



ATmega8A

Low-Power AVR 8-bit Microcontroller Data Sheet Summary

Introduction

The ATmega8A is a low-power CMOS 8-bit microcontroller based on the AVR[®] enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the ATmega8A achieves throughputs close to 1 MIPS per MHz. This empowers system designers to optimize the device for power consumption versus processing speed.

Features

- High-performance, Low-power AVR 8-bit Microcontroller
- Advanced RISC Architecture
 - 130 powerful instructions - most single-clock cycle execution
 - 32 x 8 general purpose working registers
 - Fully static operation
 - Up to 16 MIPS throughput at 16 MHz
 - On-chip 2-cycle multiplier
- High Endurance Nonvolatile Memory segments
 - 8 KB of In-System Self-programmable Flash program memory
 - 512B EEPROM
 - 1 KB internal SRAM
 - Write/erase cycles: 10,000 Flash/100,000 EEPROM
 - Data retention: 20 years at 85°C/100 years at 25°C⁽¹⁾
 - Optional boot code section with independent lock bits
 - In-system programming by on-chip boot program
 - True read-while-write operation
 - Programming lock for software security
- Microchip QTouch[®] library support
 - Capacitive touch buttons, sliders and wheels
 - QTouch and QMatrix acquisition
 - Up to 64 sense channels
- Peripheral Features
 - Two 8-bit timer/counters with separate prescaler, one compare mode
 - One 16-bit timer/counter with separate prescaler, compare mode, and capture mode
 - Real-time counter with separate oscillator
 - Three PWM channels
 - 8-channel ADC in TQFP and QFN/MLF package

- Eight channels 10-bit accuracy
- 6-channel ADC in PDIP package
 - Six channels 10-bit accuracy
- Byte-oriented two-wire serial interface
- Programmable serial USART
- Master/slave SPI serial interface
- Programmable watchdog timer with separate on-chip oscillator
- On-chip analog comparator
- Special Microcontroller Features
 - Power-on Reset and programmable Brown-out Detection
 - Internal calibrated RC oscillator
 - External and internal interrupt sources
 - Five sleep modes: Idle, ADC noise reduction, power-save, power-down, and standby
- I/O and Packages
 - 23 programmable I/O lines
 - 28-lead PDIP, 32-lead TQFP, and 32-pad QFN/MLF
- Operating Voltages
 - 2.7 - 5.5V
- Speed Grades
 - 0 - 16 MHz
- Power Consumption at 4 MHz, 3V, 25°C
 - Active: 3.6 mA
 - Idle mode: 1.0 mA
 - Power-down mode: 0.5 μ A