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| Thesis Title | BiCMOS Negative Impedance Converter and Its Applications | |
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Abstract

A novel BiCMOS Current Inversion Negative Impedance Converter (NIC) is proposed. It is shown by both simulation and experiment that the proposed circuit behaves satisfactorily as a unity NIC covering the bandwidth from dc up to as high as 800 [kHz]. The dc stability when directly coupling 2 NIC's is also investigated. It is shown that the dc stability can easily be obtained by appropriately adjusting some parameters of the circuit. In filter application, NIC's are used to simulate a 5th order Chebyshev lowpass filter with 200 [kHz] cutoff frequency. The effect of changes in resistance values on the filter characteristics are also studied. The experimental results are satisfactory and agree with the theoretical prediction. This proposed NIC has simple structure, thus is suitable for integration.