High-Performance 8-Bit Microcontrollers

Z8 Encore! XP® F0830 Series

with Extended Peripherals

Product Brief

PB016108-1206

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 and 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		

Overview

ZiLOG's Z8 Encore! XP F0830 Series devices are Flash microcontrollers based on ZiLOG's eZ8 CPU. The Z8 Encore! XP F0830 Series MCU, which is part of Z8 Encore! XP family of devices, sets a new standard for performance and on-chip peripherals.

The Z8 Encore! XP F0830 Series devices support up to 12 KB Flash program memory and 256 B register RAM, that is pin-for-pin compatible with the award-winning Z8 Encore! XP 4K Series family.

The Z8 Encore! XP F0830 Series device features up to eight channels of fast analog-to-digital conversion (11.9 µS) with SAR converter.

The single-pin debugger and programming interface simplifies code development and allows easy in-circuit programming.

Features

Key features of Z8 Encore! XP F0830 Series MCU include:

- 20 MHz eZ8 CPU core
- Up to 12 KB Flash memory with in-circuit programming capability
- Up to 256 B register RAM
- Up to 64 B non-volatile data storage (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 Pulse Width Modulation (PWM) capabilities
- Watchdog Timer (WDT) with internal RC oscillator
- 17 to 25 I/O pins depending upon package
- Up to 17 interrupts with configurable priority
- On-Chip Debugger (OCD)
- Voltage Brownout (VBO) protection
- Power-on Reset (POR)
- Internal precision oscillator (output frequencies 5.53 MHz or 32 KHz) with accuracy of ±4% full voltage/temperature range
- Crystal oscillator with three power settings and external RC network option
- 2.7 V to 3.6 V operating voltage with 5 V-tolerant digital inputs
- Variable current LED drive capability
- 20- and 28-pin SOIC, SSOP, QFN, and PDIP packages
- 0 ºC to +70 ºC standard temperature and –40 ºC to +105 ºC extended temperature operating ranges

ZiLOG Worldwide Headquarters • 532 Race Street • San Jose, CA 95126
Telephone: 408.558.8500 • Fax: 408.558.8300 • www.zilog.com

eZ8 CPU Features

The eZ8 CPU, ZiLOG's latest 8-bit CPU, meets the continuing demand for faster and more code-efficient microcontrollers. The 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 F0830 Series Development Environment

The Z8 Encore! XP F0830 Series is supported by the USB Smart Cable or the Opto-Isolated USB Smart Cable.

The microcontroller is also supported by the ZDS II—Z8 Encore! XP integrated development environment (IDE) with ANSI C-Compiler, available on www.zilog.com. The ZDS II IDE includes:

- Sample code
- Product Specifications (Data Sheet)
- Product Briefs
- Multiple Application Notes
- eZ8 CPU User Manual

Architecture

Figure 1 illustrates the Z8 Encore! XP F0830 Series block diagram.

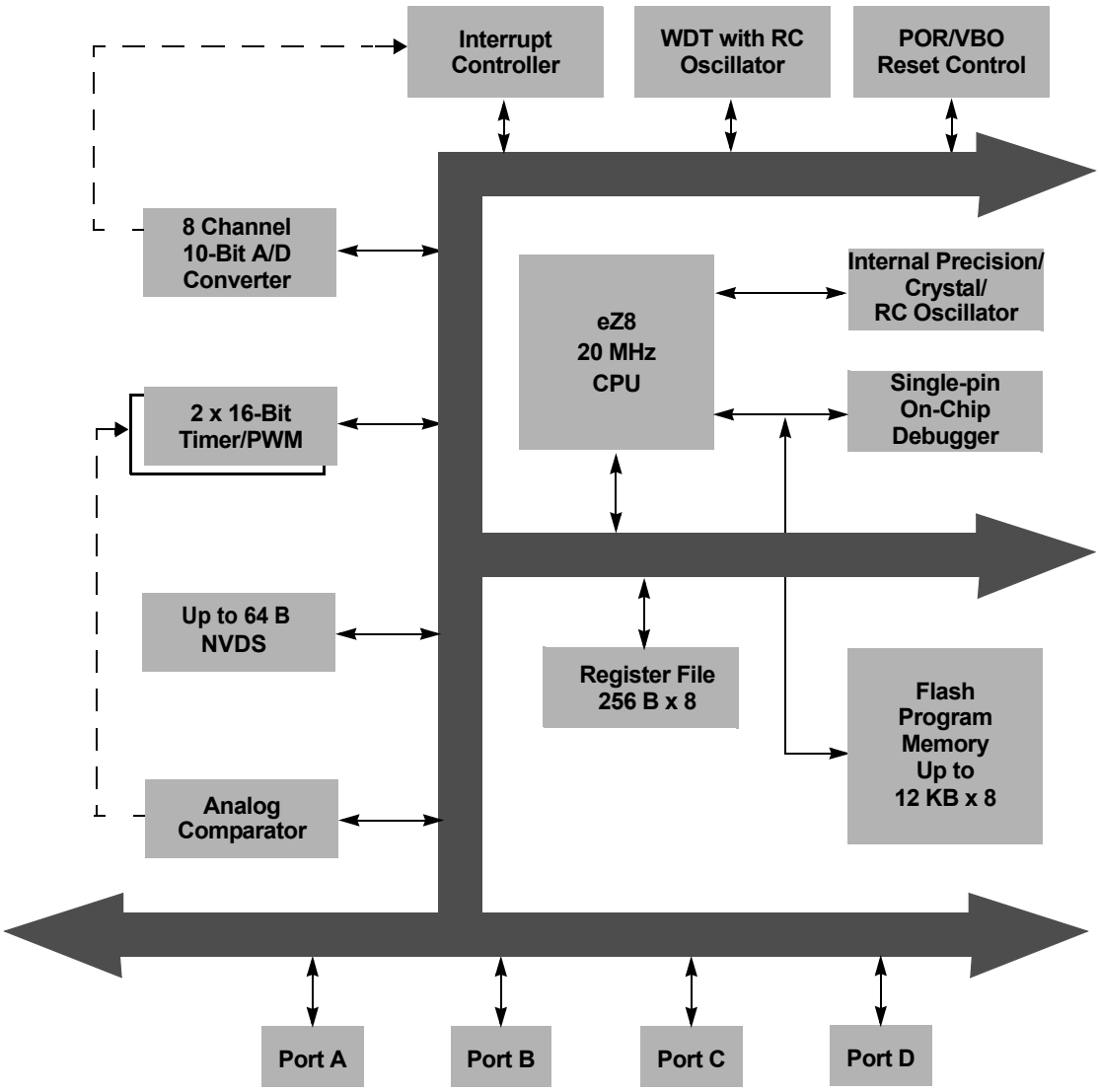


Figure 1. Z8 Encore! XP F0830 Series Block Diagram

Ordering Information

Order the Z8 Encore! XP F0830 Series from ZiLOG using the following part numbers. For more information regarding ordering, contact your local ZiLOG sales office. The ZiLOG website (www.zilog.com) lists all regional offices and provides additional information on Z8 Encore! XP product.

Part Number	Flash	RAM	NVDS	ADC Channels	Description
Z8 Encore! XP F0830 with 12 KB Flash					
Standard Temperature: 0 °C to 70°C					
Z8F1232SH020SG	12 KB	256	No	7	SOIC 20-pin
Z8F1232HH020SG	12 KB	256	No	7	SSOP 20-pin
Z8F1232PH020SG	12 KB	256	No	7	PDIP 20-pin
Z8F1232QH020SG	12 KB	256	No	7	QFN 20-pin
Z8F1233SH020SG	12 KB	256	No	0	SOIC 20-pin
Z8F1233HH020SG	12 KB	256	No	0	SSOP 20-pin
Z8F1233PH020SG	12 KB	256	No	0	PDIP 20-pin
Z8F1233QH020SG	12 KB	256	No	0	QFN 20-pin
Z8F1232SJ020SG	12 KB	256	No	8	SOIC 28-pin
Z8F1232HJ020SG	12 KB	256	No	8	SSOP 28-pin
Z8F1232PJ020SG	12 KB	256	No	8	PDIP 28-pin
Z8F1232QJ020SG	12 KB	256	No	8	QFN 28-pin
Z8F1233SJ020SG	12 KB	256	No	0	SOIC 28-pin
Z8F1233HJ020SG	12 KB	256	No	0	SSOP 28-pin
Z8F1233PJ020SG	12 KB	256	No	0	PDIP 28-pin
Z8F1233QJ020SG	12 KB	256	No	0	QFN 28-pin
Extended Temperature: –40 °C to 105 °C					
Z8F1232SH020EG	12 KB	256	No	7	SOIC 20-pin
Z8F1232HH020EG	12 KB	256	No	7	SSOP 20-pin
Z8F1232PH020EG	12 KB	256	No	7	PDIP 20-pin
Z8F1232QH020EG	12 KB	256	No	7	QFN 20-pin
Z8F1233SH020EG	12 KB	256	No	0	SOIC 20-pin
Z8F1233HH020EG	12 KB	256	No	0	SSOP 20-pin
Z8F1233PH020EG	12 KB	256	No	0	PDIP 20-pin
Z8F1233QH020EG	12 KB	256	No	0	QFN 20-pin
Z8F1232SJ020EG	12 KB	256	No	8	SOIC 28-pin
Z8F1232HJ020EG	12 KB	256	No	8	SSOP 28-pin
Z8F1232PJ020EG	12 KB	256	No	8	PDIP 28-pin
Z8F1232QJ020EG	12 KB	256	No	8	QFN 28-pin
Z8F1233SJ020EG	12 KB	256	No	0	SOIC 28-pin
Z8F1233HJ020EG	12 KB	256	No	0	SSOP 28-pin
Z8F1233PJ020EG	12 KB	256	No	0	PDIP 28-pin
Z8F1233QJ020EG	12 KB	256	No	0	QFN 28-pin

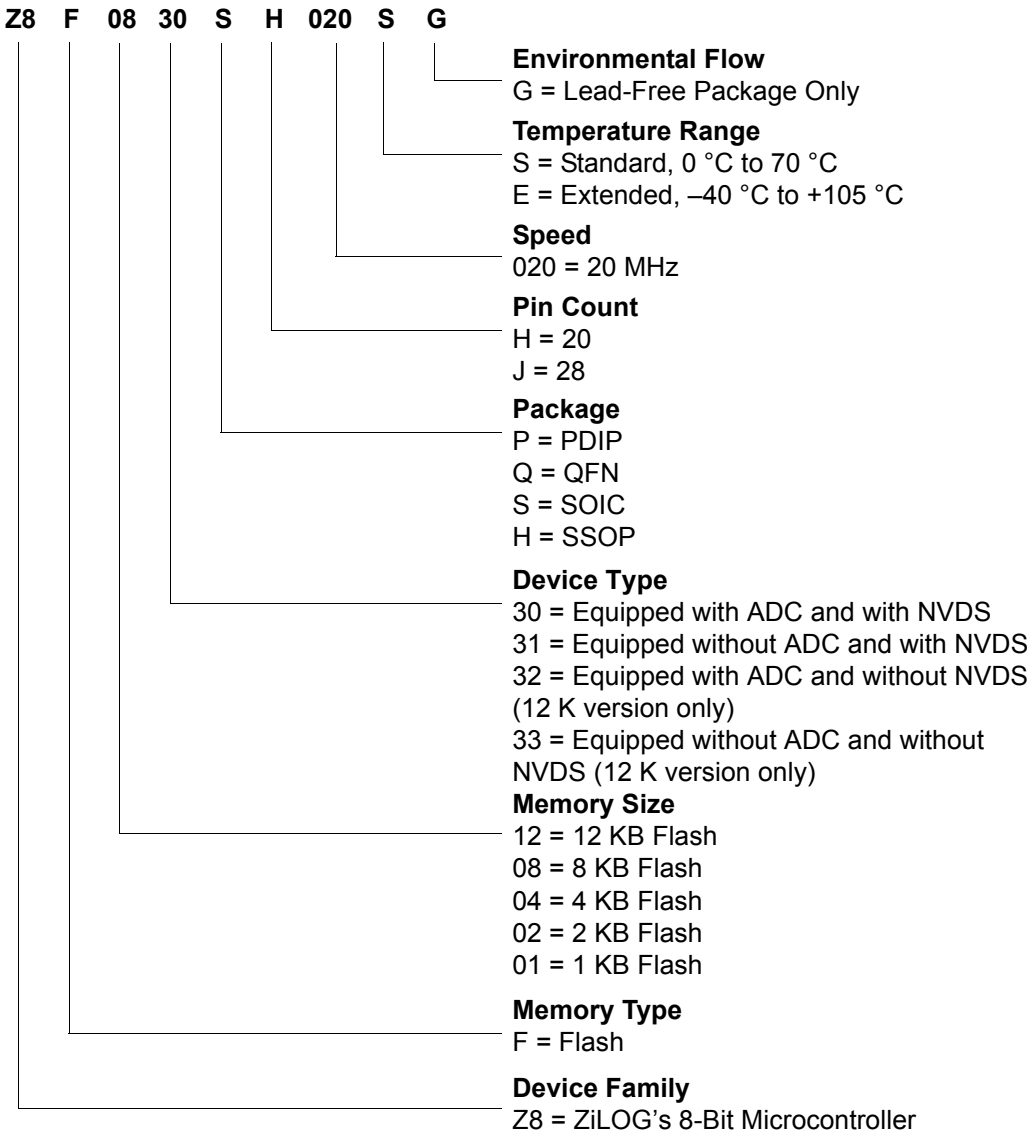
Part Number	Flash	RAM	NVDS	ADC Channels	Description
Z8 Encore! XP F0830 with 8 KB Flash					
Standard Temperature: 0 °C to 70 °C					
Z8F0830SH020SG	8 KB	256	Yes	7	SOIC 20-pin
Z8F0830HH020SG	8 KB	256	Yes	7	SSOP 20-pin
Z8F0830PH020SG	8 KB	256	Yes	7	PDIP 20-pin
Z8F0830QH020SG	8 KB	256	Yes	7	QFN 20-pin
Z8F0831SH020SG	8 KB	256	Yes	0	SOIC 20-pin
Z8F0831HH020SG	8 KB	256	Yes	0	SSOP 20-pin
Z8F0831PH020SG	8 KB	256	Yes	0	PDIP 20-pin
Z8F0831QH020SG	8 KB	256	Yes	0	QFN 20-pin
Z8F0830SJ020SG	8 KB	256	Yes	8	SOIC 28-pin
Z8F0830HJ020SG	8 KB	256	Yes	8	SSOP 28-pin
Z8F0830PJ020SG	8 KB	256	Yes	8	PDIP 28-pin
Z8F0830QJ020SG	8 KB	256	Yes	8	QFN 28-pin
Z8F0831SJ020SG	8 KB	256	Yes	0	SOIC 28-pin
Z8F0831HJ020SG	8 KB	256	Yes	0	SSOP 28-pin
Z8F0831PJ020SG	8 KB	256	Yes	0	PDIP 28-pin
Z8F0831QJ020SG	8 KB	256	Yes	0	QFN 28-pin
Extended Temperature: –40 °C to 105 °C					
Z8F0830SH020EG	8 KB	256	Yes	7	SOIC 20-pin
Z8F0830HH020EG	8 KB	256	Yes	7	SSOP 20-pin
Z8F0830PH020EG	8 KB	256	Yes	7	PDIP 20-pin
Z8F0830QH020EG	8 KB	256	Yes	7	QFN 20-pin
Z8F0831SH020EG	8 KB	256	Yes	0	SOIC 20-pin
Z8F0831HH020EG	8 KB	256	Yes	0	SSOP 20-pin
Z8F0831PH020EG	8 KB	256	Yes	0	PDIP 20-pin
Z8F0831QH020EG	8 KB	256	Yes	0	QFN 20-pin
Z8F0830SJ020EG	8 KB	256	Yes	8	SOIC 28-pin
Z8F0830HJ020EG	8 KB	256	Yes	8	SSOP 28-pin
Z8F0830PJ020EG	8 KB	256	Yes	8	PDIP 28-pin
Z8F0830QJ020EG	8 KB	256	Yes	8	QFN 28-pin
Z8F0831SJ020EG	8 KB	256	Yes	0	SOIC 28-pin
Z8F0831HJ020EG	8 KB	256	Yes	0	SSOP 28-pin
Z8F0831PJ020EG	8 KB	256	Yes	0	PDIP 28-pin
Z8F0831QJ020EG	8 KB	256	Yes	0	QFN 28-pin

Part Number	Flash	RAM	NVDS	ADC Channels	Description
Z8 Encore! XP F0830 with 4 KB Flash					
Standard Temperature: 0 °C to 70 °C					
Z8F0430SH020SG	4 KB	256	Yes	7	SOIC 20-pin
Z8F0430HH020SG	4 KB	256	Yes	7	SSOP 20-pin
Z8F0430PH020SG	4 KB	256	Yes	7	PDIP 20-pin
Z8F0430QH020SG	4 KB	256	Yes	7	QFN 20-pin
Z8F0431SH020SG	4 KB	256	Yes	0	SOIC 20-pin
Z8F0431HH020SG	4 KB	256	Yes	0	SSOP 20-pin
Z8F0431PH020SG	4 KB	256	Yes	0	PDIP 20-pin
Z8F0431QH020SG	4 KB	256	Yes	0	QFN 20-pin
Z8F0430SJ020SG	4 KB	256	Yes	8	SOIC 28-pin
Z8F0430HJ020SG	4 KB	256	Yes	8	SSOP 28-pin
Z8F0430PJ020SG	4 KB	256	Yes	8	PDIP 28-pin
Z8F0430QJ020SG	4 KB	256	Yes	8	QFN 28-pin
Z8F0431SJ020SG	4 KB	256	Yes	0	SOIC 28-pin
Z8F0431HJ020SG	4 KB	256	Yes	0	SSOP 28-pin
Z8F0431PJ020SG	4 KB	256	Yes	0	PDIP 28-pin
Z8F0431QJ020SG	4 KB	256	Yes	0	QFN 28-pin
Extended Temperature: –40 °C to 105 °C					
Z8F0430SH020EG	4 KB	256	Yes	7	SOIC 20-pin
Z8F0430HH020EG	4 KB	256	Yes	7	SSOP 20-pin
Z8F0430PH020EG	4 KB	256	Yes	7	PDIP 20-pin
Z8F0430QH020EG	4 KB	256	Yes	7	QFN 20-pin
Z8F0431SH020EG	4 KB	256	Yes	0	SOIC 20-pin
Z8F0431HH020EG	4 KB	256	Yes	0	SSOP 20-pin
Z8F0431PH020EG	4 KB	256	Yes	0	PDIP 20-pin
Z8F0431QH020EG	4 KB	256	Yes	0	QFN 20-pin
Z8F0430SJ020EG	4 KB	256	Yes	8	SOIC 28-pin
Z8F0430HJ020EG	4 KB	256	Yes	8	SSOP 28-pin
Z8F0430PJ020EG	4 KB	256	Yes	8	PDIP 28-pin
Z8F0430QJ020EG	4 KB	256	Yes	8	QFN 28-pin
Z8F0431SJ020EG	4 KB	256	Yes	0	SOIC 28-pin
Z8F0431HJ020EG	4 KB	256	Yes	0	SSOP 28-pin
Z8F0431PJ020EG	4 KB	256	Yes	0	PDIP 28-pin
Z8F0431QJ020EG	4 KB	256	Yes	0	QFN 28-pin

Part Number	Flash	RAM	NVDS	ADC Channels	Description
Z8 Encore! XP F0830 with 2 KB Flash					
Standard Temperature: 0 °C to 70 °C					
Z8F0230SH020SG	2 KB	256	Yes	7	SOIC 20-pin
Z8F0230HH020SG	2 KB	256	Yes	7	SSOP 20-pin
Z8F0230PH020SG	2 KB	256	Yes	7	PDIP 20-pin
Z8F0230QH020SG	2 KB	256	Yes	7	QFN 20-pin
Z8F0231SH020SG	2 KB	256	Yes	0	SOIC 20-pin
Z8F0231HH020SG	2 KB	256	Yes	0	SSOP 20-pin
Z8F0231PH020SG	2 KB	256	Yes	0	PDIP 20-pin
Z8F0231QH020SG	2 KB	256	Yes	0	QFN 20-pin
Z8F0230SJ020SG	2 KB	256	Yes	8	SOIC 28-pin
Z8F0230HJ020SG	2 KB	256	Yes	8	SSOP 28-pin
Z8F0230PJ020SG	2 KB	256	Yes	8	PDIP 28-pin
Z8F0230QJ020SG	2 KB	256	Yes	8	QFN 28-pin
Z8F0231SJ020SG	2 KB	256	Yes	0	SOIC 28-pin
Z8F0231HJ020SG	2 KB	256	Yes	0	SSOP 28-pin
Z8F0231PJ020SG	2 KB	256	Yes	0	PDIP 28-pin
Z8F0231QJ020SG	2 KB	256	Yes	0	QFN 28-pin
Extended Temperature: –40 °C to 105 °C					
Z8F0230SH020EG	2 KB	256	Yes	7	SOIC 20-pin
Z8F0230HH020EG	2 KB	256	Yes	7	SSOP 20-pin
Z8F0230PH020EG	2 KB	256	Yes	7	PDIP 20-pin
Z8F0230QH020EG	2 KB	256	Yes	7	QFN 20-pin
Z8F0231SH020EG	2 KB	256	Yes	0	SOIC 20-pin
Z8F0231HH020EG	2 KB	256	Yes	0	SSOP 20-pin
Z8F0231PH020EG	2 KB	256	Yes	0	PDIP 20-pin
Z8F0231QH020EG	2 KB	256	Yes	0	QFN 20-pin
Z8F0230SJ020EG	2 KB	256	Yes	8	SOIC 28-pin
Z8F0230HJ020EG	2 KB	256	Yes	8	SSOP 28-pin
Z8F0230PJ020EG	2 KB	256	Yes	8	PDIP 28-pin
Z8F0230QJ020EG	2 KB	256	Yes	8	QFN 28-pin
Z8F0231SJ020EG	2 KB	256	Yes	0	SOIC 28-pin
Z8F0231HJ020EG	2 KB	256	Yes	0	SSOP 28-pin
Z8F0231PJ020EG	2 KB	256	Yes	0	PDIP 28-pin
Z8F0231QJ020EG	2 KB	256	Yes	0	QFN 28-pin

Part Number	Flash	RAM	NVDS	ADC Channels	Description
Z8 Encore! XP F0830 with 1 KB Flash					
Standard Temperature: 0 °C to 70 °C					
Z8F0130SH020SG	1 KB	256	Yes	7	SOIC 20-pin
Z8F0130HH020SG	1 KB	256	Yes	7	SSOP 20-pin
Z8F0130PH020SG	1 KB	256	Yes	7	PDIP 20-pin
Z8F0130QH020SG	1 KB	256	Yes	7	QFN 20-pin
Z8F0131SH020SG	1 KB	256	Yes	0	SOIC 20-pin
Z8F0131HH020SG	1 KB	256	Yes	0	SSOP 20-pin
Z8F0131PH020SG	1 KB	256	Yes	0	PDIP 20-pin
Z8F0131QH020SG	1 KB	256	Yes	0	QFN 20-pin
Z8F0130SJ020SG	1 KB	256	Yes	8	SOIC 28-pin
Z8F0130HJ020SG	1 KB	256	Yes	8	SSOP 28-pin
Z8F0130PJ020SG	1 KB	256	Yes	8	PDIP 28-pin
Z8F0130QJ020SG	1 KB	256	Yes	8	QFN 28-pin
Z8F0131SJ020SG	1 KB	256	Yes	0	SOIC 28-pin
Z8F0131HJ020SG	1 KB	256	Yes	0	SSOP 28-pin
Z8F0131PJ020SG	1 KB	256	Yes	0	PDIP 28-pin
Z8F0131QJ020SG	1 KB	256	Yes	0	QFN 28-pin
Extended Temperature: –40 °C to 105 °C					
Z8F0130SH020EG	1 KB	256	Yes	7	SOIC 20-pin
Z8F0130HH020EG	1 KB	256	Yes	7	SSOP 20-pin
Z8F0130PH020EG	1 KB	256	Yes	7	PDIP 20-pin
Z8F0130QH020EG	1 KB	256	Yes	7	QFN 20-pin
Z8F0131SH020EG	1 KB	256	Yes	0	SOIC 20-pin
Z8F0131HH020EG	1 KB	256	Yes	0	SSOP 20-pin
Z8F0131PH020EG	1 KB	256	Yes	0	PDIP 20-pin
Z8F0131QH020EG	1 KB	256	Yes	0	QFN 20-pin
Z8F0130SJ020EG	1 KB	256	Yes	8	SOIC 28-pin
Z8F0130HJ020EG	1 KB	256	Yes	8	SSOP 28-pin
Z8F0130PJ020EG	1 KB	256	Yes	8	PDIP 28-pin
Z8F0130QJ020EG	1 KB	256	Yes	8	QFN 28-pin
Z8F0131SJ020EG	1 KB	256	Yes	0	SOIC 28-pin
Z8F0131HJ020EG	1 KB	256	Yes	0	SSOP 28-pin
Z8F0131PJ020EG	1 KB	256	Yes	0	PDIP 28-pin
Z8F0131QJ020EG	1 KB	256	Yes	0	QFN 28-pin
ZUSBSC00100ZACG					USB Smart Cable Accessory Kit
ZUSBOPTSC01ZACG					Opto-Isolated USB Smart Cable Accessory Kit

Part Number Suffix Designations



The product brief contains an overview of the silicon feature set and operating parameters and should not be considered as the final specification. See the product specification for the actual feature set and operating parameters for this product.

This publication is subject to replacement by a later edition. To determine whether a later edition exists, or to request copies of publications, contact:

ZiLOG Worldwide Headquarters
532 Race Street
San Jose, CA 95126
Telephone: 408.558.8500
Fax: 408.558.8300

www.zilog.com

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