

Lab 2 Report

Ty Davis

October 4, 2023

1 Introduction

In this lab we will be simulating and measuring voltages of various rectifier circuits featuring diodes. We'll be learning about the purposes of rectifier circuits, and we'll be analyzing the features of their output. The three circuits that we are analyzing are shown in Figures 1, 2, and 3. We will simulate and analyze each circuit under two conditions to better understand the functions of each circuit.

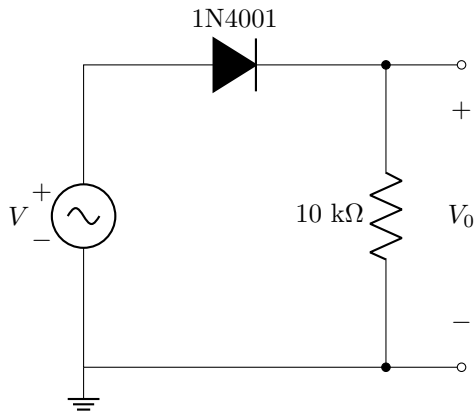


Figure 1: Half-wave Rectifier

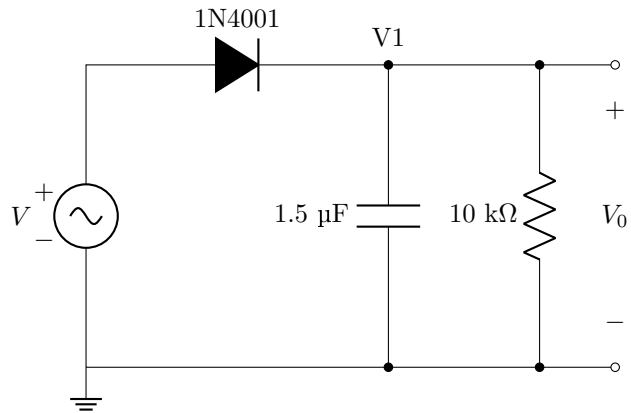


Figure 2: Peak Rectifier Circuit

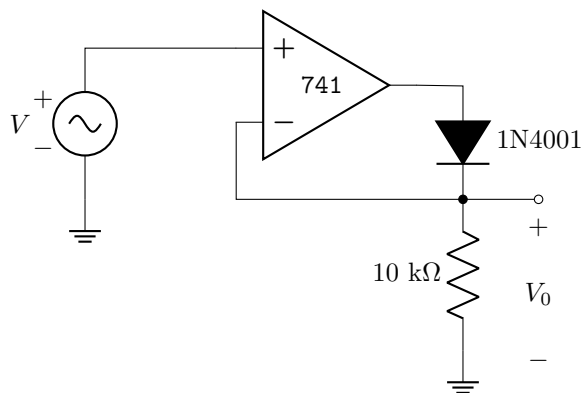


Figure 3: Precision Rectifier

In this report there will be a separate section for each type of rectifier in which we'll analyze the built circuit and measurements taken, as well as the computer analysis done in Multisim.

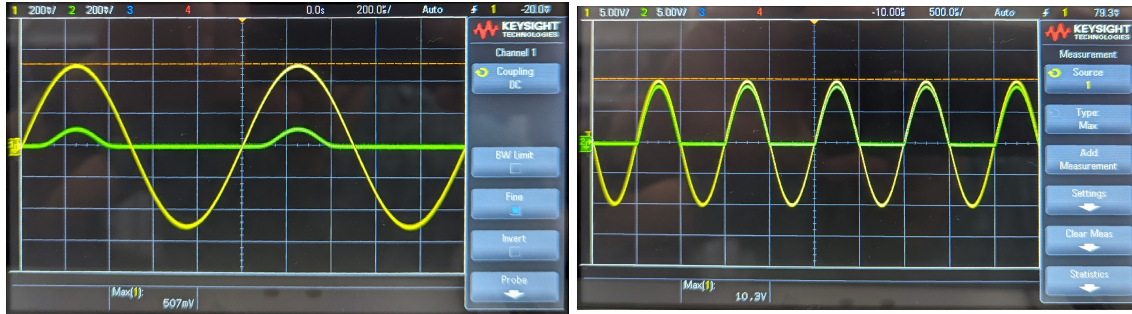


Figure 4: Left: 10V

2 Half-wave Rectifier

The first circuit, shown by Figure 1, is a half-wave rectifier. The diode is preventing current from flowing towards the voltage supply, and therefore will only allow a positive voltage over V_0 . The result is an output waveform that returns only the positive voltage from the input. With an input sinusoidal voltage of 10 V_{pk-pk} , we measure an output half-sine wave that is decreased just slightly because of the operating voltage of the diode. See Figure 2.

3 Summary