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| **Title:** | Effects of Temperature on Reverse Short Channel Effect in Pocket Implanted Sub-100 nm n-MOSFET | | |
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| **Abstract:** |  |
| Abstract— In this paper, a threshold voltage model for pocket implanted n-type Metal Oxide Semiconductor Field Effect Transistor (n-MOSFET) is developed based on two linear pocket profiles along the channel incorporating the temperature effects on Reverse Short Channel Effect (RSCE). It is observed from simulated results that the threshold voltage increases with decreasing temperature and the device behaves well in low temperature. The simulated results are compared with the other results using two different pocket profiles found in the literature for threshold voltage models of n-MOSFETs. The comparison shows that our model gives better results and smooth variation of threshold voltage with gate length at different temperatures. Therefore, the proposed model of the pocket implanted sub-100 nm n-MOSFET can be very useful in low temperature operation and can be utilized to study and characterize the pocket implanted advanced ULSI devices. | |