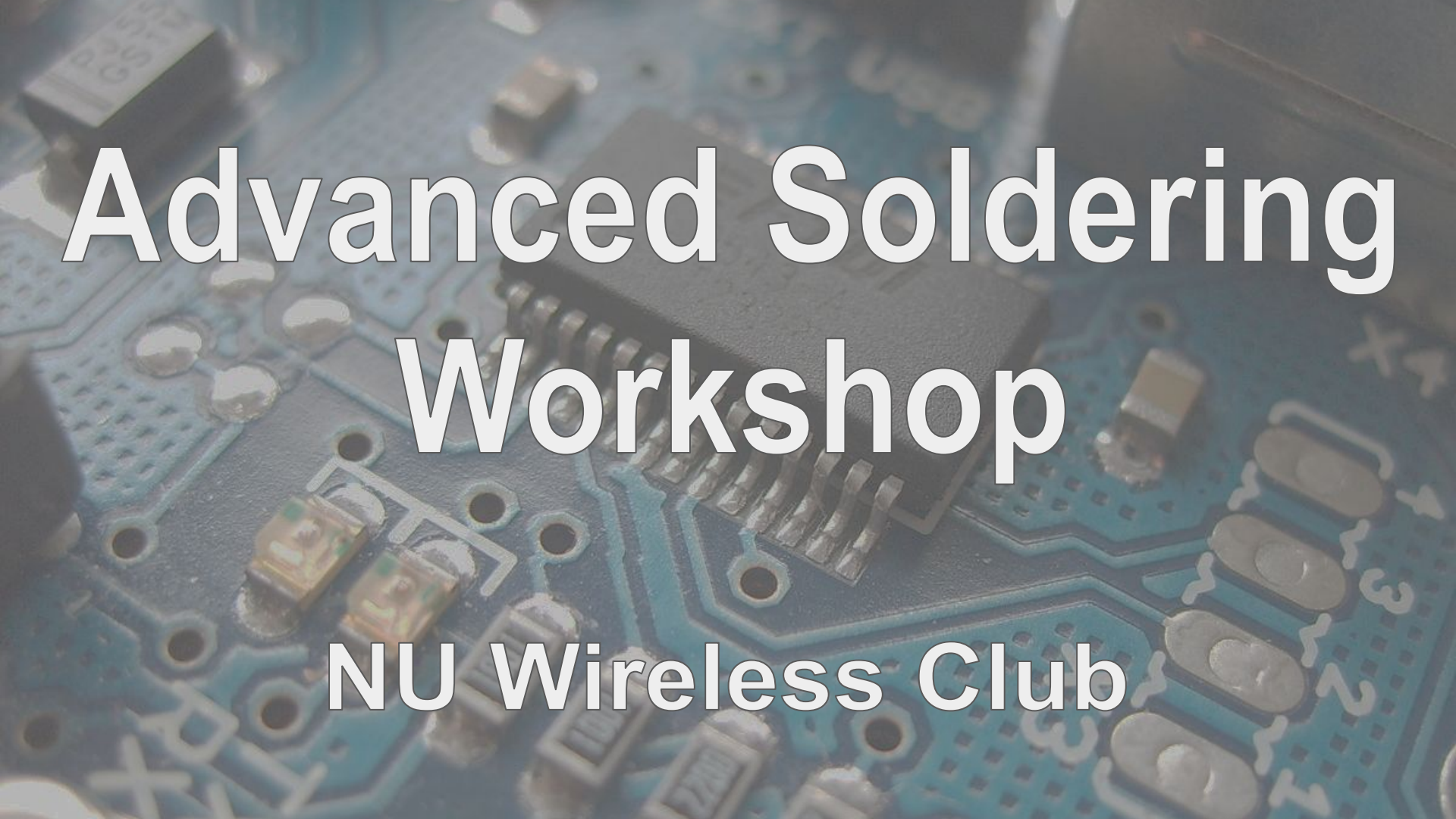
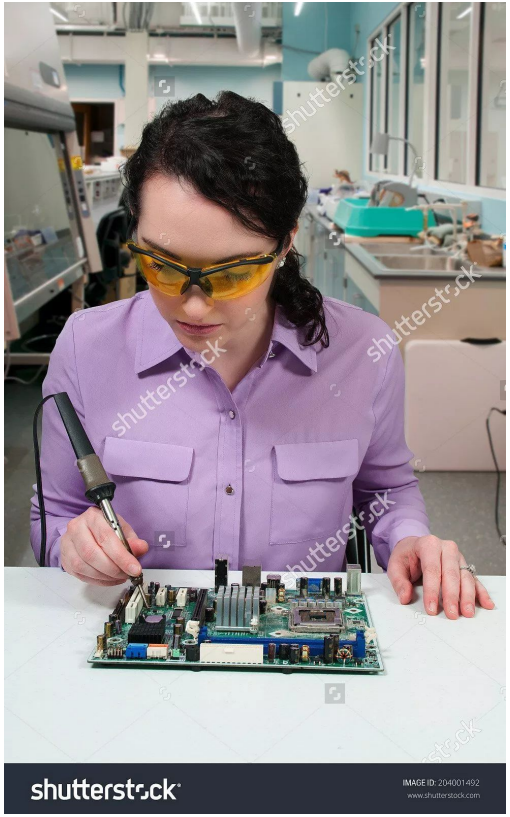


# Advanced Soldering Workshop

## NU Wireless Club

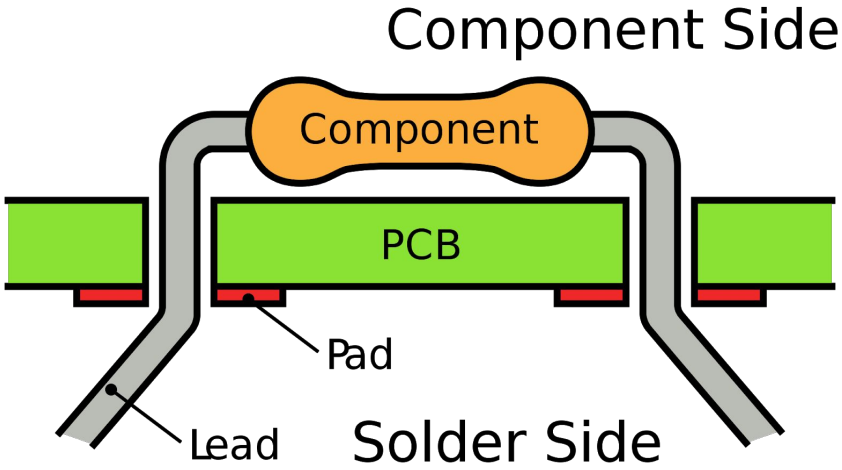
# Safety

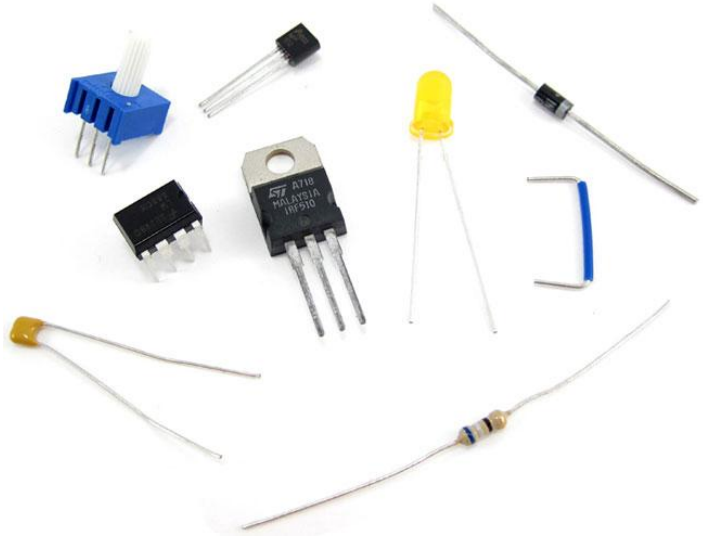
- Safety Glasses
- Solder toxicity
- Burn/ignition hazard
- Fumes/inhalation

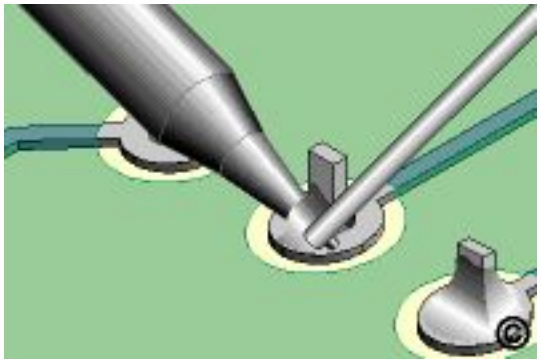



# Through Hole

- Overview
- Pros
- Cons

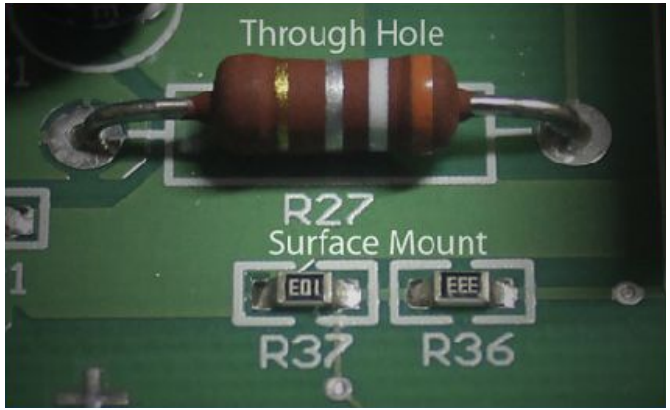


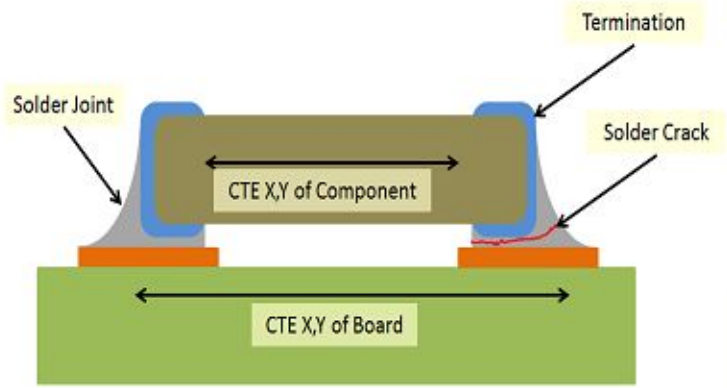



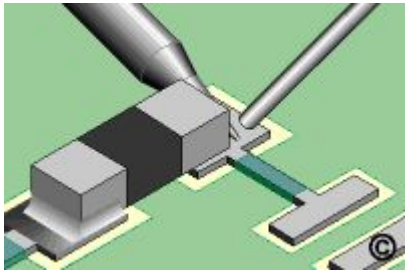


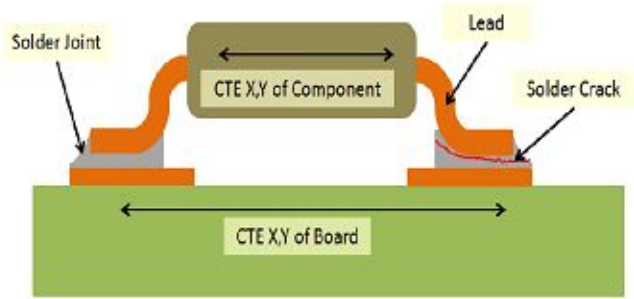
# Surface Mount

- Overview
- Pros
- Cons





# Tools

Soldering iron

- Tip Shape
- Temperature
- Cleaning the iron

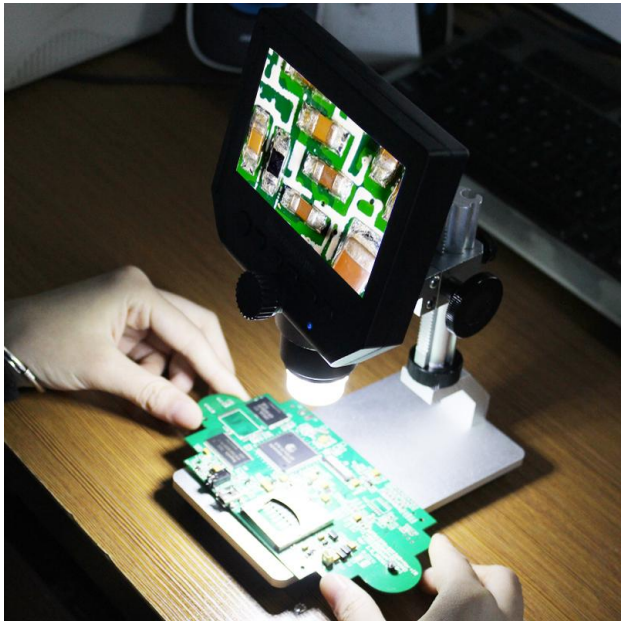
# Tools

- Tweezers

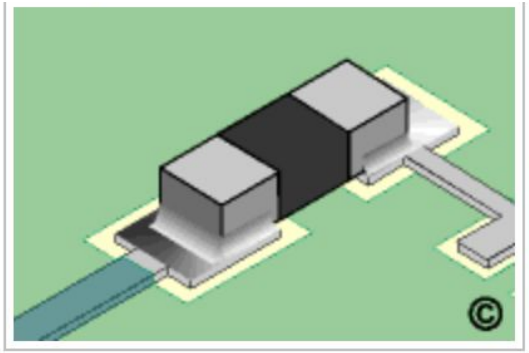


Optional but helpful:

- Flux
- Desoldering wick
- Microscope
- Hot air gun
- Solder sucker
- Tip tinner



# Technique



Surface Mount Chip Component

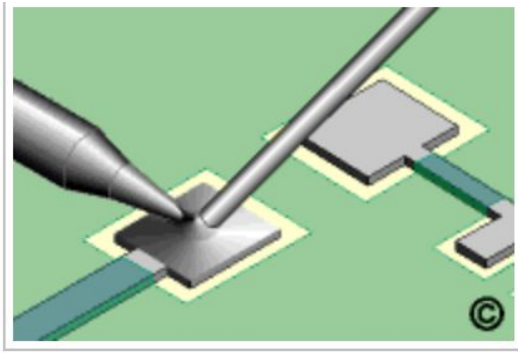


Figure 1: Prefill one pad with solder.

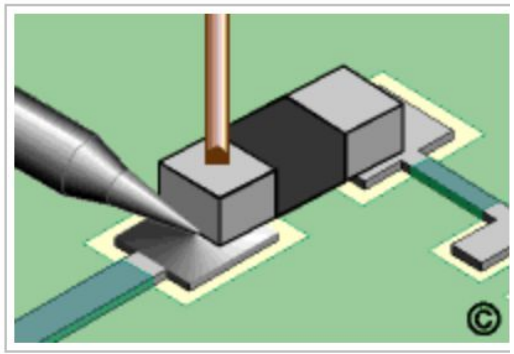


Figure 2: Place the soldering iron tip at the junction between the prefilled pad and component lead.

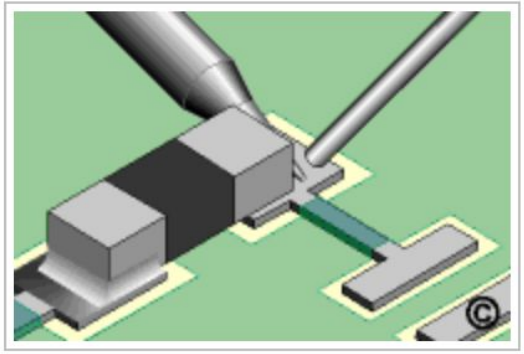
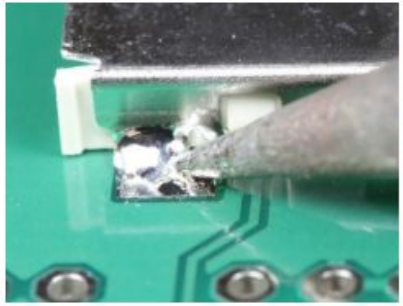


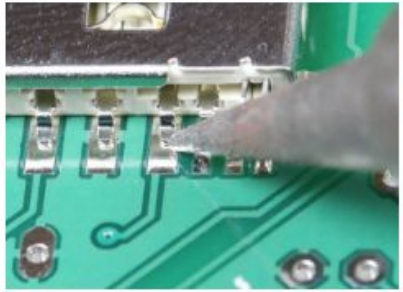
Figure 3: Solder the other opposite side of the component.

# Technique



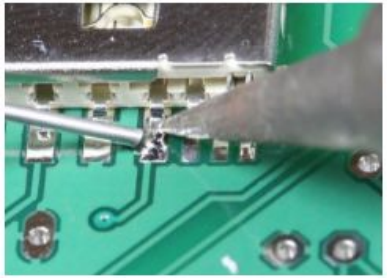
## Immobilize the Joint

Unlike many surface mount components, immobilizing the SD card holder is relatively easy. There are small pegs on the back that fit into positioning holes in the board. Once it is in place, solder the four small corner tabs to make it permanent.



## Heat the Joint

Start by putting the tip of the hot iron on the solder pad adjacent to the pin. The pad will take longer to heat, so we apply most of the heat to the pad to start.

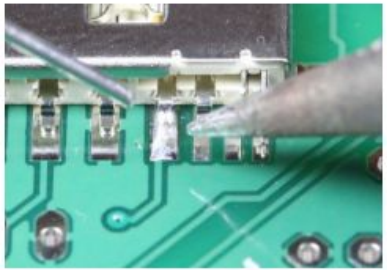


## Apply the Solder

When the joint is hot, apply solder to the side opposite the iron. The solder should melt and start to flow into the joint.

## Let it Flow

Apply just enough solder to ensure a good joint, then keep the heat on while the solder wicks up between the pin and the pad to make a good electrical bond.



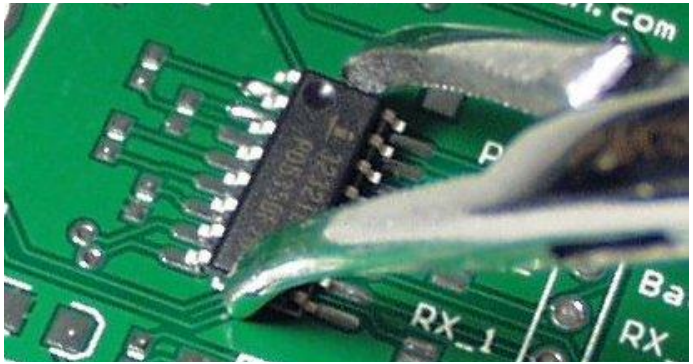
## Let it Cool

Remove the iron and allow the joint to cool undisturbed.

From: https://learn.adafruit.com/adafruit-guide-excellent-soldering/surface-mount

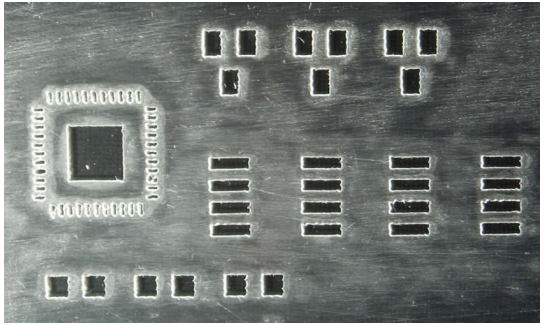
# Common Mistakes + Solutions

- Too much solder
  - Solder wick
- Incorrectly positioned component
  - Desolder or reflow and reposition
- Solder not sticking
  - Clean tip, better iron placement, use flux
- Solder not melting
  - Increase temperature



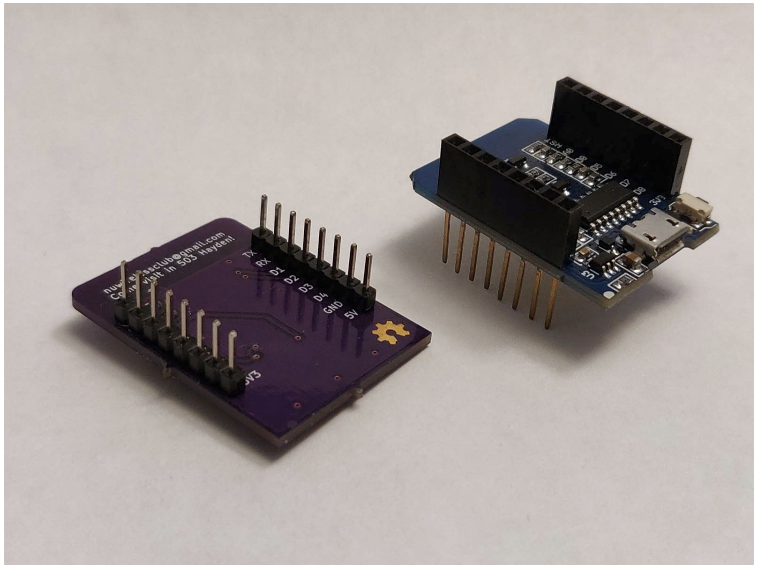

# Misc

- Testing the board
- Other tools
- Cleaning the board
- Manufacturing:
  - learn.adafruit.com/smt-manufacturing/overview


Follow this link to see the PDF handbook and the interactive BOM!

# www1.coe.neu.edu/~cnorthwa



https://www.youtube.com/watch?v=b9FC9fAIfQE