Feng Chia University

Electrical Engineering Fundamentals I Lab

Laboratory 8

Inductors and Capacitors R-L-C Circuit

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I. Introduction

a. To be familiar with Source-Free Second Order Linear R-L-C Circuit

b. To be familiar with Constant Input Parallel R-L-C Circuit

II. Materials

a. DC Power Supply

b. Digital multimeter

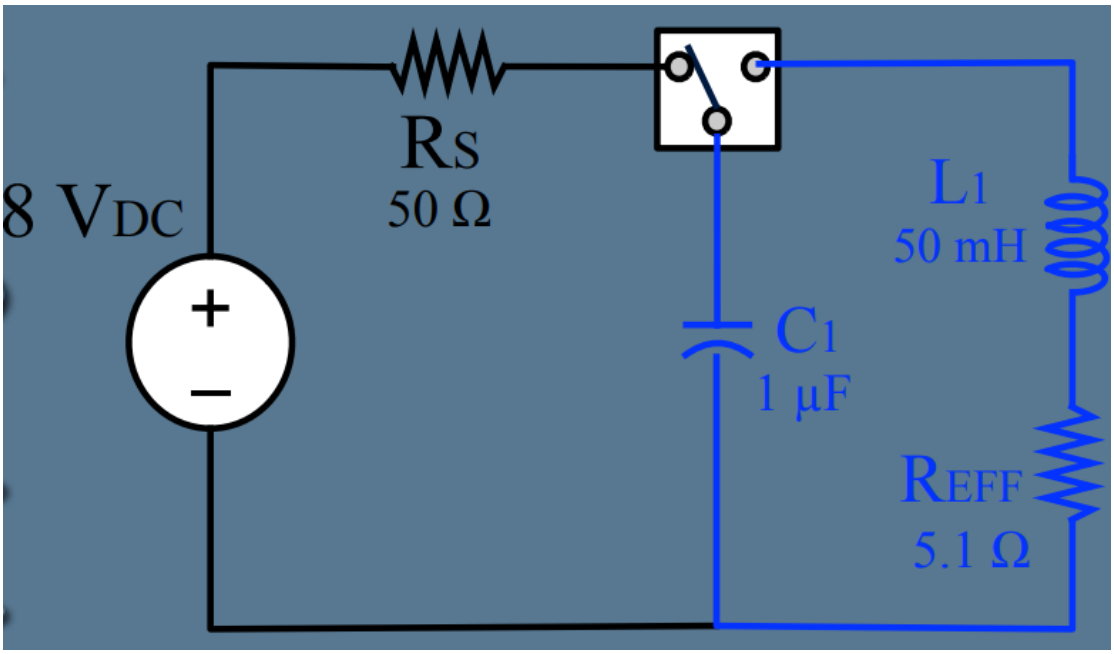
c. Waveform Generator

d. Oscilloscope

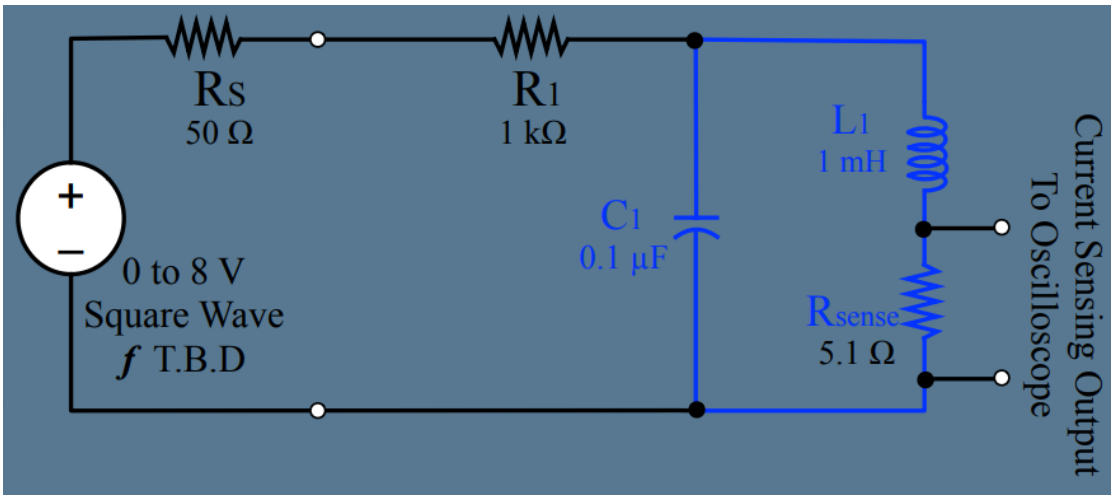
e. Devices

1. DIP Switch
2. Resistors: R = 51 Ω, 5.1 Ω
   Capacitor: C = 1 μF
   Inductor: L = 40 mH
3. Resistors: R = 5.1 Ω, 1 kΩ
   Capacitor: C = 0.1μF
   Inductor: L = 1 mH

III. Circuit diagram



▲ Figure 1. Circuit of Experiment 8.a Source-Free Second Order Series R-L-C Circuit



▲ Figure 2. Circuit of Experiment 8.b Step Response of a Second Order Parallel R-L-C Circuit

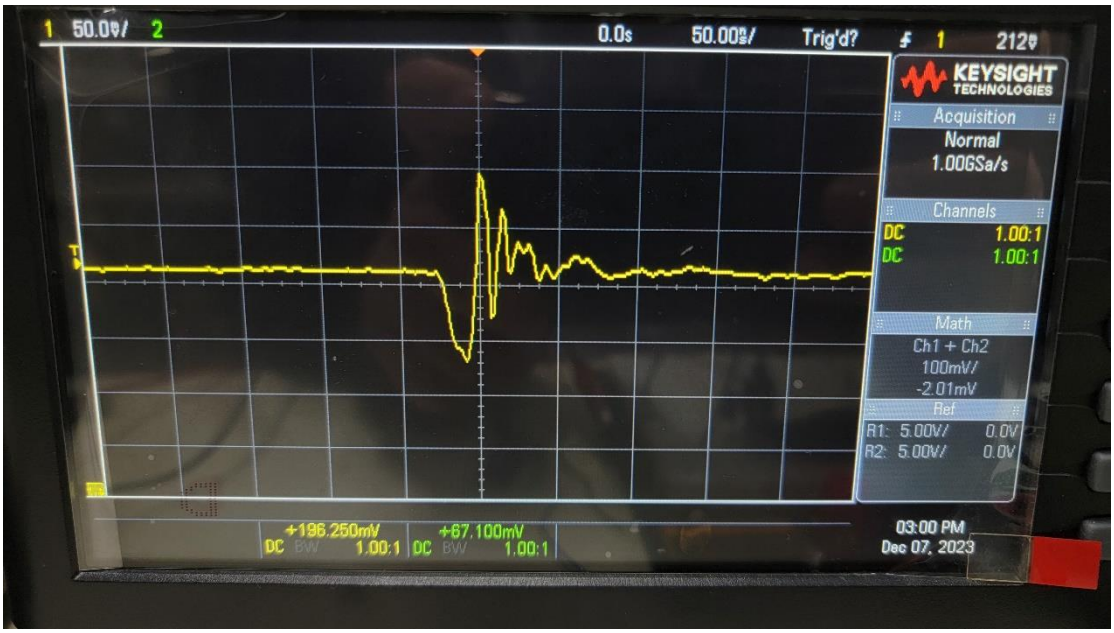
IV. Methods

Use Oscilloscope to observe the wave.

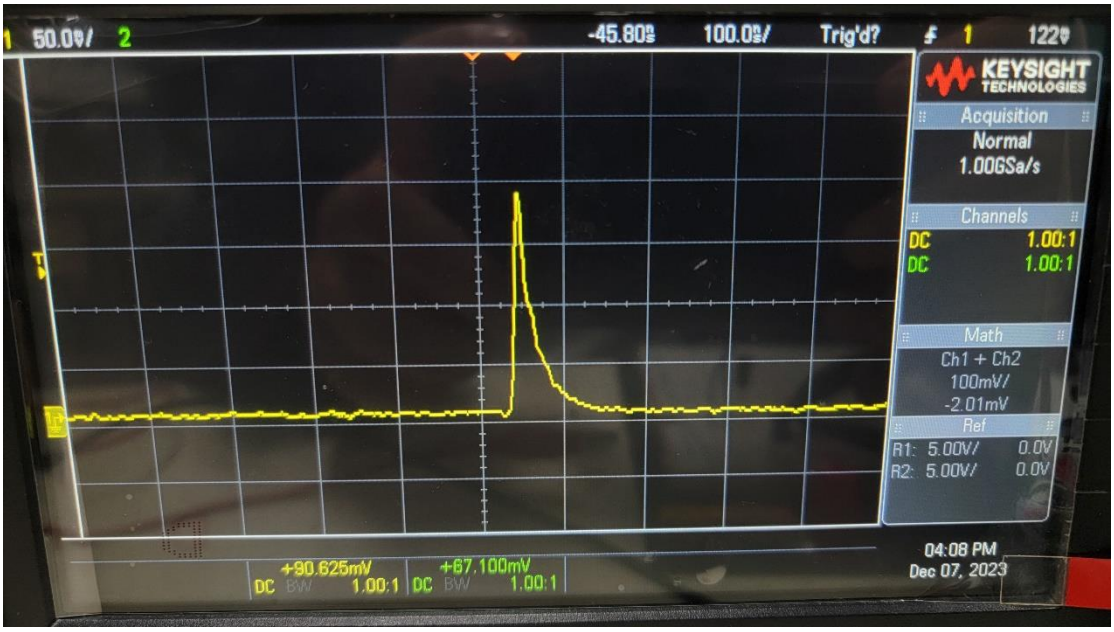
V. Experiments data

None

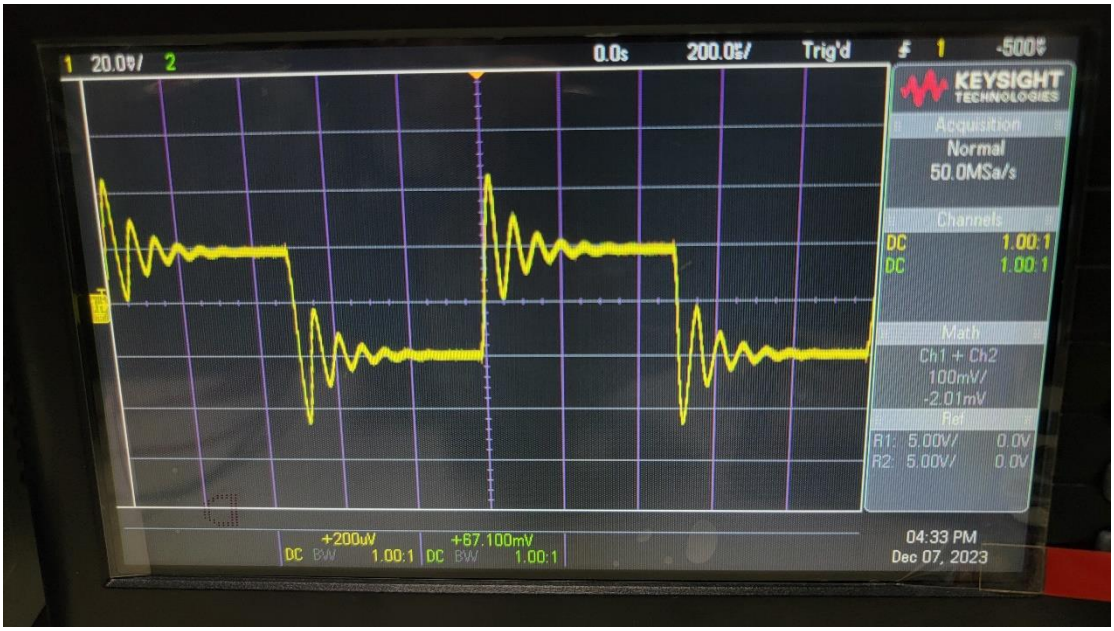
VI. Results



▲ Figure 3. Result of Experiment 8.a Step 1



▲ Figure 4. Result of Experiment 8.a Step 2



▲ Figure 5. Result of Experiment 8.b

VII. Discussion

Since resistor is not equal to 0, the graph will be underdamped.

VIII. Conclusion

With Oscilloscope, we can clearly observe the oscillation situation on resistor.