

Microstrip Bandpass Filter with Wide Stopband and High Out-of-Band Rejection Based on Inter-Digital Capacitor

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Abstract : This paper present a compact Microstrip Bandpass filter exhibiting a very wide stop band and high selectivity. The filter comprises of asymmetric resonator structures, which are interconnected by an inter-digital capacitor to enable the realization of a wide bandwidth with high rejection level. High selectivity is obtained by optimizing the parameters of the interdigital capacitor. The filter has high out-of-band rejection (> 30 dB), less than 0.6 dB of insertion-loss, up to 5.5 GHz spuri free, and about 18 dB of return-loss. Full-wave electromagnetic simulator ADSTM (Mom) is used to analyze and optimize the prototype bandpass filter. The proposed technique was verified practically to validate the design methodology. The experimental results of the prototype circuit are presented and a good agreement was obtained comparing with the simulation results. The dimensions of the proposed filter are 32 x 24 mm². The filter's characteristics and compact size make it suitable for wireless communication systems.

Keywords : asymmetric resonator, bandpass filter, microstrip, spurious suppression, ultra-wide stop band

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