

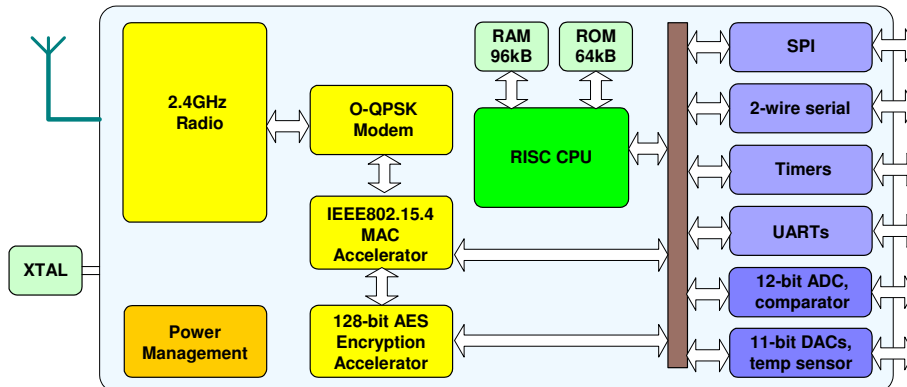
Product Brief – JN5121

IEEE802.15.4 / ZigBee Wireless Microcontroller

Overview

The JN5121 is the first in a series of low power, low cost IEEE802.15.4 compliant wireless microcontrollers. Combining an on chip 32-bit RISC core, a fully compliant 2.4GHz IEEE802.15.4 transceiver, 64kB of ROM and 96kB of RAM, provides a versatile low cost solution for wireless sensor networking applications. The high level of integration helps to reduce the overall system cost. In particular, the ROM enables integration of point-to-point and mesh network stack protocols, and the RAM allows support of router and controller functions without the need for additional external memory. The JN5121 uses hardware MAC and highly secure AES encryption accelerators for low power and minimum processor overhead. Integrated sleep oscillator and power saving facilities are provided, giving low system power consumption. The device also incorporates a wide range of digital and analogue peripherals for the user to connect to their application.

Block Diagram



Features: Transceiver

- 2.4GHz IEEE802.15.4 compliant
- Security processor (128-bit AES)
- MAC accelerator with packet formatting, CRCs, address check, auto-acks, timers
- Integrated power management and sleep oscillator for low power
- On-chip power regulation for 2.2V to 3.6V battery operation
- Sleep current (with active beacon timer) < 5µA
- Needs minimum of external components (<US\$1 extra cost)
- Rx current < 50mA
- Tx current < 45mA
- Receiver sensitivity -90dBm
- Transmit power 0dBm

Features: Microcontroller

- 16MHz 32-bit RISC optimised for low power (3MIPS/mA) and efficient code density
- 96kB RAM for shared program, data and routing tables
- 64kB ROM for program code
- 4-input 12-bit ADC, 2 11-bit DACs, comparator, temperature sensor
- 2 Application timer/counters, 3 system timers
- 2 UARTs (one for in-system debug)
- SPI port with 5 selects
- 2-wire serial interface
- 21 GPIO

Industrial temperature range
(-40°C to +85°C)

8x8mm 56 lead QFN package

Lead-free and RoHS compliant

Benefits

- Single chip solution with integrated transceiver and microcontroller for wireless sensor networks
- Capacity and power efficient microcontroller for both controllers and sensor units
- Low application BOM cost and size
- Hardware MAC ensures low power consumption and low processor overhead
- Extensive user peripherals

Applications

- Robust and secure low power wireless applications
- Wireless sensor networks, particularly IEEE802.15.4 / ZigBee systems
- Home and commercial building automation
- Home networks
- Toys and gaming peripherals
- Industrial systems
- Telemetry and utilities (e.g. AMR)

