

AS3910

13.56 MHz RFID Reader IC, ISO-14443 A/B

1 General Description

The AS3910 is a high performance 13.56MHz HF RFID Reader IC. With austriamicrosystems' unique antenna management technology it is optimized for applications with directly driven antennas.

The AS3910 is unequalled in the domain of HF Reader ICs in that it contains two differential low impedance (1.5Ω) antenna drivers.

These drivers are unmatched meaning the IC can deliver up to 8 times the output power of a standard HF Reader IC using the same power supply voltage.

Additionally using this configuration means half of the power consumption at the same output power.

The IC has an operating voltage down to 2.4V and a low power operating mode of 5mA. This means the AS3910 is ideal for portable or battery powered applications.

For applications where high power is required (EMV) the AS3910 can attain up to 700mW. This means there is no need for complex external booster circuitry.

The component count and complexity of the design is further reduced through the patented automatic modulation depth adjustment.

The analog front end (AFE) is complimented by a highly integrated data framing engine for both ISO-14443 A and B.

This includes data rates up to 848kbps with all framing and synchronization tasks on board. This enables the customer to build a complete HF RFID Reader using only a low end micro.

The AS3910 not only supports reader to tag communication, but sports Peer to Peer communication using the NFCIP-1 active communication mode with a data rate of 106kbps.

The IC has a SPI, which enables bi-directional communication with the external microcontroller.

Other standard and custom protocols, such as ISO-15693 can be implemented via transparent mode.

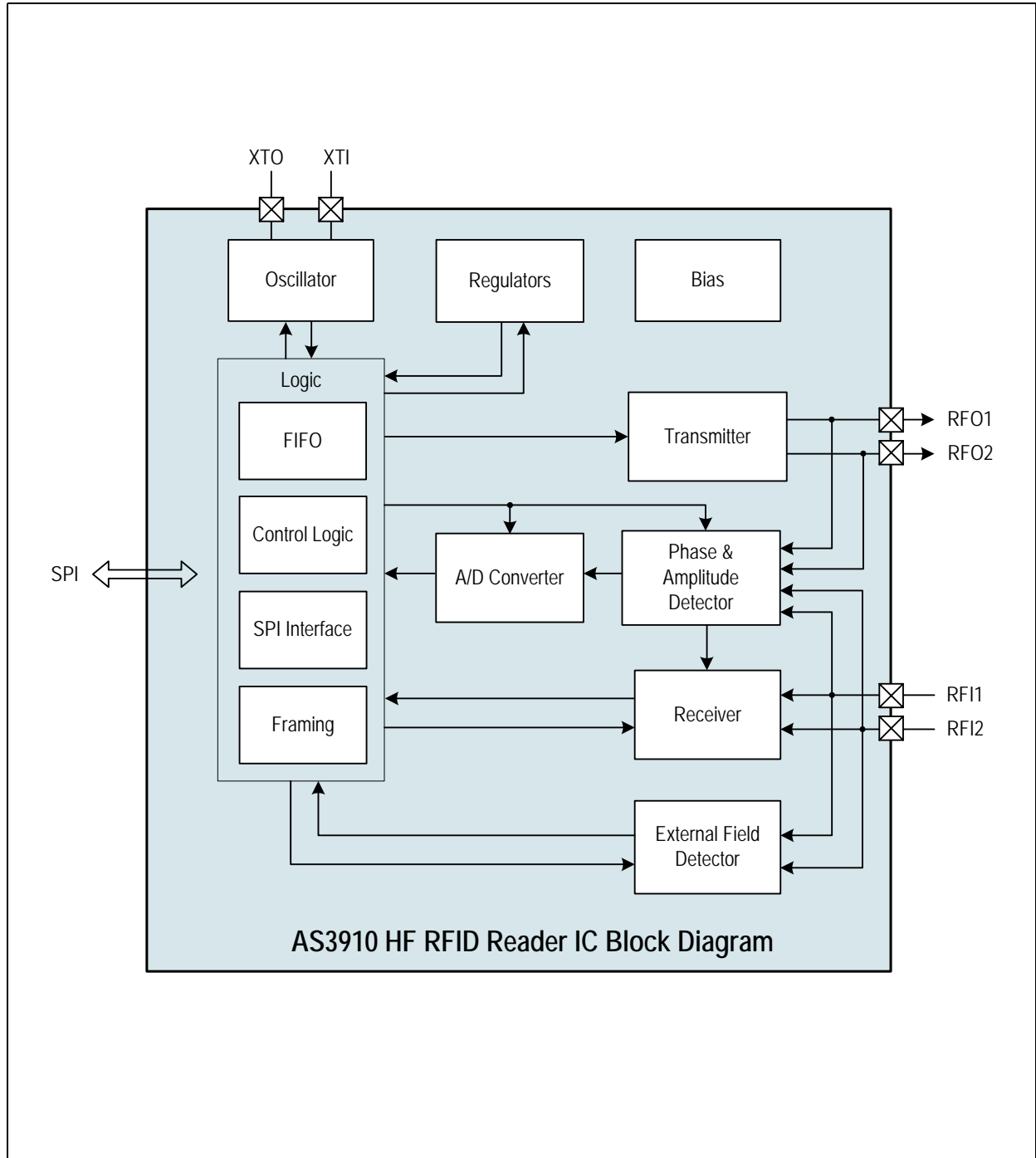
2 Key Features

- Close loop adjustment of ASK modulation for accurate control of modulation depth in case of ISO-14443B protocol
- Antenna trimming system providing correction range of LC
- Low power operating mode reduces receiver consumption from 10mA to 5mA
- Low power (3.5μA) NFC target mode
- Integrated regulators to boost system PSRR
- AM/PM demodulator to eliminate communication holes
- RSSI measurement
- Accurate RF envelope measurement (8 bit A/D)
- High output power at 3.3V power supply:
 - up to 700mW in case regulator is externally shorted
 - up to 500mW in case differential output and antenna trimming is used
 - up to 125mW in case of single ended output and antenna trimming is used
- Squelch feature which performs gain reduction to compensate for noise generated by transponder processing
- User selectable and automatic gain control
- Transparent mode to implement other standard and custom protocols (ISO-15693, Felica, ...)
- Quartz oscillator capable of operating with 13.56MHz or 27.12MHz crystal with fast start-up
- Additional A/D converter input, Serial peripheral interface (SPI) with 32 byte FIFO
- Supply voltage range from 2.4V to 3.6V
- Wide temperature range: -40°C to 85°C
- QFN 32 5x5 package

3 Applications

The AS3910 is ideal for applications where the reader antenna is directly driven (no 50Ω cable). It also includes several unique features, which make it especially suitable for low power and battery powered applications.

Figure 1. AS3910 HF RFID Reader IC Block Diagram



4 Ordering Information

The devices are available as the standard products shown in [Table 1](#).

Table 1. Ordering Information

Ordering Code	Description	Delivery Form	Package
AS3910-BQFT	HF RFID Reader IC	Tape & Reel	32-pin QFN (5x5mm)

Note: All products are RoHS compliant and Pb-free.

Buy our products or get free samples online at ICdirect: <http://www.austriamicrosystems.com/ICdirect>

For further information and requests, please contact us: RFID@austriamicrosystems.com
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