Abstracts

Time-Efficient Modeling of the Effect of Metal Packages on Electrical Circuits

Z.B. Popovic and B.D. Popovic. "Time-Efficient Modeling of the Effect of Metal Packages on Electrical Circuits." 1994 Transactions on Microwave Theory and Techniques 42.9 (Sep. 1994, Part II [T-MTT]): 1820-1826.

In this work, a method for predicting the effect of conductive plates and boxes on electrical circuit behavior is presented. The method uses the Hallen integral equation to determine currents along circuit branches. The effect of metal packages is taken into account with appropriate images of the circuit branches. Using image theory enables time-efficient approximate full-wave analysis. This approach allows the analysis of circuits placed above a single ground plane, in a metal corner, between parallel metal planes, in rectangular metal pipes or in rectangular metal boxes. The circuits can be made of possibly insulated metal wires andlor narrow strips printed on thin dielectric substrates, and can have lumped generators and lumped or distributed impedances. The method is illustrated on several simple circuit examples and the results are compared to measurements and to results obtained using circuit theory.

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