Abstracts

Microwave Noise Characterization of GaAs MESFETs by On-Wafer Measurement of the Output Noise Current

M.S. Gupta, O. Pitzalis, Jr., S.E. Rosenbaum and P.T. Greiling. "Microwave Noise Characterization of GaAs MESFETs by On-Wafer Measurement of the Output Noise Current." 1987 MTT-S International Microwave Symposium Digest 87.1 (1987 Vol. I [MWSYM]): 513-516.

A simplified noise equivalent circuit is presented for GaAs MESFETs in the common-source configuration, consisting of five linear circuit eIements: the gate-to-source capacitance C/sub gs/, the total input resistance R/sub t/, the transconductance g/sub m/, the output resistance R/sub o/, and a noise current source of spectral density S/sub io/ at the output port. AII of these elements have been determined by on-wafer measurements. The minimum noise figure F/sub min/ calculated from this model, as well as the bias and frequency dependence of F/sub min/, agree with the measured microwave noise figure of the device. Thus the determination of the F/sub min/ can be done rapidly, conveniently, without the need for tuning, and at the wafer stage of device fabrication solely by on-wafer measurements.

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