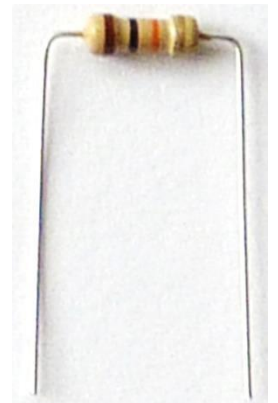


Light Mill 2022

Construction description of the Light Mill:

It is easiest to mount the parts from low to high. All resistors are mounted lying down, bend both wires at an angle of 90 degrees taking into account the distance between the holes on the PCB. Insert the resistance through the PCB and gently bend the wires on the bottom of the PCB slightly apart. The PCB can now be turned over to solder without the resistance falling out. After soldering, cut off the legs just above the soldering, do this also for all other components with longer legs.



Tip 1: The dots at the beginning of the line can be colored to indicate which parts have already been assembled.

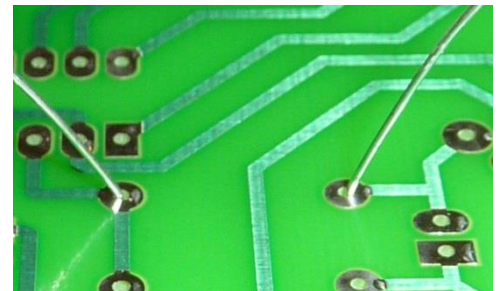
Tip 2: When in doubt about the assembly of a component, look at the photo of the built-up pcb, once soldered incorrectly repair can be difficult.

Mounting order:

Mount the following resistors successively:

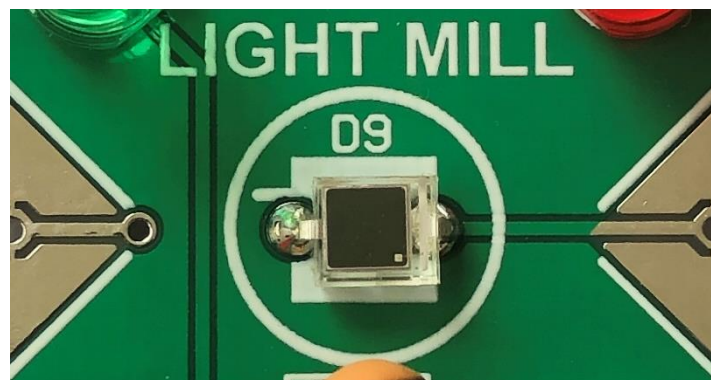
- R1, R2, R3: 560 Ω (green, blue, brown, gold)
- R4: 10 K Ω (brown, black, orange, gold)
- R5: 1 M Ω (brown, black, green, gold)

(The photo used is from a different print but shows what the intention is.)



- Mount photodiode D1.

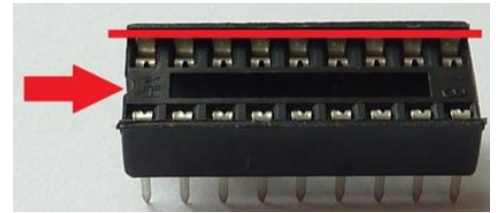
Unlike some other diode applications, it does not matter how it is mounted in this circuit. If you want to do it according to the book, the print shows that the tiny tab on the left as can be seen in the photo, the dot comes at the bottom right.



Light Mill 2022

Mount the following capacitors successively:

- C1, C2: 100 nF (yellow, pitch 5 mm, inscription 104)
- C3: 390 pF (yellow, pitch 2.5 mm, inscription 391)



Mount both IC feet:

- U1: 14 tripe (note direction)
- U2: 16 tripe (note direction)

Make sure they are well flat against the print.

NOTE: in one of the end sides of the IC feet there is a notch, this must match the drawing on the print. Make sure that all pins stick through the PCB well before soldering, at the top all connections must be flat and on the same line.

Mount the LEDs:

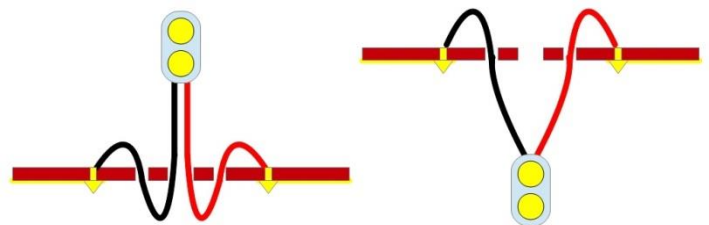
- D1, D2, D5, D6: LED red, 5 mm
- D3, D4, D7, D8: LED green, 5 mm

NOTE: The LEDs have a short and a long leg. The long legs are closest to the middle, on the side of the inscription D1 to D8 comes the shortest leg. Of course you can also change the colors from place to place, but if the LEDs are mounted incorrectly, they will not work!

TIP1: First solder them with one leg so that you can straighten them neatly and then solder the rest.

- Mount the battery clip.

Feed the wires from below through the PCB and then put them from above through the holes to solder them. After soldering, the wires can be pulled tight. As can be seen in the picture, this can be done in two ways depending on the side where you want the connection. As usual, red is + and black is -.



Place both ICs in the feet:

- U1: 40106, 14 pin (note direction)
- U2: 4060, 16 pin (note direction)

NOTE: in one of the end sides of the IC there is a notch (slot), this must correspond to the drawing on the print and the notch in the previously mounted IC feet.

The ICs are sensitive to static electricity!

- Connect the battery and the Light Mill can be tested!

If you have done everything right, you can now see the blades of the mill turning. You can make them spin faster by shining a light or a remote control on the photodiode D9 or grabbing the two silver surfaces. By inserting the battery through the holes and then connecting it, you can leave the mill upright.