International J. of Engg. Research & Indu. Appls. (IJERIA).
ISSN 0974-1518, Vol.7, No. II (May 2014), pp. 99-107

QUANTUM DOT CELLULAR AUTOMATA-THE FUTURE PROMINENCE IN ENERGY SAVING

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Abstract

The Current CMOS-based architecture is on the threshold of reaching the limit of feature size reduction. The high power consumption of the traditional CMOS architecture also leads to minimizing the energy-efficiency. The alternatives to conventional CMOS technology, for attaining high computational power and compact design density, are therefore being investigated. Quantum-dot Cellular Automata (QCA) is a novel computing mechanism that can represent binary information based on spatial distribution of electron charge configuration in chemical molecules. . A quantum-dot cellular automaton (QCA) is a new nanotechnology that can help us to reach low-power consumption, high device density, and high clock frequency. QCA size is smaller than CMOS it can, even be implemented in molecule or atom size.

Keywords : CMOS, QCA, Gates, device density, power gain