



# Z51F3221 Product Brief

PB024002-0312

## Z8051 FAMILY ADVANTAGES

- High-Performance, Low-Cost Architecture
- Industry-Standard 8051-Compatible Core
- Industry-Wide Popularity
- Numerous Third-Party Tools Available
- Zilog's Continuing Commitment to Supporting Our Customers

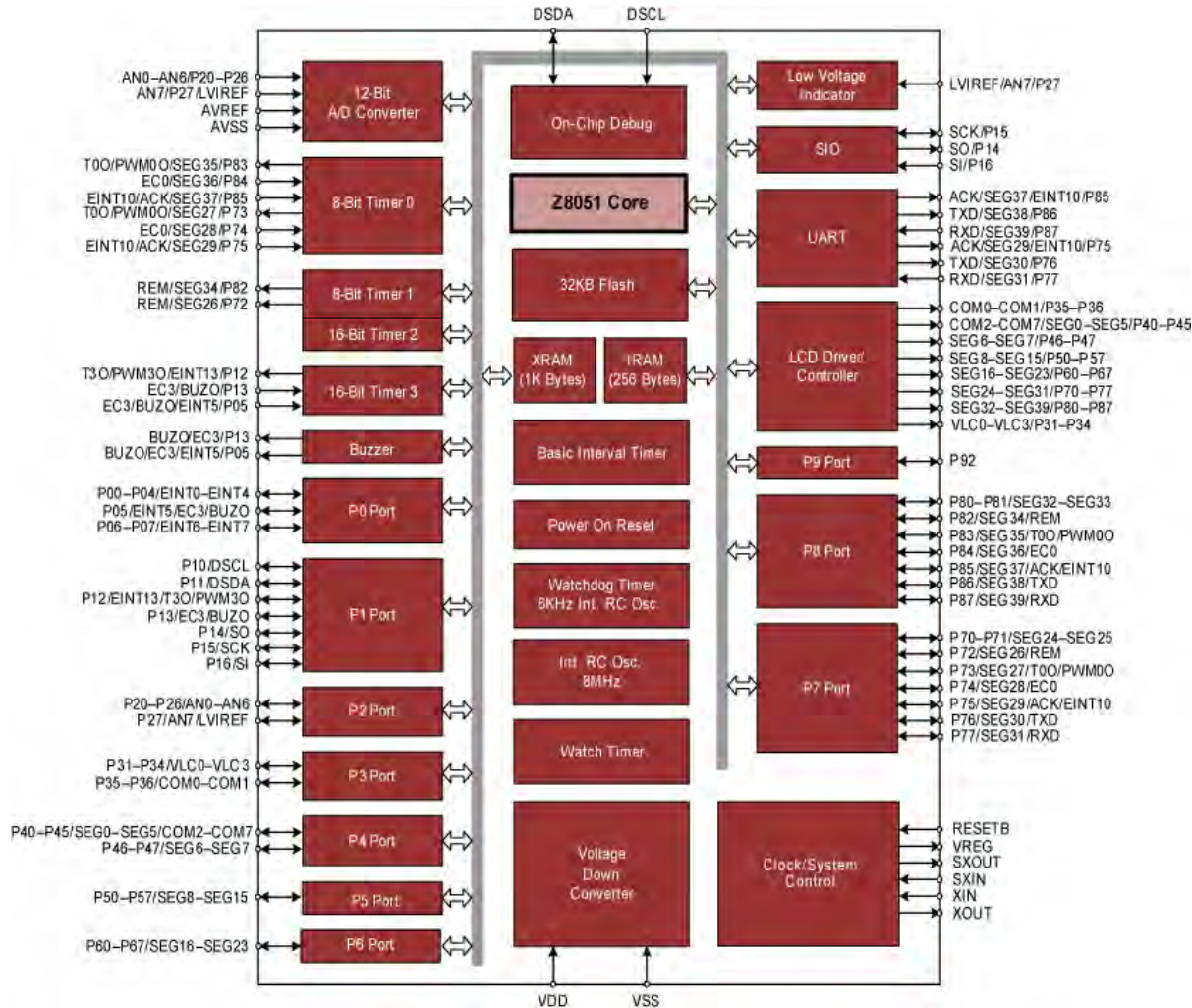
## Zilog's Z51F3221 MCU

### An Industry-Standard 8-Bit Embedded Control Solution

#### Overview

The Z51F3221 MCU, a member of Zilog's new Z8051 product family, is an advanced CMOS 8-bit microcontroller with 32KB of Flash memory. This powerful microcontroller provides a highly flexible and cost-effective solution to many embedded control applications, including digital clocks/watches, medical devices and power monitoring. With 256 bytes of IRAM, 1KB of XRAM, two clocks per machine cycle, general-purpose I/O, multiple timers (1x8-bit and 2x16-bit), plus PWM, watchdog and watch timers, UART, buzzer port, on-chip POR, 12-bit ADC and much more, the Z51F3221 MCU is your 32K Flash solution for multi-peripheral 8051 embedded application development.

#### Z51F3221 MCU Block Diagram



**KEY FEATURES**

- High-Performance 8-bit CISC Core
- 12-Bit, 8-Channel ADC
- Timers with 8- and 16-bit Capture, Counter, Compare and PWM Modes
- Internal RC Oscillator for Lower Component Count
- Code Encryption Option

**Z51F3221 MCU Feature Set**

- High-Performance 8-Bit CISC Core (2 clocks per machine cycle)
- 32KB On-Chip Flash Memory
- 256 Bytes IRAM
- 1KB XRAM
- Operating Frequency: 0–12 MHz
- Operating Voltage: 1.8V–5.5V (@0–4.2 MHz); 2.7V–5.5V (@0–10 MHz); 3.0V–5.5V (@0–12 MHz)
- Internal 8 MHz RC Oscillator with Programmable Clock Divider
- Power-Saving Modes (Idle, Stop)
- Configurable Timers
  - 8- and 16-Bit Capture/Counter PWM Timers
  - 8-Bit Counter, Carrier Mode Timer
  - 16-Bit Internal Counter/Timer
  - Basic Interval Timer
- Watchdog Timer
- Watch Timer
- Universal Asynchronous Receiver/Transmitter (UART/SPI)
- Buzzer Driver Port
- 70 GPIO pins, configurable as push-pull, pull-up or open-drain
  - 24 general-purpose pins
  - 46 shared LCD pins
- 12-Bit ADC with 8 Input Channels
- Multiple Interrupts from Multiple Sources via Priority Setting
- Programmable Brown-Out Detector
- Operating Temperature: –40°C to 85°C
- Packages: 80-Pin LQFP, 64-pin LQFP
- Lead-Free Manufacture

Zilog's Z8051 Family of MCUs: flexible, industry-standard MCU solutions backed by Zilog's long-term commitment to supporting our customers.

**APPLICATIONS**

- Digital Clocks/Alarms/Watches
- Medical Devices
- Power Monitoring

**Ordering Information**

The Z51F3221 MCU is offered in the following packages. Construct your part number based on the specific package you wish to order.

Z51F3221 MCU Part Number	ROM	IRAM	XRAM	Package
Z51F3221ATX	32 KB	256b	1KB	80-pin LQFP
Z51F3221ARX	32 KB	256b	1KB	64-pin LQFP

Order the Z51F3221 MCU separately using part numbers from the above table. For complete ordering information, please refer to the Z51F3221 MCU Product Specification (PS0300).

For more information about Zilog's Z8051 family of products, ordering or product collateral, please consult your local Zilog distributor or representative. You can find sales office locations and the most current product information on our website; please visit us at [www.zilog.com](http://www.zilog.com).

**Documentation**

For a complete listing of all available application notes, data sheets, user manuals, and sample libraries, please visit us at [www.zilog.com](http://www.zilog.com).

Document Number	Description
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PS0300	Z51F3221 Product Specification
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**Related Products**

Zilog carries a number of products based on the Z8051 Core to suit your application requirements. For more information about the following products, please visit us at [www.zilog.com](http://www.zilog.com).

Product Name	Description
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Z51F0410 MCU	Z8051 core with 4KB Flash, 256b RAM and 256b EEPROM in a 10-pin SSOP package
Z51F0811 MCU	Z8051 core with 8KB Flash, 256b RAM and 512b EEPROM in 16-, 20- & 28-pin TSSOP and 32-pin QFN packages
Z51F3220 MCU	Z8051 core with 32KB Flash, 1KB RAM in 32-pin SOP & 44-pin MQFP packages
Z51F6412 MCU	Z8051 core with 64KB Flash, 3.25KB RAM in 64- & 80-pin LQFP packages



**Warning: DO NOT USE THIS PRODUCT IN LIFE SUPPORT SYSTEMS.**

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