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شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



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بعض الوثائق الأصلية تالفة



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بالرسالة صفحات

لم ترد بالأصل



AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING

Electronics and Electrical Communications Engineering Department

**New MOSFET Device for Precision Measurement of
Microwave Signal Polarization**

A Thesis

Submitted in Partial Fulfillment for the Requirements of the Degree
of Master of Science in Electrical Engineering

Submitted By

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B.Sc. of Electrical and Computer Engineering
(Electrical and Computer Engineering)
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Cairo - 2001

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V491

بسم الله الرحمن الرحيم

"و ما أوتيتم من العلم إلا قليلا "

صدق الله العظيم

Date : 3 / 11 / 2008

Electrical and Computer Engineering
10th of Ramadan 1430
Prof. Higher Technological Institute,
Dr. M. Abd-Elaziz Mour

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Signature

Degree : Master of Science in Electrical Engineering
Thesis : New High Power Device for Precision
Measurement of Microwave Signal Polarization
Name : Dr. M. M. Mohamed Hassan

Examiner's Committee

STATEMENT

This dissertation is submitted to Ain Shams University for the degree of Master of Science in Electrical Engineering from Electronics and Electrical Communications Engineering Department.

The work included in this thesis was carried out by the author at the Electronics and Electrical Communications Engineering Department, Faculty of Engineering, Ain Shams University.

No part of this thesis has been submitted for a degree or qualification at other University or Institution.

Date : 1 / 1 / 2001

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ABSTRACT

A great attention has been recently given to the development and realization of precise MOSFET IC magnetic field detectors. This is referred to the remarkable enhancements in device concepts and technology and because precision magnetic field detectors found wide field of applications. Many magnetic field detectors and sensors are in use and satisfying performance requirements. However, most are neither cost effective or reliable. Moreover, they are bulky, heavy and sophisticated. Also, they can't be integrated using MOSFET technology on a single chip.

In this thesis, an accurate and efficient two-dimensional physical simulator is developed to analyze the operation and performance of MOS Magnetic Field Detector. The simulator is able to determine accurately the effect of externally applied magnetic field on the electrical characteristics of MOSFET. This is achieved by efficient coupling of the magnetic field equation with the transport equation, which describes the electrical behavior of the MOSFET transistor. The sensitivity of the detector for both dc and ac magnetic field at different frequencies is investigated. Finally, we simulate the new proposed detector for magnetic field magnitude detection and orientation and we try to obtain high sensitivity and to see how this device can applicable for microwave measurements and what the main parameters are which affect the device performance in microwave area.

The new proposed detector is designed of a short channel MOSFET, acting as a lateral carrier injector, surrounded by four diffused collectors, which are topologically, arranged so as to detect the magnitude and direction of the magnetic field to be measured or monitored and determine its orientation.

