New High Performance CMOS Realizations for the Second Generation Current Conveyors

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Abstract

Recently, analog CMOS current-mode circuits have begun to emerge as an important class of circuits with properties that enable them to rival their voltage-mode counterparts in a wide range of applications. The second generation current conveyor CCII is the most versatile building block in current-mode signal processing. The CCII realizations can be classified into two categories: long tail pair based realizations and non-long tail pair based realizations. This classification is an ultimate goal targeted by the thesis. The thesis focuses on the long tail pair based CCII category. Its objective is to make a review on this CCII category and to propose new high performance CCII realizations that belong to the same category. Moreover, a fair comparison criterion is adopted throughout the thesis while designing all the old and new circuits. The first part of the work is a survey on high performance long tail pair based positive CMOS CCII realizations. The second part of the work proposes a new balanced output CMOS CCII. The third part of the work presents new wide band low power positive CMOS current conveyors. The fourth part of the work introduces new high accuracy rail to rail low power high current driving capability positive CMOS current conveyors.

Keywords

CMOS current conveyors, Analog circuits, High performance,