

AVR 32KBytes Flash, 1KBytes EEPROM, 2KBytes RAM, w - 20MHZ, QFN/MFL, Extended TEMP, GREEN 5 V

Manufacturers	<a href="#">Microchip Technology, Inc</a>
Package/Case	VQFN-32
Product Type	Embedded Processors & Controllers
RoHS	
Lifecycle	



Images are for reference only

Please submit RFQ for ATMEGA328PB-MN or [Email to us: sales@ovaga.com](mailto:sales@ovaga.com) We will contact you in 12 hours.

[RFQ](#)

## General Description

The high-performance Microchip's ATmega328PB is an 8-bit AVR® RISC-based microcontroller (MCU) with picoPower® technology. It combines 32kB ISP Flash memory with read-while-write capabilities, 1kB EEPROM, 2kB SRAM, 27 general purpose I/O lines, 32 general purpose working registers, five flexible timer/counters with compare modes, internal and external interrupts, two USARTs with wake-up on start of transmission, two byte-oriented 2-wire serial interfaces, two SPI serial ports, 8-channel 10-bit A/D converter, programmable watchdog timer with internal oscillator, a unique serial number and six software selectable power saving modes. The device operates between 1.8-5.5 volts.

The ATmega328PB is the first 8-bit AVR MCU to feature the QTouch® Peripheral Touch Controller (PTC), which acquires signals in order to detect touch on capacitive sensors, and supports both self- and mutual-capacitance sensors. The PTC is supported by the QTouch Composer development tool (QTouch Library project builder and QTouch Analyzer). It provides a faster and less complex capacitive touch implementation in any application.

The ATmega328PB supports 24 buttons in self-capacitance mode, or up to 144 buttons in mutual-capacitance mode. Mixing and matching mutual- and self-capacitance sensors is possible. Only one pin is required per electrode and no external components are required, delivering savings on the BOM cost compared to competing solutions.

By executing powerful instructions in a single clock cycle, the device achieves throughputs approaching 1 MIPS per MHz, balancing power consumption and processing speed.

**Functional Safety:** This product is recommended for safety critical applications targeting both industrial and automotive products (IEC 61508 and ISO 26262). Necessary documentation such as the FMEDA report can be provided on request. Please contact your local Microchip sales office or your distributor for more information.

## Features

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

32KBytes of In-System Self-Programmable Flash program memory

1KBytes EEPROM

2KBytes Internal SRAM

Write/Erase Cycles: 10,000 Flash/100,000 EEPROM

Data retention: 20 years at 85°C

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

Peripheral Features

Peripheral Touch Controller (PTC)

Capacitive Touch Buttons, Sliders and Wheels

24 Self-Cap Channels and 144 Mutual Cap Channels

Two 8-bit Timer/Counters with Separate Prescaler and Compare Mode

Three 16-bit Timer/Counters with Separate Prescaler, Compare Mode, and Capture Mode

Real Time Counter with Separate Oscillator

Ten PWM Channels

8-channel 10-bit ADC in TQFP and QFN/MLF package

Two Programmable Serial USARTs

Two Master/Slave SPI Serial Interfaces

Two Byte-Oriented 2-Wire Serial Interfaces (Philips I2C Compatible)

Programmable Watchdog Timer with Separate On-chip Oscillator

On-Chip Analog Comparator

Interrupt and Wake-Up on Pin Change

Special Microcontroller Features

Power-On Reset and Programmable Brown-Out Detection

Internal 8 MHz Calibrated Oscillator

External and Internal Interrupt Sources

Six Sleep Modes: Idle, ADC Noise Reduction, Power-save, Power-down, Standby, and Extended Standby

Clock Failure Detection Mechanism and Switch to Internal 8 MHz RC Oscillator in case of Failure

Individual Serial Number to Represent a Unique ID

I/O and Packages

27 Programmable I/O Lines

32-pin TQFP and 32-pin QFN/MLF

Operating Voltage:

1.8 - 5.5V

Temperature Range:

Speed Grade:

0 - 4MHz @ 1.8 - 5.5V

0 - 10MHz @ 2.7 - 5.5V

0 - 20MHz @ 4.5 - 5.5V

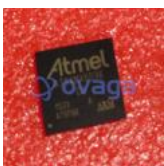
Power Consumption at 1MHz, 1.8V, 25°C

Active Mode: 0.24mA

Power-Down Mode: 0.2µA

Power-Save Mode: 1.3µA (Including 32kHz RTC)

## Related Products



[ATSAMA5D36A-CU](#)

Microchip Technology, Inc  
LFBGA-324



[ATMEGA32M1-AU](#)

Microchip Technology, Inc  
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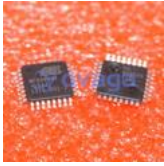
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