

## Product Overview

### AXM0F243: Ultra-Low Power Narrow-Band Sub GHz (27 - 1050 MHz) ARM® Cortex®-M0+ Wireless Microcontroller

For complete documentation, see the data sheet.

The AXM0F243 is a System on Chip (SoC) for true single chip wireless applications. The SoC contains the field proven narrow-band RF transceiver core and a high performance ARM® Cortex®-M0+ microcontroller (MCU) core.

The AX5043 core is extremely powerful and is software programmable. With the widest array of available modulation schemes and data rates from 100 bps to 125 kbps, nearly any Sub GHz protocol, proprietary or standards based, can be implemented.

The software programmability of the radio core also makes it possible to share a common hardware design for products that have different software loaded, making it easier for customers to manage multiple SKUs. It's also possible to implement a multi-protocol solution using this device for powerful gateway implementations.

The integrated frequency synthesizer can generate any carrier frequency from 27 MHz to 1050 MHz. For frequencies below ~400 MHz an external inductor is used by the integrated VCO, but above ~400 MHz an integrated inductor can be used instead.

The AX5043 receiver is extremely robust and can achieve sensitivities as low as -137 dBm, while consuming less than 10 mA of current. For applications that require antenna diversity, an integrated diversity controller is included and can automatically control an external antenna switch through a GPIO pin. The receiver also has a wake on radio feature, which further reduces power consumption by allowing the MCU to sleep as long and as often as possible between radio events.

The AX5043 transmitter includes either a differential power amplifier that generates up to 16 dBm or a single ended option for up to 13 dBm.

The high performance ARM® Cortex®-M0+ runs at up to 48 MHz and has 64 kB of FLASH and 8 kB of RAM. The MCU contains two independent serial communication blocks (SCBs) which can be configured to do I2C, SPI, UART, etc. The MCU has five 16 bit timers that act as counters, PWM modulators, or pulse generators. There are 19 programmable GPIO pins.

In addition to the extremely power MCU core, the AXM0F243 MCU also has powerful and unique analog functionality. There is an integrated 12 bit SAR ADC capable of 1 Msps conversions, with single-ended and fully differential modes. The MCU also contains two current DACs, two ultra-low power comparators and two ultra-low power operational amplifiers.

With its robust and efficient RF transceiver, and powerful ARM® Cortex®-M0+ MCU and programmable analog, the AXM0F243 is an outstanding choice for low power and long range Internet of Things applications.

#### Features

- Frequency Range of 27 MHz to 1050 MHz
- Ultra-low Power ARM® Cortex®-M0+ 48 MHz MCU with 64 kB FLASH, 8 KB RAM
- High Performance Narrow-band RF-Transceiver, based on field proven AX5043
- 5 mm x 7 mm QFN40 package
- Supply Range 1.8V - 3.6 V
- Ultra-low Power and Programmable Analog Blocks
- 19 General Purpose I/O

#### Applications

- Automatic Meter Reading (AMR)
- Security Applications
- Home and Building Automation
- Industrial IoT and Sensor Networks
- Lighting and Remote Control

#### Benefits

- Largest range of frequencies available on a single device
- Industry standard MCU for software portability
- Widest array of shaped modulations supported (FSK, MSK, 4-FSK, GFSK, GMSK, AFSK, ASK, FM), excellent receiver, and efficient transmitter, with a very high link budget for long range communication
- Ultra-low power, high performance device housed in a small package
- Ideal for wide range of battery operated application
- Higher levels of system integration possible
- Flexible digital I/O to interface with sensors and other devices

#### End Products

- Electricity Meter
- Remote Control
- Sensor Node
- Water Meter
- Sensor Gateway

## Part Electrical Specifications

Product	Compliance	Status	Data Transmission Standard	Frequency Band (MHz)	Carrier Frequency (MHz)	Package Type
AXM0F243-1-TX40	Pb-free Halide free	NEW	MSK PSK GMSK FSK ASK AFSK 4-FSK GFSK	27-1050	27-1050	QFN-40

For more information please contact your local sales support at [www.onsemi.com](http://www.onsemi.com).

Created on: 2/19/2019