Abstracts

Equivalent lumped elements G, L, C, and unloaded Q's of closed- and open-loop ring resonators

Lung-Hwa Hsieh and Kai Chang. "Equivalent lumped elements G, L, C, and unloaded Q's of closed- and open-loop ring resonators." 2002 Transactions on Microwave Theory and Techniques 50.2 (Feb. 2002 [T-MTT]): 453-460.

A transmission-line model is used to extract the equivalent lumped-element circuits for the closed- and open-loop ring resonators. The unloaded Q values of the ring resonators can be calculated from the equivalent lumped elements G, L, and C. Four different configurations of microstrip ring resonators fabricated on low and high dielectric-constant substrates are used to investigate the lumped elements and unloaded Qs. The largest difference between the measured and calculated unloaded Q is 5.7%, which is due to measurement uncertainties and accuracies of the calculation. These simple expressions introduce an easy method for analyzing ring resonators in filters and provide, for the first time, a means of predicting their unloaded Q.

❑ Return to main document.