Abstracts

Improved prediction of the intermodulation distortion characteristics of MESFETs and PHEMTs via a robust nonlinear device model

V.I. Cojocaru and T.J. Brazil. "Improved prediction of the intermodulation distortion characteristics of MESFETs and PHEMTs via a robust nonlinear device model." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 749-752.

The paper investigates the intermodulation distortion (IMD) prediction capabilities of the COBRA model by analysing the first, second and third order derivatives of the drain I/V model and the gate Q/V model. The model is extracted simply from DC and small-signal S-parameter data, without the need for complex low-frequency (VHF) measurements of harmonic output levels under low-load conditions, as proposed in previous studies. The computed main I/V characteristic and its derivatives are shown to be continuous over the entire bias plane, and are proven to give better results than other models available. Results of two-tone large signal tests for the case of a 0.2 /spl mu/m PHEMT process are presented, showing excellent agreement between simulated and experimental third and fifth intermodulation products.

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