AS3955 – NFC Dynamic Tag IC

- NFC Forum Tag 2 Type compliant
- 2kbit/4kbit high-retention, high-endurance internal EEPROM
- Energy harvesting up to 5mA@4.5V
- High speed bidirectional data transfer over SPI/I^2C
- Passive wake up

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

General Description

AS3955 NFC Dynamic Tag IC is the ultimate solution to easily add NFC functionality to electronic devices, pair them with NFC phones and transfer data. Thanks to a high-sensitivity ISO14443A frontend and a high-integrated resonance capacitor, AS3955 o¬ffers standalone NFC passive tag functionality in a small footprint. Fast system integration and high-speed data transfer are guaranteed by the available SPI and I^2C interfaces, and by optimized protocols, such as tunneling and extended modes, which allow bidirectional communication between the device microcontroller and an external NFC-compliant device or ISO14443A reader device. AS3955 is able to operate fully powered by the RF field without any external supply. This, combined with an advanced energy harvesting feature, greatly increases battery life and even allows for battery-less designs. AS3955 can operate as a standalone NFC Forum Type 2 Tag or, when tunneling mode is activated, as a bridge between the NFC reader and the microcontroller, e.g., to emulate a custom or standard ISO14443A Level 3 or Level 4 card, or a NFC Forum tag. A configurable wake-up signal notifies the microcontroller about ongoing RF activities to minimize overall power consumption. AS3955 includes an embedded EEPROM memory accessable from the NFC reader through the RF link or from the microcontroller through the SPI or I^2C interfaces. Part or all memory can be protected by a 32-bit password or permanently locked. AS3955 supports ISO 14443A up to Level 4 and is designed according to EMVCo requirements to enable the emulation of contactless smart cards, or NFC Forum compliant Type 2 or Type 4 Tags. AS3955 is designed for high reliability and can operate in a broad power supply range of 1.65V to 5.5V and in a wide temperature range of -40°C to 125°C. EEPROM memory reaches automotive-grade quality with endurance of 100,000 cycles and data retention of 10 years at 125°C.

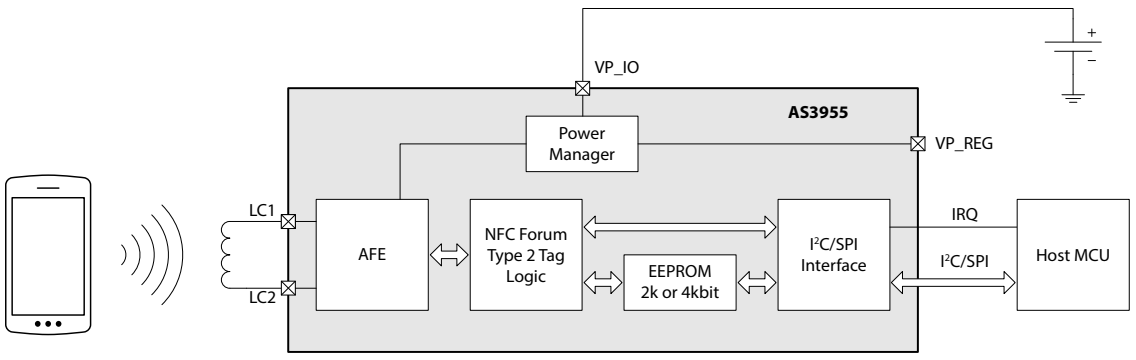
Applications

- Bluetooth, Bluetooth Low Energy and Wi-Fi pairing in consumer electronics
  - Smart watches, health and fitness trackers
  - Bluetooth headsets and speakers, Wi-Fi routers, printers, and set-top boxes
- Zero-power configuration and service management
  - HVAC, smart meters, home appliances and automation, and medical equipment
- Interactive retail marketing
  - Out-of-home advertising, dynamic displays, and interactive menus
- Access control and personal identification
  - Hotel and office door locks, BYOD login and authentication
- Contactless payment
- Interactive gaming
- Infotainment and automotive smart keys

Features

- Fully compliant to NFC Forum Type 2/4 Tag, ISO14443A up to Level 4, EMVCo
- Unique 7-byte identification number
- 2kbit/4kbit EEPROM (resp. 216 and 472 bytes of user data)
- Energy harvesting up to 5mA@4.5V
- Configurable passive wake-up signal
- Interfaces: SPI up to 5 Mbps, I^2C up to 1 Mbps
- Tunneling and extended modes for high-speed data and bidirectional data transfer
- 32-bit read/write password with configurable protected area
- Chip Kill feature to block RF access to IC memory or MCU
- Silent mode to disable RF link when battery charge is low, configurable between 1.42V-3.65V
- Available in 8-pin QFN package, Chip Scale Package, or sawn wafer

AS3955 Block Diagram



www.ams.com
products@ams.com

Headquarters
ams AG
Tobelbader Strasse 30, 8141 Unterpremstaetten, Austria
Phone +43 3136 500-0

Sales Offices Worldwide
sales-europe@ams.com
sales-asia@ams.com
sales-americas@ams.com