Abstracts

Characterization of MESFET and MODFET Microwave Noise Properties Utilizing Drain Noise Current

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The microwave drain noise characteristics have been studied for conventional long gate (1.0 µm and 0.5 µm) GaAs MESFET's and short (/spl ap/ 0.15 µm) strained InGaAs/InAIAs/ InP MODFET's. Although the MODFET's have lower noise figures (F/sub min/ /spl ap/ 0.4dB at 10GHz) than the MESFET's (1.5dB at 10GHz), their measured drain noise currents are greater indicating that F/sub min/ does not describe the true device noise characteristics. Due to higher gain, estimated parastic contribution to the device noise is greater for the MODFET's than the MESFET's. The intrinsic channel noise has been modelled with an effective temperature associated with r/sub ds/, showing that carrier heating alone cannot explain the measured characteristics.

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