Abstracts

Low-Parasitic, Planar Schottky Diodes for Millimeter-Wave Integrated Circuits

J.W. Archer, R.A. Batchelor and C.J. Smith. "Low-Parasitic, Planar Schottky Diodes for Millimeter-Wave Integrated Circuits." 1990 Transactions on Microwave Theory and Techniques 38.1 (Jan. 1990 [T-MTT]): 15-22.

The design and fabrication of air-bridged, ultra-low-capacitance Schottky barrier diodes are described. Mott diodes, for mixer applications, and varactor diodes, for use in frequency multipliers, have been produced simultaneously on epitaxial wafers grown by molecular beam expitaxy. Typical mixer diodes have a nominal anode contact area of 4μm² exhibit a total zero-bias capacitance of 4.0-4.5 fF (including a parasitic capacitance of approximately 1.0 fF) and a series resistance of 6-8 Omega. Diode chips have been incorporated in hybrid integrated circuit (MIC) mixers for 33-50 GHz and 75-110 GHz and an MIC frequency tripler for 90-140 GHz. Fully monolithic (MMIC) subharmonically pumped mixers for 75-110 GHz have also been fabricated and tested.

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