Abstracts

A GaAs MESFET Large-Signal Circuit Model for Nonlinear Analysis

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A large-signal GaAs MESFET model for performing nonlinear microwave simulations with SPICE or Microwave SPICE™ and Libra™ programs is described. The model includes accurate analytic representation of the dependence of gm, C/sub gs/, C/sub gd/, R/sub j/, and R/sub ds/ upon operating voltages V/sub gs/ and V/sub ds/. The model also functions as a master Iinear model that accurately replicates measured microwave s-parameters at arbitrarily chosen bias points within the transistor's useful operating I-V range. Microwave SPICE harmonic distortion simulations with the model compare favorably with measurements for an NEC NE71000. The model is useful in the analysis of a broad range of circuits including amplifiers, mixers, and oscillators.

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