



MICROCHIP

ATmega48A/PA/88A/PA/168A/PA/328/P

megaAVR[®] Data Sheet

Introduction

The ATmega48A/PA/88A/PA/168A/PA/328/P is a low power, CMOS 8-bit microcontrollers based on the AVR[®] enhanced RISC architecture. By executing instructions in a single clock cycle, the devices achieve CPU throughput approaching one million instructions per second (MIPS) per megahertz, allowing the system designer to optimize power consumption versus processing speed.

Features

- High Performance, Low Power AVR[®] 8-Bit Microcontroller Family
- Advanced RISC Architecture
 - 131 Powerful Instructions – Most Single Clock Cycle Execution
 - 32 x 8 General Purpose Working Registers
 - Fully Static Operation
 - Up to 20 MIPS Throughput at 20MHz
 - On-chip 2-cycle Multiplier
- High Endurance Non-volatile Memory Segments
 - 4/8/16/32KBytes of In-System Self-Programmable Flash program memory
 - 256/512/512/1KBytes EEPROM
 - 512/1K/1K/2KBytes 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
- 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 and Compare Mode
 - One 16-bit Timer/Counter with Separate Prescaler, Compare Mode, and Capture Mode

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

38.2 ATmega48PA

Speed (MHz) ⁽³⁾	Power Supply (V)	Ordering Code ⁽²⁾	Package ⁽¹⁾	Operational Range
20	1.8 - 5.5	ATmega48PA-AU	32A	Industrial (-40°C to 85°C)
		ATmega48PA-AUR ⁽⁵⁾	32A	
		ATmega48PA-MMH ⁽⁴⁾	28M1	
		ATmega48PA-MMHR ⁽⁴⁾⁽⁵⁾	28M1	
		ATmega48PA-MU	32M1-A	
		ATmega48PA-MUR ⁽⁵⁾	32M1-A	
		ATmega48PA-PU	28P3	
		ATmega48PA-AN	32A	Industrial (-40°C to 105°C)
		ATmega48PA-ANR ⁽⁵⁾	32A	
		ATmega48PA-MMN ⁽⁴⁾	28M1	
		ATmega48PA-MMNR ⁽⁴⁾⁽⁵⁾	28M1	
		ATmega48PA-MN	32M1-A	
		ATmega48PA-MNR ⁽⁵⁾	32M1-A	
		ATmega48PA-PN	28P3	

- Note:**
1. This device can also be supplied in wafer form. Contact your local Microchip sales office for detailed ordering information and minimum quantities.
 2. Pb-free packaging complies to the European Directive for Restriction of Hazardous Substances (RoHS directive). Also Halide free and fully Green.
 3. See "Speed Grades" on page 312.
 4. NiPdAu Lead Finish.
 5. Tape & Reel.

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