Evaluation of Meshed Reference Planes for High Performance Applications

http://www.firstlight.cn 1999-07-20

The actual generations of integrated circuits are characterized, inter alia, by very high frequencies or very high speeds. The dramatic evolution ofthe semiconductor's technology establishes a greater “pressure” to the design and the manufacturing of the passive interconnection structure from PCB/MCM electronic modules. In these conditions the reference planes (power and ground planes) have a more and more important contribution. The paper intents to present the effect of different configuration reference planes on the characteristics of the high speed/high frequency interconnection lines. The first part deals with modeling and simulation of usual practical interconnection geometries. A computer modeling of meshed structures was realized and Spice models for a good compatibility with circuit simulators were obtained. S-, Y-, Z- parameters and radiation patterns were calculated, too. The second part contains measurements made by a vector network analyzer as regards to different practical configurations manufactured at Technical University of Budapest.

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