Abstracts

Micromachined filters on synthesized substrates (Feb. 2001 [T-MTT])

R.F. Drayton, S.P. Pacheco, L.P.B. Katehi, J. Wang and J.-G. Yook. "Micromachined filters on synthesized substrates." 2001 Transactions on Microwave Theory and Techniques 49.2 (Feb. 2001 [T-MTT]): 308-314.

Effective high-frequency spectrum usage requires high-performance filters to have a sharp cutoff frequency and high stopband attenuation. Stepped-impedance low-pass designs achieve this function best with large ratios of high-to-low-impedance values. In high-index materials, such as Si (11.7) and GaAs (12.9), however these high-to-low-impedance ratios are around five, thereby significantly limiting optimum filter performance. This paper characterizes the use of Si micromachining for the development of synthesized substrates, which, when utilized appropriately, can further reduce the low-impedance value or increase the high-impedance value. Both designs have demonstrated high-to-low-impedance ratios that are 1.5-2 times larger than conventional techniques.

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