Abstracts

Choosing an Optimum Large Signal Model for GaAs MESFETs and HEMTs

M. Miller, M. Golio, B. Beckwith, E. Arnold, D. Halchin, S. Ageno and S. Dorn. "Choosing an Optimum Large Signal Model for GaAs MESFETs and HEMTs." 1990 MTT-S International Microwave Symposium Digest 90.3 (1990 Vol. III [MWSYM]): 1279-1282.

Seven large signal MESFET models and three newly developed HEMT models have been compared, providing the microwave circuit designer with a practical benchmark. The error for each model is quantified and minimized using a modified Newton's method with the restricted step technique of Levenberg and Marquardt. This minimum obtainable error is used as a basis for comparing the models. The validity of this approach is confirmed by comparing predicted to measured large-signal performance made on a Triquint 0.5 µm gate length MESFET. The model comparison tool has also been utilized to develop a general approach to large signal HEMT modeling for circuit simulation applications. A 0.7 µm gate length pseudomorphic HEMT device was used for this portion of the study.

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