



# AX102 8-bit RISC Microcontroller



## High Performance 8-bit RISC MCU

- DC-24MHz operation
- 125ns internal interrupt response
- All instructions are single-cycled except branching and special-I instructions

## CPU Features

- 64 compact instruction sets
- Special lread instruction for memory access
- 3.0~3.6V operating voltage
- Support HOLD/SLEEP power-saving mode
- 16-level deep hardware stack for subroutine linkage (extended levels of subroutine linkage are supported by software)

## Program Memory and Data Memory

- 4k x 16-bit OTP program memory
- 640 x 8-bit SRAM data memory
- Provide 1 pointer for direct and indirect addressing
- Dedicate 62 x 8-bit ROM space for storing product ID

## Interrupt Features

- 16 vectored interrupts for Timer/CCP/Ports/USB/UART/ADC/SSP
- External wakeup/interrupt capabilities on Port B (7 pins) and USB PHY
- 2 levels interrupt priority selection for all the hardware interrupt sources
- Software interrupt capability

## Flexible I/O

- 26 GPIO pins
- All pins can be individually programmable as I/O
- All pins(except RD) are internal pull-up selectable

## Hardware Peripheral Features

- Timer0: 8-bit timer/counter with 8-bit period register and 12-bit prescaler
- Timer1: 16-bit timer/counter with 12-bit prescaler
- Timer2: 8-bit timer/counter with 8-bit period register and 12-bit prescaler
- Timers support Timer/Counter mode
- Timer2 supports 12-bit PWM
- Watchdog Timer with on-chip 16kHz RC oscillator
- Internal PLL allows flexible selection of system clock, reducing some applications that require multiple crystals to single crystal operation
- Full-speed USB 2.0 device controller and PHY module with 4 endpoints (including endpoint 0) and 512 bytes FIFO. FIFO size of each endpoint:
  - EP0: 32 bytes
  - EP1 IN: 16 bytes
  - EP1 OUT: 16 bytes
  - EP2 IN: 32 bytes
  - EP2 OUT: 32 bytes
  - EP3 IN: 128 bytes
  - EP3 OUT: 256 bytes
- SSP1 (Synchronous Serial Port1) module supports SPI mode
- SSP2 (Synchronous Serial Port2) module supports I<sup>2</sup>S/PCM mode
- SSP3 (Synchronous Serial Port3) module supports GPSI mode
- 8-channel 10-bit ADC, with 1 channel supports microphone amplifier input
- 1-channel of 10-bit DAC
- 2 high-speed full-duplex UART

## Programming and Debugging Support

- In-System Programming (ISP) support
- In-System Debugging (ISD) support

## Packages

- 48-pin LQFP (7mm x 7mm)
- DIE form

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