Abstracts

HEMT Models for S-Parameter and Noise Parameter Extrapolation

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Four models have been developed and assessed for fitting the measured noise parameters up to 26GHz and S-parameters up to 40GHz, for a commercial HEMT chip. The first treats the intrinsic noise sources as uncorrelated, thermal sources. The second is an extension of this, allowing a better fit to be achieved by including the distributed nature of the gate and drain electrodes using a semidistributed, sliced model. The third model neglects the distributed effect but takes into account the partial correlation of the gate and drain noise sources. This causes a larger improvement in the quality of fit, allowing the model to fit the measured data within reasonable measurement limits. Fourthly, the addition of the distributed effect to the correlated model allows a further marginal improvement, but the conditioning of the problem and the accuracy of the data appear to be insufficient to allow accurate extraction of the additional parameters needed.

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