Abstracts

Characterization and modeling of on-chip inductor substrate coupling effect (2002 Vol. I [MWSYM])

C.-J. Chao, Shyh-Chyi Wong, Chia-Jen Hsu, Ming-Jer Chen and Len-Yi Leu. "Characterization and modeling of on-chip inductor substrate coupling effect (2002 Vol. I [MWSYM])." 2002 MTT-S International Microwave Symposium Digest 02.1 (2002 Vol. I [MWSYM]): 157-160 vol.1.

The substrate coupling effects of two adjacent coplanar spiral inductors are characterized and modeled. The noise magnitude between two 45 /spl mu/m-away inductors can be reduced by 6.83 dB by using guard-rings surrounding each inductor, and improved by 10.28 dB further by adding a patterned ground polysilicon shield beneath at 3 GHz. Inductors with patterned polysilicon shields show improved quality factor and noise isolation. Moreover, a macro model is presented for modeling quality factor and inductance of on-chip spiral inductors and associated neighboring inductors' coupling noise effect.

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