

Extremely Low-Power Edge Devices Microcontroller for Sensing Applications

Description

The EDMS105N general purposes microcontroller is based on the ARM Cortex-M0 32-bit architecture and presents an extremely low power consumption, both in active and standby mode. This makes it perfectly suited for sensing applications that operate for extended period of time in standby mode while still requiring processing capabilities. It is packed with multiple peripherals for communication, timing, sensing or security purposes along with memories, oscillators, integrated power regulators and an intelligent multi-mode power management unit. This extremely low-power, highly-integrated microcontroller will turn any sensing edge devices into true install and forget systems.

Features

Performances:

- 32-bit ARM Cortex-M0, 24 MHz operating frequency
- Supply voltage: 1.8-3.3 V
- Active current (CoreMark): 18 μ A/MHz
- DeepSleep current (RTC + 8 kB SRAM retention): 340 nA

Power Management:

- Highly efficient built-in inductive buck converters
- LDOs for reduced BOM or improved supply stability
- Multiple, easy to use operating modes based on ARM Active, Sleep and Deepsleep modes for different levels of power and clock gating
- 1 MHz LP mode for instantaneous power reduction

Memories:

- 256 kB of non-volatile single-cycle flash memory with instruction cache
- 32 kB of SRAM memory
- SRAM retention available per 8 kB bank in Deepsleep

System:

- 8-channel DMA controller for coreless memory transfers
- Inter-peripheral signalling for coreless peripheral communication
- Single Wire Debug interface
- Clock gating and scaling available by peripheral

Oscillators:

- Internal RC oscillators (32.768 kHz, 1 MHz and 24 MHz)
- Crystal drivers (32.768 kHz and up to 32 MHz)

Communication:

- One UART with 8-byte FIFO
- One debug UART (no FIFO, TX only)
- Two master/slave SPI with multi-master support, up to 4 chip select, 8-byte FIFO
- Two master/slave I²C with multi-master support, 7- and 10-bit addressing modes, up to FM+ (1 Mbit/s)
- Two master/slave/controller I²S, 8 to 32 bits word size, 16-byte FIFO
- Up to 48 GPIOs

Timers:

- Four 32-bit Multi-Function timers with two compare/capture channels
- One RTC with both calendar and millisecond counters
- One 32-bit Watchdog

Security:

- One 128-bit AES module with ECB, CBC and CTR mode support
- One hardware TRNG based on clock drift

Analog:

- One 12-bit ADC with 8 channels, up to 500 kS/s, 8-data FIFO, accumulation and averaging, LP mode for low sample rate/low power consumption
- One rail-to-rail analog comparator with VDD scaler

Applications

- Smart Sensor
- Smart Home
- Smart Building
- Industrial Monitoring
- Asset Tracking
- E-health/Medical

Device Information

Part number	Package	Size
EDMS105N-28MQ	QFN48	6 mm x 6 mm

Block Diagram

