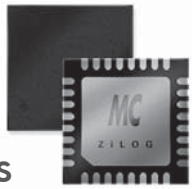
Motor Control Solutions

Z8 Encore! MC™ 8-bit Microcontrollers



HVAC APPLICATION

Z8FMC16100 Series MCU

MOTOR TYPES COMMONLY USED

- AC Induction
- Brushless DC (BLDC)

FEATURES THAT SEPARATE US FROM THE REST

- 8-channel 2µs A/D Converter for accurate current and back EMF sensing
- Time stamp on ADC sampling for accurate back EMF zero crossing
- Op-amp with external gain settings for current sensing amplification
- Comparator with programmable shutdown for over-current protection
- 3-phase PWM module optimized for motor control
- UART with LIN, SPI, I2C communication peripherals
- 4% Internal Precision Oscillator

THE Z8 ENCORE! MC

ZiLOG's high performance Z8 Encore! MC™ 8-bit microcontrollers provide a simple solution for controlling the motors of HVAC systems. Heating, Ventilation, and Air Conditioning (HVAC) industry today is not only concerned with improving the air quality and comfort levels of the consumers, but also trying to meet the demanding energy efficiency standards and ever increasing need for differentiating features. To keep up with these trends, HVAC designs greatly benefit from the advanced features of microcontrollers (MCUs) such as the Z8FMC16100 series of Z8 Encore! MC™ motor control devices.

DESIGN CHALLENGES

Energy Efficiency

Ability to run the motor at slower speeds reduces power consumption. Our 2µs ADC with time stamp is tied to the PWM module and allows you more accurate control of the motor at lower or variable speeds.

Quiet Operation

Keep your HVAC system's audible noise low by using the soft start feature and ability to adjust the speed of the motor by using our advanced analog motor control features.

Design Flexibility

Microcontroller based HVAC design allows for ability to add more complex and differentiating features. With 16K of Flash and 17 GPIO you are able to add many bells and whistles to differentiate your product.

Low System Cost

Highly integrated microcontroller features, such as the op-amp and comparator, give you the ability to reduce your overall system cost.

Communication

Use the advantage of integrated multiple communication peripherals for complete system level communication.

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BLOCK DIAGRAM

12-bit PWM Module for Motor Control	16-bit Time Capture Copture/ Compare /PWM	Operational Amplifier with dedicated sample and hold
SPI, I2C and UART with LIN	**20MHz eZ8 CPU**	8 Channel 10-bit ADC
Up to 512B RAM	Up to 16KB Flash	POR/VBO and Reset Control
Watch-Dog Timer	Debugger	Internal Precision Oscillator
Comparator	Interrupt Controller	
Up to 17 General-Purpose I/O Pins		

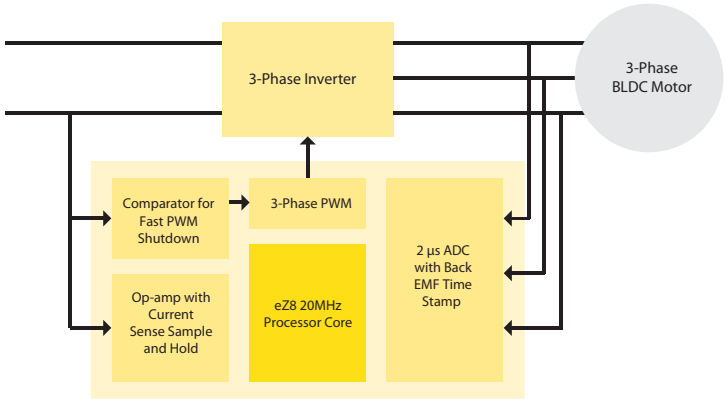
MCU FEATURES

- 20MHz CPU core
- Up to 16KB Flash memory
- Up to 512B RAM
- 6-channels of 12-bit PWM with fast shut down
- 8-channel 2µs 10-bit ADC with internal reference
- Operational amplifier
- Analog comparator
- Internal Precision Oscillator
- UART with LIN, SPI, I^2C
- One 16-bit timer
- Single-pin debug
- Watch Dog Timer (WDT), Voltage Brown Out (VBO),
- Power On Reset (POR)
- 32-pin QFN or LQFP
- 2.7-3.6V operation
- Standard (0° to 70°C) and extended (-40° to 105°C) temperature range (125° available upon special request)

REFERENCE TOOLS

- Software libraries
- Reference designs
- Application notes

SYSTEM DIAGRAM



DEVELOPMENT TOOLS INFORMATION

Z8 Encore! MC™ Z8FMC16100 Series MCU Development Kit is the low cost motor control development tool which contains everything you need to evaluate and design your next motor control project. Includes:

- Brushless DC application board
- Z8FMC16100 series MCU development board
- Opto-isolated USB debugging and programming cable
- ZDS II Integrated Development Environment (IDE) with a full ANSI C compiler

Z8 Encore! MC™ Z8FMC16100 Series MCU In-Circuit Emulator Kit is recommended for more advanced development with trace and event system.

FOR MORE INFORMATION

Visit us at www.zilog.com or call us at 1(866) GO ZiLOG