Abstracts

A vertically integrated micromachined filter

L. Harle and L.P.B. Katehi. "A vertically integrated micromachined filter." 2002 Transactions on Microwave Theory and Techniques 50.9 (Sep. 2002 [T-MTT]): 2063-2068.

A 10-GHz filter constructed of slot-coupled micromachined cavities in silicon is presented. The novel character of the filter lies in its structure, which consists of a microstrip feed to cavities via slot apertures and three vertically stacked slot-coupled cavities. The cavities are essentially reduced-height waveguide resonators. The measured results are presented and compared to a finite-element-method model. The simulated model has a bandwidth of 4% with an insertion loss of 0.9 dB at 10.02 GHz. The measured filter yields a 3.7% bandwidth with a deembedded insertion loss of 2.0 dB at 10.01 GHz. Various loss mechanisms are examined to explain the difference between simulated and measured insertion loss.

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