Simulation and Analysis of Power Integrity on Print Circuit Boards

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ABSTRACT

As the clock rate of digital system increase rapidly, it becomes more and more difficult to maintain power integrity for power distribution system. In order to suppress the voltage fluctuation between power and ground planes, input impedance for all of the switching pins has to be maintained at low value. Moreover, the power and ground planes of printed circuit board (PCB) form a two dimensional resonator. Therefore, decoupling capacitors are used to suppress resonant occurred at low frequency and to reduce the input impedance at the pins of critical circuit. This can be proof by both simulation done by Sigrity PowerSI and experiment by network analyzer Ailent E5071A. Both simulation and experiment results show the consistency and prove that the decoupling capacitors do improve the power integrity on power distribution system.

Keywords : power distribution system ; Sigrity PowerSI ; decoupling capacitor ; power integrity

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