Abstracts

A New Programmable Load for Noise Parameter Determination

B.M. Albinsson, H. Guo, M. Schoon and H.-O. Vickes. "A New Programmable Load for Noise Parameter Determination." 1991 Transactions on Microwave Theory and Techniques 39.2 (Feb. 1991 [T-MTT]): 216-223.

A new computer-controlled programmable load is presented. The load consists of a cascade of p-i-n diodes bonded to each other. The capacitance of the reverse-biased p-i-n diode, together with the interconnecting bonding wires, forms an artificial transmission line. A complete phase coverage in the Smith chart is obtained by forward-biasing any diode pair, using only two current generators and two multiplexer. The amplitude coverage will depend on the diode spacing. The load may be set to any reflection coefficient within its coverage area. Synthesis formulas for the determination of the current driver settings have been derived. A calibration procedure determining the unknown synthesis parameters from input port measurements only is presented. Only the p-i-n diode parameters are characterized separately, The programmable load has been built and tested. Measurements verify the principle and show good agreement with computer simulations. The load has been developed for noise parameter determination. Other applications for variable impedance measurements are circuit or device optimization of gain and output power performance.

❑ Return to main document.