

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
10 September 2010 (10.09.2010)

(10) International Publication Number
WO 2010/102151 A3

- (51) **International Patent Classification:**
H01L 23/36 (2006.01) *H01L 23/48* (2006.01)
- (21) **International Application Number:**
PCT/US2010/026276
- (22) **International Filing Date:**
4 March 2010 (04.03.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/157,883 5 March 2009 (05.03.2009) US
12/716,197 2 March 2010 (02.03.2010) US
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AO, AT, AU, AZ, BA, BB, BG, BH, 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, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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.

(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, 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, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM,

Declarations under Rule 4.17:

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))

(88) **Date of publication of the international search report:**
13 January 2011

(54) **Title:** CHIP-SCALE PACKAGING WITH PROTECTIVE HEAT SPREADER

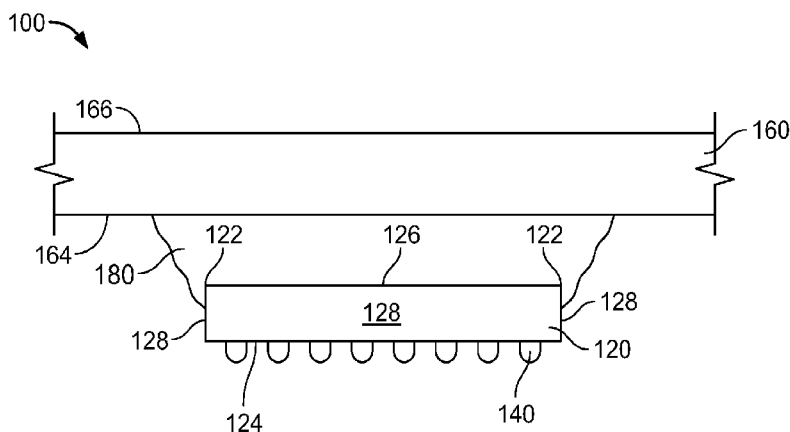


FIG. 1A

(57) **Abstract:** A semiconductor package can include a semiconductor die having an integrated circuit, a first die surface, and an opposite second die surface. A packaging can be attached to the die and have a holder surface opposite the first die surface. A heat spreader can be configured to cover the second die surface and the packaging surface and can be attached thereto by a layer of adhesive positioned between the heat spreader and the semiconductor die. A semiconductor package array can include an array of semiconductor dies and a heat spreader configured to cover each semiconductor die. A conductive lead can be electrically connected to the integrated circuit in a semiconductor die and can extend from the first die surface. Manufacturing a semiconductor package can include applying thermally conductive adhesive to the heat spreader and placing the heat spreader proximate the semiconductor die.



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A. CLASSIFICATION OF SUBJECT MATTER**H01L 23/36(2006.01)i, H01L 23/48(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)

H01L 23/36; H05K 7/20; H01L 23/48; H01L 23/34; H01L 21/00

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

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: heat spreader, adhesive layer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2007-0109749 A1 (HYEOG CHAN KWON) 17 May 2007 See abstract, paragraphs 28, 30-32, and figures 3-5.	1-4, 8, 12, 13, 16, 17 5-7, 9-11, 14, 15 , 18-20, 24, 26, 27-45 , 48, 49, 52-54, 56, 57 , 59, 61-70, 72-77
X	US 2007-0216009 A1 (THIAN MOY NG) 20 September 2007 See abstract, paragraphs 15-19, 24-25, 43-44, 46, 48, 50, 54, claims 19, 20, 24 and figures 1-2, 4-5,	21, 22, 71
X	US 2006-0186533 A1 (DAVID CORISIS) 24 August 2006 See abstract, paragraphs 25-26, 29, 32-34, 37-41, claims 1, 3, 5, 6, 8, 9 and figures 1-5.	23, 25, 46, 47, 50, 51 , 55, 58, 60
X A	US 2006-0087033 A1 (KIM GOH et al.) 27 April 2006 See abstract, paragraphs 38, 40-41, 43, claims 1, 3 and figure 2.	78, 80 79, 81-85

 Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search

14 SEPTEMBER 2010 (14.09.2010)

Date of mailing of the international search report

28 SEPTEMBER 2010 (28.09.2010)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
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Facsimile No. 82-42-472-7140

Authorized officer

CHO, Cheon Whan

Telephone No. 82-42-481-8328



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2010/026276

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