Abstracts

Dielectric Ring-Gap Resonator for Application in MMIC's (Dec. 1991 [T-MTT])

W.K. Hui and I. Wolff. "Dielectric Ring-Gap Resonator for Application in MMIC's (Dec. 1991 [T-MTT])." 1991 Transactions on Microwave Theory and Techniques 39.12 (Dec. 1991 [T-MTT] (1991 Symposium Issue)): 2061-2068.

A new dielectric resonator--the dielectric ring-gap resonator--is introduced and analyzed. The dielectric ring-gap resonator is obtained by sawing a narrow gap into a dielectric ring resonator. Resonant frequencies and unloaded Q factors of quasi-TE/sub 0pq/ modes in the ring-gap resonator have been calculated by an appropriate equivalent circuit starting from the resonant frequencies and the field distributions of the TE/sub 0pq/ modes in the ring resonator. The calculatnant frequencies of the fundamental quasi-TE/sub 011/ mode show an accuracy of <1% compared with the experimental results. New coupling techniques to couple the ring-gap resonator to e.g. a microstrip line on a thin substrate, using the electric fringing field near the gap, have been experimentally investigated, A new rigorous method of determining resonant frequencies and field distributions of TE modes in a multicomposite multilayered cylindrical dielectric resonator is presented. This resonator consists of numbers of cylinders, which are arbitrarily layered in axial direction.

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