



PRESS RELEASE FOR IMMEDIATE RELEASE – January 2013

For Editors

Providing Electronic Solutions

Orion AEC Q100 Tested Combi-Sensor – A Vehicle to Success

Willow Technologies Limited (www.willow.co.uk) introduces **Orion™**, a new family of **integrated MEMS inertial ‘Combi-Sensors’** from Silicon Sensing, combining high performance single-axis angular rate and dual-axis linear acceleration measurement, in a small surface mounted package.



Orion comprises two discrete MEMS sensing devices with a dedicated control ASIC in a single ceramic LCC package. Sensor data is output onto an SPI® digital interface. **The dynamic range** (150°/s, 300°/s, 2.5g & 10g) **and bandwidth** (45 or 90Hz, Acc: 45, 95 or 190Hz) **of all three channels can be independently selected by the user for optimal sensitivity.** Two package configurations are available; part numbers: **CMS300** (Flat) and **CMS390** (Orthogonal).



10.4x6.7x2.7mm



10.4x6.0x2.2 mm



Orion™ (CMS300 and CMS390) is supplied as a PCBA surface mountable LCC ceramic packaged device. It comprises six main components; Silicon MEMS Single-Axis Angular Rate Sensor, Silicon On Glass (SOG) Dual-Axis MEMS Accelerometer, Silicon Pedestal, ASIC and the Package Base and Lid. The MEMS Sensors, ASIC and Pedestal are housed in a hermetically sealed package cavity with a nitrogen back-filled partial vacuum; this has particular advantages over sensors supplied in plastic packages which have Moisture Sensitivity Level limitations.

Angular rate is accurately measured using Silicon Sensing's proven 5th generation VSG5 Silicon MEMS ring gyroscope with multiple piezoelectric actuators and transducers. The 3mm ring is driven into resonance by a pair of primary drive actuators. Primary pick-off transducers provide closed loop control of ring amplitude and frequency. Pick-off transducers detect rate induced motion in the secondary axis, due to Coriolis force effects, the amplitude of which is proportional to angular velocity.

Precise linear acceleration sensing is achieved by a Silicon MEMS detector forming an orthogonal pair of sprung masses. Each mass provides the moving plate of a variable capacitance formed by an array of interlaced 'fingers'. This structure also provides critical damping to prevent resonant gain. Linear acceleration results in a change of capacitance which is measured by demodulation of the square wave excitation. The sensor has high linearity and shock resistance.

ASIC processing includes rate and acceleration bias, bias temperature (1.75°/s, 30mg) sensitivity and scale factor sensitivity trim for all three sensors allowing sensor calibration over temperature in production. Continuous self-test and monitoring enables safety integrity level ASIL-D (ISO 26262) when appropriately installed in a host system.

Orion operates in a temperature range of -40 to +125°C and is ideal for low power consumption (8mA from a 3.3V supply) applications such as vehicle safety (roll detection), vehicle dynamics measurement and control, vehicle navigation and personal navigation and Inertial measurement units.

Editor Information

Founded in 1989, Willow Technologies is located in Copthorne, West Sussex in the UK. We provide electronic solutions to customers by designing, manufacturing and supplying components and systems globally to the electrical and electronic marketplace. Specialists in switching, sensing, resistive and hermetic seal solutions we have a wide portfolio of sensing technologies and over 100 years of application experience. Our in-house engineering capability and rapid prototyping facility for custom parts enable us to develop products to match specific application requirements. Willow is ISO9001:2000 registered.

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