Abstracts

A large-signal characterization of an HEMT using a multilayered neural network

We propose an approach to describe the large-signal behavior of a high electron-mobility transistor (HEMT) by using a multilayered neural network. To conveniently implement this in standard circuit simulators, we extracted the HEMT's bias dependent behavior in terms of conventional small-signal equivalent-circuit elements. We successfully represented seven intrinsic elements with a five-layered neural network (composed of 28 neurons) whose inputs are the gate-to source bias (V_{gs},) and drain-to-source bias (V_{ds}) A "well-trained" neural network shows excellent accuracy and generates good extrapolations.

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