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Realization of current-mode fully integrated full-wave rectifier

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Abstract. In this paper, a new fully integrated high frequency current-mode full-wave rectifier which consists of two complementary MOSFETs without any passive component is presented. The proposed circuit rectifies the input signals without diode, so the output signal confronts zero-crossing distortions because of the diode characteristics have been solved with this rectifier even in high frequencies. The presented circuit has a vastly superior zero crossing performance, good linearity, minimum number of transistors, wide frequency range, and suitable for monolithic integrated implementation. The performances of the proposed circuit are investigated through LTSpice. The circuit exhibits the high frequency operation and has the simplest structure compared to hitherto published rectifiers. Monte-Carlo and Noise analyses have also been performed to show the effectiveness of the proposed circuit.

Keywords

Full-wave rectifier, high frequency, precision rectifier, current-mode, voltage-mode.

1. Introduction

Several full-wave rectifier circuits for different applications have been extensively used such as energy harvesting systems [1–7], biomedical applications [8], biomedical sensors

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