Abstracts

Nonlinear FET model for intermodulation distortion analysis of resistive mixers

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This paper describes an improved nonlinear model for predicting an intermodulation distortion (IMD) power characteristic of GaAs FETs in switching applications. The model is capable of modeling the voltage dependent drain current and its derivatives, including gate-source and gate-drain capacitance. The drain current and its derivatives are described by a function of voltage dependent drain conductance. The model parameters are extracted from a measured drain conductance versus gate voltage characteristic of a PHEMT. The IMD power characteristics calculated with the use of the proposed method are compared with experimental data taken from an MMIC resistive mixer. Good agreements over large gate voltages and input power levels are observed.

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