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(71) Applicant (for all designated States except US): MAXIM INTEGRATED PRODUCTS, INC. [US/US]; 120 San Gabriel Drive, Sunnyvale, CA 94086 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SRIDHAR, Uppili [US/US]; 14041 Preston Road, Apt. 1901E, Dallas, TX 75254 (US). **ZOU, Quanbo** [CN/US]; 2401 Ohio Drive, Apt. 901, Plano, TX 75093 (US).

(74) Agent: BLAKELY, Roger, W., Jr.; BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN, 12400 Wilshire Blvd., 7th Floor, Los Angeles, CA 90025-1026 (US).

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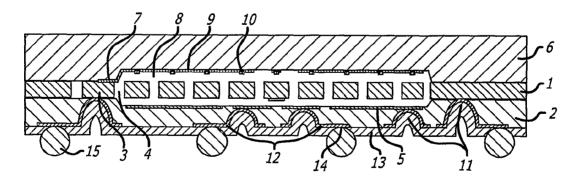
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(54) Title: WAFER LEVEL PACKAGING PROCESS



(57) Abstract: Wafer level packaging process for packaging MEMS or other devices. In some embodiments, a MEMS wafer with normal thickness is firstly bonded to a cap wafer of normal thickness, followed by a thinning on the backside of the MEMS wafer. After this, the bonded wafer stack and the capping of the hermetically packaged MEMS devices are still rigid enough to do further processing. On this basis, through vias on the thinned substrate can be easily formed and stopped on the regions to be led out (e.g., metal pads /electrodes, highly doped silicon, etc.) . Vias can be partially filled as this is the final surface of process . Even thick metal coated/patterned vias have much more space to relax possible thermal stress, as long as the vias are not completely filled with hard metal (s) . Various embodiments are disclosed.



### INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/041853 A. CLASSIFICATION OF SUBJECT MATTER INV. B81C1/00 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) B81C 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) C. DOCUMENTS CONSIDERED TO BE RELEVANT Category' Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. χ US 6 225 145 B1 (CHOI CHANG AUCK [KR] ET 1 - 23AL) 1 May 2001 (2001-05-01) figures 1,2a-2m χ WO 2005/006432 A (EPCOS AG [DE]; DIEKMANN 24 - 29CHRISTIAN [DE]) 20 January 2005 (2005-01-20) figures 1-3(b) WO 03/024865 A2 (SCHOTT GLAS [DE]; ZEISS X 1,24 STIFTUNG [DE]; LEIB JUERGEN [DE]; BIECK FLORIA) 27 March 2003 (2003-03-27) figures 2a-3d X US 2002/113321 A1 (SINIAGUINE OLEG [US]) 24 - 2922 August 2002 (2002-08-22) figures 2a-6 -/--χ Further documents are listed in the continuation of Box C. See patent family annex. Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but "A" document defining the general state of the art which is not considered to be of particular relevance cited to understand the principle or theory underlying the invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another involve an inventive step when the document is taken alone document of particular relevance; the claimed invention citation or other special reason (as specified) cannot be considered to involve an inventive step when the document is combined with one or more other such docudocument referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled document published prior to the international filing date but later than the priority date claimed in the art. "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 17 April 2007 26/04/2007 Name and mailing address of the ISA/ Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016

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