Infineon Ships Industry's First CMOS RF Switches with GaAs Performance

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Today Infineon Technologies announced it is shipping in volume the world's first RF switches that are manufactured in a CMOS-based process on silicon wafers and offer the equivalent performance of RF switches manufactured in Gallium Arsenide (GaAs) process technology - a technology break-through that has never before been achieved. So far, CMOS-based RF switches had to be manufactured on dedicated, much more expensive sapphire wafers to reach the performance of GaAs switches.

The first CMOS RF switch of a whole new family, the BGS12A, is available in a fine-pitch Wafer-Level Package (WLP) with dimensions of only 0.79mm x 0.54mm, which is approximately 60 percent less printed circuit board (PCB) space compared to the smallest packaged GaAs RF switch on the market.

In many wireless products, including cellular phones, WLAN, WiMAX, GPS navigation systems, Bluetooth accessories or remote-keyless entry, RF switches are typically used to implement switching functions for receiving and transmitting (Rx/Tx) data, band select or antenna diversity applications and also enable worldwide roaming. On average, mobile devices are typically equipped with one RF switch. However, some multi-band multi-mode mobile phones are fitted with up to four RF switches.

"Infineon's CMOS-based RF switches come in a tiny chip-scale package and require no further external components, such as level shifters, offering more space savings for various board designs," said Michael

Mauer, senior director, Silicon Discretes at Infineon Technologies. "With the increasing complexity of modern mobile devices, RF switches are expected to substitute today's PIN diodes in the next five years."

According to the US market research group Strategy Analytics, Boston, the worldwide market for RF switches accounted for approximately two billion pieces in 2006 and is expected to double to about four billion pieces by the year 2011.

The new Infineon RF switches are manufactured in a unique RF CMOS technology, combining the benefits of CMOS with outstanding RF performance, such as low insertion loss, low harmonic distortion, good isolation and high power levels. The inherent CMOS advantages include high integration capabilities, cost effectiveness and excellent electrostatic discharge (ESD) robustness. Compared to existing solutions, the CMOS-based RF switches offer the highest integration capabilities; are less expensive than GaAs devices; and allow higher battery life than PIN diodes, because current consumption is significantly reduced. All Infineon RF switches do not require external direct current (DC) blocking capacitors and integrate the complete control logic. CMOS compatible logic levels (1.4 V to 2.8 V) eliminate the need of external level shifters.

The BGS12A is Infineon's first product in the new CMOS-based RF switches family. It is a general purpose single-pole double-throw (SPDT) RF switch designed for power levels of up to 20dBm, with a P -1dB above 30dBm. The new RF switch offers a high RF performance with an insertion loss of only 0.3dB at a frequency of 1.0GHz, low harmonic distortion, good isolation (34dB at 1.0GHz), and fast switching time of less than 4μs. The interfaces are protected against 1.5kV HBM (Human Body Model) ESD which improves the production yield of manufacturers of mobile device modules and achieves the required ESD levels. The BGS12A is ideal for use in low- and medium-power

applications of up to 3GHz.

The BGS12A is available in volume quantities. Pricing starts at USD 0.70 per piece for quantities of 1,000 units.

Source: Infineon