

The Missing Link

www.ams.com/AS3953



AS3953 – Connects NFC With Everything Else

- NFIC: NFC interface IC
- Low Cost Bidirectional NFC interface
- Passive programming and wakeup
- Delivers 4mA from magnetic field
- Data rates up to 848 kbit/s

We provide innovative analog solutions to the most challenging applications in sensor and sensor interfaces, power management, and wireless.

General Description

The AS3953 delivers low cost, ultra low power NFC forum functionality to multiple different applications.

The AS3953 is an analog front-end with integrated 14443A data framing and SPI interface. It is designed to create a fast data link between an ISO14443A reader device (PCD) and a microcontroller. The AS3953 is Passively powered meaning that it can be supplied from the PCD magnetic field, eliminating the need of a continual external supply. This makes the AS3953 perfect for wireless communication to a low power battery powered device. The AS3953 is used with an appropriate antenna coil connected to the terminals LC1 and LC2 and behaves as a normal passive ISO14443A tag (PICC). After the anti-collision protocol is passed, the PCD sends a Wake-up command, which wakes up the microcontroller by sending an interrupt. From this point onwards, the AS3953 serves as a data link between the microcontroller and the PCD.

The AS3953 includes an onboard EEPROM that can be accessed either from the PCD or from the microcontroller via the SPI interface. This built-in flexibility makes it ideal for two types of applications:

- Where personalization data is programmed by the PCD (even in case the SPI side is not powered) and it is later read by microcontroller through SPI interface.

- Where log data is stored periodically by the microcontroller and can then be read by the PCD even when the microcontroller is not powered.

A regulated power supply voltage extracted from the PCD field is also available on a pin and can be used as power supply for external circuitry. For example, an external microcontroller and a sensor could be powered from the PCD field combined with pass through data rates up to 848 Kbps, which means the AS3953 is also ideal for contactless passive programming of MCU systems. The AS3953 can also operate as a stand-alone ISO14443A tag. The AS3953 supports ISO14443A up to Level 4, meaning a contactless smart card or an NFC forum compatible tag (Tag Type 4) can be built. Having a NFC Forum compatible tag interface allows the AS3953 to be used in an application where a standard NFC enabled phone is used as a PCD.

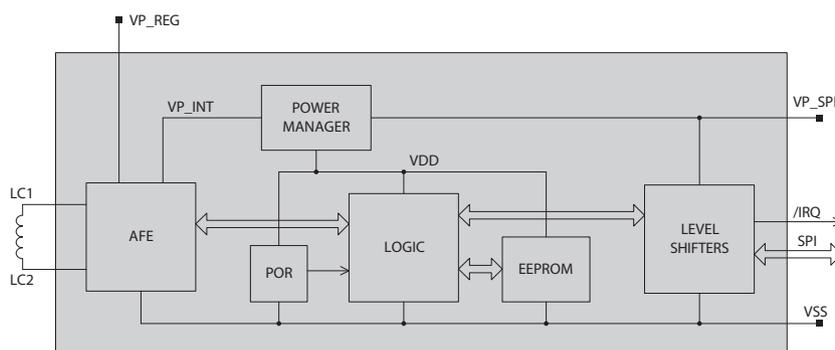
Applications

- Smart cards with displays
- Sensors and dataloggers
- Industrial, Medical and Factory Automation
- Diagnostics and Maintenance
- Product activation and passive programming
- NFC Bluetooth Pairing
- Consumer electronics

Features

- ISO 14443A compliant to level 4
- 1k bit EEPROM (928 bits of user memory)
- Configurable wake-up interrupt (after tag is selected or using proprietary command)
- Powered from external magnetic field with the possibility to draw up to 4mA
- 7 byte UID
- User configurable regulated voltage extracted from external magnetic field
- Very High Data Rates available from 106kbit/s to 848 kbit/s
- Integrated resonant capacitor
- Integrated buffer capacitor
- 4 wire Serial Peripheral Interface (SPI) with 32 byte FIFO
- Wide SPI power supply range (1.65V to 3.6V)
- Wide temperature range: -40°C to 85°C
- Available as die or in MLP - Dual x 10 3x3 package

AS3953 Block Diagram



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