

Multi-Level Vertical Channel SONOS Nonvolatile Memory on SOI

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Abstract

A new VC-SONOS (Vertical Channel SONOS) memory cell structure is proposed and fabricated using 0.12 μm SOI standard logic process for the next generation flash memory cell with ultra high density. This fabricated VC-SONOS memory cell which has 57nm wide vertical channels and 15 Å tunnel gate oxide on vertical active shows not only scaling breakthrough beyond 0.10 μm flash memory but also multi-level operation with negative programming voltages.