



New Voltage Controlled Oscillator Design

Technology ID

z03117

VCO with High-frequency Performance and Low-power Low-noise

A voltage controlled oscillator (VCO) using capacitive degeneration can overcome limitations of existing topologies. The design is comprised of an inductor capacitor LC tank coupled to a negative resistance cell. The capacitively emitter-degenerated topology is used with a cross-coupled MOS pair as the degeneration cell. The cross-coupled MOS pair contributes additional conductance and results in higher maximum attainable oscillation frequency and better negative resistance characteristics than other topologies at high frequencies. These properties of the VCO, combined with small, effective capacitance, enable high-frequency performance in a low-power, low-noise implementation.

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BENEFITS AND FEATURES:

- Capacitively emitter degenerated topology
- High-frequency performance in a low-power low-noise implementation
- Higher maximum attainable oscillation frequency
- Better negative resistance characteristics
- Overcomes limitations of existing topologies

APPLICATIONS:

- VCO applications
- Digital communications
- High-performance communication systems

Phase of Development - Proof of Concept

Researchers:

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