STUDY OF CAPACITIVE LOAD EFFECT PREAMPLIFIER DESIGN USING SILVACO GATEWAY

This thesis is presented in partial fulfillment for the award of the

Bachelor of Electrical (Hons) Engineering

UNIVERSITI TEKNOLOGI MARA

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ACKNOWLEDGEMENT

In the name of almighty God, I would like to express my sincere appreciation to Encik Fairul Nazmi osman and Encik Mohd Faizul Mohd Idros, who has supervised the project since its commencement in July 2010, for his generous and constructive support, stimulating suggestions and encouragement in all the time of the project.

Colleagues and friends have also contributed immeasurably by giving response to inquiries, presentations and the draft report of the thesis work and also for their effort and helpful comments.

Last but not least, to my family with all my heart, I express my deepest love for your patience, constructive help and unfailing support throughout the project.

ABSTRACT

This paper is to study about capacitive load effect of preamplifier design by using Silvaco Gateway. Each capacitive load can carry a specific high cut off frequency to use in any application that needed and there are any changes at frequency and transient response due to the changes of capacitive load value. The data that been taken from the two stage operational amplifier (preamplifier) with various capacitive load (10pF to 100pF) at two difference of temperature 27 and 85 °C. The result will have some suitable value of capacitive load to drive load for future use. The design of this preamplifier is using 0.18µm CMOS technology with +1.8V (V_{DD}) and -1.8V (V_{SS}) supply.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 PREAMPLIFIER

Preamplifier is use to amplify low signal level from sensor. Mostly sensor generate very low output signal. The signal can't be amplify directly to high signal because the output not stable cause high amplification. Multistage amplifier mostly applied to encounter the stability problem.

1.2 DIFFERENTIAL AMPLIFIER

Differential amplifier is the circuit that used the current mirror circuit in the design as active load or biasing circuit. There also discreet current source in the differential amplifier such as transistor resistor current source and zener current source.

The current mirror circuit such as simple current mirror, modified current mirror, Wilson current mirror and cascode current mirror. The current mirror can be active load or biasing circuit in differential amplifier.

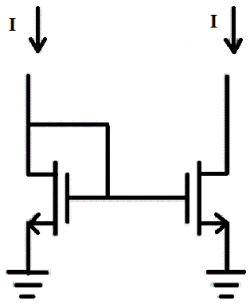

Figure 1.1: Simple current mirror.