Abstracts

The Super-Schottky Diode

F.L. Vernon, Jr., M.F. Millea, M.F. Bottjer, A.H. Silver, R.J. Pedersen and M. McColl. "The Super-Schottky Diode." 1977 Transactions on Microwave Theory and Techniques 25.4 (Apr. 1977 [T-MTT] (Special Issue on Low-Noise Technology)): 286-294.

The super-Schottky-barrier diode, a superconductor-semiconductor tunneling junction, has been established as the most sensitive detector of microwaves. These record sensitivities were obtained in both the video and mixing modes of operation. Measurements at X-band have yielded a video NEP of 5 x 10/sup -16/ W/Hz/sup 1/2/ and a mixer input noise temperature of 6 K. The super-Schottky mixer provides a front-end component for ultralow-noise receivers that is superior in bandwidth to available parametric and maser amplifiers and yet has a comparable noise temperature. This article reports the design, fabrication, and measurement of Pb on p-GaAs super-Schottky diodes which perform as nearly ideal low-noise mixers at 9 GHz.

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