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### 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	20MHz
Connectivity	IrDA, UART/USART
Peripherals	Brown-out Detect/Reset, LED, LVD, POR, PWM, WDT
Number of I/O	25
Program Memory Size	8KB (8K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	1K 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	-
Supplier Device Package	28-SSOP
Purchase URL	<a href="https://www.e-xfl.com/product-detail/zilog/z8f081ahj020sg2156">https://www.e-xfl.com/product-detail/zilog/z8f081ahj020sg2156</a>



## High-Performance 8-Bit Microcontrollers

# Z8 Encore! XP<sup>®</sup> F08xA Series with eXtended Peripherals

## Product Brief

PB015905-0106

Z8  Encore! XP<sup>®</sup>  
Flash Microcontrollers

## Product Block Diagram

8 KB Flash	1 KB RAM	Up to 8 Channels 10-Bit ADC
Two 16-Bit Timers/PWM	<b>20 MHz eZ8 CPU</b>	Trans- Impedance Amplifier
Watch-Dog Timer with RC Oscillator		POR/VBO & Reset Control
UART with IrDA	On-Chip Debugger	Crystal/RC Oscillator
Temperature Sensor	Analog Comparator	Internal Precision Oscillator
Up to 25 General-Purpose I/O Pins		

An on-chip temperature sensor allows die temperature measurement over a range of  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$ . These devices include two enhanced 16-bit reloadable timers. These timers featuring PWMs and Capture and Compare. Up to 18 vectored interrupts with programmable priorities provide increased application flexibility.

The Z8 Encore! XP<sup>®</sup> F08xA Series features an on-chip Internal Precision Oscillator (5 MHz/32 KHz) as a trimmable clock source that requires no external components. The new single-pin on-chip debugger and programming interface simplifies code development and allows for easy in-circuit programming.

The full-duplex UART provides serial communications and IrDA encoding and decoding capability. The UART baud rate generator (BRG) can be configured and used as a basic 16-bit timer.

## Z8 Encore! XP<sup>®</sup> F08xA Series MCU Features

Key features of Z8 Encore! XP<sup>®</sup> F08xA Series MCU include:

- 20 MHz eZ8 CPU core
- 8 KB Flash memory with in-circuit programming capability
- 1 KB register RAM
- Up to 8 channels 10-bit analog-to-digital converter (ADC)
- On-chip temperature sensor
- On-chip analog comparator
- On-chip transimpedance (current sense) amplifier

## Overview

The Z8 Encore! XP<sup>®</sup> F08xA Series Flash microcontrollers are based on the ZiLOG's eZ8 CPU. The Z8 Encore! XP<sup>®</sup> F08xA Series MCU family of devices sets a new standard of performance and on-chip peripherals. The Z8 Encore! XP<sup>®</sup> F08xA Series devices support 8 KB of Flash program memory and 1 KB register RAM.

The Z8 Encore! XP<sup>®</sup> F08xA Series features 10-bit sigma-delta analog-to-digital converter (ADC). The ADC facilitates up to 8 single-ended/differential channels of 10-bit A/D conversion with 1x or 20x differential input gain and a transimpedance amplifier for current measurement.



- 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 capability
- Watch-Dog Timer (WDT) with internal RC oscillator
- 6 to 25 I/O pins depending upon package
- Up to 18 interrupts with configurable priority
- On-Chip Debugger
- Voltage Brown-Out Protection (VBO)
- Programmable Low Voltage Detection (LVD), 8-pin only
- Power-On Reset (POR)
- Internal Precision Oscillator (5 MHz/32 KHz)
- Crystal oscillator with three power settings and external RC network option
- 2.7 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 ZiLOGs latest 8-bit 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

## **Z8 Encore! XP® F08xA Series Development Kit**

The Z8 Encore! XP® F08xA Series Development Kit includes the following:

### **Hardware**

- Z8 Encore! XP® F08xA Series Development Board
- Smart Cable for PC to Z8 Encore! XP® F08xA Series Development Board (DB9 to 6-pin male, only 20-pin and 28-pin kits)
- USB Smart Cable (included in 8-pin kit only)
- USB Smart Cable available for 20-pin and 28-pin kits as an accessory kit ZUSBSC0100ZAC
- 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
- Registration card
- Z8 Encore! XP® F08xA Series technical documentation (on CD-ROM)
  - Development Kit User Manual
  - ZDSII IDE User Manual
  - eZ8 CPU User Manual
  - Product Specification
  - Product Brief
  - Application Notes

## Architecture

Figure 1 illustrates the Z8 Encore! XP<sup>®</sup> F08xA Series block diagram.

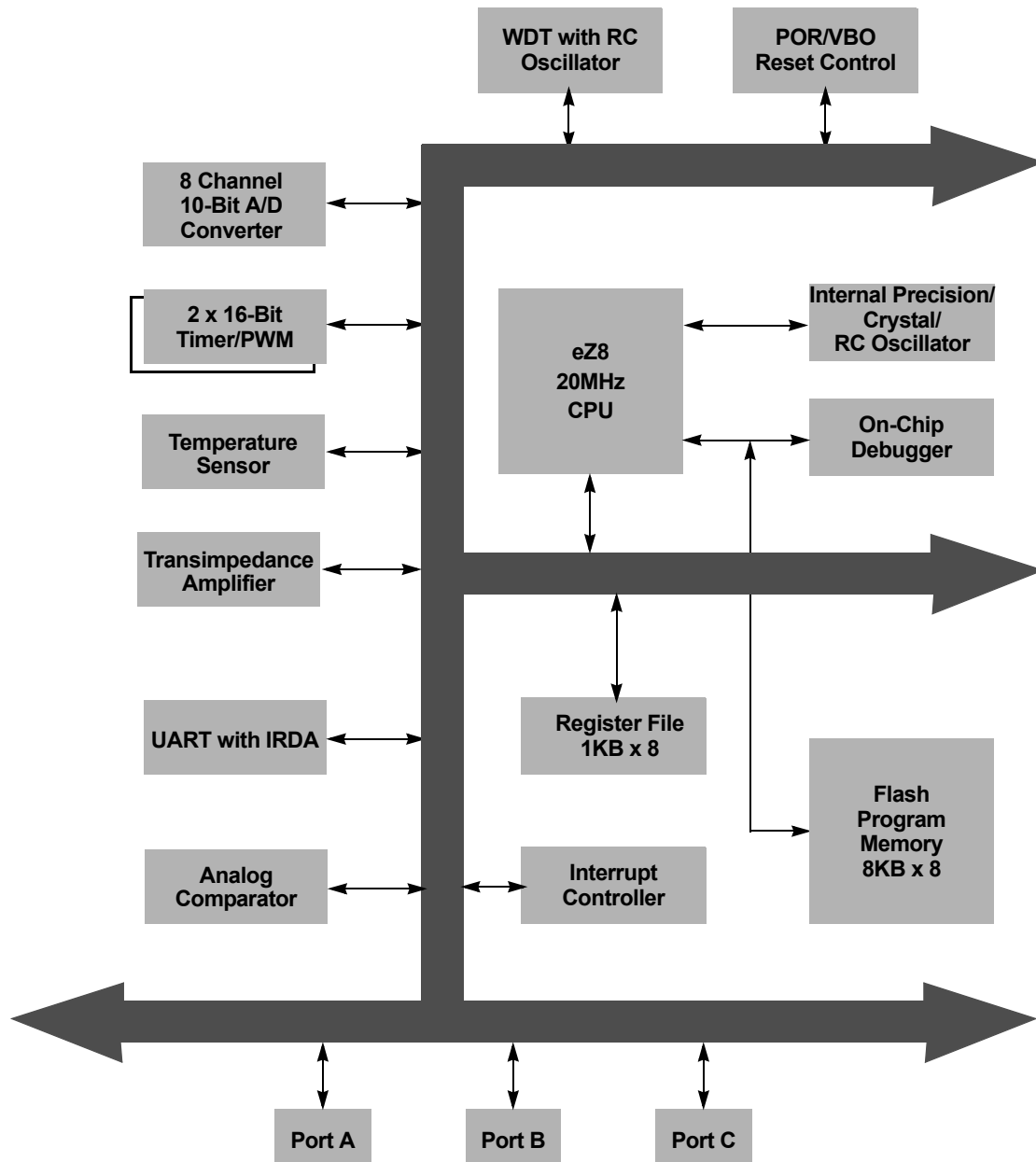


Figure 1. Z8 Encore! XP<sup>®</sup> F08xA Series Block Diagram



## Ordering Information

You can order the Z8 Encore! XP<sup>®</sup> F08xA Series from ZiLOG<sup>®</sup>, referencing the following part numbers. For more information regarding ordering, please consult your local ZiLOG<sup>®</sup> sales office. The ZiLOG<sup>®</sup> website [www.zilog.com](http://www.zilog.com) lists all regional offices and provides additional Z8 Encore!<sup>®</sup> product information.

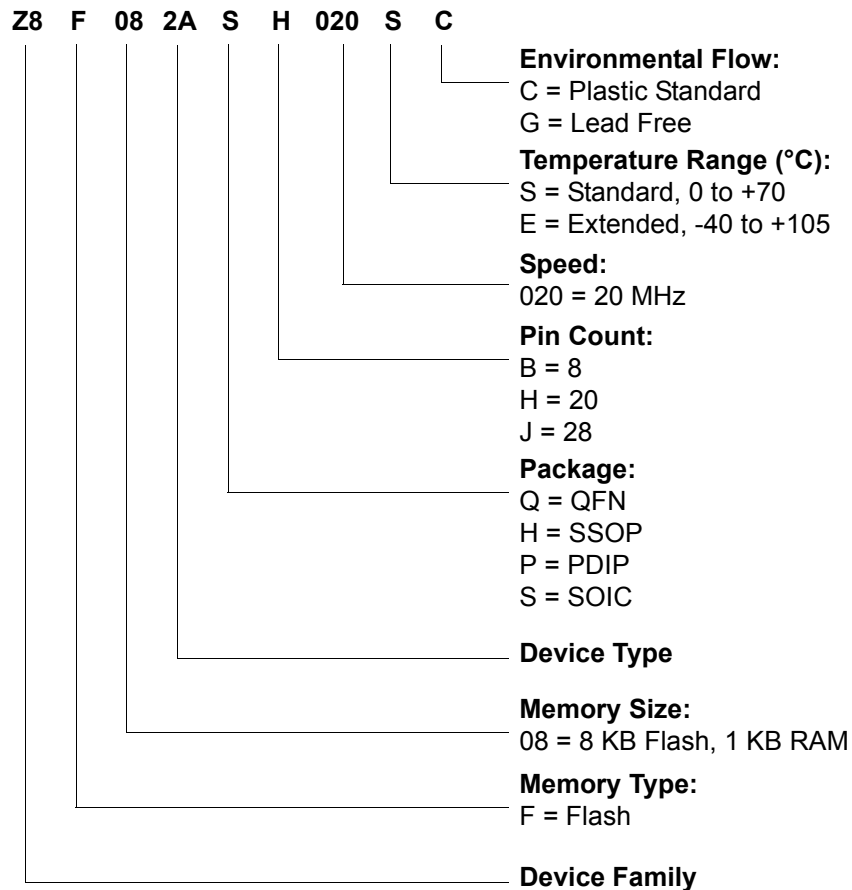
Part Number	Flash	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	UART with IrDA	Comparator	Temperature Sensor	Description
<b>Z8 Encore! XP<sup>®</sup> F08xA Series with 8KB Flash, 10-Bit Analog-to-Digital Converter</b>										
<b>Standard Temperature: 0° to +70°C</b>										
Z8F082APB020SC	8 KB	1 KB	6	18	2	4	1	1	1	PDIP 8-pin package
Z8F082AQB020SC	8 KB	1 KB	6	18	2	4	1	1	1	QFN 8-pin package
Z8F082ASB020SC	8 KB	1 KB	6	18	2	4	1	1	1	SOIC 8-pin package
Z8F082ASH020SC	8 KB	1 KB	17	18	2	7	1	1	1	SOIC 20-pin package
Z8F082AHH020SC	8 KB	1 KB	17	18	2	7	1	1	1	SSOP 20-pin package
Z8F082APH020SC	8 KB	1 KB	17	18	2	7	1	1	1	PDIP 20-pin package
Z8F082ASJ020SC	8 KB	1 KB	23	18	2	8	1	1	1	SOIC 28-pin package
Z8F082AHJ020SC	8 KB	1 KB	23	18	2	8	1	1	1	SSOP 28-pin package
Z8F082APJ020SC	8 KB	1 KB	23	18	2	8	1	1	1	PDIP 28-pin package
<b>Extended Temperature: -40° to +105°C</b>										
Z8F082APB020EC	8 KB	1 KB	6	18	2	0	1	1	0	PDIP 8-pin package
Z8F082AQB020EC	8 KB	1 KB	6	18	2	0	1	1	0	QFN 8-pin package
Z8F082ASB020EC	8 KB	1 KB	6	18	2	0	1	1	0	SOIC 8-pin package
Z8F082ASH020EC	8 KB	1 KB	17	18	2	7	1	1	1	SOIC 20-pin package
Z8F082AHH020EC	8 KB	1 KB	17	18	2	7	1	1	1	SSOP 20-pin package
Z8F082APH020EC	8 KB	1 KB	17	18	2	7	1	1	1	PDIP 20-pin package
Z8F082ASJ020EC	8 KB	1 KB	23	18	2	8	1	1	1	SOIC 28-pin package
Z8F082AHJ020EC	8 KB	1 KB	23	18	2	8	1	1	1	SSOP 28-pin package
Z8F082APJ020EC	8 KB	1 KB	23	18	2	8	1	1	1	PDIP 28-pin package



Part Number	Flash	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	UART with IrDA	Comparator	Temperature Sensor	Description
<b>Z8 Encore! XP® F08xA Series with 8KB Flash</b>										
<b>Standard Temperature: 0° to +70°C</b>										
Z8F081APB020SC	8 KB	1 KB	6	18	2	0	1	1	1	PDIP 8-pin package
Z8F081AQB020SC	8 KB	1 KB	6	18	2	0	1	1	1	QFN 8-pin package
Z8F081ASB020SC	8 KB	1 KB	6	18	2	0	1	1	1	SOIC 8-pin package
Z8F081ASH020SC	8 KB	1 KB	17	17	2	0	1	1	1	SOIC 20-pin package
Z8F081AHH020SC	8 KB	1 KB	17	17	2	0	1	1	1	SSOP 20-pin package
Z8F081APH020SC	8 KB	1 KB	17	17	2	0	1	1	1	PDIP 20-pin package
Z8F081ASJ020SC	8 KB	1 KB	25	17	2	0	1	1	1	SOIC 28-pin package
Z8F081AHJ020SC	8 KB	1 KB	25	17	2	0	1	1	1	SSOP 28-pin package
Z8F081APJ020SC	8 KB	1 KB	25	17	2	0	1	1	1	PDIP 28-pin package
<b>Extended Temperature: -40° to +105°C</b>										
Z8F081APB020EC	8 KB	1 KB	6	18	2	0	1	1	0	PDIP 8-pin package
Z8F081AQB020EC	8 KB	1 KB	6	18	2	0	1	1	0	QFN 8-pin package
Z8F081ASB020EC	8 KB	1 KB	6	18	2	0	1	1	0	SOIC 8-pin package
Z8F081ASH020EC	8 KB	1 KB	17	17	2	0	1	1	0	SOIC 20-pin package
Z8F081AHH020EC	8 KB	1 KB	17	17	2	0	1	1	0	SSOP 20-pin package
Z8F081APH020EC	8 KB	1 KB	17	17	2	0	1	1	0	PDIP 20-pin package
Z8F081ASJ020EC	8 KB	1 KB	25	17	2	0	1	1	0	SOIC 28-pin package
Z8F081AHJ020EC	8 KB	1 KB	25	17	2	0	1	1	0	SSOP 28-pin package
Z8F081APJ020EC	8 KB	1 KB	25	17	2	0	1	1	0	PDIP 28-pin package
<b>Replace C with G for Lead-Free Packaging</b>										
Z8F08A28100KIT										20-pin and 28-pin Development Kit
Z8F04A08100KIT										8-pin Development Kit
ZUSBSC0100ZAC										USB Smart Cable Accessory Kit



## Part Number Suffix Designations



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