

Tick Kit

Assembly Instructions



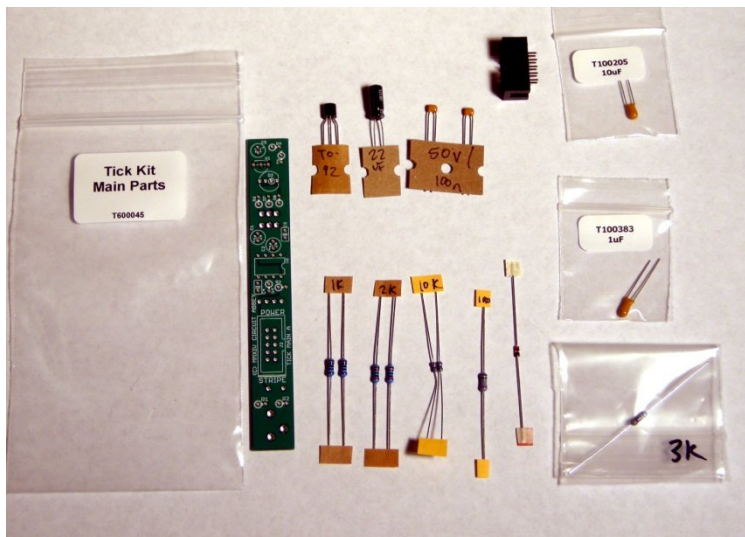
Circuit Abbey

Tick Kit Description

The Tick is a simple clock module kit. It has 3 ranges from fast to glacial, with a cool LED to show the range. The module puts out a square wave. This 3HP module has a maximum 20mA current draw. Module depth is 26mm.

Main Parts Assembly

First unpack the components and lay them out as shown:

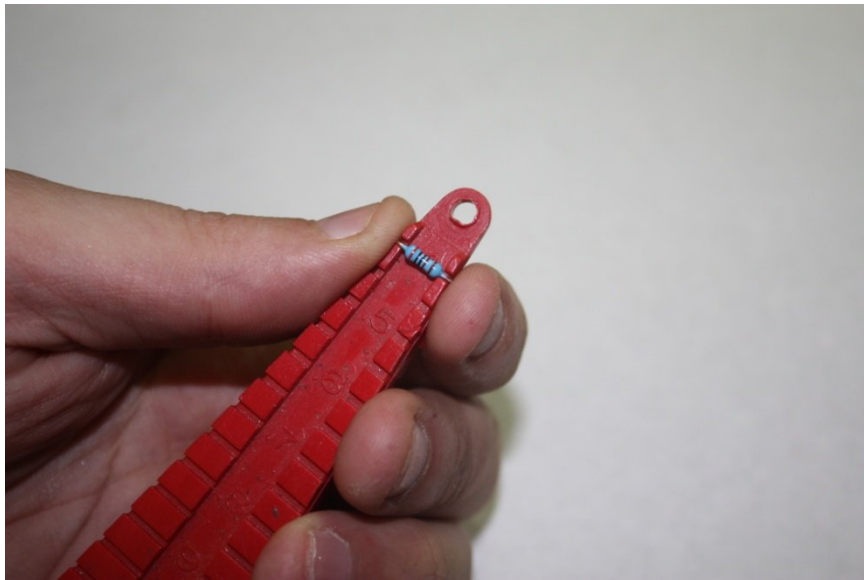


Make sure all of the components are present. If you are missing components, email support@circuitabbey.com for replacements.

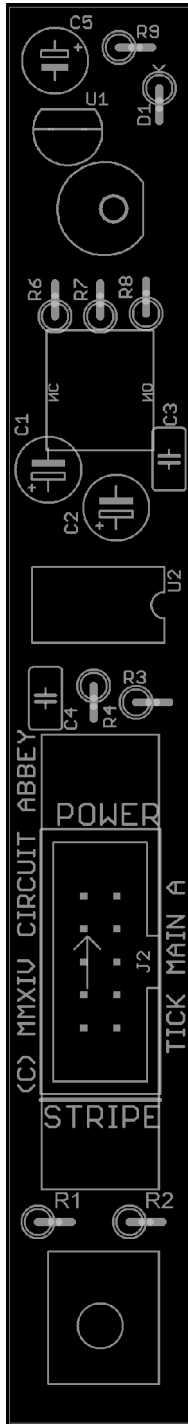
Main Parts List:

Qty	Title	Reference
1	BAT85 Diode	D1
2	100n Capacitor	C3,C4
2	10K Resistor	R3,R4
2	1K Resistor	R1,R2
2	2K Resistor	R7,R8
1	3K Resistor	R6
1	1 Ohm Resistor	R9
1	22uF 25V Capacitor	C5
1	78L05	U1
1	Header,2x5,shrouded	J2
1	1u 25v TANT	C2
1	10u 25v TANT	C1

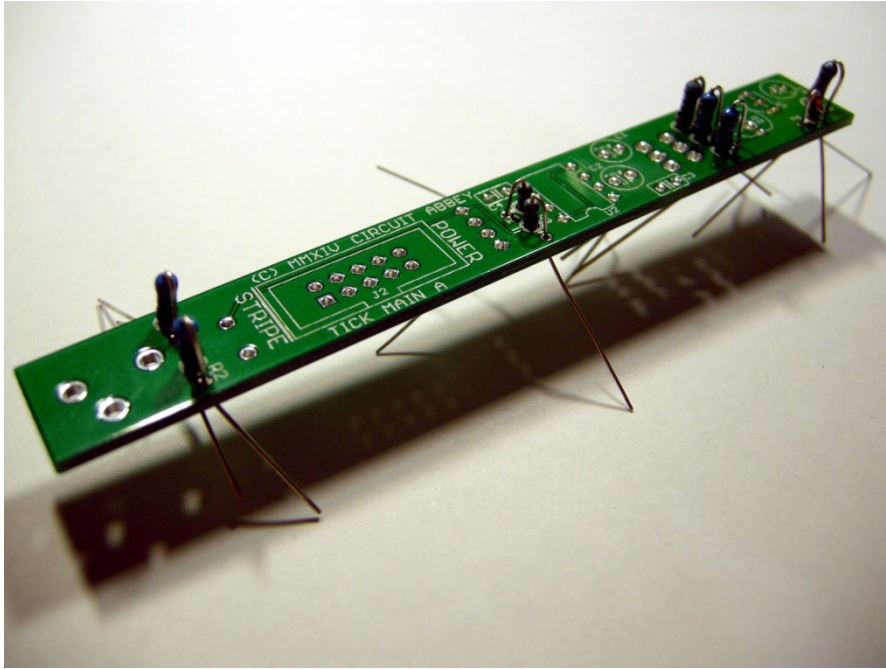
A lead forming tool is handy and speeds assembly.



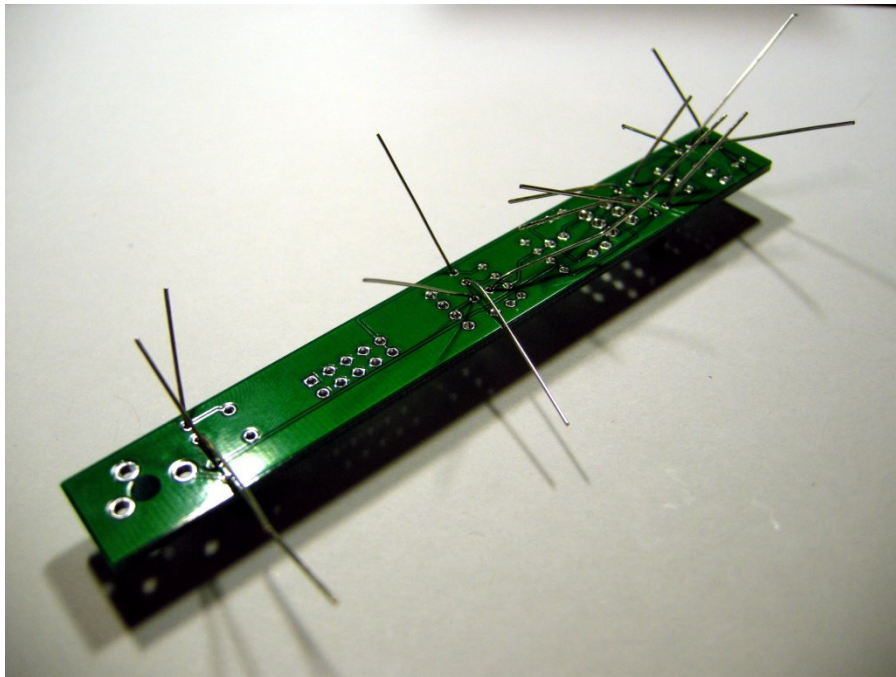
Here is a picture of the board for reference:



Start by inserting the Resistors and the diode. They are placed on the silk screen side of the board:

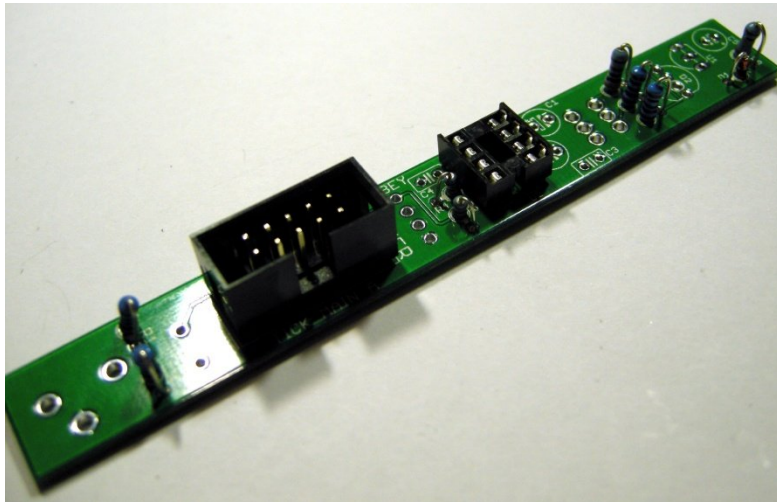


Flip the board over (carefully) solder, and trim the leads:



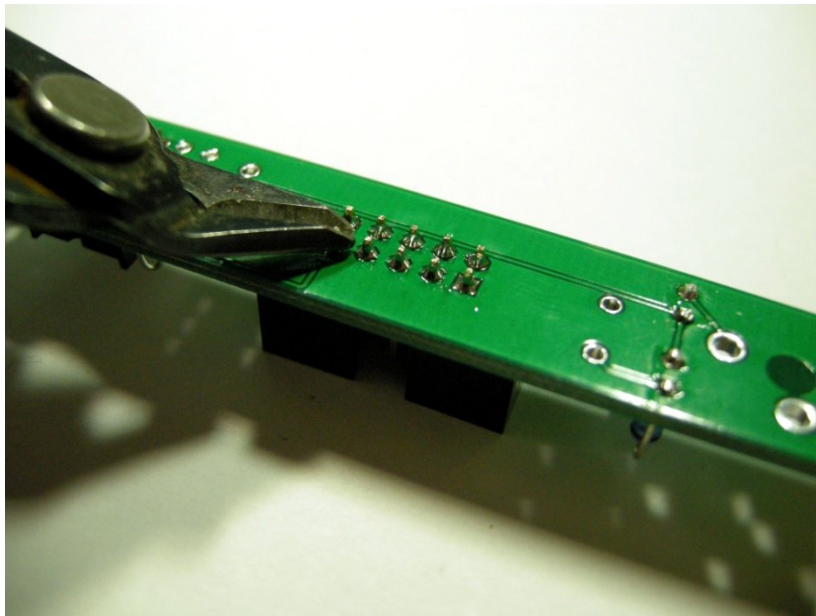
There are several techniques for holding parts in place while soldering. The first is bending the leads slightly. The second is to use tape like masking tape to hold the parts. The third is to tack solder the leads on the component side then flip the board and finish soldering.

Next solder the 8-pin socket and the 2x5 shrouded connector. The socket can be found in the bag labeled "555 and Socket".



Be sure to align the socket and connector properly before soldering.

Clip the connector leads:

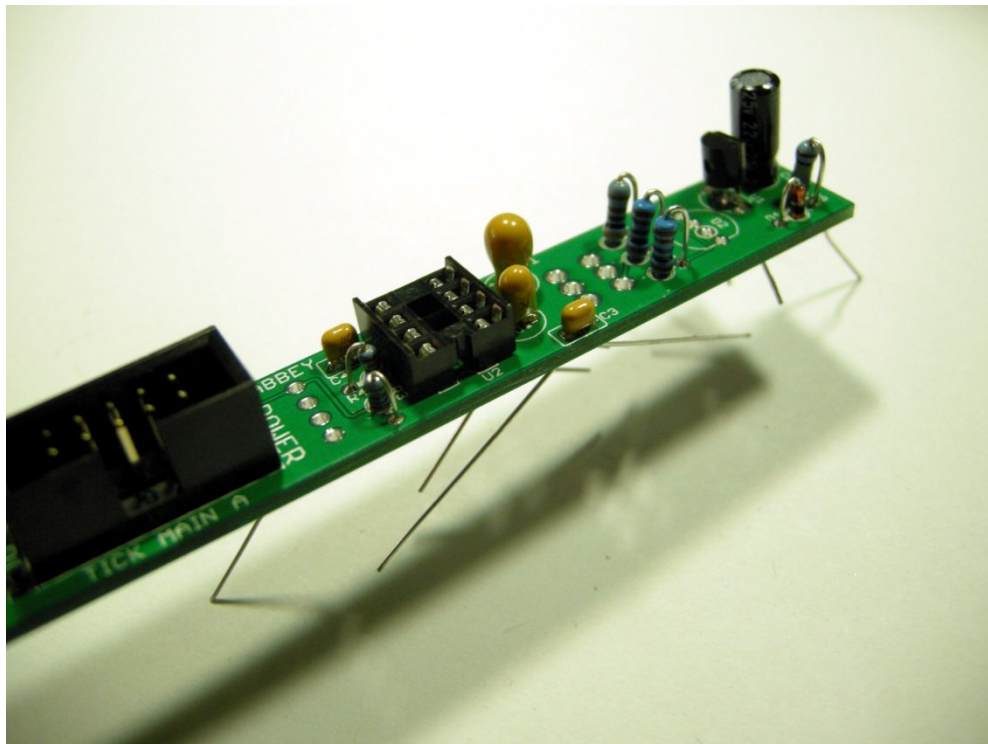


Now locate the tantalum capacitors. They are in separate bags:



The 1uF goes in C2 and the 10uF goes in C1.

Locate the 100n capacitors. They go in C3 and C4. Place the 78L05 regulator and the 22uF capacitor.



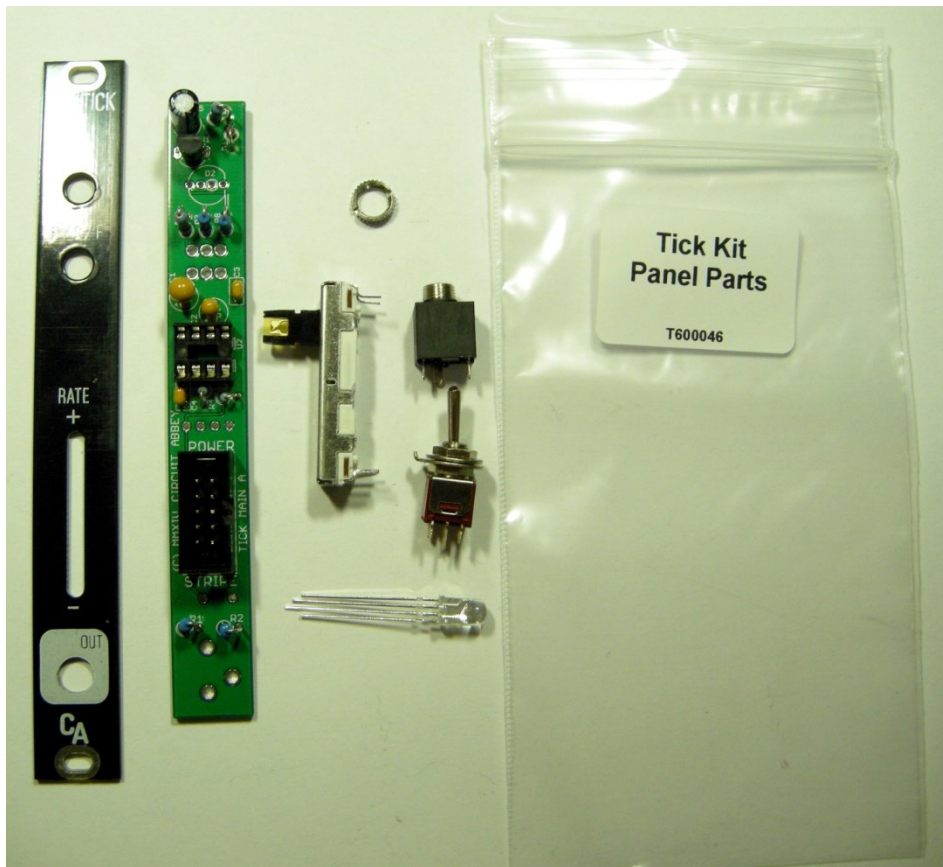
Flip the board and solder the components. Trim the leads.

Control Parts Assembly

Panel parts list:

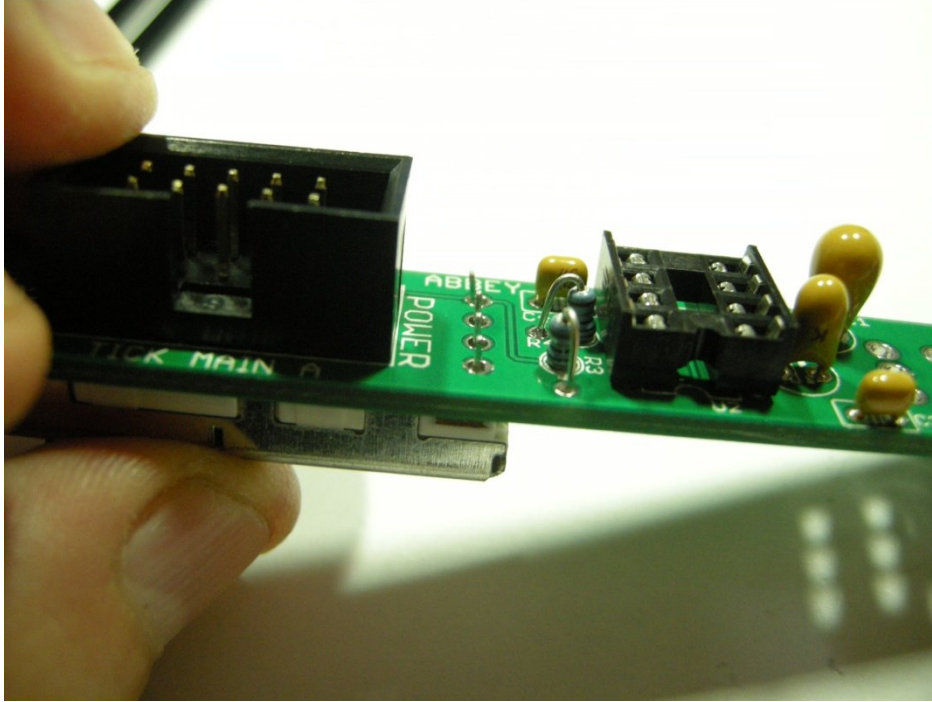
Qty	Title	Reference(m)
1	POT,500K SLIDE	R5
1	LED,5MM RGB	D2
1	Jack,3.5mm,Stereo,Vert	J1
1	DPDT SUB MINI SWITCH	SW1
1	Nut, Round	J1

Locate the bag labeled "Panel Parts"



These parts go on the opposite side of the board, the side with no silk screen.

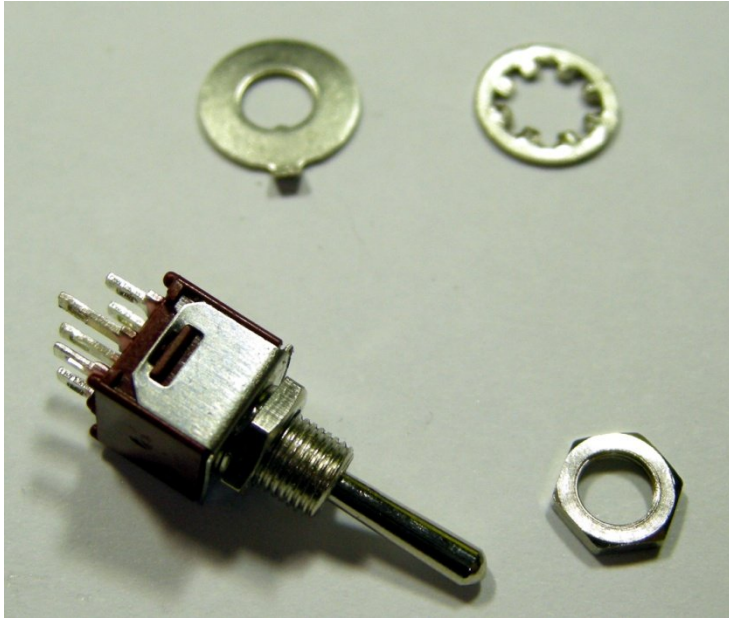
Start with the slide pot, R5. Insert into the board as shown:



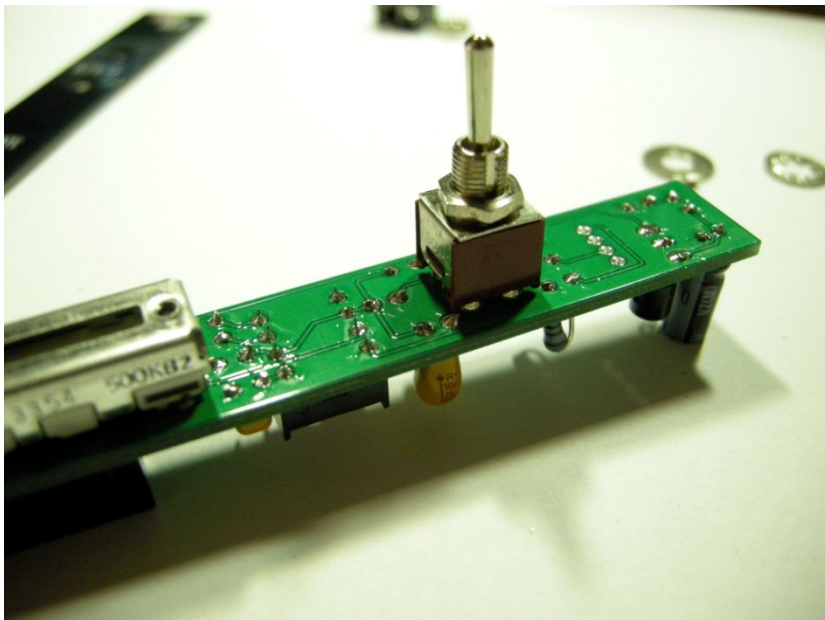
Make sure the slide pot sits flush with the board. If the connector leads are too long they will push the slide pot up. If this is happening then remove the slide pot and trim the connector leads closer to the board.

Solder in the slide pot but only tack solder 2 pins. Re-verify the pot is flush to the board. If it is not, carefully re-heat the tacked pins while pushing the pot against the board. Once the slide pot is flush, solder the rest of the pot pins.

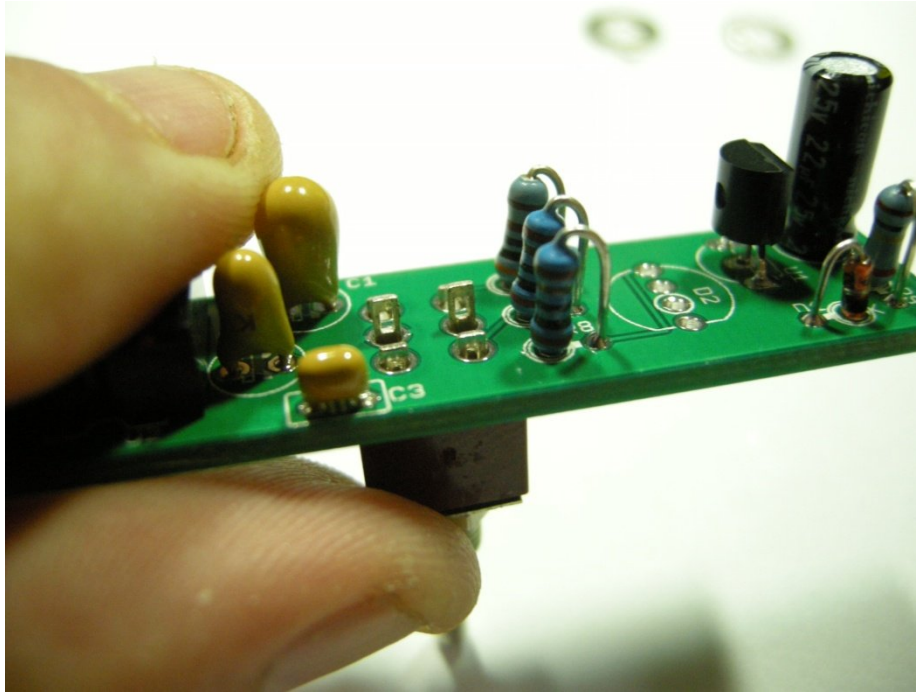
Locate the switch. Assemble one nut onto the switch. Remove all other hardware.



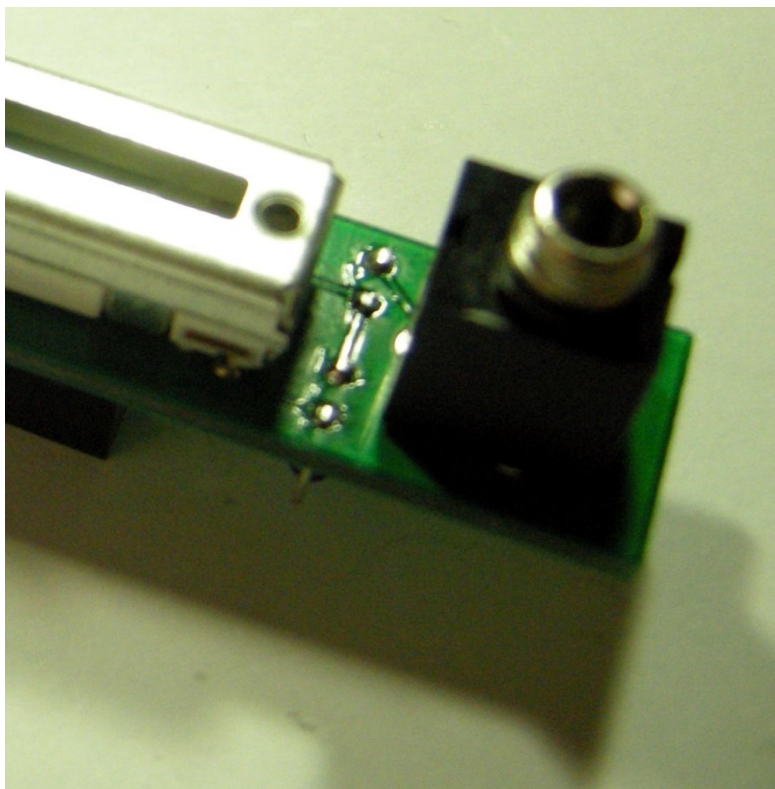
Insert the switch into the board as shown:



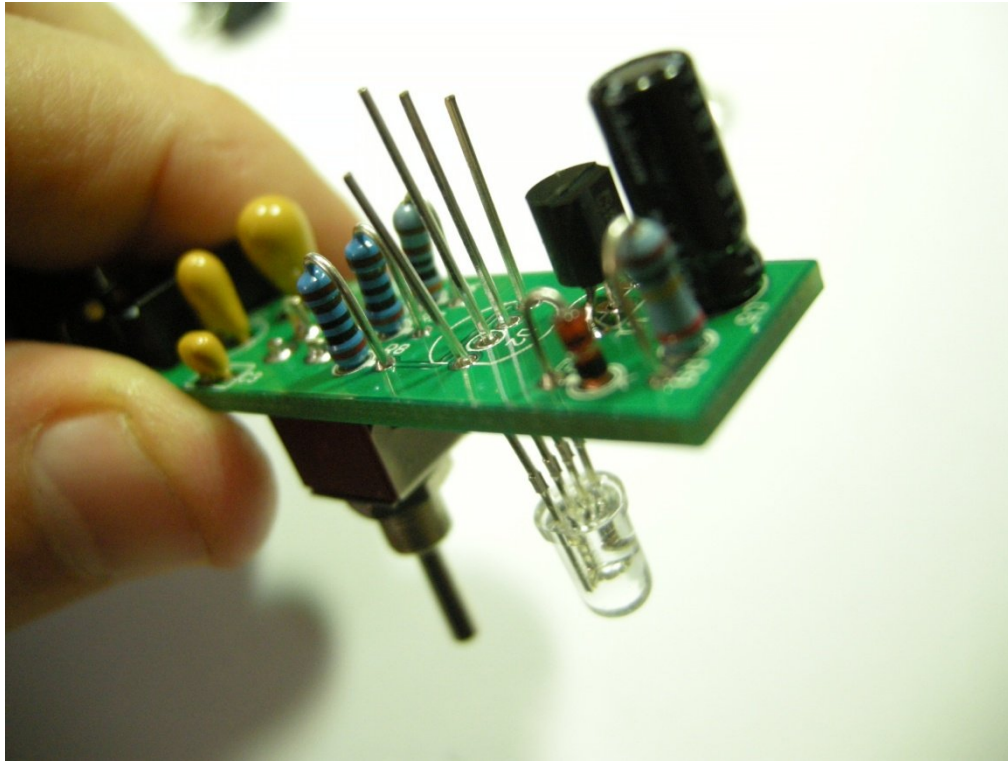
Make sure the switch is flush with the board. Turn the board over and solder the switch leads:



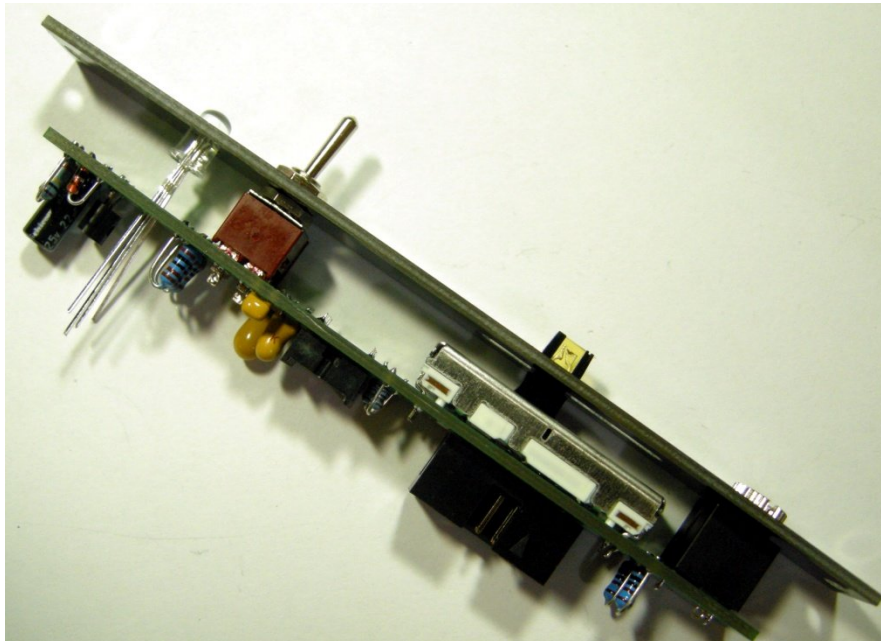
Place the jack into the board, flip the board over, and solder the jack in place:



Now place the LED. The circle on the silk screen side of the board is where the long lead of the LED goes:

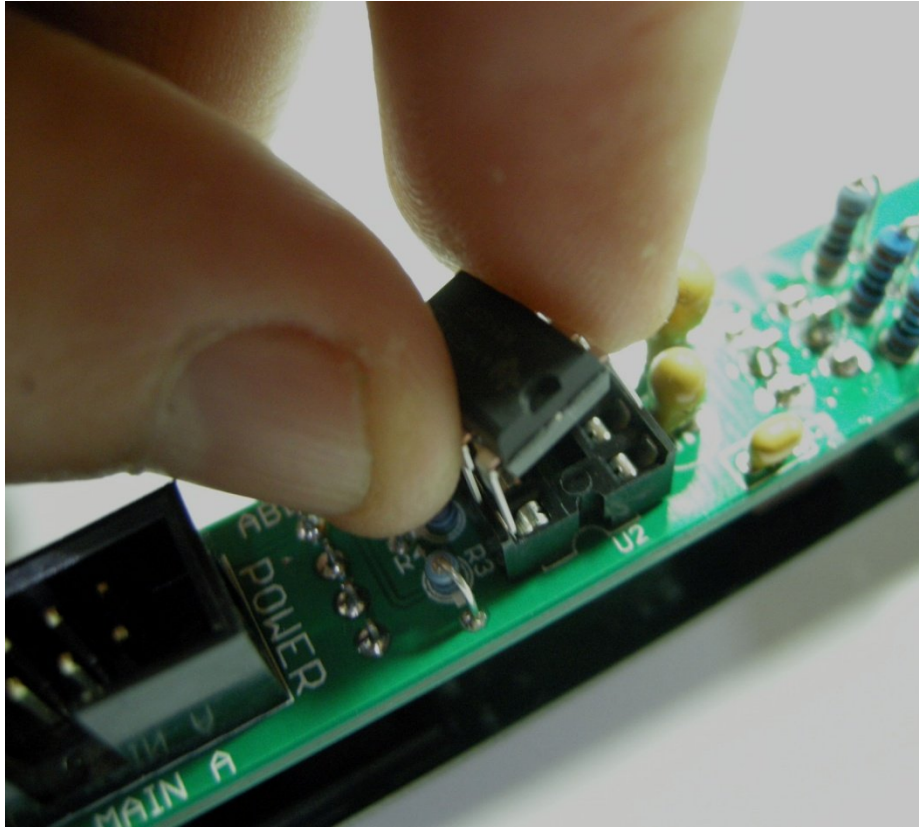


To align the LED it is best to install the front panel at this time:



Put on the nuts for the jack and the switch as shown. Now use the panel to position the LED. We like to have the LED protruding out about half way, but this is up to the user. Solder the LED in place and trim the leads.

Finally, install the 555 into the 8 pin socket:



Congratulations! Your Tick kit is complete.

Usage

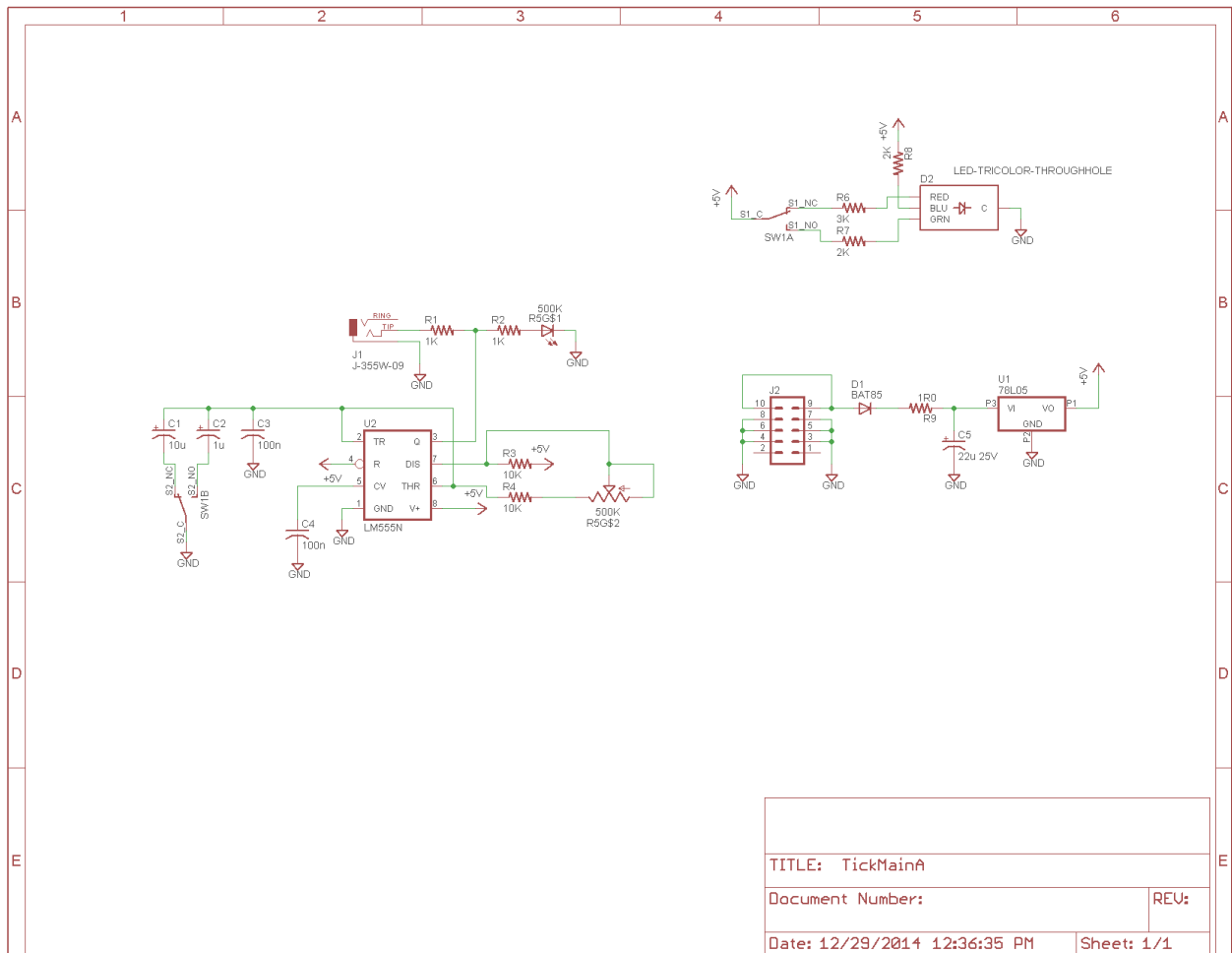
There are many places where a clock can be handy. The most basic use, of course, is on modules that need a clock: counters, ADSRs, sequencers just to name a few. The Tick can be used as a master clock in a complicated patch. Mult the output of the Tick to the rest of your patch. Now everything is synced to one clock, and you didn't tie up an LFO to do it!

The Tick is designed to go up to several hundred hertz to it can clock a counter and still have some speed. The low end is about seven seconds so it can do a fairly slow rate.

This module is 3HP. This is literally as small as we could make it and still have good usability. 2HP is too small and 4HP wastes space. So 3HP is just right.

Theory of Operation

Simple enough. The design uses an astable 555 circuit straight from the data sheet. R3, R4+R5, and C1-3 set the frequency. The toggle switch selects one of three different timing capacitors: C1, C2 or C3. R4 sets the maximum frequency for the selected range, and the sum of R4 and R5 sets the lowest. The toggle switch also selects the color of the range LED. Blue is always on, and the switch turns on red or green. C4 is for noise suppression. R1 is a current limiting resistor for the output, and R2 set the current for the resistor in the slide pot.



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