



Welcome to [E-XFL.COM](https://www.e-xfl.com)

### What is "[Embedded - Microcontrollers](#)"?

"[Embedded - Microcontrollers](#)" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

### Applications of "[Embedded - Microcontrollers](#)"

#### Details

|                            |   |
|----------------------------|---|
| Product Status             | Active  |
| Core Processor             | eZ8   |
| Core Size                  | 8-Bit   |
| Speed                      | 5MHz  |
| Connectivity               | IrDA, UART/USART  |
| Peripherals                | Brown-out Detect/Reset, LED, POR, PWM, WDT  |
| Number of I/O              | 24  |
| Program Memory Size        | 2KB (2K x 8)  |
| Program Memory Type        | FLASH   |
| EEPROM Size                | -   |
| RAM Size                   | 512 x 8   |
| Voltage - Supply (Vcc/Vdd) | 2.7V ~ 3.6V   |
| Data Converters            | -   |
| Oscillator Type            | Internal  |
| Operating Temperature      | 0°C ~ 70°C (TA)   |
| Mounting Type              | Surface Mount   |
| Package / Case             | 28-SOIC (0.295", 7.50mm Width)  |
| Supplier Device Package    | 28-SOIC   |
| Purchase URL               | <a href="https://www.e-xfl.com/product-detail/zilog/z8f0213sj005sg2156">https://www.e-xfl.com/product-detail/zilog/z8f0213sj005sg2156</a> |

# High-Performance 8-Bit Microcontrollers

## Z8 Encore! XP<sup>®</sup> F0823 Series

### Product Brief

PB016509-0508



### Product Block Diagram

|                                   |                            |                               |
|-----------------------------------|----------------------------|-------------------------------|
| 1-8 KB Flash                      | 256 B -1 KB RAM            | Up to 8 10-Bit ADC Channels   |
| Watchdog Timer with RC Oscillator | 5 MHz eZ8 <sup>™</sup> CPU | Two 16-Bit Timers/PWM         |
| Analog Comparator                 |                            | POR/VBO & Reset Control       |
| UART with IrDA                    | On-Chip Debugger           | Internal Precision Oscillator |
| Up to 24 General-Purpose I/O Pins |                            |                               |

### Overview

Zilog's Z8 Encore! XP<sup>®</sup> Z8F0823 Series Flash microcontrollers are based on Zilog's 8-bit eZ8 CPU core. The Z8 Encore! XP F0823 Series set a new standard of performance and on-chip peripherals.

The Z8 Encore! XP F0823 Series support 8 KB of non-volatile Flash memory and 1 KB on-chip register RAM. The Z8 Encore! Z8F0823 Series features up to 8 single-ended channels of 10-bit analog-to-digital conversion.

These devices include two enhanced 16-bit reloadable timers featuring generation of PWM signals, and Capture and Compare capability.

Up to 18 vectored interrupts with 3 levels of programmable priorities, providing increased application flexibility.

The Z8 Encore! XP F0823 Series features an on-chip internal precision oscillator (IPO) as a trimmable clock source that requires no external components. The IPO features the output frequency of either 5 MHz or 32 kHz.

The full-duplex UART provides serial communication and IrDA encoding and decoding capability. The UART baud rate generator (BRG) can be configured and used as a basic 16-bit timer. The new single-pin on chip debugger and programming interface simplifies code development and allows for easy in-circuit programming.

### Features

Key features of Z8 Encore! XP F0823 Series include:

- 5 MHz eZ8 CPU core
- Up to 8 KB Flash memory with in-circuit programming capability
- Up to 1 KB register RAM
- Up to 8 channels 10-bit Analog-to-Digital Converter (ADC)
- On-Chip Analog Comparator
- Full-duplex 9-bit UART with bus transceiver Driver Enable Control
- The UART Baud Rate Generator (BRG) can be configured and used as a basic 16-bit timer
- Infrared Data Association (IrDA)-compliant infrared encoder/decoders
- Two 16-bit timers with capture, compare, and PWM capabilities

- Watchdog Timer (WDT) with dedicated internal RC oscillator
- 6 to 24 I/O pins depending upon package
- Direct LED Drive with programmable drive strengths
- Up to 18 interrupts with configurable priority
- On-Chip Debugger (OCD)
- Voltage Brownout Protection (VBO)
- Power-On Reset (POR)
- Internal Precision Oscillator with output frequency of either 5 MHz or 32 kHz
- 2.7 V to 3.6 V operating voltage with 5 V-tolerant inputs
- 8-pin, 20-pin, and 28-pin packages
- 0 °C to +70 °C standard temperature and –40 °C to +105 °C extended temperature operating ranges

## eZ8™ CPU Features

The eZ8 CPU, Zilog's latest 8-bit CPU, meets the continuing demand for faster and more code-efficient microcontrollers. The eZ8 CPU features include:

- New instructions for improved performance including BIT, BSWAP, BTJ, CPC, LDC, LDCI, LEA, MULT, and SRL
- New instructions support 12-bit linear addressing of the Register File
- Compatible with existing Z8® code
- Up to 10 MIPS operation
- C-Compiler friendly
- 2 to 9 clock cycles per instruction

## Development Kit

The Z8 Encore! XP F0823 Series uses the Z8 Encore! XP F08xA Series Development Kit which includes:

### Hardware

- Z8 Encore! XP F08xA Series Development Board
- Smart Cable
- 5 V DC power supply

### Software on CD-ROM

- ZDS II–Z8 Encore!® IDE with ANSI C-Compiler
- Sample code
- Document browser
- Acrobat Reader®

### Documentation

- Quick Start Guide
- Z8 Encore! XP F0823 Series technical documentation (on CD-ROM):
  - Development Kit User Manual
  - ZDSII IDE User Manual
  - eZ8™ CPU User Manual
  - Product Specification
  - Product Brief

## Architecture

Figure 1 displays the Z8 Encore! XP F0823 Series block diagram.



Figure 1. Z8 Encore! XP F0823 Series Block Diagram

## Ordering Information

Order the Z8 Encore! XP F0823 Series from Zilog®, using the following part numbers. For more information regarding ordering, contact your local Zilog sales office. The Zilog website ([www.zilog.com](http://www.zilog.com)) lists all regional offices and provides additional Z8 Encore! XP product information.

| Part Number   | Flash | RAM  | I/O Lines | Interrupts | 16-Bit Timers w/PWM | 10-Bit A/D Channels | UART with IrDA | Comparator | Description         |
|---|-------|------|-----------|------------|---------------------|---------------------|----------------|------------|---------------------|
| <b>Z8 Encore! XP F0823 Series with 8 KB Flash, 10-Bit Analog-to-Digital Converter</b> |       |      |           |            |                     |                     |                |            |                     |
| <b>Standard Temperature: 0 °C to +70 °C</b>   |       |      |           |            |                     |                     |                |            |                     |
| Z8F0823PB005SC  | 8 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0823QB005SC  | 8 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0823SB005SC  | 8 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0823SH005SC  | 8 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0823HH005SC  | 8 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0823PH005SC  | 8 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0823SJ005SC  | 8 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0823HJ005SC  | 8 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0823PJ005SC  | 8 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Extended Temperature: -40 °C to +105 °C</b>  |       |      |           |            |                     |                     |                |            |                     |
| Z8F0823PB005EC  | 8 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0823QB005EC  | 8 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0823SB005EC  | 8 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0823SH005EC  | 8 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0823HH005EC  | 8 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0823PH005EC  | 8 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0823SJ005EC  | 8 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0823HJ005EC  | 8 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0823PJ005EC  | 8 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Note:</b> Replace C with G for Lead-Free Packaging.                                |       |      |           |            |                     |                     |                |            |                     |

| Part Number  | Flash | RAM  | I/O Lines | Interrupts | 16-Bit Timers w/PWM | 10-Bit A/D Channels | UART with IrDA | Comparator | Description         |
|--|-------|------|-----------|------------|---------------------|---------------------|----------------|------------|---------------------|
| <b>Z8 Encore! XP F0823 Series with 8 KB Flash</b>      |       |      |           |            |                     |                     |                |            |                     |
| <b>Standard Temperature: 0 °C to +70 °C</b>            |       |      |           |            |                     |                     |                |            |                     |
| Z8F0813PB005SC   | 8 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0813QB005SC   | 8 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | QFN 8-pin package   |
| Z8F0813SB005SC   | 8 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0813SH005SC   | 8 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | SOIC 20-pin package |
| Z8F0813HH005SC   | 8 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | SSOP 20-pin package |
| Z8F0813PH005SC   | 8 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | PDIP 20-pin package |
| Z8F0813SJ005SC   | 8 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | SOIC 28-pin package |
| Z8F0813HJ005SC   | 8 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | SSOP 28-pin package |
| Z8F0813PJ005SC   | 8 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | PDIP 28-pin package |
| <b>Extended Temperature: –40 °C to +105 °C</b>         |       |      |           |            |                     |                     |                |            |                     |
| Z8F0813PB005EC   | 8 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0813QB005EC   | 8 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | QFN 8-pin package   |
| Z8F0813SB005EC   | 8 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0813SH005EC   | 8 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | SOIC 20-pin package |
| Z8F0813HH005EC   | 8 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | SSOP 20-pin package |
| Z8F0813PH005EC   | 8 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | PDIP 20-pin package |
| Z8F0813SJ005EC   | 8 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | SOIC 28-pin package |
| Z8F0813HJ005EC   | 8 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | SSOP 28-pin package |
| Z8F0813PJ005EC   | 8 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | PDIP 28-pin package |
| <b>Note:</b> Replace C with G for Lead-Free Packaging. |       |      |           |            |                     |                     |                |            |                     |

| Part Number   | Flash | RAM  | I/O Lines | Interrupts | 16-Bit Timers w/PWM | 10-Bit A/D Channels | UART with IrDA | Comparator | Description         |
|---|-------|------|-----------|------------|---------------------|---------------------|----------------|------------|---------------------|
| <b>Z8 Encore! XP F0823 Series with 4 KB Flash, 10-Bit Analog-to-Digital Converter</b> |       |      |           |            |                     |                     |                |            |                     |
| <b>Standard Temperature: 0 °C to +70 °C</b>   |       |      |           |            |                     |                     |                |            |                     |
| Z8F0423PB005SC  | 4 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0423QB005SC  | 4 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0423SB005SC  | 4 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0423SH005SC  | 4 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0423HH005SC  | 4 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0423PH005SC  | 4 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0423SJ005SC  | 4 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0423HJ005SC  | 4 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0423PJ005SC  | 4 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Extended Temperature: –40 °C to +105 °C</b>  |       |      |           |            |                     |                     |                |            |                     |
| Z8F0423PB005EC  | 4 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0423QB005EC  | 4 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0423SB005EC  | 4 KB  | 1 KB | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0423SH005EC  | 4 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0423HH005EC  | 4 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0423PH005EC  | 4 KB  | 1 KB | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0423SJ005EC  | 4 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0423HJ005EC  | 4 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0423PJ005EC  | 4 KB  | 1 KB | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Note:</b> Replace C with G for Lead-Free Packaging.                                |       |      |           |            |                     |                     |                |            |                     |

| Part Number  | Flash | RAM  | I/O Lines | Interrupts | 16-Bit Timers w/PWM | 10-Bit A/D Channels | UART with IrDA | Comparator | Description         |
|--|-------|------|-----------|------------|---------------------|---------------------|----------------|------------|---------------------|
| <b>Z8 Encore! XP F0823 Series with 4 KB Flash</b>      |       |      |           |            |                     |                     |                |            |                     |
| <b>Standard Temperature: 0 °C to +70 °C</b>            |       |      |           |            |                     |                     |                |            |                     |
| Z8F0413PB005SC   | 4 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0413QB005SC   | 4 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | QFN 8-pin package   |
| Z8F0413SB005SC   | 4 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0413SH005SC   | 4 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | SOIC 20-pin package |
| Z8F0413HH005SC   | 4 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | SSOP 20-pin package |
| Z8F0413PH005SC   | 4 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | PDIP 20-pin package |
| Z8F0413SJ005SC   | 4 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | SOIC 28-pin package |
| Z8F0413HJ005SC   | 4 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | SSOP 28-pin package |
| Z8F0413PJ005SC   | 4 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | PDIP 28-pin package |
| <b>Extended Temperature: –40 °C to +105 °C</b>         |       |      |           |            |                     |                     |                |            |                     |
| Z8F0413PB005EC   | 4 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0413QB005EC   | 4 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | QFN 8-pin package   |
| Z8F0413SB005EC   | 4 KB  | 1 KB | 6         | 12         | 2                   | 0                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0413SH005EC   | 4 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | SOIC 20-pin package |
| Z8F0413HH005EC   | 4 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | SSOP 20-pin package |
| Z8F0413PH005EC   | 4 KB  | 1 KB | 16        | 18         | 2                   | 0                   | 1              | 1          | PDIP 20-pin package |
| Z8F0413SJ005EC   | 4 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | SOIC 28-pin package |
| Z8F0413HJ005EC   | 4 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | SSOP 28-pin package |
| Z8F0413PJ005EC   | 4 KB  | 1 KB | 24        | 18         | 2                   | 0                   | 1              | 1          | PDIP 28-pin package |
| <b>Note:</b> Replace C with G for Lead-Free Packaging. |       |      |           |            |                     |                     |                |            |                     |



| Part Number   | Flash | RAM   | I/O Lines | Interrupts | 16-Bit Timers w/PWM | 10-Bit A/D Channels | UART with IrDA | Comparator | Description         |
|---|-------|-------|-----------|------------|---------------------|---------------------|----------------|------------|---------------------|
| <b>Z8 Encore! XP F0823 Series with 2 KB Flash, 10-Bit Analog-to-Digital Converter</b> |       |       |           |            |                     |                     |                |            |                     |
| <b>Standard Temperature: 0 °C to +70 °C</b>   |       |       |           |            |                     |                     |                |            |                     |
| Z8F0223PB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0223QB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0223SB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0223SH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0223HH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0223PH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0223SJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0223HJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0223PJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Extended Temperature: –40 °C to +105 °C</b>  |       |       |           |            |                     |                     |                |            |                     |
| Z8F0223PB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0223QB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0223SB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0223SH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0223HH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0223PH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0223SJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0223HJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0223PJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Note:</b> Replace C with G for Lead-Free Packaging.                                |       |       |           |            |                     |                     |                |            |                     |

| Part Number   | Flash | RAM   | I/O Lines | Interrupts | 16-Bit Timers w/PWM | 10-Bit A/D Channels | UART with IrDA | Comparator | Description         |
|---|-------|-------|-----------|------------|---------------------|---------------------|----------------|------------|---------------------|
| <b>Z8 Encore! XP F0823 Series with 2 KB Flash, 10-Bit Analog-to-Digital Converter</b> |       |       |           |            |                     |                     |                |            |                     |
| <b>Standard Temperature: 0 °C to +70 °C</b>   |       |       |           |            |                     |                     |                |            |                     |
| Z8F0223PB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0223QB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0223SB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0223SH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0223HH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0223PH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0223SJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0223HJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0223PJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Extended Temperature: –40 °C to +105 °C</b>  |       |       |           |            |                     |                     |                |            |                     |
| Z8F0223PB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0223QB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0223SB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0223SH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0223HH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0223PH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0223SJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0223HJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0223PJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Note:</b> Replace C with G for Lead-Free Packaging.                                |       |       |           |            |                     |                     |                |            |                     |

| Part Number   | Flash | RAM   | I/O Lines | Interrupts | 16-Bit Timers w/PWM | 10-Bit A/D Channels | UART with IrDA | Comparator | Description         |
|---|-------|-------|-----------|------------|---------------------|---------------------|----------------|------------|---------------------|
| <b>Z8 Encore! XP F0823 Series with 2 KB Flash, 10-Bit Analog-to-Digital Converter</b> |       |       |           |            |                     |                     |                |            |                     |
| <b>Standard Temperature: 0 °C to +70 °C</b>   |       |       |           |            |                     |                     |                |            |                     |
| Z8F0223PB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0223QB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0223SB005SC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0223SH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0223HH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0223PH005SC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0223SJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0223HJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0223PJ005SC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Extended Temperature: –40 °C to +105 °C</b>  |       |       |           |            |                     |                     |                |            |                     |
| Z8F0223PB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0223QB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | QFN 8-pin package   |
| Z8F0223SB005EC  | 2 KB  | 512 B | 6         | 12         | 2                   | 4                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0223SH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SOIC 20-pin package |
| Z8F0223HH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | SSOP 20-pin package |
| Z8F0223PH005EC  | 2 KB  | 512 B | 16        | 18         | 2                   | 7                   | 1              | 1          | PDIP 20-pin package |
| Z8F0223SJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SOIC 28-pin package |
| Z8F0223HJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | SSOP 28-pin package |
| Z8F0223PJ005EC  | 2 KB  | 512 B | 22        | 18         | 2                   | 8                   | 1              | 1          | PDIP 28-pin package |
| <b>Note:</b> Replace C with G for Lead-Free Packaging.                                |       |       |           |            |                     |                     |                |            |                     |

| Part Number  | Flash                                       | RAM   | I/O Lines | Interrupts | 16-Bit Timers w/PWM | 10-Bit A/D Channels | UART with IrDA | Comparator | Description         |
|--|---|-------|-----------|------------|---------------------|---------------------|----------------|------------|---------------------|
| <b>Z8 Encore! XP F0823 Series with 1 KB Flash</b>      |   |       |           |            |                     |                     |                |            |                     |
| <b>Standard Temperature: 0 °C to +70 °C</b>            |   |       |           |            |                     |                     |                |            |                     |
| Z8F0113PB005SC   | 1 KB  | 256 B | 6         | 12         | 2                   | 0                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0113QB005SC   | 1 KB  | 256 B | 6         | 12         | 2                   | 0                   | 1              | 1          | QFN 8-pin package   |
| Z8F0113SB005SC   | 1 KB  | 256 B | 6         | 12         | 2                   | 0                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0113SH005SC   | 1 KB  | 256 B | 16        | 18         | 2                   | 0                   | 1              | 1          | SOIC 20-pin package |
| Z8F0113HH005SC   | 1 KB  | 256 B | 16        | 18         | 2                   | 0                   | 1              | 1          | SSOP 20-pin package |
| Z8F0113PH005SC   | 1 KB  | 256 B | 16        | 18         | 2                   | 0                   | 1              | 1          | PDIP 20-pin package |
| Z8F0113SJ005SC   | 1 KB  | 256 B | 24        | 18         | 2                   | 0                   | 1              | 1          | SOIC 28-pin package |
| Z8F0113HJ005SC   | 1 KB  | 256 B | 24        | 18         | 2                   | 0                   | 1              | 1          | SSOP 28-pin package |
| Z8F0113PJ005SC   | 1 KB  | 256 B | 24        | 18         | 2                   | 0                   | 1              | 1          | PDIP 28-pin package |
| <b>Extended Temperature: –40 °C to +105 °C</b>         |   |       |           |            |                     |                     |                |            |                     |
| Z8F0113PB005EC   | 1 KB  | 256 B | 6         | 12         | 2                   | 0                   | 1              | 1          | PDIP 8-pin package  |
| Z8F0113QB005EC   | 1 KB  | 256 B | 6         | 12         | 2                   | 0                   | 1              | 1          | QFN 8-pin package   |
| Z8F0113SB005EC   | 1 KB  | 256 B | 6         | 12         | 2                   | 0                   | 1              | 1          | SOIC 8-pin package  |
| Z8F0113SH005EC   | 1 KB  | 256 B | 16        | 18         | 2                   | 0                   | 1              | 1          | SOIC 20-pin package |
| Z8F0113HH005EC   | 1 KB  | 256 B | 16        | 18         | 2                   | 0                   | 1              | 1          | SSOP 20-pin package |
| Z8F0113PH005EC   | 1 KB  | 256 B | 16        | 18         | 2                   | 0                   | 1              | 1          | PDIP 20-pin package |
| Z8F0113SJ005EC   | 1 KB  | 256 B | 24        | 18         | 2                   | 0                   | 1              | 1          | SOIC 28-pin package |
| Z8F0113HJ005EC   | 1 KB  | 256 B | 24        | 18         | 2                   | 0                   | 1              | 1          | SSOP 28-pin package |
| Z8F0113PJ005EC   | 1 KB  | 256 B | 24        | 18         | 2                   | 0                   | 1              | 1          | PDIP 28-pin package |
| <b>Note:</b> Replace C with G for Lead-Free Packaging. |   |       |           |            |                     |                     |                |            |                     |
| Z8F08A28100KITG  | 20-pin and 28-pin Development Kit           |       |           |            |                     |                     |                |            |                     |
| Z8F04A08100KITG  | 8-pin Development Kit                       |       |           |            |                     |                     |                |            |                     |
| ZUSBSC00100ZACG  | USB Smart Cable Accessory Kit               |       |           |            |                     |                     |                |            |                     |
| ZUSBOPTSC01ZACG  | Opto-isolated USB Smart Cable Accessory Kit |       |           |            |                     |                     |                |            |                     |
| ZENETSC0100ZACG  | Ethernet Smart Cable Accessory Kit          |       |           |            |                     |                     |                |            |                     |

## Part Number Suffix Designations





**Warning:** DO NOT USE IN LIFE SUPPORT

### **LIFE SUPPORT POLICY**

ZILOG'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE PRESIDENT AND GENERAL COUNSEL OF ZILOG CORPORATION.

### **As used herein**

Life support devices or systems are devices which (a) are intended for surgical implant into the body, or (b) support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in a significant injury to the user. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.

### **Document Disclaimer**

©2008 by Zilog, Inc. All rights reserved. Information in this publication concerning the devices, applications, or technology described is intended to suggest possible uses and may be superseded. ZILOG, INC. DOES NOT ASSUME LIABILITY FOR OR PROVIDE A REPRESENTATION OF ACCURACY OF THE INFORMATION, DEVICES, OR TECHNOLOGY DESCRIBED IN THIS DOCUMENT. ZILOG ALSO DOES NOT ASSUME LIABILITY FOR INTELLECTUAL PROPERTY INFRINGEMENT RELATED IN ANY MANNER TO USE OF INFORMATION, DEVICES, OR TECHNOLOGY DESCRIBED HEREIN OR OTHERWISE. The information contained within this document has been verified according to the general principles of electrical and mechanical engineering.

Z8 Encore!, Z8 Encore! XP, and Z8 are registered trademarks of Zilog Inc. eZ8 is a trademark of Zilog Inc. All other product or service names are the property of their respective owners.