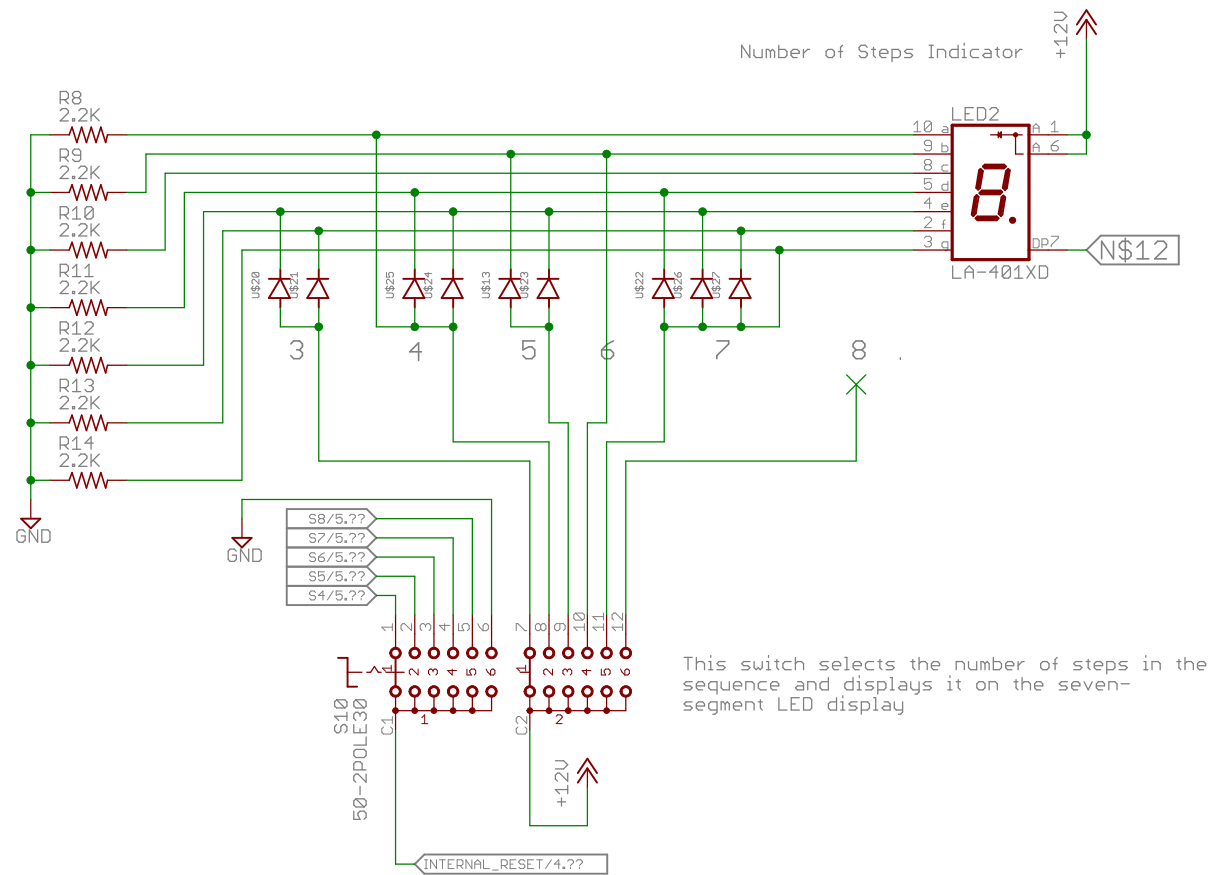
Cigar Box Sequencer

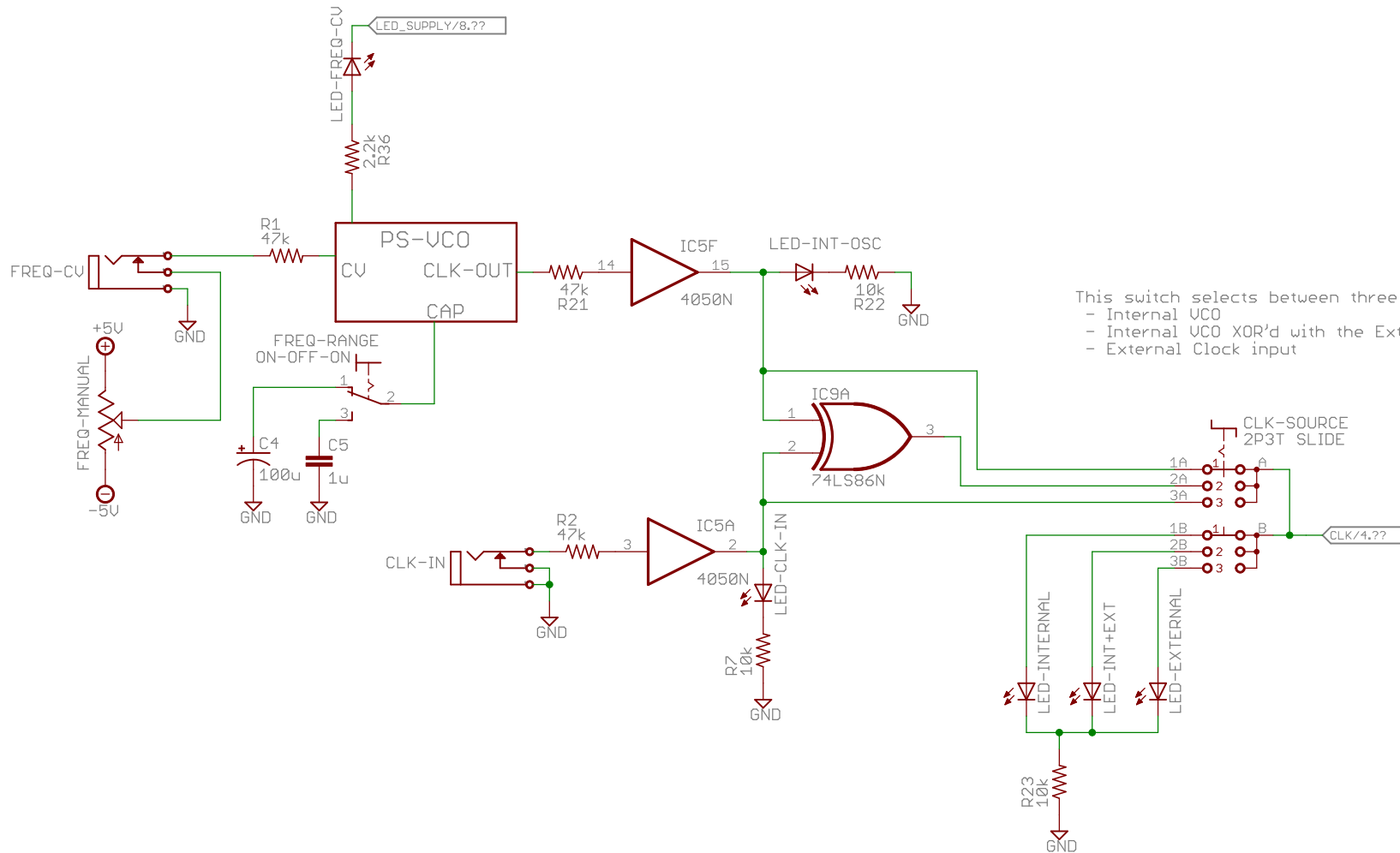
A 3-to-8-step sequencer built into a cigar box

2015-November

Ryan Jensen

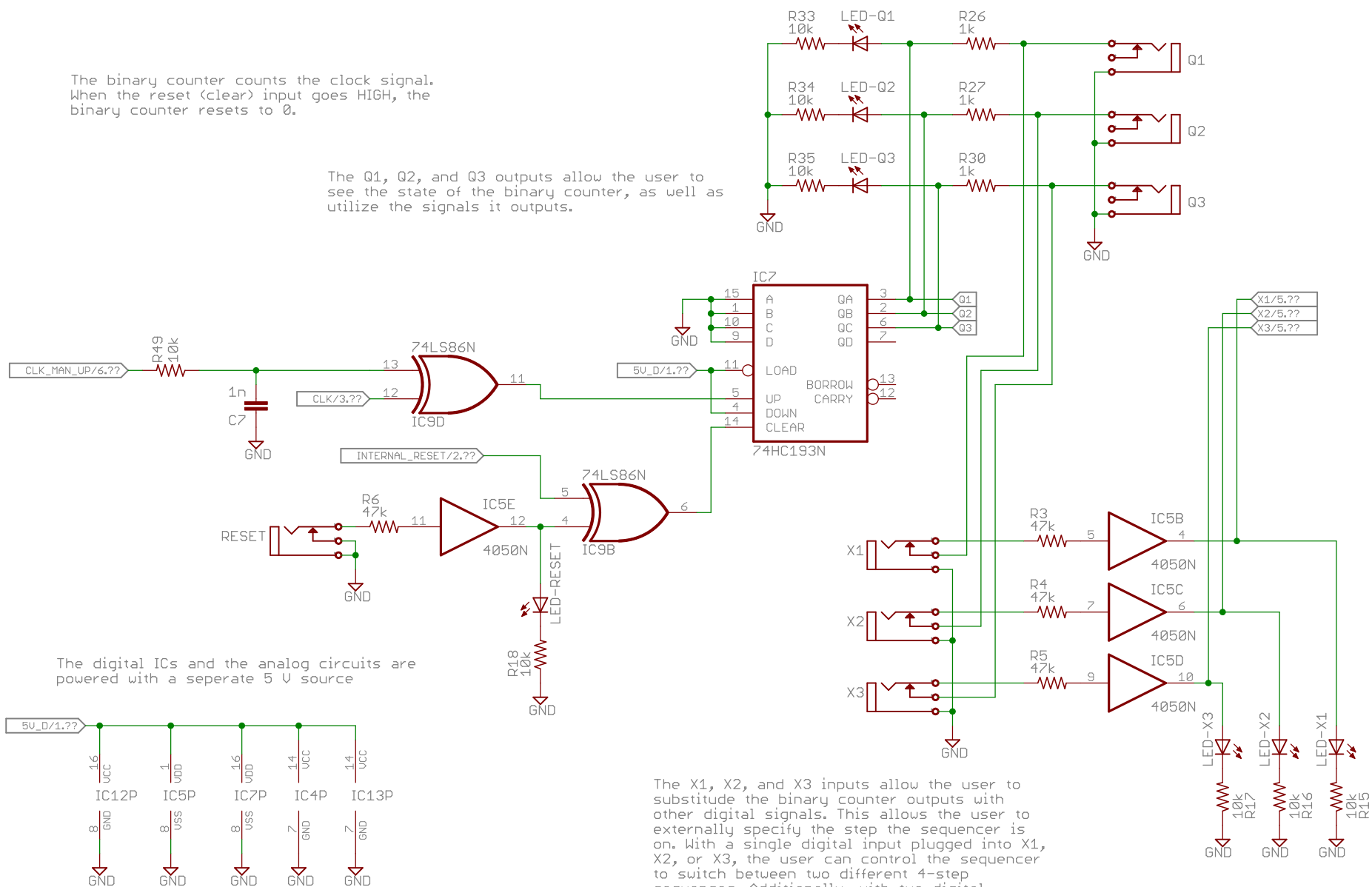






The binary counter counts the clock signal. When the reset (clear) input goes HIGH, the binary counter resets to 0.

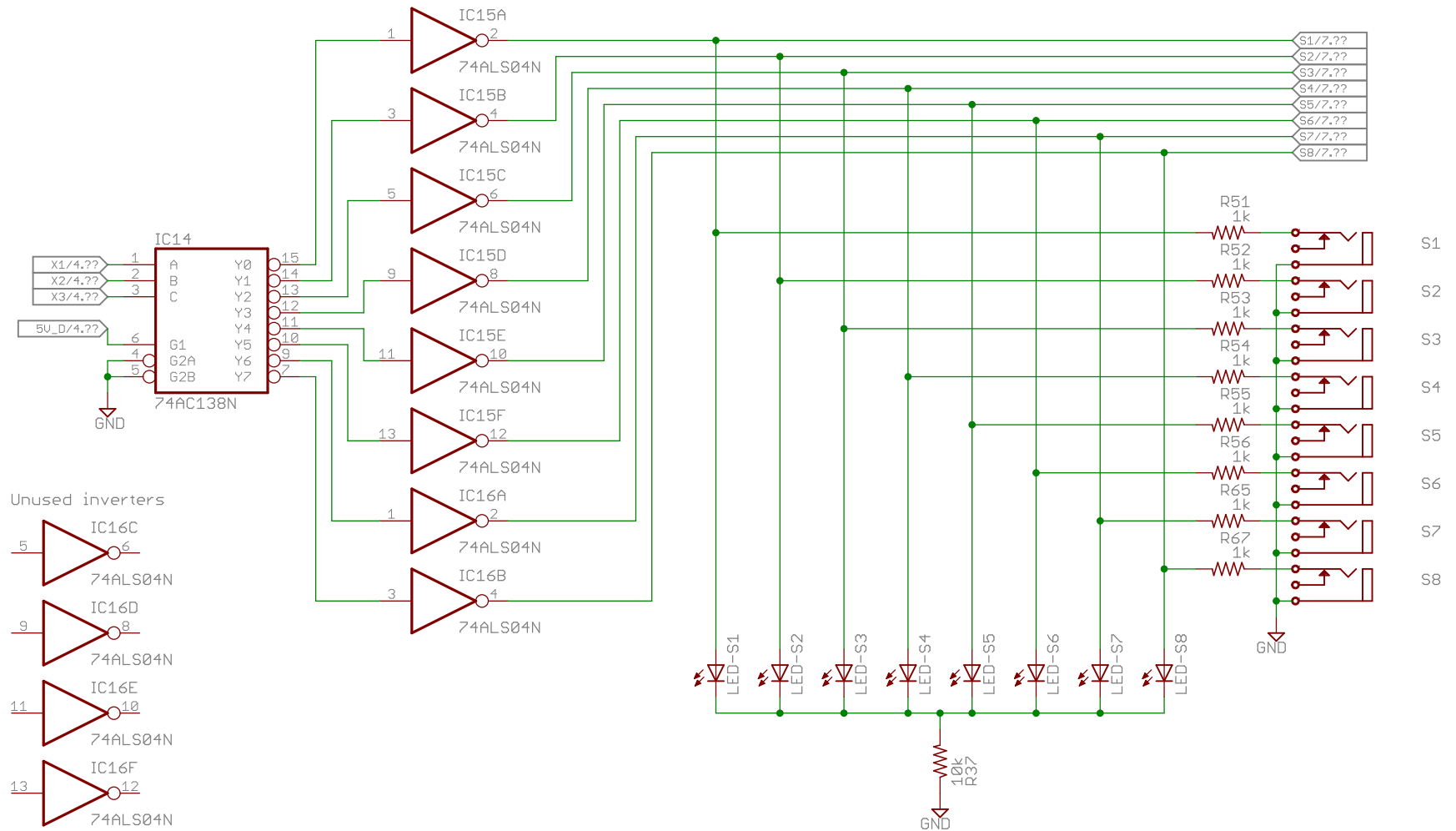
The Q1, Q2, and Q3 outputs allow the user to see the state of the binary counter, as well as utilize the signals it outputs.



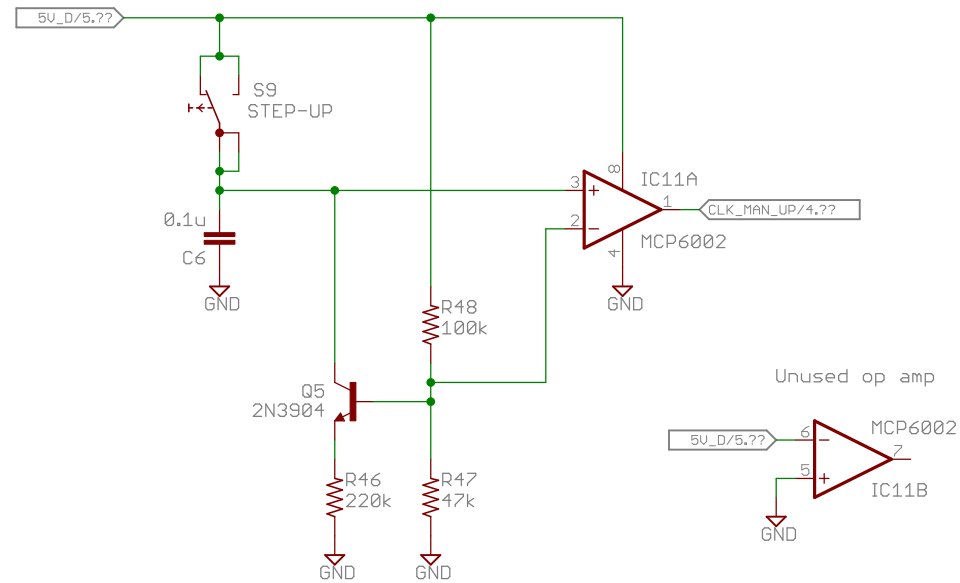
The digital ICs and the analog circuits are powered with a separate 5 V source

The X1, X2, and X3 inputs allow the user to substitute the binary counter outputs with other digital signals. This allows the user to externally specify the step the sequencer is on. With a single digital input plugged into X1, X2, or X3, the user can control the sequencer to switch between two different 4-step sequences. Additionally, with two digital signals plugged into X1, X2, or X3, the user can control the sequencer to switch between four different 2-step sequences.

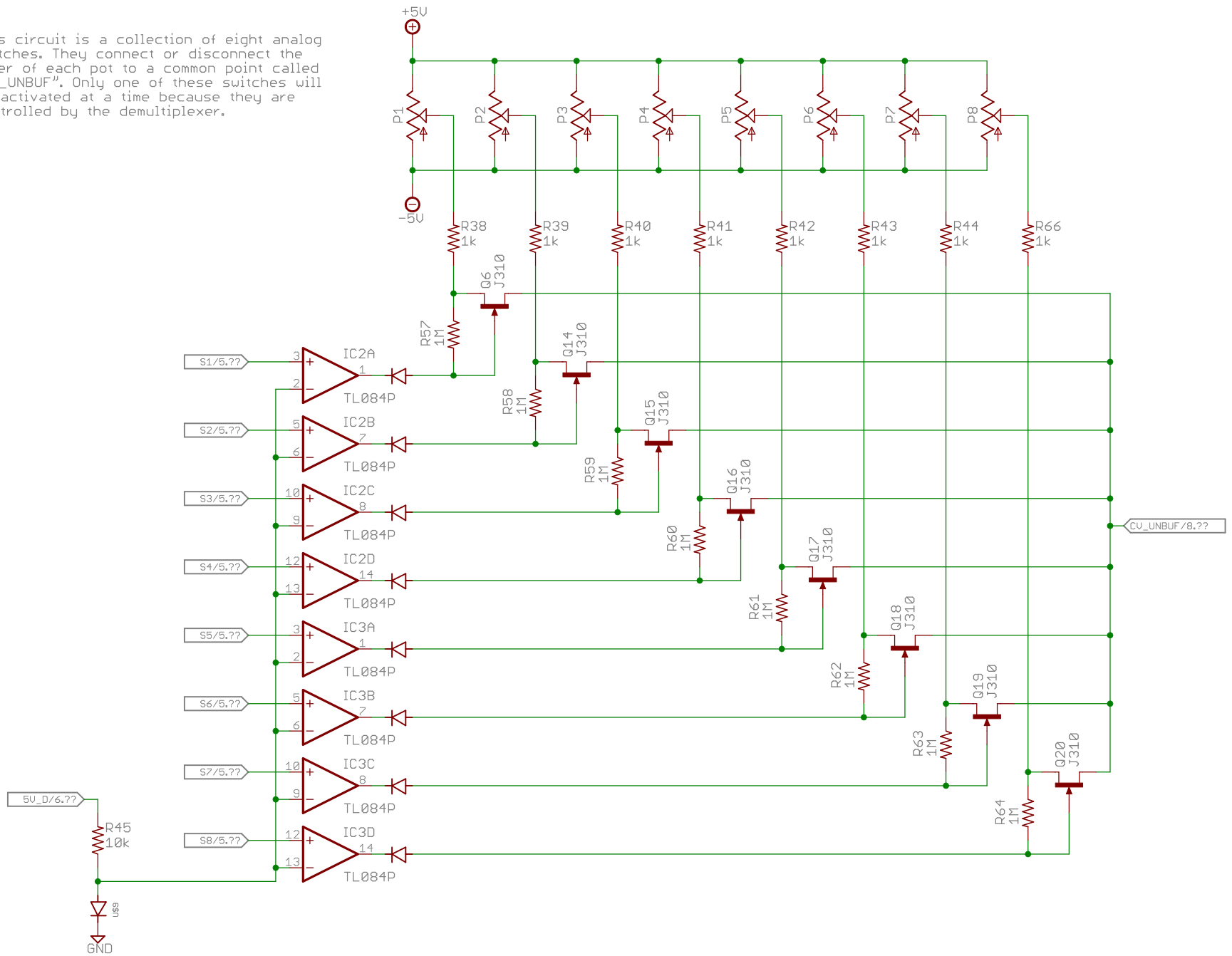
The demultiplexer converts the three digital binary lines (where all each of the three lines can be either HIGH or LOW) into eight digital output lines (where only a single output is "SELECTED"). This circuit converts the binary encoding into a selection of a single step of the sequencer.



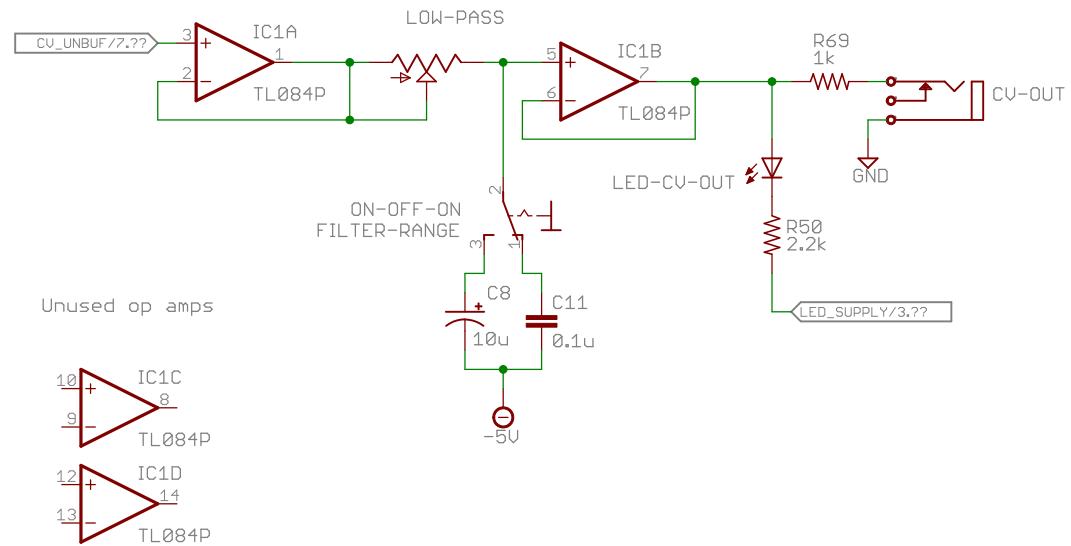
This switch allows the user to manually advance through the steps of the sequencer. The circuitry around the switch debounces the signal to prevent the rapid addition of counts that occurs when a noisy switch is fed into a digital logic device.



This circuit is a collection of eight analog switches. They connect or disconnect the wiper of each pot to a common point called "CU_UNBUF". Only one of these switches will be activated at a time because they are controlled by the demultiplexer.



This circuit buffers the CV signal from the eight potentiometers. It also acts as an RC lowpass filter with a variable cutoff frequency (variable time constant).



This circuit uses eight switches to generate GATE signals on the specified steps. It is useful for turning notes "ON" or "OFF" with the aid of external modules. The signals from the eight switches are combined with the clock source to achieve this.

