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Capacitance Models of AlGaN/GaN High Electron Mobility Transistors

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Abstract : In this study, we report calculations of gate capacitance of AlGaN/GaN HEMTs with nextnano device simulation software. We have used a physical gate capacitance model for III-V FETs that incorporates quantum capacitance and centroid capacitance in the channel. These simulations explore various device structures with different values of barrier thickness and channel thickness. A detailed understanding of the impact of gate capacitance in HEMTs will allow us to determine their role in future 10 nm physical gate length node.

Keywords : gate capacitance, AlGaN/GaN, HEMTs, quantum capacitance, centroid capacitance
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