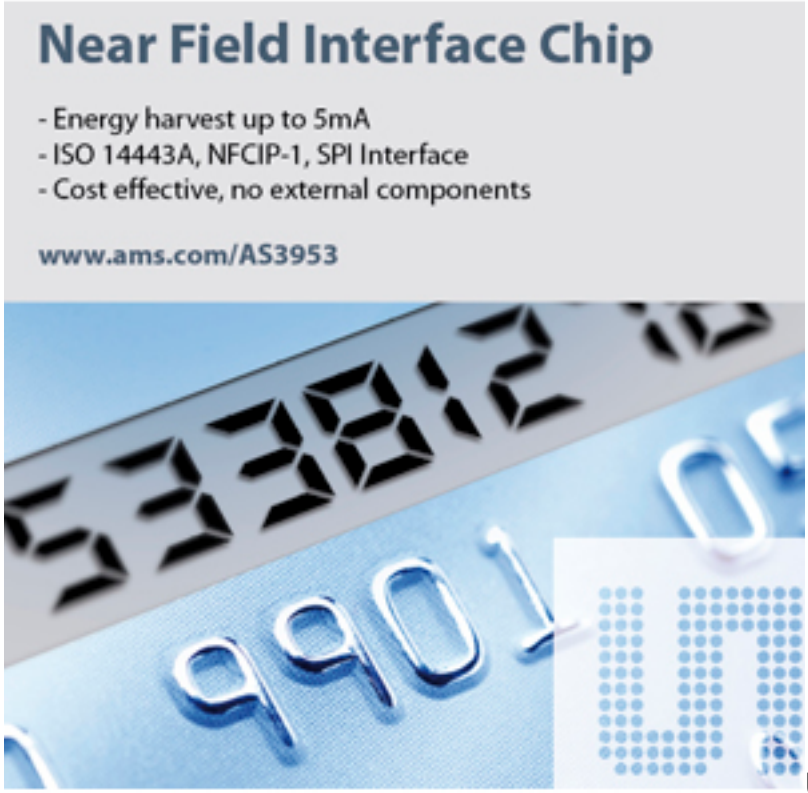
Interface chip drives down the cost of adding high data-rate NFC capability to microcontroller designs



Unterpremstaetten, Austria (November 5, 2012). Implementing instant, high-speed Near Field Communication (NFC) between two independent devices has been made easier and cheaper with the introduction of the AS3953 interface chip from ams.

The AS3953 offers a high data rate interface between an NFC device such as a smartphone and any host microcontroller with a standard Serial Peripheral Interface (SPI).

Operating on energy harvested from an NFC reader's RF emissions, the AS3953 NFiC® (Near Field Communications interface Chip) requires no external power source and at most one external capacitor. The device enables system designers to add full bi-directional NFC capability at a total cost less than half that of a typical NFC reader implementation, which can require as many as 20 external components.

TheAS3953 is fully compliant with NFC Forum specifications (NFCIP-1 target at 106 kbps) and the ISO14443A industry standard (up to 848 kbps, to Level 4). This means that it can be used in contactless smart cards and as an NFC Forum-compatible interface tag, and can establish instant communication with any NFC-enabledphone in close proximity (<10cm).

TheAS3953 is expected to find uses in a wide variety of applications, including

contactless passive programming of MCU-based systems, smart cards with displays, smart retail shelf labels, sensors and ultra low-power data loggers, medical devices, and secured NFC Bluetooth pairing.

It can also enable new innovative approaches to system designs by using an NFC-enabled smartphone as a display host and system controller for normally stand-alonedevices, eliminating the requirement for the slave device to have its own display and processor.

The AS3953 features a configurable wake-up interrupt, enabling a zero-power system design while in shut down. It also contains a complete analog front end, 1 kB of internal EEPROM, and a 4-wire SPI with a 32-byte FIFO. The device can draw up to 5 mA of harvestedenergy from the external magnetic field, and includes an internal power management circuit that can supply harvested energy to the application. This makes the AS3953 well suited for use with battery-powered and portable microcontroller-based devices.

Rene Wutte, Marketing Manager at ams, maintains, “The AS3953 creates a whole new category of NFC applications. It allows NFC functionality to be added to any application for a fraction of the cost of a full NFC reader, without complicating the design. This is the easiest and most affordable way to enable an application to communicate with a mobile phone.”

ams has also announced a new reference design developed in close cooperation with Epson. The design is for a complete passive solution for price labels and smart cards. It combines an Epson S1C17F57 microcontroller, which features a built-in driver for e-paper displays (64 channels), and the AS3953 NFiC® from ams. According to Manfred Wittmeir, IC Department Manager at Epson Europe Electronics GmbH, “Epson has a long track record of providing energy efficient semiconductors for various battery-driven products. The AS3953 enables us for the first time to build a complete passive solution without the need for an auxiliary power supply, such as a battery, while implementing a standard NFC interface for exchanging data with our microcontroller. A simple design, it can be implemented quickly by engineers with no deep knowledge of the operation of NFC technology.”

Both the AS3953 and the passive e-paper demonstration design will be shown at the ams booth at Cartes 2012 in Paris (3D.105, November 6-8, Paris). They will also be on display at Electronica (Hall A4, stand 211, November 13-16, Munich).

Price & Availability

The AS3953 NFiC is available as a bare die or in a 10-pin, 3 mm x 3 mm MLPD package. The device is available for sampling now. It is priced at $1.59 in 1,000 piece quantities as a packaged device, and $1.15 as a bare die.

Technical Support

A demonstration board for the AS3953 NFiC is available. For further information on the AS3953 or to request samples, please visit www.ams.com/RFID/AS3953 [1].

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Links:
[1] http://www.ams.com/RFID/AS3953