Abstracts

Microstrip Lines Using Yttrium Iron Garnet Film

M. Tsutsumi and T. Asahara. "Microstrip Lines Using Yttrium Iron Garnet Film." 1990 Transactions on Microwave Theory and Techniques 38.10 (Oct. 1990 [T-MTT]): 1461-1467.

The spectral-domain technique is employed for computing the dispersion characteristics and the transverse field distributions of microstrip lines using a yttrium iron garnet (YIG) film substrate. Numerical results are presented to show a sharp cutoff characteristic for large thickness of gadolinium gallium garnet (GGG), which is caused by the reduction in the negative permeability range, and to show the effect of YIG thickness of the nonreciprocal behavior. Experiments are carried out using a YIG film a few tenths of a micrometer thick and 400-μm-thick GGG substrate. A narrow stopband characteristic of 200 MHz is observed at 6 GHz, which agrees well with the theory. The application to a band-rejection filter is also discussed briefly.

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