

BDC Motor Control with Z8 Encore!® Microcontrollers Z8F0830/Z8F083A Series Microcontrollers

The Z8 Encore! Family offers several devices that meet the needs of universal and brushed DC motor control, along with basic fan control. The Z8F0830 and Z8F083A devices were designed for these types of motors and include an optimized 8-bit eZ8 core, direct memory-to-memory arithmetic operation, a flexible Internal Precision Oscillator (IPO), and a fast ADC.

If your design requires more precision, the Z8F083A MCU takes all of the performance and key peripheral features of the Z8F0830 and adds a more optimized peripheral set that specifically caters to applications that require faster response times. This enhanced Z8F083A peripheral set enables critical motor control loop operations, for example, that accommodate for features such as current and temperature monitoring that are crucial for motor control applications.

Both the Z8F0830 and Z8F083A Series devices are pin-for-pin compatible to allow you to select the best device for your application.

The Z8F0830 and Z8F083A Series MCUs are also suitable for digital power management, battery charging and environmental sensor applications. Both are also pin-for-pin compatible with the F082A family.

Z8F0830/Z8F083A Series Features and Benefits

- 20 MHz eZ8 CPU
- Up to 12 KB Flash memory with in-circuit programming capability
- Up to 256 B register RAM
- Up to 100 B Non-Volatile Data Storage (NVDS)
- Up to 25 I/O pins depending upon package
- Internal Precision Oscillator (IPO): 5.33 MHz (F0830)/20.0 MHz (F083A)
- External crystal oscillator
- Two enhanced 16-bit timers with capture, compare and PWM capability
- Watchdog Timer (WDT) with dedicated internal RC oscillator
- Single-pin On-Chip Debugger (OCD)
- Optional 8-channel, 10-bit Analog-to-Digital Converter (ADC)
- On-chip analog comparator
- Up to 17 interrupt sources
- Voltage Brown-Out (VBO) protection
- Power-On Reset (POR)
- 2.7 V to 3.6 V operating voltage
- Up to thirteen 5 V-tolerant input pins
- 20- and 28-pin packages
- 0°C to +70°C standard temperature range and -40°C to +105°C extended temperature operating ranges

Resources & Documentation

[Order Samples](#)

[Product Information](#)

[Development Kit](#)

[ZDS II Development Tools](#)

[Schematic Diagrams](#)

[Product Brief \(PB0208\)](#)

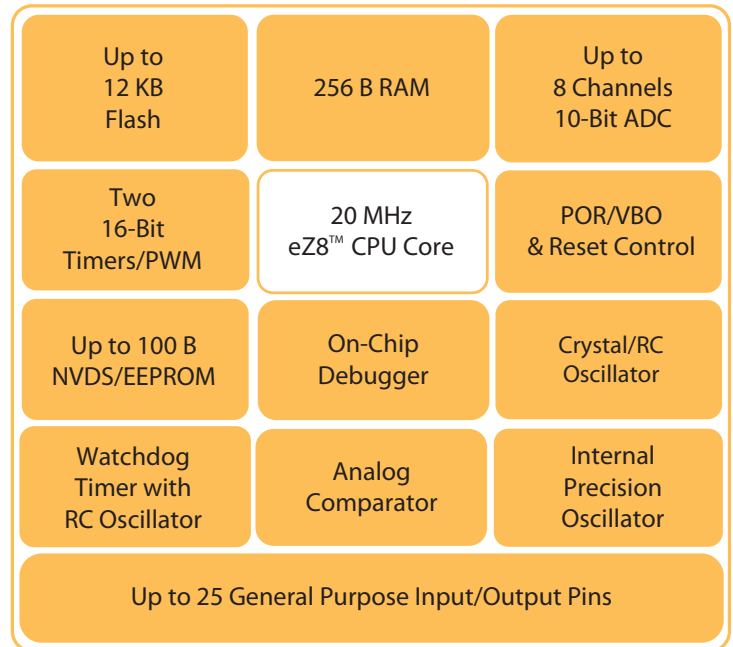
[Product Specification \(PS0251\)](#)

[User Manual \(UM0206\)](#)

[Technical Support](#)

[Zilog Forum](#)

Z8 Encore!® Z8F083A Series Block Diagram



Application Notes & Source Code Files

An Interrupt-Driven UART for Z8 Encore! XP and Z8 Encore! MC MCUs ([AN0330](#), [AN0330-SC01](#))

An OLED Interface Using the Z8 Encore! XP Series of MCUs ([AN0329](#), [AN0329-SC01](#))

NVDS Operation in the Z8 Encore! and Z8 Encore! XP Microcontrollers ([AN0310](#), [AN0310-SC01](#), [AN0310-SC02](#))

Using the Timer Functions of the Z8 Encore! and Z8 Encore! XP Family of Microcontrollers ([AN0291](#), [AN0291-SC01](#), [AN0291-SC02](#))

Implementing SPI Master and Slave Functionality Using the Z8 Encore! F083A MCU ([AN0267](#), [AN0267-SC01](#))

Software I²C Master and Slave Mode Support for Z8 Encore! F0830/F083A MCUs ([AN0266](#), [AN0266-SC01](#))

Control a Cordless Drill Motor and Battery Charger Using Z8 Encore! F0830 Series ([AN0255](#), [AN0255-SC01](#))

Migration from the Z8 Encore! F0830 Series MCU to the F083A Series MCU ([AN0245](#), [AN0245-SC01](#))

eZ8 Core. Zilog's advanced register-based eZ8 8-bit CPU core, running at 20MHz with memory-to-memory architecture, modified Harvard architecture, and excellent math performance.

Memory. Available with up to 12KB of nonvolatile Flash memory, 512 bytes of SRAM (static RAM), and 100 bytes of Non-Volatile Data Storage (NVDS).

Up to 8-channel 10-bit ADC. The conversion of an analog input signal to a 10-bit binary number occurs in as low as 2.8µs. Time stamping of the conversion makes the ADC ideal for current sampling and back-EMF sensing.

Two 16-bit Timers with Capture/Compare/PWM. A 16-bit reloadable timer used for timing, event counting, or PWM signal generation.

One Analog Comparator. Generally used for current limiting or overcurrent shutdown when used with a current transformer or sense resistor.

Oscillator Supports either IPO or External Crystals and Ceramic Resonators. The oscillator can be driven with an external crystal of up to 20MHz or with the 5.33MHz (F0830)/20.0MHz (F083A) Internal Precision Oscillator, which requires no external components.

25 General-Purpose I/O Pins (GPIO). Provides sufficient I/O pins for control of Brushed DC Motors with external inputs and outputs.

Watchdog Timer (WDT) with Internal RC Oscillator. Helps protect against corrupted or unreliable software and other system-level problems that may place the MCU into unsuitable operating states.

Single-Pin On-Chip Debugger. The on-chip debugger provides advanced debugging features, including: reading and writing of the Register File, reading and writing of program and data memory, setting of breaking points and execution of eZ8 CPU instructions.

Standard Operating and Programming Voltages. Operating and programming ranges from 2.7V to 3.6V.

Standard 20-Pin and 28-Pin Packaging. Available in a compact SOIC, SSOP, PDIP and QFN lead-free packages.

Standard and Extended Temperature Ranges. Available in standard (0°C to 70°C) and extended (-40°C to 105°C) temperature ranges.

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contact information
here*

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