

Product Overview

AXM0F343: Ultra-Low Power Narrow-Band Sub GHz (27 - 1050 MHz) ARM® Cortex®-M0+ Wireless Microcontroller

For complete documentation, see the data sheet.

The AXM0F343 is a System on Chip (SoC) for true single chip wireless applications. The SoC contains the field proven narrow-band AX5043 RF transceiver and a high performance ARM® Cortex®-M0+ microcontroller (MCU).

The AX5043 radio is extremely powerful and is software programmable. With the widest array of available modulation schemes, frequency range from 27 MHz to 1050 MHz, 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 industry leading 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 40 MHz and between two variants has either 64 kB of FLASH and 8 kB of RAM or 256 kB of FLASH and 32 kB RAM. The MCU has two USART blocks, a SPI controller, and I2C interfaces. Rich timer options: systick timer, three 16 bit general purpose timers, a 32 bit tick timer, and a 32 bit watchdog timer. There are four capture and compare PWM blocks as well as a sigma delta modulator. On board hardware acceleration for AES, CRC, and TRNG. There are 19 programmable GPIO.

In addition to the extremely powerful MCU core, the AXM0F343 MCU also has powerful analog functionality. There is an integrated 12 bit SAR ADC capable of 1 Msps conversions, with single-ended and fully differential modes for up to six different channels. The MCU also contains two ultra-low power comparators.

With its robust and efficient RF transceiver, and powerful ARM® Cortex®-M0+ MCU, the AXM0F343 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+ 40 MHz MCU with either 64 kB FLASH / 8 KB RAM or 256 kB FLASH / 32 kB RAM
 - High Performance Narrow-band RF-Transceiver, based on field proven AX5043
 - 5 mm x 7 mm QFN40 package
 - Supply Range 2.1V - 3.6 V
 - High performance 12 bit ADC, low power comparators
 - 19 General Purpose I/O
 - Extremely low standby current
 - Industry leading best in class receiver sensitivity of -137 dBm
 - PHY support for many low data rate 802.15.4g SUN PHYs
- For more features, see the data sheet

Applications

- Smart Metering
- Smart City
- Electronic Shelf Labels (ESL)
- Security Applications
- Industrial IoT and Sensor Networks

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 the highest link budget for the longest 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
- Vastly extends battery life
- Longest range due to largest link budget, and can trade off ultra-long range for lower Tx current consumption

End Products

- Electricity Meter
- Sensor Concentrator
- Water Meter
- Sensor Node
- Gas Meter

Part Electrical Specifications

Product	Pricing (\$/Unit)	Compliance	Status	Data Transmission Standard	Frequency Band (MHz)	Carrier Frequency (MHz)	Package Type
AXM0F343-256-1-TX40	2.28	Pb-free	NEW	4-FSK	27-1050	27-1050	QFN-40
		Halide free		AFSK			
		non AEC-Q and PPAP		ASK			
		FSK					
		GFSK					
		GMSK					
		MSK					
PSK							
AXM0F343-64-1-TX40	1.8	Pb-free Halide free non AEC-Q and PPAP	NEW	4-FSK AFSK ASK FSK GFSK GMSK MSK PSK	27-1050	27-1050	QFN-40

For more information please contact your local sales support at www.onsemi.com.

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