

High-Performance PIC32MZ with Floating Point Unit (FPU) Embedded Connectivity Family

Summary

The PIC32MZ with FPU Embedded Connectivity family offers a high-performance MCU with MIPS32 M-Class core running at 200 MHz/330 DMIPS. The core features an FPU for fast, single- and double-precision math and enhanced DSP functionality with four 64-bit accumulators, single-cycle MAC and a 5-stage pipeline. It is coupled with up to 2 MB Flash and 512 KB SRAM and several on-board advanced peripherals including I²S/SPI for audio; 8-/16-bit Parallel Master Port (PMP) and External Bus Interface (EBI) for graphics or external memory; 48-channel, 12-bit Analog-to-Digital Converter (ADC); Hi-Speed USB 2.0-compliant Device/Host/OTG; 10/100 Mbps Ethernet MAC; Serial Quad Interface (SQI) for serial devices and Crypto Engine for reduced software overhead and easy execution of encryption/decryption.

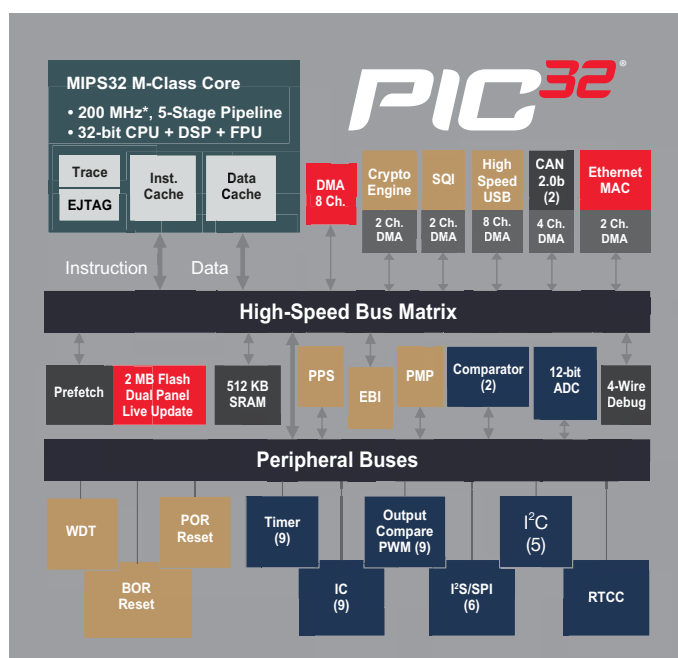
Key Features

- 200 MHz/330 DMIPS MIPS32 M-Class core
- Up to 2 MB dual-panel Flash for live update support
- Floating Point Unit for fast single- and double-precision math
- DSP enhanced core:
 - Four 64-bit accumulators
 - Single-cycle MAC
- 12-bit, 12 Msps, 48-channel ADC
- Memory management unit for optimum embedded OS execution
- microMIPS™ mode for up to 35% code compression
- CAN, UART, I²C, PMP, EBI, SQI and analog comparators
- SPI/I²S interfaces for audio processing and playback
- Hi-Speed USB Device/Host/OTG
- 10/100 Mbps Ethernet MAC with MII and RMII interface
- Temperature range: -40 to 85°C; -40 to 125°C
- AEC-Q100 REVG (Grade 1-40 to 125°C)
- Class B safety library, IEC 60730 (planned)

*High frequency (250 MHz) option available for I-temp (-40 to 85°C) version only. For a complete list of high-frequency PIC32MZ devices, please visit www.microchip.com/pic32.

MPLAB® Harmony for PIC32 MCUs

MPLAB Harmony is a flexible, abstracted, fully integrated firmware development environment for PIC32 microcontrollers. It enables robust framework development of interoperable RTOS-friendly libraries with quick and extensive Microchip support for third-party software integration. MPLAB Harmony includes a set of peripheral libraries, drivers and system services that are readily accessible for application development. The code development format allows for maximum re-use and reduces time to market. It features the MPLAB Harmony Configurator (MHC) plug-in that provides a graphical way to select and configure all MPLAB Harmony components including middleware, system services and peripherals with ease.



Featured PIC32MZ Devices with Floating Point Unit*

Device	Flash + Boot Flash (KB)	SRAM (KB)	Pin Count	Speed (MHz)	SPI/I ² S™	I ² C	UART	DMA Channels General Dedicated	PPS	USB (Full/Hi-Speed)	10/100 Ethernet	CAN2.0B	IC/OC/PWM	12-bit ADC (Ch)	ADC S/H	Analog Comparator	Timer 16-bit/32-bit	RTCC	SQI	EBI	PMP	JTAG Program, Debug, Boundary Scan	Encryption	Temp. Range (°C)
PIC32MZ2048EFG144	2048 + 160	512	144	200	6	5	6	8/12	✓	HS	✓	-	9/9/9	48	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ2048EFH144	2048 + 160	512	144	200**	6	5	6	8/16	✓	HS	✓	2	9/9/9	48	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ2048EFG124	2048 + 160	512	124	200	6	5	6	8/12	✓	HS	✓	-	9/9/9	48	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ2048EFH124	2048 + 160	512	124	200	6	5	6	8/16	✓	HS	✓	2	9/9/9	48	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ1024EFG100	1024 + 160	512	100	200	6	5	6	8/12	✓	HS	✓	-	9/9/9	40	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ1024EFH100	1024 + 160	512	100	200	6	5	6	8/16	✓	HS	✓	2	9/9/9	40	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ1024EFG064	1024 + 160	512	64	200	4	4	6	8/12	✓	HS	✓	-	9/9/9	24	6	2	9/4	✓	✓	-	✓	✓	-	-40 to 125
PIC32MZ2048EFM144	2048 + 160	512	144	200	6	5	6	8/18	✓	HS	✓	2	9/9/9	48	6	2	9/4	✓	✓	✓	✓	✓	✓	-40 to 125
PIC32MZ1024EFM124	1024 + 160	512	124	200	6	5	6	8/18	✓	HS	✓	2	9/9/9	48	6	2	9/4	✓	✓	✓	✓	✓	✓	-40 to 125
PIC32MZ1024EFE144	1024 + 160	256	144	200	6	5	6	8/12	✓	HS	✓	-	9/9/9	48	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ1024EFF100	1024 + 160	256	100	200	6	5	6	8/16	✓	HS	✓	2	9/9/9	40	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ1024EFK064	1024 + 160	256	64	200	4	4	6	8/18	✓	HS	✓	2	9/9/9	24	6	2	9/4	✓	✓	-	✓	✓	✓	-40 to 125
PIC32MZ0512EFF124	512 + 160	128	124	200	6	5	6	8/16	✓	HS	✓	2	9/9/9	48	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ0512EFE100	512 + 160	128	100	200	6	5	6	8/12	✓	HS	✓	-	9/9/9	40	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ0512EFF100	512 + 160	128	100	200	6	5	6	8/16	✓	HS	✓	2	9/9/9	40	6	2	9/4	✓	✓	✓	✓	✓	-	-40 to 125
PIC32MZ0512EFK064	512 + 160	128	64	200	4	4	6	8/18	✓	HS	✓	2	9/9/9	24	6	2	9/4	✓	✓	-	✓	✓	✓	-40 to 125

*For a complete list of PIC32MZ devices with FPU, please visit www.microchip.com/pic32.

**High frequency (250 MHz) option available for I-temp (-40 to 85°C) version only. For a complete list of high-frequency PIC32MZ devices, please visit www.microchip.com/pic32.

Package Options



64-lead QFN (MR)
9 × 9 × 0.9 mm



64-lead TQFP (PT)
10 × 10 × 1 mm



100-lead TQFP (PT)
12 × 12 × 1 mm



100-lead TQFP (PF)
14 × 14 × 1 mm



124-lead VTLA (TL)
9 × 9 × 0.9 mm



144-lead TQFP (PH)
16 × 16 × 1 mm



144-lead LQFP (PL)
20 × 20 × 1.4 mm

Development Tools

PIC32MZ with FPU Embedded Connectivity Starter Kits (DM320007/DM320007-C)



This kit boasts an on-board 200 MHz, 2 MB Flash PIC32MZ with FPU, 12-bit ADC, Hi-Speed USB, CAN, Ethernet, EBI, SQI and

more. The kit also features a plug-in interface that can accommodate various 10/100 Ethernet PHY transceiver daughter boards for prototyping and development in addition to a 40-pin expansion connector. Two versions of the starter kit are available: one with an on-chip crypto engine (DM320007-C) and one without (DM320007).

PIC32MZ2048 EF Plug-In Module (PIM) (MA320019)



This PIM enables USB, Ethernet, CAN and general purpose embedded control development using the Explorer 16 Development Board.

Note: This PIM is not compatible with the PIC32 Bluetooth Audio Development Kit

PIC32MZ2048 EF Audio PIM (MA320018)



This PIM enables Bluetooth and digital audio development using the PIC32 Bluetooth Audio Development Kit.

Note: This PIM is not compatible with the Explorer 16 Development Board.

Curiosity PIC32MZ EF Development Board (DM320104)



This board is a cost-effective, fully integrated 32-bit development platform featuring the high-performance PIC32MZ EF series with an integrated FPU and crypto acceleration hardware. It includes an integrated programmer/debugger and an on-board MRF24WN-OMA-I/RM100 Wi-Fi® N module. The board is fully integrated with MPLAB X IDE and MPLAB Harmony framework. The board fully Supports Cloud-based MPLAB Xpress IDE development and offers expansion capabilities making it a great choice for developing IoT, connectivity, security and general-purpose applications.

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