

1 Warm-Up Problems

Most labs will have warm-up problems here, though we're omitting them from this example lab for clarity. You can do these problems any time before, after or during lab, but bear in mind that I gave them to you because they are good practice. They're due one day after the lab.

2 Lab Introduction

In this lab we are trying to obtain a deep understanding of resistor dividers. The learning goals are listed below.

1. Prototype resistor dividers and practice relating algebraic analysis to circuit quantities.
2. Appreciate the effect of parasitic elements on our measurements, particularly at high frequency.
3. Learn how to write a lab notebook.

3 Test Resistor Divider Behavior

Recall that in class we gave the formula for a resistor divider's output as

$$V_o = \frac{R_2}{R_1 + R_2} \quad (1)$$

This equation can, of course, be affected by a variety of real world effects. We're going to investigate those by following these steps:

1. Manipulate the resistor divider equation until it depends on only on one parameter: $k = R_1/R_2$.
2. Vary the value of k over a wide range and also test the performance of the divider at a wide range of input frequencies.
3. Comment on deviations from your analytical model and propose a more accurate model for the resistor divider.

Required Data: Analysis of voltage divider equation, measured performance of voltage divider