Abstract

The paper aims at designing a universal filter using current mode circuit. The main advantages of current mode circuits over voltage mode circuits are better linearity in performance, higher bandwidth responses, low noise performances. The preferred technology is 32nm FinFET technology since CMOS technology shows short channel effects and DIBL (Drain Induced Bareer Lowering) which hampers the performance of the circuit. As channel length reduces from 45nm CMOS technology to 32nm technology, the FinFET technology shows superior performances. The paper shows all the responses (Low Pass, High Pass, Band Pass and Band Reject) of the Universal Filter. Bias currents are applied to reduce the effects of parasitic capacitances and resistances in the circuit. The circuit uses the MO-CCCDTA as the building block of the filter. The simulation is done on HSPICE software.

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Index Terms

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Keywords

Bandwidth, FinFET, HSPICE, MO-CCCCTA (modified output current controlled current
differencing transconductance amplifier), short channel effects.