



LAB4: Start Flag Project 1

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| ☰ B04 status | |
| 📅 Date | |
| ☰ Description | Voltage Regulator Kick of Start |
| ☰ H1 status | ready |
| ☰ Sessions | Week 5 |

Voltage Regulator

In this LAB you are going to start the development of **Project1: An Adjustable Voltage Regulator**. The goal is to mount and probe the prototype for this project. To accomplish this, follow the next activities:

Before the LAB

- **Print this document and bring it to the LAB.**
- Search what is the meaning of prototype?
- Review and study the circuit schematic in **Figure 1**. How does this circuit work?
- Print and study the datasheet for the LM117 circuit
- Answer the following questions:

- ☐ What is Line Regulation?
- ☐ What is the typical line regulation for the LM117?
- ☐ What is Load Regulation?
- ☐ What is the typical load regulation for the LM117?

- ☐ What is the minimum Maximum Load Current for LM117 and what does it mean?
- ☐ What is the maximum input voltage we can apply to this regulator?
- Define the Bill of Materials (BOM) for the prototype of this project. What is a BOM? Do not forget SW1, SW2.
- Buy all the components you will need according to your BOM and assuming you are going to assembly the prototype in breadboards.
- **Mount your circuit before the LAB!**

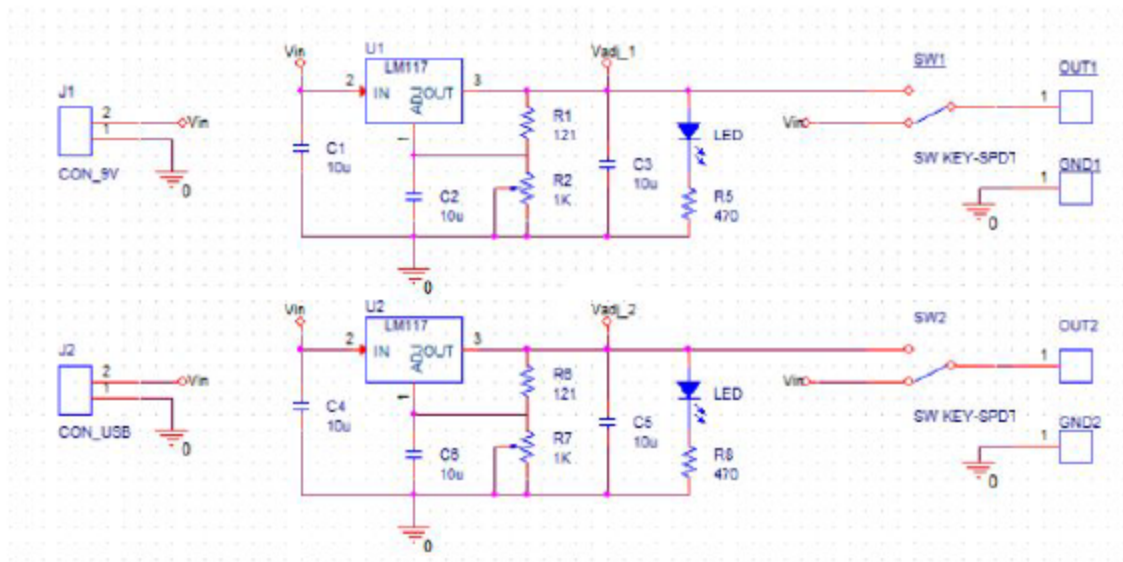


Figure 1

During the LAB

- Pay attention to the instructor instructions according to LED + Resistor design.
- Pay attention to the instructor instructions about R1, R2 design and additional project specifications.
- Pay attention regarding project schedule.
- Power on your circuit using the power supply in LAB.
- Using the oscilloscope, capture V_{in} and V_{out} in Channels 1 and 2 respectively.
- Adjust the POT to generate the desired output voltage $V_{out1} = 5V$ and $V_{out2} = 12V$. Adjust V_{in} to obtain always a voltage drop $V_{in} - V_{out} = 5V$.

- Meas the input ripple and output ripple in both situations ($V_{out1} = 5V$ and V_{out2}).
- Write down all the things you need to do in order to push the project forward. Show it to the instructor.
- Make conclusions.

That is it!