Abstracts

Characterization and modeling of thermal dynamic behavior of AlGaAs/GaAs HBTs

Ke Lu and Xiangdong Zhang. "Characterization and modeling of thermal dynamic behavior of AlGaAs/GaAs HBTs." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 611-614.

This study presents a systematic investigation for the first time on the dynamic thermal impedance of AlGaAs/GaAs HBTs. A simple small-signal measurement technique is developed to measure the frequency domain relationship between the dissipation power and the HBT junction temperature. The technique provides a unique measurement tool to analyse device thermal structure, such as die attachment and heat-sink. A multi-section RC circuit is proposed in the paper to describe the thermal impedance. The agreements between measurement and simulation results are excellent. This investigation is useful in terms of modeling the HBT self-heating effect and its impact on HBT linearity or other temperature-sensitive performance.

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