

VTI to enter MEMS timing device market.

Medical Design Technology

For MEMS pioneer VTI, timing devices represent a natural step forward in a highly interesting market. *"In an analysis on emerging MEMS products, Yole Développement puts MEMS oscillators as having the highest market value in 2015 and the highest Compounded Annual Growth Rate (CAGR) from 2009 through 2015. The forecasted value of MEMS oscillators in 2015 is USD 644.9 million from USD 7.9 million in 2009,"* says **Mr. Sten Stockmann**, Vice President, VTI Consumer Electronics.

VTI's timing device products will leverage VTI's proprietary 3D MEMS and packaging technology. VTI currently uses its Chip-on-MEMS (CoM) technology to produce Chip Scale Packages (CSP) for its consumer based sensors. This same technology is being utilised for oscillators in a reverse configuration of MEMS-on-Chip (MoC).

Miniaturisation favours MEMS technology

Quartz crystal – the most common piezoelectric resonator used in timing devices – is facing clear difficulties in overcoming the challenges of miniaturisation in the most advanced consumer devices. Oscillation stability and frequency sensitivity are negatively impacted as the size of the quartz resonator shrinks, which is partially due to the increased crystal impedances of these smaller resonators. Small quartz resonators are also more susceptible to shock induced frequency deviations as smaller packages leave less tolerance for mechanical vibration.

Silicon MEMS resonators are a viable alternative to quartz crystals. Tiny resonators can be etched in silicon, offering a product that is miniature in size and low cost given the batch semiconductor manufacturing processes on large (8 inch) wafers. In addition, MEMS resonators are very robust to shock and vibration.

VTI's solution offers cost-efficiency, small size and superior performance

The MEMS resonator technology that is currently available on the market suffers from poor initial accuracy and a wide temperature drift. A typical MEMS resonator can be off by 10,000ppm from its target frequency. On top of this, a MEMS resonator has drift over temperature of approximately 30ppm per degree Celsius, or an additional 3000ppm over a standard temperature range of minus 20 to plus 70 degrees Celsius.

With this type of resonator technology, complex ASICs have to be designed to compensate for the frequency inaccuracies, adding size, cost, power and noise. The end result is an oscillator that offers minimal cost benefits and no competitive differentiation.

VTI's technology overcomes these common hurdles and offers performance that is more comparable to traditional quartz based oscillators. VTI will launch its first timing device product in early 2011.

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VTI in Brief

VTI Technologies is a leading supplier of acceleration, inclination and angular motion sensor solutions for transportation, medical, instrument and consumer electronics applications. VTI develops and produces silicon-based capacitive sensors using its proprietary 3D MEMS (Micro Electro-Mechanical System) technology. For more information, please visit www.vtitechnologies.com.

VTI Technologies at Electronica 2010 in Munich, Germany: 9-12 November 2010, Hall A2, Booth 428

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