Abstracts

Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set

E.F. Calandra, G. Martines and M. Sannino. "Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 231-236.

A method for the complete characterization of GaAs FET's in terms of noise parameters (F/sub o/, Gamma/sub on/, R/sub n/), gain parameters (G/sub ao/, Gamma /sub og/, R/sub g/), and of those scattering parameters (S/sub 11/, S/sub 22/, |S/sub 12/|, |S/sub 21/|, /spl angle/S/sub 12/S/sub 21/) that are needed for low-noise microwave amplifier design is presented. The instrumentation employed, i.e., a noise-figure measuring system equipped with a vectorial reflectometer, as well as the time consumption, are the same required for the determination of noise parameters only through conventional methods. The measuring setup and the experimental procedure are described in detail. Considerations about the computer-aided data processing technique are also provided. As an experimental result, the characterization of a sample device versus frequency (4-12 GHz) and drain current is reported. A comparison between the scattering parameters provided by the method and those measured by means of a network analyzer is also included.

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