



Scintilla SMD Soldering Course

March 10th



Planning

Lecture

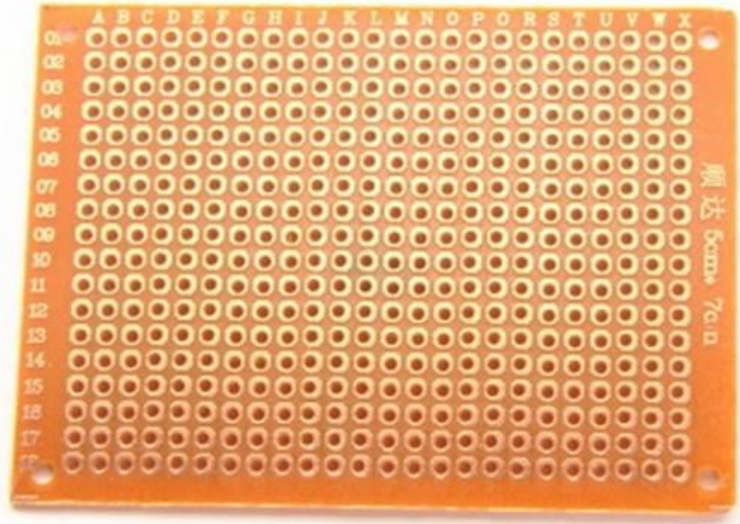
- ⚡ What is (SMD) soldering?
- ⚡ Electronic components
- ⚡ Soldering techniques
- ⚡ Principles of the kit

Practical

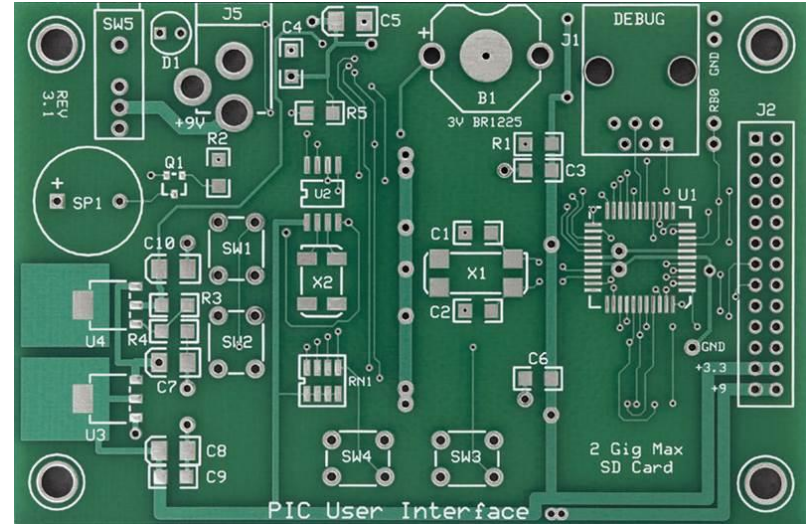
- ⚡ Soldering the components
- ⚡ Testing
- ⚡ Debugging
- ⚡ Testing
- ⚡ Etc.

What is soldering?

Through-hole (THT)



Surface mount (SMD)

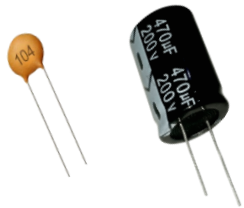
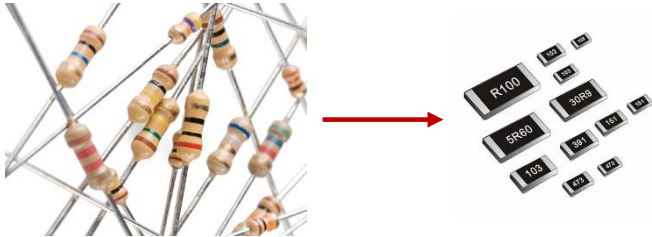




What to take into account?

Electronic Components

SMD components



Polarized Components

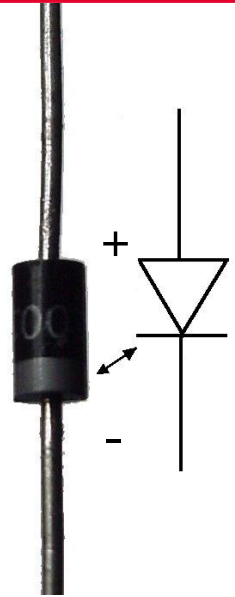
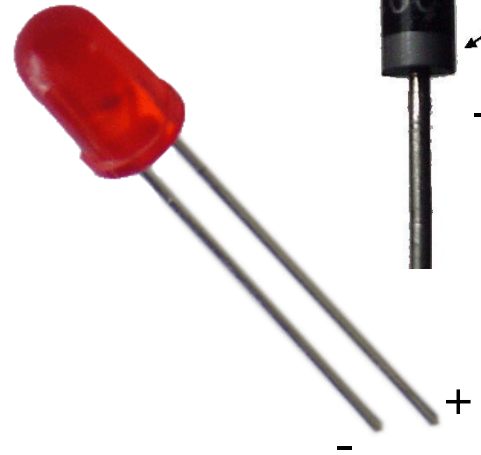
Only possible to connect in 1 direction

For through hole:

- Long side usually '+'
- White stripe usually '-'

For SMD Look on the PCB

- Usually says on the PCB
- Look for indents or marks on the components



Help it has more pins!?

Orientation

- Almost always a indent
- Dot on the silkscreen



LCCC



CLCC



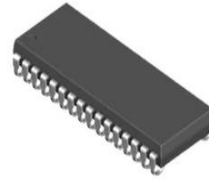
SOT



SOIC



PLCC



SOJ



QFT



BGA



Do's and don'ts

Soldering techniques

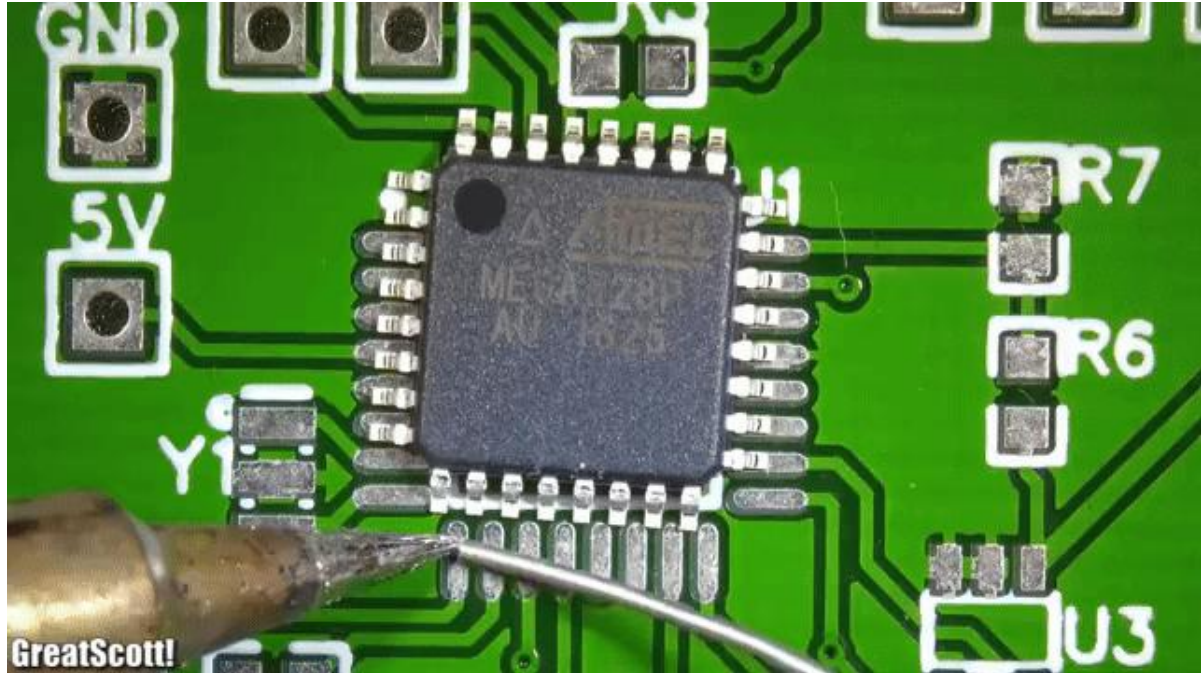
SMD soldering

- First put solder on one pad
- Place component
- Heat first pad, then second pad and to finish again the first pad



QFP chip

- First attach corners
- Dragging and cleaning up can be a way to do things



SMD soldering

- ❗ Extra flux can go a long way to help, it helps to prevent oxidation and help with flowing of the solder
- ❗ Good example of using too much solder





Start small

- 📡 Use tweezers to place the components.
- 📡 Start with large resistors and the small capacitors
- 📡 Then work on the ic's and led's
- 📡 Save the tall and through hole components until last!



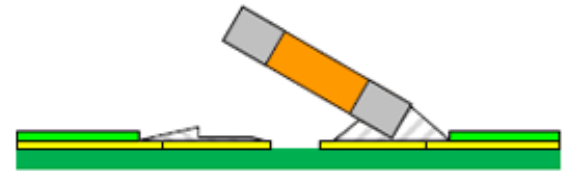
Finding Errors

And fixing them!

Finding errors

Visual inspection

- Common errors:
 - Missing connections
 - Short circuits
 - Cold joints
 - Dry joints
 - Tombstoning

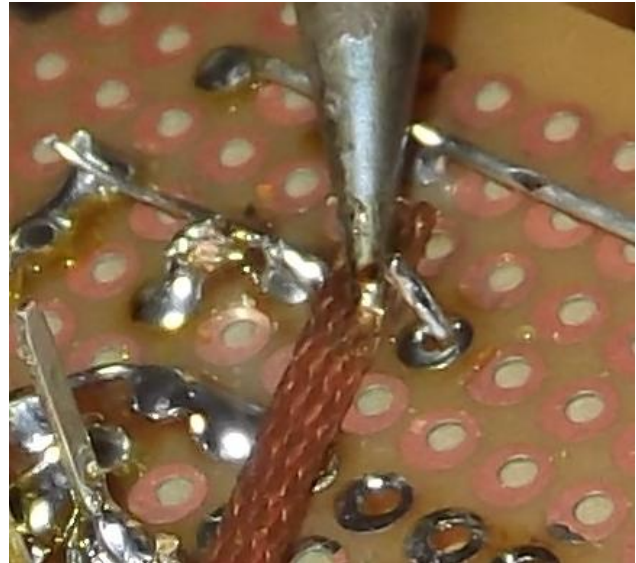


Fixing errors

Flux



Desoldering Wick

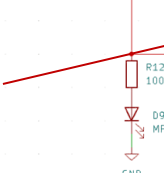


Principals of the circuit

USB



Timer



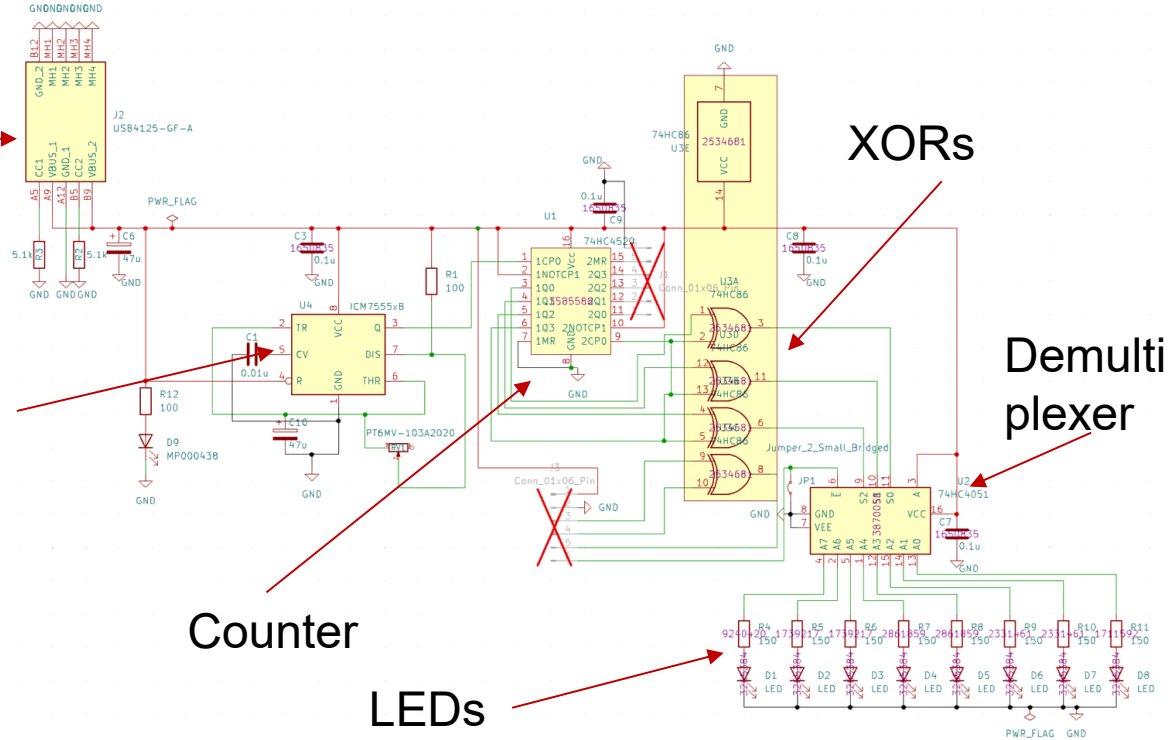
Counter

LEDs

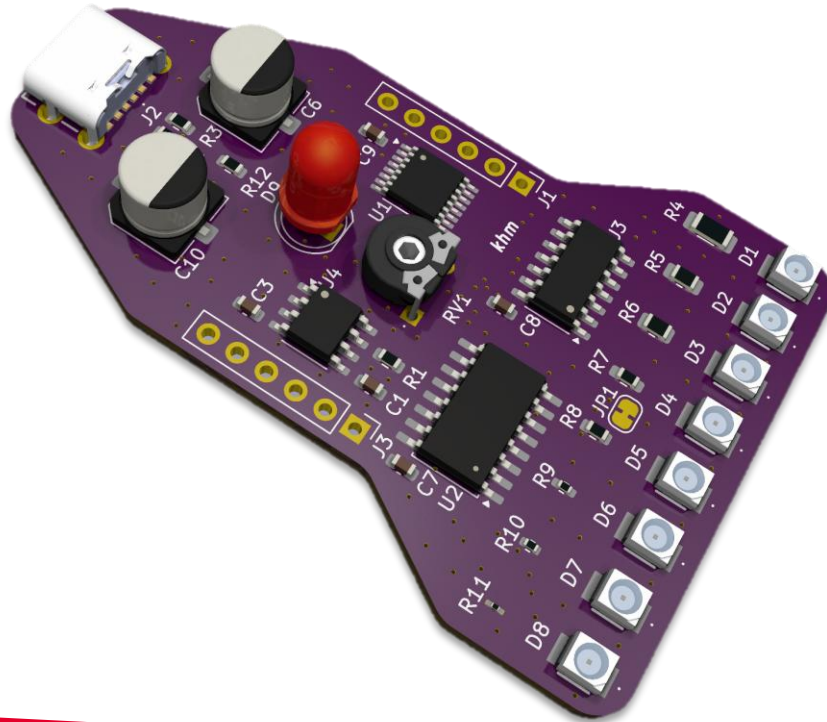


XORs

Demulti
plexer



Principals of the circuit





Good luck and happy soldering!

You can ask the MasterCLASS members
for an example on how to solder a
component. And all other questions 😊