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论文

具有预计算功能的新型绝热数值比较器设计

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摘要
该文通过对钟控传输门绝热逻辑(Clocked Transmission Gate Adiabatic Logic，CTGAL)电路和数值比较器电路工作原理及结构的研究，提出了一种基于CTGAL电路的具有预计算功能的新型绝热数值比较器设计方案。该方案具有冗余抑制作用，将其与利用PAL-2N电路设计的低功耗绝热数值比较器相比，功耗节省平均约60%。PSPCIE模拟结果表明，此数值比较器逻辑功能正确，低功耗特性明显。

关键词 CTGAL电路 数值比较器 低功耗 电路设计

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Design of New Adiabatic Digital Comparator with Pre-Computational Function

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Abstract
Through the study of the working principle and structure of Clocked Transmission Gate Adiabatic Logic (CTGAL) and digital comparator, a new design scheme of digital comparator which has the pre-computational function is proposed based on CTGAL. The scheme has the redundancy- restraining function, and it can attain energy saving of about 60% compared to the digital comparator based on PAL-2N. The PSPICE simulation results indicate that this digital comparator has correct logic function and the character of clearly low power.

Key words CTGAL circuit Digital comparator Low-power Circuit design

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