

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 A4 20190227 (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)

Citation (search report)
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• [XI] US 2014264446 A1 20140918 - BASU ANIRBAN [US], et al
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• See references of WO 2017003414A1

Designated contracting state (EPC)
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DOCDB simple family (publication)
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