## (19) World Intellectual Property Organization

International Bureau



# 

## (43) International Publication Date 18 December 2008 (18.12.2008)

PCT

# (10) International Publication Number WO 2008/154580 A3

(51) International Patent Classification: *H01L 23/12* (2006.01)

(21) International Application Number:

PCT/US2008/066561

(22) International Filing Date: 11 June 2008 (11.06.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/943,252 11 June 2007 (11.06.2007) US

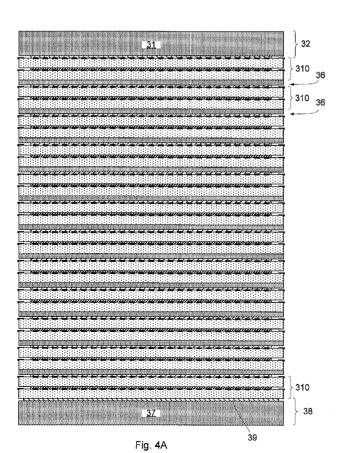
- (71) Applicant (for all designated States except US): VERTI-CAL CIRCUITS, INC. [US/US]; 10 Victor Square, Scotts Valley, CA 95066 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MCGRATH, Scott [US/US]; 13 Terrace View Court, Scotts Valley, CA 95066 (US). MCELREA, Simon, J.s. [GB/US]; 621 Acorn Court, Scotts Valley, CA 95066 (US). CASKEY, Terrence [US/US]; 236 John Street, Santa Cruz, CA 95606

(US). ANDREWS, Lawrence, Douglas [US/US]; 22545 Old Santa Cruz Hwy., Los Gatos, CA 95033 (US). DU, Yong [CN/US]; 10190 N. Foothill Boulevard, Apt. F23, Cupertino, CA 95014 (US).

- (74) Agent: KENNEDY, Bill; Haynes Beffel & Wolfeld Llp, P.o. Box 366, Half Moon Bay, CA 94019 (US).
- (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, 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, 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,

[Continued on next page]

#### (54) Title: METHOD FOR OPTIMIZED INTEGRATED CIRCUIT CHIP INTERCONNECTION



(57) Abstract: A method for forming electrical interconnection on stacked die units includes steps of arranging one or more stacked die units so that the arrangement presents die edges to be interconnected at a stack face, and applying a trace of electrical interconnect material at the presented stack face.



### WO 2008/154580 A3



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, 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).

#### before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

#### **Published:**

with international search report

 $(88)\;\; Date\; of\; publication\; of\; the\; international\; search\; report:$ 

19 February 2009

International application No. **PCT/US2008/066561** 

#### A. CLASSIFICATION OF SUBJECT MATTER

#### H01L 23/12(2006.01)i

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)

IPC 8 H01L 23/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean Utility models and applications for Utility models since 1975.

Japanese Utility models and applications for Utility models since 1975.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) e-KIPASS (KIPO internal); fixture, frame, die, stack, support, separator

#### C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
		00.01
X	KR 20-1994-4952 Y1 (Lee) 23 Jul. 1994	20, 21
Y	see Claims 1~3, Figs. 1~3	1~21
X	US 2005-101039 A1 (Chen et al.) 12 May 2005	20, 21
Y	see abstract, Claims 1~28, Figs. 1~9	1~21
	US 5434745 A (Shokrgozar et al.) 18 Jul. 1995	
Y	see abstract, Claims 1~19, Figs. 1~4	1~21
	US 5698895 A (Pedersen et al.) 16 Dec. 1997	
Y	see abstract, Claims 1~6, Figs. 1~10	1~21
	US 2005-230802 A1 (Vindasius et al.) 20 Oct. 2005	
Y	see abstract, Claims 1~14, Figs. 1~6	1~21

		Further document	nts 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 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

31 DECEMBER 2008 (31.12.2008)

Date of mailing of the international search report

31 DECEMBER 2008 (31.12.2008)

Name and mailing address of the ISA/KR



Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seogu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

BAK, JUNYUNG

Telephone No. 82-42-481-5729



#### INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

## PCT/US2008/066561

cited in search report	Publication date	Patent family member(s)	Publication date
KR 20-1994-4952 Y1	23.07.1994	None	
US 2005-0101039 A1	12.05.2005	US 7268005 B2	11.09.2007
US 5434745 A	18.07.1995	None	
US 5698895 A	16.12.1997	AT 211350 T AT 325426 T AU 2815395 A AU 4744196 A DE 69524756 D1 DE 69524756 T2 DE 69534976 D1 EP 0766909 B1 EP 1158570 A1 EP 1158570 B1 EP 0766909 A1 JP 10-508154 T JP 2007-019527 A KR 1997-704327 A US 5657206 A US 5661087 A US 5675180 A US 5837566 US 5891761 US 5936302 US 5994170 US 6080596 US 6098278 US 6124633 US 6177296 US 6188126 US 6486528 US 6255726 B1 WO 96-00494 A1 WO 96-00494 A1	15.01.2002 15.06.2006 19.01.1996 07.08.1996 31.01.2002 14.08.2002 08.06.2006 19.12.2001 28.11.2001 03.05.2006 09.04.1997 04.08.1998 25.01.2007 09.08.1997 12.08.1997 12.08.1997 17.11.1998 06.04.1999 10.08.1999 30.11.1999 27.06.2000 08.08.2000 26.09.2000 23.01.2001 13.02.2001 26.11.2002 03.07.2001 04.01.1996 25.07.1996
	20.10.2005	US 7215018 B2	08.05.2007