Abstracts

Stripline Dual-Mode Ring Resonators and Their Application to Microwave Devices

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This paper describes the fundamental properties of two orthogonal resonant modes within stripline ring resonators and their application to microwave devices. There are two principal methods for application of ring resonators, the first is by using two-port devices and the second four-port devices. In the case of two-port configurations, dual-mode filters using coupling between two degenerate modes have been studied as typical applications. In this paper, new methods for the coupling of two modes and their applications to practical devices are proposed, and then experimental results for proof of the new structures are presented. Four-port configurations, which make use of two resonant modes as being independent or having no coupling between them, have a wider range of application to microwave devices. Microwave circuits such as tuned amplifiers and oscillators with novel structures are proposed, and their excellent characteristics are demonstrated. The experimental results obtained in this study on two and four-port devices make it clear that dual-mode ring resonators have great potential for application to various microwave devices.

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