Abstracts

A Waveguide Isolator Using InSb (Correspondence)

W.G. May and B.R. McLeod. "A Waveguide Isolator Using InSb (Correspondence)." 1968 Transactions on Microwave Theory and Techniques 16.10 (Oct. 1968 [T-MTT]): 877-878.

Solid-state plasmas have been used as the basis of waveguide isolators, using the tensor properties of the dielectric constant in the presence of a dc magnetic field to produce nonreciprocal behavior. In the device repofted by Toda, field displacement of the signal propagated through InSb at 75°K in the presence of a transverse dc magnetic field was used to achieve isolation. Another device used Faraday rotation in a waveguide filled with InSb under a longitudinal magnetic field to achieve good isolation. In this correspondence isolators in which InSb only partially fills a waveguide are discussed, and experimental data at 35.0 GHz is given. Isolator action is achieved because the signal is excluded from or absorbed by the InSb, depending on the direction of rotation of a circularly polarized signal with respect to a longitudinal magnetic field. Low forward loss is possible since the signal is not transmitted through the InSb. The device is similar to existing ferrite devices.

❑ Return to main document.