

عنوان مقاله:

Design of a low power high speed F_2 compressor using CNTFET 32nm technology for parallel multipliers

محل انتشار:

مجله بین المللی ابعاد نانو، دوره 10، شماره 1 (سال: 1398)

تعداد صفحات اصل مقاله: 11

نویسندگان:

.Ali Rahnamaei - Department of Electrical Engineering, Rasht Branch, Islamic Azad University, Rasht, Iran

Gholamreza Zare Fatin - Department of Electrical and Computer Engineering, University of Mohaghegh Ardabili,
Ardabil ۵۶۱۹۹-۱۱۳۶۷, Iran

.Abdollah Eskandarian - Department of Electrical Engineering, Rasht Branch, Islamic Azad University, Rasht, Iran

خلاصه مقاله:

In this article a low power and low latency F_2 compressor has been presented. By using modified truth table and Pass Transistor Logic (PTL) a novel structure has been proposed which outperforms previous designs from the frequency of operation view point. The proposed design method has reduced the total transistor count considerably which will lead to reduced power consumption and smaller active area in the final realized circuit. Comparison with previous works depicts that the proposed structure has the lowest number of transistor among them. The proposed design has been designed and simulated in Carbon Nanotube Field-Effect Transistor (CNTFET) technology having 32nm channel dimension. The comparison with the best reported recent designs demonstrates the superiority of the proposed work; these reported designs in literature were simulated here in the same settings and process to perform a fair comparison. In addition, the Complementary Metal-Oxide-Semiconductor (CMOS) 32nm standard process has also been employed to realize the proposed circuit and to do the comparison between CMOS and CNTFET technologies which illustrates the advantage of CNTFET over standard CMOS processes. The transistor level delay for the critical path of the proposed design is equal to ۴ transistors which is equal to the best reported work in the literature; however in the proposed work here the total number of transistors is reduced to ۵۸ which according to the authors knowledge is the lowest num reported for a F_2 compressor block in the papers

کلمات کلیدی:

Carbon Nanotube, CNTFET, High speed, Low power, Parallel multiplier, F_2 compressor

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1460443>

