Abstracts

Impedance Measurements of Microwave Lumped Elements from 1 to 12 GHz

R.E. DeBrecht. "Impedance Measurements of Microwave Lumped Elements from 1 to 12 GHz." 1972 Transactions on Microwave Theory and Techniques 20.1 (Jan. 1972 [T-MTT] (Special Issue on Automated Microwave Measurements)): 41-48.

The impedance measurement of small, microwave lumped elements of the order of 1 mm has been extended up to 12 GHz by a technique in which the frequency and Q of a resonant transmission line are perturbed by the connection of a lumped element. With the use of low-loss resonant coaxial lines, the technique has been applied to the measurement of lumped-element capacitors ranging from 0.4 to 3.6 pF and inductors ranging from 1.1 to 4.3 nH. Conductor Q values for capacitors as high as 1700 at 1.4 GHz and 100 at 12 GHz have been measured and estimates of dielectric Q values for capacitors of over 5000 have been obtained. Single-turn 1.1-nH inductor Q's of 40 at 1 GHz and 90 at 7 GHz have also been measured. The capacitors and single-turn inductors are found to have constant C and L values up to 12 GHz.

❑ Return to main document.