

First fully programmable ISO 15693-compliant 13.56 MHz sensor transponder

December 11 2014



Texas Instruments today announced the industry's first flexible high frequency 13.56 MHz sensor transponder family. The highly integrated ultra-low-power RF430FRL15xH system-on-chip (SoC) family

combines an ISO 15693-compliant Near Field Communication (NFC) interface with a programmable microcontroller (MCU), non-volatile FRAM, an analog-to-digital converter (ADC) and SPI or I2C interface. The dual-interface RF430FRL15xH NFC sensor transponder is optimized for use in fully passive (battery-less) or semi-active modes to achieve extended battery life in a wide range of consumer wearables, industrial, medical and asset tracking applications.

Non-volatile FRAM combines the speed, flexibility and endurance of SRAM with the stability and reliability of flash – while providing the industry's lowest power consumption and virtually unlimited write cycles. FRAM allows developers to create products that can quickly store [sensor data](#) and enables easy configuration of the transponder and sensors to meet any application's needs.

Integrating NFC sensors into medical, industrial and asset-tracking applications

Developers can now design products that require an analog or digital interface, data-logging capabilities and data transfers to an NFC-enabled reader. The RF430FRL15xH transponder acts as a sensor node for these applications and generates an IoT-ready solution when an NFC-enabled device pushes the data to the cloud.

In medical or health and fitness applications, the RF430FRL15xH can be used in disposable patches that sense temperature, hydration and more. This allows patients to monitor and share vital data securely with their health providers. The device monitors and logs data in local storage (FRAM) before transferring it to an NFC-enabled tablet or smartphone.

The RF430FRL15xH enables the design of maintenance-free and hermetically sealed galvanic isolated sensor systems in the industrial

markets. These sensors are powered out of the RF field and communicate wirelessly through NFC to collect and log data.

Logistics applications such as food tracking need constant temperature control, which can be monitored and logged with the RF430FRL15xH transponder. It allows the design of highly integrated, size-optimized and easy-to-use data loggers with several sensors that connect to NFC-enabled devices and readers throughout the distribution channel.

Features and benefits of TI's RF430FRL15xH NFC sensor transponders

- Supports wireless communication via the ISO/IEC 15693, ISO/IEC 18000-3 compliant RFID interface.
- Optimized for 1.5 V single-cell-battery-powered designs or battery-less designs that harvest energy from the RF field generated from an NFC reader at the same reading distance. Intelligent power management includes a battery switch to ensure long battery life.
- 14-bit sigma-delta ADC with ultra-low input current, low noise and ultra-low offset enables developers to connect up to three additional external sensors in addition to the integrated temperature sensor.
- SPI or I2C interface can support digital [sensors](#) or connect the device to a host system.
- Application code embedded in ROM manages RF communication and sensor readings to provide the ultimate flexibility in configuring the device. Developers can configure sampling rates, measurement thresholds and alarms.
- Universal non-volatile memory (FRAM) allows data storage as well as extension and adjustment of application code.
- Integrates a 16-bit ultra-low-power programmable MSP430 CPU

core that is supported by a robust ecosystem of development tools.

- Fully integrated into TI's Code Composer Studio (CCS) and IAR's Embedded Workbench® integrated development environments (IDEs).

Provided by Texas Instruments

Citation: First fully programmable ISO 15693-compliant 13.56 MHz sensor transponder (2014, December 11) retrieved 14 May 2024 from <https://phys.org/news/2014-12-fully-programmable-iso-compliant-mhz.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.