Abstracts

Physics-Based Expressions for the Nonlinear Capacitances of the MESFET Equivalent Circuit

S. D'Agostino and A. Betti-Berutto. "Physics-Based Expressions for the Nonlinear Capacitances of the MESFET Equivalent Circuit." 1994 Transactions on Microwave Theory and Techniques 42.3 (Mar. 1994 [T-MTT]): 403-406.

In this paper, we present a simple physical determination of the nonlinear capacitance parameters (C/sub gdo/ and C/sub gso/) of the MESFET equivalent circuit. Semiempirical models such as the Curtice and Statz-Pucel models, in conjunction with these physics-based expressions, are a fast tool for CAD of microwave integrated circuit simulation, saving the designer the tedious and sometimes difficult process of parameter extraction and providing a better estimate of device statistics. Using the equations obtained in this work, a submicron gate length MESFET has been simulated and theoretical results are in good agreement with the experimental measurements.

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