Title (en)

SILICON NANOPARTICLE FIELD EFFECT TRANSISTOR AND TRANSISTOR MEMORY DEVICE

Title (de)

SILIZIUM-NANOTEILCHEN-FELDEFFEKTTRANSISTOR UND TRANSISTORSPEICHERELEMENT

Title (fr)

TRANSISTOR A EFFET DE CHAMP COMPRENANT DES NANOPARTICULES DE SILICIUM, ET DISPOSITIF DE MEMOIRE A TRANSISTOR

Publication

EP 1252658 A4 20080213 (EN)

Application

EP 01912688 A 20010202

Priority

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Abstract (en)

[origin: WO0157927A1] A silicon nanoparticle (18) transistor (30, 32, 34) and transistor memory device. The transistor of the invention has silicon nanoparticles (18), dimensioned on the order of 1nm, in a gate area (34) of a field effect transistor (30, 32, 34). The resulting transistor is a transistor in which single electron flow controls operation of the transistor. Room temperature operation is possible with the novel transistor structure by radiation assistance, with radiation being directed toward the silicon nanoparticles to create necessary holes in the quantum structure for the flow of an electron. The transistor of the invention also forms the basis for a memory device. The device is a flash memory device which will store electrical charge instead of magnetic effects.

IPC 8 full level

H01L 29/06 (2006.01); **H01L 29/76** (2006.01); **H01L 21/8247** (2006.01); **H01L 27/10** (2006.01); **H01L 27/115** (2006.01); **H01L 27/15** (2006.01); **H01L 29/423** (2006.01); **H01L 29/66** (2006.01); **H01L 29/78** (2006.01); **H01L 29/788** (2006.01); **H01L 29/792** (2006.01)

CPC (source: EP)

B82Y 10/00 (2013.01); **H01L 29/42332** (2013.01); **H01L 29/7883** (2013.01); **H01L 29/7888** (2013.01)

Citation (search report)

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- See references of WO 0157927A1

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