Abstracts

Experimental Evaluation of Large-Signal Modeling Assumptions Based on Vector Analysis of Bias-Dependent S-Parameter Data from MESFETs and HEMTs

D.E. Root and S. Fan. "Experimental Evaluation of Large-Signal Modeling Assumptions Based on Vector Analysis of Bias-Dependent S-Parameter Data from MESFETs and HEMTs." 1992 MTT-S International Microwave Symposium Digest 92.1 (1992 Vol. I [MWSYM]): 255-258.

This paper presents, for the first time, a systematic experimental examination of the validity of basic large-signal modeling assumptions by subjecting measured S-parameter data versus bias from MESFETs and HEMTs to various mathematical operations of vector analysis. Several approaches are used to determine the degree to which pairs of device nonlinearities can be accurately modeled by charge-based nonlinear capacitors, voltage-controlled current sources, and higher-order elements arranged in a standard equivalent circuit topology. Implications are discussed for such circuit modeling concepts as terminal charge conservation and its extension to other state-functions.

❑ Return to main document.