URN etd-0407109-183709-683
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Statistics This thesis had been viewed 48 times. Download 0 times.
Department
Year 2007
Semester 2
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title New Low Power Compressor Architecture Design Implementation
Date of Defense 0000-00-00
Page Count 73

Keyword
Low Power
3-2 Compressor
4-2 Compressor
5-2 Compressor

Abstract
Recently, many high speed and low power 3-2, 4-2, or 5-2 compressors are proposed. Those circuits have improvement in delay and power consumption, and can operate in different voltage supplies. Thus, the proposed designs are better than the traditional compressor design. Although traditional compressor has many advantages, it requires more transistors which makes it occupies more area. If we can reduce the amount of transistor counts while maintaining it correct behavior, we will greatly improve the performance of the traditional compressor.
In this paper, we propose a novel architecture of low power 3-2 compressor. The proposed design improves the disadvantage of the traditional 3-2 compressor. In addition, we have also realize a low power 63-6 compressor using the proposed 3-2 compressor. Moreover, a novel low power 4-2 compressor as well as a novel low power 5-2 compressor are also proposed. The proposed designs are capability to improve fanout and reduce transistor counts. In short, it will reduce power consumption.
The proposed designs are realized using TSMC 0.18 um 1P6M CMOS process. The voltage supply is 1.8 V. The simulation tool used is HSPICE. According to our comparison, the proposed designs possess the advantages of lower power consumption and lower power-delay product.
Advisory Committee Po-Ming Lee - advisor

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Date of Submission 2008-07-14