

硅基片上变压器层间串扰与屏蔽优化

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摘 要: 提出了一种基于共面波导传输线栅格屏蔽原理的片上变压器层间串扰屏蔽结构. 通过场路结合、协同仿真的方法比较分析了该结构对片上变压器层间串扰的影响. 结果表明: 该屏蔽结构能有效屏蔽硅基片上变压器层间电磁场的渗透, 对改善片上变压器的高频性能、屏蔽片上变压器的层间串扰效应有较好的效果.

关键词: 硅基片上变压器; 互连线; 串扰效应; 栅格屏蔽

Crosstalk Analysis and Optimization of Metal Layers for On-Chip Transformers in Silicon RFIC

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Abstract: This paper analyzes the on-chip transformer crosstalk effects between the layers, and the extraction of the on-chip transformer parameter and interconnection transmission lines modeling are studied. In order to reduce losses caused by the crosstalk effects, patterned shield structure which based on the principle of coplanar waveguide transmission lines shielding grid is proposed. Finally, the influence of patterned shield structure to on-chip transformer interlayer crosstalk is analyzed by the method of CO simulation. The results show that the shielding structure effectively decouples the interconnect lines of on-chip transformers.

Key words: on-chip transformers; interconnect lines; crosstalk effect; gridded shield

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