

A Conditional Isolation Technique for Low-Energy and High-Performance Wide
Domino Gates

Lin, How-Rern; Chiu, Wei-Hao; Wu, Tsung-Yi

Abstract

A new conditional isolation technique (CI-Domino) in domino logic is proposed for wide domino gates. This technique can not only reduce the subthreshold and gate oxide leakage currents simultaneously without sacrificing circuit performance, but also it can be utilized to speed up the evaluation time of domino gate. Simulations on high fan-in domino OR gates with 0.18 μ m process technology show that the proposed technique achieves reduction on total static power by 36%, dynamic power by 49.14%, and delay time by 60.27% compared to the conventional domino gate. Meanwhile, the proposed technique also gains about 48.14% improvement on leakage tolerance.

Key words : Leakage power; Leakage tolerance; High performance; Domino logic