University of Washington

BEE331 Lab 1.1

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Characterising Diodes; I-V Curve

Design Objective

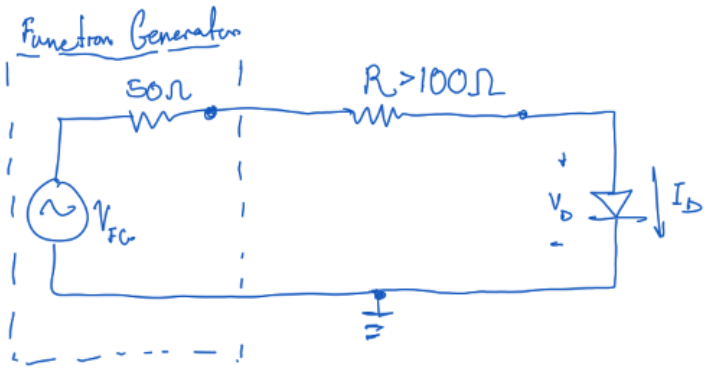
In this lab, we introduce ourselves to the diode, we characterise its function by the I-V curve.

Circuit Design Outline

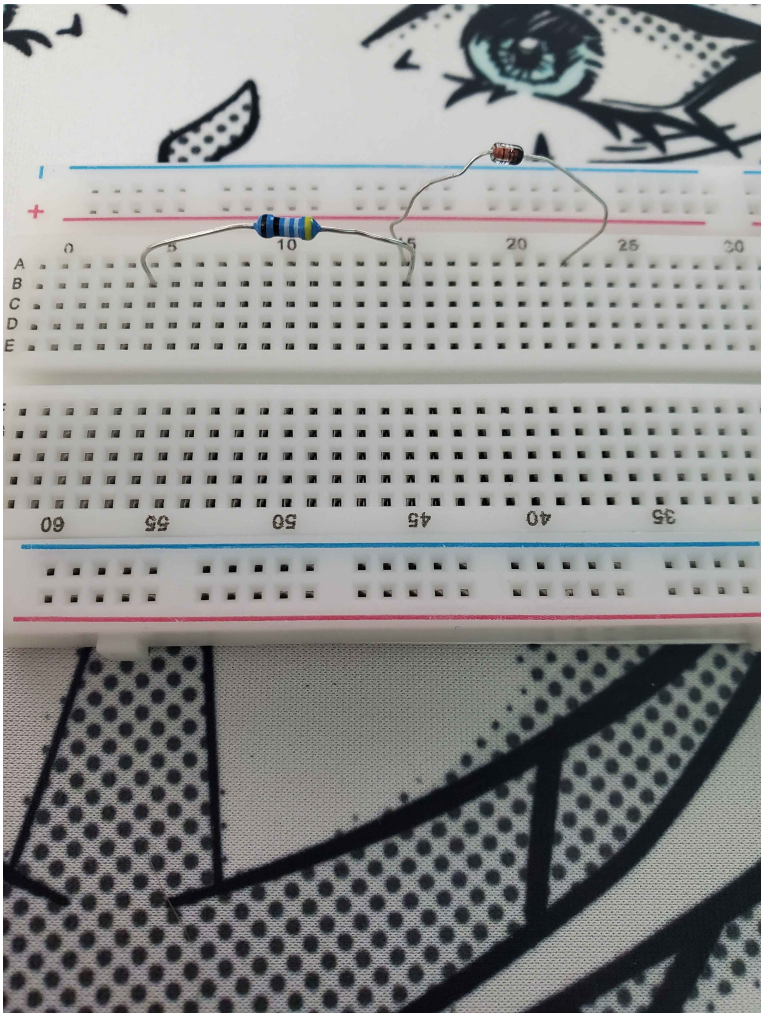
With a resistor of an arbitrary impedance greater than 50Ω ($R \geq 100\Omega$), and the natural impedance of the Function Generator in series ($R_{TOT} = R_{FG} + R \geq 150\Omega$), the (1N4148 silicon) diode is set in series to forward-bias from the function generator. Set the function generator @ f=1kHz and $V_P = 5V$.

Figure 1: RLC Circuit

(a) LTSpice + Rudimentary Schematic RLC Circuit



(b) RLC Circuit



Descriptions of Measurements & Calculations

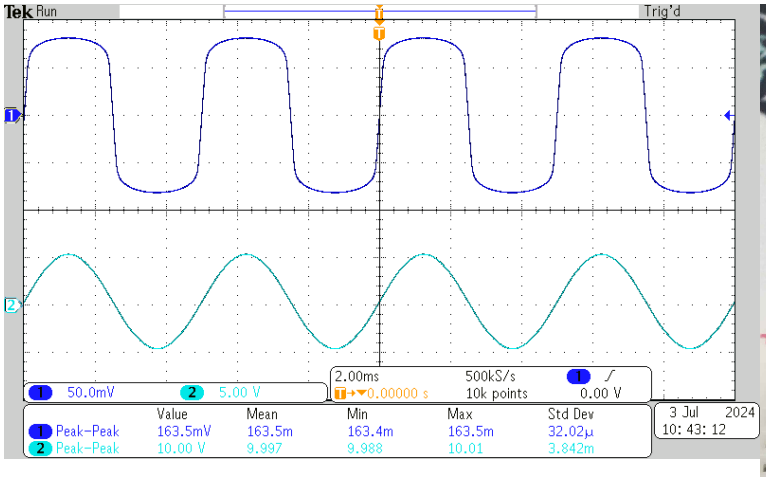
Anylsing the data below, the measured and LTSpice sim were similar. Except the LTSpice sim had a measured rise-time much lower than the LTSpice calculations.

Summary & Conclusions

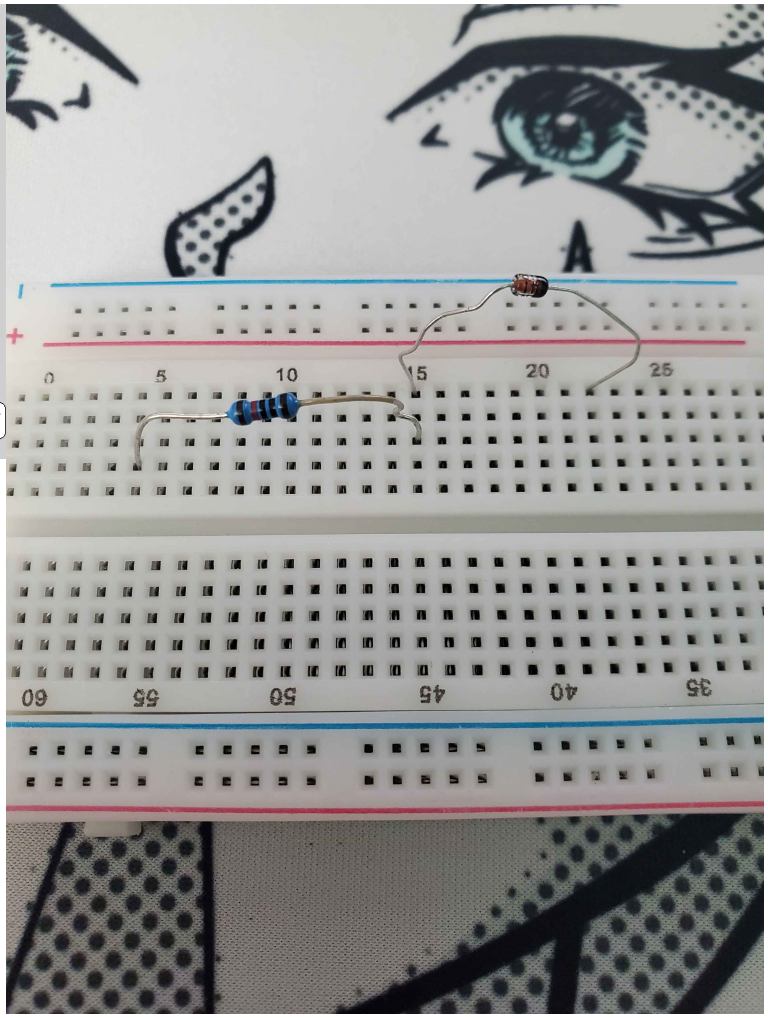
Revealed in Figure 2(a-b), the primary components; the Inductor and Capacitor, overcompensate and overdamp the circuit, and grew to be greater than the voltage originally. The calculation and the measurements in actuality were very close in similar measurements.

Figure 2: RLC Circuit

(a) RLC Circuit: Math



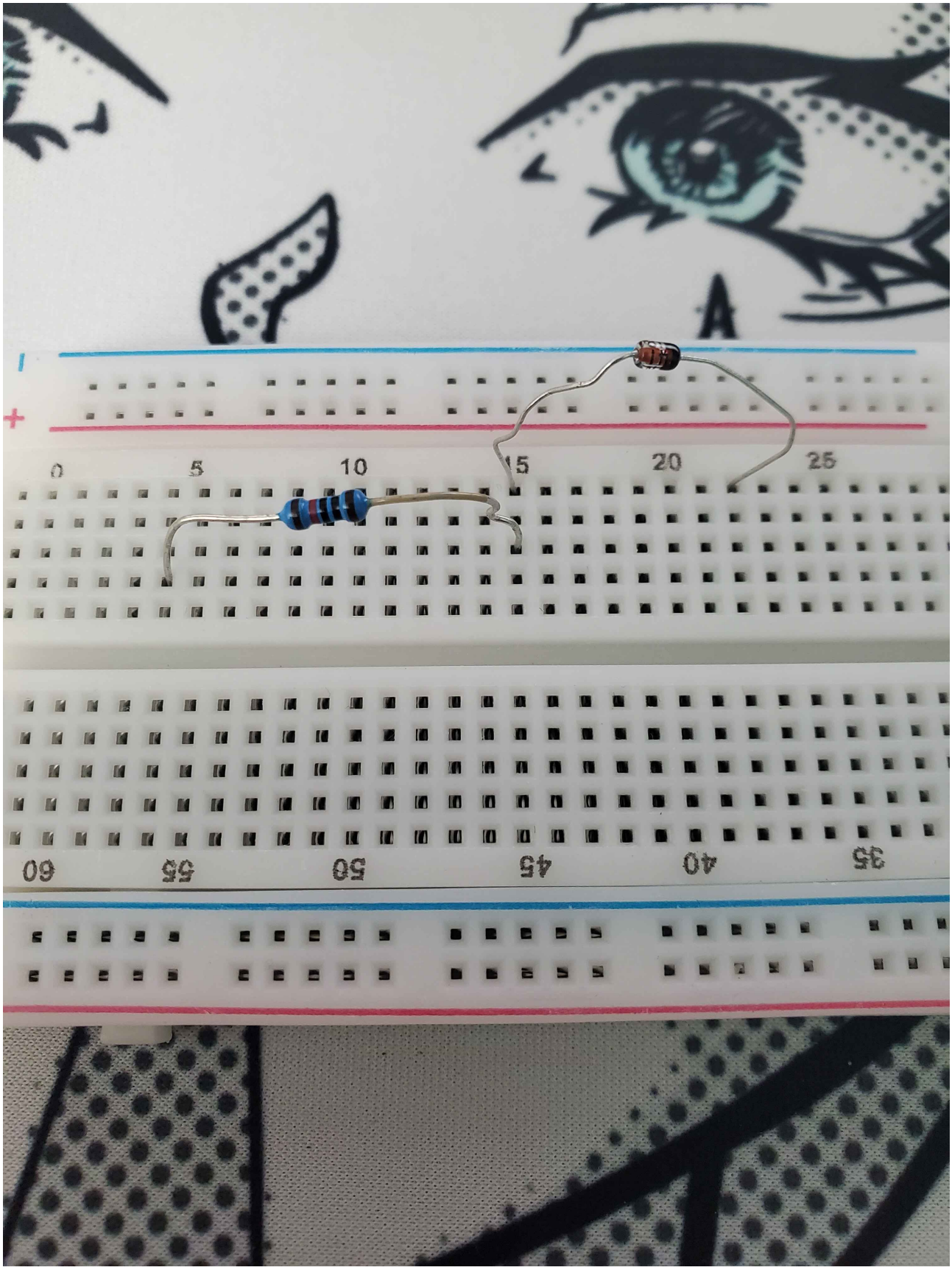
(b) Square RLC Circuit



Addendum Pages

Figure 3: Jason Truong Addendum

(a) Lab Design Calculations



Bibliography

Cited:

- Lab 1 Manual
- Class textbook: "Electric Circuits 11e, Nillson & Riedel"

(a) Look at her, she's perfect.