

**THE ELECTRICAL CHARACTERISTICS OF P-N JUNCTION FABRICATED
ON N-TYPE SILICON WAFER BY USING SOLID DOPANT**

SITI HAJARTUL NADIAH BADEK RUZAMAN

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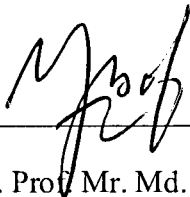
This Final Year Project report entitled "The electrical characteristics of p-n junction fabricated on n-type Silicon wafer by using solid dopant" was submitted by Siti Hajartul Nadiah bt Badek Ruzaman, in partial fulfillment of the requirements for the degree of Bachelor of Science (Hons.) Industrial Physics, in the Faculty of Applied Sciences, and was approved by



Miss Farah Liyana Muhammad Khir
Project Supervisor,
Faculty of Applied Sciences,
Universiti Teknologi MARA,
Shah Alam, Selangor.



Mr. Azlan Zakaria
Project Co-Supervisor,
Faculty of Applied Sciences,
Universiti Teknologi MARA,
Shah Alam, Selangor.



Assoc. Prof. Mr. Md. Yusof Theeran
Project Coordinator,
Faculty of Applied Sciences,
Universiti Teknologi MARA,
Shah Alam, Selangor.

Tuan Haji Mohd Isa Yusof
Head of Program,
Bachelor of Science (Hons.) Industrial
Physics,
Faculty of Applied Sciences,
Universiti Teknologi MARA,
Shah Alam, Selangor.

Date : 13 MAY 2010

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ABSTRACT

THE ELECTRICAL CHARACTERISTICS OF P-N JUNCTION FABRICATED ON N-TYPE SILICON WAFER BY USING SOLID DOPANT

Diffusion is the major process in fabricating the p-n junction which controlled the amount of particular impurities that introduced into the semiconductor (such as Silicon) to alter the electrical characteristics by improving its conductivity. In this project, the effects of p-type dopant (Boron) diffusion into n-type Silicon wafer by using solid dopant technique were studied. The study includes fabrication, calculation and characterization of p-n junction such as sheet resistance and current-voltage (I-V) characteristics. Boron Nitride wafer is used as a solid dopant in doping process. Two stages required in this diffusion process, starts with pre-deposition and followed by drive-in diffusion at variation of temperature and time. The affects of different temperature and time onto six samples are then characterized by using Four-Point-Probe and I-V tester to determine the sheet resistance and resistance before and after the diffusion process. The result showed that sheet resistance is proportional to resistivity which is the value of sheet resistance is decrease with increasing diffusion temperature and diffusion time. Then, type of diode and its characteristics is then were identified by comparing to the theoretical value.