3D Integration for Digital and Imagers Circuits: Opportunities and Challenges

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Abstract. To cope with the market requirements of more functionalities and performances, while keeping reasonable power consumption, the microelectronic industry has always extensively relied on 2D technology scaling. However, with the technical and economic challenges increasing dramatically with the very advanced nodes, 3D integration is now recognized as a very attractive alternative solution to sustain increased system integration. The key drivers towards 3D integration will be first introduced in this talk. Examples of the various 3D process, their associated technological challenges and limitations will be given. At this stage, 3D design rules and 3D specific CAD tools (industrial or at the research level) will be presented and discussed. Then, examples of 3D IPs or circuits will be detailed. Finally, a perspective about another type of 3D integration (stacking transistors instead of dies or wafers) will conclude this talk.

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