Abstracts

Design Study of Linearized AlGaAs/GaAs HBTs Using Volterra Series

J. Lee, W. Kim, Y. Kim, T. Roh and B. Kim. "Design Study of Linearized AlGaAs/GaAs HBTs Using Volterra Series." 1996 MTT-S International Microwave Symposium Digest 96.3 (1996 Vol. III [MWSYM]): 1775-1778.

The interrnodulation (IM) mechanism of HBT has been studied theoretically and experimentally. Volterra Series analysis with an analytical nonlinear HBT model shows that IP3 can be greatly enhanced by using a punch-through collector structure. It is also found that the high linearity of HBT stems mainly from the almost exact cancellation between base-emitter and base-collector nonlinear current components. The fabricated HBT with a punch through collector has the IP3 of 31 dBm at a dc power consumption of 150 mW, which is 3 dB higher than those of HBTs with normal collector.

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