



Z i L O G

High-Performance 8-Bit Microcontrollers

Z8 Encore! XP® F08xA Series with eXtended Peripherals

Product Brief

PB015905-0106

Z8  **Encore!XP®**
Flash Microcontrollers

Product Block Diagram

8 KB Flash	1 KB RAM	Up to 8 Channels 10-Bit ADC
Two 16-Bit Timers/PWM	20 MHz eZ8 CPU	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		

Overview

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

The Z8 Encore! XP® 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.

An on-chip temperature sensor allows die temperature measurement over a range of -40°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® 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® F08xA Series MCU Features

Key features of Z8 Encore! XP® 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



- 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[®] F08xA Series block diagram.

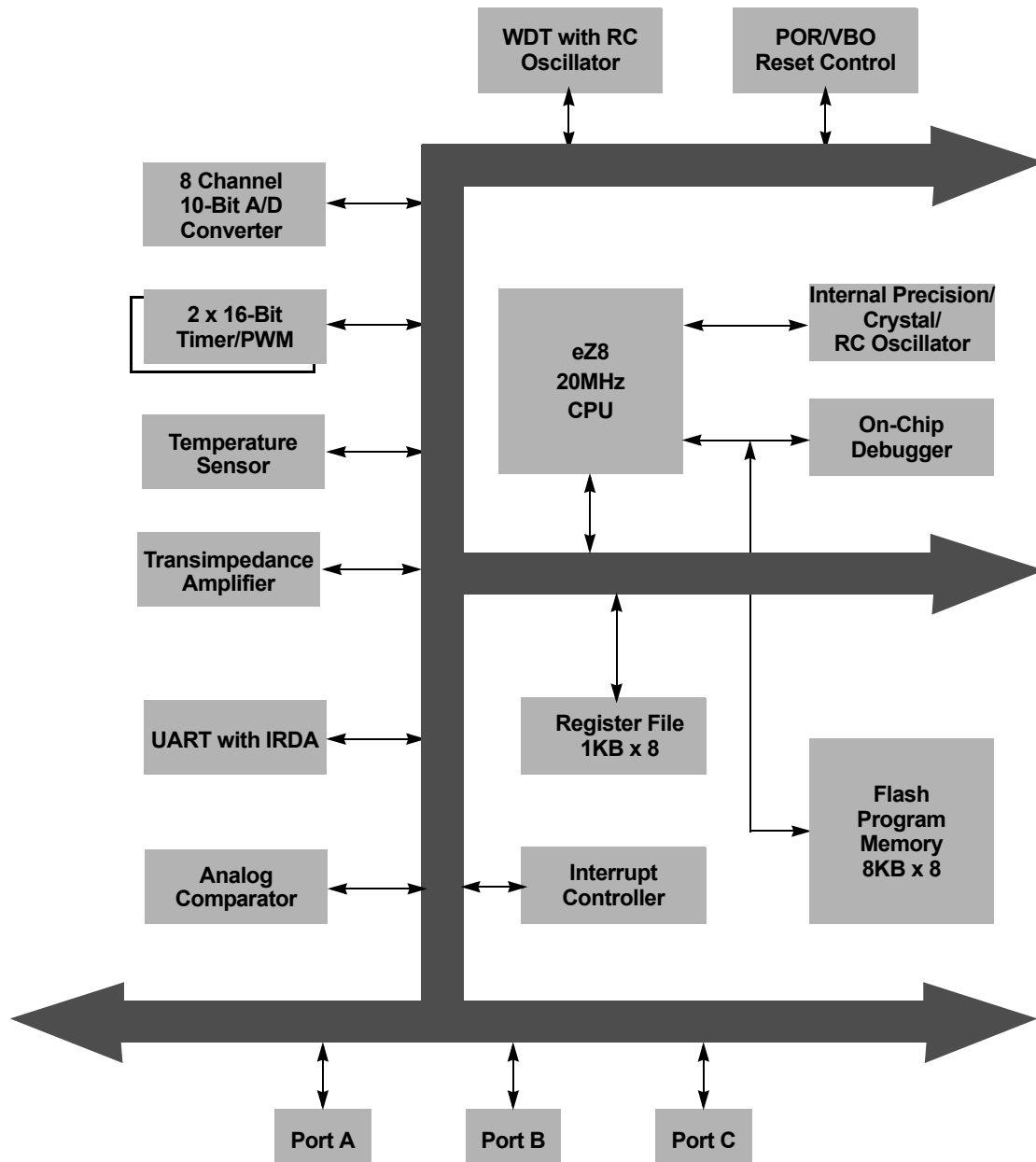


Figure 1. Z8 Encore! XP[®] F08xA Series Block Diagram



Ordering Information

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

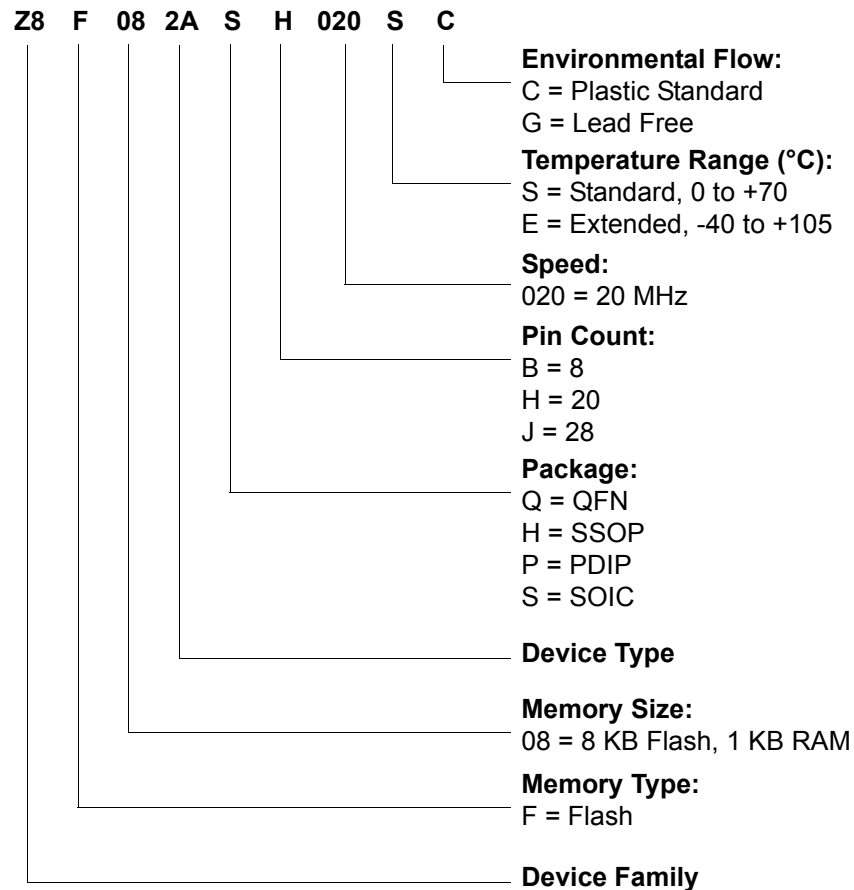
Part Number	Flash	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	UART with IrDA	Comparator	Temperature Sensor	Description
Z8 Encore! XP[®] F08xA Series with 8KB Flash, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to +70°C										
Z8F082APB020SC	8 KB	1 KB	6	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
Extended Temperature: -40° to +105°C										
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
Z8 Encore! XP[®] F08xA Series with 8KB Flash										
Standard Temperature: 0° to +70°C										
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
Extended Temperature: -40° to +105°C										
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
Replace C with G for Lead-Free Packaging										
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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[Z8F082ASH020SC](#) [Z8F082APH020SC](#) [Z8F082AHH020SC](#) [Z8F082AHH020SG](#) [Z8F081AHJ020SG2156](#)