Analysis of Crosstalk Reduction Techniques for Multi-conductor Interconnects On Silicon Substrate

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ABSTRACT

Purpose of this study is to examine crosstalk reduction techniques for multi-conductor interconnects on silicon substrate. Modern IC design is more complicate than PCB design. Because there are many interconnections in a small chip area and interconnections generate crosstalk easier for each other. In addition, the lossy nature of silicon substrate makes the crosstalk worse. In recent years, many attentions have been given to the problem of crosstalk of interconnects on silicon substrate. Because the trend towards a higher integrated circuit density and faster signal will cause serious coupling. The crosstalk or coupling is a serious problem for performance. In order to improve the problem, we establish several techniques. In this paper, the crosstalk reduction techniques are investigated by varying the doping concentration of substrate, modifying the distance between interconnects, adding a guard ring between interconnects, and using three shielding methods, groove, package. On the basis of the results and discussion, the performance of the crosstalk reduction techniques can be shown.

Keywords : crosstalk

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