

Title (en)

CAPACITIVE-COUPLED NON-VOLATILE THIN-FILM TRANSISTOR STRINGS IN THREE DIMENSIONAL ARRAYS

Title (de)

KAPAZITIVE GEKOPPELTE NICHTFLÜCHTIGE DÜNNFILM-TRANSISTORSTRÄNGE IN DREIDIMENSIONALEN ARRAYS

Title (fr)

CHAÎNES DE TRANSISTORS À COUCHES MINCES NON-VOLATILES À COUPLAGE CAPACITIF DANS DES RÉSEAUX TRIDIMENSIONNELS

Publication

**EP 3504728 A4 20200909 (EN)**

Application

**EP 17844550 A 20170825**

Priority

- US 201615248420 A 20160826
- US 2017048768 W 20170825

Abstract (en)

[origin: WO2018039654A1] Multi-gate NOR flash thin-film transistor (TFT) string arrays are organized as three dimensional stacks of active strips. Each active strip includes a shared source sublayer and a shared drain sublayer that is connected to substrate circuits. Data storage in the active strip is provided by charge-storage elements between the active strip and a multiplicity of control gates provided by adjacent local word-lines. The parasitic capacitance of each active strip is used to eliminate hard-wire ground connection to the shared source making it a semi-floating, or virtual source. Pre-charge voltages temporarily supplied from the substrate through a single port per active strip provide the appropriate voltages on the source and drain required during read, program, program-inhibit and erase operations. TFTs on multiple active strips can be pre-charged separately and then read, programmed or erased together in a massively parallel operation.

IPC 8 full level

**H01L 27/11578** (2017.01); **G11C 11/34** (2006.01); **G11C 16/04** (2006.01); **G11C 16/06** (2006.01); **H01L 27/11568** (2017.01); **H01L 29/792** (2006.01)

CPC (source: EP KR)

**G11C 16/08** (2013.01 - KR); **G11C 16/10** (2013.01 - KR); **H01L 21/28** (2013.01 - KR); **H01L 29/78618** (2013.01 - KR); **H01L 29/78696** (2013.01 - KR); **H10B 41/20** (2023.02 - KR); **H10B 41/30** (2023.02 - KR); **H10B 43/20** (2023.02 - EP KR); **H10B 43/30** (2023.02 - EP KR); **H01L 2924/1443** (2013.01 - KR)

Citation (search report)

- [I] US 2016086970 A1 20160324 - PENG HAIBING [US]
- [I] KR 20120085591 A 20120801 - KIM JIN SEON [KR]
- See also references of WO 2018039654A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**WO 2018039654 A1 20180301**; **WO 2018039654 A4 20180419**; CN 109863575 A 20190607; CN 109863575 B 20240130; EP 3504728 A1 20190703; EP 3504728 A4 20200909; JP 2019526934 A 20190919; JP 2022123017 A 20220823; JP 7089505 B2 20220622; JP 7379593 B2 20231114; KR 102513489 B1 20230323; KR 102626193 B1 20240118; KR 20190057065 A 20190527; KR 20230042417 A 20230328

DOCDB simple family (application)

**US 2017048768 W 20170825**; CN 201780065559 A 20170825; EP 17844550 A 20170825; JP 2019511578 A 20170825; JP 2022094508 A 20220610; KR 20197008535 A 20170825; KR 20237009566 A 20170825