Abstracts

Physics-based large-signal sensitivity analysis of microwave circuits using technological parametric sensitivity from multidimensional semiconductor device models

F. Bonani, S.D. Guerrieri, F. Filicori, G. Ghione and M. Pirola. "Physics-based large-signal sensitivity analysis of microwave circuits using technological parametric sensitivity from multidimensional semiconductor device models." 1997 Transactions on Microwave Theory and Techniques 45.5 (May 1997, Part II [T-MTT]): 846-855.

The authors present an efficient approach to evaluate the large-signal (LS) parametric sensitivity of active semiconductor devices under quasi-periodic operation through accurate, multidimensional physics-based models. The proposed technique exploits efficient intermediate mathematical models to perform the link between physics-based analysis and circuit-oriented simulations, and only requires the evaluation of dc and ac small-signal (dc charge) sensitivities under general quasi-static conditions. To illustrate the technique, the authors discuss examples of sensitivity evaluation, statistical analysis, and doping profile optimization of an implanted MESFET to minimize intermodulation which makes use of LS parametric sensitivities under two-tone excitation.

❑ Return to main document.