Abstracts

Two-port noise and impedance measurements for two-terminal devices with a resonant tunneling diode example

A. Przadka, K.J. Webb and D.B. Janes. "Two-port noise and impedance measurements for two-terminal devices with a resonant tunneling diode example." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1215-1220.

A two-port technique is presented for determining the circuit elements and noise sources of the equivalent circuit of a two-terminal device at microwave frequencies. The two-terminal device is connected as a two-port so that intrinsic and parasitic circuit elements can be obtained from full two-port S-parameter measurements. This measurement does not require one of the two contacts to be grounded, which makes it particularly well suited for the characterization of integrated devices where parasitic elements become important and cannot be easily calculated. The noise of the device is measured by employing a noise-figure meter and the intrinsic noise is computed from the measured terminal noise. As an example, the impedance and noise elements of a resonant tunneling diode (RTD) are measured over frequency ranges of 2-8 and 2-4 GHz, respectively.

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