Abstract

With the advent of the integrated circuits, greater emphasis was given on performance and miniaturization. But with the increasing prominence of portable and battery operated appliances the key factor that requires attention is power consumption. The feature size is shrinking due to the advancement in fabrication technology which causes integration of more transistors in the integrated circuit. As a result, the magnitude of power per unit area is growing and the accompanying problem of heat removal and cooling is worsening. To maintain the chip temperature at an acceptable level the dissipated heat must be removed effectively, the cost of heat removal and cooling becomes a significant factor in these circuits. The reliability of the
chip will be greatly degraded with high power dissipation due to silicon failure mechanism such as electro migration. The linear scaling of supply voltage with the features size was started from half-micron technology. But the power supply scaling affects the speed of the circuit. The need of the time is to put efforts in designing low power and high speed circuits. In this paper, we investigate and analyse the causes and solutions of power dissipation and delay in different topologies.

References


**Index Terms**

Computer Science  
Circuits And Systems

**Keywords**

VLSI  
Low Power Techniques  
Power Estimation