



## INTERNATIONAL SEARCH REPORT

PCT/US2005/014529

A. CLASSIFICATION OF SUBJECT MATTER  
H01L21/322

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)  
H01L

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 practical, search terms used)

EPO-Internal, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.  |
|------------|--|------------------------|
| X          | US 2003/104680 A1 (STEFANESCU ANDREI D ET AL) 5 June 2003 (2003-06-05)   | 1,3,<br>6-11,<br>26-36 |
| Y          | paragraph '0029! - paragraph '0041!  | 13-25,<br>37-41        |
| X          | -----<br>PATENT ABSTRACTS OF JAPAN<br>vol. 009, no. 185 (E-332),<br>31 July 1985 (1985-07-31)<br>& JP 60 055629 A (FUJITSU KK),<br>30 March 1985 (1985-03-30)<br>abstract<br>-----<br>-/-- | 1,2,11                 |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
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- "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

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- "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

24 November 2005

Date of mailing of the international search report

07/12/2005

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| X          | PATENT ABSTRACTS OF JAPAN<br>vol. 012, no. 385 (E-668),<br>14 October 1988 (1988-10-14)<br>& JP 63 129633 A (FUJITSU LTD),<br>2 June 1988 (1988-06-02)<br>abstract   | 1,3                   |
| Y          | -----<br>TAMATSUKA M ET AL: "HIGH PERFORMANCE<br>SILICON WAFER WITH WIDE GROWN-IN VOID FREE<br>ZONE AND HIGH DENSITY INTERNAL GETTERING<br>SITE ACHIEVED VIA RAPID CRYSTALGROWTH WITH<br>NITROGEN DOPING AND HIGH TEMPERATURE<br>HYDROGEN AND/OR ARGON ANNEALING"<br>ELECTROCHEMICAL SOCIETY PROCEEDINGS,<br>ELECTROCHEMICAL SOCIETY, PENNINGTON, NJ,<br>US,<br>vol. 99, no. 1, May 1999 (1999-05), pages<br>456-467, XP002934357<br>ISSN: 0161-6374<br>abstract | 13-25,<br>37-41       |
| A          | -----<br>GRAEF D ET AL: "IMPROVEMENT OF<br>CZOCHELSKI SILICON WAFERS BY<br>HIGH-TEMPERATURE ANNEALING"<br>JOURNAL OF THE ELECTROCHEMICAL SOCIETY,<br>ELECTROCHEMICAL SOCIETY, MANCHESTER, NEW<br>HAMPSHIRE, US,<br>vol. 142, no. 9, September 1995 (1995-09),<br>pages 3189-3192, XP002045230<br>ISSN: 0013-4651<br>cited in the application<br>abstract   | 1,13,26,<br>37        |
| A          | -----<br>US 6 100 167 A (FALSTER ET AL)<br>8 August 2000 (2000-08-08)<br>cited in the application<br>abstract  | 1,13,26,<br>37        |
| A          | -----<br>BAI P ET AL: "INTRINSIC CU GETTERING AT A<br>THERMALLY GROWN SiO <sub>2</sub> /Si INTERFACE"<br>JOURNAL OF APPLIED PHYSICS, AMERICAN<br>INSTITUTE OF PHYSICS, NEW YORK, US,<br>vol. 68, no. 7,<br>1 October 1990 (1990-10-01), pages<br>3313-3316, XP001108893<br>ISSN: 0021-8979<br>abstract   | 1,13,26,<br>37        |
|            | -----<br>-/--  |                       |

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.  |
|------------|--|------------------------|
| A          | <p>HOZAWA K ET AL: "Copper distribution near a SiO<sub>2</sub>/Si interface under low-temperature annealing"</p> <p>JAPANESE JOURNAL OF APPLIED PHYSICS, PART 1 (REGULAR PAPERS, SHORT NOTES &amp; REVIEW PAPERS) JAPAN SOC. APPL. PHYS JAPAN, vol. 41, no. 10, October 2002 (2002-10), pages 5887-5893, XP002355833</p> <p>ISSN: 0021-4922</p> <p>abstract</p> <p style="text-align: center;">-----</p> | <p>1,13,26,<br/>37</p> |

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| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
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| US 2003104680                             | A1 | 05-06-2003          | NONE                       |                     |
| JP 60055629                               | A  | 30-03-1985          | NONE                       |                     |
| JP 63129633                               | A  | 02-06-1988          | NONE                       |                     |
| US 6100167                                | A  | 08-08-2000          | WO 9854758 A1              | 03-12-1998          |