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| **Title:** | An Analytical Subthreshold Drain Current Model for Pocket Implanted Nano Scale n-MOSFET | | |
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| **Abstract:** |  |
| Abstract— This paper presents an analytical subthreshold drain current model for pocket implanted nano scale n-MOSFET. The model is developed by using the linear pocket profiles at the source and drain edges and by solving the Poisson's equation in the depletion region at the surface with the appropriate boundary conditions at source and drain for deriving the surface potential. The model includes the effective doping concentration of the two linear pocket profiles. Electron current density is obtained from the conventional drift-diffusion equation. Integration of surface potential is obtained numerically. Effective channel thickness is obtained by applying Gauss's Law at the surface. The simulation results show that the derived subthreshold drain current model has a simple compact form that can be utilized to study and characterize the pocket implanted advanced ULSI MOS devices. | |