Abstracts

A Proposal of a New Dielectric Resonator Construction for MIC's

Y. Shimoda, H. Tomimuro and K. Onuki. "A Proposal of a New Dielectric Resonator Construction for MIC's." 1983 Transactions on Microwave Theory and Techniques 31.7 (Jul. 1983 [T-MTT]): 527-532.

A compact and high-temperature-stable dielectric resonator having no shielding metal walls nor a conventional frequency tuning screw is described. This resonator consists of a high epsilon/sub r/ dielectric resonator element mounted on a low-loss dielectric mount, a dielectric disk with thin metal film fixed on the resonator element, and a microstrip line substrate on which to mount the constituents. The resonant frequency tuning is made by trimming the metal film on the disk. The TE/sub 01delta/ -mode resonant frequencies are analyzed through dielectric waveguide model application. Less than 1-percent analytical error is presented in comparison with the experimental data for a practical resonator. The frequency tuning limit by metal film trimming is about 7 percent. The unfoaded Q value of 2700 at 8.8 GHz and a 4.4-ppm/deg frequency temperature coefficient are obtained.

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