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Accurate Subthreshold Leakage Model for Nanoscale MOSFET Transistor

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Abstract: In this paper, a new accurate and efficient model for subthreshold leakage current is proposed for nanoscale metal oxide semiconductor field effect transistor (MOSFET). The influence of drain induced barrier lowering (DIBL) and gate induced drain lowering (GIDL) due to short channel effect (SCE) on subthreshold leakage is modeled and included in the characteristic equation. The linearization factor (?) and subthreshold swing coefficient (?) are modeled and included to make the proposed model faster than the recent published models. The evaluation of the proposed model shows very good agreement when compared with simulation results of BSIM4 Level 54 Model using HSPICE tool.