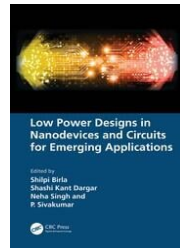


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Chapter

## Low power designs for enhanced CMOS performance

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## ABSTRACT

This chapter focuses on different low-power CMOS circuit techniques that can be generally applied to almost any kind of digital circuits. First, it gives the basic understanding of the sources of power dissipation. Second, the fundamentals of different static and dynamic logic techniques are discussed. As dynamic power dissipation has a quadratic relation with the supply voltage, it proves to be the dominant component and is the major concern presented here. The impact of voltage scaling and its effects are discussed in detail. Various threshold voltage control techniques such as MTCMOS, VTCMOS, DTCMOS and Dual- $V_{th}$  CMOS in order to mitigate the problems caused by reducing the voltage, subthreshold leakage current, and many others give a fundamental understanding. Finally, a comparative analysis of different domino logics is presented.

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