WAFER LEVEL MOSFET OUTPUT AND TRANSFER CHARACTERISTICS OF 0.35 μm TECHNOLOGY

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ABSTRACT

This project report is about the study of MOS Field Effect Transistor (MOSFET) I-V characteristic for 0.35 μm and 0.4 μm channel length mask, Lm. The MOSFET I-V characteristic are output, transfer and subthreshold were determined from the wafer level 0.35 μm Technology from MIMOS Berhad. The n-channel enhancement type of MOSFET will be examined. Introduce available MOSFET model between LEVEL 1 and LEVEL 2 for short channel length also done. The shape of the curve found is similar with theory and the experiment.

CONTENTS

CHAPTER 1

INTRODUCTION

1.1 Introduction of MOSFET

The MOS Field Effect Transistor (MOSFET) is the fundamental building block of Metal Oxide semiconductor (MOS) digital integrated circuits and growth since 1970 [1]. The performances of MOS Integrated Circuits (IC) have increased and it realized mainly through the reduction of MOS transistor dimension in addition to improve the process [2]. This trend is expected to continue, with very important implication for VLSI and system design. In this case, it is focused on dimension of channel length. The short channel length will give an effect to behavior of MOSFET that explained later.

1.2 Research objective

The research objective is to investigate MOSFET I-V characteristic in 0.35 μm Technology. The technology is selected since it is a lower technology available in MIMOS Berhad. Next is to compare 0.35 μm and 0.4 μm channel length mask, Lm, and similar 1 μm channel width mask, Wm, at wafer 0.35 μm Technology. Lastly, simulation is used to suggest models SPICE (Level 1 and Level 2) to short channel device of MOSFET.