



Soldering

Tips and Tricks

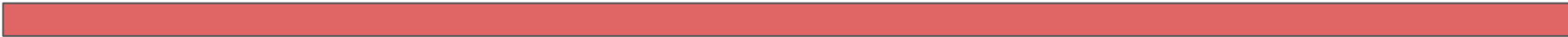
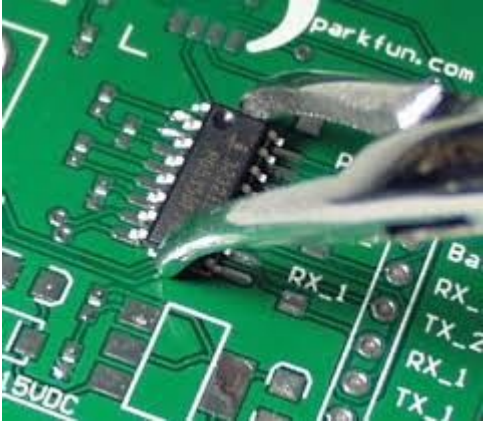


Why Solder?

Connect two metal pieces

- Component to board
- Wire to component
- Wire to wire

Creates strong electrical and mechanical connection





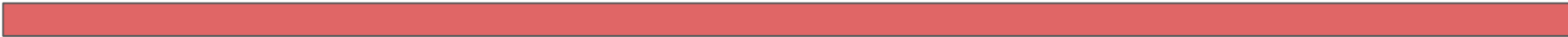
Terminology

Solder - the metal melted to join two metal parts

Tin - to cover a pad or wire with a layer of solder preemptively

Flux - sap-like material that cleans and prevents oxidation, making soldering easier

Rosin - solder can have a rosin core, which is essentially flux inside the solder





Tools

Heat gun - if you can place solder or solder paste on a pad, place the pad, and blast it with hot air, it can sometimes make it easier to place many-padded SMT parts

Soldering Iron - Heated metal pen-like tool that melts solder, heats pads to be soldered

Solder Sucker - Can remove excess solder from pad or wire

Solder wick - Braided copper that also removes excess solder



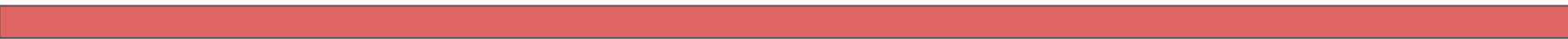
Heat gun



Soldering Iron



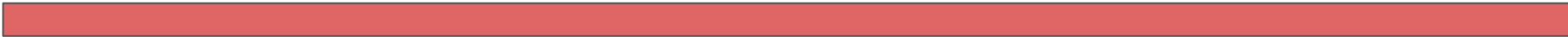
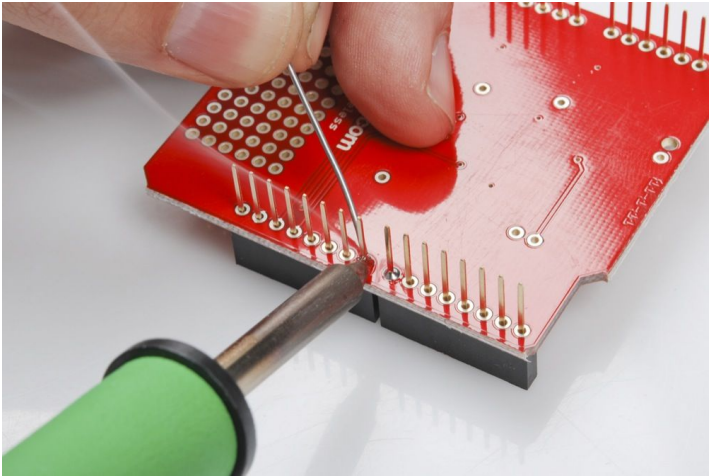
Solder Sucker





Process

1. Heat both components to be soldered (pad and wire, pad and component, etc) with soldering iron
2. Apply solder to component (NOT soldering iron)
3. Wait till solder flows over component
4. Remove solder
5. Remove soldering iron





Tips

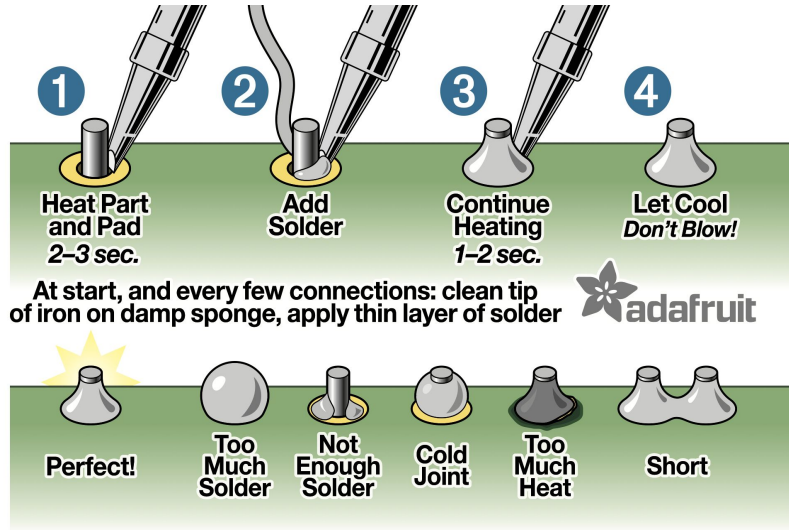
Cold solder joints - lumpy bits because pin/wire was not hot enough when solder was applied

- Caused by melting solder with soldering iron instead of on component

Remove excess solder with wick or sucker

Test for shorts on nearby pins

SOLDERING





Soldering Iron Tips: Does size matter?

In this case yes!

Smaller tips are better for small components, like the SMT 0805s you'll be soldering shortly

However, with larger components, especially those with a metal chassis, it may be hard to heat it up enough with a small tip

Some irons have easy swap tips, sometimes you have to wait for it to cool down and swap it out





Safety

Always wear **goggles** when soldering

- Solder can “jump” when very hot

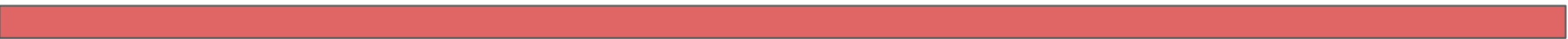
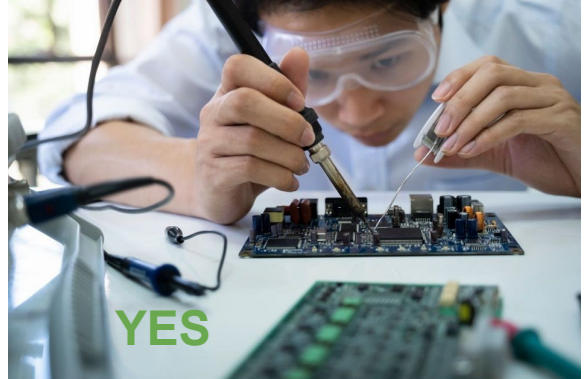
Wash your hands before eating - solder can have lead!

The iron is **always** hot

- Never grab anywhere but the handle
- It takes forever to cool down even if unplugged

Try to have **air flow** - fumes can make you sick

Don't solder while **circuit is powered!**





Video Demo

