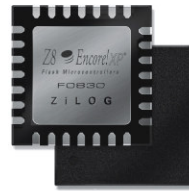# Power Tool Solutions
Z8 Encore!® 8-Bit Microcontrollers

zilog®

POWER TOOLS

F0830 Series MCU

MOTOR TYPES COMMONLY USED

- Universal
- AC Induction
- Brushless DC (BLDC)

FEATURES THAT SEPARATE US FROM THE REST

- 8-channel 11.9μs A/D Converter allows accurate current and voltage sampling
- Comparator with programmable shutdown for over-current protection
- 2 16-bit Timers provide PWM output optimized for motor control applications
- Highly accurate Internal Precision Oscillator

THE Z8 ENCORE! XP® F0830 SERIES

The world wide demand for power tools continues to grow with the accelerating economic activity and improving living standards. This in turn leads to end solutions with more features at lower costs. To help you keep up with these demands, Zilog has created a line of microcontrollers dedicated to intelligent control of devices such as power tools. Our Z8 Encore!® microcontrollers incorporate a number of peripherals on-chip to help you reduce overall system cost while adding more functionality to your design. For example, our comparator is directly coupled to the PWM module and allows fast overcurrent protection during a fault condition, hence improving the safety of our product. With our easy to use development tools, supporting reference designs and application notes, you can now beat your competition and get to market faster.

DESIGN CHALLENGES

Low System Cost
Highly integrated microcontroller features, such as the ADC and comparator, provide for reduced system cost.

Small Size
Our high performance, feature rich MCU is available in 28 or 20-pin QFN packages requiring only $5 \times 5mm^2$ of your PCB space.

Design Robustness
In small appliance designs, motor noise can interfere with MCU's operation. With our IPO and noise robustness, our Z8 Encore!® MCU can operate even in the worst of conditions.

Safe Operation
With the Z8 Encore!® microcontroller's over current sense feature, you can incorporate fast shutdown of the motor.

Differentiating Features
12 K of Flash and 25 GPIO enable you to add many bells and whistles to differentiate your product.

BLOCK DIAGRAM

Up to 12 KB Flash	256 B RAM	Up to 8 Channels 10-bit ADC
Two 16-bit Timers/PWM	**20 MHz eZ8™ CPU**	POR/VBO & Reset Control
Up to 64 B NVDS	On-Chip Debugger	Crystal/RC Oscillator
Watchdog Timer with RC Oscillator	Analog Comparator	Internal Precision Oscillator
17 to 25 General-Purpose I/O Pins		

Power Tools Solution
Z8 Encore!® 8-Bit Microcontrollers

POWER TOOLS	F0830 Series MCU

FEATURES

- 20 MHz eZ8™ CPU core
- Up to 12 KB Flash memory with in-cricuit programming capability
- Up to 256 B of register RAM
- Up to 64 B of NVDS (on 8 KB devices and below)
- Up to eight channels 10-bit analog-to-digital converter (ADC)
- On-chip analog comparator
- Two 16-bit timers with capture, compare, and PWM capabilities
- Watchdog timer (WDT) with internal RC oscillator
- 17-25 I/O pins depending upon package
- Up to 18 interrupts with configurable priority
- On-Chip debugger
- Voltage brown-out protection (VBO)
- Power on reset (POR)
- Internal Precision Oscillator (5.53 Mhz/ 32 KHz) w/±4% accuracy over full voltage/ temperature range
- Crystal oscillator with three power settings and external RC network option
- 2.7 V-3.6 V operating voltage with 5 V- tolerant digital inputs
- 20- and 28-pin packages
- 0 °C to + 70 °C extended temperature and -40 °C to + 105 °C extended temperature operating ranges

REFERENCE TOOLS

- Reference designs
- Application notes

Affordable and Efficient Tools

Zilog has always invested in making robust, yet affordable design tools that are easy to use. This product is supported by our free C-Compiler and ZDS II environment. You can start development with the F0830 with many options including our USB cable or our opto-isolated USB cable. Whatever option you choose, Zilog offers the right tools to get your application up-and-running fast!

SILICON ORDERING INFORMATION

Device	Flash	NVDS	ADC	Package Types Supported
Z8F1232XX	12 KB	No	Yes	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F1233XX	12 KB	No	No	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F0830XX	8 KB	Yes	Yes	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F0831XX	8 KB	Yes	No	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F0430XX	4 KB	Yes	Yes	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F0431XX	4 KB	Yes	No	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F0230XX	2 KB	Yes	Yes	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F0231XX	2 KB	Yes	No	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F0130XX	1 KB	Yes	Yes	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP
Z8F0131XX	1 KB	Yes	No	20-Pin SOIC, PDIP, QFN, or SSOP 28-Pin SOIC, PDIP, QFN, or SSOP

DEVELOPMENT TOOL ORDERING INFORMATION

ZUSBSC00100ZACG : USB Smart Cable Accessory Kit
ZUSBOPTSC01ZACG : Opto-Isolated USB Smart Cable

FOR MORE INFORMATION

Visit us at www.zilog.com

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