Abstracts

Nonlinear GaAs MESFET Modeling Using Pulsed Gate Measurements (Dec. 1988 [T-MTT])

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The effects of traps in GaAs MESFET's are studied using a pulsed gate measurement system. The devices are pulsed into the active region for a short period (typically 1 µs) and are held in the cutoff region for the rest of a 1 ms period. While the devices are on, the drain current is sampled and a series of "pulsed gate" I-V curves are obtained. The drain current obtained under the pulsed gate conditions for a given V/sub gs/ and V/sub ds/ gives a better representation of the instantaneous current for a corresponding V/sub gs/ and V/sub ds/ in the microwave cycle because of the effects of traps. The static and pulsed gate curves were used in a nonlinear time-domain model to predict harmonic current. The results showed that analysis using pulsed gate curves yielded better predictions of harmonic distortion than analysis based on conventional static I-V curves under large-signal conditions.

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