Abstracts

Differentially driven symmetric microstrip inductors

M. Danesh and J.R. Long. "Differentially driven symmetric microstrip inductors." 2002 Transactions on Microwave Theory and Techniques 50.1 (Jan. 2002, Part II [T-MTT] (Special Issue on Silicon-Based RF and Microwave Integrated Circuits)): 332-341.

A differentially excited symmetric inductor that enhances inductor quality (Q) factor on silicon RFICs is presented. Compared with an equivalent single-ended configuration, experimental data demonstrate that the differential inductor offers a 50% greater Q factor and a broader range of operating frequencies. Predictions from full-wave simulations and a physics-based SPICE-compatible model are validated by experimental measurements on an inductor fabricated in a triple-level metal silicon technology. Application of the symmetric inductor to a cross-coupled oscillator improves output voltage swing and phase noise by 75% and 1.8 dB, respectively (for a given power consumption), while chip area is reduced by 35% compared to conventional inductor equivalents.

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