RFID Reader ICs Fit Power, Size and Cost Constraints of Embedded and Consumer Applications

Two new RFID reader chips from austriamicrosystems combine low-power operation, small size and low cost to offer an attractive route to RFID implementation in embedded, portable and consumer devices.

The AS3993 is an EPC Class 1 Gen 2 RFID reader IC which implements all the relevant protocols, including ISO 18000-6C, the ISO 29143 air-interface protocol for mobile RFID interrogators, and ISO 18000-6A/B (for operation in direct mode). Highly integrated – it includes an on-chip VCO and power amplifier – it offers a complete set of RFID features including Dense Reader Mode functionality and support for frequency-hopping, low-level transmission coding, low-level decode, data framing and CRC checking.

The AS3980, a sister device to the AS3993, is also an EPC Class 1 Gen 2 RFID reader IC which offers a high level of integration and RF performance. But by removing certain functions, such as support for Dense Reader Mode and Direct Mode, austriamicrosystems has produced a device which is perfectly suited to cost-constrained consumer applications such as the authentication of branded consumables.

Both the AS3993 and AS3980 operate at very low power, typically drawing just 75 mA on a supply voltage of 3.3 V. This means that these advanced RFID reader ICs are suitable for use in portable and battery-powered equipment such as mobile phones.

Packaged in a 7mm x 7mm QFN package, the ICs benefit from fabrication process technology unique to austriamicrosystems to deliver very high sensitivity of -90 dBm, while providing high immunity to the effects of antenna reflections and self-jamming. This is critical in mobile and embedded applications, in which antenna design is often compromised by cost or size constraints. High sensitivity enables end-product designs to achieve their required range while using a simpler and cheaper antenna, thus reducing system bill-of-materials cost.

When used in a stand-alone end product, the AS3993 or AS3980 only require the addition of a simple 8-bit microcontroller to create a complete RFID reader system. Because they are highly integrated and implement the required RFID functions on-chip, they can also be used alongside an embedded processor, the low processing overhead meaning that an RFID co-processor is not necessary.

Mark Dickson, Product Manager at austriamicrosystems, said, “The familiar and well-supported RFID standard has an enormous number of new potential uses in

embedded and consumer products, but cost and power constraints have meant that it has not been widely adopted in these markets to date. With the introduction of the AS3993 and AS3980, we expect to see RFID reader functionality being designed in to many products which have never previously benefited from this useful wireless technology."

The AS3993 and AS3980 RFID reader ICs are available for sampling today. For more information on these two devices, please visit www.austriamicrosystems.com/RFID [1].

austriamicrosystems is demonstrating implementations of both the AS3993 and AS3980 at the RFID Journal Live! exhibition, 3-5 April, Orlando, Florida, Booth 718. www.austriamicrosystems.com/events [2]

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