

A CMOS Differential Voltage-to-Frequency Converter with Temperature Drift Compensation

M. R. Valero, S. Celma, B. Calvo, N. Medrano
Group of Electronic Design – I3A, University of Zaragoza, Spain

Abstract

This paper presents a new CMOS differential voltage-to-frequency converter (VFC) which targets front-end sensor interfacing in wireless sensor network applications. The proposed VFC, designed in a low-cost 0.35 μm CMOS technology supplied at 3 V, achieves high performances: power consumption below 0.3 mW, 0 - 2V differential input range operation and nonlinearity error less than 0.3 %. Thanks to the introduction of a very simple control circuit, linearity is preserved over variations of temperature: the error is less than 2.3 % over all the frequency range for a temperature range from -40°C to +120°C.