Lab 8: Intro to KiCAD and PCBs

Due: Friday 04/03/2020

Objectives

1. To become familiar with PCB layout and design in KiCAD
2. To build and verify a PCB

Supplies

- Computer
- PCB Mill
- 1 sided FR-1
- Components

Procedure

Your task is to design, build and verify the operation of a printed circuit board. The circuit you are going to implement is a BJT voltage divider amplifier, shown in Figure 1. You may replace the 20 μF capacitor with a 10μF capacitor.

1. Use LTSpice to simulate the circuit from Figure 1. This will be used to verify the operation of your PCB.
2. Learn how to do PCB design and layout in KiCAD using the document KiCAD_ tutorial_ acd_ pcb.pdf and the video found here: `https://youtu.be/SpI7A8xaRJw`.
3. Make your PCB design, and generate Gerber files.
4. Use Bantam Tools to verify your Gerber files can be milled.
5. Use the OtherMill to make your PCB.
6. Populate the PCB with components, and solder them into place.
7. Using a function generator and oscilloscope, verify the operation of the amplifier.
8. If needed, the following video resource is helpful in learning to create your own footprint in kiCAD `https://www.youtube.com/watch?v=ZHH4G_EWhm0`.
9. A very detailed video teaching playlist is located at `https://www.youtube.com/watch?v=gIf8sdd-JL4&list=PLEBQazB0HUyR24ckSZ5u05TZHV9khgA1O`

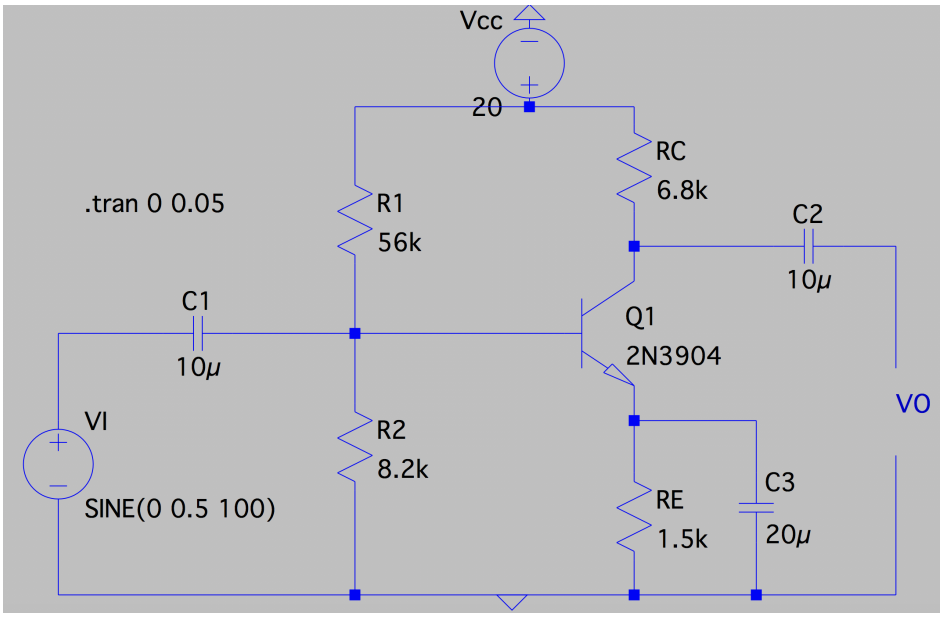

Figure 1: Voltage divider amplifier.

Requirements

Submit each of the following on Canvas

- Your LTSpice file.
- All files generated by KiCAD, including your Gerber files.
- A screenshot of the oscilloscope verifying operation of your PCB.

In addition, please submit your populated PCB to the instructor.