عنوان مقاله:

Nonlinear Analysis of Negative non-Foster Capacitance in the Time Domain, Based on Dynamic FET Model

محل انتشار:

هفتمین کنگره ملی تازه یافته های مهندسی برق ایران (سال: 1399)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Hamed Khoshniyat - *Department of Electrical Engineering, Arak University of Technology, Arak, Iran*

Abdolali Abdipour - *Department of Electrical Engineering, Amirkabir University of Technology, Tehran, Iran*

Gholamreza Moradi - *Department of Electrical Engineering, Amirkabir University of Technology, Tehran, Iran*

خلاصه مقاله:

In this paper, the nonlinear analysis of the negative non-Foster capacitance is studied in the time domain and the transient response of the circuit can be used to study the stability of the circuit. For the analysis of the circuit performance, the linear time-dependent modeling approach is used. This method is based on determination of the circuit parameters at each step according to parameters of the previous steps, bias voltages and the input signal. By considering the effects of parasitic capacitors at the high frequency with applying the dynamic nonlinear model of FETs, the performance of non-foster capacitance are studied in the time domain. Results of the proposed method for analysis of non-Foster capacitor are compared with those of nonlinear analysis using commercial software which shows a good agreement together and the proposed method is validated.

کلمات کلیدی:

Non-Foster elements, Negative impedance converter (NIC), Nonlinear model of negative capacitor , Dynamic FET Model.