Abstracts

A New Method to Determine the Source Resistance of FET from Measured S-Parameters Under Active-Bias Conditions

V. Sommer. "A New Method to Determine the Source Resistance of FET from Measured S-Parameters Under Active-Bias Conditions." 1995 Transactions on Microwave Theory and Techniques 43.3 (Mar. 1995 [T-MTT]): 504-510.

A new method is proposed to evaluate the source resistance R/sub S/ directly from the S-parameters of a field-effect transistor biased in the active region. The method is based on the fact that the real part of the feedback admittance is mainly caused by the source and the gate resistance. This enables the analytical calculation of R/sub S/ at any measured frequency with high accuracy. Taking the ratio of R/sub G/ with regard to R/sub S/ as the only optimizing parameter, it is possible to calculate quickly an equivalent circuit the elements of which do not depend on starting values. The equivalent circuit fits the measured S-parameters very well and allows a physical interpretation of the calculated elements. By application of the new method in accordance with theoretical considerations one can observe for the first time from rf-measurements a bias-dependence of the source resistance that has been assumed to be constant up to now.

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