Abstracts

On-Wafer Measurement and Modeling of Millimeter-Wave GaAs Schottky Mixer Diodes

J.L. Allen, C.-Y. Chen and D.P. Klemer. "On-Wafer Measurement and Modeling of Millimeter-Wave GaAs Schottky Mixer Diodes." 1992 MTT-S International Microwave Symposium Digest 92.2 (1992 Vol. II [MWSYM]): 743-746.

Direct on-wafer U-band measurements of GaAs Schottky diodes have allowed for the development of bias-dependent nonlinear device models. The devices are low-parasitic-capacitance planar diodes, fabricated on epitaxial (n-on-n+ GaAs) substrates prepared by metal-organic chemical vapor deposition. Schottky contacts with areas of 4 μm^2 and 9 μm^2 were formed using a Ti-Pt-Au metallization and plated airbridge contact technique. Techniques evaluated for de-embedding device measurements involved both numerical simulation as well as a novel on-chip calibration procedure. Although this work considered Schottky diodes specifically, similar techniques could be employed for determining bias-dependent and large-signal models for the gate electrode of millimeter-wave MESFET and HEMT devices.

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