Abstracts

Microwave Channelized Active Filters--A New Modular Approach to Achieving Compactness and High Selectivity

C. Rauscher. "Microwave Channelized Active Filters--A New Modular Approach to Achieving Compactness and High Selectivity." 1996 Transactions on Microwave Theory and Techniques 44.1 (Jan. 1996 [T-MTT]): 122-132.

The new class of microwave active filters being presented offers a convenient way to realize miniature filter circuits with sharp passband-to-stopband transitions. The approach, which lends itself to a broad range of narrowband and wideband filtering applications, involves parallel connections of frequency-selective, unilateral network branches that contain both passive and active subcircuits. Highly selective filtering action derives from controlled interferences among branch signal components. Attributes of the new technique include unconditional circuit stability, tolerance for large passive-circuit-element losses, practicability of narrowband lumped-element configurations, graceful performance degradation with active element parameter changes, and the advantage of module-based procedures for design and implementation. The broad applicability of the new approach is illustrated with three experimental demonstration circuits that employ off-the-shelf MMIC amplifier chips. The circuits comprise a 1O-GHz notch filter of one quarter percent bandwidth, a 10GHz bandpass filter of two percent bandwidth, and a 7.5-GHz lowpass filter.

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