

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 November 2007 (15.11.2007)

PCT

(10) International Publication Number
WO 2007/130240 A1

(51) International Patent Classification:

H01L 29/04 (2006.01) *H01L 21/336* (2006.01)
H01L 29/78 (2006.01) *H01L 29/24* (2006.01)
H01L 21/8238 (2006.01) *H01L 29/08* (2006.01)

(21) International Application Number:

PCT/US2007/007843

(22) International Filing Date: 29 March 2007 (29.03.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

102006019835.2 28 April 2006 (28.04.2006) DE
11/567,268 6 December 2006 (06.12.2006) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

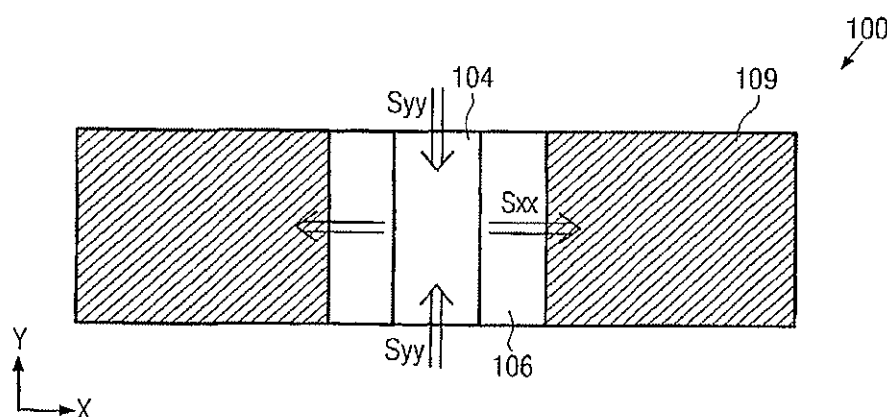
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SI, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A TRANSISTOR HAVING A CHANNEL WITH TENSILE STRAIN AND ORIENTED ALONG A CRYSTALLOGRAPHIC ORIENTATION WITH INCREASED CHARGE CARRIER MOBILITY



(57) Abstract: By appropriately orienting the channel length direction with respect to the crystallographic characteristics of a silicon layer (102), the stress-inducing effects of strained silicon/carbon material (109) may be significantly enhanced compared to conventional techniques. In one illustrative embodiment, the channel (103) may be oriented along the $\langle 100 \rangle$ direction for a (100) surface orientation, thereby providing an electron mobility increase of approximately a factor of four.