Abstracts

Fabrication of high-performance on-chip suspended spiral inductors by micromachining and electroless copper plating

H. Jiang, Y. Wang, J.-L.A. Yeh and N.C. Tien. "Fabrication of high-performance on-chip suspended spiral inductors by micromachining and electroless copper plating." 2000 MTT-S International Microwave Symposium Digest 00.1 (2000 Vol. I [MWSYM]): 279-282.

Polysilicon spiral inductors encapsulated with copper (Cu) were suspended over 30-/spl mu/m-deep cavities in the silicon substrate beneath. The metallization process simultaneously coated the inner surfaces of the cavities with Cu to form both good radio-frequency (RF) ground and electromagnetic shield. Quality factor (Q) up to 30 and self-resonance frequency (f/sub res/) higher than 10 GHz were achieved for a 10.4 nH inductor. Simulation showed that the Cu-lined cavities reduced the mutual inductance between two adjacent inductors by a factor of 5, compared with that without the cavities. This proves that good shielding was provided by the cavities.

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