Abstracts

A large-signal switching MESFET model for intermodulation distortion analysis

K. Fujii, Y. Hara, T. Yakabe and H. Yabe. "A large-signal switching MESFET model for intermodulation distortion analysis." 2000 Transactions on Microwave Theory and Techniques 48.3 (Mar. 2000 [T-MTT]): 431-436.

This paper describes an improved large-signal model for predicting an intermodulation distortion (IMD) power characteristic of MESFETs in switching applications. The model is capable of modeling the voltage-dependent drain current and its derivatives, including gate-source and gate-drain capacitors. The drain current and its derivatives are described by a function of a voltage-dependent drain conductance. The model parameters are extracted from a measured drain conductance versus gate voltage characteristic of a MESFET. This paper also presents a new fully symmetric equivalent circuit for switching MESFETs. The IMD power characteristics calculated with the use of the proposed method are compared with experimental data taken from a monolithic microwave integrated circuit single-pole double-throw switch. Good agreements over the large gate voltages and input power levels are observed.

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