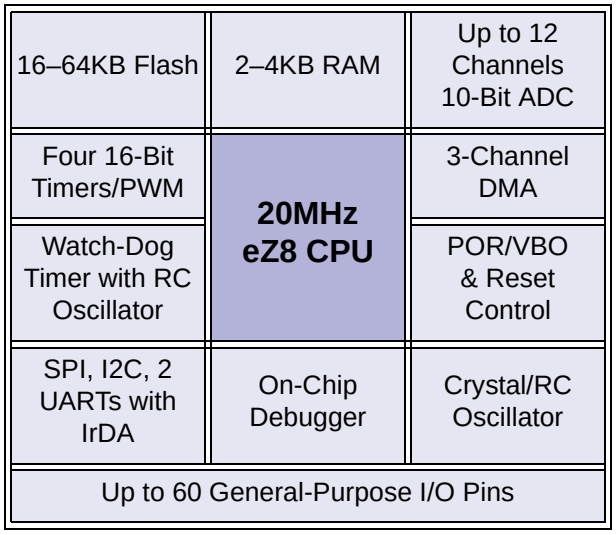
High Performance 8-Bit Microcontrollers

Z8 Encore!® 64K Series

Product Brief

PB012403-0304 PRELIMINARY

Product Block Diagram



Overview

The Z8 Encore!® 64K Series devices are Flash microcontrollers based on the ZiLOG® eZ8 CPU. The Z8 Encore!® 64K Series MCU family of devices sets a new standard for performance and on-chip peripherals.

The Z8 Encore!® 64K Series devices support up to 64KB of Flash (or optional ROM) program memory and 4KB register RAM

The 64K Series devices feature up to twelve channels of 10-bit A/D conversion for measuring analog signals.

These devices include up to four enhanced 16-bit timer blocks featuring PWMs and Capture and Compare.

Up to 24 vectored interrupts with programmable priorities provide increased application flexibility.

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

Two full-duplex UARTs provides serial communications and IrDA encoding and decoding capability.

SPI and I2C ports allow easy incorporation into any system.

Features

- 20MHz eZ8 CPU core
- Up to 64KB Flash memory (or optional ROM) with in-circuit programming capability (Flash only)
- Up to 4KB register RAM
- Up to twelve channels 10-bit analog-to-digital converter (ADC)
- Two full-duplex 9-bit UARTs with bus transceiver Driver Enable Control
- I^2C
- Serial peripheral interface (SPI)
- Infrared Data Association (IrDA)-compliant infrared encoder/decoders
- Up to four 16-bit timers with capture, compare, and PWM capability
- Watch-Dog Timer (WDT) with internal RC oscillator
- 3-channel DMA
- Up to 60 I/O pins depending upon package
- Up to 24 interrupts with configurable priority
- On-Chip Debugger
- Voltage Brown-out Protection (VBO)
- Power-On Reset (POR)
- Crystal oscillator with three power settings and external RC network option

- 3.0–3.6V operating voltage with 5V-tolerant inputs
- 40-, 44-, 64-, 68- and 80-pin packages
- 0° to +70°C standard temperature and -40° to +105°C extended temperature operating ranges

eZ8 CPU Features

- 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
- 2-9 clock cycles per instruction

Z8 Encore!® 64K Series Development Kit

The Z8 Encore!® 64K Series Development Kit includes the following:

Hardware

- Z8 Encore!® 64K Series Development board
- Smart Cable for PC to Z8 Encore!® 64K Series Development board (DB9 to 6-pin male)
- 5VDC power supply

Software (on CD-ROM)

- ZDS II–Z8 Encore!® IDE with ANSI C-Compiler
- Sample code
- Document Browser
- Acrobat Reader install program

Documentation

- Quick Start Guide
- Registration card
- Z8 Encore!® 64K Series technical documentation (on CD-ROM)
  - Development Kit User Manual
  - ZDS II - IDE User Manual
  - eZ8 CPU User Manual
  - Product specification
  - Product brief
  - Application notes

Architecture

Figure 1 illustrates the Z8 Encore!® 64K Series block diagram.

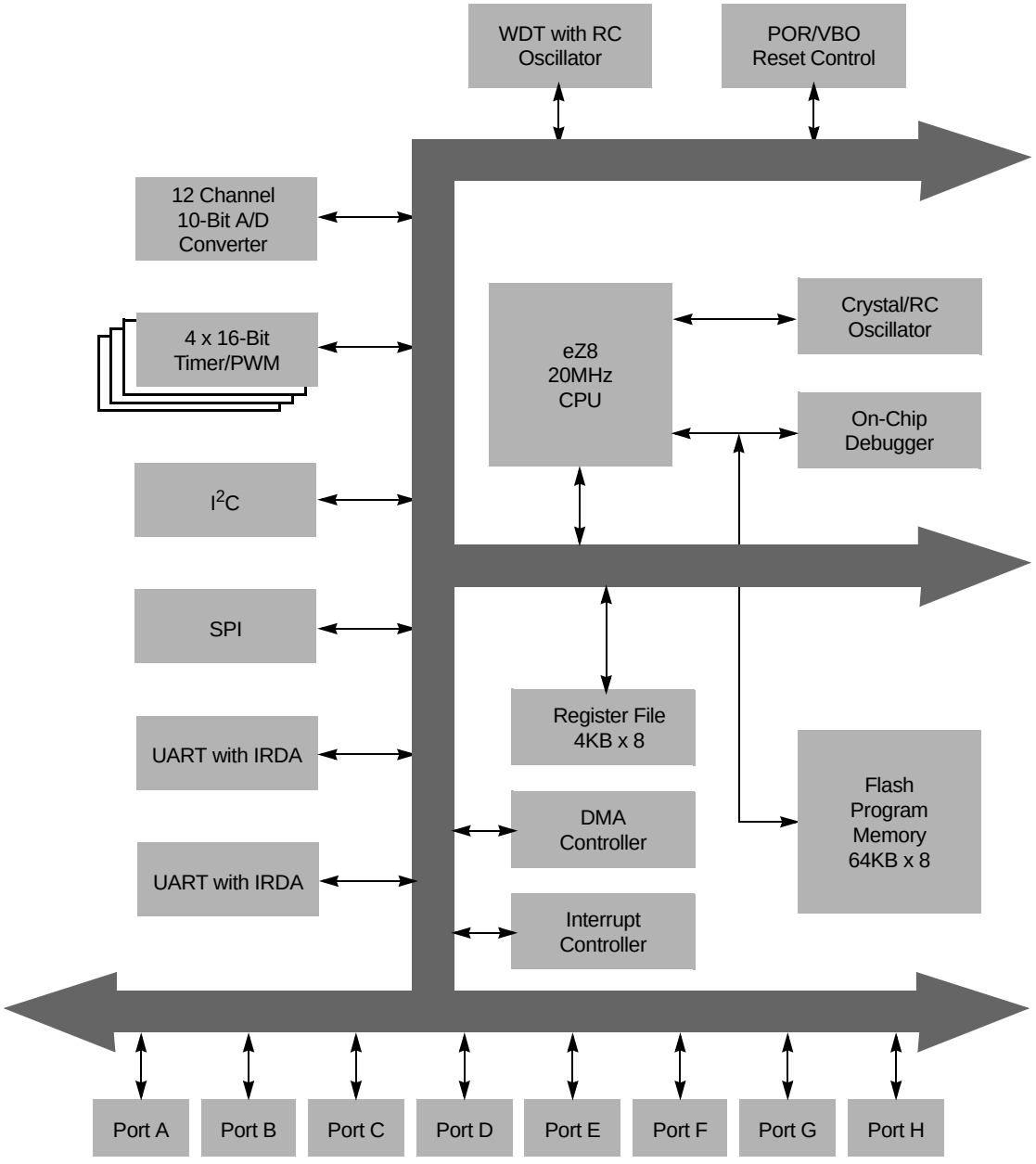


Figure 1. Z8 Encore!® 64K Series Block Diagram

Ordering Information

Order the Z8 Encore!® 64K Series from ZiLOG®, referencing the following part numbers. For more information regarding ordering, please consult your local ZiLOG® sales office. The ZiLOG® website at www.zilog.com lists all regional offices and provides additional Z8 Encore!® product information.

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8F642x with 64KB Flash, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8F6421PM020SC	64KB	4KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F6421AN020SC	64KB	4KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F6421VN020SC	64KB	4KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F6422AR020SC	64KB	4KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F6422VS020SC	64KB	4KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8F6423FT020SC	64KB	4KB	60	24	4	12	1	1	2	QFP 80-pin package
Extended Temperature: -40° to +105°C										
Z8F6421PM020EC	64KB	4KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F6421AN020EC	64KB	4KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F6421VN020EC	64KB	4KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F6422AR020EC	64KB	4KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F6422VS020EC	64KB	4KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8F6423FT020EC	64KB	4KB	60	24	4	12	1	1	2	QFP 80-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8F482x with 48KB Flash, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8F4821PM020SC	48KB	4KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F4821AN020SC	48KB	4KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F4821VN020SC	48KB	4KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F4822AR020SC	48KB	4KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F4822VS020SC	48KB	4KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8F4823FT020SC	48KB	4KB	60	24	4	12	1	1	2	QFP 80-pin package
Extended Temperature: -40° to +105°C										
Z8F4821PM020EC	48KB	4KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F4821AN020EC	48KB	4KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F4821VN020EC	48KB	4KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F4822AR020EC	48KB	4KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F4822VS020EC	48KB	4KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8F4823FT020EC	48KB	4KB	46	24	4	12	1	1	2	QFP 80-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8F322x with 32KB Flash, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8F3221PM020SC	32KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F3221AN020SC	32KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F3221VN020SC	32KB	2KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F3222AR020SC	32KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F3222VS020SC	32KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package
Extended Temperature: -40° to 105°C										
Z8F3221PM020EC	32KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F3221AN020EC	32KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F3221VN020EC	32KB	2KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F3222AR020EC	32KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F3222VS020EC	32KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8F242x with 24KB Flash, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8F2421PM020SC	24KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F2421AN020SC	24KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F2421VN020SC	24KB	2KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F2422AR020SC	24KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F2422VS020SC	24KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package
Extended Temperature: -40° to 105°C										
Z8F2421PM020EC	24KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F2421AN020EC	24KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F2421VN020EC	24KB	2KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F2422AR020EC	24KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F2422VS020EC	24KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8F162x with 16KB Flash, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8F1621PM020SC	16KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F1621AN020SC	16KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F1621VN020SC	16KB	2KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F1622AR020SC	16KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F1622VS020SC	16KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package
Extended Temperature: -40° to +105°C										
Z8F1621PM020EC	16KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8F1621AN020EC	16KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8F1621VN020EC	16KB	2KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F1622AR020EC	16KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8F1622VS020EC	16KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8R642x with 64KB ROM, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8R6421PM020SC	64KB	4KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8R6421AN020SC	64KB	4KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8R6421VN020SC	64KB	4KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8F6422AR020SC	64KB	4KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8R6422VS020SC	64KB	4KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8R6423FT020SC	64KB	4KB	60	24	4	12	1	1	2	QFP 80-pin package
Extended Temperature: -40° to +105°C										
Z8R6421PM020EC	64KB	4KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8R6421AN020EC	64KB	4KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8R6421VN020EC	64KB	4KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8R6422AR020EC	64KB	4KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8R6422VS020EC	64KB	4KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8R6423FT020EC	64KB	4KB	60	24	4	12	1	1	2	QFP 80-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8R482x with 48KB ROM, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8R4821PM020SC	48KB	4KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8R4821AN020SC	48KB	4KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8R4821VN020SC	48KB	4KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8R4822AR020SC	48KB	4KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8R4822VS020SC	48KB	4KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8R4823FT020SC	48KB	4KB	60	24	4	12	1	1	2	QFP 80-pin package
Extended Temperature: -40° to +105°C										
Z8R4821PM020EC	48KB	4KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8R4821AN020EC	48KB	4KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8R4821VN020EC	48KB	4KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8R4822AR020EC	48KB	4KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8R4822VS020EC	48KB	4KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8R4823FT020EC	48KB	4KB	46	24	4	12	1	1	2	QFP 80-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8R322x with 32KB ROM, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8R3221PM020SC	32KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8R3221AN020SC	32KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8R3221VN020SC	32KB	2KB	31	23	3	8	1	1	2	PLCC 44-pin package
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Z8R3222AR020EC	32KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8R3222VS020EC	32KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8R242x with 24KB ROM, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8R2421PM020SC	24KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8R2421AN020SC	24KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
Z8R2421VN020SC	24KB	2KB	31	23	3	8	1	1	2	PLCC 44-pin package
Z8R2422AR020SC	24KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8R2422VS020SC	24KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package
Extended Temperature: -40° to 105°C										
Z8R2421PM020EC	24KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
Z8R2421AN020EC	24KB	2KB	31	23	3	8	1	1	2	LQFP 44-pin package
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Z8R2422AR020EC	24KB	2KB	46	24	4	12	1	1	2	LQFP 64-pin package
Z8R2422VS020EC	24KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package

Part Number	Flash/ROM	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	I^2C	SPI	UARTs with IrDA	Description
Z8R162x with 16KB ROM, 10-Bit Analog-to-Digital Converter										
Standard Temperature: 0° to 70°C										
Z8R1621PM020SC	16KB	2KB	29	23	3	8	1	1	2	PDIP 40-pin package
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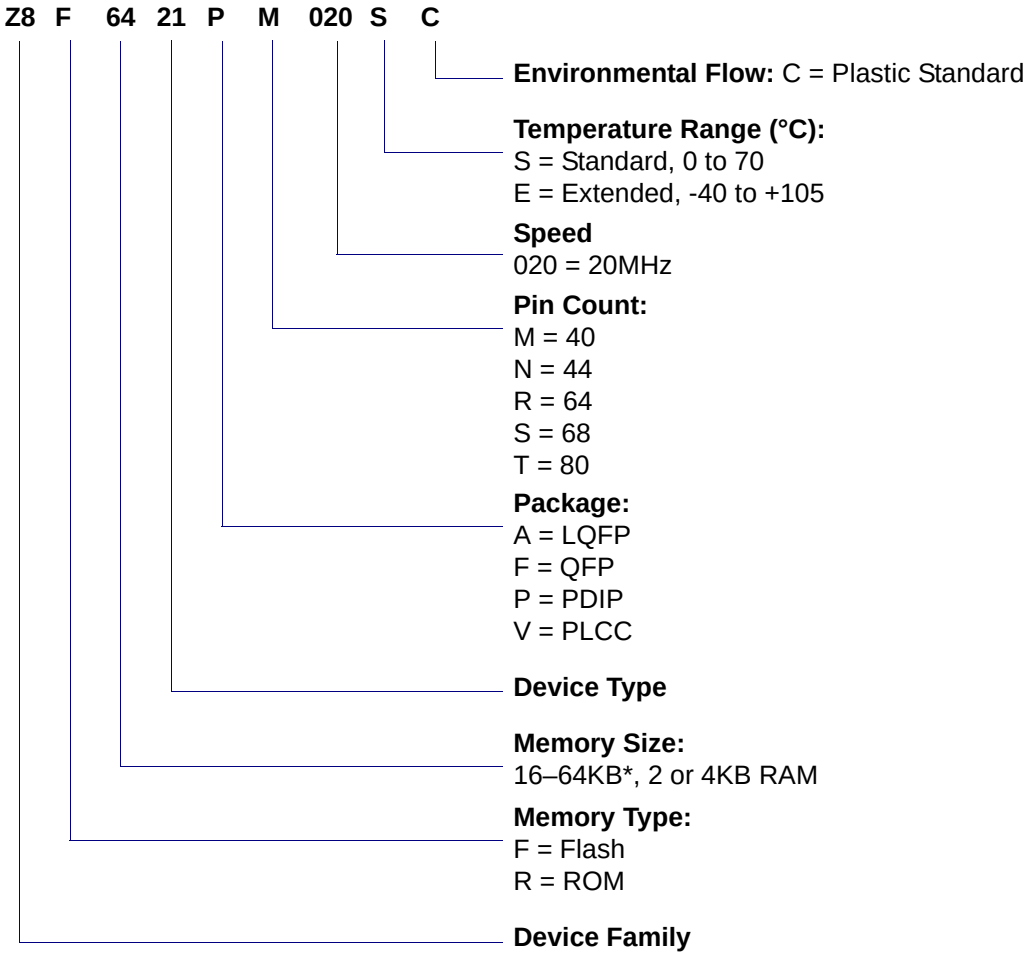
Z8R1622VS020EC	16KB	2KB	46	24	4	12	1	1	2	PLCC 68-pin package
Z8F64200100KIT										Development Kit

Part Number Suffix Designations



Notes:
* Not all packages are available for all memory sizes. See Ordering Information for the packages available for your requirements.

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