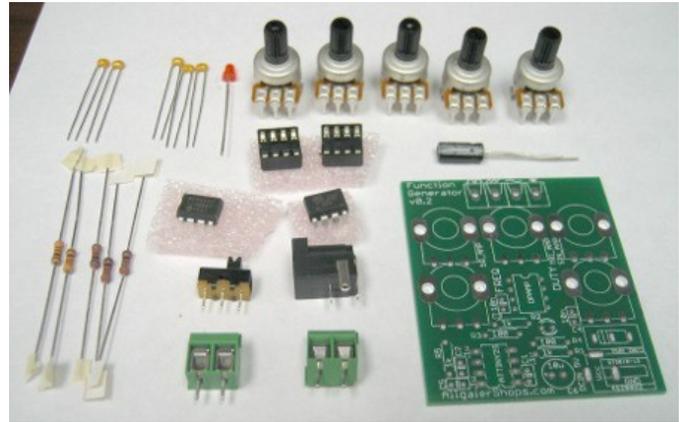


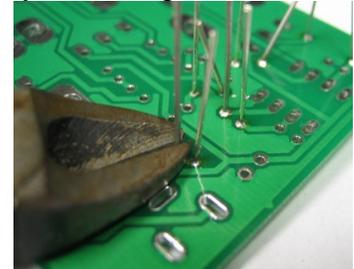
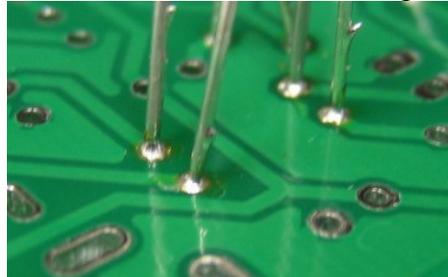
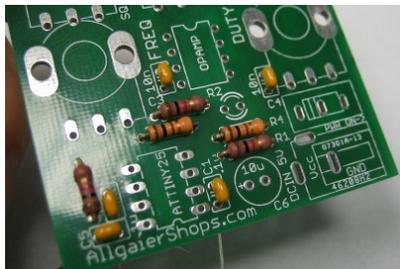
## Tiny25 Function Generator v0.2 Assembly Instructions (Aug 2012)

### Parts List:

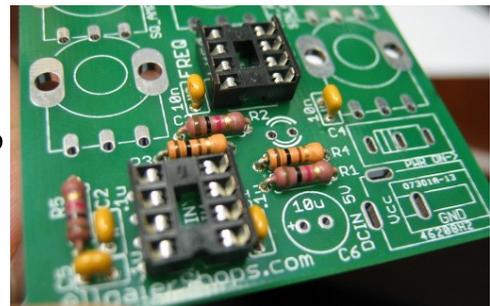
- 2x 10uH inductors
- 5x 100nF ceramic capacitors
- 1x T-1 LED
- 5x 10k linear potentiometers
- 1x 10uF electrolytic capacitor
- 3x 1 kOhm resistor
- 2x PDIP-8 socket
- 1x ATTiny25 (pre-programmed)
- 1x rail-rail op amp
- 1x SPDT switch
- 1x 5.5mm OD/2.1mm ID DC power jack
- 2x 2-contact terminal blocks
- 1x printed circuit board



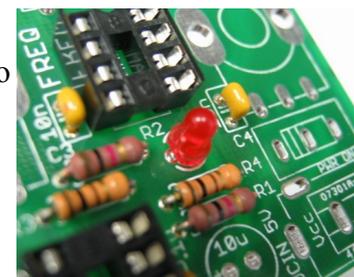
Step 1: Start soldering the lowest-profile components first, and work your way up. That way, as you insert each component and flip the board upside down to solder it, the weight of the board will keep the component fully inserted. The ceramic caps, resistors, and inductors are the shortest, so insert them first. Note that kits distributed after Aug 10, 2012 have a couple of tweaks to improve the output quality—R3 and R4, which are shown as “100” on the PCB, have been replaced by 10uH inductors, and C3 and C4, which are shown as “10n” on the PCB, have been replaced by 100nF capacitors.



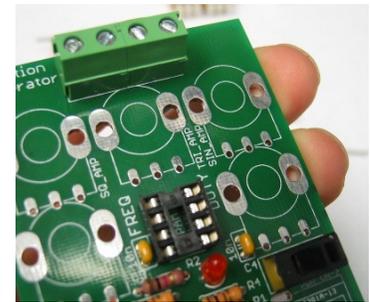
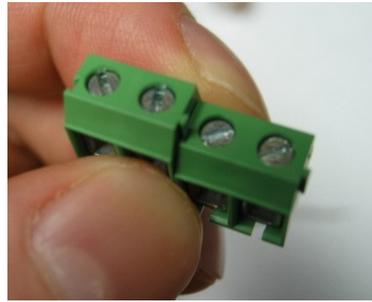
Step 2: The PDIP-8 sockets are the next shortest component. Solder it as you did the capacitors and resistors. No need to snip off any excess leads here. Make sure to orient the sockets correctly.



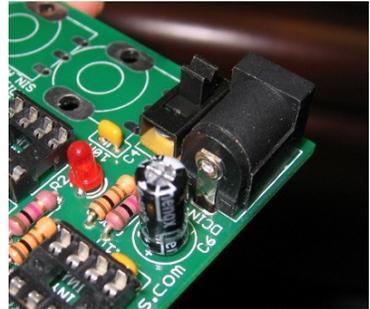
Step 3: Insert, solder, and snip the leads on the LED. The anode (longer lead) goes to the right, and the cathode (flat side on the LED flange) goes to the left.



Step 4: The terminal blocks fit together. Place the terminal blocks and power switch on the board and solder them in place. (Newer kits will have spring terminals instead of screw terminals)



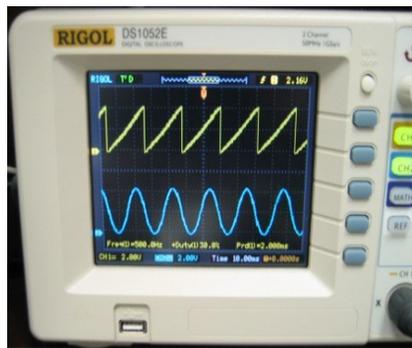
Step 5: If your kit includes the power jack, solder it in place now. If you have the battery holder, don't attach it now—wait until the end. Add the electrolytic capacitor and solder/snip it just like the resistors and ceramic caps. Observe polarity!



Step 6: Place the potentiometers on the board and solder them in place. It is not necessary to solder the mounting ears, but it provides extra stability if you do. You can see an example of each case below:



That's all! Hook it up and you're ready to go!



### Application notes:

The frequency range is approximately 1Hz-40kHz, ramping exponentially. Duty cycle ranges from about 2% to about 98%. The Duty control changes the duty cycle (in approx. 2% increments) as well as the shape of the triangle wave. There are up to 48 steps per cycle (fewer at high frequencies), and the output resolution is 6-bit (64 levels). 7- and 8-bit resolution is possible with a minor modification of the code, but doing so drops the PWM frequency accordingly and messes up the waveform (even worse than it already is) at higher frequencies. If you'd like to modify the kit, feel free! Schematics and source code are available at <http://allgaiershops.com/documentation.php>. We only ask that you let us know what colossal errors we've made in our design, so that we can fix it.

Questions? Comments? Derogatory remarks? Send 'em all to [info@allgaiershops.com](mailto:info@allgaiershops.com)