Abstracts

A Design Method for High Efficiency Class F HBT Amplifiers

A. Mallet, T. Peyretaillade, R. Sommet, D. Floriot, S. Delage, J.M. Nebus and J. Obregon. "A Design Method for High Efficiency Class F HBT Amplifiers." 1996 MTT-S International Microwave Symposium Digest 96.2 (1996 Vol. II [MWSYM]): 855-858.

In this paper, we report on the Class F operation of HBTs. A temperature dependent model of a 240µm² GaInP/GaAs HBT (THOMSON-CSF) was extracted from pulsed I/V and pulsed S parameter measurements and validated by load-pull measurements. An extensive large signal HB analysis, based on "the substitute generator technique", was achieved to optimize the load impedance at harmonic frequencies required for class F operation. Furthermore, the performances of the transistor in terms of added power, power added efficiency and dissipated power, were investigated under different bias modes (ie: constant base voltage, constant base current and self bias modes). We will show that the bias mode has a great influence on the HBT linearity.

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