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(71) Applicant (for all designated States except US):
FREESCALE SEMICONDUCTOR, INC. [US/US];
6501 William Cannon Drive West, Austin, Texas 78735
(US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **THOMPSON, Vasile Romega** [US/US]; 6920 S. Clark Drive, Tempe, Arizona 85283 (US). **FENDER, Jason** [US/US]; 2348 E. Kaibab Place, Chandler, Arizona 85249 (US). **DALY, Terry K.** [US/US]; 1101 West Spur Avenue, Gilbert, Arizona 85233 (US). **JANG, Jin-Wook** [KR/US]; 855 N. Dobson Road #2042, Chandler, Arizona 85224 (US).

(74) Agents: **KING, Robert L.** et al.; 7700 W. Parmer Lane, MD:PL02, Austin, Texas 78729 (US).

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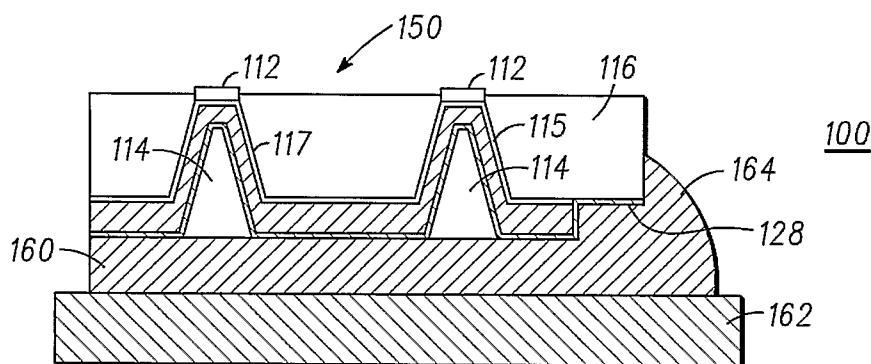
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(54) Title: SEMICONDUCTOR PACKAGE AND METHOD FOR FORMING THE SAME



(57) Abstract: Semiconductor packages (100) that prevent the leaching of gold from back metal layers (118) into the solder (164) and methods for fabricating the same are provided. An exemplary method comprises providing a semiconductor wafer stack (110) including metal pads (112) and a substrate (116). An adhesion/plating layer (115) is formed on the substrate (116). A layer of gold (118) is plated on surface of the adhesion/plating layer (115). The layer of gold is etched in a street area (124) to expose edge portions (128) of the layer of gold (118) and the adhesion/plating layer (115). A layer of barrier metal (130) is deposited to form an edge seal (129) about the exposed edge portions (128). The edge seal (129) prevents the leaching of gold from back metal layers (118) into the solder (162) when the wafer stack (110) is soldered to a leadframe (162).

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/10745

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **H01L 21/00**(2006.01),**23/52**(2006.01)

USPC: 257/751;438/460

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)

U.S. : 257/751, 766, 698; 438/460, 244, 612

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,140,703 A (CRONIN et al) 31 October 2000 (31.10.2000), column 1, lines 12-14, 25-27; column 2, lines 27-29, 41-44, 54-56, 63-65.	1-20
Y	US 3,881,884 A (COOK et al) 06 May 1975 (06.05.1975), column 2, lines 62-69.	15-20
Y	US 6,607,941 B2 (PRABHU et al) 19 August 2003 (19.08.2003), column 5, lines 55-59.	1-14
Y	US 6,040,239 A (AKRAM et al) 21 March 2000 (21.03.2000), see entire document.	1-14, 19
Y	US 2004/0023463 A1 (SHIRAKAWA) 05 February 2004 (05.04.2004), paragraph 0007-0008.	9-14, 20
A	US 5,027,189 A (SHANNON et al) 25 June 1991 (25.06.1991), see entire document.	1-20
A,P	US 6,960,824 B1 (HASHEMI et al) 01 November 2005 (01.11.2005), see entire document.	1-20



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 cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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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Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

JOSE G. DEES

Telephone No. (571) 272-1569

Renee Pal...

INTERNATIONAL SEARCH REPORT

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Continuation of B. FIELDS SEARCHED Item 3:

EAST: US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB

search terms: semiconductor; back adj metal or backmetal; gold or Au or au; leach\$3; solder; Gallium adj Arsenide or AsAs; barrier; leadframe or lead adj frame; daly-terry\$.in.; janj-jin-wook\$.in.; seal\$4 or barrier; void\$4; solder adj diffusion; (adhesion or conducting) adj layer; barrier or coating; prevent\$4; advantage\$3; adavantages adj of adj using adj gold; gold adj as adj a adj conductor; Gallium adj Arsenide or GaAs; gold near10 oxidize; gold near5 excellent; conductivity; conductive adj layer; thermal near4 via\$2; near4 barrier adj layer; via\$2 near4 barrier adj layer; method near4(thermal near4 via\$2) near4 pads; street; singulation saw; die near attach; ("edgeperiphery)near10(goldau)onar10barrier".PN.; (edge periphery) near10 (gold au) near10 barrier; (edge periphery) near10 (gold au) near10 barrier near10 seal; etch near "10" street; etch near10 street; (via vias) near10 substrate near10 heat; GaAs Gallium adj arsenide