

First and Second Order Gm-C Filters

Authors : Rana Mahmoud

Abstract : This study represents a systematic study of the Operational Transconductance Amplifiers capacitance (OTA-C) filters or as it is often called Gm-C filters. OTA-C filters have been paid a great attention for the last decades. As Gm-C filters operate in an open loop topology, this makes them flexible to perform in low and high frequencies. As such, Gm-C filters can be used in various wireless communication applications. Another property of Gm-C filters is its electronic tunability, thus different filter frequency characteristics can be obtained without changing the inductance and resistance values. This can be achieved by an OTA (Operational Transconductance Amplifier) and a capacitor. By tuning the OTA transconductance, the cut-off frequency will be tuned and different frequency responses are achieved. Different high-order analog filters can be design using Gm-C filters including low pass, high pass and band pass filters. 1st and 2nd order low pass, high pass and band pass filters are presented in this paper.

Keywords : Gm-C, filters, low-pass, high-pass, band-pass

Conference Title : ICECS 2023 : International Conference on Engineering and Computer Science

Conference Location : New York, United States

Conference Dates : April 24-25, 2023