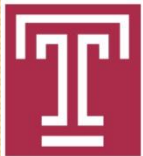
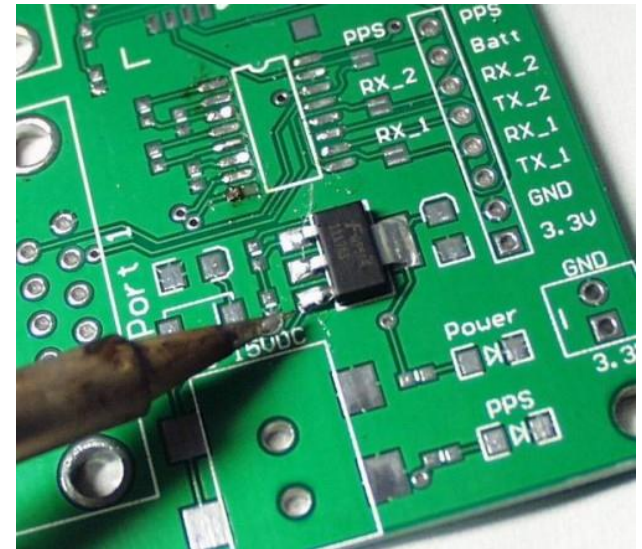
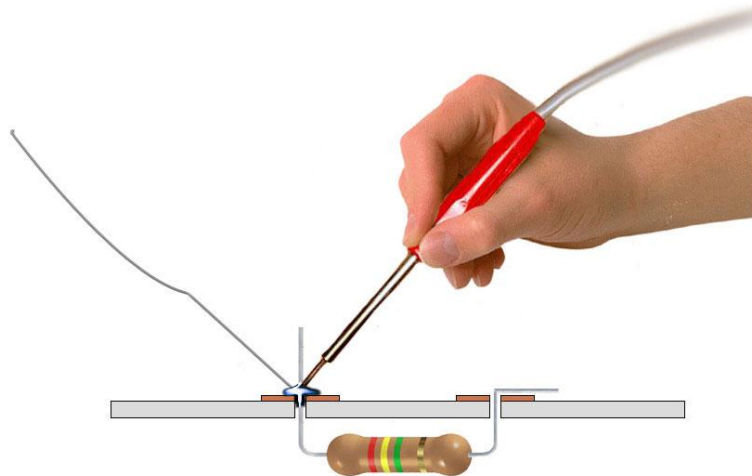


Introduction to Soldering

ENGR 1101 – Introduction to Engineering
ECE Department – Fall 2012

Dr. John J. Helferty



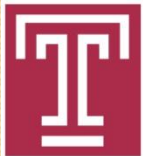
Basic Tools, Materials and Procedure of Hand Soldering

- Basic Elements of Hand Soldering:

- Temperature controlled Soldering Iron with stand and sponge
- Solder Material (will be provided by TAs)



- Turn on the Soldering Iron and wait for the iron to heat up (Medium setting will be fine)
- Make sure your **sponge is wet!**



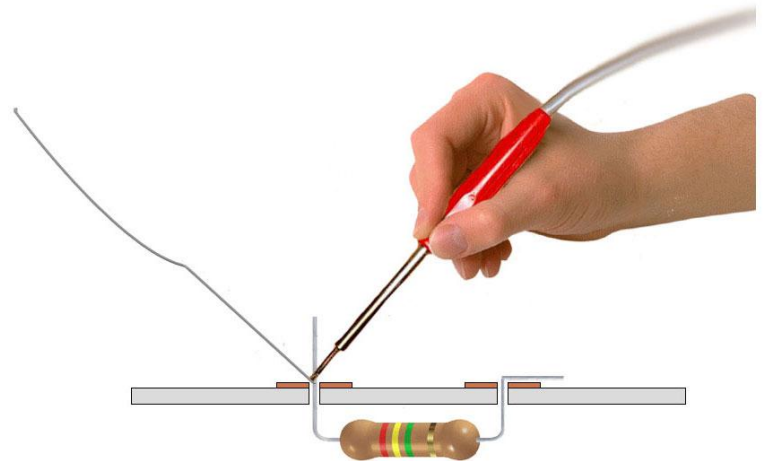
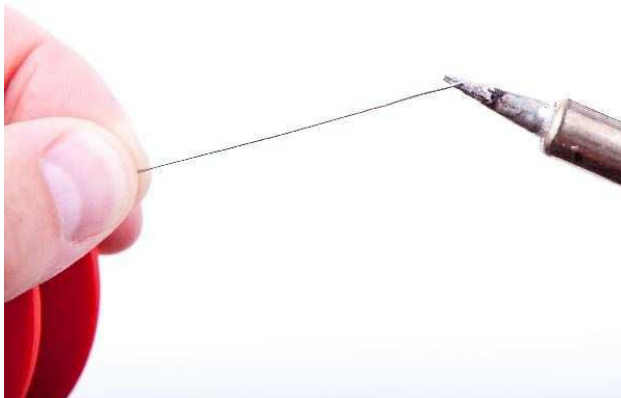
What is Soldering?

- The process of making an electrical connection by melting low-temperature metal alloys around component leads
- Soldering is just as much an “Art” as it is a “Science”
- We will:
 - Go over some soldering vocabulary
 - Illustrate graphically soldering techniques
 - Show how to create a “perfect” solder joint
 - Begin the Hovercraft Construction (ECE section)



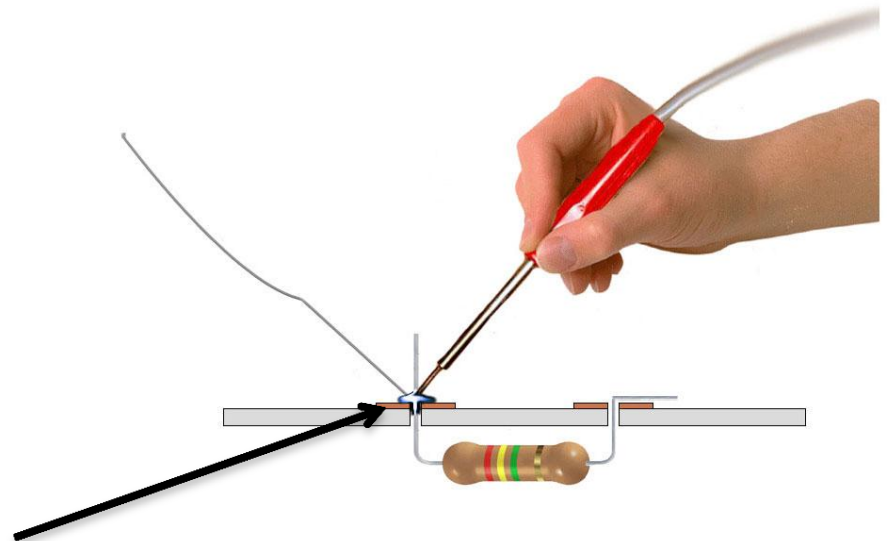
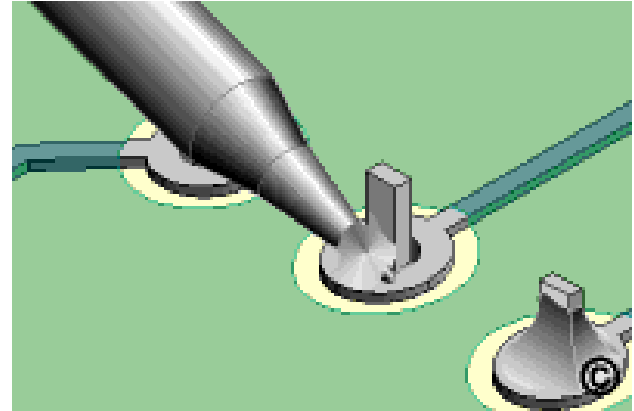
Basic Procedures for Soldering:

- Clean the surfaces to be soldered (dirt free, grease free and oxide-free)
- Put two target objects (to be soldered) together
- Wet the joint area with flux, if needed
- Pre-heat the joint area with soldering iron
- Apply solder at the joint and remove when sufficient solder has flowed down to the joint
- Remove solder wire and then soldering iron, and allow the joint to cool down



Basic Procedures for Soldering:

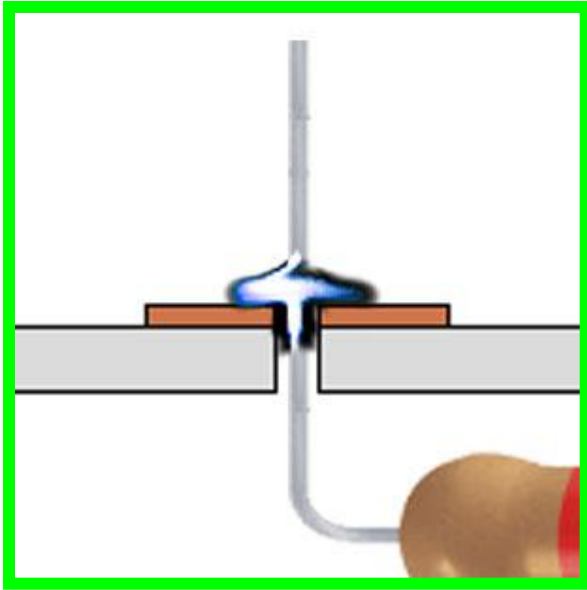
- Touch the tip to the component lead **AND** the pad
- Apply just enough heat
 - TLAR (That Looks About Right)



Your join should look something like this one.
You should only need a small amount of solder for each joint.

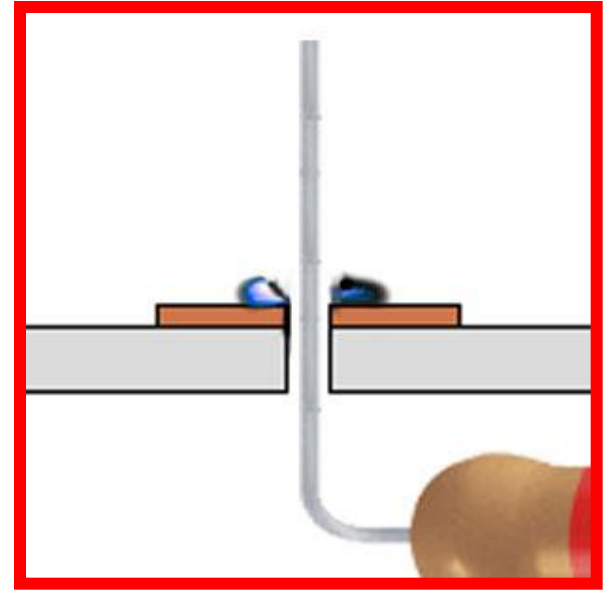


Good and Bad Attempts:



GOOD:

The join is complete
and will hold in place.



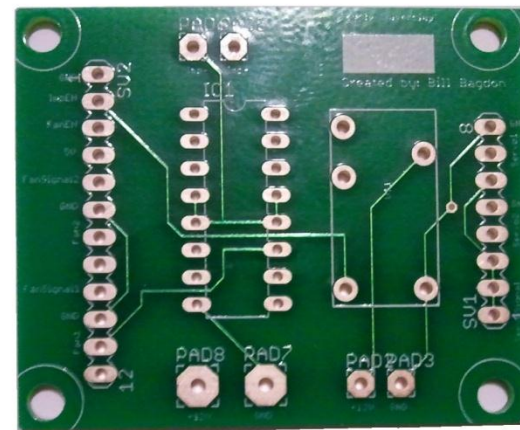
BAD:

Not enough solder
applied. No join.

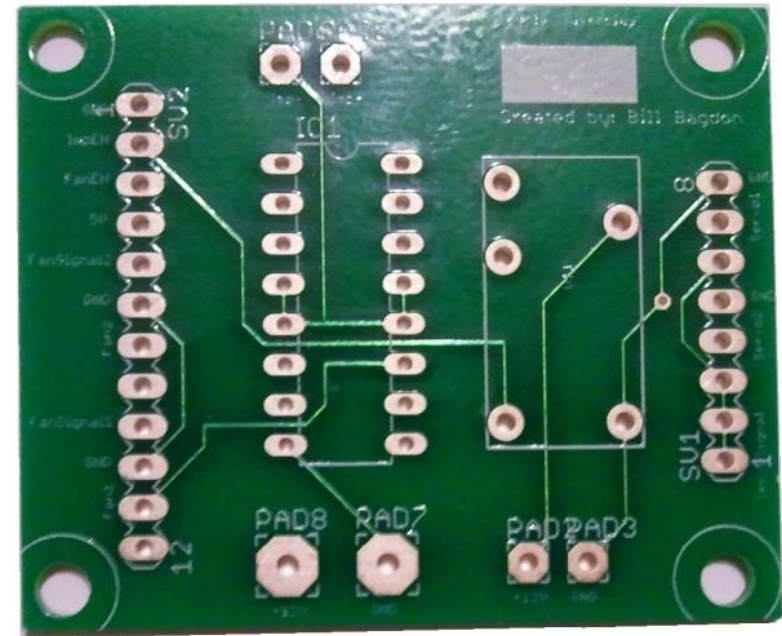
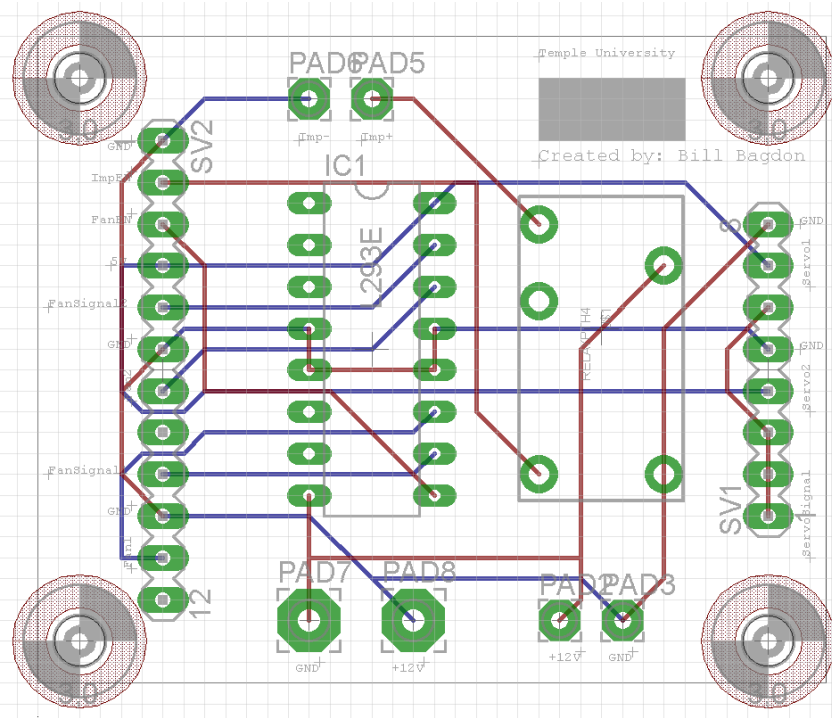


The PCB (Printed Circuit Board)

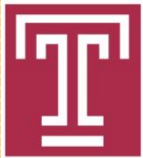
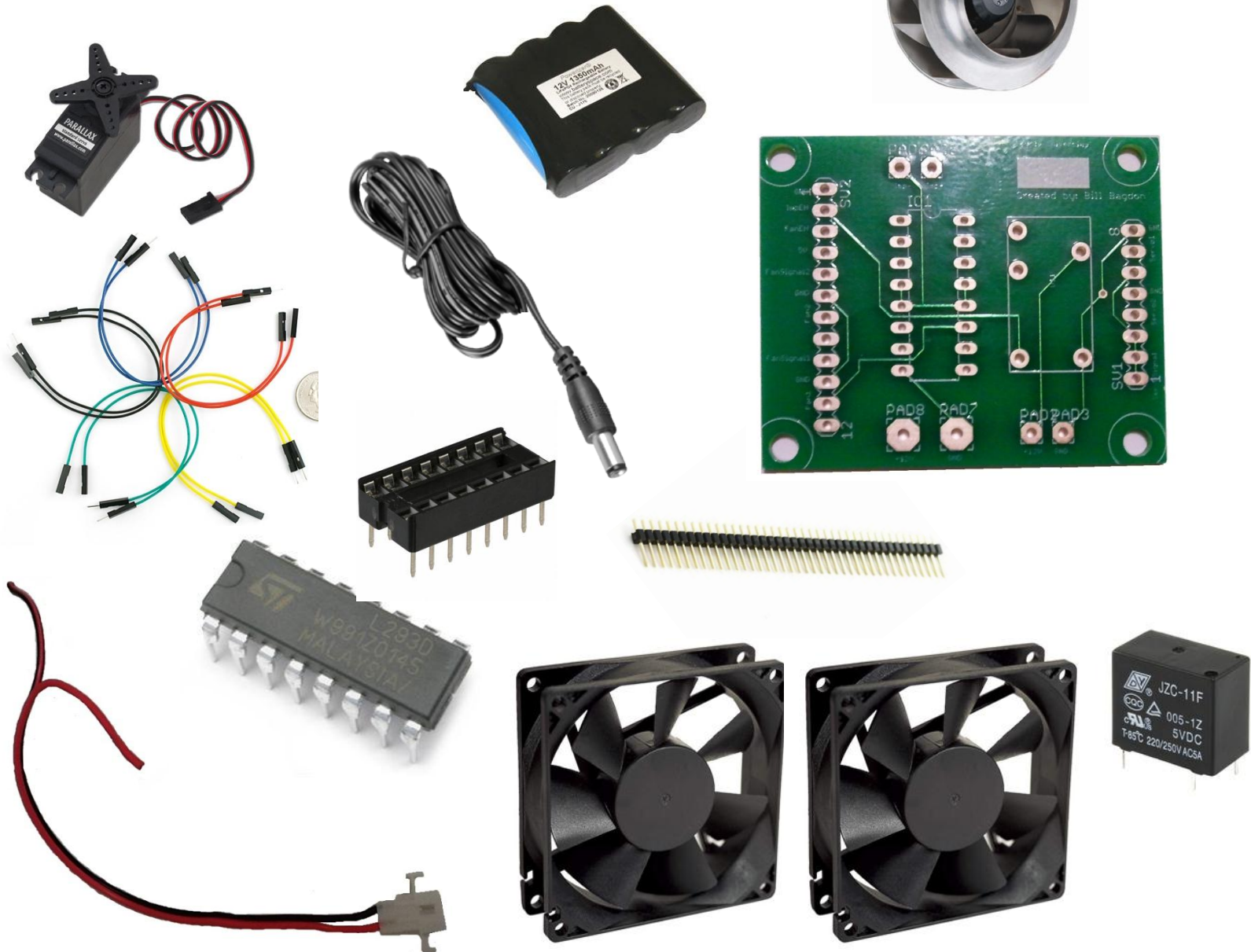
- A PCB (Printed Circuit Board) is used to mechanically support and electrically connect electronic components using conductive pathways, tracks or signal traces etched from copper sheets laminated onto a non-conductive substrate.
- Think of it as a breadboard, in which the traces are already mapped out.



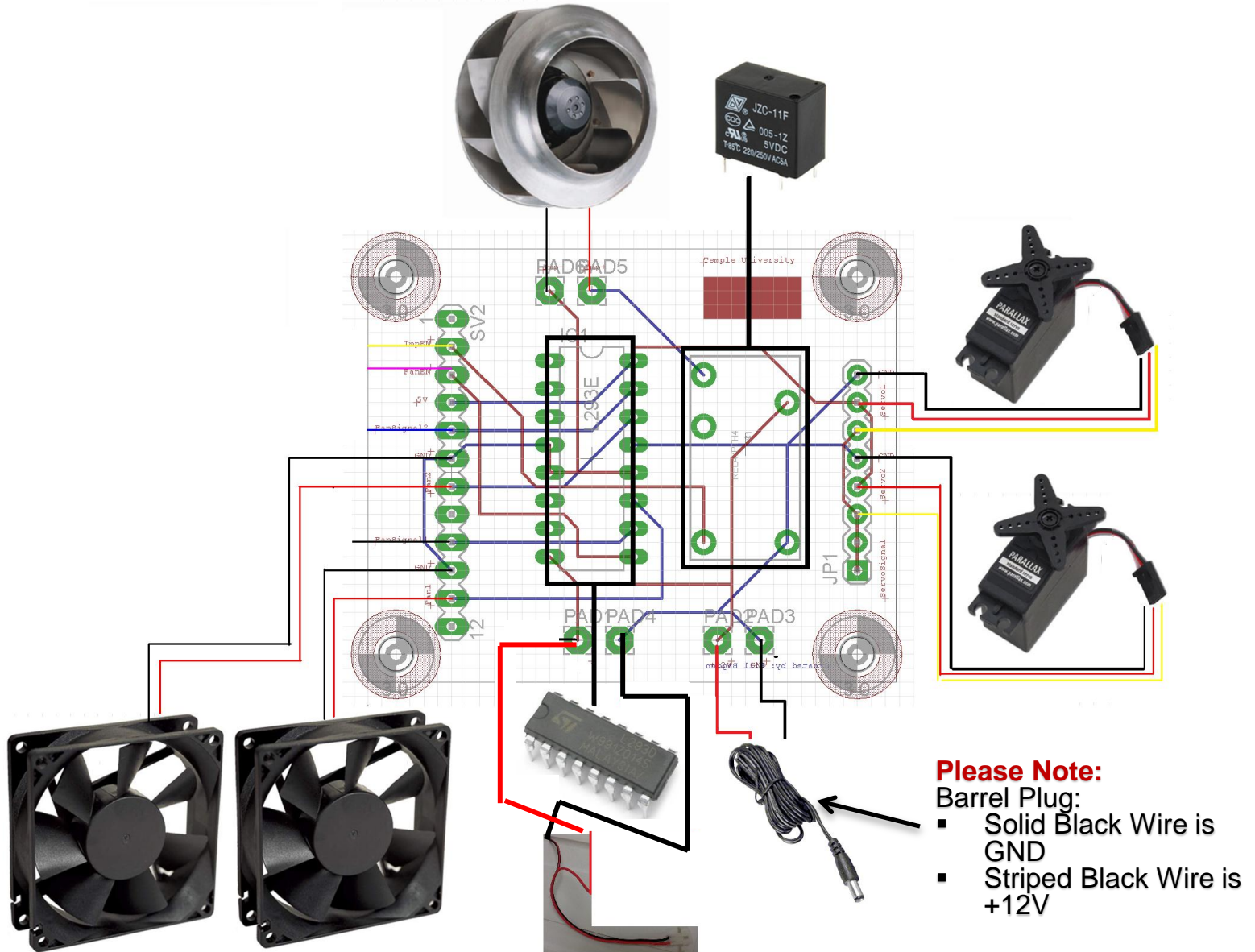
Here's our PCB:



Components for Soldering



PCB Schematic



Safety Concerns:

- Don't solder while **circuit is powered**
- Use well ventilated and lighted work space
- Don't touch the solder tip – it's hot (dahhhh)
- Watch for flying leads when clipping excess



Any
Questions?

