Abstracts

Circulator Synthesis (Jan. 1965 [T-MTT])

J.A. Weiss. "Circulator Synthesis (Jan. 1965 [T-MTT])." 1965 Transactions on Microwave Theory and Techniques 13.1 (Jan. 1965 [T-MTT]): 38-44.

A symmetrical three-port ring network composed of reciprocal T junctions and nonreciprocal phase shifters is analyzed theoretically to determine conditions under which it exhibits perfect circulation. All physically realizable T junctions are considered. It is found that many such junctions, combined with appropriate phase shifters specified by the theory, form perfect circulators. Among these are many cases for which the internal wave amplitudes are small and which require only very small amounts of nonreciprocal phase shift. Circulators designed in accordance with this model may offer appreciable advantages in insertion loss and bandwidth, as well as in mechanical characteristics such as size and weight, and in the possibility of adapting the design for special applications such as high-power capability, high-speed switching, etc. The nature of the model and the method of calculation are summarized.

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