

SCHOOL OF ENGINEERING
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A STUDY AND VERIFICATION OF THE MUSFET
THRESHOLD VOLTAGE MEASUREMENT TECHNIQUE

FINAL PROJECT REPORT

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ABSTRACT

As threshold voltage, V_T is a basic MOSFET parameter, it must be determined for the design and application of discrete MOSFET integrated circuits. Threshold voltage is utilized in circuit design to specify the turn-on voltage of MOSFETs, and thereby determine performance attributes such as speed, power, noise margin, etc., in digital and analog circuitry.

There are numerous existing extraction methods that had been developed up to date. Among them, some showed complexity in the procedure of extraction of threshold voltage, some providing ambiguous results and some were not able to cope with the rapid shrinking geometry of the device, hence producing unreliable results

In order to fully evaluate the MOSFET threshold voltage measurement technique, one must establish an understanding of the traditional MOSFET threshold voltage measurement techniques. Threshold voltage is a critical parameter in circuit models for MOSFETs. Various measurement methods have been used to determine threshold voltage.