Abstracts

Symmetrical Four-Port Edge-Guided Wave Circulators

P. de Santis and F. Pucci. "Symmetrical Four-Port Edge-Guided Wave Circulators." 1976 Transactions on Microwave Theory and Techniques 24.1 (Jan. 1976 [T-MTT]): 10-18.

Four-port microwave-integrated-circuit (MIC) edge-guided wave circulators (BGC) have been designed, fabricated, and tested. A mathematical characterization of the strip conductor's shape as well as a precise mechanical control of the bias inhomogeneity are provided. By means of these two techniques the reproducibility of the device is greatly improved with respect to that of the EGC obtained by the traditional cut-and-try methods. X-band performance data are presented and related to the spatial distribution of the effective magnetic permeability mu/sub eff/ in the ferrite substrate. Experimental evidence is reported that an efficient circulator action occurs when mu/sub eff/< 0 at some point under the central circular shield. The spatial distribution of the RF electric field at the circulator's surface is investigated by a mechanical probing technique. It is found that in the lower part of the operation band, RF fields of considerable amplitude extend in the air in the region between the guiding edge and the substrate's edge.

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