6-Axis OIS IMU: Technology Analysis

Description:
IMU for OIS is a new trend taken by the main suppliers in high-end smartphones. Two players share the pie: InvenSense and STMicroelectronics who have developed a new generation of IMU dedicated for OIS on smartphone mainboard. For InvenSense as usual, the latest customized version can be found in the iPhone 7 Plus and for STMicroelectronics it is the LSM6DSM.

The 6-axis IMU are located on the motherboard of high-end smartphones (and other consumer product) and the main constraint consists on providing a small footprint and more importantly a very low power consumption.

The thickness was the same than standard LGA or QFN packages some years ago, close to 1mm. Now the standard is 0.75mm, and both InvenSense and STMicroelectronics released a device with this thickness.

InvenSense has been the first to integrate in an actual device, with a custom version for Apple, a 3.0x3.0x0.75mm IMU. This version uses the same Nasiri platform as other InvenSense IMU devices, making the wafer-level integration of the MEMS sensor on top of the ASIC, thus providing only one die in the final LGA package. InvenSense new 6-Axis IMU presented new design which are specific to this Apple's Version.

STMicroelectronics on its side released the LSM6DSM and provides a smaller device. The device is manufactured using the same THELMA process than all STMicroelectronics IMU devices. This THELMA platform requires a two dies approach which becomes challenging for very thin package integration. At the end both players have been able to propose very low cost OIS IMU due to die size reduction and process optimization.

Contents:
Overview/Introduction

Company Profile & Supply Chain

Physical Analysis
- Package
- Package views and dimensions
- Package opening
- Package cross-section

- ASIC Die
- View, dimensions, and marking
- Delayering and process
- Cross-section

- MEMS Die
- View, dimensions, and marking
- Cap Removed
- Sensing Area
- Cross-sections (Sensor, Cap, Sealing)

Manufacturing Process Flow
- ASIC front-end process
- ASIC wafer fabrication unit
- MEMS process flow
- MEMS wafer fabrication unit
- Packaging process flow
- Package assembly unit

Cost Analysis
- Yields hypotheses
- ASIC front-end cost
- ASIC back-end: probe test and dicing
- ASIC wafer and die cost
- MEMS front-end cost
- MEMS back-end: probe test and dicing
- MEMS front-end cost per process steps
- MEMS wafer and die cost
- Back-end: packaging cost
- Back-end: packaging cost per process steps
- Back-end: final test cost
- IMU component cost

Estimated Price Analysis

Comparison with InvenSense IMU MP-67B and Sensor Hub ICM30360

Ordering:

Order by Fax - using the form below

Order by Post - print the order form below and send to

Research and Markets,
Guinness Centre,
Taylors Lane,
Dublin 8,
Ireland.
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct.

Product Name: 6-Axis OIS IMU: Technology Analysis
Web Address: http://www.researchandmarkets.com/reports/4039370/
Office Code: SC

Product Format
Please select the product format and quantity you require:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>USD 3710</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDF and Excel - Enterprisewide:</td>
<td>□</td>
</tr>
</tbody>
</table>

* The price quoted above is only valid for 30 days. Please submit your order within that time frame to avail of this price as all prices are subject to change.

Contact Information
Please enter all the information below in BLOCK CAPITALS

<table>
<thead>
<tr>
<th>Title:</th>
<th></th>
<th>Mr</th>
<th>Mrs</th>
<th>Dr</th>
<th>Miss</th>
<th>Ms</th>
<th>Prof</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Name:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address: *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Title:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organisation:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postal / Zip Code:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone Number:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fax Number:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:
Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer: Please transfer funds to:

Account number 833 130 83
Sort code 98-53-30
Swift code ULSBIE2D
IBAN number IE78ULSB98533083313083
Bank Address Ulster Bank,
27-35 Main Street,
Blackrock,
Co. Dublin,
Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: ____________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp

Please fax this form to:
(646) 607-1907 or (646) 964-6609 - From USA
+353-1-481-1716 or +353-1-653-1571 - From Rest of World