# 30

# Conclusions

Power consumption can be reduced by applying a multi-voltage scheme, while enhancing the overall performance of an integrated circuit. Providing a lower voltage for the non-critical data paths can save power while maintaining the speed of an integrated circuit. Tradeoffs among area, power, and design complexity are critical in multi-voltage systems. The power savings can be enhanced by simultaneously utilizing devices with different threshold voltages. Design complexity is increasing since multiple networks are required to support different power supply voltages.

The placement of the decoupling capacitors is an important factor in multi-voltage systems. The placement and magnitude of the decoupling capacitors need to be chosen carefully due to the effective series resistance and inductance of the decoupling capacitors. A significant decrease in noise is shown for multi-voltage networks with decoupling capacitors.

Three primary components need to be considered when designing a multi-voltage system: (1) the voltage converters, (2) the multiple power supply networks, and (3) placement of the decoupling capacitors. With the introduction of multiple power supply voltages, the design complexity increases; however, the power consumption can be significantly reduced.

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