

Fork-Coupled Resonators for High Frequency Characterization of Dielectric Substrate Materials

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Abstract

Abstract—Efficient coupling of energy in and out of a resonator can significantly enhance its performance, particularly when used for dielectric characterization of materials. In this paper, a new microstrip resonator is introduced, which uses fork-shaped feed elements for improving the coupling efficiency. The proposed resonator is studied both experimentally and theoretically with field simulation software. An important advantage of the fork microstrip resonator is attributed to its single-layer geometry and easier manufacturing processes. This resonator is used to characterize three different dielectric materials. Comparison of measurement results from the fork resonator with those obtained with a stripline resonator suggests that the proposed resonator offers a superior performance.