High-Speed Self-Timed Carry-Skip Adder

Amin, A.; Dept. of Comput. Eng., King Fahd Univ. of Pet. & Miner., Dhahran;
Circuits, Devices and Systems, IEE Proceedings -; Publication Date: Dec.2006; Vol: 153, Issue: 6
King Fahd University of Petroleum & Minerals

http://www.kfupm.edu.sa

Summary

An efficient self-timed carry-skip adder with low area overhead and fast operation is proposed. The adder combines delay-insensitive and bounded delay completion signal detection techniques to define a novel, reliable, area-efficient and high-speed completion-detection circuit. The circuit employs double-rail encoded carry signals together with process-tracking delay circuit elements to efficiently produce a final completion signal of tight acknowledge slack time under different operating conditions. In addition the proposed adder employs carry-skip speed-up circuitry resulting in a novel self-timed carry-skip adder that is quite efficient in terms of both speed and area.

For pre-prints please write to: abstracts@kfupm.edu.sa