50nm - Gate All Around (GAA) - Silicon On Nothing (SON) - Devices: A Simple Way to Co-integration of GAA Transistors within bulk MOSFET process

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Abstract

For the first time, both GAA and bulk devices were shown operational on the same chip. Not all issues have been solved yet (gate materials, R_{access}) but the first-try results are very encouraging: Ion=170µA/µm @1.2V (Tox=20Å), 10mV of DIBL compared with 600mV on bulk devices. Calibrating 2D simulator on this data, the performance of GAA was estimated to 1500µA/µm @1V (Tox=20Å), once having corrected for the R_{access} (~3000Ω) that was due to non-optimal mask layout in this first device realization.