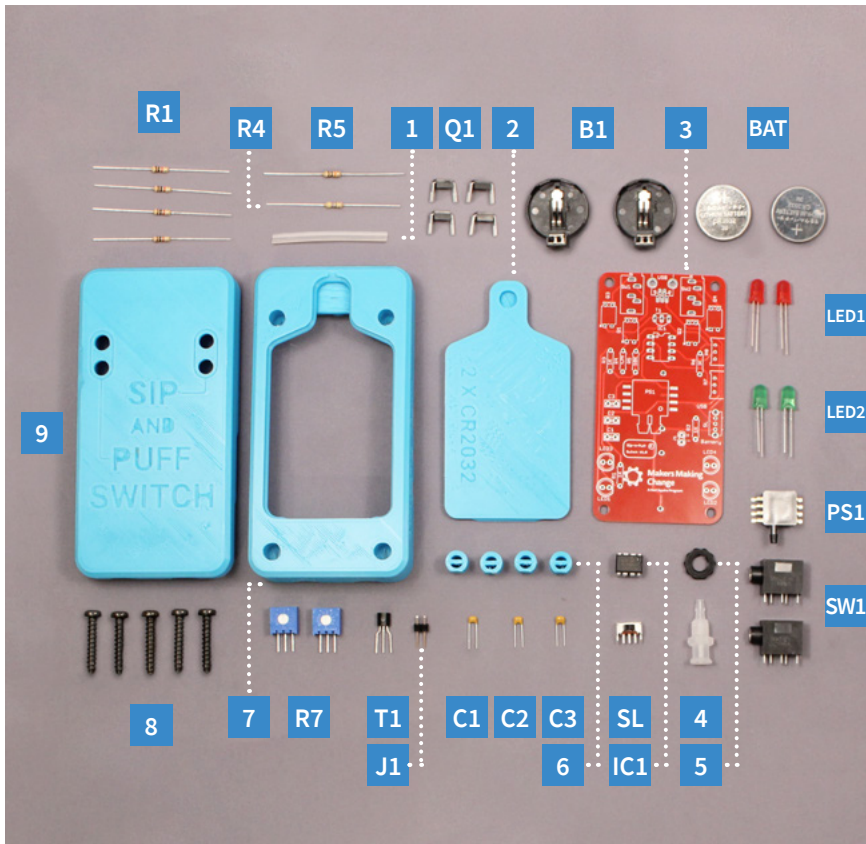


Sip & Puff Analog Switch

ASSEMBLY MANUAL



Makers Making Change
A Neil Squire Program



BILL OF MATERIALS

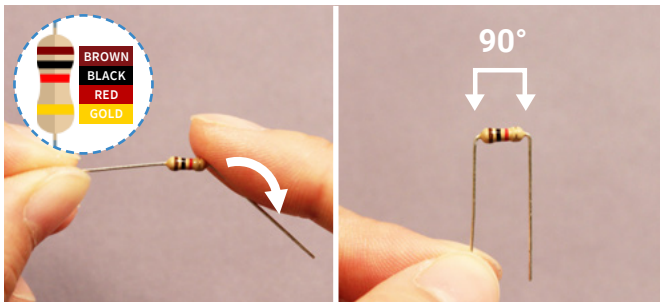
R1	1k Ohm Resistor (4) BROWN BLACK RED GOLD	5	Luer Lock Nut
R4	4.7M Ohm Resistor YELLOW PURPLE GREEN GOLD	SL	Slide Switch
R5	10k Ohm Resistor BROWN BLACK ORANGE GOLD	IC1	OP Amp
1	Tubing	C1	1uF Capacitor (label: 105)
Q1	MOSFET (4)	C2	10nF Capacitor (label: 103)
2	Battery Case Cover	C3	47pF Capacitor (label: 471)
B1	Battery Holder (2)	6	LED Spacer (4)
3	PCB	T1	Transistor
BAT	Battery (2)	J1	2-position Male Header
LED1	Red LED (2)	R7	Potentiometer (2)
LED2	Green LED (2)	7	Case Bottom
PS1	Pressure Sensor	8	M4 Screws (5)
SW1	Mono Jack (2)	9	Case Top
4	Luer Lock Fitting		

BEFORE STARTING:

- All components are inserted into the PCB from the side with the MMC logo except the battery holders.
- Insert components flush to the PCB except Q1, IC1, and T1.
- Some components need to be inserted in a specific orientation.
- = Hole to put component through
- = Solder the area in the white square.

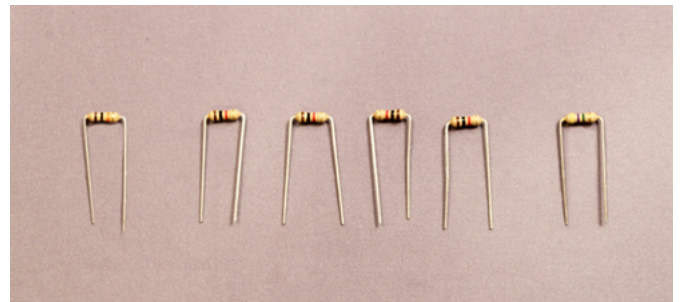
TOOLS

- Soldering iron
- Solder
- Flush cutters
- Wire stripper
- Needle nose pliers
- Phillips screwdriver
- Clamp
- Magnifier
- Desoldering pump
- Plate
- Tape



01.

R1

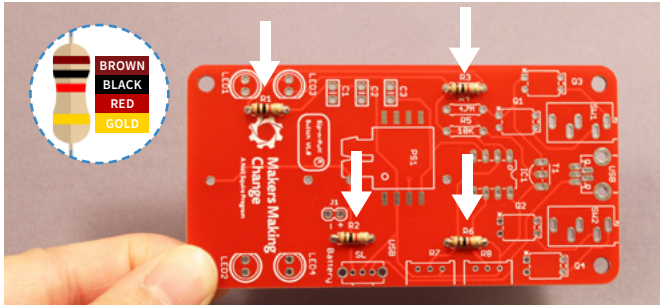


02. Bend all 6 resistors.

R4 R5

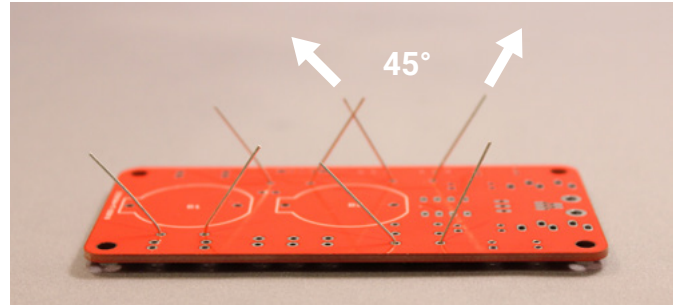
Sip & Puff Analog Switch

ASSEMBLY MANUAL

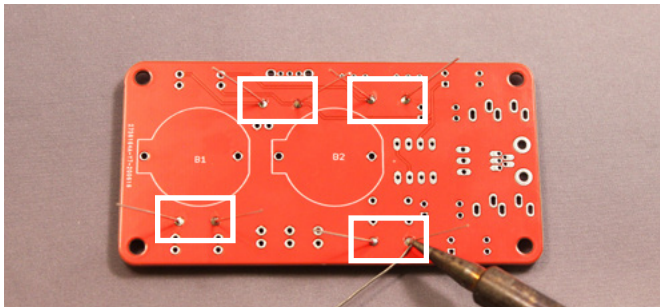


03.

3 R1 HOLE R1 HOLE R2 HOLE R3 HOLE R6



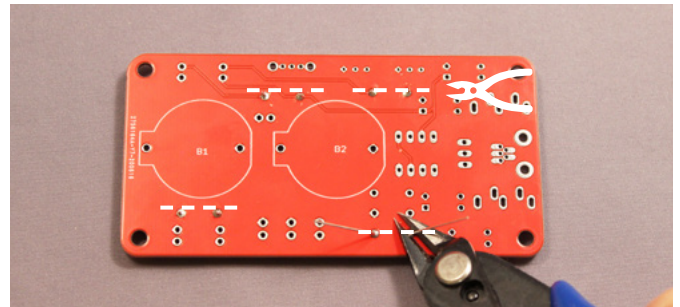
04. Bend all leads so components stay in place.



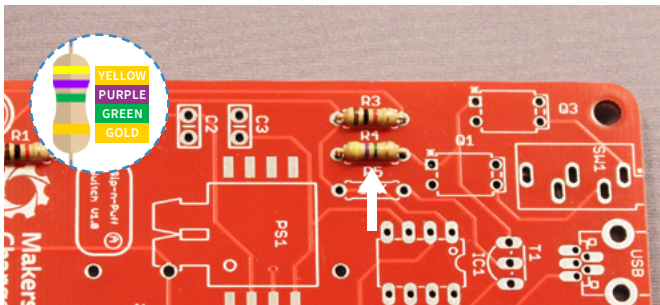
05.



x 2

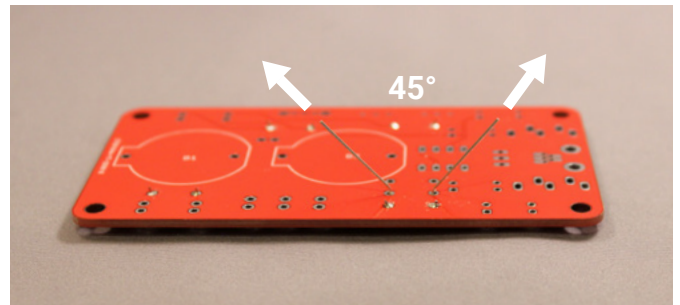


06. Snip off all excess leads flush to the PCB.

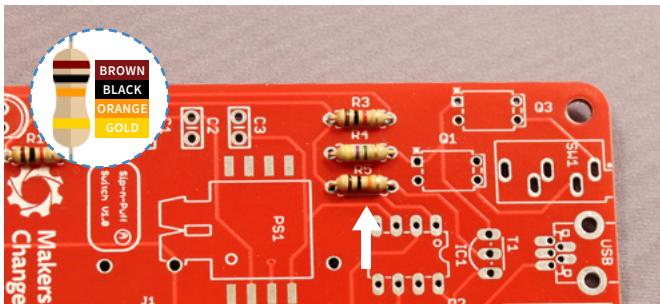


07.

R4 HOLE R4

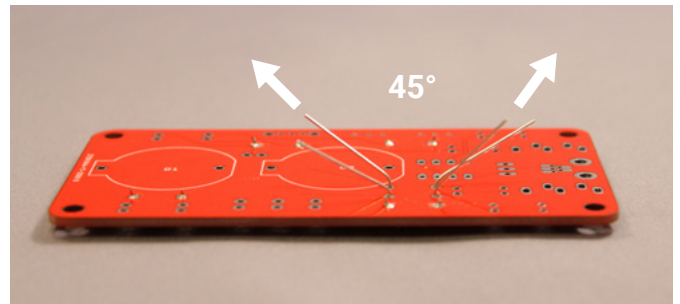


08.



09.

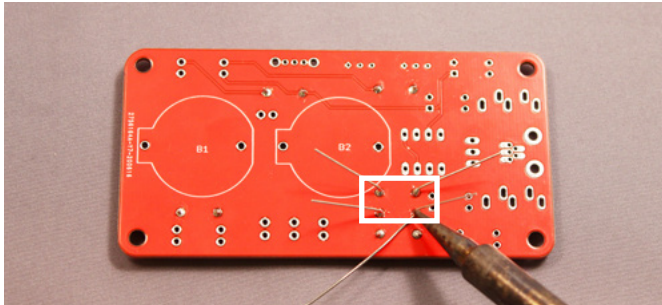
R5 HOLE R5



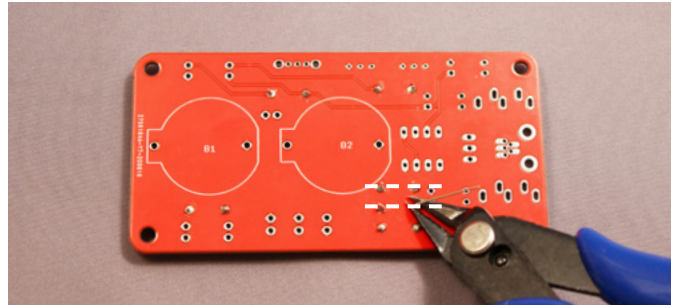
10.

Sip & Puff Analog Switch

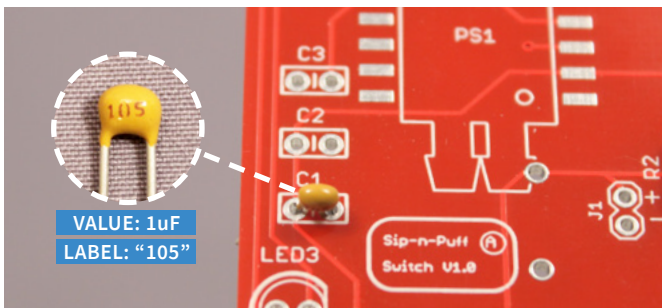
ASSEMBLY MANUAL



11.

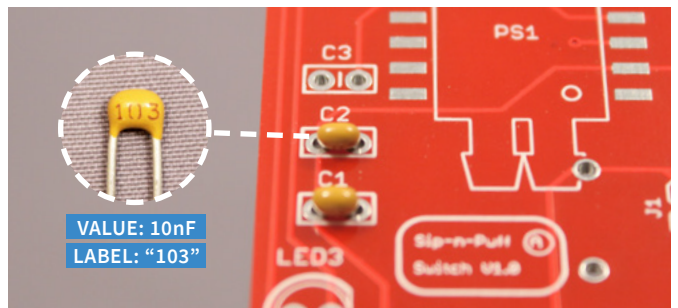


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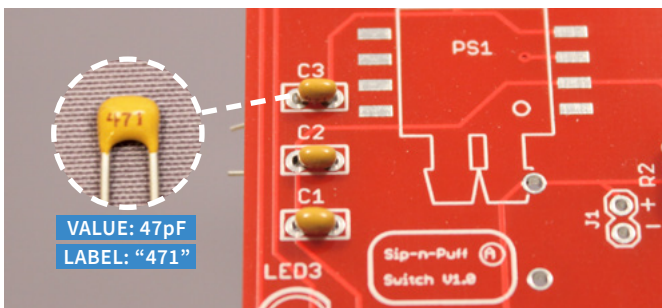
13.

C1 HOLE C1



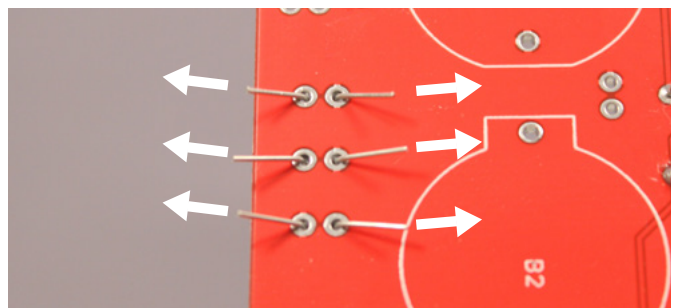
14.

C2 HOLE C2

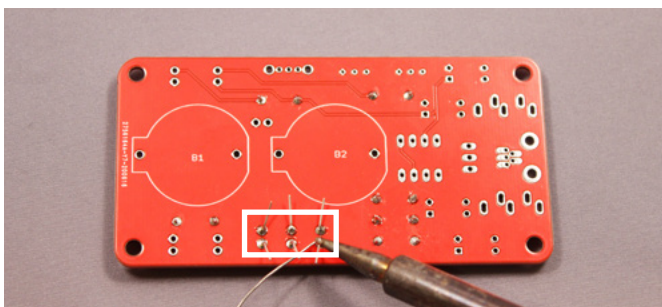


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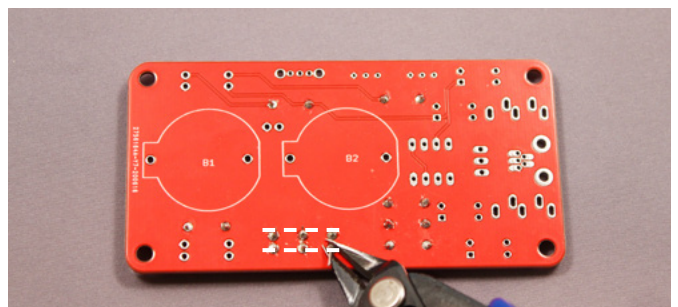
C3 HOLE C3



16.



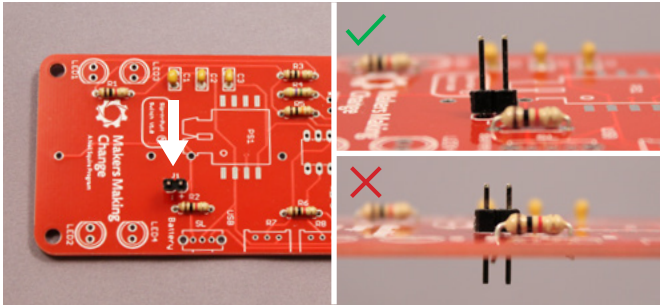
17.



18.

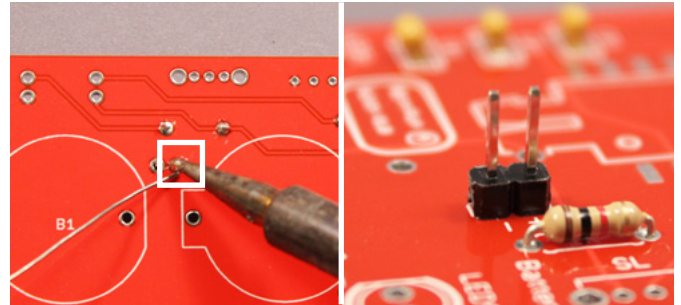
Sip & Puff Analog Switch

ASSEMBLY MANUAL

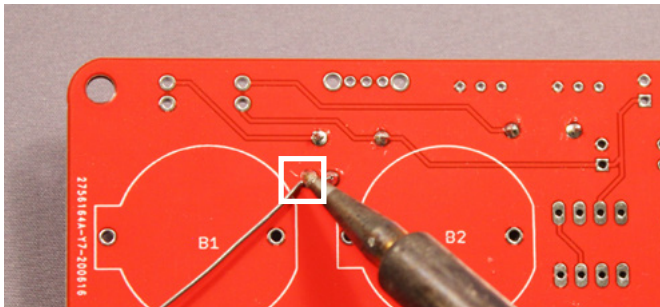


19. The **short** leads are inserted.

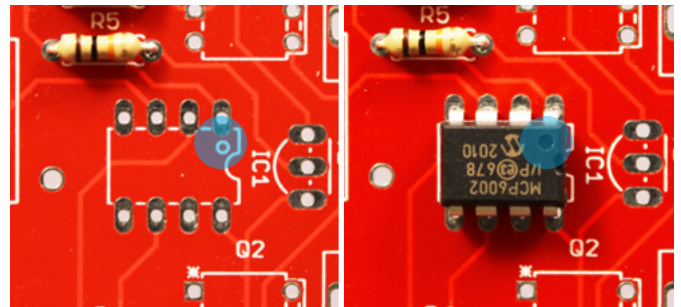
J1 HOLE J1



20. Solder **only 1 lead** and check if the component is flush to board. Adjust as necessary.

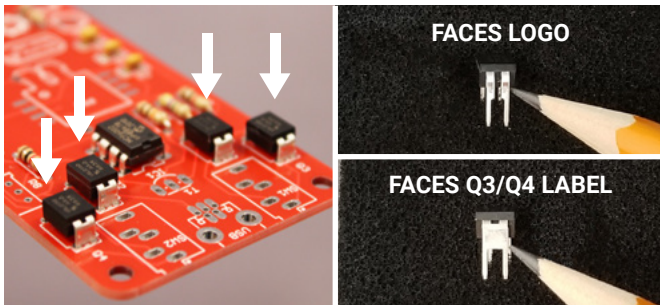


21.



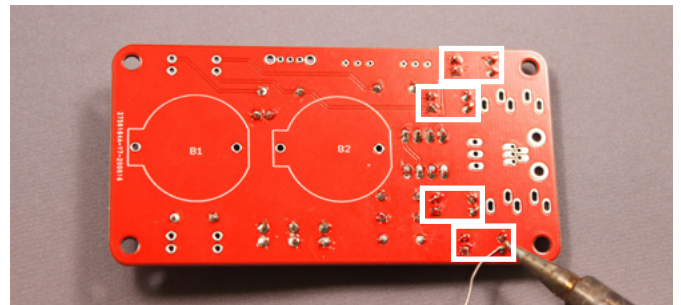
22. **IMPORTANT:** Insert and orient the OP Amp with dot towards the PCB dot.

IC1 HOLE IC1



23. MOSFETs will slightly above the PCB.

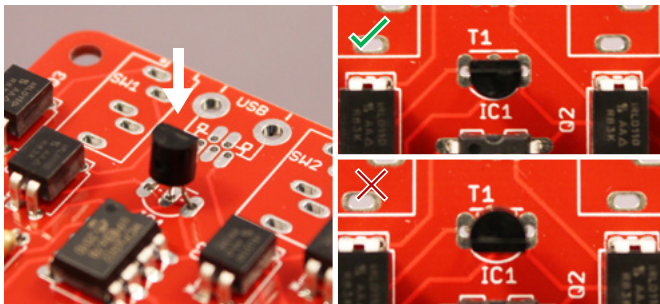
Q1 HOLE Q1 HOLE Q2 HOLE Q3 HOLE Q4



24.

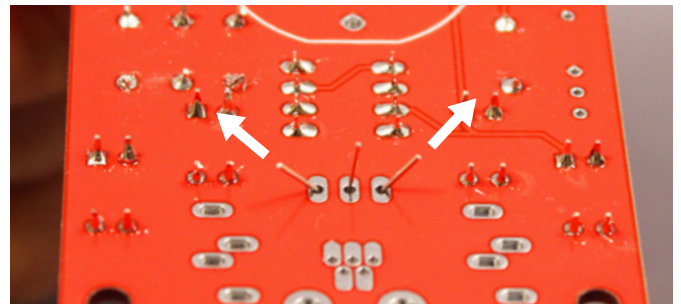


x 16



25.

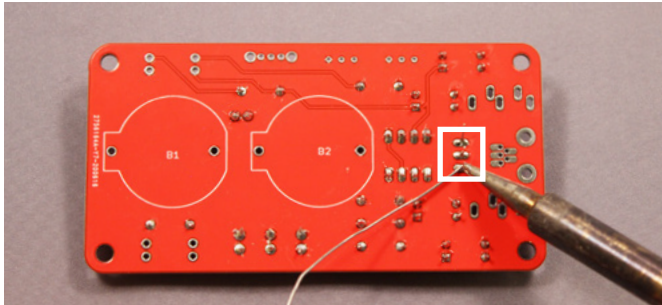
T1 HOLE T1



26.

Sip & Puff Analog Switch

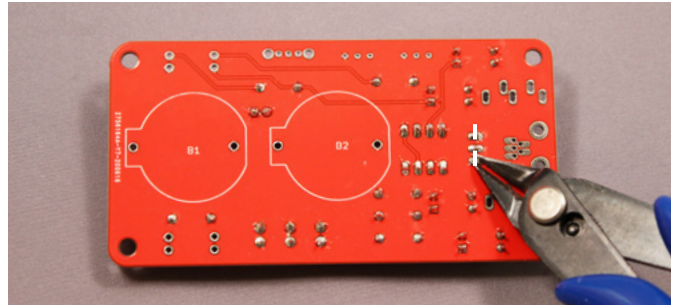
ASSEMBLY MANUAL



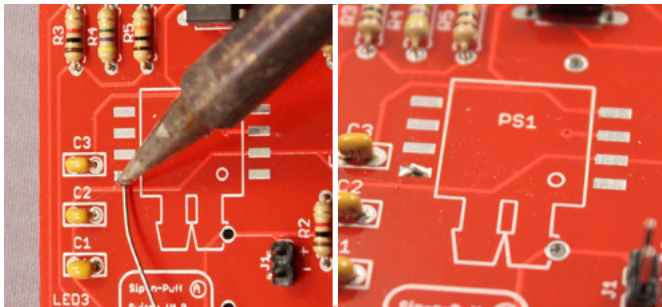
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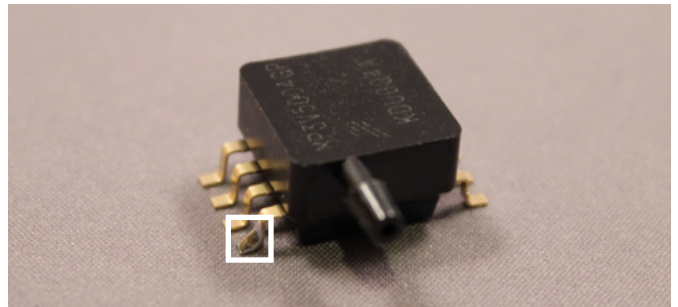
x 3



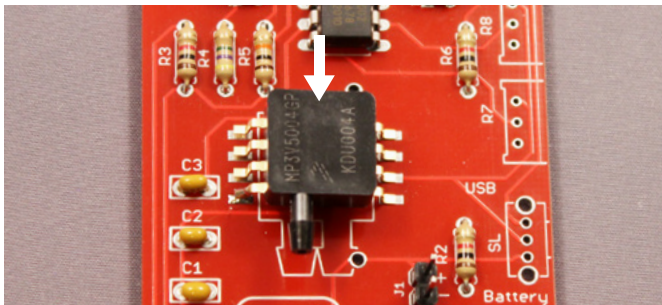
28.



29. Add solder to the bottom left pad.



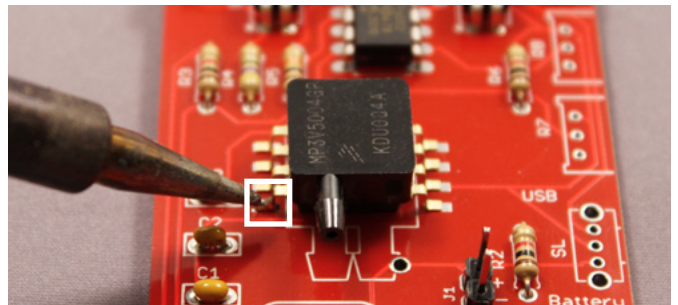
30. Add solder to the bottom left lead.



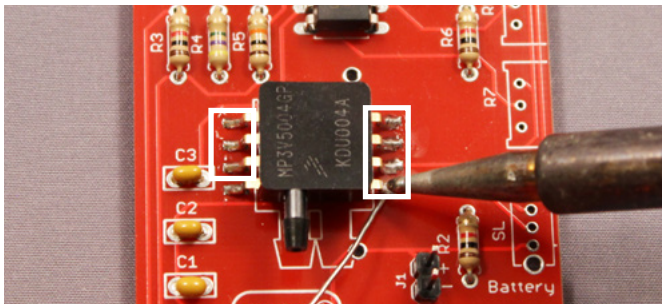
31.



HOLE PS1



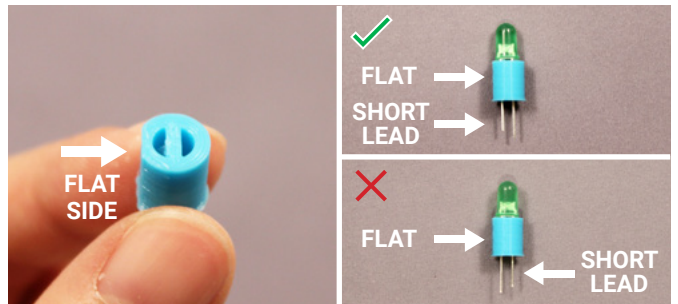
32. Put the iron tip on the lead and the sensor should "drop." Adjust as necessary.



33.



x 7



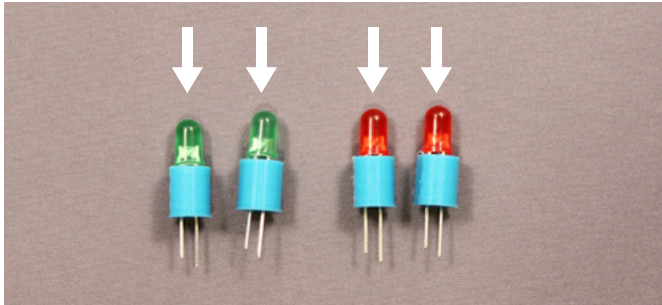
34. Insert the LED into the spacer with the shorter lead towards the flat side.



LED1 6

Sip & Puff Analog Switch

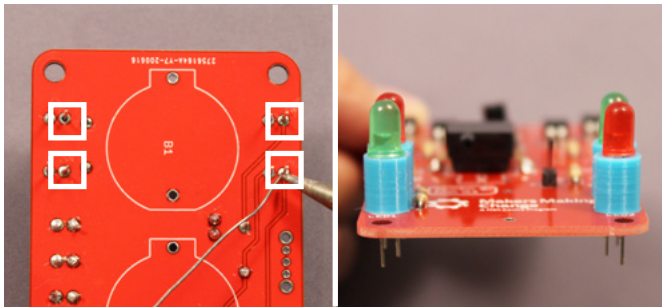
ASSEMBLY MANUAL



35.



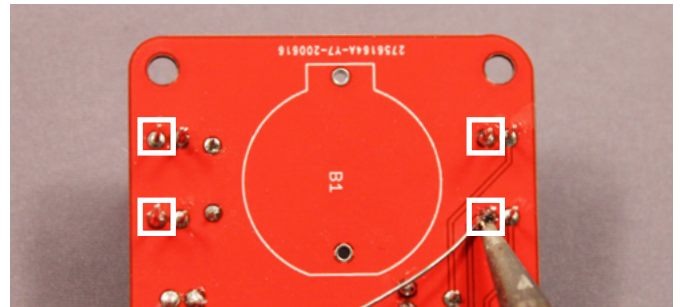
36. Insert the red LED in **LED2** & **LED3**. Insert the green LED in **LED1** & **LED4**.



37. Solder **only 1 lead on each LED** and check if it's flush to the board. Adjust as necessary.



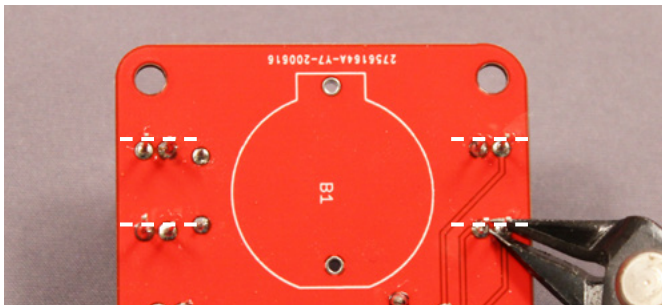
x 4



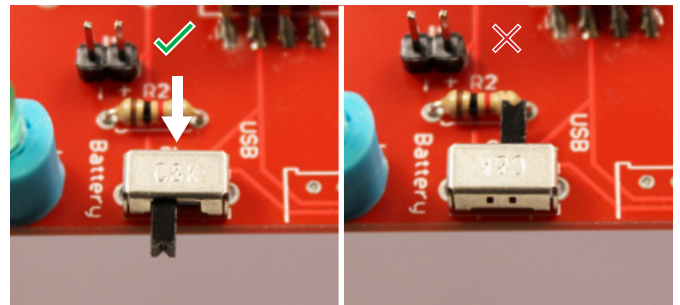
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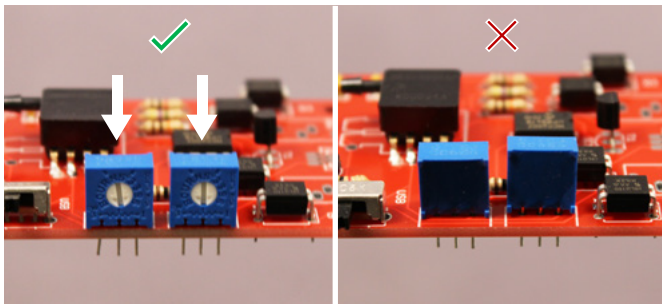
x 4



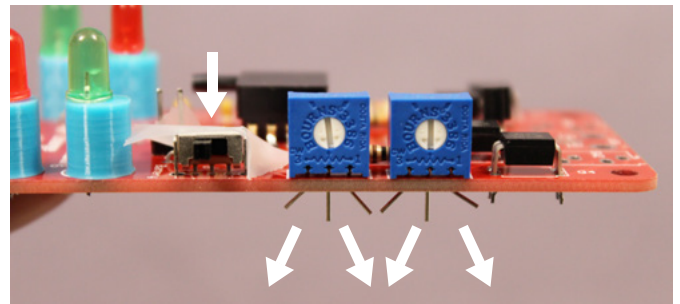
39.



40.



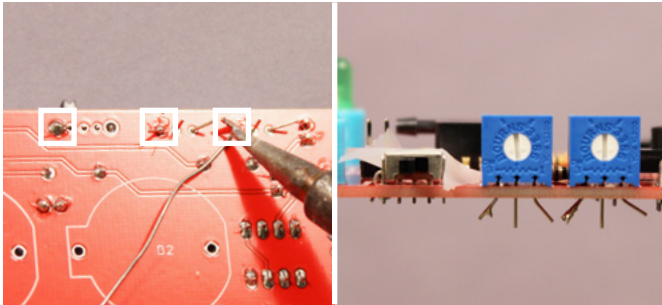
41.



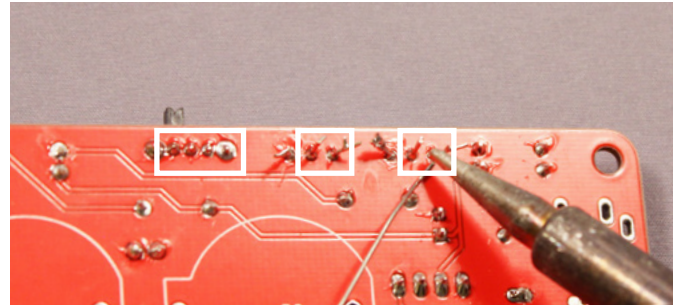
42. Optional: use tape to keep the slide switch in place.

Sip & Puff Analog Switch

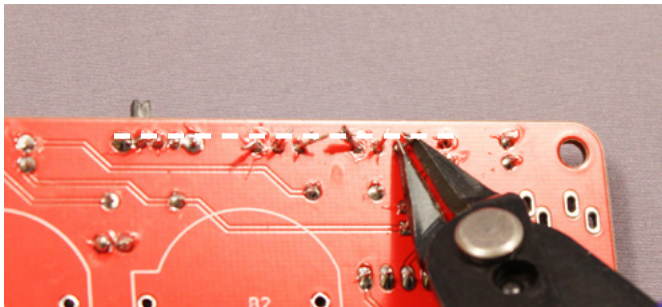
ASSEMBLY MANUAL



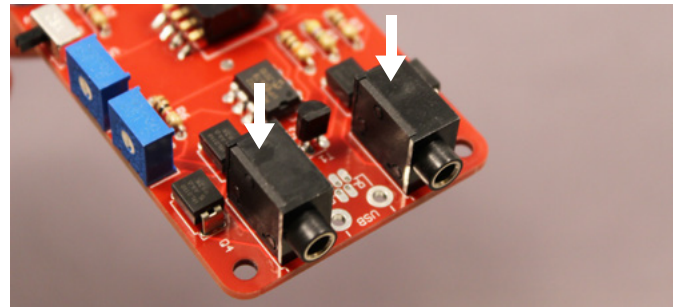
43. Solder **only 1 lead on each component** and check if they're flush to the board. Adjust as necessary.



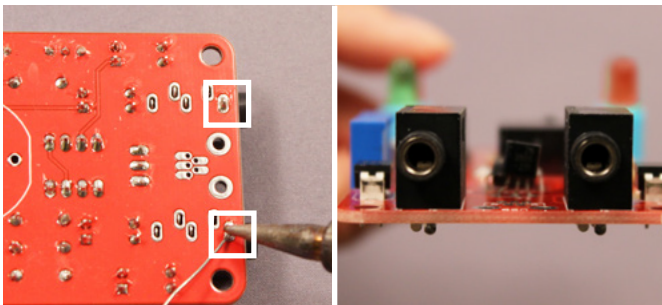
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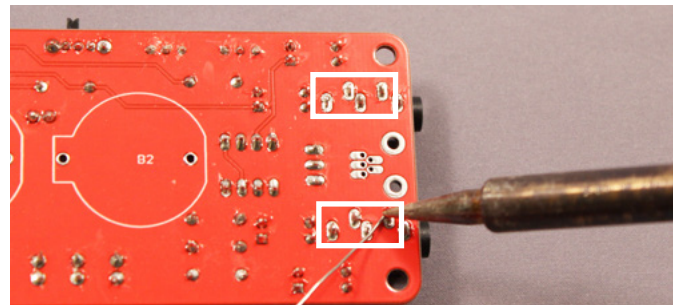
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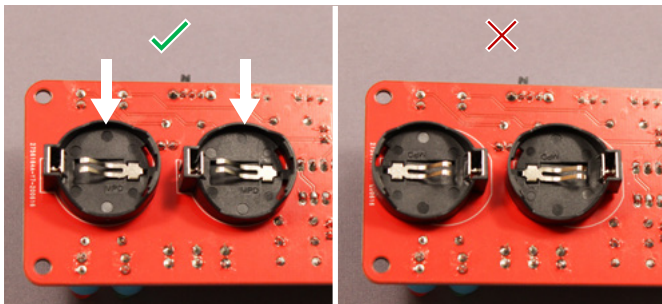
46.



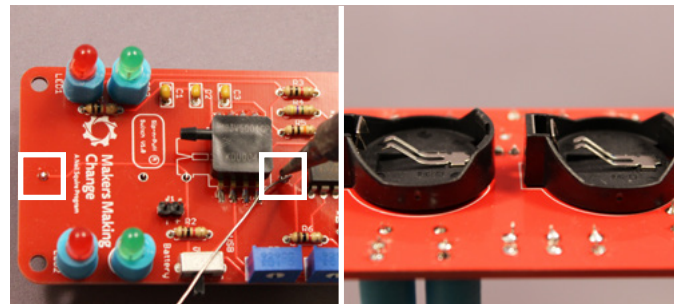
47. Solder **only 1 lead on each component** and check if they're flush to the board. Adjust as necessary.



48.



49.

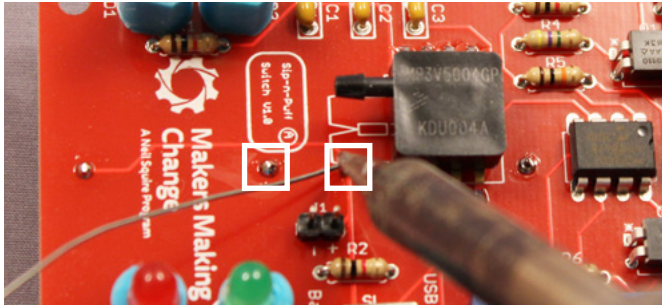


50. Solder **only 1 lead on each part** and check if they're flush to the board. Adjust as necessary.



Sip & Puff Analog Switch

ASSEMBLY MANUAL



51.



52.

4 9

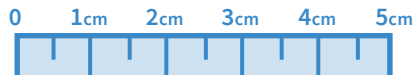


53.

5



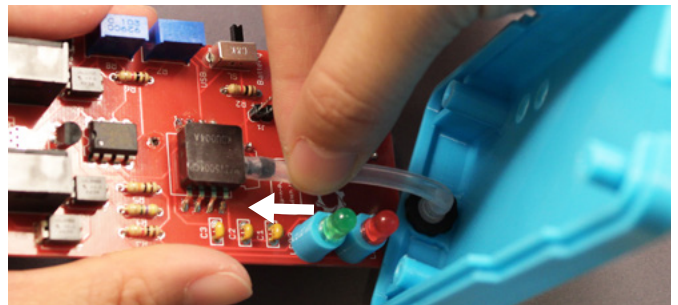
54.



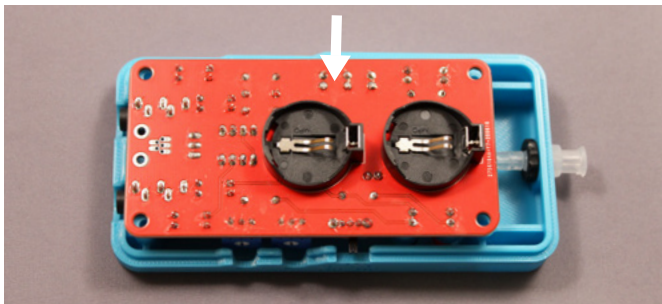
1



55.



56.



57.

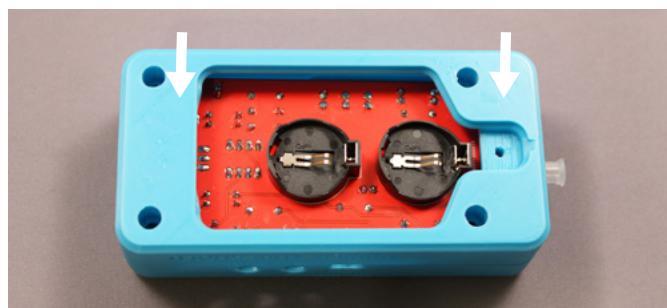


58. Clear any 3D printed material from the screw holes.

7

Sip & Puff Analog Switch

ASSEMBLY MANUAL

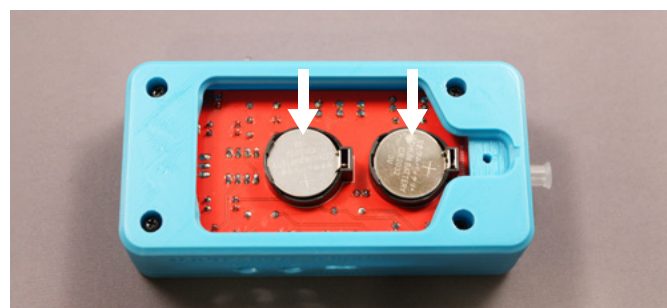


59.



60.

8



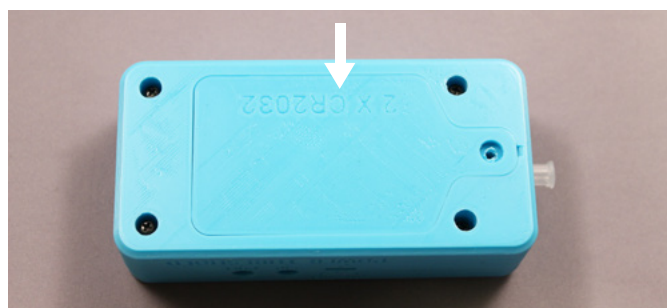
61.

BAT



62. Clear any 3D printed material from the screw hole.

2



63.



64.

8