

75-word Abstract

The Umbrella Cell: A Logic-Process-Compatible 2T Cell for SOC Applications

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We propose the Umbrella Cell, a logic-process-compatible cell. The cell has two logic transistors and a planar MIM capacitor placed on a Cu wire above the transistors to form an umbrella-like structure. This requires one additional photo mask. Its area is $26 F^2$, approximately 60% smaller than a 6T cell. Careful bias design and a sub-1V sensing scheme allow the use of thin-oxide logic transistors as well as operation at a bit-line voltage of 0.72-V.