(57) Abstract: Improved sensor packaging is provided with a hybrid integration approach. In one example, an application specific integrated circuit (ASIC) for sensor signal conditioning is packaged. The ASIC package has an aperture in it that exposes a chip to chip bonding interface of the ASIC chip. The rest of the ASIC chip is surrounded by the package, including the connections between the external package leads and the ASIC chip. A sensor chip, also having a chip to chip bonding interface, is disposed in the package aperture and bonded to the ASIC chip, such that the two chip to chip bonding interfaces are connected. Flip chip bonding of the sensor chip to the ASIC chip is a preferred approach for chip to chip bonding. The vertical gap between the two chips can be filled in by an underfill process. The lateral gap between the sensor chip and the package can also be filled.
**INTERNATIONAL SEARCH REPORT**

International application No.
PCT/US07/14390

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H01L 23/31 (2007.10)
USPC - 257/777

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 23/31, 23/52 (2007 10)

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 practicable, search terms used)
USPTO EAST System (US, USPG-PUB, USOCR), MicroPatent ππ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
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<tbody>
<tr>
<td>X</td>
<td>US 2004/0188699 A1 (KAMEYAMA et al) 30 September 2004 (30 09 2004) entire document</td>
<td>1, 2, 6, 7, 15</td>
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<td>Y</td>
<td>US 5,291,061 A (BALL) 01 March 1994 (01 03 1994) entire document</td>
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<td>US 6,522,015 B1 (GLENN et al) 18 February 2003 (18 02 2003) entire document</td>
<td>1, 5, 7, 9-12, 14</td>
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Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search
20 December 2007

Date of mailing of the international search report
08 FEB 2008

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P O Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer: Blame R. Copenheaver
PCT Helpdesk 571-272-4300
PCT/OSP 571-272-7774

Form PCT/ISA/2 10 (second sheet) (April 2005)