

CHAPTER 1

INTRODUCTION

1.0 Overview

Final year project (FYP) titled, “Fabrication Of 50 μm Transistor and AlNiAu Interconnection Using Lift – Off Process At UNIMAP” was selected because mostly it challenging to develop and fabricated. The process of fabrication the transistor is very complex process, it involves manufacture of process equipment, circuit design, wafer processing, materials and final testing.

AlNiAu as the interconnection involved of several steps. It starts with Al deposition, the follow by cleaning, activation and zincation to remove the oxide layer thus, provide good adhesive. The next process is nickel deposition and lastly gold in deposited on top of Ni. Gold is used because of is not easily oxidize upon exposure for environment.

1.1 Project objective

The objective of this project is to study the process fabrication of transistor, analysis IV characteristic and also process interconnection using electroless technique.

1.2 Scope of study

Scopes of the project are as the following:

1. To study the process fabrication transistor, design, technique electroless.
2. To analysis IV characteristic pmos and nmos after finish process fabrication.

1.3 Problem Statement

This project related to fabrication process and size of transistor plays an important rules. The process parameter must be controlled to achieve the designed characteristic of the transistors. The process flow could is created as a guideline with include all the parameter and to record any results or remarks along the process steps.

During to run the experiment, all the parameters must be determined to achieve consistent result. Lithography process is one of the critical process, and alignment between mask to another mask is very challenging especially to smaller size.

1.4 The organization of work

Having explained the aims and design consideration of the project, further discussion upon the project will be discussed in later sections. Here is a brief summary of the contents in this report.

In **Chapter 2** provides history of first transistor, basic operation for MOSFET Transistor (pMOS and nMOS), discussed process fabrication of transistor such as oxidation, diffusion, metallization, lithography process and also process interconnection using electroless technique.

Chapter 3 describes methodology of process fabrication transistor and electroless.

Chapter 4 presents and highlights the results and discussions obtained from methodology provided in Chapter 3.

Chapter 5 provide conclusion obtained from the result and discussion. The conclusion included summary, recommendation for future project and commercialization potential.