Abstracts

Nonreciprocal Wave Propagation in Semiconductor Loaded Waveguides in the Presence of a Transverse Magnetic Field

R.M. Arnold and F.J. Rosenbaum. "Nonreciprocal Wave Propagation in Semiconductor Loaded Waveguides in the Presence of a Transverse Magnetic Field." 1971 Transactions on Microwave Theory and Techniques 19.1 (Jan. 1971 [T-MTT]): 57-65.

Approximate solutions for the complex propagation constant in semiconductor loaded waveguides are obtained by expansion of the fields in terms of a finite number of the empty waveguide modes. Solutions are obtained for the case of partial loading in the narrow dimension of the guide, which explicitly exhibit the non-reciprocal effects observed in the presence of a transverse magnetic field. Coupling between the TE/sub 10/ and TM/sub 11/ empty waveguide modes is shown to explain qualitatively the observed experimental effects. Good quantitative agreement with experiments using Si samples is obtained.

❑ Return to main document.