EXPERIMENT PCB1: PCB Layout Design 1

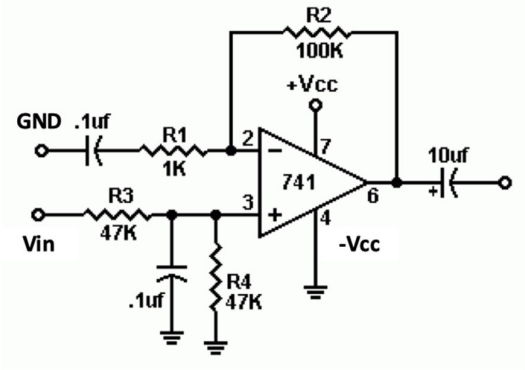
OBJECTIVES:
Learn the basic process of PCB layout design using software tools.

EQUIPMENT:
PC with access to PCB design software (e.g. EazyEDA.)

INSTRUCTIONS:

1. Refer to "Basic guide to EazyEDA 1" at the end of this manual to understand the basic operations of the application. Note that the circuits given in the guide are just an example and not the actual circuits that you need to design. This is an open-ended experiment, assume your own values (provide justifications) for any parameters that are not specified.

2. Prepare the schematic for the following circuit using EazyEDA.



Circuit 1

3. Run the simulation for Circuit 1. Assume the input AC source has a Vpp of 1V & frequency of 1Khz. Run the AC analysis for Bode plot from 10Hz to 1MHz. Add the appropriate measurement device at the relevant location to monitor the output.

4. Screenshot your final schematic and simulation results to be included in the report. Save your project, it will be used in the next experiment, "PCB Layout Design 2".

REPORT:

1. Include a brief description of each element and phenomenon that occurs during the experiment
2. Attach the screenshot of the results and provide some explanation.
3. Conclude the things learned, problems encountered, and how it was overcome.
4. Answer all questions at the Questions section.

QUESTIONS:

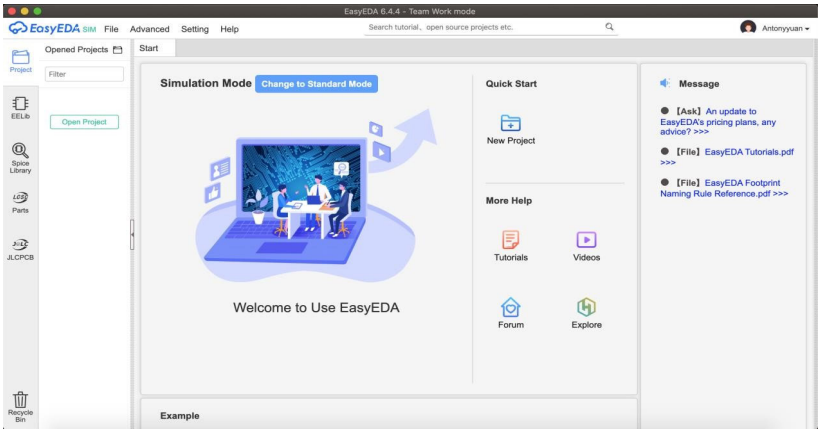
1. Identify the component in Circuit 1 and explain what is the purpose of this circuit.

END OF EXPERIMENT

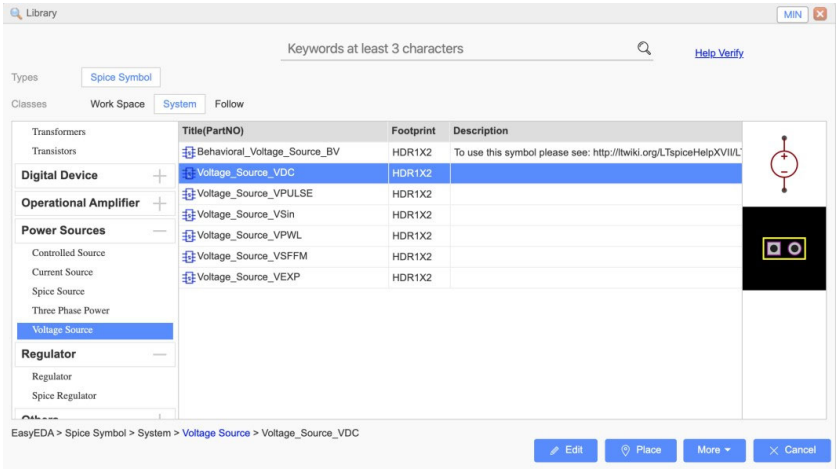
Basic guide to EazyEDA 1:

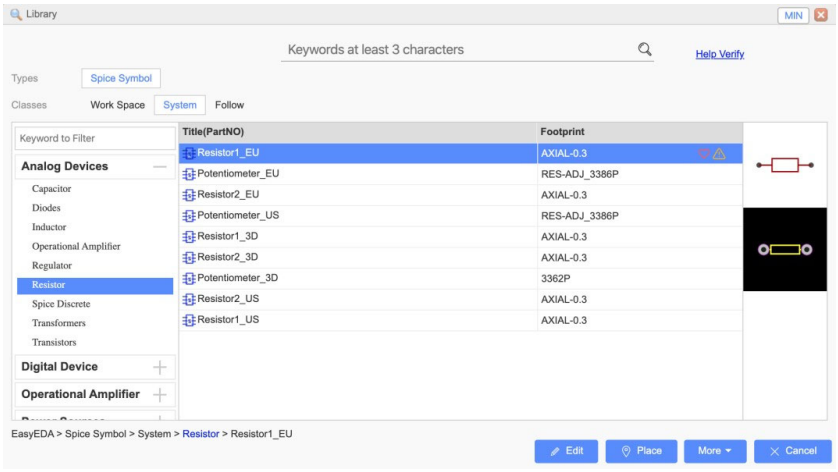
1. EazyEDA is available as a free online application at https://easyeda.com, it is also possible to install the application locally to your computer using the installer.

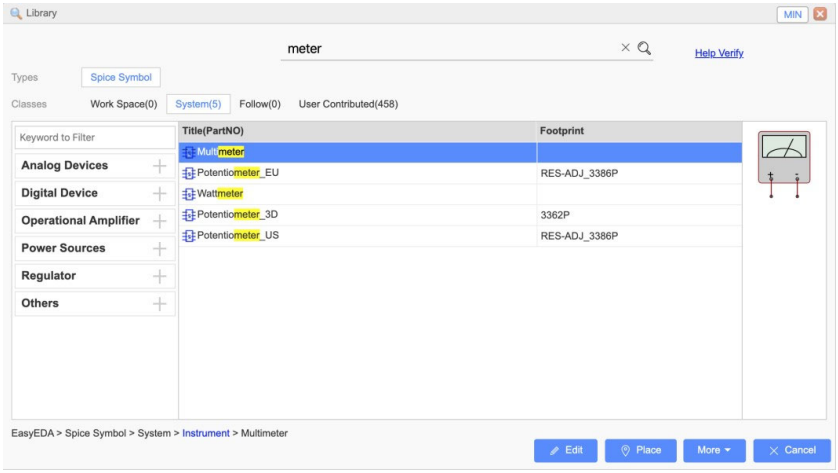
2. The “Standard Mode” does not support simulations, select “Simulation Mode” and create a “New Project”.



3. Click “Spice Library” and choose a suitable find power source (DC voltage source), resistors, and multimeter (ammeter & voltmeter). Click the “Place” button to add them to the schematic and add a “Ground”



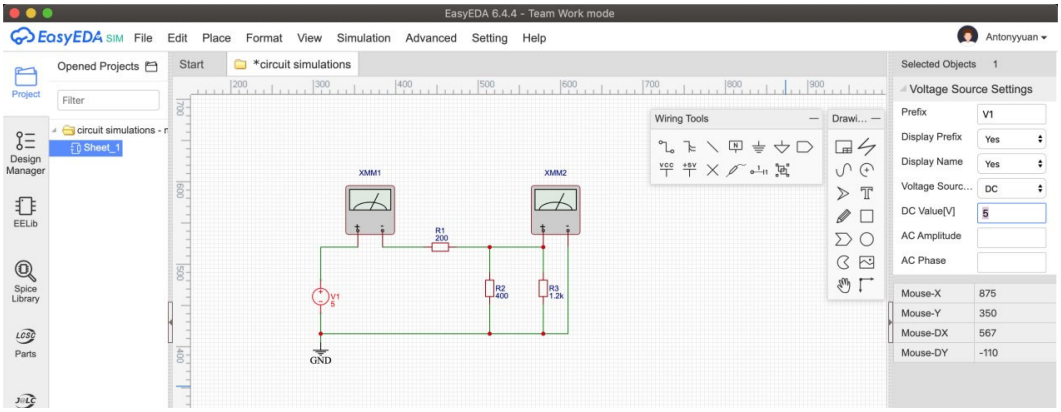




4. It is possible to rotate any selected item via “Top Menu” > “Format” > “Rotate Left/Right”, or by pressing the default hotkey (spacebar).

5. Use the “Wiring Tools” to connect the components accordingly.

6. Click on the components to edit its parameters.



Selected Objects 1	
multimeter Settings	
Prefix	XMM1
Display Prefix	Yes
multimeter type	Ammeter
Mouse-X	845
Mouse-Y	580
Mouse-DX	480
Mouse-DY	16.66

Selected Objects 1	
Resistor Settings	
Prefix	R1
Display Prefix	Yes
Display Name	Yes
Resistance[Ω]	200
Mouse-X	845
Mouse-Y	495
Mouse-DX	385.83
Mouse-DY	-27.5

7. Run the simulation via “Top Menu” > “Simulation” > “Run your simulation”. Take note of the current and voltage readings on the multimeters.