ECSE 331 Electronics

Laboratory Report

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MOSFETs and BJTs DC Characteristics*

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***Abstract*— The purpose of laboratory experiment was to explore the functions and characteristics of MOSFETs and BJTs. In the first part of this laboratory, the I-V characteristics of the MOSFET was found and drawn for different gate voltages, then the transconductance gm of the circuit was found. In the second part, the behavior of the MOSFET was studied at various temperatures. The same experiment was also conducted on the BJT transistor.**

I. INTRODUCTION

The goal of this laboratory was to test and explore the behavior of different transistors by drawing their I-V diagrams using the NI Elvis-II test instrument. More specifically, the I-V curve for the MOSFET and BJT transistors were drawn using the data taken with the NI Elvis instrument. A resistor network was designed to find the DC operating point of the transistors. Finally, the effect of temperature on the operation of the transistors was tested.

II. EXPERIMENTS PROCEDURES AND RESULT

A. MOSFET $I_D - V_{DS}$ Characteristics Using a Curve Tracer

B. MOSFET Temperature Effects

C. BJT $I_C - V_{CE}$ Characteristics Using a Curve Tracer

D. BJT Temperature Effects

III. CONCLUSIONS

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