

# Save power – not functionality

## AS3993

- ▶ GEN2 Reader IC with DRM
- ▶ Tolerance against Self Jammer
- ▶ Operation down to 2.7V
- ▶ Current consumption 80mA
- ▶ Small Package QFN-48 7x7





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**General Description**

The AS3993 UHF reader chip is the next generation integrated analog front end and protocol handling system for a 900MHz RFID reader system from austriamicrosystems. It is a completely new architecture from the AS3992 and is optimized for low voltage, low power applications down to 2.7V.

The AS3993 now delivers UHF EPC Gen 2 in a small QFN48 7x7 or flip chip, while retaining the flexibility, integration and simplicity of the previous generations. Combined with the low power operation makes it ideal for embedded or mobile applications.

The AS3993 retains the -86dBm sensitivity of the AS3992, including self jamming robustness against antenna reflections. This is critical for mobile or embedded applications, where the antenna design is challenged and the additional sensitivity / robustness is needed.

The internal PA has been optimized further, which will now deliver up to 20dBm even under challenging conditions. It continues to support operation on the DRM link frequencies used in ETSI and FCC regions. It complies with EPC Class 1 Generation 2 protocol (ISO 18000-6C) and ISO 18000-6A/B (in direct mode). The reader configuration is achieved by selecting the desired protocol settings in the control registers. Direct access to all control registers also allows fine-tuning of different reader parameters.

**Key Features**

- ISO18000-6C (EPC Gen2) full protocol support
- ISO18000-6A,B compatibility in Transparent mode
- 3.3V supply voltage (2.7V to 3.6V)
- Filters dedicated to 250kHz and 320kHz M4 and M8 DRM operation
- Support of ISO29143 (Air Interface for Mobile RFID Interrogators)
- Antenna driver using ASK or PR-ASK modulation
- AM & PM demodulation eliminating communication holes through automatic I/Q selection
- On-board VCO and PLL covering complete RFID frequency range from 840MHz to 960MHz
- Significant increase of PSRR through on-chip RF output supply regulators
- Power-down, standby and active mode
- Frequency hopping support
- Integrated low level transmission coding
- Integrated low level decoders
- Integrated data framing
- Integrated CRC checking
- 4 pin SPI interface to MCU using 24 bytes FIFO
- Selectable clock output for MCU
- Large peripheral communication supply range from 1.65V to 5.5V
- Integrated regulators with automatic setting to boost system PSRR

- Internal power amplifier (<td> dBm) for short range applications
- Adjustable ASK modulation index
- Selectable reception gain
- Reception automatic gain control
- Oscillator using 20MHz crystal
- Wide temperature range: -40°C to 85°C
- 48-pin QFN (7x7mm) package

**Applications**

The device is ideal for embedded consumer/Industrial applications with cost constraints like beverage dispensing. Additionally, AS3990 is well positioned for the growing UHF mobile market.

