

REVERSE COSTING

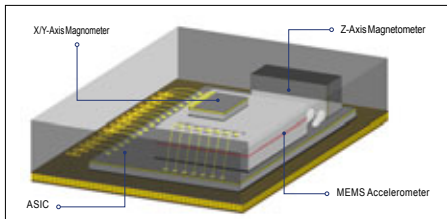
STMicroelectronics' LSM303D: 6-axis electronic compass

Following Bosch Sensortec and their BMC050 (see our article in Micronews#133), STMicroelectronics just released a 3x3mm e-Compass module integrating motion and magnetic sensing.

Targeted for consumer applications (Tilt-compensated compass, Map rotation, Position detection, etc.), the LSM303D provides accurate output across full-scale ranges up to ±16g (linear acceleration) and ±12 Gauss (magnetic field).

Technology analysis

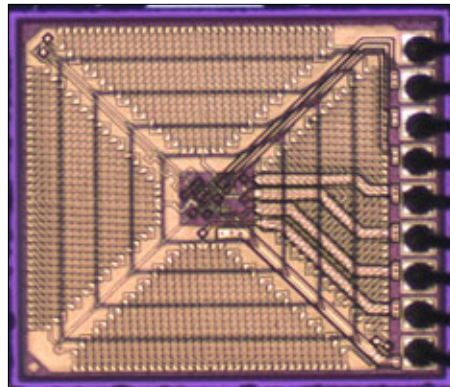
The LSM303D is a system-in-package featuring a 3-axis magnetometer and a 3-axis accelerometer.



LSM303D structure
(Courtesy of System Plus Consulting)



MEMS accelerometer cross-section
(Courtesy of System Plus Consulting)



X/Y-axis magnetometer
(Courtesy of System Plus Consulting)

The 3-Axis accelerometer uses ST's TSV process to remove the area reserved for I/O pads, generating an area savings of almost 20%.

Resulting from the partnership of ST and Honeywell, the magnetometer uses anisotropic magneto-resistive (AMR) technology. Two AMR dies are necessary to realize X/Y-Axis detection and Z-Axis detection.

Cost results

STMicroelectronics manufactures the 3-Axis accelerometer and the ASIC dies on 8-inch wafers in France and Italy. The magnetometer dies are supplied by Honeywell and manufactured on 6-inch wafers in the U.S. By focusing on die size reduction and the integration of only one ASIC to control the sensors, ST has managed to create a very cost-effective device.

The complete reverse costing report, combining technological analysis of the device and a detailed manufacturing cost, is currently available.

www.systemplus.fr

Recent reverse costing reports

- Bosch-Sensortec BMC050: e-compass
- InvenSense MPU-9150: MEMS 9-Axis IMU
- TI DLP: nHD Pico projector
- SETi UVTOP270: UV LED
- Mitsubishi CM450DY-24S: 1200V IGBT Power Module

System Plus Consulting develops costing tools and performs on demand reverse costing studies of semiconductors (from integrated circuits to power devices, from single chip packages to MEMS and multichip modules) & of electronic boards and systems.



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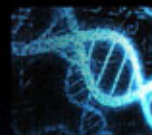
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Giorgio Anania, Chairman



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