

Abstract Submitted
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Oxide Reliability of SiC MOSFETs¹ ENRIQUE CARRION, Student, MOSHE GURFINKEL, JOHN SUEHLE — SiC is one of the materials that presents the most promise for harsh environment electronics. Its ability to operate under high temperature and high power, as well as under radiation, made it the material of choice for this study. SiC MOSFETs constitute an important step towards the development of the next generation of resistant electronics. The eventual industrial manufacturing of this type of field effect transistor depends on the effectiveness to improve its performance. Currently, a sudden current degradation, and an unsatisfactory low mobility are observed during the operation of these devices. In this work, we studied both of these drawbacks as a function of temperature. The devices used were SiC nMOSFETs with a SiO₂ oxide. Two types of measurements (ultra fast and conventional) were performed during this experience in order to observe 8 decades of current degradation. From our experience, it was observed that as the temperature was lowered the threshold voltage (V_{TH}) increased, while the mobility and the drain current (I_D) decreased.

¹National Institute of Standards and Technology

Enrique Carrion
Student

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