Abstracts

A new pinched-off cold-FET method to determine parasitic capacitances of FET equivalent circuits

Yeong-Lin Lai and Kuo-Hua Hsu. "A new pinched-off cold-FET method to determine parasitic capacitances of FET equivalent circuits." 2001 Transactions on Microwave Theory and Techniques 49.8 (Aug. 2001 [T-MTT] (Mini-Special Issue on the 2000 IEEE Radio and Wireless Conference (RAWCON))): 1410-1418.

A new pinched-off cold FET method to extract the parasitic capacitances of FETs is proposed in this paper. The method is based on a physically meaningful depletion-layer model and the theoretical analysis of the two-port network for the pinched-off cold FETs. The parasitic gate capacitance (C/sub pg/) and the parasitic drain capacitance (C/sub pd/) of FETs are extracted using the linear regression technique associated with the frequency responses of Y-parameters. The extraction method can be applied to the small-signal equivalent-circuit modeling of the FETs including MESFETs, heterojunction FETs, and high-electron-mobility transistors. According to the new analytical method, the simulated S-parameters exhibit great agreement with the measured S-parameters for the equivalent-circuit models of FETs.

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