# Abstracts

## Circulators Using Planar Triangular Resonators

*J. Helszajn, D.S. James and W.T. Nisbet. "Circulators Using Planar Triangular Resonators." 1979 Transactions on Microwave Theory and Techniques 27.2 (Feb. 1979 [T-MTT]): 188-193.*

This paper gives the theoretical description of 3-port circulators using planar triangular resonators. The standing-wave solution for this circulator is obtained by taking a linear combination of two TM/sub 1,0,-1/ standing waves with one of them rotated through 120°. The loaded Q factor for this junction is derived by forming the ratio of the energy stored in the circuit to that dissipated in the termination. The bandwidth of circulators using apex-coupled triangular resonators is three times that of circulators using conventional disk resonators. In the case of circulators using side-coupled triangular resonators, the bandwidth is one-third of that of the conventional arrangement.

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