

UZ2400 Low Power 2.4GHz Transceiver



General Description

The UZ2400 is a RF-solution that complies with the IEEE 802.15.4/ZigBee specifications. It integrates a wireless RF transceiver operating at 2.4 GHz with 802.15.4 compliant baseband and MAC layer function blocks.

UZ2400 can be combined with a microprocessor (e.g. 8051) for low data rate applications such as home automation, consumer electronics, PC peripherals, toys, industrial automation, etc.

The RF block of UZ2400 integrates receiver, transmitter, VCO and PLL within a single IC. It uses advanced radio architecture to minimize the external component count and the power consumption.

UZ2400 MAC/Baseband provides the hardware architecture for both the 802.15.4 MAC and the PHY layers. It mainly consists of TX/RX FIFOs, CSMA-CA controller, Super frame constructor, receiving frame filter, security engine and digital signal processing module.

Features

RF/Analog

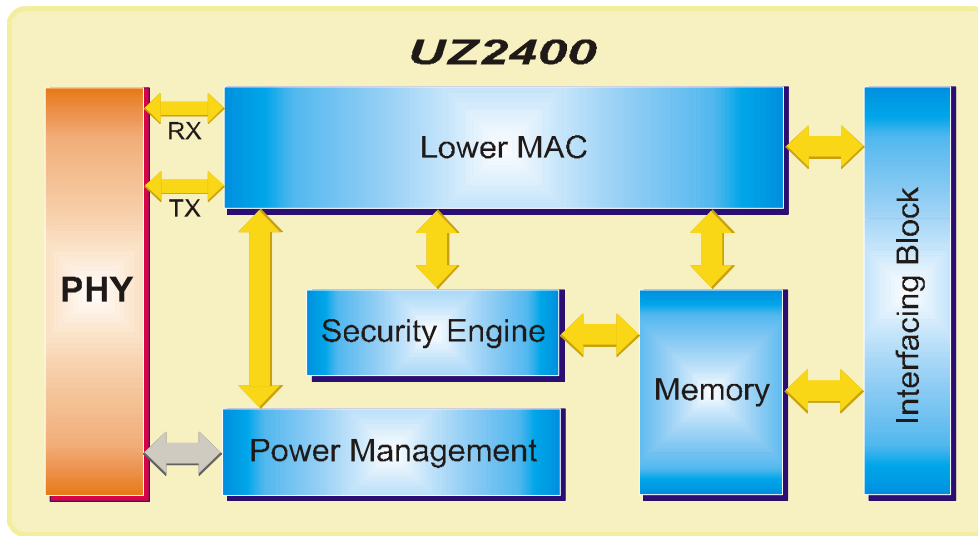
- ◆ ISM band 2.405 to 2.480 GHz operation
- ◆ Complete IEEE 802.15.4-2003 specification compliance
- ◆ -95 dBm sensitivity and 5 dBm maximum input level
- ◆ 0 dBm typical output power and 36 dB TX power control range
- ◆ Differential RF input/output and integrated TX/RX switch
- ◆ Integrated low phase noise VCO, frequency synthesizer and PLL loop filter
- ◆ Integrated 20 MHz and 32.768KHz oscillator drive
- ◆ Integrated 100kHz internal oscillator circuit
- ◆ Digital VCO and filter calibration
- ◆ Integrated RSSI ADC and I/Q DACs
- ◆ Integrated LDO
- ◆ High receiver and RSSI dynamic range
- ◆ Support power saving modes
- ◆ Low current consumption, 18 mA in RX and 22mA in TX mode
- ◆ 2 uA deep sleep mode
- ◆ Low external component count
- ◆ Data rate: 250kbps/625kbps
- ◆ 0.18 μm CMOS technology
- ◆ Small 40-pin leadless QFN 6x6 mm² package

MAC/Baseband

- ◆ Complete IEEE 802.15.4-2003 specification compliance
- ◆ Hardware CSMA-CA mechanism, automatic ACK response and FCS check
- ◆ Programmable Super frame construction
- ◆ Independent beacon, transmit and GTS FIFO
- ◆ Hardware security engine (AES-128) with CTR, CCM and CBC-MAC modes
- ◆ Four low power operation modes
- ◆ Support all CCA modes and RSSI/LQI
- ◆ Simple four-wire SPI interface
- ◆ I2C slave supported



UZ2400 Chip Block Diagram



PHY Block Architecture

- ◆ The PHY (physical) block is compliant to IEEE 802.15.4-2003 2.4GHz band standard

