

November 18, 2013



**PIC32MZ Embedded
Connectivity MCU Family**
2 MB Flash, 512 KB RAM, 330 DMIPS



PIC32MZ Embedded Connectivity (EC) Family of 32-bit MCUs



What are we Announcing?

- **New PIC32 Microcontroller Family offering breakthrough performance, and high memory and peripheral integration.**
 - Class-Leading 32-bit MCU Performance With 200 MHz / 330 DMIPS and 3.28 CoreMarks™/MHz
 - Over 3x performance of previous generation PIC32 MCUs
 - Class-Leading 32-bit MCU Code Density while Maintaining Top Performance – 30% better than competitors
 - Class-Leading 32-bit MCU ADC Throughput at 28 Msps
 - Up to 2 MB Flash and 512 KB RAM
 - Dual-Panel Flash with Live Update
 - Highest Integrated Memory of any PIC® MCU (4x)
 - High Integration
 - Hi-Speed USB (PIC MCU First)
 - 10/100 Ethernet MAC
 - 2 CAN 2.0b modules
 - 6 UART, 6 SPI / I²S, 5 I²C™
 - SQI (PIC MCU First)
 - Full-Featured Hardware Crypto Engine
 - Crypto Engine with a Random Number Generator (RNG) for data encryption/decryption and authentication (AES, 3DES, SHA, MD5, and HMAC)

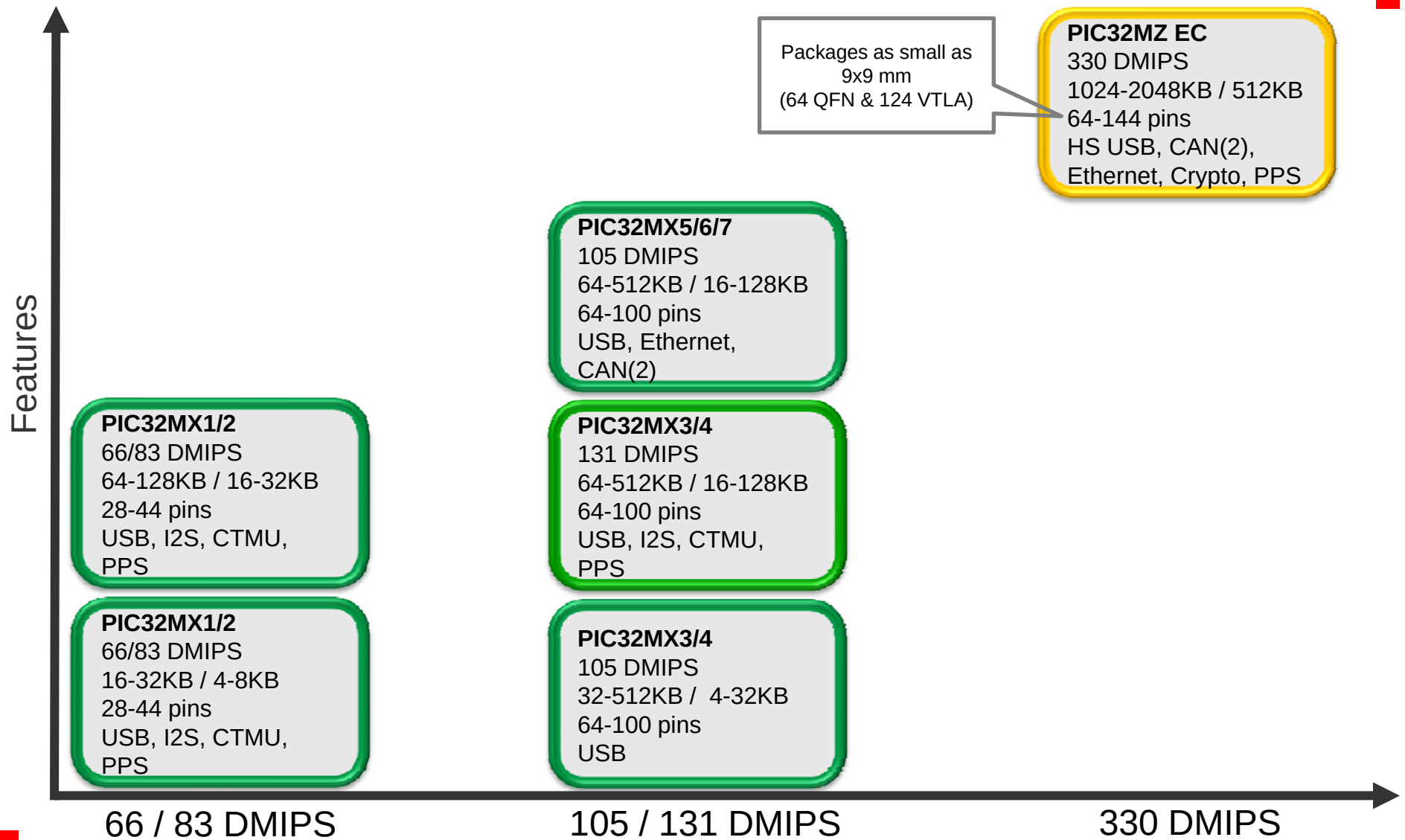


What are we Announcing (Continued)?

- **Compact, affordable Starter kits and Development Boards – All Available at Launch**
 - PIC32MZ Embedded Connectivity (EC) Starter Kit (DM320006) - Complete, turn-key kit (\$119.00)
 - PIC32MZ EC Starter Kit with Crypto Engine (DM320006-C) - Complete, turn-key kit (\$119.00)
 - PIC32MZ2048EC PIM (MA320012)- Explorer 16 Plug In Module (\$25.00)
 - Multimedia Expansion Board II (DM320005-2) – Integrated Development and Demonstration Platform for use with Starter Kit (\$299.00—introductory price for first 6 months)
 - 168-pin to 132-pin Starter Kit Adapter (AC320006) – Adaptor to interface PIC32MZ Starter Kit with extensive portfolio of application-specific daughter boards (\$59.00)



Expanding PIC32 Portfolio



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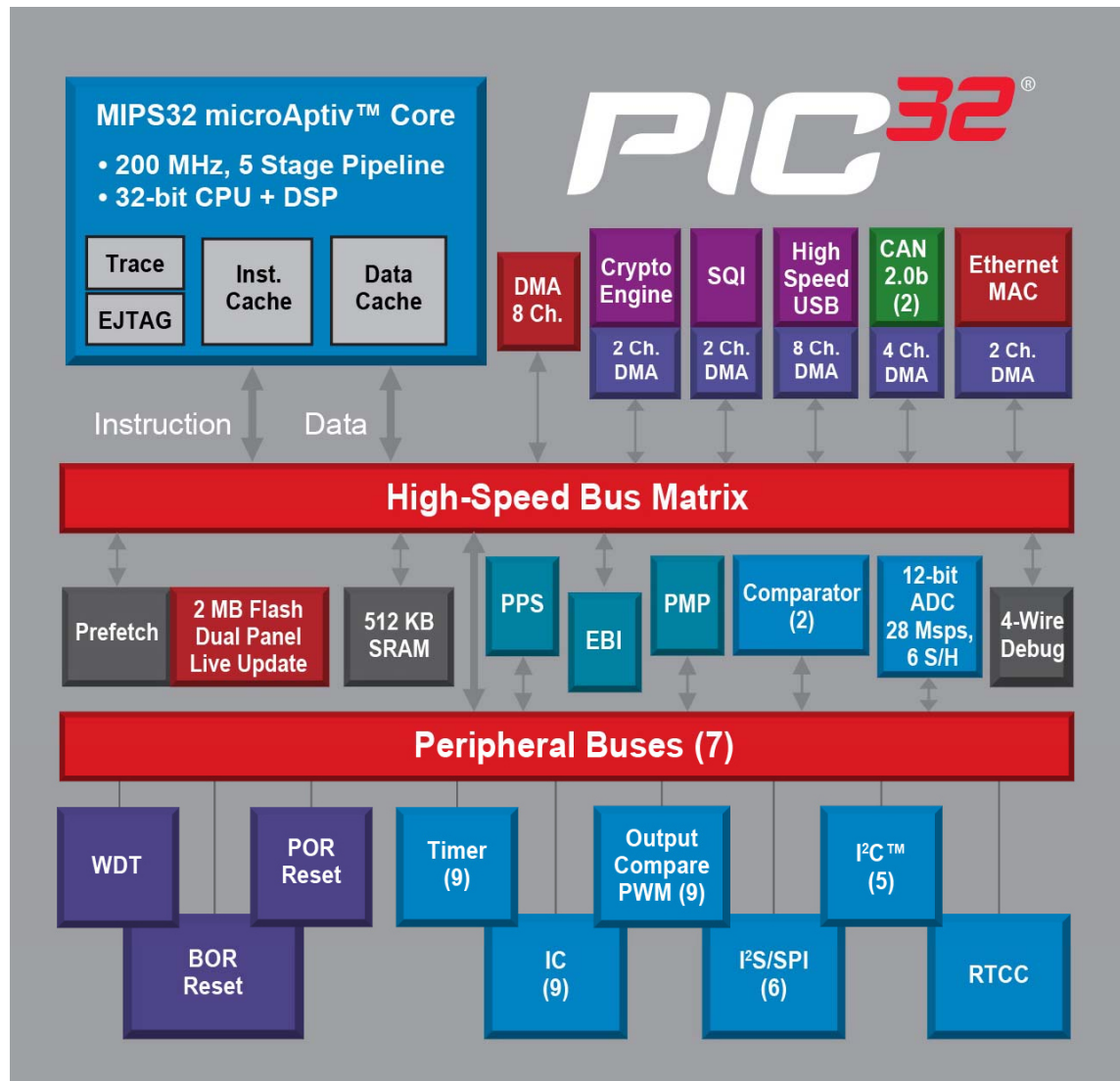


Target Markets

Markets	Application Examples
<i>Consumer Audio</i>	High-End Docking Stations, Streaming Audio, Wireless Audio
<i>Factory Automation</i>	PLC, I/O Modules, HMI
<i>Building Automation</i>	HVAC, Environmental Controls, Security, Fire & Safety Panels, Access Terminals
<i>Home Automation</i>	HVAC, Thermostats, Power Mgmt., Security, Sensors
<i>Power Meters</i>	Electrical-Meter Communication Modules
<i>Renewable Energy</i>	Control Modules
<i>Automotive – Body</i>	Dashboard, Rearview Camera, Infotainment
<i>Appliances</i>	Consumer White Goods, Small Appliances
<i>Transportation</i>	Dashboard, Fleet Management
<i>Security</i>	Control Panels, Keypads, RFID Reader
<i>Cloud Computing</i>	Data Aggregator, Access Points



PIC32MZ EC Block Diagram





Key Features and Benefits

Key Feature	Benefit
330 DMIPS	Performance to manage multiple communication stacks, manage graphics, perform audio Processing
2 MB Live-Update Flash	Memory space to store large applications as well as data. Live-update capability enables true remote field updates while application is running in a fail-safe manner.
512 KB RAM	Large internal RAM supports multiple protocol stacks operating simultaneously, buffer space supporting audio processing, and Frame Buffers supporting Graphic Displays
MIPS microAptiv™ Core	Class-leading efficiency and Code Density supports doing more with less. Digital Signal Processing Extensions enhance performance of DSP algorithms.
Hi-Speed USB	Host / Device / OTG capability coupled with up to 480 MBPS performance greatly speeds transfer of large files and streaming data
12-bit 28 MSPS ADC	Class-leading ADC throughput coupled with 6 sample-and-hold circuits and up to 48 channels supports complex mixed-signal applications
10/100 Ethernet MAC	Supports applications needing network and WAN access
Crypto Engine	Provides Higher throughput for Secure Connectivity applications and offloads processing from the core, freeing up DMIPS for other tasks
SQI	Serial Quad Interface supports high-speed interface to external Flash storage
Dual CAN	Dual Controller Area Network ports supporting Industrial and Automotive applications



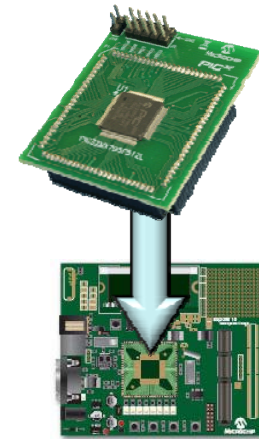
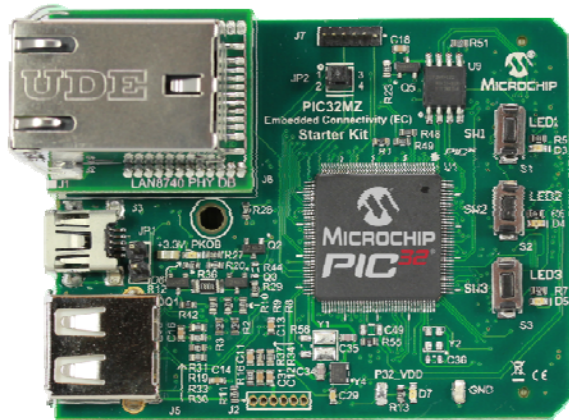
MIPS microAptiv™ Core: New Features

- High-performance: 1.65 DMIPS / MHz (same as M4K™)
- DSP Engine added (159 new instructions added)
- Cache core
- microMIPS® offers better code size and performance combination
 - Optimally mixes in 16/32 instructions
 - Performance of MIPS32® ISA (within 2-3%)
 - Code size of MIPS16® ISA
- MIPS32 legacy decoder – fully backward compatible
- Reduced interrupt latency (10 cycles)
- Enhanced debug features
- Lower power

microAptiv™



Tools to get started with PIC32MZ EC Family (Starter Kit & PIM)



- Integrated debugger/programmer
- USB Powered
- 10/100 Ethernet Development using PIC32 MCUs
- Hi-Speed USB Host, Device, Dual Role and OTG
- 4 MB SQI Flash
- Online tools & software download
- PIC32MZ MCU
- Enables addition of PIC32 Expansion Board, for connecting application-specific daughter boards

- PIC32MZ Processor Plug-In Module (PIM)
- PIM plugs into Explorer 16 Board
- Explorer 16 is a low-cost, modular development board for Microchip's 16-bit PIC24, dsPIC® DSC, and the 32-bit PIC32 microcontroller families



Multimedia Expansion Board II

- **Highly integrated, flexible development platform**
 - Works with PIC32MZ SK
 - High-quality graphics LCCG WQVGA graphics
 - Multi-Touch Projected Capacitive Touch
 - Forward-facing VGA camera
 - Wi-Fi® and Bluetooth® Wireless
 - 24-bit stereo audio
 - On-board 3-axis accelerometer and temperature sensor



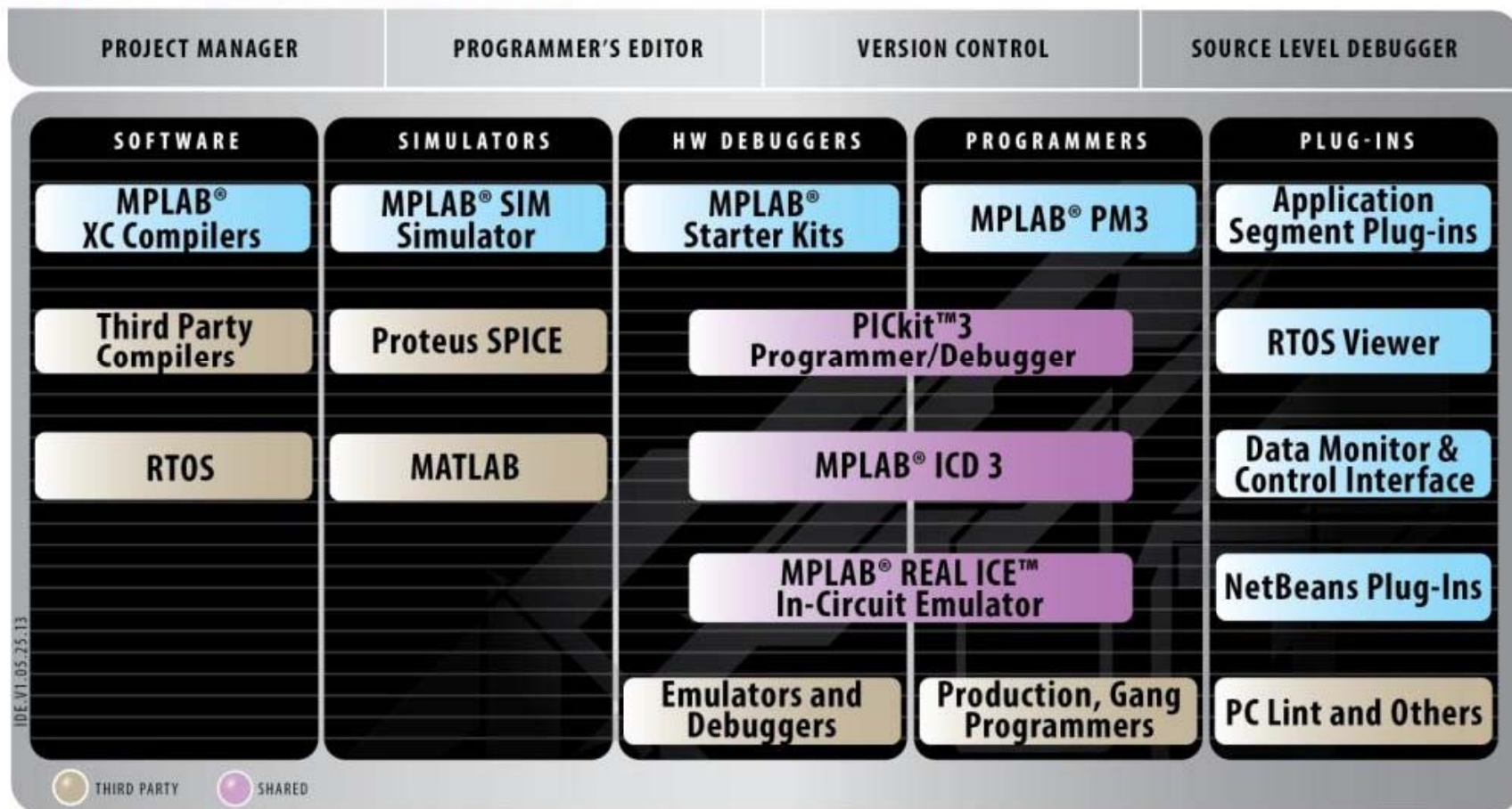
**PIC32 Multimedia Expansion Board II
(PART # DM320005-2)**

- **PIC32MZ Demo Software**
 - Audio decode (MP3, AAC)
 - Graphical HMI
 - Internet Connectivity



MPLAB® X IDE: Integrated Toolset

MPLAB® X INTEGRATED DEVELOPMENT ENVIRONMENT





Summary

- **The new PIC32MZ EC MCU Family brings breakthrough performance, and high memory and peripheral integration, supporting advanced applications:**
 - 200 MHz / 330 DMIPS and 3.28 CoreMarks™/MHz performance
 - Up to 2 MB Flash and 512 KB RAM internal memory with Live Update
 - Up to 48 Channels of 12-bit ADC, operating at 28 Msps throughput
 - Hi-Speed USB, 10/100 Ethernet and Dual CAN
 - Optional Hardware Crypto Engine
 - Package sizes starting at 9x9 mm (64-pin QFN & 124 VTLA)
 - Very competitive pricing, starting at \$6.68 each in 10Ku quantities



MICROCHIP

Back-Up Slides

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PIC32MZ EC Family

Device Details (Non Crypto)

Product	Flash (MB)	RAM (KB)	Pin count	Speed (MHz)	DMA CH#	ADC Modules	#ADC Ch	ADC S/H	Analog Comp	Input Capture	Output Compare	Timers	RTCC	SPI / I ² S	I ² C™	UART	HS USB	Ethernet 10/100	CAN 2.0b	Encryption	PMP Static EBI
PIC32MZ2048ECG144	2	512	144	200	8/12	1	48	6	2	9	9	9	1	6	5	6	1	1		N	Y/Y
PIC32MZ2048ECH144	2	512	144	200	8/16	1	48	6	2	9	9	9	1	6	5	6	1	1	2	N	Y/Y
PIC32MZ2048ECG124	2	512	124	200	8/12	1	48	6	2	9	9	9	1	6	5	6	1	1		N	Y/Y
PIC32MZ2048ECH124	2	512	124	200	8/16	1	48	6	2	9	9	9	1	6	5	6	1	1	2	N	Y/Y
PIC32MZ2048ECG100	2	512	100	200	8/12	1	40	6	2	9	9	9	1	6	5	6	1	1		N	Y/Y
PIC32MZ2048ECH100	2	512	100	200	8/16	1	40	6	2	9	9	9	1	6	5	6	1	1	2	N	Y/Y
PIC32MZ2048ECG064	2	512	64	200	8/12	1	24	6	2	9	9	9	1	4	4	6	1	1		N	Y/N
PIC32MZ2048ECH064	2	512	64	200	8/16	1	24	6	2	9	9	9	1	4	4	6	1	1	2	N	Y/N
PIC32MZ1024ECG144	1	512	144	200	8/12	1	48	6	2	9	9	9	1	6	5	6	1	1		N	Y/Y
PIC32MZ1024ECH144	1	512	144	200	8/16	1	48	6	2	9	9	9	1	6	5	6	1	1	2	N	Y/Y
PIC32MZ1024ECG124	1	512	124	200	8/12	1	48	6	2	9	9	9	1	6	5	6	1	1		N	Y/Y
PIC32MZ1024ECH124	1	512	124	200	8/16	1	48	6	2	9	9	9	1	6	5	6	1	1	2	N	Y/Y
PIC32MZ1024ECG100	1	512	100	200	8/12	1	40	6	2	9	9	9	1	6	5	6	1	1		N	Y/Y
PIC32MZ1024ECH100	1	512	100	200	8/16	1	40	6	2	9	9	9	1	6	5	6	1	1	2	N	Y/Y
PIC32MZ1024ECG064	1	512	64	200	8/12	1	24	6	2	9	9	9	1	4	4	6	1	1		N	Y/N
PIC32MZ1024ECH064	1	512	64	200	8/16	1	24	6	2	9	9	9	1	4	4	6	1	1	2	N	Y/N



PIC32MZ EC Family

Device Details (Crypto Engine)

Product	Flash (MB)	RAM (KB)	Pin count	Speed (MHz)	DMA CH#	ADC Modules	#ADC Ch	ADC S/H	Analog Comp	Input Capture	Output Compare	Timers	RTCC	SPI / I ² S	I ² C™	UART	HS USB	Ethernet 10/100	CAN 2.0b	Encryption	PMP Static EBI
PIC32MZ2048ECM144	2	512	144	200	8/18	1	48	6	2	9	9	9	1	6	5	6	1	1	2	Y	Y/Y
PIC32MZ2048ECM124	2	512	124	200	8/18	1	48	6	2	9	9	9	1	6	5	6	1	1	2	Y	Y/Y
PIC32MZ2048ECM100	2	512	100	200	8/18	1	40	6	2	9	9	9	1	6	5	6	1	1	2	Y	Y/Y
PIC32MZ2048ECM064	2	512	64	200	8/18	1	24	6	2	9	9	9	1	4	4	6	1	1	2	Y	Y/N
PIC32MZ1024ECM144	1	512	144	200	8/18	1	48	6	2	9	9	9	1	6	5	6	1	1	2	Y	Y/Y
PIC32MZ1024ECM124	1	512	124	200	8/18	1	48	6	2	9	9	9	1	6	5	6	1	1	2	Y	Y/Y
PIC32MZ1024ECM100	1	512	100	200	8/18	1	40	6	2	9	9	9	1	6	5	6	1	1	2	Y	Y/Y
PIC32MZ1024ECM064	1	512	64	200	8/18	1	24	6	2	9	9	9	1	4	4	6	1	1	2	Y	Y/N