Highly Manufacturable SONOS Non-Volatile Memory for the Embedded SoC Solution

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A new Local SONOS structure has been proposed for an embedded NVM cell in 0.13um standard CMOS logic process. The localized storage silicon nitride layer of Local SONOS cell provides the essential properties for the embedded NVM such as the complete erase, low program current, and high on cell current from the low threshold voltage. The entire embedded memory solution has been realized with 0.276 um^2 Local SONOS NVM cell, which has 20us program and 2 ms erase speed under 5.5V bias condition, and good reliability without the special algorithms and cell array modifications.