Abstracts

Microwave Propagation in Rectangular Waveguide Containing a Semiconductor Subject to a Transverse Magnetic Field (Short Papers)

J.B. Ness and M.W. Gunn. "Microwave Propagation in Rectangular Waveguide Containing a Semiconductor Subject to a Transverse Magnetic Field (Short Papers)." 1975 Transactions on Microwave Theory and Techniques 23.9 (Sep. 1975 [T-MTT]): 767-772.

The propagation constant of waveguide partially loaded with a semiconductor in the H plane is evaluated using a three-mode approximation analysis. As the waveguide is progressively filled, a large peak occurs in the attenuation coefficient due to higher order mode propagation. In the presence of a transverse magnetic field, propagation becomes nonreciprocal and this nonreciprocal effect is shown to be significantly increased in the region of the peak. The theoretical results are verified using n-type germanium samples in 26.5-40 -GHz waveguide.

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