



**High Performance 8-Bit Microcontrollers**

## Z8 Encore!<sup>®</sup> 8K Series MCUs

**Product Brief**

PB011109-0805



### Product Block Diagram

4–8KB Flash	1KB RAM	Up to 5 Channels 10-Bit ADC
Two 16-Bit Timers/PWM	20MHz eZ8 CPU	POR/VBO and Reset Control
SPI, I <sup>2</sup> C, UART w/ IrDA		Watch-Dog Timer with RC Oscillator
	On-Chip Debugger	Crystal/RC Oscillator
Up to 19 General-Purpose I/O Pins		

### Overview

The Z8 Encore!<sup>®</sup> 8K Series devices are Flash microcontrollers based on the ZiLOG<sup>®</sup> eZ8 CPU. The Z8 Encore!<sup>®</sup> 8K Series MCU devices sets a new standard for performance and on-chip peripherals.

The Z8 Encore!<sup>®</sup> 8K Series devices support up to 8KB of Flash program memory and 1KB register RAM

The 8K Series devices feature up to five channels of 10-bit A/D conversion for measuring analog signals.

These devices include two enhanced 16-bit timer blocks featuring PWMs and Capture and Compare.

Up to 19 vectored interrupts with programmable priorities provide increased application flexibility.

The new single-pin 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.

SPI and I2C ports allow easy incorporation into any system.

### Features

- 20 MHz eZ8 CPU core
- Up to 8 KB Flash memory with in-circuit programming capability
- 1 KB register RAM
- Optional 2- or 5-channel, 10-bit analog-to-digital converter (ADC)
- Full-duplex 9-bit UART with bus transceiver Driver Enable Control
- I<sup>2</sup>C
- Serial peripheral interface (SPI)
- 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
- 11-19 I/O pins depending upon package
- Up to 19 interrupts with configurable priority
- On-Chip Debugger
- Voltage Brown-out Protection (VBO)
- Power-On Reset (POR)
- Crystal oscillator with three power settings and external RC network option
- 2.7–3.6 V operating voltage with 5 V-tolerant inputs
- 20- and 28-pin packages



- 0° to +70°C standard temperature and –40° to +105°C extended temperature operating ranges

## eZ8 CPU Features

- 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<sup>®</sup> code
- Up to 10 MIPS operation
- C-Compiler friendly
- 2-9 clock cycles per instruction

## Z8 Encore!<sup>®</sup> 8K Series Development Kit

The Z8 Encore!<sup>®</sup> 8K Series Development Kit includes the following:

### Hardware

- Z8 Encore!<sup>®</sup> 8K Series Development board

- Smart Cable for PC to Z8 Encore!<sup>®</sup> 8K Series Development board (DB9 to 6-pin male)
- 5VDC power supply

### Software (on CD-ROM)

- ZDS II—Z8 Encore!<sup>®</sup> IDE with ANSI C-Compiler
- Sample code
- Document Browser
- Acrobat Reader install program

### Documentation

- Quick Start Guide
- Registration card
- Z8 Encore!<sup>®</sup> 8K Series technical documentation (on CD-ROM)

## Architecture

Figure 1 illustrates the Z8 Encore!<sup>®</sup> 8K Series block diagram.

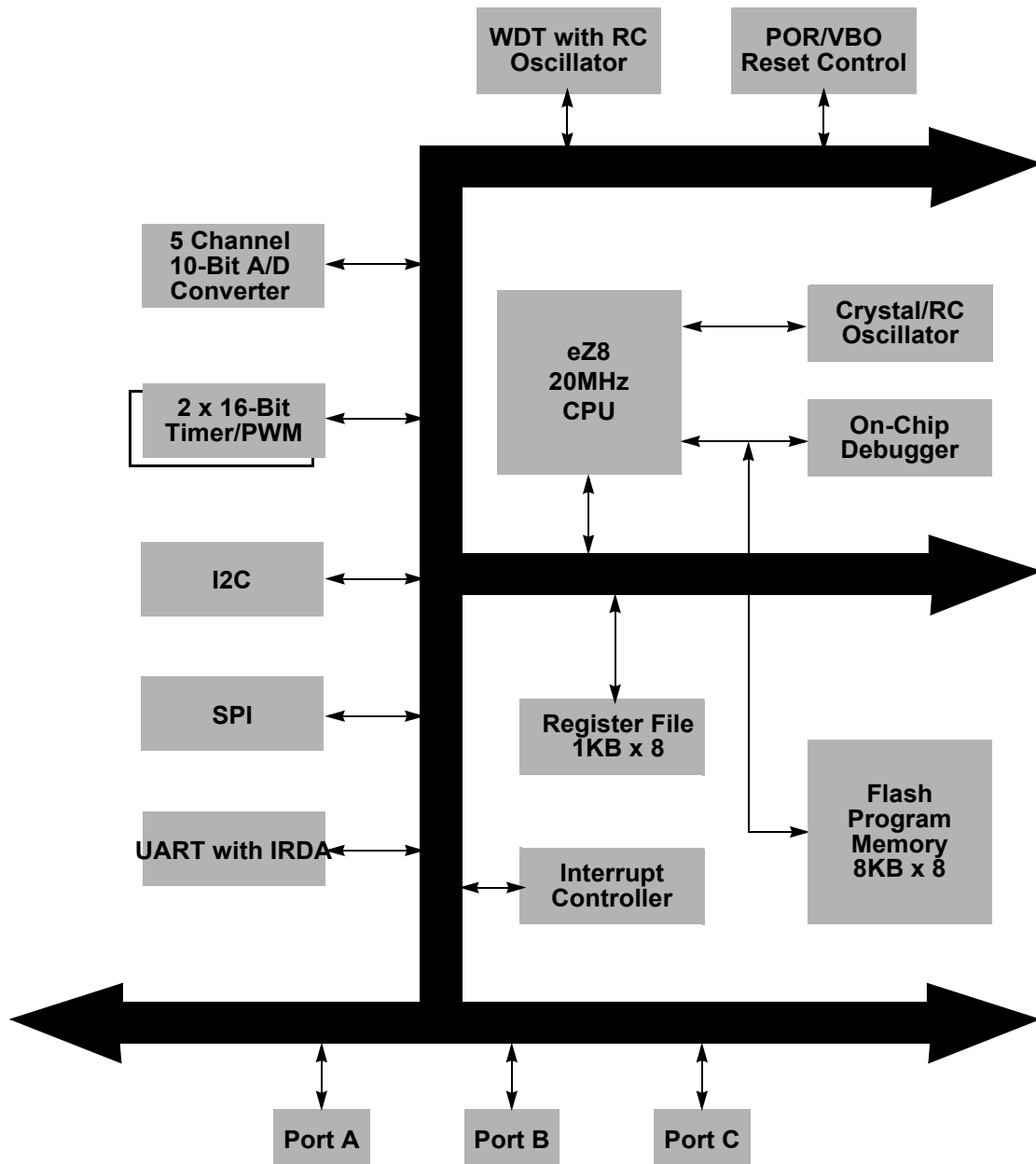


Figure 1. Z8 Encore!<sup>®</sup> 8K Series Block Diagram

## Ordering Information

Order the Z8 Encore!<sup>®</sup> 8K Series from ZiLOG, referencing the following part numbers. For more information regarding ordering, please consult

your local ZiLOG sales office. The ZiLOG website at [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	I <sup>2</sup> C	SPI	UARTs with IrDA	Description
<b>Z8F08xx with 8KB Flash, 10-Bit Analog-to-Digital Converter</b>										
Standard Temperature: 0° to 70°C										
Z8F0821HH020SC	8KB	1KB	11	16	2	2	1	0	1	SSOP 20-pin package
Z8F0821PH020SC	8KB	1KB	11	16	2	2	1	0	1	PDIP 20-pin package
Z8F0822SJ020SC	8KB	1KB	19	19	2	5	1	1	1	SOIC 28-pin package
Z8F0822PJ020SC	8KB	1KB	19	19	2	5	1	1	1	PDIP 28-pin package
Extended Temperature: -40° to +105°C										
Z8F0821HH020EC	8KB	1KB	11	16	2	2	1	0	1	SSOP 20-pin package
Z8F0821PH020EC	8KB	1KB	11	16	2	2	1	0	1	PDIP 20-pin package
Z8F0822SJ020EC	8KB	1KB	19	19	2	5	1	1	1	SOIC 28-pin package
Z8F0822PJ020EC	8KB	1KB	19	19	2	5	1	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	I <sup>2</sup> C	SPI	UARTs with IrDA	Description
<b>Z8F08xx with 8KB Flash</b>										
Standard Temperature: 0° to 70°C										
Z8F0811HH020SC	8KB	1KB	11	16	2	0	1	0	1	SSOP 20-pin package
Z8F0811PH020SC	8KB	1KB	11	16	2	0	1	0	1	PDIP 20-pin package
Z8F0812SJ020SC	8KB	1KB	19	19	2	0	1	1	1	SOIC 28-pin package
Z8F0812PJ020SC	8KB	1KB	19	19	2	0	1	1	1	PDIP 28-pin package
Extended Temperature: -40° to +105°C										
Z8F0811HH020EC	8KB	1KB	11	16	2	0	1	0	1	SSOP 20-pin package
Z8F0811PH020EC	8KB	1KB	11	16	2	0	1	0	1	PDIP 20-pin package
Z8F0812SJ020EC	8KB	1KB	19	19	2	0	1	1	1	SOIC 28-pin package
Z8F0812PJ020EC	8KB	1KB	19	19	2	0	1	1	1	PDIP 28-pin package
<b>NOTE:</b> Replace C with G for lead-free packaging.										



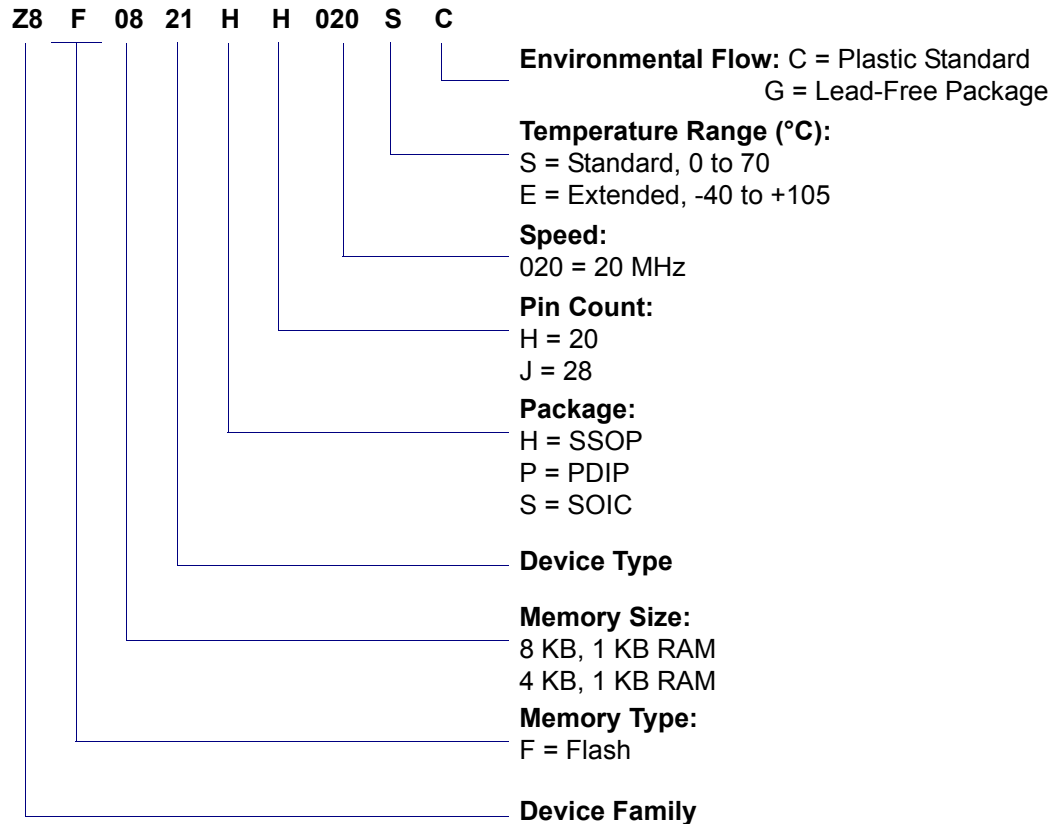
Part Number	Flash	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I <sup>2</sup> C	SPI	UARTs with IrDA	Description
<b>Z8F04xx with 4KB Flash, 10-Bit Analog-to-Digital Converter</b>										
Standard Temperature: 0° to 70°C										
Z8F0421HH020SC	4KB	1KB	11	16	2	2	1	0	1	SSOP 20-pin package
Z8F0421PH020SC	4KB	1KB	11	16	2	2	1	0	1	PDIP 20-pin package
Z8F0422SJ020SC	4KB	1KB	19	19	2	5	1	1	1	SOIC 28-pin package
Z8F0422PJ020SC	4KB	1KB	19	19	2	5	1	1	1	PDIP 28-pin package
Extended Temperature: -40° to 105°C										
Z8F0421HH020EC	4KB	1KB	11	16	2	2	1	0	1	SSOP 20-pin package
Z8F0421PH020EC	4KB	1KB	11	16	2	2	1	0	1	PDIP 20-pin package
Z8F0422SJ020EC	4KB	1KB	19	19	2	5	1	1	1	SOIC 28-pin package
Z8F0422PJ020EC	4KB	1KB	19	19	2	5	1	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	I <sup>2</sup> C	SPI	UARTs with IrDA	Description
<b>Z8F04xx with 4KB Flash</b>										
Standard Temperature: 0° to 70°C										
Z8F0411HH020SC	4KB	1KB	11	16	2	0	1	0	1	SSOP 20-pin package
Z8F0411PH020SC	4KB	1KB	11	16	2	0	1	0	1	PDIP 20-pin package
Z8F0412SJ020SC	4KB	1KB	19	19	2	0	1	1	1	SOIC 28-pin package
Z8F0412PJ020SC	4KB	1KB	19	19	2	0	1	1	1	PDIP 28-pin package
Extended Temperature: -40° to 105°C										
Z8F0411HH020EC	4KB	1KB	11	16	2	0	1	0	1	SSOP 20-pin package
Z8F0411PH020EC	4KB	1KB	11	16	2	0	1	0	1	PDIP 20-pin package
Z8F0412SJ020EC	4KB	1KB	19	19	2	0	1	1	1	SOIC 28-pin package
Z8F0412PJ020EC	4KB	1KB	19	19	2	0	1	1	1	PDIP 28-pin package
Z8F08200100KIT										Development Kit
<b>NOTE:</b> Replace C with G for lead-free packaging.										



## Part Number Suffix Designations



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