Abstracts

A novel active inductor and its application to inductance-controlled oscillator

Yong-ho Cho, Song-cheol Hong and Young-se Kwon. "A novel active inductor and its application to inductance-controlled oscillator." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part I [T-MTT]): 1208-1213.

This paper describes a novel active inductor using a common-source cascode FET with an inductive feedback. A compact lossy active inductor, which consists of a common-source FET and a feedback resistor, was used as the feedback inductor to achieve high Q-factor and tunability, as well as reduce the chip size. The fabricated active inductor achieved more than 100 Q-factors with the maximum value of 3400 over the frequency range of 200 MHz, in the vicinity of 1.7 GHz. Inductance was tuned from 9.6 to 56 nH at 1.7 GHz by the variation of the feedback resistance of the lossy active inductor. Using this active inductor (as a frequency-selective element in the resonator), a monolithic inductance-controlled FET oscillator was fabricated, which demonstrated an 18% frequency-tuning range from 1.73 to 2.07 GHz, with an output power range from -9.3 to -6.3 dBm.

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