Abstracts

Modeling of Low Frequency Noise Sources in HEMTs

T. Felgentreff and G.R. Olbrich. "Modeling of Low Frequency Noise Sources in HEMTs." 1996 MTT-S International Microwave Symposium Digest 96.3 (1996 Vol. III [MWSYM]): 1743-1746.

For amplifier and oscillator applications it is often necessary, to know the low frequency noise behavior of the used HEMT device. In this paper we present the models of two important low frequency noise contributions - the f/sup negative a/ noise and the generation/recombination noise (g-r noise). Starting with measurements of the noise power spectral densities at about 100 bias points we can find analytical expressions for the characterization of two noise current sources assumed in the channel of the HEMT. The two low frequency noise current sources are implemented in a large signal physics based HEMT model, which describes the signal and noise properties in the frequency range from 1 Hz to 40 GHz and is used for oscillator phase noise calculations. Also other noise current sources in this model will be discussed.

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