

Design of Two Second-Order Polyphase Biquads using AO-RC Implementation

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Abstract

The design of two AO-RC polyphase filters, used in the ISM band, based on the standard and a modified version of the Tow-Thomas biquad topology is presented, the latter is implemented by using two lossy integrators. Following a thorough analytical analysis, design strategies are devised for both biquads. Based on these design strategies both filters were designed for an IF frequency of 1MHz and a cut-off frequency of 686 kHz. Next, the operational amplifier specifications are obtained through an iterative process, by using parameterized OA models, considering the minimization of the power consumption. To validate the proposed design both biquads were implemented by using a standard 180nm CMOS process, and simulations were carried out using Cadence ADE L. Based on the simulations results a comparison is made between the two biquad structures.

Biography

Câmpanu Iulian is a second year master student at the Faculty of ETTI in Cluj-Napoca. His interests are in electronic circuits.

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