

# Abstracts

## A Thin Film Lumped Element Circulator

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*R.H. Knerr. "A Thin Film Lumped Element Circulator." 1969 G-MTT International Microwave Symposium Digest of Technical Papers 69.1 (1969 [MWSYM]): 116-121.*

The lumped element circulator has been treated analytically and several lumped element circulators have been described. Recent advances in thin film technology such as the thin film crossover as developed by J. P. Sitarik (BTL) who used photo-resist as the insulating layer at the crossover point and more recently the air crossover by Martin P. Lepselter (BTL) offer new design possibilities for lumped element circulators which decrease their size, increase the possibility of integration and extend the range of feasibility from L-band up into the higher regions of the microwave spectrum.

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