Abstract

Reversible logic is one of the flourishing importance to many futuristic technologies. A reversible circuit maps each input vector into a unique output vector. There should not be any information loss in the circuit, because it is proved that each irreversible bit operation dissipate kTln2 amount of energy, but there are so many fields such as cryptography, optical computing, DNA computing etc., where such kind of information loss augments the heat dissipation. As the circuits are getting more compact, soon a limitation to Moore’s Law will be reached hence further no more transistors can be mounted on a single chip. Therefore the next era of technology is transistor less circuit, in which the same operations which are performed now using transistors will be processed at atomic or molecular level using transistor less technique i.e. Quantum Dot Cellular Automata. A novel Reversible Gate RSG is proposed which is designed using QCA. RSG gate outperforms existing reversible gates in terms of garbage outputs and multi functionality.

References

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Design of a Novel Reversible Arithmetic Circuit using QCA

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Index Terms

Computer Science

Intregrated Circuit
Keywords
RSG  QCA  Quantum Cost  Garbage Output  Multifunctional  HA  HS.