Abstracts

A New Small Signal MESFET and HEMT Model Compatible with Large Signal Modeling

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We present a new, fully symmetric, small signal device model for GaAs MESFETs and HEMTs. This model is compatible with large signal device models since it represents the small signal limit of a devices nonlinear behavior at any given bias point. The model is fully symmetric due to the incorporation of two transcapacitances C/sub m1/ (in parallel with C/sub gs/) and C/sub m2/ (in parallel with C/sub dg/) and by replacing the traditional output conductance g/sub ds/ with a new voltage controlled current source G/sub m2/ with time delay T/sub 2/. Model fits of measured S parameter data to 50 GHz are shown where our new model accurately fits the data and traditional models fail.

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