SWE iCON 16 Workshop

BadgerStick

https://github.com/sparkfun/SWE_iCON

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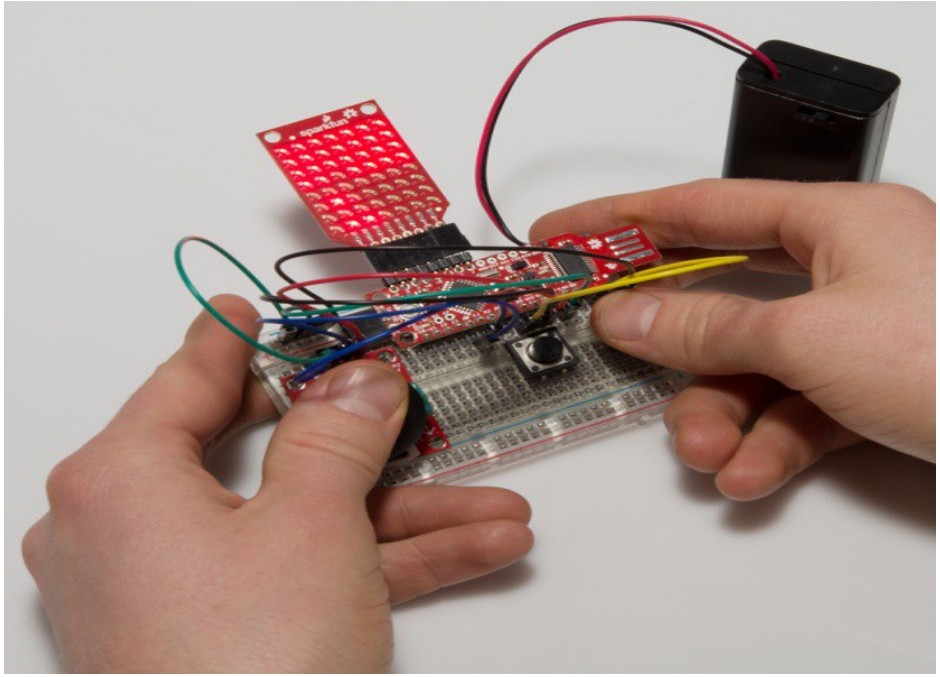
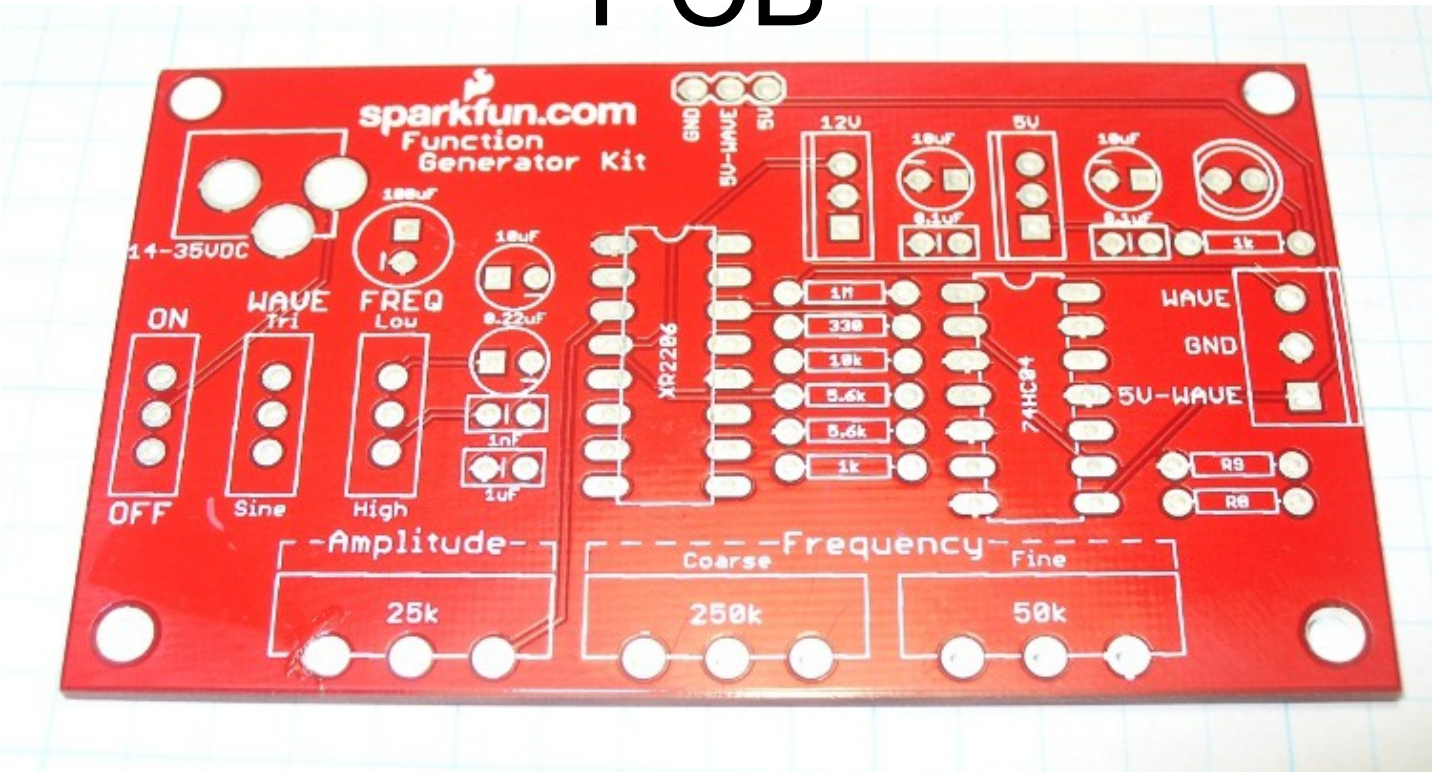
BadgerStick



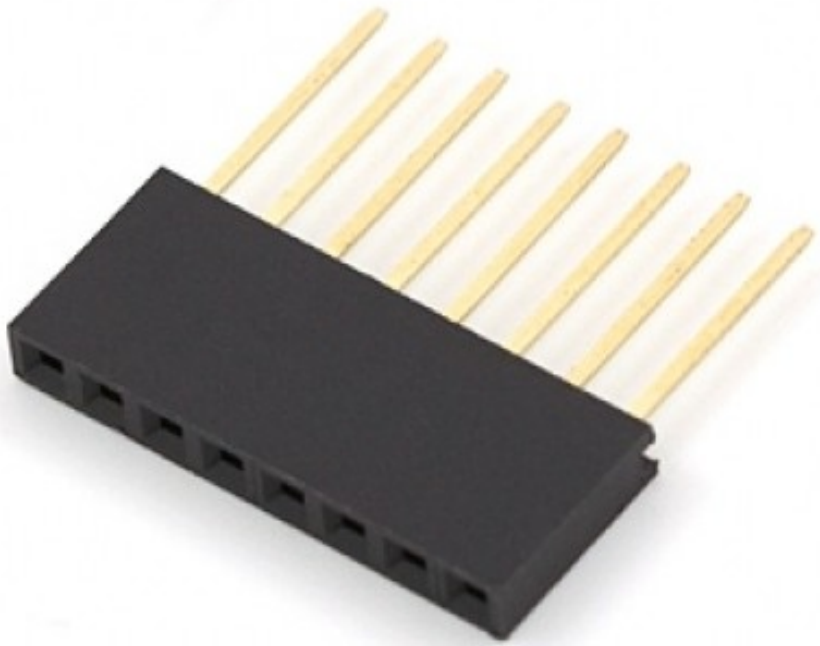
- Tutorial
  - https://learn.sparkfun.com/tutorials/badgerhack
- GitHub:
  - https://github.com/sparkfun/BadgerStick
  - https://github.com/sparkfun/BadgerArray
  - https://github.com/sparkfun/BadgerHack_Demos

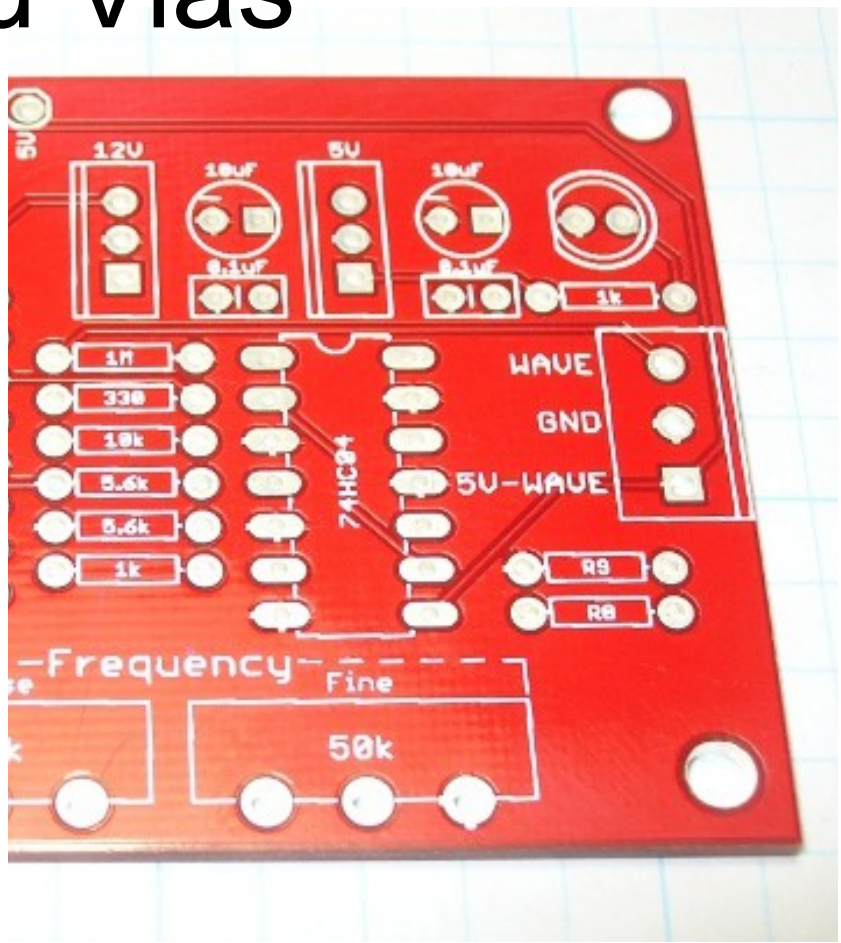
PCB



- Printed Circuit Board
- Comprised mainly of fiberglass and copper foil

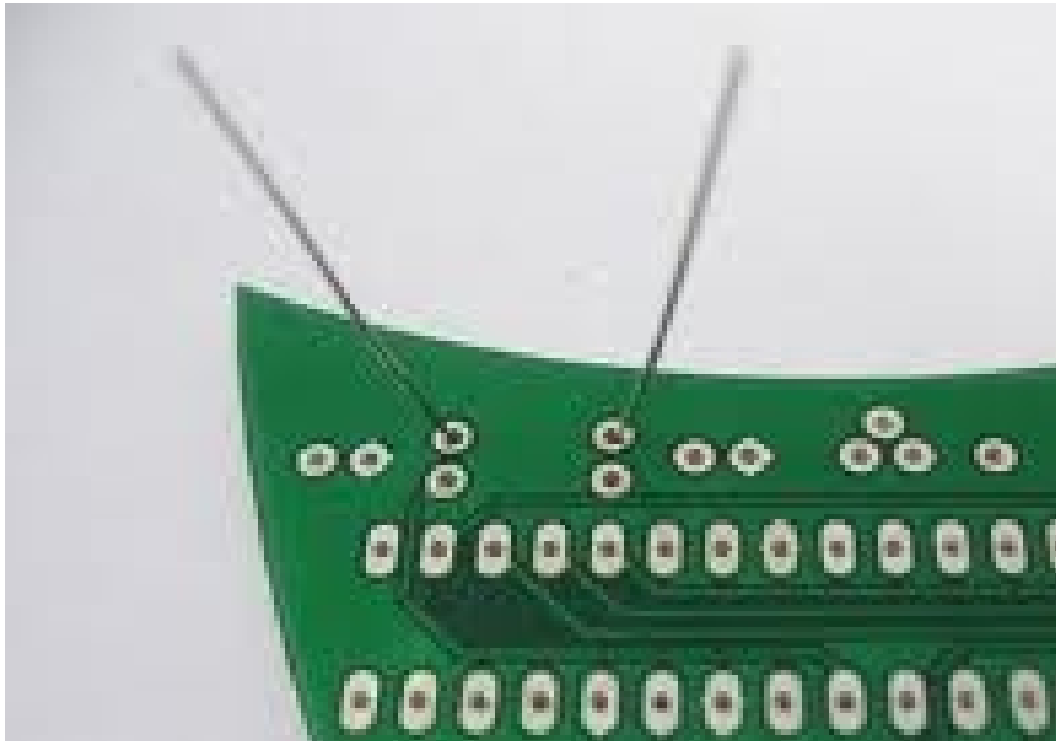
Pins and Vias





- Male and female parts that you will solder together

Plated Through Hole Soldering



Soldering Iron

- The main soldering tool
- Used to melt solder

Solder

- Metal “glue” used to join together metal parts
- Contains flux
- Made of Tin and Copper, sometimes Lead

Flux

- Makes solder melt easier
- Always use extra flux for rework

Solder Wick

- Use to remove solder
- Careful, it gets really hot!

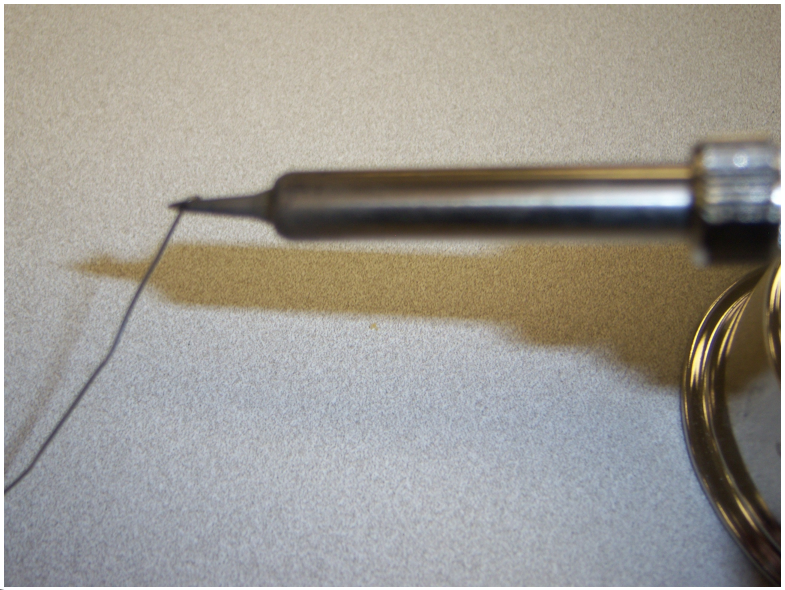
Sponge

- Used to clean off soldering iron tip
- Can be made of various materials
- Should be used every time before soldering a joint

What is oxidization?

- Oxidization is what happens when oxygen breaks down matter
- It impedes heat and electricity transfer
- As a result you must clean your iron tip constantly… really!

Cleaning your soldering iron

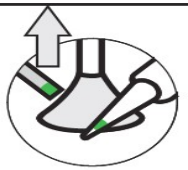


- Cleaning your soldering iron is one of the most important aspects of soldering
- If you can’t get the oxidization off using a sponge try tip tinner

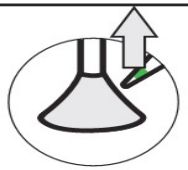
SOLDERING TIPS

1: Touch the iron to the component leg and metal ring at the same time.

2: Keeping the iron in place, feed solder into the joint.



3: Lift the solder away from the board.



4: Take the iron away, and see your solder joint.

5: Remember to keep the tip clean! Use the sponge if there is any black oxidation.

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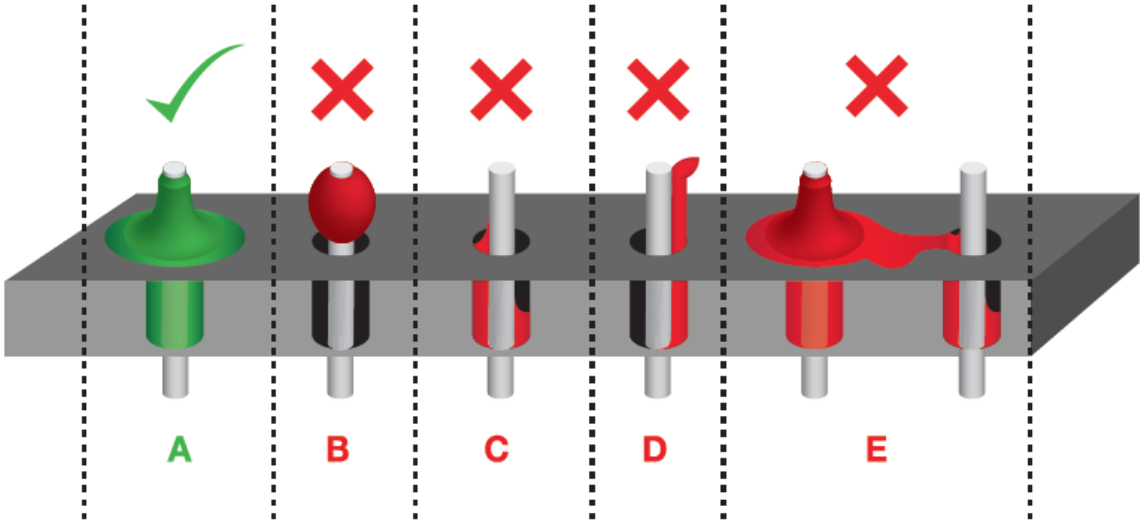
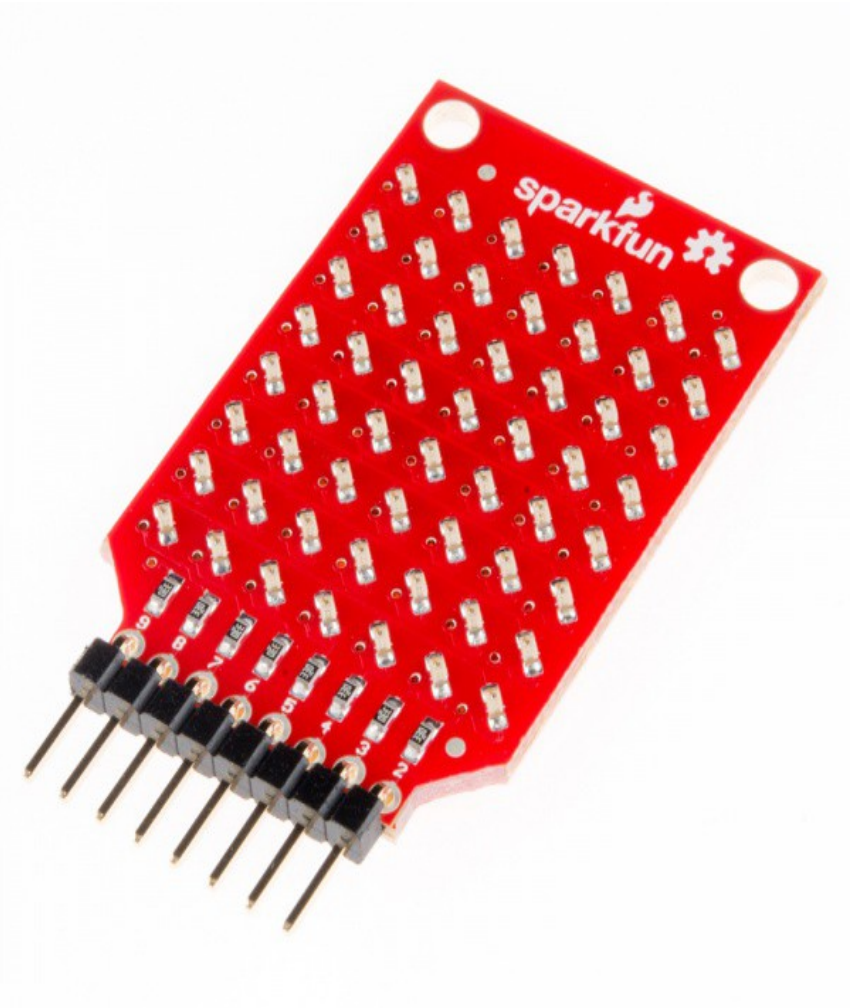
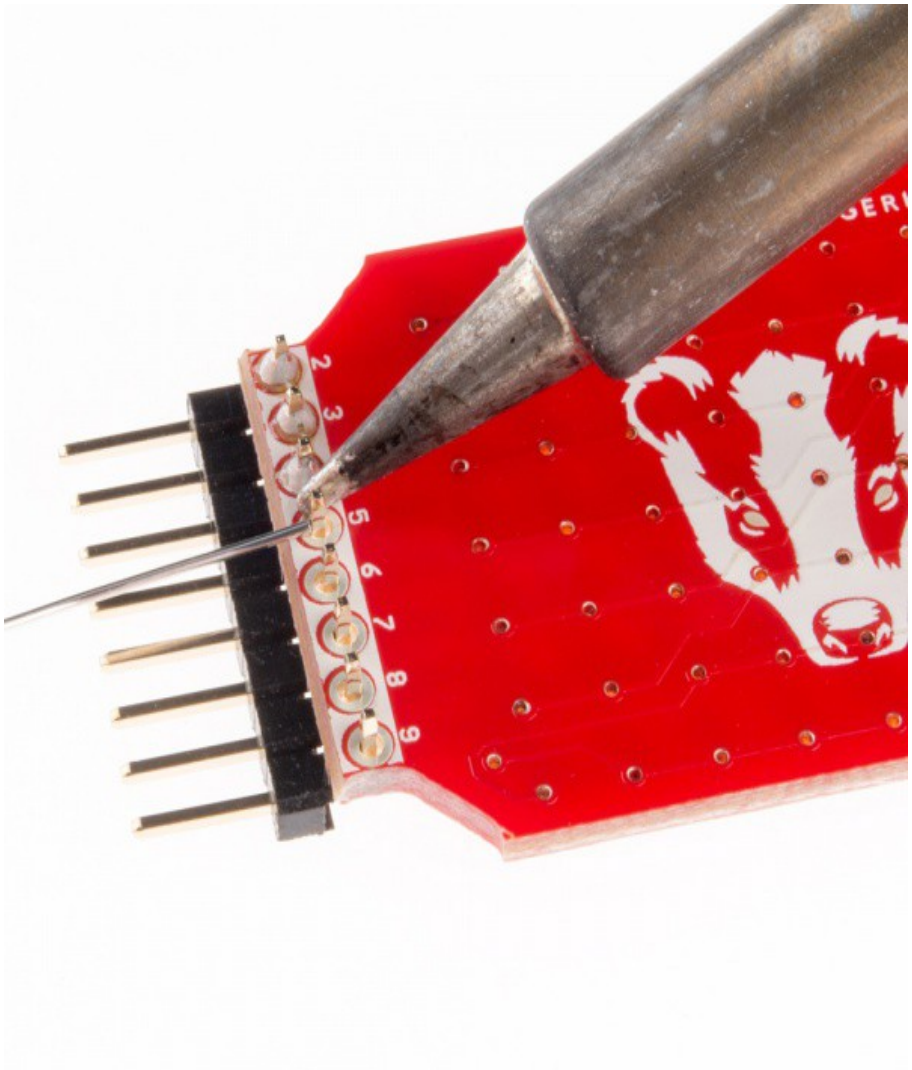
Perfect and not so perfect solder joint



- “Jumpers” will give electricity another path to travel (one that you don’t want it to travel)
- “Cold joints” may look like they are connected, but won’t conduct electricity

Solder 8-pin male header to LED board





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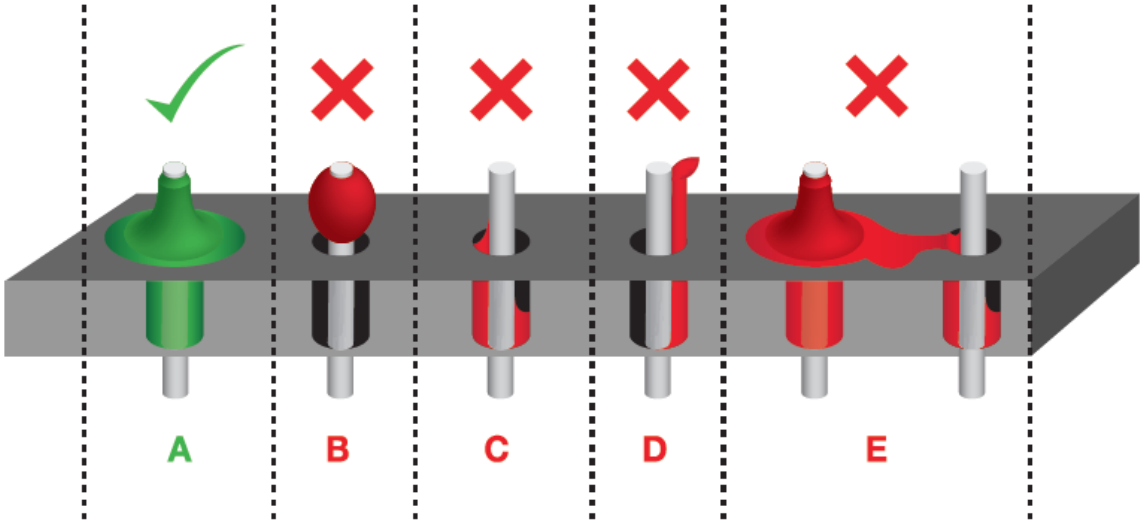

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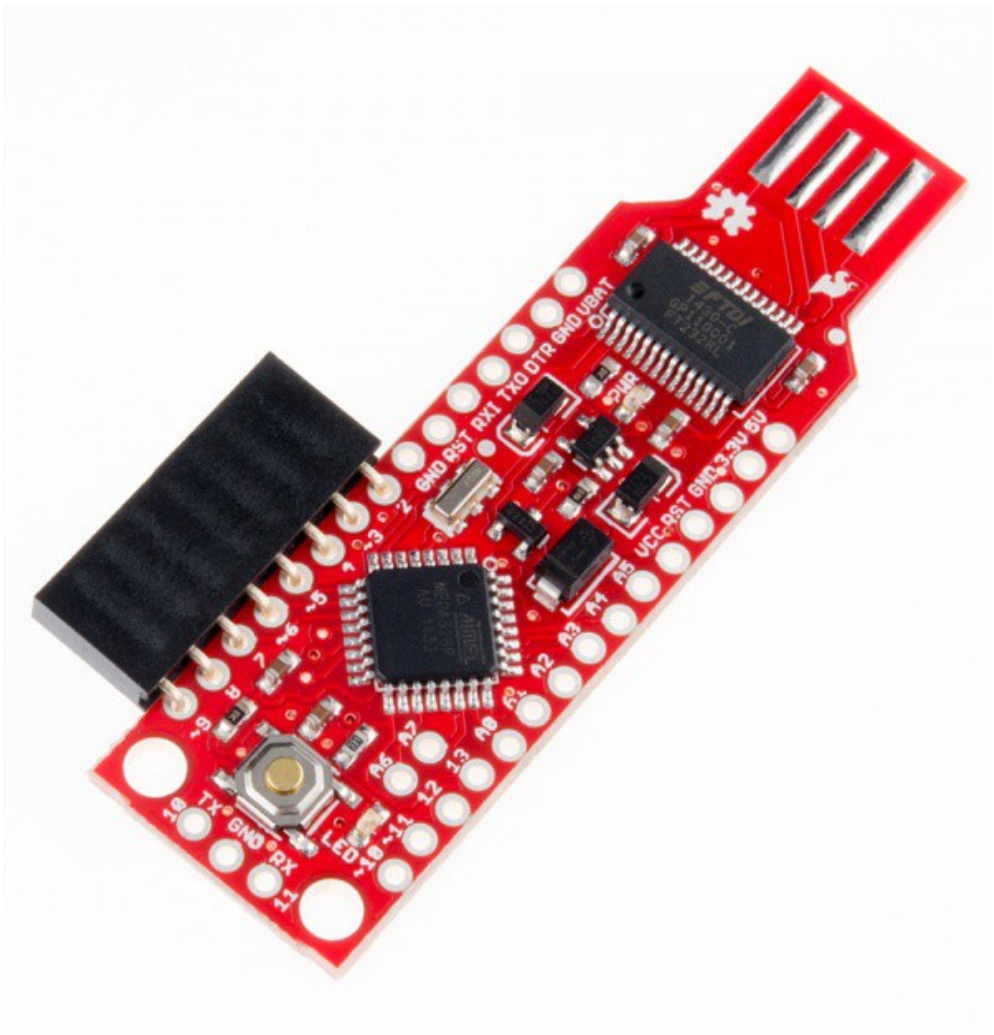
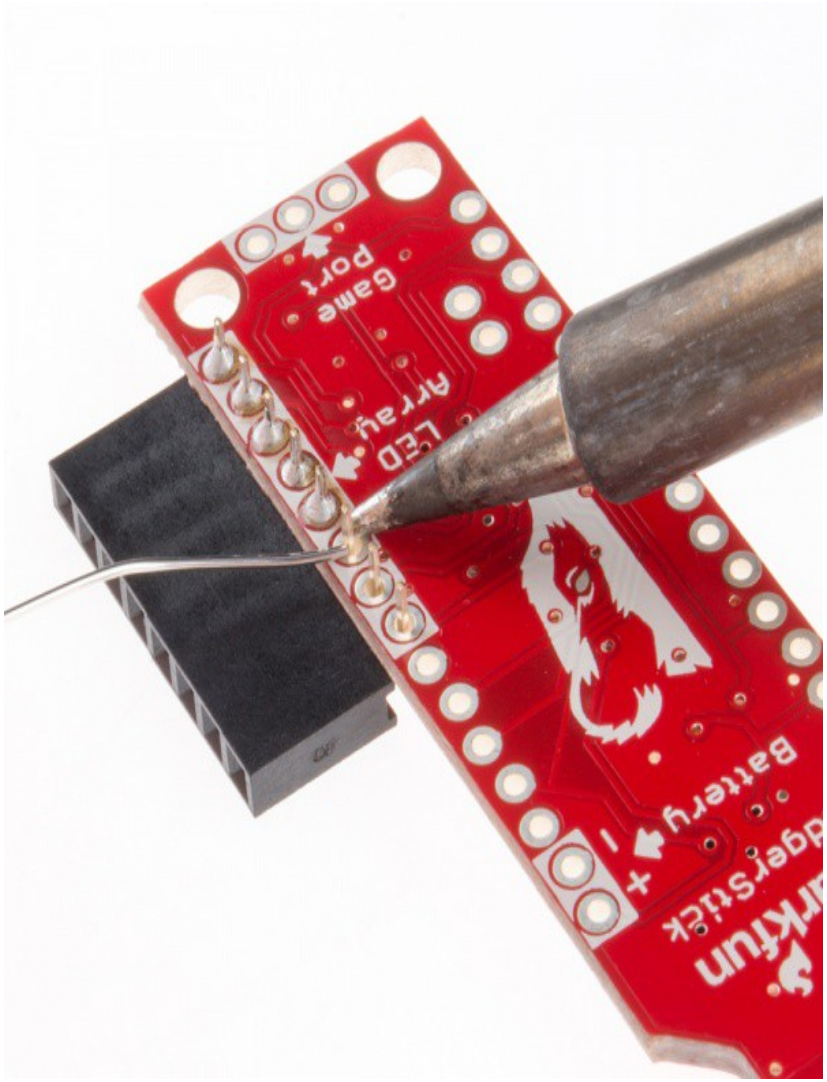
Solder 8-pin female header to BadgerStick (pins 2-9)





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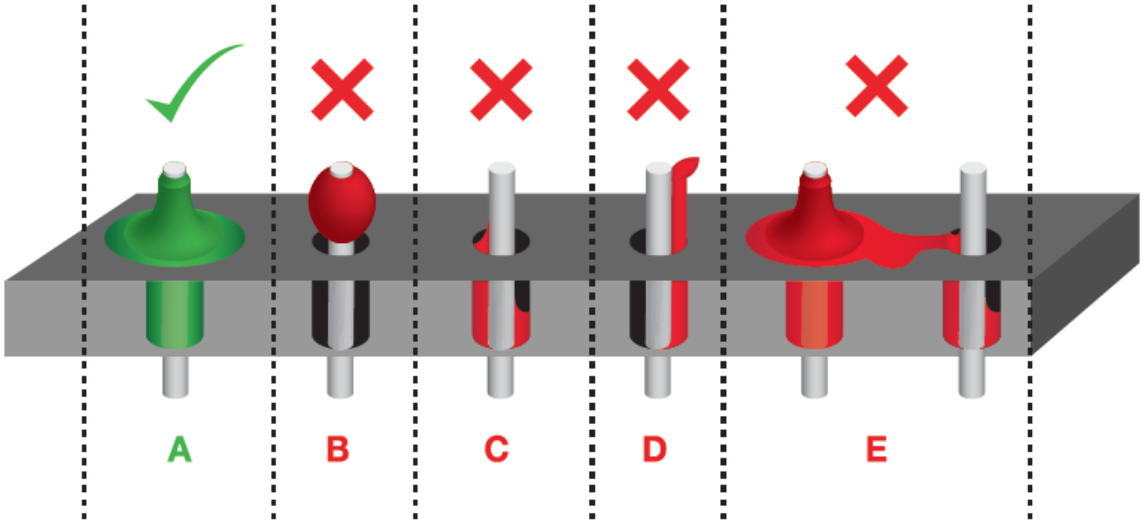

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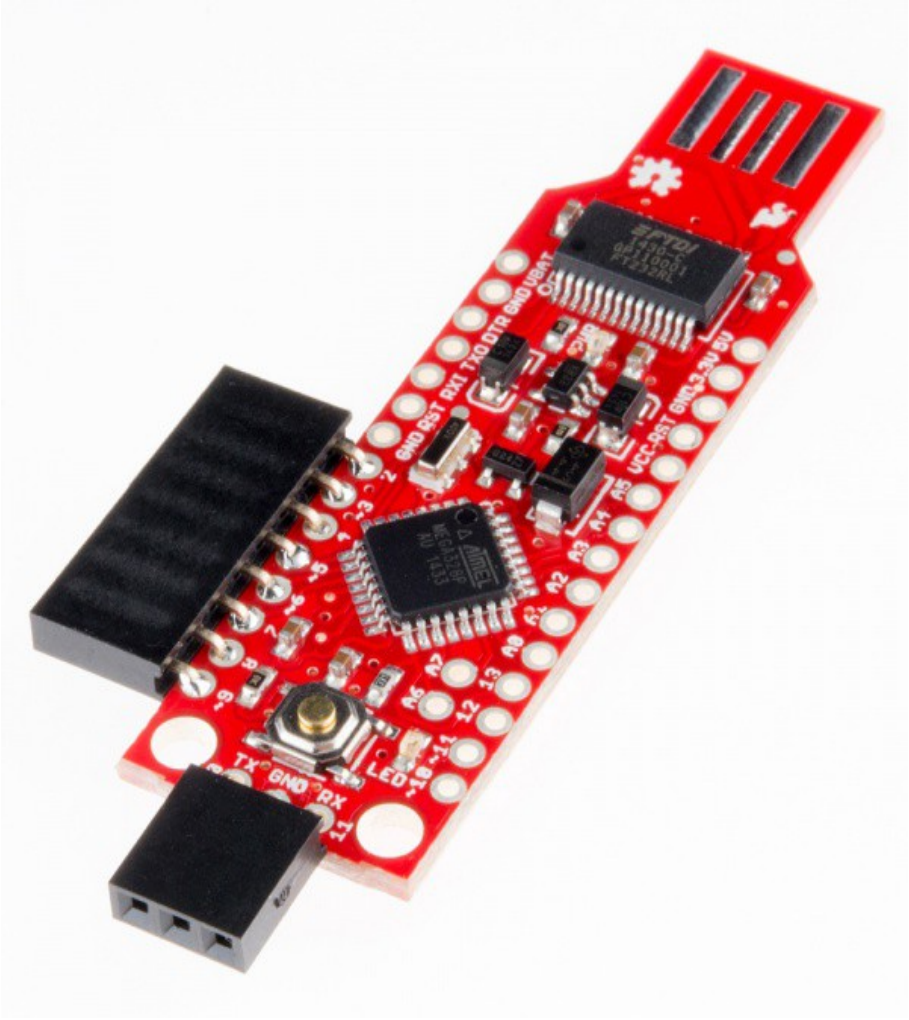
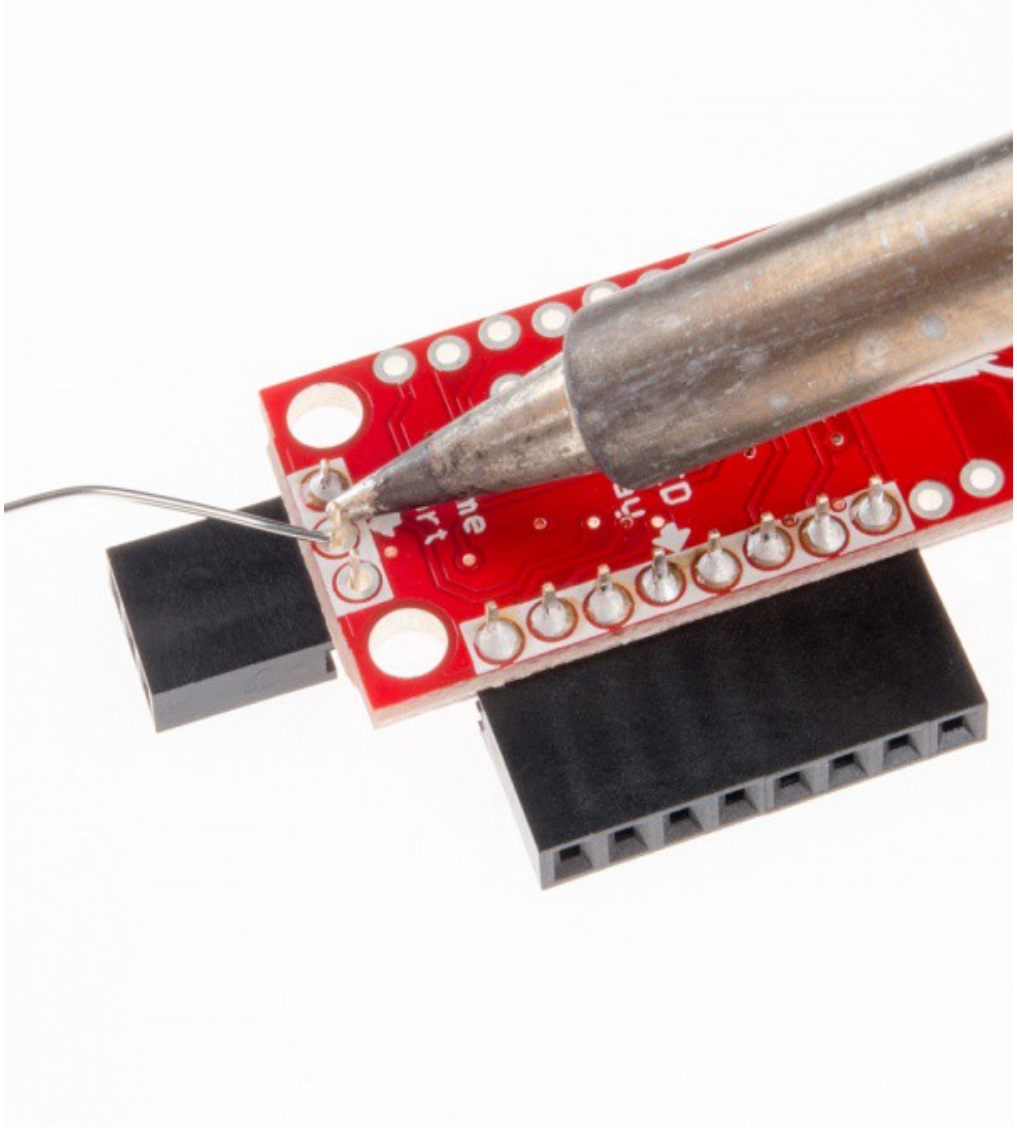
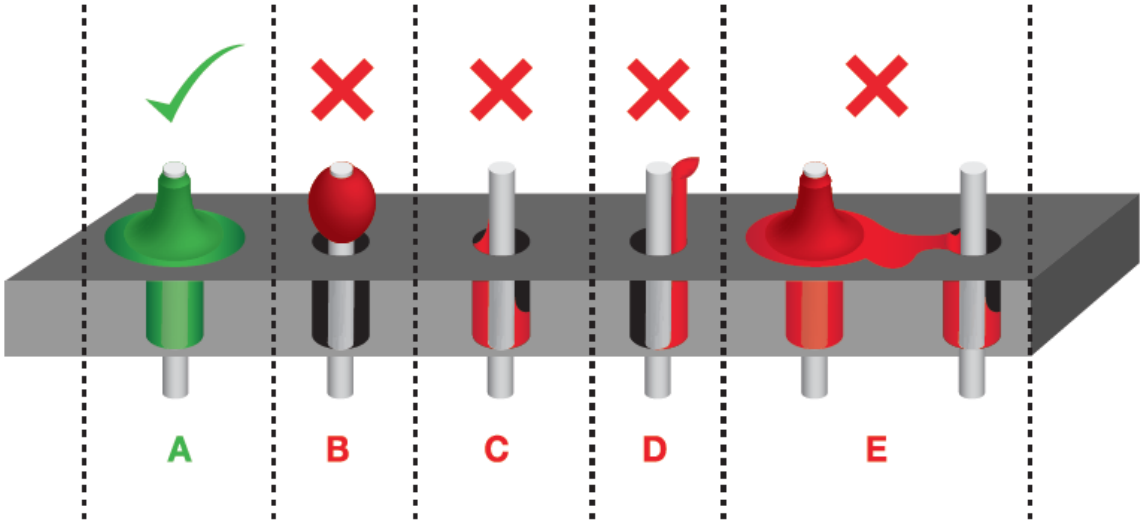
Solder 3-pin female header to BadgerStick (game port)





Perfect and not so perfect solder joint



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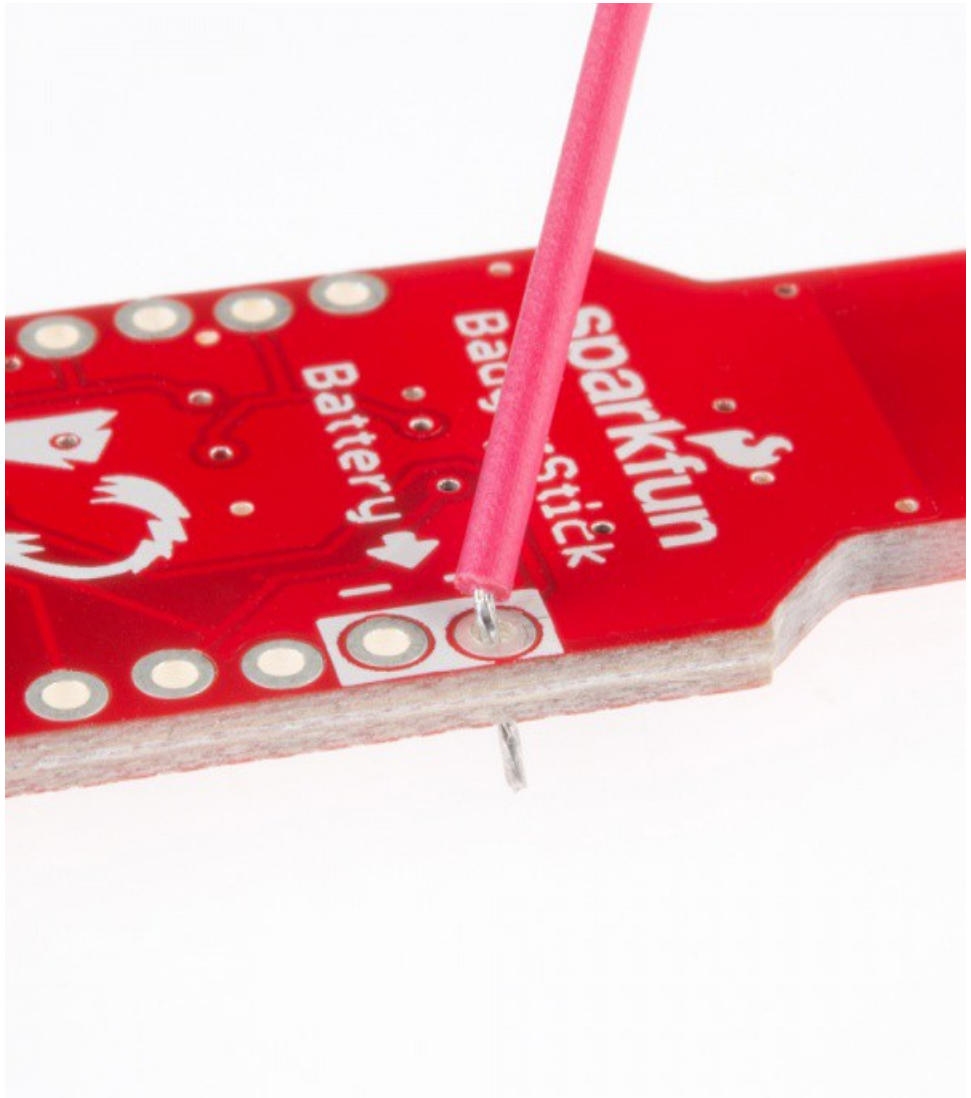
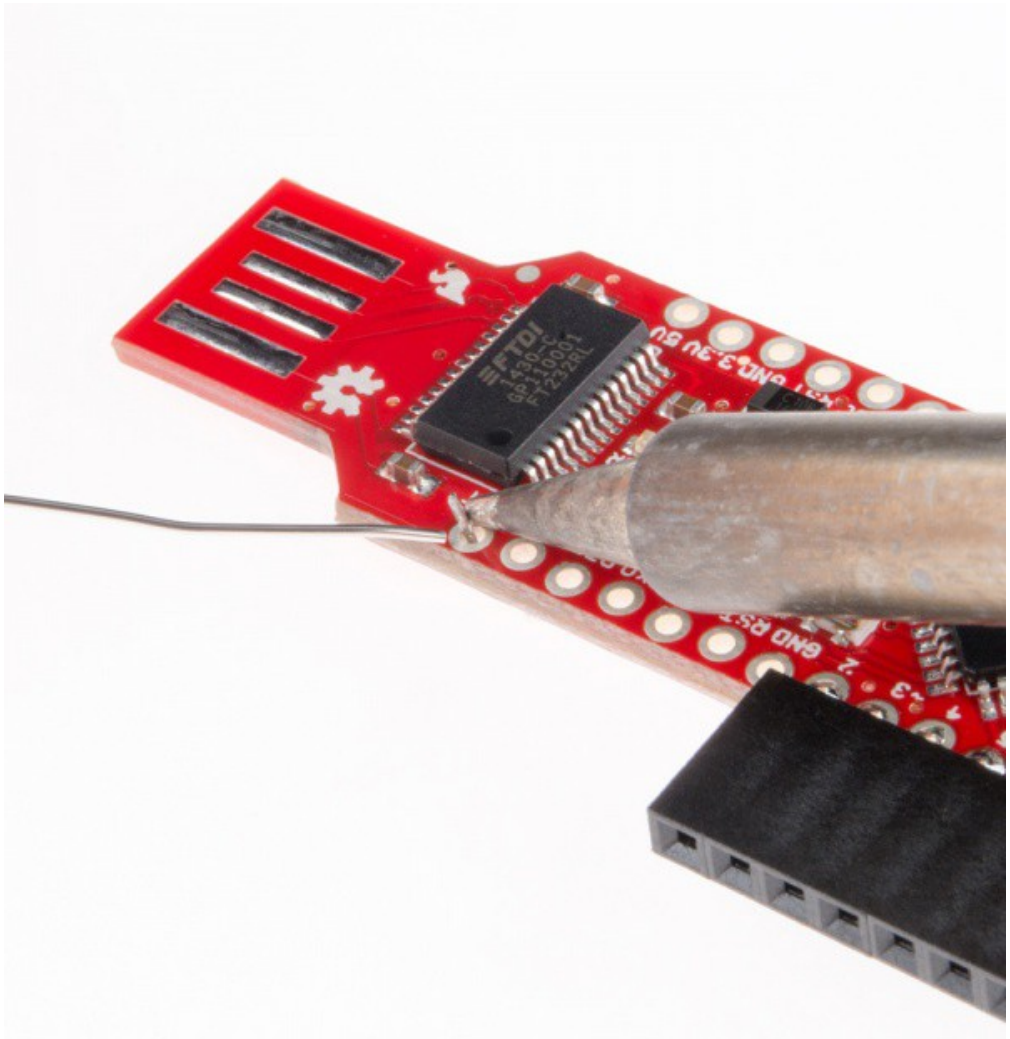
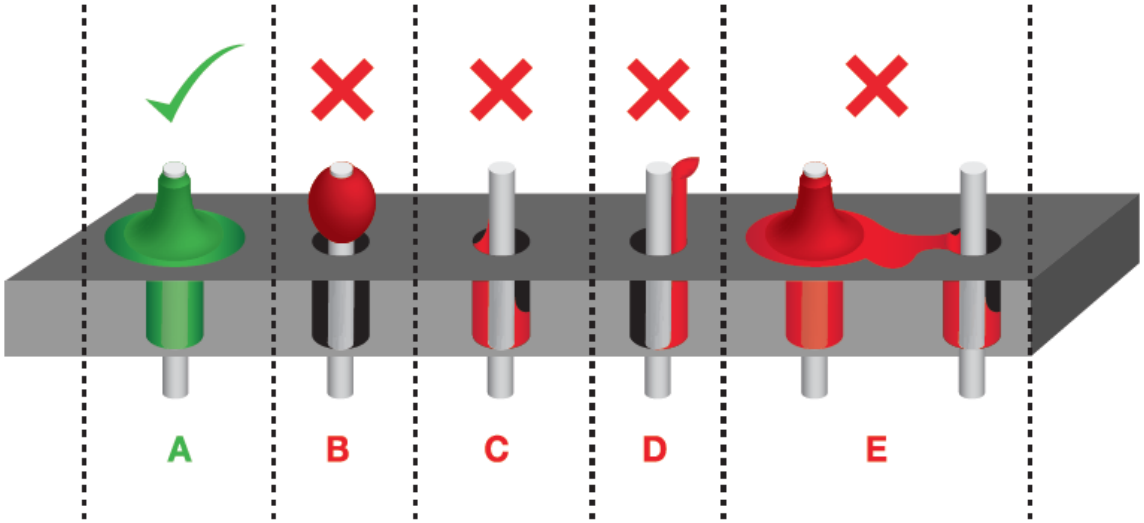
Solder red battery wire to BadgerStick (+ battery pin VBAT)





Perfect and not so perfect solder joint



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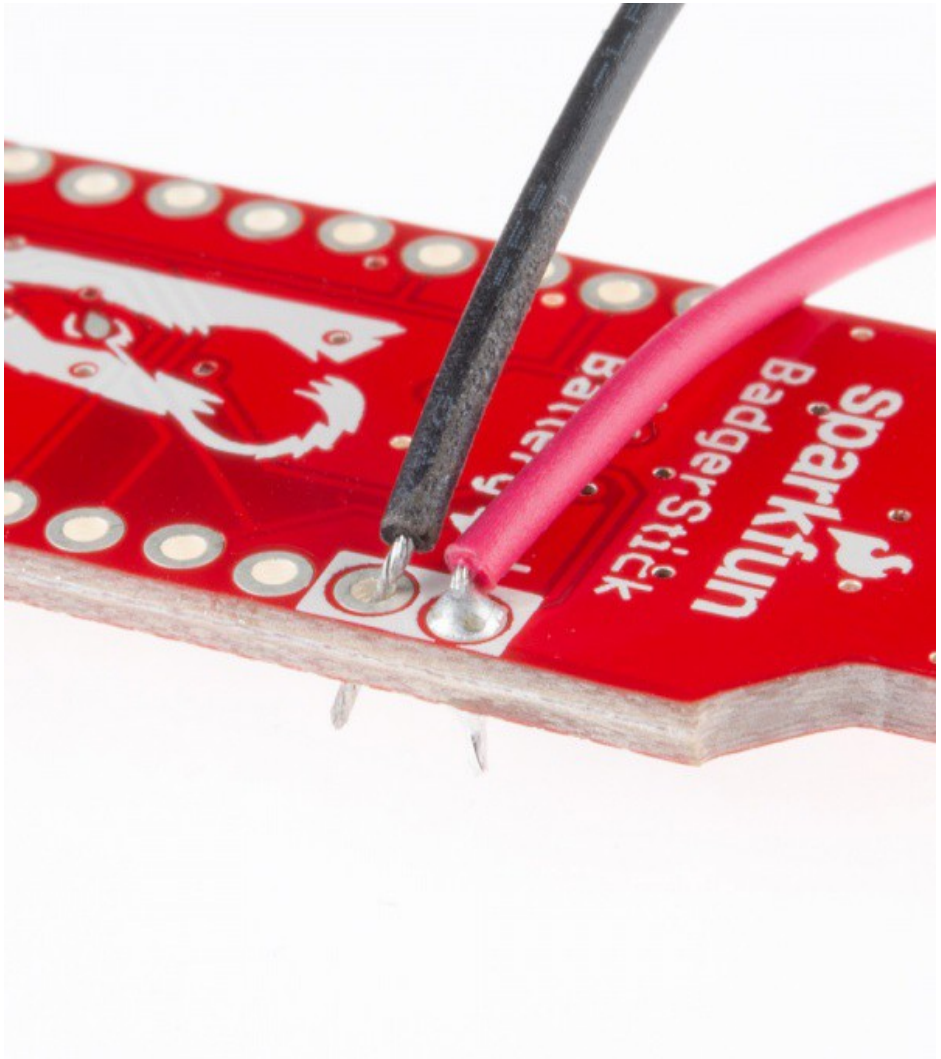
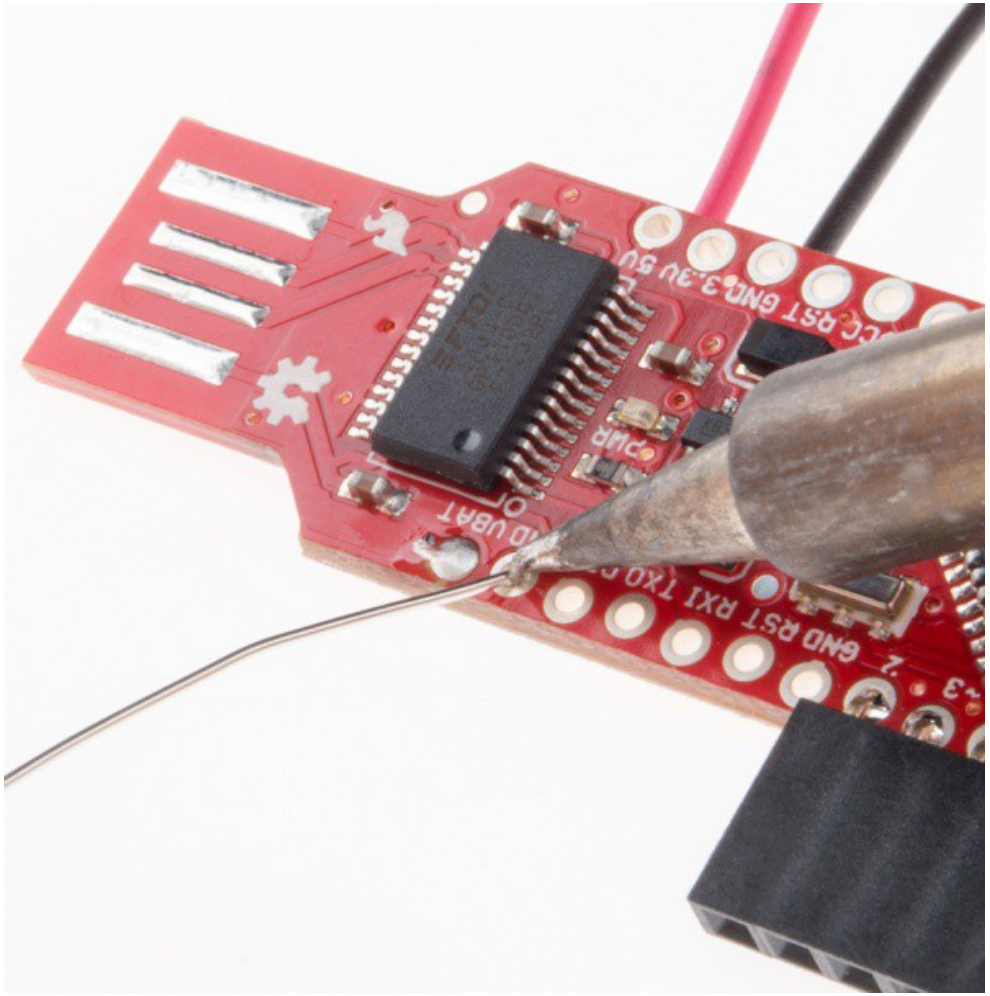
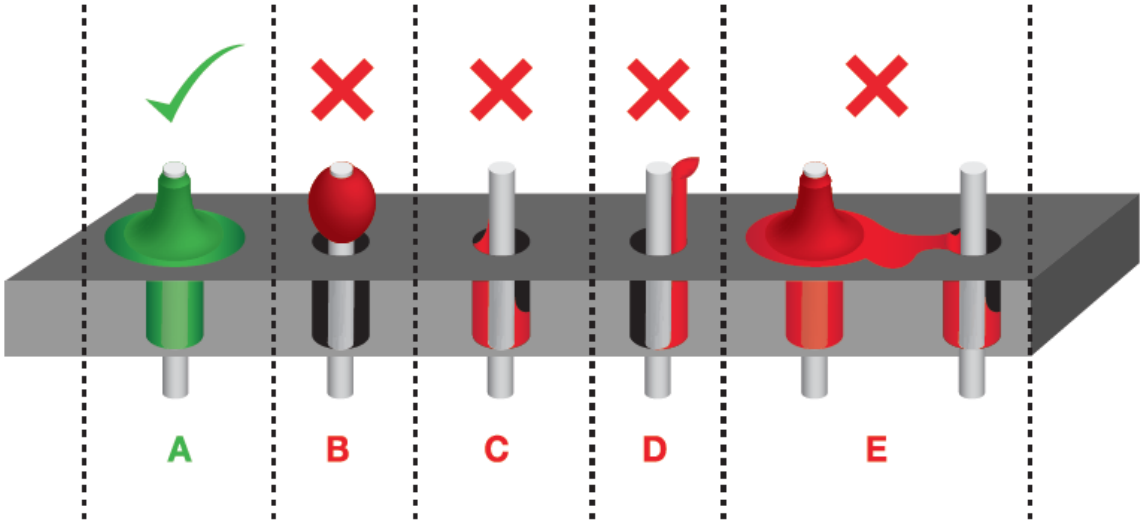
Solder black battery wire to BadgerStick (- battery pin GND)





Perfect and not so perfect solder joint



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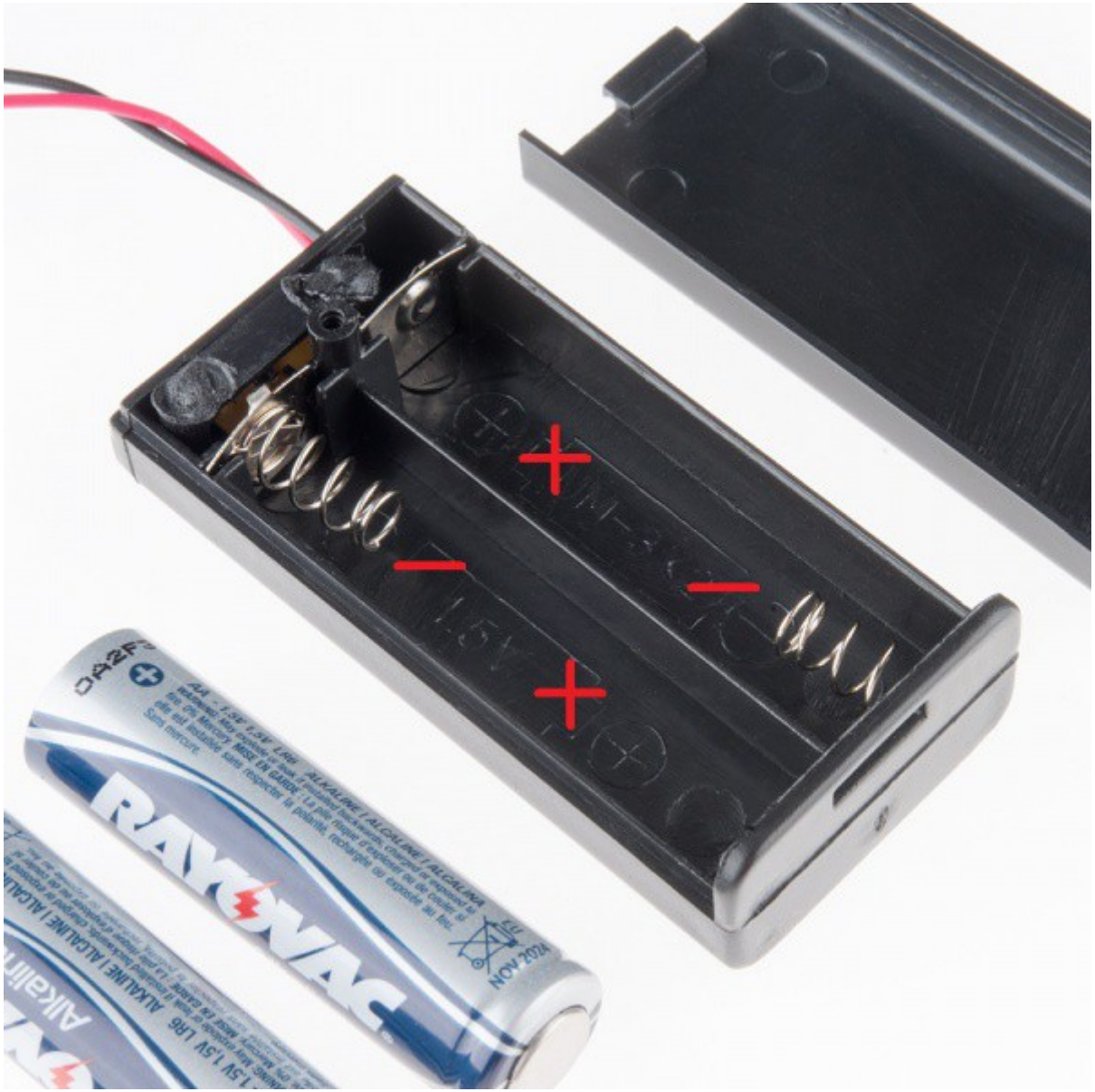
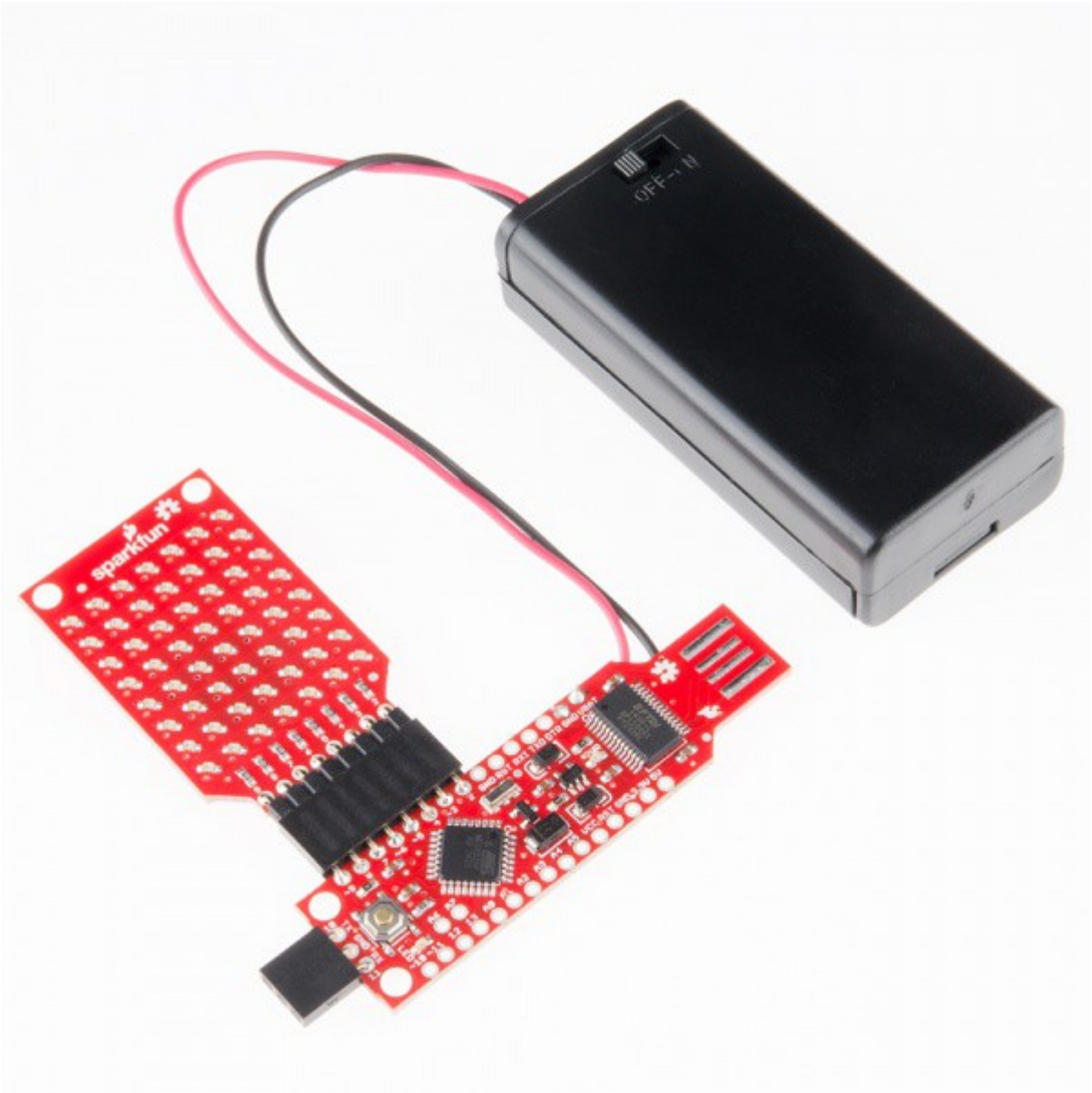
Verify!

Add Batteries to Battery Pack

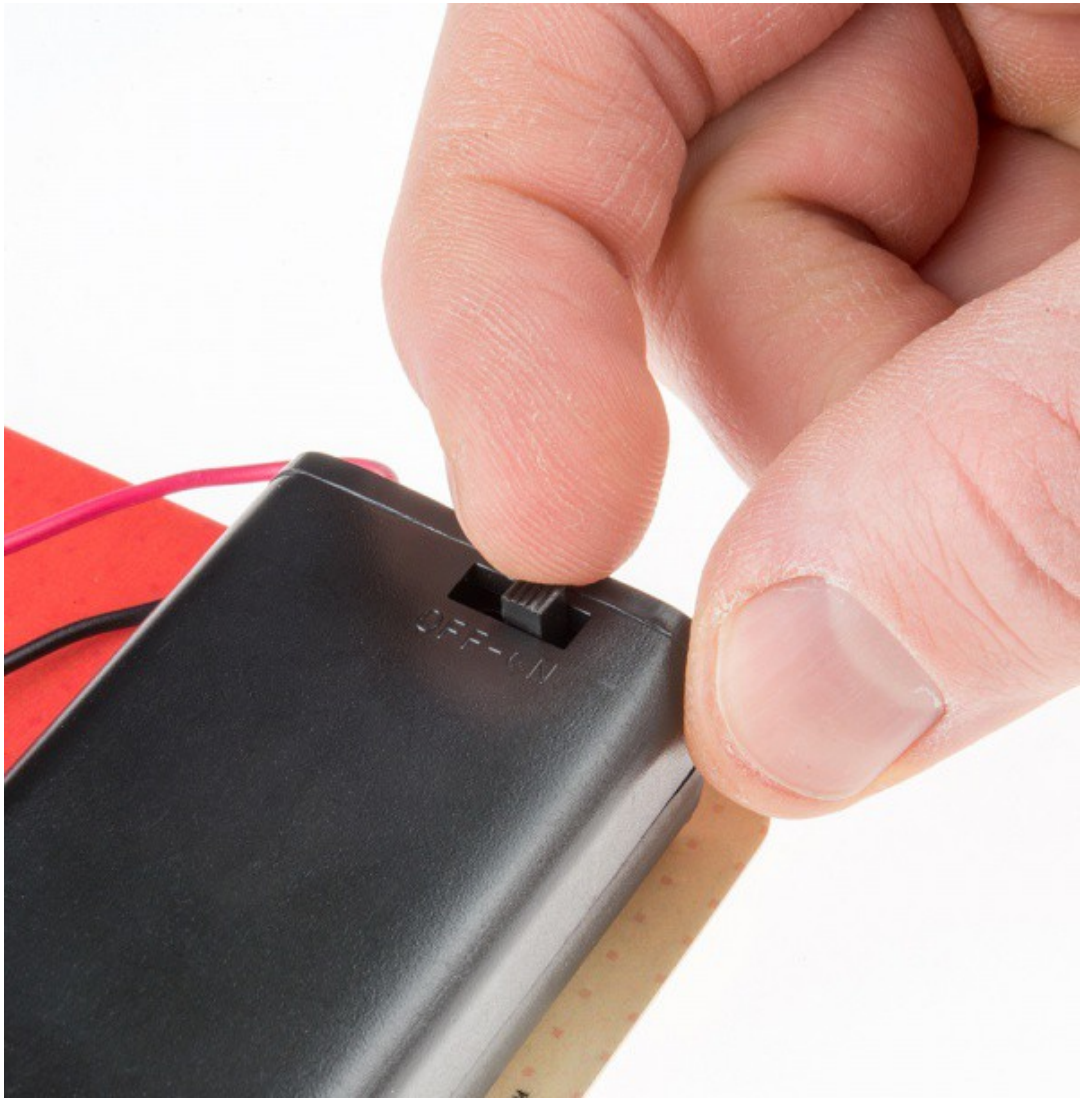


Connect LED Board to BadgerStick



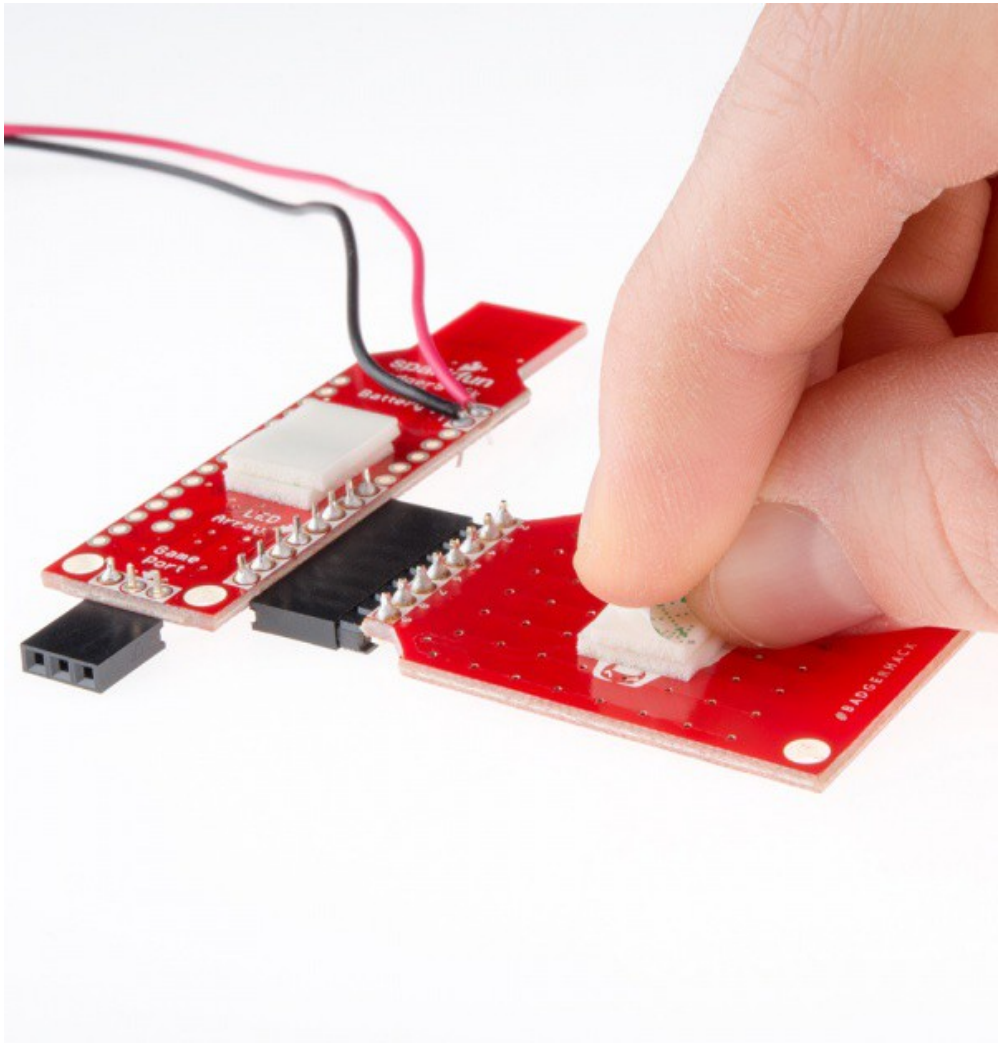
Verify Again!

Check Functionality



Turn those batteries on and check for blinky goodness

Add Foam Tape (Double stack it on PCBs)



Affix Everything to the Badge

Blinky Goodness!

Questions?

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