World Academy of Science, Engineering and Technology
International Journal of Electrical and Computer Engineering
Vol:11, No:06, 2017

A Physically-Based Analytical Model for Reduced Surface Field Laterally Double Diffused MOSFETs

Authors : M. Abouelatta, A. Shaker, M. El-Banna, G. T. Sayah, C. Gontrand, A. Zekry

Abstract : In this paper, a methodology for physically modeling the intrinsic MOS part and the drift region of the n-channel Laterally Double-diffused MOSFET (LDMOS) is presented. The basic physical effects like velocity saturation, mobility reduction, and nonuniform impurity concentration in the channel are taken into consideration. The analytical model is implemented using MATLAB. A comparison of the simulations from technology computer aided design (TCAD) and that from the proposed analytical model, at room temperature, shows a satisfactory accuracy which is less than 5% for the whole voltage domain.

Keywords : LDMOS, MATLAB, RESURF, modeling, TCAD
Conference Title : ICPEDCA 2017 : International Conference on Power Electronics Devices, Circuits and Applications
Conference Location : Copenhagen, Denmark
Conference Dates : June 11-12, 2017