Abstracts

A physical frequency-dependent compact model for RF integrated inductors

J. Sieiro, J.M. Lopez-Villegas, J. Cabanillas, J.A. Osorio and J. Samitier. "A physical frequency-dependent compact model for RF integrated inductors." 2002 Transactions on Microwave Theory and Techniques 50.1 (Jan. 2002, Part II [T-MTT] (Special Issue on Silicon-Based RF and Microwave Integrated Circuits)): 384-392.

A frequency-dependent compact model for inductors in high ohmic substrates, which is based on an energy point-of-view, is developed. This approach enables the description of the most important coupling phenomena that take place inside the device. Magnetically induced losses are quite accurately calculated and coupling between electric and magnetic fields is given by means of a delay constant. The later coupling phenomenon provides a modified procedure for the computation of the fringing capacitance value, when the self-resonance frequency of the inductor is used as a fitting parameter. The model takes into account the width of every metal strip and the pitch between strips. This enables the description of optimized layout inductors. Data from experiments and electromagnetic simulators are presented to test the accuracy of the model.

❑ Return to main document.