Abstracts

A novel extraction method for a fully electro-thermal large-signal model of HBT

Hyun-Min Park, R. Green and Songcheol Hong. "A novel extraction method for a fully electro-thermal large-signal model of HBT." 2002 MTT-S International Microwave Symposium Digest 02.2 (2002 Vol. II [MWSYM]): 1009-1012 vol.2.

Large-signal modeling of power HBTs is demonstrated for accurate simulation of self-heating and ambient temperature effects and nonlinear behavior such as output power, gain expansion, and IMD. The extraction was done for an in-situ output-stage device from a power amplifier circuit. The physical relationship between the device current and the rate of change in the built-in potential with respect to the device temperature has been utilized for fully electro-thermal modeling. Measurements and simulations are compared for the verification of the model under DC conditions at various temperatures. Also, the gain expansion and the sweet spot under large-signal two-tone conditions have been characterized under various harmonic loads to assess the accuracy of the model.

❑ Return to main document.