

Performance Analysis of Differential Amplifiers Using Cadence with GPDK45, GPDK90, and GPDK180

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Abstract:

This paper presents a comprehensive analysis of differential amplifier circuits designed using three process technologies: GPDK45, GPDK90, and GPDK180. Utilizing Cadence design and simulation tools, we perform detailed simulations to evaluate and compare key performance parameters of these architectures. The analysis focuses on critical metrics such as propagation delay, gain, power consumption, and bandwidth, which play a pivotal role in determining the overall efficiency and suitability of differential amplifiers for various applications. The simulation results highlight the impact of technology scaling on the performance characteristics, offering insights into trade-offs and optimization strategies. By systematically comparing the outputs across these process nodes, the study provides valuable guidelines for the selection of process technology based on specific design requirements and application domains.

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