

## Features

- High-performance, Low-power AVR <sup>®</sup> 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
- Nonvolatile Program and Data Memories
  - 8K Bytes of In-System Self-Programmable Flash
    - Endurance: 10,000 Write/Erase Cycles
  - Optional Boot Code Section with Independent Lock Bits
    - In-System Programming by On-chip Boot Program
    - True Read-While-Write Operation
  - 512 Bytes EEPROM
    - Endurance: 100,000 Write/Erase Cycles
  - 1K Byte Internal SRAM
  - Programming Lock for Software Security
- 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 QFNMLF package
    - Eight Channels 10-bit Accuracy
  - 6-channel ADC in PDIP package
    - Eight 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 QFNMLF
- Operating Voltages
  - 2.7 - 5.5V (ATmega8L)
  - 4.5 - 5.5V (ATmega8)
- Speed Grades
  - 0 - 8 MHz (ATmega8L)
  - 0 - 16 MHz (ATmega8)
- Power Consumption at 4 MHz, 3V, 25°C
  - Active: 3.6 mA
  - Idle Mode: 1.0 mA
  - Power-down Mode: 0.5 µA



8-bit AVR<sup>®</sup>  
with 8K Bytes  
In-System  
Programmable  
Flash

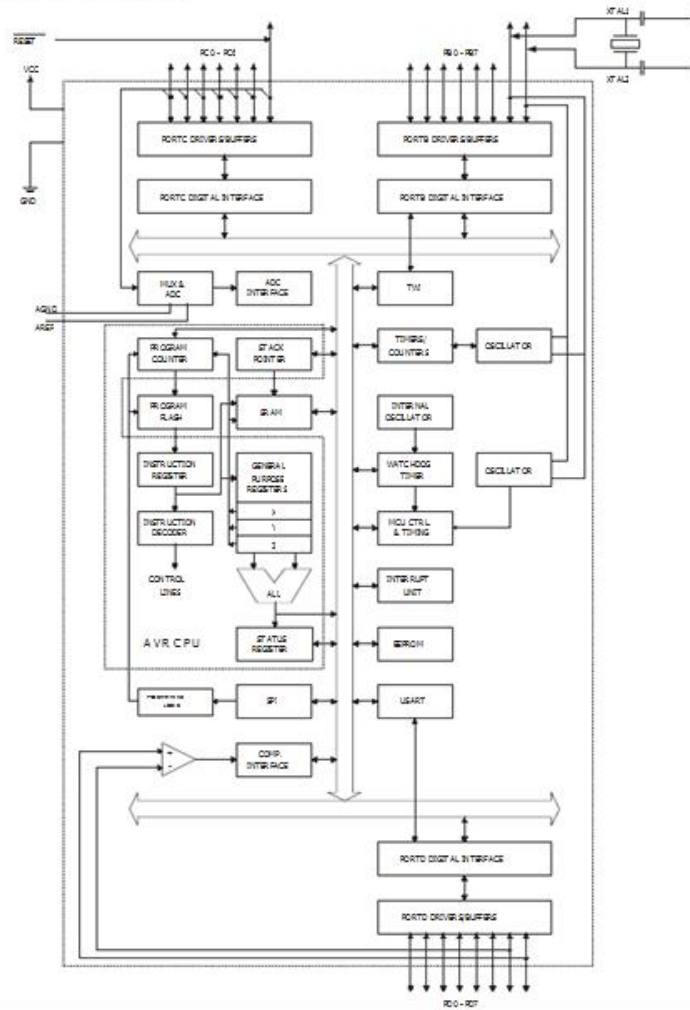
A Tmega8  
A Tmega8L

## Overview

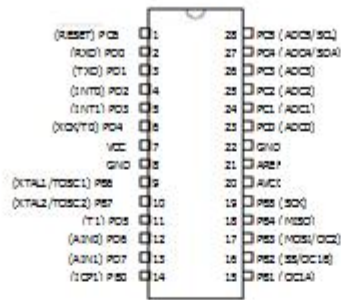
The ATmega8 is a low-power CMOS 8-bit microcontroller based on the AVR RISC architecture. By executing powerful instructions in a single clock cycle, the ATmega8 achieves throughputs approaching 1 MIPS per MHz, allowing the system designer to optimize power consumption versus processing speed.

## Block Diagram

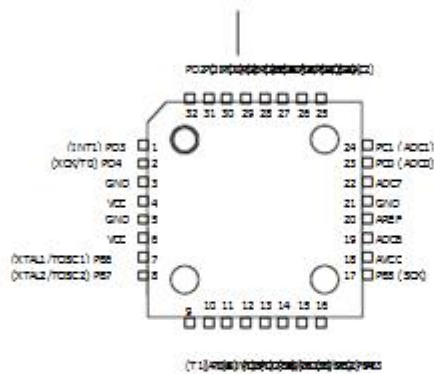
Figure 1. Block Diagram



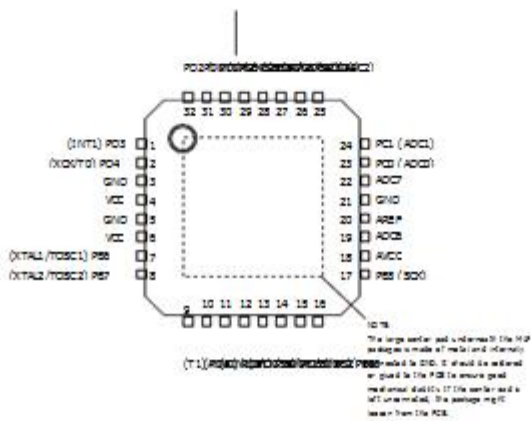
PDP



TQFP Top View



MLF Top View



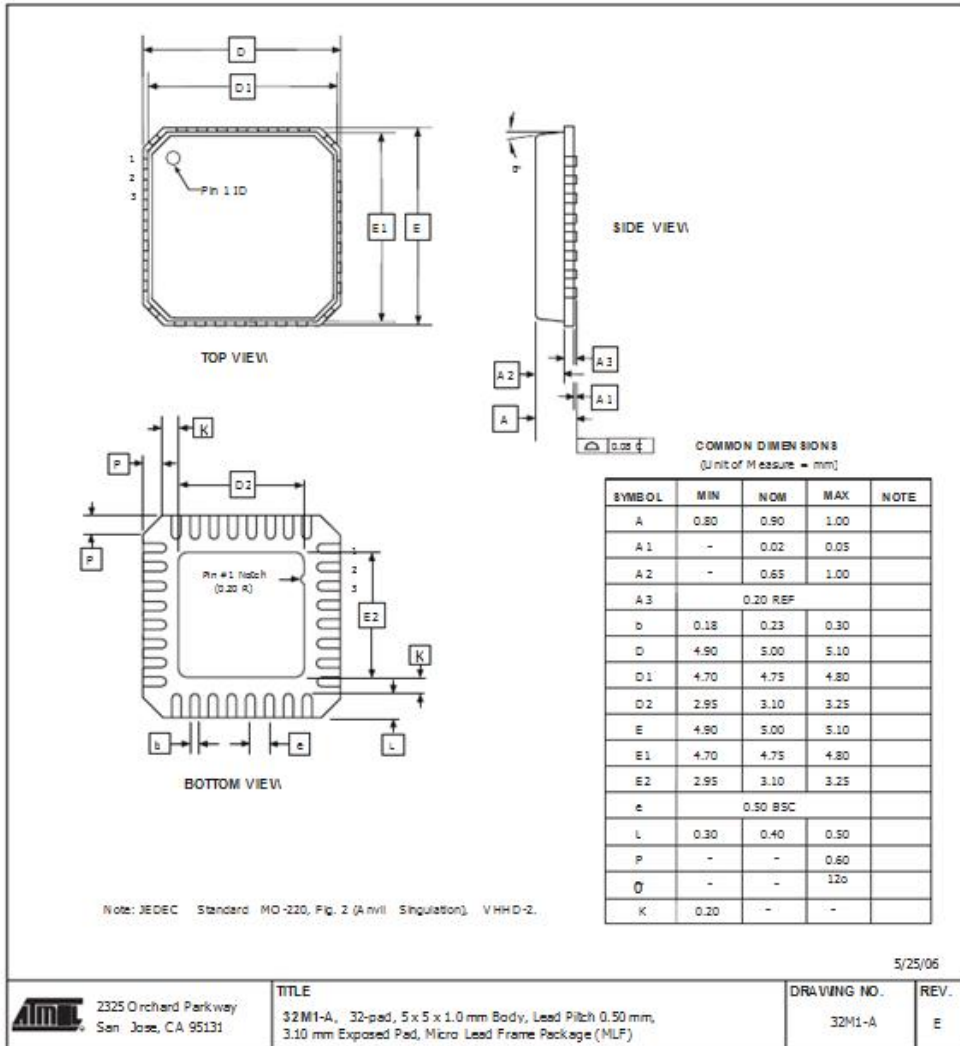
## ATmega8(L)

### Ordering Information

Speed (MHz)	Power Supply	Ordering Code	Package (1)	Operation Range
8	2.7 - 5.5	ATmega8L-8AC	32A	Commercial (0 °C to 70 °C)
		ATmega8L-8PC	28P3	
		ATmega8L-8MC	32M1-A	
		ATmega8L-8AI	32A	Industrial (-40 °C to 85 °C)
		ATmega8L-8AU (2)	32A	
		ATmega8L-8PI	28P3	
ATmega8L-8PU (2)	28P3			
ATmega8L-8MI	32M1-A			
ATmega8L-8MU (2)	32M1-A			
16	4.5 - 5.5	ATmega8-16AC	32A	Commercial (0 °C to 70 °C)
		ATmega8-16PC	28P3	
		ATmega8-16MC	32M1-A	
		ATmega8-16AI	32A	Industrial (-40 °C to 85 °C)
		ATmega8-16AU (2)	32A	
		ATmega8-16PI	28P3	
		ATmega8-16PU (2)	28P3	
		ATmega8-16MI	32M1-A	
		ATmega8-16MU (2)	32M1-A	

- Notes:
1. This device can also be supplied in wafer form. Please contact your local Atmel sales office for detailed ordering information and minimum quantities.
  2. Pb-free packaging alternative, complies to the European Directive for Restriction of Hazardous Substances (RoHS directive). Also Halide free and fully Green.

32M1-A



2325 Orchard Parkway  
San Jose, CA 95131

TITLE

32M1-A, 32-pad, 5 x 5 x 1.0 mm Body, Lead Pitch 0.50 mm,  
3.10 mm Exposed Pad, Micro Lead Frame Package (MLF)

DRAWING NO.

32M1-A

REV.

E