Abstracts

Accurate RF large-signal model of LDMOSFETs including self-heating effect

Youngoo Yang, Jaehyok Yi and Bumman Kim. "Accurate RF large-signal model of LDMOSFETs including self-heating effect." 2001 Transactions on Microwave Theory and Techniques 49.2 (Feb. 2001 [T-MTT]): 387-390.

In this paper, we present a new silicon RF LDMOSFET large-signal model including a self-heating effect. A new empirical channel current model suited for accurately predicting intermodulation distortion is employed. The proposed channel current model can represent transconductance (gm) saturation and rolloff in the continuous manner. It has continuous higher order derivatives for accurate prediction of nonlinear microwave circuit behavior, such as power amplifiers, microwave mixers, oscillators, etc. Using the complete large-signal model, we have designed and implemented a 1.2 GHz power amplifier. The measured and simulated amplifier characteristics, especially the intermodulation and harmonic behaviors, are in good agreement.

❑ Return to main document.