Abstracts

Integrated self-biased hexaferrite microstrip circulators for millimeter-wavelength applications

S.A. Oliver, P. Shi, N.E. McGruer, C. Vittoria, W. Hu, H. How, S.W. McKnight and P.M. Zavracky. "Integrated self-biased hexaferrite microstrip circulators for millimeter-wavelength applications." 2001 Transactions on Microwave Theory and Techniques 49.2 (Feb. 2001 [T-MTT]): 385-387.

Planar microstrip Y-junction circulators have been fabricated from metallized 130-/spl mu/m-thick self-biased strontium hexaferrite ceramic die, and then bonded onto silicon die to yield integrated circulator circuits. The impedance matching networks needed to transform the low-impedance circulator outputs were deployed on low-loss alumina or glass dielectrics to minimize circuit losses. These magnetically self-biased circulators show a normalized isolation and insertion loss of 33 and 2.8 dB, respectively, and a 1% bandwidth for an isolation of 20 dB. Application of small (H<1.5 kOe) magnetic bias fields improved the isolation and insertion loss values to 50 and 1.6 dB, respectively. This design may form the basis for future monolithic millimeter-wave integrated circulator circuits that do not require magnets.

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