FOUR-POINT PROBE RESISTIVITY MEASUREMENT

This thesis is presented in partial fulfillment for the award of
Bachelor Degree in Electrical Engineering (Hons.)
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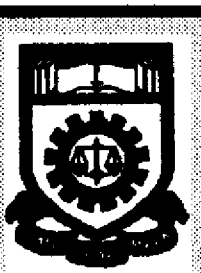

MOHD SHUKRI BIN HASHIM
FACULTY OF ELECTRICAL ENGINEERING
MARA INSTITUTE OF TECHNOLOGY
40450 SHAH ALAM

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ABSTRACT

Today's research and manufacturing are being pressured to improve productivity while reducing costs. Testing and measurement must be accomplised in the shortest possible time and in repeatable manner.

This project describes the design and construction of a Four-Point Probe Resistivity Measurement unit with moveable probe. This measurement method is the most widely employed in practice. The system consists of two main parts namely oscillator and mixer circuit.

ACKNOWLEDGEMENT

In the name of Allah S.W.T, the Merciful, the Beneficent, the Only One. Praised be to Allah along for HIS endowment allow me to complete this project.

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CHAPTER 1

1.0 INTRODUCTION

Resistivity is a specific property of a material and it is an important material parameter especially semiconductor material. The resistance of a piece of metal or semiconductor is given by:

$$R = \rho\frac{l}{A} \qquad \text{---------} (1.0)$$

Where,

l is the length of the material

A is the cross-sectional area

ρ is the resistivity

The resistivity is a macroscopic property that depends on the density of electron and holes and their mobilities.

The measured resistivity required in determining the doping can be obtained in a number of different ways. A seemingly straightforward approach would be to form the semiconductor into a bar as in Figure 1.0.