

UiO : **Department of Physics**
University of Oslo

FYS4260 2019

Microsystems, electronic packaging and
interconnection technologies

Lecture 7 – Assembly day Info



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What we will do

- Print paste using a stencil printer.
- Place SMD components using manual Pick & Place stations / Tweezers.
- Solder in Vapour Phase Oven.
- Visually inspect board and correct errors.
- Solder through hole components manually.
- Use a multimeter to check for shorts.
- Crimp needed cables.
- Power up, program and test.

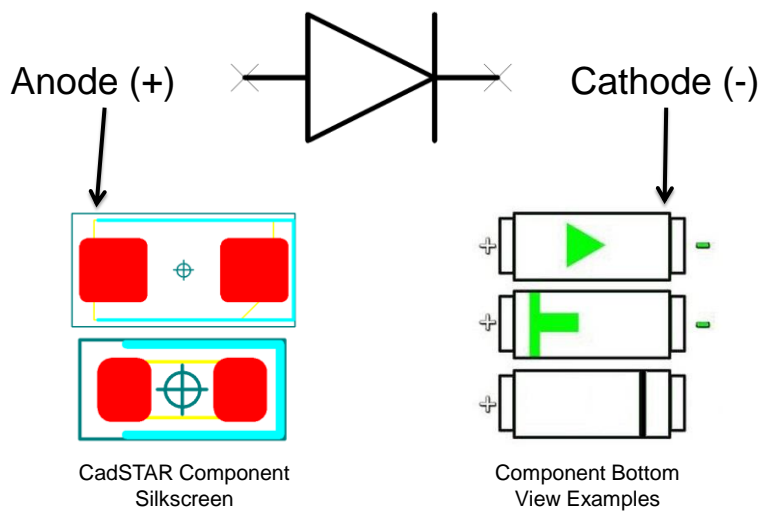
What to think of on assembly day

- ESD
- IC Orientation / Chip Polarization
- Use correct sized soldering iron tip!!!
- Handle your board carefully
 - Dont smear out paste
- And as always, keep the lab clean and tidy, put things back where you found them!

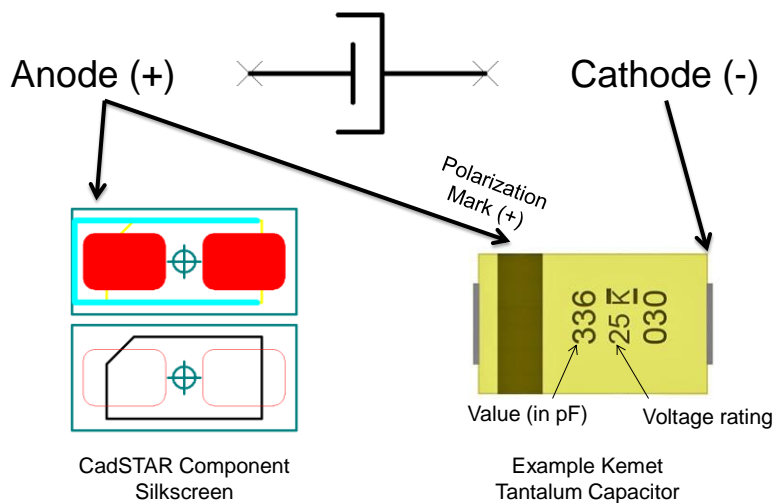
ESD

- Some electronic components are sensitive to static electricity and can be damaged by its discharge.
- To prevent such discharge
 - Make sure the operator is properly grounded through:
 1. Wearing antistatic footwear on a dissipative floor, or
 2. Using wrist straps.
 - Handle the boards and components by the edges.
 - Keep the lab clean and neat!
 - Do not use hand lotions.
 - Leave your woolen socks and sweaters at home.
- At ELAB, we have a static dissipative floor in the lab, and there are wrist straps at each work place.

Orientation - Diodes

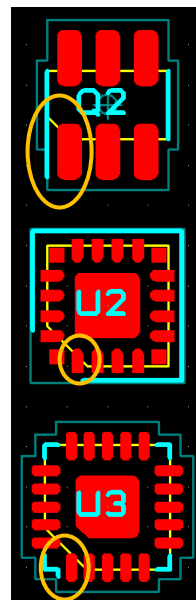


Orientation – Solid Tantalum Caps



Orientation – IC's

- In CadSTAR, pin 1 is denoted as a chamfered corner in the assembly layer, and with a marking in the silk screen layer.
- The silk screen marking is either an opening or a prolonged edge.

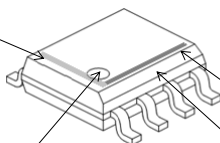


Orientation – IC's

- There are different markings used to indicate pin 1 on a physical chip.
- If you can read the text the correct way, pin 1 is *usually* on the top or bottom left side.

A line to indicate
pin 1 edge

A «dot» in pin 1 corner.
(If there are multiple
dots, it is «always» the
smallest that's used.)



A line or slightly
beveled edge to
indicate pin 1 side

Hand soldering

- A small soldering iron tip transfers little heat
=> Use as big a tip as possible
- Mechanical force do not improve soldering! It only destroys tips.
- Ask for help if you have no or limited experience in hand soldering.
- DO NOT USE THE NANO STATION!!!

Lab Rules

- Leave your jackets, backpacks, etc outside the lab.
- No food or drinks in the lab.
- We have hand tools for everybody, but you have to share the microscopes and manual pick and place machines.
- Take breaks as you please, there might(?) be coffee right outside the lab.

Welcome!