Abstracts

A new model for enhancement-mode power pHEMT

Ce-Jun Wei, Y.A. Tkachenko and D. Bartle. "A new model for enhancement-mode power pHEMT." 2002 Transactions on Microwave Theory and Techniques 50.1 (Jan. 2002, Part I [T-MTT] (Mini-Special Issue on 1999 International Microwave and Optoelectronics Conference (IMOC'99))): 57-61.

Optimum loading for a power enhancement-mode pseudomorphic high electron-mobility transistor (E-pHEMT) is determined by a systematic harmonic load-pull simulation. The simulation uses a modified Angelov-Parker model that can accurately predict DC, small-signal RF, and power performance of the devices. The optimum second harmonic loading for a 2-mm device is found to be open circuit and the optimum third harmonic is at the third quadrant, which is about 1/spl ang/210/spl deg/. The measured versus modeled results show very good agreement and, therefore, verify the model. The simulation predicts that as high as 80% power-added efficiency can be achieved for E-pHEMT under optimum source and load termination with harmonic tuning.

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