

# ECE 214 - Lab #10 — DC–DC Power Supply

18 April 2017

## Introduction:

This is the final lab for ECE 214. You will design, simulate, build, and test a DC–DC power supply. A block diagram of the DC–DC power supply is shown in Figure 1. The design should incorporate one or more boost converter circuits (see Lab #7 and Lab #8), one or more oscillators (see Lab #5 and Lab #9), and a low pass filter (see Lab #3).

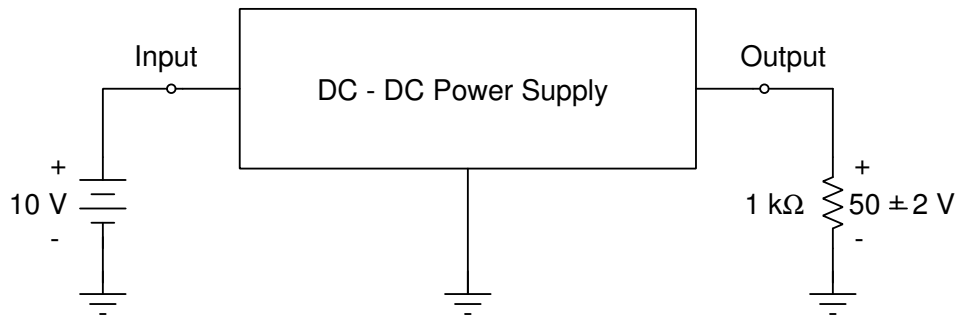


Figure 1: Block diagram of the DC–DC power supply.

## Design Specifications:

1. Input:  $+10\text{ V}_{\text{DC}}$  (from a power supply).
2. Output:  $50 \pm 2\text{ V}_{\text{DC}}$  with a ripple less than  $2\text{ mV}_{\text{RMS}}$ .
3. Load:  $1\text{ k}\Omega$  resistor.

**Pre Lab:** Design and simulate a DC–DC power supply to meet the design specifications.

**Lab Procedure:** Build and test the DC–DC power supply.

**Post Lab:** Write and submit a technical report describing the design, simulation results, measured performance, and a cost analysis to produce 1,000 units of your DC–DC power supply. The format of the report will be discussed in ECP 214. The report must be submitted electronically, in PDF format, to kotecki@maine.edu, no later than 2200 UTC on Friday 5 May 2017.