Abstracts

A New Extraction Method for Noise Sources and Correlation Coefficient in MESFET (Short Papers)

J.-H. Han and K. Lee. "A New Extraction Method for Noise Sources and Correlation Coefficient in MESFET (Short Papers)." 1996 Transactions on Microwave Theory and Techniques 44.3 (Mar. 1996 [T-MTT]): 487-490.

A new extraction method for noise sources and correlation coefficient in the noise equivalent circuit of GaAs metal semiconductor field effect transistor (MESFET) is proposed. It is based on the linear regression, which allows us to extract physically meaningful parameters from the measurement in a systematic and straightforward way. The confidence level of the measured data can also be easily examined from the linearity, y-intercept of the linear regression, and the scattering from the regression line. Furthermore, it is found that the time constant of correlation coefficient whose value is almost the same as that of the transconductance should be considered to model noise parameters accurately. The calculated values of minimum noise figure, optimum impedance, and noise resistance using above approach, show excellent agreement with measurement for a typical MESFET device studied in this paper.

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