Abstracts

Study of the relation between doping profile and diode CV characteristics

D. Salameh and D. Linton. "Study of the relation between doping profile and diode CV characteristics." 1999 Transactions on Microwave Theory and Techniques 47.4 (Apr. 1999 [T-MTT]): 506-509.

An explicit formula relating Schottky-diode junction capacitance (C/sub j/) as a function of diode bias (V/sub dc/) and Gaussian doping profile (k) has been curve fitted to a one-dimensional numerical analysis. Two-dimensional physical simulation and the explicit formula have been applied to a Schottky diode with both simulated and analytic results compared against measurement. Incomplete ionization, edge effects, and additional charge created by traps have also been investigated using a physical simulation package, and results are presented for different trap densities. The stated formula has been implemented for a Schottky diode model using a symbolically defined device within the HP-MDS harmonic-balance simulator. This has been used as a building block for a nonlinear transmission-line (NLTL) doubler design with simulated and measured second harmonic-power output being presented. The formula, which is easily implemented in computer-aided design tools, is important for NLTL modeling and design.

❑ Return to main document.