PROCESS TO MANUFACTURE NONVOLATILE MOS MEMORY DEVICE

ABSTRACT

Devices with embedded silicon or germanium nanocrystals, fabricated using ion implantation, exhibit superior data-retention characteristics relative to conventional floating-gate devices. However, the prior art use of ion implantation for their manufacture introduces several problems. These have been overcome by initial use of rapid thermal oxidation to grow a high quality layer of thin tunnel oxide. Chemical vapor deposition is then used to deposit a germanium doped oxide layer. A capping oxide is then deposited following which the structure is rapid thermally annealed to synthesize the germanium nanocrystals.

Fig. 5