This paper describes the design of a 3.4 GHz three stage Ring Voltage Controlled Oscillator (VCO). In order to achieve wide tuning range at gega hertz frequencies a three stage ring oscillator based VCO is designed using differential delay cell. The linearity is achieved over a wide-tuning range from 1.5 GHz to 3.8 GHz while maintain the phase noise -116 dBc/Hz at 3.4GHz. The designed VCO is simulated using Cadence 0.18-µm CMOS process and VCO consumes 8.58 mA current and 15.4mW power from a 1.8V power supply. The designed VCO is generating a frequency of 3.4 GHz over a temperature range from 0o C to 65o C. The VCO has been found to work for all Process (Typical, Slow and Fast corners), Voltage and Temperature (PVT) conditions.

References

Design of a Three Stage Ring VCO in 0.18 µm CMOS under PVT Variations


Index Terms

Computer Science circuits and Systems

Keywords

Delay cell, Ring oscillator, Voltage Controlled Oscillator, Communication systems.