University of Washington

BEE331 Lab 2

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MOSFET Bias Circuit

Design Objective

In this lab we bias a MOSFET for use in both saturation and triode regions. This allows us to maintain a stable DC operating point.

Circuit Design Outline

Using our calculated resistors of $38.2k\Omega$ and $95.3k\Omega$ combined with our given resistance values of 500Ω and $1k\Omega$ and connecting them to our NMOS transistor in the configureation shown below we can bias our circuit so that the current across the 500Ω and $1k\Omega$ (I_D) is 10mA. By inputting a voltage of 15V at the leg of the 500Ω resistor we can achive 10mA across the resistors.

Measurement and Simulation Results

Analysis

- **1. Calculate expected V_G, I_D and V_{DS}**

  Given

- **2. Compare to simulated results for V_G, I_D and V_{DS}**

  The simulated results for V_G, I_D and V_{DS} all line up with what we observed during our measurements. The % difference between the calculated and simulated values were about

- **3. Comment on descrepancies**

Summary & Conclusions