

Menorah

version 2.0

Build Instructions

F O U R
B I T
I N D U S T R I E S . C O M

Thank you for purchasing our Hanukkah Menorah kit. The instructions below will show you the proper placement of all parts into the PCB. Be sure to follow the directions closely as many parts are polarized and will not work if inserted backwards.

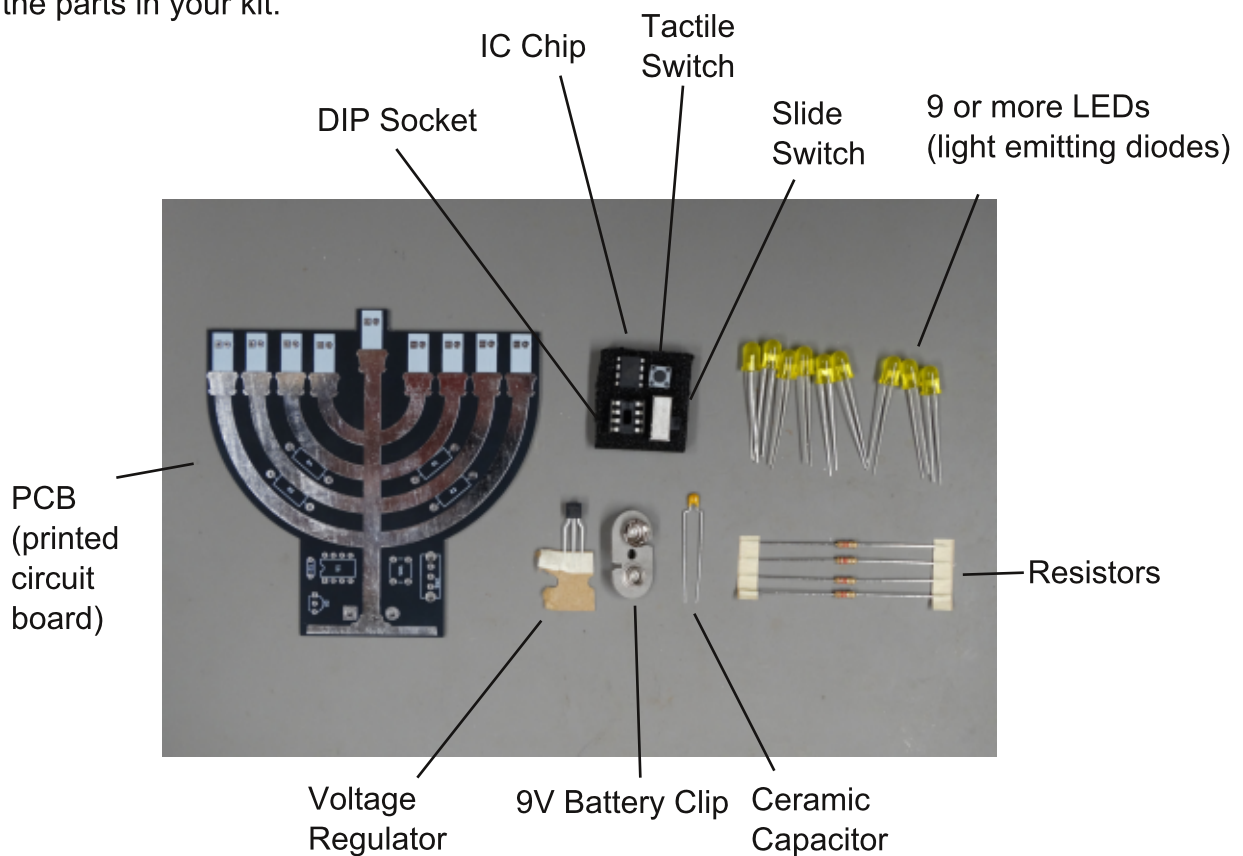
If you've never soldered before, consider taking a class at your local hackerspace! We have found a good introductory video from [curiousinventor.com](https://youtu.be/lpkkfK937mU) on youtube at <https://youtu.be/lpkkfK937mU> or by following the QR code at right.



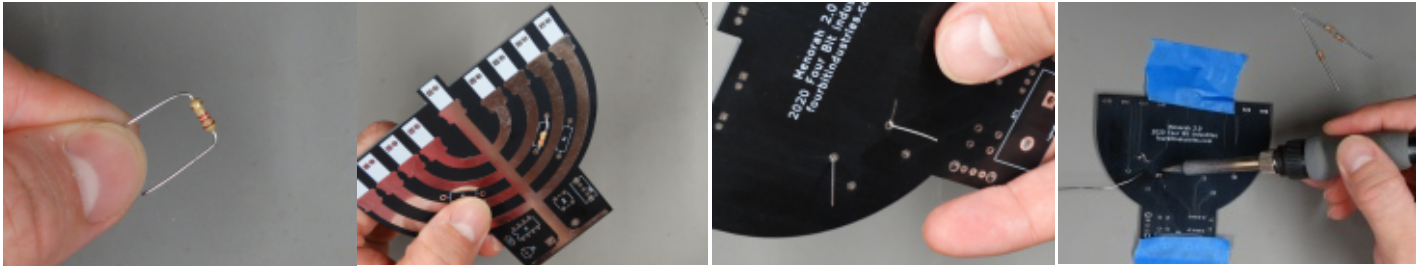
WARNINGS

Always follow best safety practices for soldering, including the wearing of eye protection and adequate fume extraction. This kit is not for children.

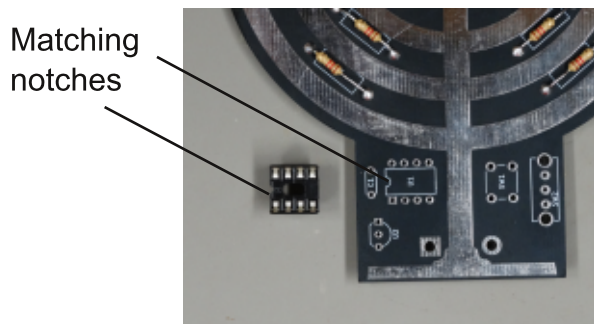
1. Verify the parts in your kit.



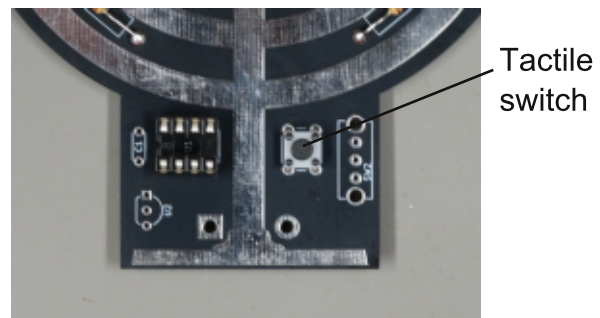
2. We will begin with resistors. The four resistors are identical and non-polarized, meaning they can be inserted either way around. Locate R1 on the circuit board and bend the two leads so they can be inserted through the two holes. Once in place, bend the leads out so the resistor stays in place as you solder it. If you don't have a holder for your PCB, you can tape it down for soldering. Once soldered in place, you can trim the leads with wire cutters. Then proceed to R2, R3, and R4.



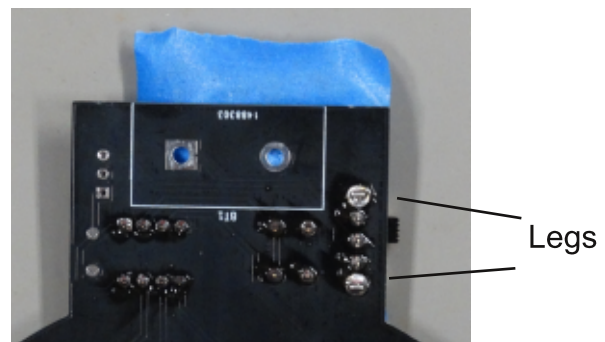
3. Next we will instal the DIP socket into position U1. Notice that there is a notch in one end of the socket that matches a notch in the outline on the PCB. Insert the socket so the notches line up. Tape the socket into place for soldering. Start by soldering just one pin and then check to make sure the socket is flat against the board. If it is not, you can reheat the one pin and move it into place before proceeding to the other pins.



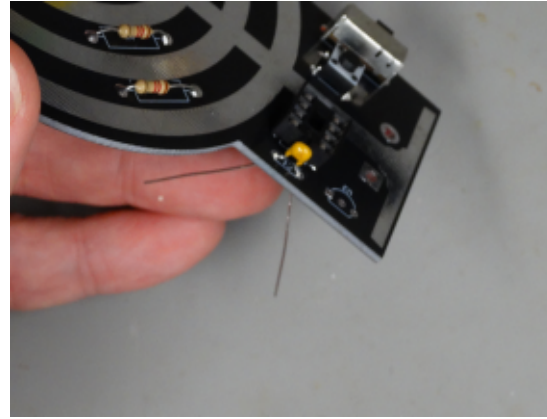
4. Instal the tactile switch by inserting it into position SW1. Because the pins of the switch are bent, it should hold intself into the PCB for soldering.



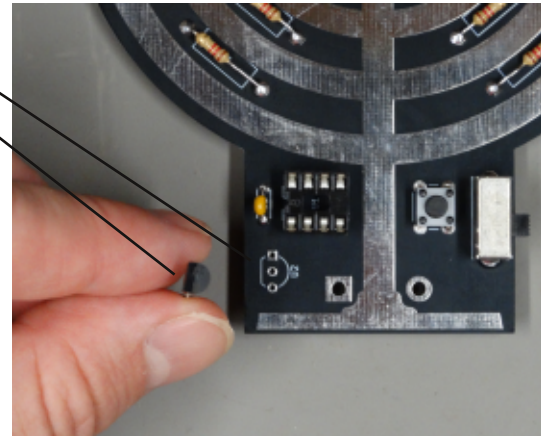
5. Next install the slide switch. It should be installed with the slide facing out from the board. You can solder the three pins and the two legs for additional stability. If your iron has adjustable heat, you may want to turn it up when soldering the two legs.



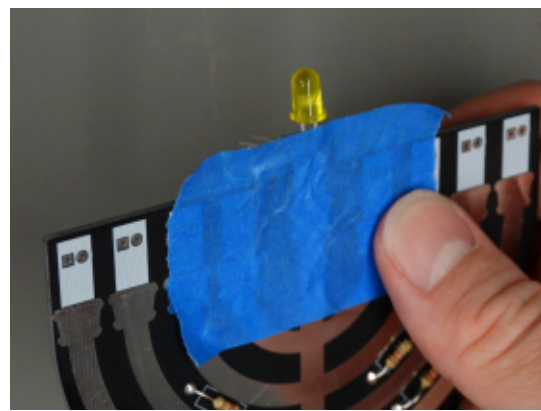
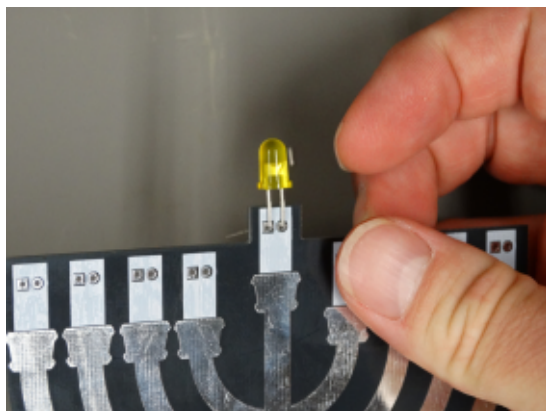
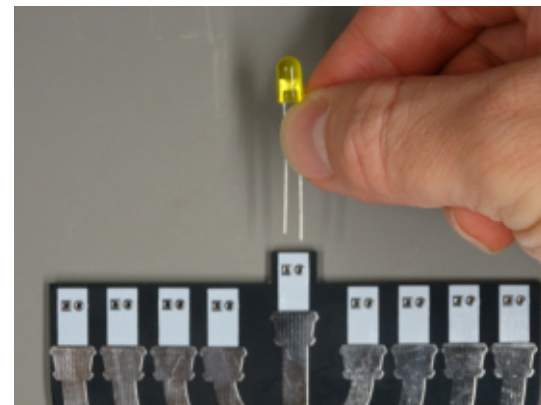
6. Next solder into place the ceramic capacitor. This device is non polarized. You can bend the legs out to hold it into place for soldering. Do not expect the device to sit flush against the board. Trim the leads once soldered into place.



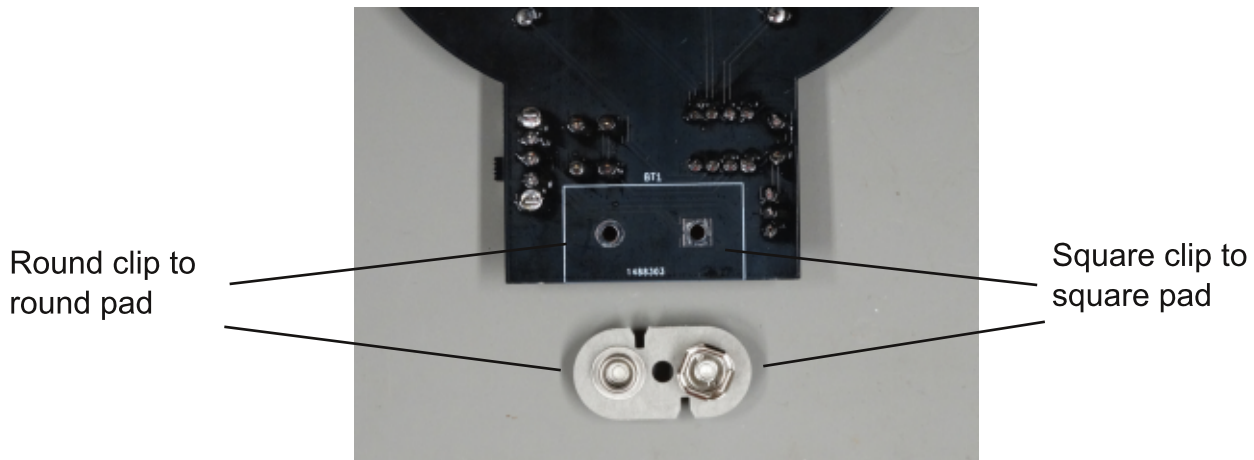
7. Notice that the voltage regulator is in an asymmetric package with a flat face and a rounded face. Place the regulator in position U2 so that the flat face matches the flat edge in the outline on the PCB.



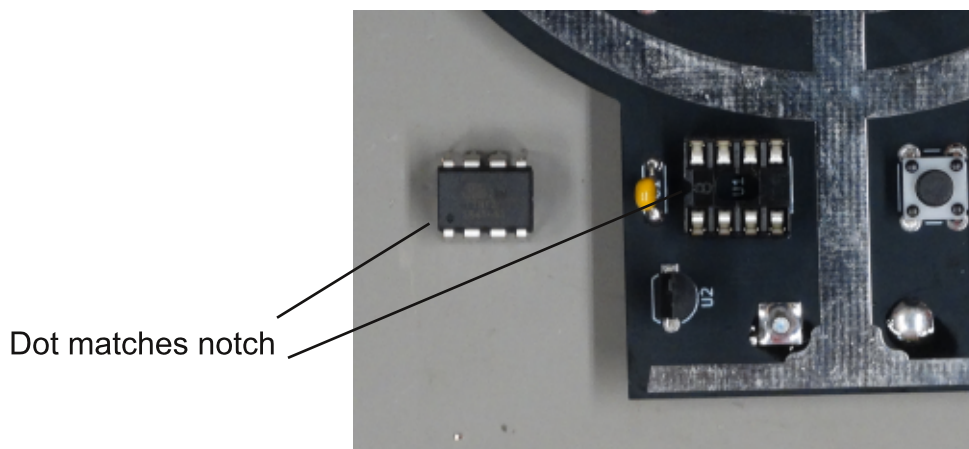
8. All nine LEDs are installed at the top of the board at the ends of the candles. Notice that the legs of an LED are different lengths and that the two pads they are soldered to are different shapes. The long leg should go to the round pad. The short leg should be soldered to the square pad. Bend the legs so the LED points up past the end of the board. Tape the LED into place for soldering. Solder the other eight similarly.



9. The last part to solder is the 9V battery connector. We recommend soldering this component to the back of the PCB so that the battery attaches from the rear. Insert the battery connector so that the square-shaped clip corresponds with the square pad and the round shaped clip corresponds with the round pad. Tape the component in place and solder from the front of the PCB.



10. Last we will install the DIP chip. You can straighten the leads of the chip by rolling it gently against a flat surface to bend all the leads on one side so they point straight down. Then do the same to other side of the chip. Insert the chip so that the small dot in the corner is at the same end as the notch in the socket.



11. To operate, attach a 9V battery and turn the switch on. The shamash "candle" should light immediately, followed by one or more of the other "candles." Each time you turn it on, one more light should turn on than the time before. After all candles are lit, turning the menorah on one more time should start the sequence over. If too many lights are lit, pressing the tactile switch will turn off the furthest light.