Abstracts

Instantaneous Model of a MESFET for use in Linear and Nonlinear Circuit Simulations

I. Corbella, J.M. Legido and G. Naval. "Instantaneous Model of a MESFET for use in Linear and Nonlinear Circuit Simulations." 1992 Transactions on Microwave Theory and Techniques 40.7 (Jul. 1992 [T-MTT] (Special Issue on Process-Oriented Microwave CAD and Modeling)): 1410-1421.

A formal approach for nonlinear modeling of FET's is presented. The intrinsic transistor is described by current and charge generators, that are instantaneously dependent on the two internal voltages. The extrinsic parasitic elements are also included. This instantaneous model is obtained from the small signal equivalent circuit computed at a number of bias points, by integration of the bias dependent elements. A program for using this model in nonlinear circuit analysis has been developed. The process has been carried out for two transistors, one being of low noise, and the other a power MESFET. Good agreement has been observed when comparing the non-linear analysis with measured data. Finally a Solid State Power Amplifier at 28 GHz has been designed using the power transistor, delivering 21 dBm at 1 dB compression point.

❑ Return to main document.