Abstracts

The Use of Manganese-Doped Iron Garnets and High Dielectric Constant Loading for Microwave Latching Ferrite Phasers

W.J. Ince, D.H. Temme, F.G. Willwerth and R.L. Huntt. "The Use of Manganese-Doped Iron Garnets and High Dielectric Constant Loading for Microwave Latching Ferrite Phasers." 1970 G-MTT International Microwave Symposium Digest of Technical Papers 70.1 (1970 [MWSYM]): 327-331.

The characteristics of ferrite materials desired for microwave devices with the material operated in the remanent state have been reviewed by Ince and Temme. The major deficiencies in the material for such applications have been the sensitivities of the remanent magnetization to both temperature and stress. Of the two most commonly used material systems, Mg-Mn ferrites and yttritum-iron garnets, the temperature sensitivity of the remanent magnetization of the garnet is less severe, particularly at low magnetization values. However, the stress sensitivity of the garnet is significantly greater than that of the ferrites and consequently, presents a serious problem for latching devices. Following earlier attempts to reduce the stress sensitivity through rare earth additions, which proved lossy, Dionne, et al. have shown that a small manganese addition to yttrium-iron garnet is effective for the reduction of magnetostriction. They have presented data suggesting that the microwave characteristics would also be satisfactory.

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