



Z8F3224 Series Flash Microcontrollers

Applications

- PIR Motion Detection
- IP Cameras, Video Doorbells, Intrusion Detectors, Energy Management, Display Control, Lighting Control
- Gas, Ambient Light, Pressure, Temperature sensing
- Intelligent Lighting Controllers – DALI, DSI, PWM, 1-10V
- Stage lighting with DMX Bus
- Product Dispensers
- Automatic Flushers, Paper Towel Dispensers, Hand Sanitizer, Faucets
- Kiosks, Display Control
- Motor Control – BD, BLDC, PWM
- Multi-fan Speed Control
- Wireless Controllers
- LED Lighting Control
- Utility Meters

Zilog's F3224 Series MCUs are members of the Z8 Encore! XP[®] family. Based on Zilog's advanced 8-bit eZ8 CPU core, this series is optimized for low-power sensing & control applications and supports 1.8 V to 3.6 V operation. The series offers an assortment of CPU speed and low-power configuration options. The low power Analog Front End (AFE) is supported by 2 Op Amps, 2 Comparators, a programmable voltage reference system and 12/14-bit ADC making it suitable for a variety of applications including safety and security, utility metering, digital power supervisory, hand-held electronic devices, environmental sensors, PIR motion detection and general purpose motor control.

Features

- Up to 20 MHz eZ8 CPU core
- 16 KB or 32 KB Flash memory with in-circuit programming capability
- 3.75 KB internal RAM
- Up to 15-Channel, 12/14-bit Analog-to-Digital Converter (ADC) that can be configured for internal or external voltage reference and use single-ended or differential inputs
- Two on-chip low power analog comparators
- Two on-chip, low-power operational amplifiers
- 8 Channel Event System provides communication between peripherals for autonomous triggering
- Full-duplex 9-bit UART supporting Local Interconnect Network (LIN), Digital Addressable Lighting Interface (DALI) and Digital Multiplex (DMX) protocols
- Enhanced Serial Peripheral Interface (ESPI) controller
- I2C controller which supports Master/Slave modes
- One 16-bit Interrupt/Wakeup Timer provides >24 hours timeout and supports input capture and PWM modes
- Three 16-bit Multi-Function Timers with 8 operating modes including Capture, Compare, PWM, Demodulation, and Triggered input
- 16-bit Multi-Channel Timer which supports four Capture/Compare/PWM modules
- Watchdog Timer (WDT) with dedicated 8.2 KHz internal oscillator
- 26 to 36 General-Purpose Input/Output (GPIO) pins, depending upon package
- Up to 30 interrupt sources with up to 23 interrupt vectors
- On-Chip Debugger (OCD)
- Internal and external clock sources including internal 32.768 KHz Low-Power Precision Oscillator (IPO), 8.2 KHz Watchdog Timer Oscillator (WTO) and external Low Frequency Crystal Oscillator (LFXO) operating at 32.768 kHz with low power



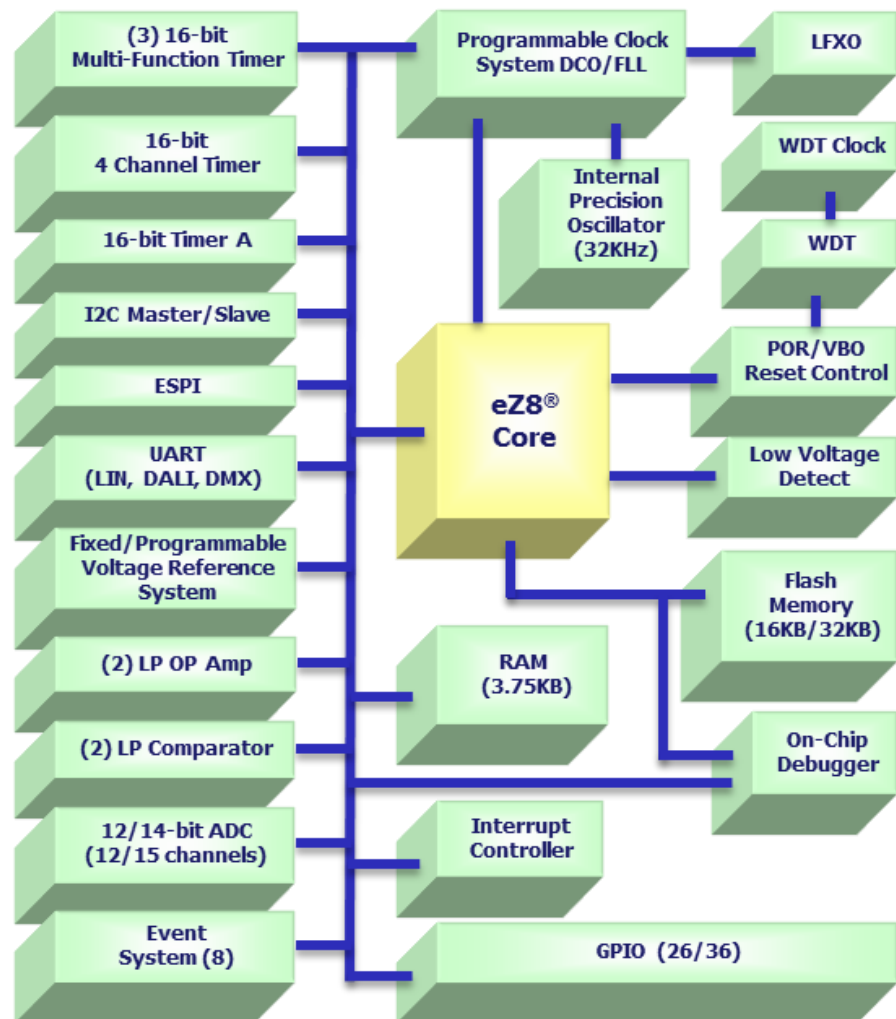
Advantages

- Flexible clocking scheme allows peripherals to operate while the CPU is in Stop Mode
- Analog Front End (AFE) consisting of 2 Op Amps, 2 Comparators and a programmable voltage reference system provides flexibility while reducing board size and layout complexity
- All in one support for RS485, DMX, DALI, and LIN
- Event System allows automatic handling of real-time control tasks between peripherals without CPU intervention
- Three independent serial communication peripherals: I2C, ESPI, and 1-2 UART
- Low-power op amps and comparators are ideal for PIR motion detection
- ADC features programmable automatic averaging, removing this task from the CPU

Features (Continued)

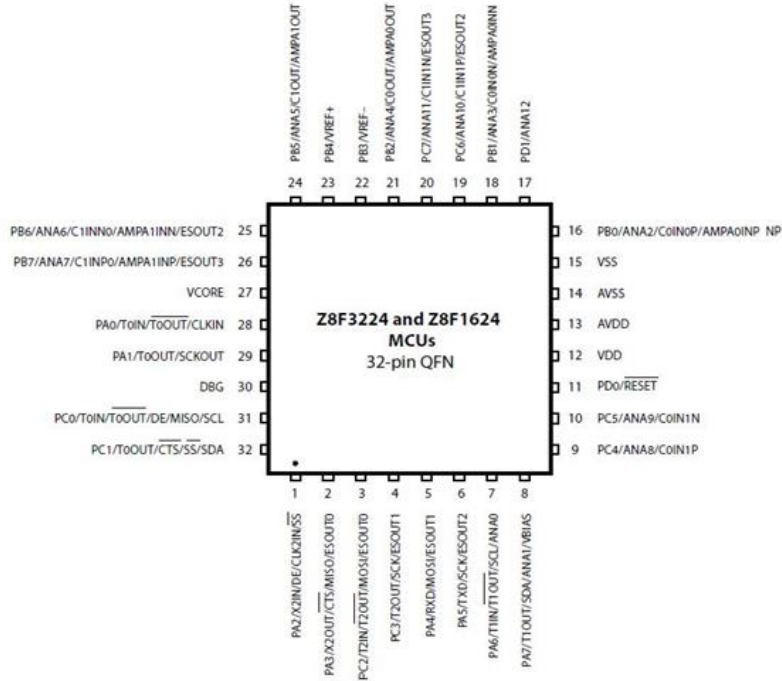
- Clock multiplication including Digitally Controlled Oscillator (DCO) and Frequency Locked Loop (FLL) supporting up to 20MHz operation
- Power-On Reset (POR) and Voltage Brown-Out (VBO) protection
- Built-in Low-Voltage Detection (LVD) with programmable voltage threshold
- 32-QFN (5mm x 5mm) and 44-QFN (7mm x 7mm) packages
- -40°C to +85°C (extended) operating temperature range

Block Diagram

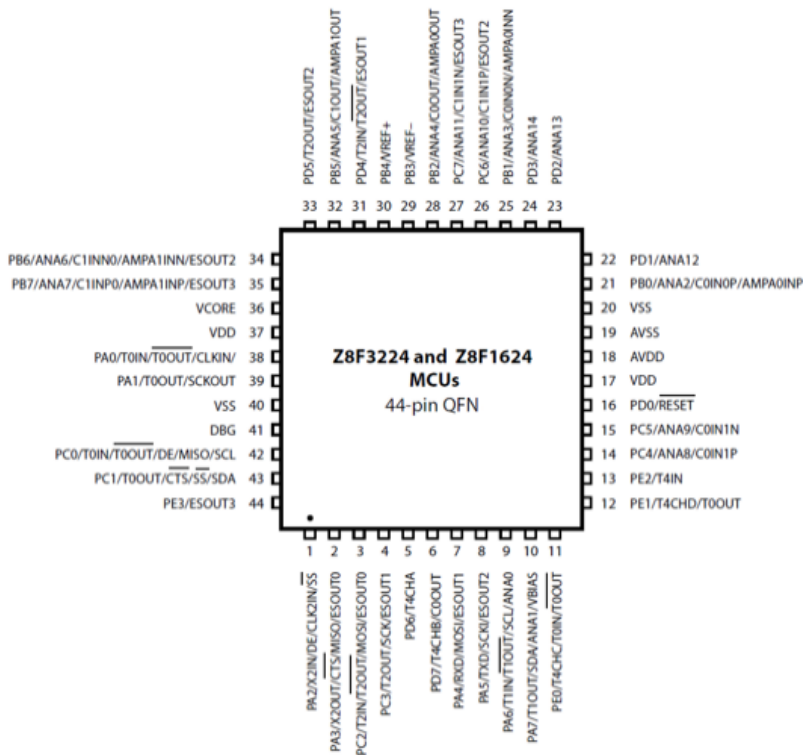




Package and Signals



32-Pin QFN Package (5mm x 5mm) and Signals



44-Pin QFN Package (7mm x 7mm) and Signals



Development Tools

The F3224 Series is supported by a comprehensive package of development tools that includes all the essential design elements needed to get your application up and running in record time.

Z8F3224 General Purpose Development Kit

The F3224 Development Kit, contains the following tools:

- F3224 Series Development Board with 44-QFN device
- Encore SmartCable for debug and programming
- USB A to Mini B cable
- Sample applications
- Part Number: Z8F32240100ZCOG



Development Kit: Z8F32240100ZCOG

ZMOTION Development Kit

For PIR motion sensing applications using the ZMOTION Library, Zilog provides a complete motion detection development kit with lenses and sample S/W.

- Z8F3224 ZMOTION Development Board with 2 44-QFN devices
- Encore SmartCable for debug and programming
- USB A to Mini B cable
- Sample applications
- Part Number: ZMOTIONL400ZCOG

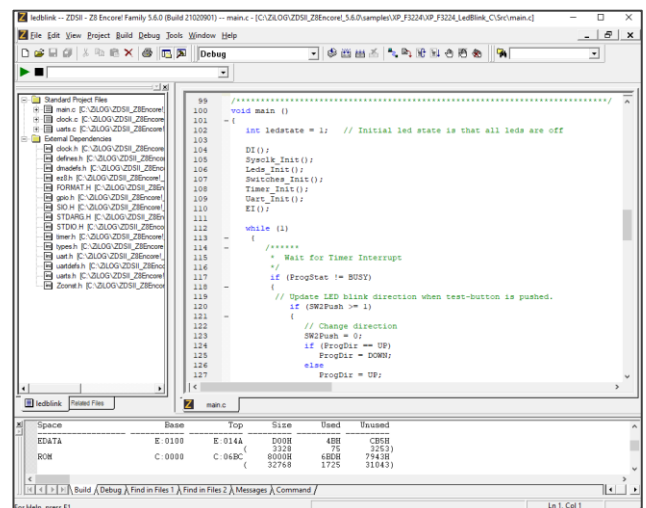


Development Kit: ZMOTIONL400ZCOG

Zilog Developer Studio IDE (ZDS-II)

The F3224 Series is also supported by ZDS II — Zilog's Integrated Development Environment (IDE).

- Complete Integrated Development Environment (IDE) includes a full ANSI C Compiler, Assembler, Linker, Debugger, Simulator, and Editor
- Includes sample applications
- Download the latest version of ZDS II for Z8 Encore! XP devices free from the Zilog website





Z8F3224 Series Selection Table

Part Number	Flash	Register RAM	I2C Master/Slave	ESPI	I/O Lines	Interrupt Vectors	16-Bit Timers with PWM	12/14-Bit A/D Channels	UART (LIN/DALI/DMX)	Comparator	Op Amp	Multichannel Timer	Description
Z8F3224QN020XK Z8F3224QN020XK2258	32 KB	3.75 KB	1	1	36	23	3	15	1	2	2	1	QFN 44-pin package
Z8F3224QK020XK Z8F3224QK020XK2258	32 KB	3.75 KB	1	1	26	22	3	12	1	2	2	1	QFN 32-pin package
Z8F1624QN020XK	16 KB	3.75 KB	1	1	36	23	3	15	1	2	2	1	QFN 44-pin package
Z8F1624QK020XK	16 KB	3.75 KB	1	1	26	22	3	12	1	2	2	1	QFN 32-pin package
Z8F32240100ZCOG	Z8F3224 General Purpose Development Kit												
ZMOTIONL400ZCOG	Z8F3224 ZMOTION Development Kit												

Note: Z8F3224 Series of microcontrollers supports the ZMOTION Engine Library for motion detection applications. A specific version of the device must be used for the Library to operate correctly. This version is identified by the 2258 suffix on the device part number. Please refer to UM0275 for more information about the ZMOTION Library.