Abstracts

A reduced-size silicon micromachined high-Q resonator at 5.7 GHz

C.A. Tavernier, R.M. Henderson and J. Papapolymerou. "A reduced-size silicon micromachined high-Q resonator at 5.7 GHz." 2002 Transactions on Microwave Theory and Techniques 50.10 (Oct. 2002 [T-MTT]): 2305-2314.

This paper depicts the progress toward a novel high-quality-factor miniaturized resonator operating in the 5.6-5.8-GHz range. The design of the resonator is based on a micromachined cavity loaded with a high dielectric-constant material. Energy is coupled into the cavity from input and output microstrip lines via slots. Quality factors up to 640 are demonstrated on silicon planar structures with a volume of 177 mm/sup 3/. Further size reduction yields a volume of 24.5 mm/sup 3/ and quality factors ranging from 152 to 197, while keeping the resonator integration ability. Bonding techniques and the dielectric loss of the loading material are proven to be the limiting factors in achieving higher quality factors.

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