Abstracts

Total Charge Capacitor Model for Short-Channel MESFET's

D. Webster, M. Darvishzadeh and D. Haigh. "Total Charge Capacitor Model for Short-Channel MESFET's." 1996 Microwave and Guided Wave Letters 6.10 (Oct. 1996 [MGWL]): 351-353.

Total charge models for short-channel metal-semiconductor field-effect transistors (MESFET'S) currently available in large-signal simulator packages such as SPICE give a poor description of the bias dependence of the gate capacitance. This letter describes a novel empirical model whose structure is deduced from the reconstructed total charge function derived from measured s-parameters. The new model gives a good overall fit to the observed gate capacitance behavior of a commercial monolithic microwave/millimeter-wave integrated circuit (MMIC] MESFET over a wide range of bias conditions and enables large-signal MESFET models to have a superior fit to measured s-parameters, giving greater confidence in design.

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