

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 July 2008 (17.07.2008)

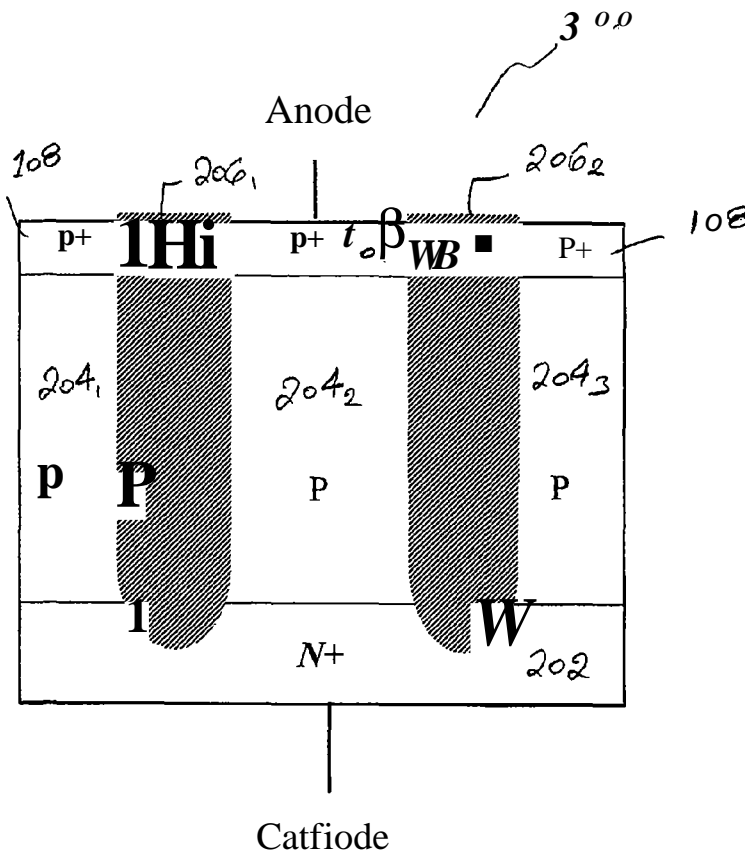
PCT

(10) International Publication Number
WO 2008/086366 A3

- (51) **International Patent Classification:**
HOIL 29/76 (2006.01)
- (21) **International Application Number:**
PCT/US2008/050532
- (22) **International Filing Date:** 8 January 2008 (08.01.2008)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
60/879,434 9 January 2007 (09.01.2007) US
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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FT, 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, ME, 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, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,

[Continued on next page]

(54) **Title:** SEMICONDUCTOR DEVICE



(57) **Abstract:** A semiconductor structure includes a number of semiconductor regions, a pair of dielectric regions and a pair of terminals. The first and second regions of the structure are respectively coupled to the first and second terminals. The third region of the structure is disposed between the first and second regions. The dielectric regions extend into the third region. A concentration of doping impurities present in the third region and a distance between the dielectric regions define an electrical characteristic of the structure. The electrical characteristic of the structure is independent of the width of the dielectric regions width. The first and second regions are of opposite conductivity types. The structure optionally includes a fourth region that extends into the third region, and surrounds a portion of the pair of dielectric regions. The interface region between the dielectric regions and the fourth region includes intentionally introduced charges.

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NO, 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*

(88) Date of publication of the international search report:

18 September 2008

INTERNATIONAL SEARCH REPORT

International application No
PCT/US 08/50532

A CLASSIFICATION OF SUBJECT MATTER IPC(8) - H01L 29/76 (2008 04) USPC - 257/342, 257/335, 257/506 According to International Patent Classification (IPC) or to both national classification and IPC		
B FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) USPC 257/342, 257/335, 257/506 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC 257/342, 257/335, 257/506 (text delimited) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWest (USPT, PGPB, EPAB, JPAB), Google Scholar, DialogWeb INSPEC Search Terms Used trench, dielectric, charge, balance, superjunction, diode, pillar, terminal, anode, aluminum, fluoride, doping, composite, layer, drift, multiple		
C DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 6,184,555 B1 (TIHANYI et al) 06 February 2001 (06 02 2001), entire document especially FIGs 1-8, Col 1 ln 32-35, Col 3 ln 5-18, Col 4 ln 37-45, Col 5 ln 17-27, Col 6 ln 17-25	1, 4-6, 8-14, 16-25, 28-30, 32-38, 40-49, 51-53, 55-61, 63-68
Y		2, 3, 7, 15, 26-27, 31, 39, 50, 54, 62, 69-71
Y	US 6,608,350 B2 (KINZER et al) 19 August 2003 (19 08 2003), FIG 1, Col 2 ln 15-17, Col 5 ln 14-18	2, 3, 26, 27, 50
Y	US 6,201,291 B1 (KORDIC et al) 13 March 2001 (13 03 2001), Col 4 ln 3-10	7, 31, 54
Y	US 6,724,042 B2 (Onishi et al) 20 April 2004 (20 04 2004), FIG 14	15, 39, 62, 69-71
A ₁ P	US 2007/0158740 A1 (YOSHIKAWA et al) 12 July 2007 (12 07 2007), FIG 13	15, 39, 62, 69-71
A	US 6,812,525 B2 (BUL et al) 02 November 2004 (02 11 2004), entire document	1-71
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Date of the actual completion of the international search 24 June 2008 (24 06 2008)		Date of mailing of the international search report 02 JUL 2008
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