Feng Chia University

Electrical Engineering Fundamentals I Lab

Laboratory 8

Inductors and Capacitors R-L-C Circuit

Instructor: Prof. Shyan-Lung Lin

Student Name: 周嘉禾

Student ID: D1166506

Experiment Date:07/12/2023

1. Introduction
2. To be familiar with Source-Free Second Order Linear R-L-C Circuit
3. To be familiar with Constant Input Parallel R-L-C Circuit
4. Materials
   1. DC Power Supply
   2. Digital multimeter
   3. Waveform Generator
   4. Oscilloscope
   5. Devices
      1. DIP Switch
      2. Resistors: R = 51 Ω, 5.1 Ω

Capacitor: C = 1 µF

Inductor: L = 40 mH

* + 1. Resistors: R = 5.1 Ω, 1 kΩ

Capacitor: C = 0.1µF

Inductor: L = 1 mH

1. Circuit diagram

一張含有 文字, 圖表, 螢幕擷取畫面, 字型 的圖片

自動產生的描述

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

Circuit

一張含有 文字, 螢幕擷取畫面, 圖表, 字型 的圖片

自動產生的描述

▲ Figure 2. Circuit of Experiment 8.b Step Response of a Second Order Parallel

R-L-C Circuit

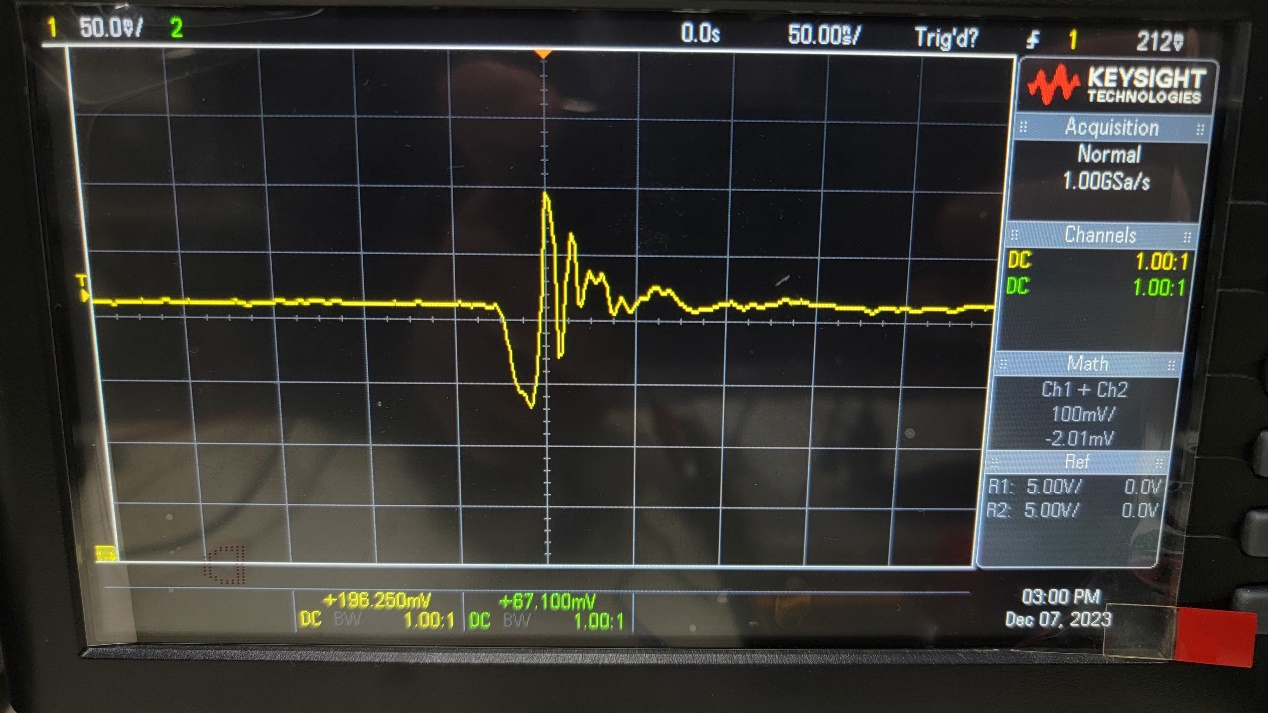
1. Methods

Use Oscilloscope to observe the wave.

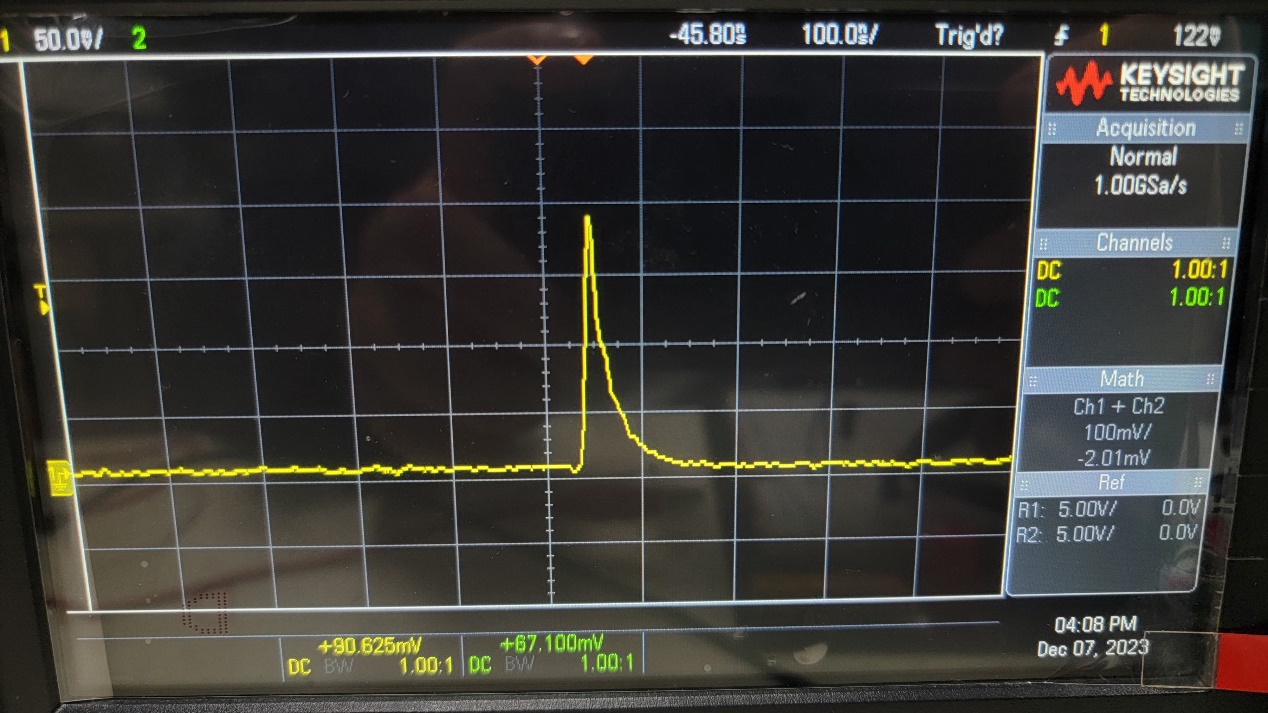
1. Experiments data

None

1. Results



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



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

一張含有 文字, 電腦, 電子產品, 顯示裝置 的圖片

自動產生的描述

▲ Figure 5. Result of Experiment 8.b

1. Discussion

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

1. Conclusion

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