

Performance Comparison of Different Fin Shapes of FinFET

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Abstract

FinFET has become highly significant in the semiconductor industry today. In FinFET devices, the fin shape may be rectangular, trapezoidal, triangular, convex, or concave. We have analyzed the impact of fin shape on FinFET performance through an extensive literature survey. In this paper, we compare the performance of rectangular, trapezoidal, and triangular FinFETs for the suitability of the device to be used in the design of voltage variable attenuator. Recent trends in semiconductor technology emphasize high speed, low leakage power dissipation, and high gain. Therefore, parameters such as mobility, maximum electron concentration, drive current, threshold voltage, transconductance, output conductance, drain-induced barrier lowering (DIBL), voltage gain, switching speed, and subthreshold swing have been evaluated. Voltage variable attenuators require rapid switching between the on and off states, which can be achieved using multi-fin triangular-shaped GaAs-On-Insulator FinFETs.

Keywords

FinFET, parameters, triangular fin, voltage variable attenuator.