Product Overview

AX8052F151: RF Microcontroller, Ultra-low Power

For complete documentation, see the data sheet

Product Description

The AX8052F151 is a complete universal RF-microcontroller for usage in the 400 - 470 MHz and 800 - 940 MHz bands. It offers high integration, small footprint, flexibility and ultra-low power consumption. The AX8052F151 is able to transmit and receive data rates of 1 - 600 kbps for ASK modulated data, 1 - 350 kbps for FSK modulated data and 10 - 600 kbps for PSK modulated data. With a sensitivity of -116 dBm for 1.2 kbps FSK and 15 dBm maximum output power at 868 MHz, the AX8052F151 is able to offer an attractive link budget.

The AX8052F151 microcontroller core executes the industry standard 8052 instruction set. The system clock can be programmed freely from DC to 20 MHz. As instructions are executed in a single cycle, the core can deliver 20 MIPS. A 64 kByte flash memory is provided, allowing to program applications in C. A fully associative cache and a pre-fetch controller hide the latency of the flash memory. It specifically targets ultra-low power applications. Four system clock sources can be selected on the fly, allowing to flexibly adapt the system speed to varying application needs. The core consumes 150 µA/MHz and AX5052F151 consumes 950 nA in sleep mode with wake-up timer running and with 256 Byte SRAM retention.

The AX5052F151 features a dual channel DMA engine that can transfer data to and from XRAM to any peripheral on chip. A dedicated AES engine with its own DMA engine is provided for encryption. Further peripherals include three general purpose timers with optional sigma-delta output mode. The timers can be used as baud rate generators for the two UARTs. A master/slave SPI interface is provided. A 10-bit, 500 kSample/s ADC with flexible input modes, as well as comparators allow to interface with analog data streams.

Features	Benefits
• Carrier frequency range of 400 - 470 MHz and 800 - 940 MHz	• Ideal RF-microcontroller for many applications
• Ultra-low Power AX8052 MCU	• Consumes 950 nA in sleep mode with wake-up timer running and with 256 Byte SRAM retention.
• High Performance Narrow-band RF-Transceiver	• Wide variety of shaped modulations supported (FSK, MSK, 4-FSK, GFSK, GMSK, AFSK, ASK, FM)
• 64 kByte Flash and 8.25 kByte SRAM memory	• Able to program applications in C

Applications	End Products
• Wireless Applications	• Toys
• Building Automation	• Remote Controls
• Automatic Meter Reading (AMR)	• Remote Keyless Entry
• Telemetry	• Sensor Readouts / Thermostats

Part Electrical Specifications

Product	Compliance	Status	Bits	ROM (bits)	RAM (bits)	Bus Cycle Time Min (µs)	Instruction Cycle Time Min (µs)	Interrupts	IO Ports	ADC	PWM Outputs	Timers	USB	LCD Controller/Driver	V_{DD} Min (V)	V_{DD} Max (V)	Package Type
AX8052F151-2-TB05	Pb-free / Halide free	Active															QFN-40
AX8052F151-2-TX30	Pb-free / Halide free	Active															QFN-40

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