

Abstracts

A Method for Enhancing the Performance of Nonreciprocal Microwave Devices (Correspondence)

B. Ancker-Johnson. "A Method for Enhancing the Performance of Nonreciprocal Microwave Devices (Correspondence)." 1959 Transactions on Microwave Theory and Techniques 7.3 (Jul. 1959 [T-MTT]): 394-395.

The performances of nonreciprocal microwave devices are as temperature dependent as the ferromagnetic materials used to produce them. Hence, the operating characteristics vary markedly with incident power level and ambient temperature. In order to compensate for these temperature changes, special cooling techniques are frequently utilized. Since those are often inconvenient, devices are more usually designed to operate at a much broader frequency range than the specifications demand resulting in deterioration of performance in the specified band. In some cases, ferrites may be especially prepared to have a nearly constant saturation magnetization for range of temperature, as illustrated in Fig. 1. Whereas both of these ferrites have the same saturation magnetization at room temperature, changing the temperature to 100°C causes a 25 per cent change in the $4\mu\text{M}/\text{sub s/}$ of the commercially available ferrite, but only a 7 per cent variation in the especially designed one. Tailoring ferrites to the application is much too difficult to represent a solution to the problem.

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