Abstract

The voltage controlled oscillator (VCO) may be considered one of the most important building blocks in modern communication applications such as microprocessor clock generation, wired and wireless communications, system synchronization, and frequency synthesis. The search in the field of design for high performance VCOs has been increasingly more important and becomes an active research area. In the past decade, The Researches on VCOs have been based on the areas of higher frequency, lower phase noise, low power, low operating voltage, and increased tuning range. However many of these objectives can be only achieved at the expense of some other objectives. This thesis analyzes the design of high performance ring VCOs. The beginning of the thesis is reviewing the basic ring VCOs. The different designs are also introduced. Finally, the circuit techniques used in a proposed VCO based on the new technique is designed and simulated in 65nm CMOS SOI process. The results of proposed device are compared and confirmed the usability of the new ring VCO cell topology. Finally, a conclusion of the proposed design of high performance ring VCOs is explained.
Index Terms

Computer Science

Circuits And Systems

Keywords

Phase noise  power  operating voltage  tuning range