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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, BN, BR, BW, BY,

BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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**Published:**

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

- (88) Date of publication of the international search report:  
27 February 2014



WO 2013/183266 A3

(54) Title: SEMICONDUCTOR DEVICE AND SENSING SYSTEM

(57) Abstract: A semiconductor device includes: a first substrate having a sensing portion detecting predetermined information; a second substrate having a first processing portion processing data supplied thereto from the sensing portion; and a third substrate having a second processing portion processing data supplied thereto either from the first substrate or from the second substrate.

INTERNATIONAL SEARCH REPORT

International application No  
PCT/JP2013/003440

A. CLASSIFICATION OF SUBJECT MATTER  
INV. H04N5/335  
ADD.  
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)  
H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011/142581 A2 (HANA MICRON CO LTD [KR]; JUNG YONG HA [KR]; KIM DAE JIN [KR]) 17 November 2011 (2011-11-17)	1-3,17
Y	the whole document	4,6-8,18
X,P	& US 2013/127070 A1 (JUNG YONG HA [KR] ET AL) 23 May 2013 (2013-05-23) paragraphs [0035], [0037]; figure 1a	1-4
Y	Atmel: "ATmega8(L) Preliminary Summary", 31 December 2002 (2002-12-31), XP002713043, Retrieved from the Internet: URL:www.promelec.ru/pdf/atmega8.pdf [retrieved on 2013-09-17] page 1	4,6-8,18

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search <b>24 September 2013</b>	Date of mailing of the international search report <b>08/01/2014</b>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer <b>Zakharian, Andre</b>
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/JP2013/003440

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 197 32 755 A1 (SIKA WERKE GMBH [DE]) 5 February 1998 (1998-02-05) abstract; figure 6 -----	1-4,17
A	US 2009/001612 A1 (SONG SUNGMIN [KR] ET AL) 1 January 2009 (2009-01-01) paragraphs [0066] - [0070]; figure 8 -----	1-4,17
A	RU 2 190 251 C2 (LEONT EV VLADIMIR VASIL EVICH; GRECHUSHKIN IGOR VASIL EVICH; KOVALEV A) 27 September 2002 (2002-09-27) abstract -----	1-4,17

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/JP2013/003440

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-4, 6-8, 17, 18

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/JP2013/003440

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011142581	A2	17-11-2011	
		KR 20110124065 A	16-11-2011
		US 2013127070 A1	23-05-2013
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US 2009001612	A1	01-01-2009	
		KR 20080114622 A	31-12-2008
		TW 200905856 A	01-02-2009
		US 2009001612 A1	01-01-2009
		US 2011115098 A1	19-05-2011
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RU 2190251	C2	27-09-2002	NONE
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**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4, 6-8, 17, 18

To provide for a stacked semiconductor structure having a predetermined electronic architecture

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2. claim: 5

To provide for a stacked semiconductor structure with certain manufacturing advantages

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3. claims: 9, 10

To provide for a stacked semiconductor structure having predetermined heat dissipation characteristics.

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4. claims: 11-16

To provide for an image sensor having predetermined spatial topology.

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