Abstracts

Backward Diodes for Low-level Millimeter-Wave Detection

C.A. Burrus, Jr.. "Backward Diodes for Low-level Millimeter-Wave Detection." 1963 Transactions on Microwave Theory and Techniques 11.5 (Sep. 1963 [T-MTT]): 357-362.

Backward diodes (low peak current tunnel diodes) suitable for small-signal detection applications in the millimeter-wave region have been fabricated from n-type germanium. The diodes have the dimensions and geometry of point-contact diodes. For millimeter-wave signal levels below about - 20 dbm, the current sensitivity of these units is an order of magnitude greater than that of selected existing diodes for this frequency range. When employed as millimeter-wave frequency converters, the minimum conversion loss is comparable to that of conventional diodes, but the beating oscillator power requirements may be somewhat reduced. The diode noise factor at megacycle IF frequencies is comparable to that of conventional units, and in the low audio IF range it is expected to be markedly decreased. The fabrication of these diodes is described and their initial performance at selected frequencies from 11 Gc to 300 Gc is discussed.

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