Abstracts

Trap-related gain/phase jump of HFET power amplifiers

Ce-Jun Wei and J.C.M. Hwang. "Trap-related gain/phase jump of HFET power amplifiers." 1999 Transactions on Microwave Theory and Techniques 47.8 (Aug. 1999 [T-MTT] (Mini-Special Issue on Low-Power/Low-Noise Technologies for Mobile Wireless Communications)): 1570-1576.

Using novel characterization techniques, output gain, and phase jumps (with respect to input frequency or input level) of multistage monolithic-microwave integrated-circuit power amplifiers were correlated with heterojunction field-effect transistor (HFET) drain-current kinks and negative gate resistances. Both physical and phenomenological models were used to explain the correlation through hole-trapping and self-biasing mechanisms. A remedy involving bias-stabilization diodes was experimentally verified. Other possible remedies are also discussed. The present conclusion can be extended to other metal-semiconductor field-effect transistor and HFET amplifiers with similar gain/phase jump problems.

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