

Output Voltage Analysis of CMOS Colpitts Oscillator with Short Channel Device

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Abstract : This paper presents the steady-state amplitude analysis of MOS Colpitts oscillator with short channel device. The proposed method is based on a large signal analysis and the nonlinear differential equations that govern the oscillator circuit behaviour. Also, the short channel effects are considered in the proposed analysis and analytical equations for finding the steady-state oscillation amplitude are derived. The output voltage calculated from this analysis is in excellent agreement with simulations for a wide range of circuit parameters.

Keywords : colpitts oscillator, CMOS, electronics, circuits

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