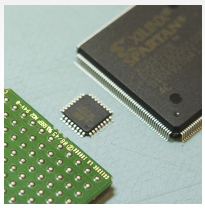
SparkFun Electronics Stenciling

Materials by Bob Hunke & Linz Craig

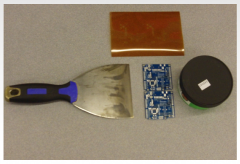
Why Stencil?

- Smaller footprint means smaller board
- Tight pitch components
- Multiple boards at a time
- Greater efficiency
- “Hidden” connections

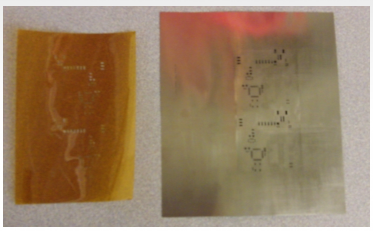


Materials Needed

- Stencil
- Paste
- Reflow capability (oven, hot plate, iron)
- Stencil frame
- Squeegees/putty knife



Plastic vs. Metal Stencils



Plastic vs. Metal Stencils Cost

- The metal stencils SFE gets are laser etched & sold by the 15” x 15” sheet at $125
- Plastic stencils are $25 plus shipping per board

Plastic vs. Metal Stencils Durability

- The metal stencils SFE gets are good for thousands of uses
- Plastic stencils are good for 50 – 100 uses

Plastic vs. Metal Stencils
Ease of Use

- Make sure that your stencil extends over the end of your frame or framing scrap PCBs
- Stiffer stencils are easier to pick up off of the board, hence metal is easier to work with

Plastic vs. Metal Stencils
DIY

- Cut your own plastic stencils fairly easily
- Chemically etch your own metal stencils not so easily
- Machine cut your own stencil if you've got the hardware and software (this is becoming more and more common)

Plastic vs. Metal Stencils
Quality of work

- Metal stencils tend to make for better paste placement

Paste Types

- Leaded vs. Lead free
- Flux: Clean vs. no clean
- Size: SFE uses Type 3, average solder sphere of 36 microns
- Five-ball rule for choosing type:

Smallest component footprint should be no smaller than five times the width of average solder sphere

Type 3 Paste Cost

- SFE, leaded: $9.95 for 50g

SFE, leaded

Lead free, $63

Syringe style

- Larger quantites: 500g $100 - $150

Paste Storage and Handling

- Store your paste in a cool place such as a refrigerator
- For short term storage room temperature is okay