Leveraging FDSOI for spin qubits

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In the perspective of large scale quantum computer, the co-integration of qubits and control electronics is an essential asset. FD SOI CMOS technology is demonstrated as a promising platform to co-integrate hole and electron spin qubits with cryo-electronics. We propose a standard cell for two-qubit gates on commercial 22FDX® and show double quantum dot features. Finally, we demonstrate hole and electron qubits on the same FDSOI technology state-of-the-art manipulation speed and coherence time. We measured the dynamics of two-qubit gate at 80nm pitch. For cryo-electronics, we have evaluated the performance of analog and digital devices in the perspective of designing low temperature IP blocks and demonstrated co-integration of read out and quantum devices.