The LPS22HB Nano Pressure Sensor is the world’s smallest barometric sensor, incorporating the VENSENS process and the new BASTILLE process, featuring abundant design innovation. Targeting altitude and weather forecasting applications in portable devices, this MEMS sensor positions STMicroelectronics for double-digit growth in the pressure sensor market.

STMicroelectronics LPS22HB pressure-sensing device is manufactured using a proprietary MEMS technology called “VENSENS”, which allows the pressure sensor to be fabricated on a monolithic silicon chip. The LPS22HB’s sensing element is based on a flexible silicon membrane formed above an air cavity with a controlled gap and defined internal pressure. The membrane is tiny compared to traditional silicon micro-machined membranes. The device is allowing some waterproof functionalities, detailed in the report.

For the LPS22HB, STMicroelectronics has introduced two significant innovations. The first one is a holed cap in silicon, bonded on the sensor to integrate the pressure sensor into a small molded package of 2x2x0.76mm HLGA. This package resembles the one used for the HTS221 humidity sensor. The second one is a spring structure to increase the sensor’s sensitivity and reliability. These two innovations are the core of the new “Bastille” MEMS technology.

This report presents a detailed analysis of the sensor structure and cost, as well as a characteristics comparison with the 1st-generation STMicroelectronics LPS331AP pressure sensor and the Bosch Sensortec BMP280, highlighting differences in each company’s technical choices.
Véronique is in charge of structure analysis of semi-conductors. She has a deep knowledge in chemical & physical technical analyses. She previously worked for 20 years in Atmel Nantes Laboratory.

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Yvon has joined System Plus Consulting in 2011, in order to set up the laboratory of System Plus Consulting. He previously worked during 25 years in Atmel Nantes Technological Analysis Labo-ratory as fab support in physical analysis, and 3 years at Hirex Engineering in Toulouse, in a DPA lab.

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Estimated Price Analysis

Analysis performed with our costing tools MEMS CoSim+ and IC Price+

Integrated Circuits
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LEDs
Advanced Packaging
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Electronic Systems
Displays

Process-Based Costing Tools
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Display Price+

Market

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Cost simulation tool to evaluate the cost of any MEMS process or device:
From single chip to complex structures.

IC Price+
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