SOI Technology and Tools

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ABSTRACT

SOI represents a technology shift comparable in impact to the shift from NMOS to CMOS. It has impacts on many aspects of modeling, simulation and analysis, and presents some unique challenges due to the presence of a number of electrical phenomena unique to SOI.

In this tutorial, we will review SOI technology, touching specifically on devices and models, as well as the impact of the floating body and parasitic bipolar effects. We show examples of the impact of these electrical phenomena on circuit behavior and balance that against existing sources of variation such as power supply variations, signal-to-signal coupling and processing fluctuations. We will then show the impact of these phenomena on relevant areas of ECADD such as circuit simulation, timing (or fast circuit) simulation, static timing analysis, power and thermal estimation, synthesis/technology mapping and physical design.