Abstracts

HBT's RF noise parameter determination by means of an efficient method based on noise analysis of linear amplifier networks

P. Rouquette, D. Gasquet, T. Holden and J. Moult. "HBT's RF noise parameter determination by means of an efficient method based on noise analysis of linear amplifier networks." 1997 Transactions on Microwave Theory and Techniques 45.5 (May 1997, Part I [T-MTT]): 690-694.

A method for the evaluation of the RF noise figure of heterojunction bipolar transistors (HBTs) is presented. The noise analysis is based on the use of the correlation matrices. The two-port device is described as an interconnection of basic two-port devices whose noise behaviour is known. The circuit theory of linear noisy networks allows that any two-port device can be replaced by a noise equivalent circuit which consists of the original two-port assumed to be noiseless and possess two additional noise sources. The purpose of this paper is to obtain the four noise parameters of the device, taking into account the excess resistances and inductances. The calculations presented show good agreement with measurements, and as a consequence, they permit a good estimation of the noise performance of the structure without neglecting any parasitic elements of the equivalent circuit.

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