

ANALYTICAL MODELING OF TRIPLE GATE MOSFET

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ABSTRACT

There are so many reasons for evolving from single-gate to multi-gate structures of MOSFET. Our proposal describes how to increase the quality of current drive and improve the short-channel effects (SCEs) of Triple Gate (TG) MOSFET. We also calculate the threshold voltage, drain-induced barrier lowering (DIBL) and surface potential and discussed a model for the transconductance, drain current and drain conductance in comparison with the Double-gate (DG) and Single-gate (SG) MOSFET. The simulation of triple-gate MOSFET shown the transconductance and voltage gain are increased to 81.47uS and 17.40 respectively with respect to Double-gate (DG) and Single-gate (SG) MOSFET. Better results of operation for the parameters like surface potential, electric field and threshold voltage in triple gate (TG) MOSFET are also established.

KEYWORDS: Triple Gate, Conductance, Drain-Induced Barrier Lowering (DIBL), Transconductance, Voltage-Gain and BOX