Abstracts

Uncertainty estimation and optimal extraction of intrinsic FET small signal model parameters

C. Fager, P. Linner and J.C. Pedro. "Uncertainty estimation and optimal extraction of intrinsic FET small signal model parameters." 2002 MTT-S International Microwave Symposium Digest 02.2 (2002 Vol. II [MWSYM]): 729-732 vol.2.

In this paper, analytical expressions for the sensitivities in the parameters of a standard intrinsic FET small signal model are derived with respect to variations in the S-parameters. The sensitivities are used to estimate the uncertainty in extracted model parameters. The theories are applied to measurements made on a commercial HEMT device. Using models for the measurement uncertainties allows the model parameter uncertainties to be studied versus frequency and bias. As a result, optimal, minimum uncertainty parameter extraction can be performed independent of the bias voltage and without prior knowledge of the FET device characteristics. Thus making it suitable for implementation in automatic multi-bias extraction programs.

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