



## **MODELING OF A 6H-SiC MESFET FOR HIGH-POWER AND HIGH-GAIN APPLICATIONS**

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### **Abstract**

A Monte Carlo simulation has been used to model steady state and transient electron transport in 6H-SiC field effect transistor. The simulated device geometries and doping are matched to the nominal parameters described for the experimental structures as closely as possible, and the predicted I-V and transfer characteristics for the intrinsic devices show fair agreement with the available experimental data. Simulations of the effect of modulating the gate bias have also been carried out to test the device response and derived the frequency bandwidth. Value of  $90 \pm 10$  GHz has been derived for the intrinsic current gain cut-off frequency of the 6H-SiC MESFETs.

**Keywords and phrases:** steady-state, transient, cut-off frequency, frequency bandwidth.

