Abstracts

Solid-State Plasma Controlled Nonreciprocal Microwave Device (Correspondence)

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Various types of nonreciprocal microwave devices have been developed through the use of the tensor permeability of magnetic materials such as ferrites. In a solid-state plasma such as a semiconductor, the conductivity becomes a tensor quantity under a de magnetic field. Toda developed an isolator using a solid-state plasma under a transverse magnetic field and obtained the isolation ratio of about 10 dB. Recently, we have reported the result of the experimental observation o fthe microwave Faraday effect in a solid state plasma waveguide under a longitudinal magnetic field. It was found that a large amount of rotation of the plane of polarizaton with very small attenuation of power can be obtained in a solid-state plasma under a relatively high magnetic field. In this paper, an experimental nonreciprocal microwave device which makes use of the Faraday rotation in a solid-state plasma is presented.

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