Abstracts

Ferrite-Superconductor Devices for Advanced Microwave Applications

G.F. Dionne, D.E. Oates, D.H. Temme and J.A. Weiss. "Ferrite-Superconductor Devices for Advanced Microwave Applications." 1996 Transactions on Microwave Theory and Techniques 44.7 (Jul. 1996, Part II [T-MTT] (Special Issue on the Microwave and Millimeter Wave Applications of High Temperature Superconductivity)): 1361-1368.

Microwave devices comprising magnetized ferrite in contact with superconductor circuits designed to eliminate magnetic field penetration of the superconductor have demonstrated phase shift without significant conduction losses. The device structures are adaptable to low- or high-T/sub c/ superconductors. A nonoptimized design of a ferrite phase shifter that employs niobium or YBCO meanderlines has produced over 1000 degrees of differential phase shift with a figure of merit exceeding 1000 degrees/dB at X band. By combining superconductor meanderline sections with alternating T junctions on a ferrite substrate in a configuration with three-fold symmetry, a low-loss three-port switching circulator has been demonstrated.

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