Abstracts

A Lumped-Element Circulator without Crossovers (Short Papers)

R.H. Knerr. "A Lumped-Element Circulator without Crossovers (Short Papers)." 1974 Transactions on Microwave Theory and Techniques 22.5 (May 1974 [T-MTT]): 544-548.

It is proposed to construct a simple "crossoverless" lumped-element circulator, which can be made without sophisticated thin-film processing. The circulator can be described by a "delta connected" equivalent circuit. A simple capacitor arrangement can be used to influence the three eigenvalue phases of the circulator independently, thus permitting this circulator to be maximized systematically. A set of computer-generated eigenvalues gives insight into the behavior of the device under varying operating conditions. Preliminary measurements using a very simple pattern on a 0.650-in-diam ferrite substrate show a 20-dB bandwidth of 10 percent and an insertion loss < 1 dB (0.3 dB/min) at L band.

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