

Title (en)
LOW DAMAGE SELF-ALIGNED AMPHOTERIC FINFET TIP DOPING

Title (de)
DOTIERUNG EINER SELBSTAUSGERICHTETEN AMPHOTEREN FINFET-SPITZE MIT GERINGER SCHÄDIGUNG

Title (fr)
DOPAGE AMPHOTÈRE AUTO-ALIGNÉ À FAIBLE ENDOMMAGEMENT DE POINTE DE FINFET

Publication
EP 3314667 A1 20180502 (EN)

Application
EP 15897305 A 20150627

Priority
US 2015038197 W 20150627

Abstract (en)
[origin: WO2017003414A1] Monolithic finFETs including a majority carrier channel in a first III-V compound semiconductor material disposed on a second III-V compound semiconductor. While a mask, such as a sacrificial gate stack, is covering the channel region, a source of an amphoteric dopant is deposited over exposed fin sidewalls and diffused into the first III-V compound semiconductor material. The amphoteric dopant preferentially activates as a donor within the first III-V material and an acceptor with the second III-V material, providing transistor tip doping with a p-n junction between the first and second III-V materials. A lateral spacer is deposited to cover the tip portion of the fin. Source/drain regions in regions of the fin not covered by the mask or spacer electrically couple to the channel through the tip region. The channel mask is replaced with a gate stack.

IPC 8 full level
H01L 29/78 (2006.01); **H01L 21/336** (2006.01); **H01L 21/8238** (2006.01)

CPC (source: EP KR)
H01L 21/2258 (2013.01 - EP); **H01L 21/8238** (2013.01 - KR); **H01L 21/8258** (2013.01 - EP KR); **H01L 27/0924** (2013.01 - EP KR); **H01L 29/1054** (2013.01 - EP); **H01L 29/66522** (2013.01 - EP); **H01L 29/66545** (2013.01 - EP); **H01L 29/66795** (2013.01 - KR); **H01L 29/66803** (2013.01 - EP); **H01L 29/785** (2013.01 - EP KR); **H01L 29/205** (2013.01 - EP)

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

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
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