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Performance Analysis of Planar Subharmonically Pumped Antiparallel-pair Schottky Diode Mixers for Submillimeter-wave Applications

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ABSTRACT

A computer simulation based on the techniques developed by Kerr has been developed that takes into account the physical presence of the pad-to-pad capacitance inherent in antiparallel-pair planar diode chips. The computer simulation is used to examine the effect of the pad-to-pad capacitance on the performance of subharmonic mixers at millimeter wave frequencies. It is shown that for the best mixer performance the optimum pad-to-pad capacitance is dependent on the anode diameter and series inductance of the anti-parallel pair diodes. This stresses the need for an accurate measurement of the loop inductance in an antiparallel-pair planar subharmonic mixer,