PIC32MM Family
Low-Power, Low-Cost 32-bit Microcontrollers

Summary

The PIC32MM family is Microchip's lowest-power and most cost-effective family of 32-bit PIC32 microcontrollers. The PIC32MM family bridges the gap between our popular PIC24F XLP and PIC32MX families. For applications demanding longer battery life and smaller form factors, the PIC32MM devices offer sleep modes down to 500 nA and packages as small as 4 × 4 mm. These devices feature Core Independent Peripherals, such as Configurable Logic Cells (CLCs) and Multiple-output Capture Compare PWMs (MCCPs), designed to offload the CPU. Compact microMIPS™ instructions, microAptiv™ UC core and a shadow register set enable a 79 CoreMark™ score at 25 MHz. The microMIPS ISA combines 16-bit and 32-bit instructions for compact code size. These devices are supported by Microchip's MPLAB® Code Configurator (MCC) to help simplify designs.
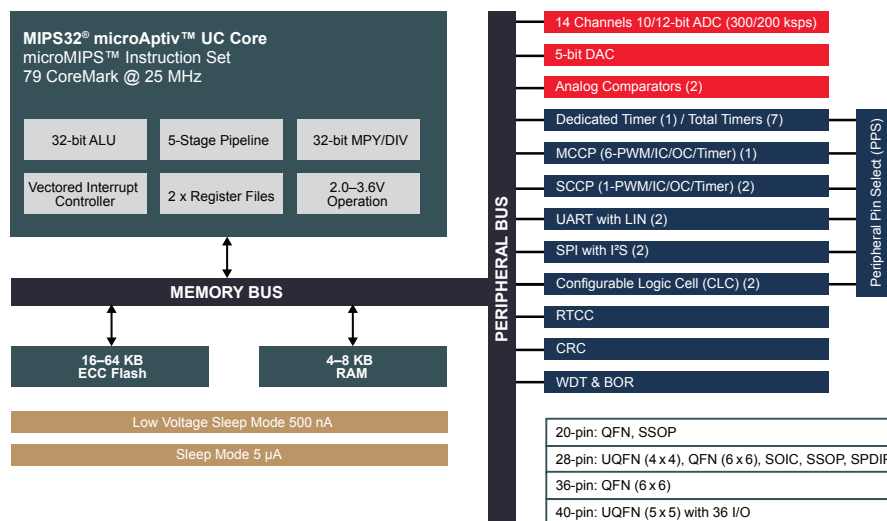
Key Attributes

- Low power: optimize power consumption for batteries
  - Low-voltage sleep mode with RAM retention < 500 nA
- Low cost: prices as low as $0.60 in high volume
- Small packages: 4 × 4 mm, 5 × 5 mm and 6 × 6 mm
- Core Independent Peripheral integration
  - ADC, comparators, RTCC, WDT, CLC
  - Flexible PWMs/IC/OC/Timers (MCCP and SCCP)
- Analog integration
  - 12-bit 200 ksps ADC, 5-bit DAC, comparators
- Supported by MPLAB Code Configurator for easy set up

Target Applications

- Low-power/wireless applications:
  - IoT sensor nodes
  - Connected thermostats/environmental monitoring
  - Portable medical devices and remote controls
- Consumer applications:
  - Game consoles and home healthcare/fitness devices
- Industrial control applications:
  - Building automation and heating/lighting controls
- Low-cost motor control applications:
 - White goods and table-top appliances

MIPS32® microAptiv™ UC Core
microMIPS™ Instruction Set
79 CoreMark @ 25 MHz

| 32-bit ALU | 5-Stage Pipeline | 32-bit MPY/DIV |
| Vectored Interrupt Controller | 2 x Register Files | 2.0–3.6V Operation |

MEMORY BUS

16–64 KB ECC Flash

4–8 KB RAM

Low Voltage Sleep Mode 500 nA

Sleep Mode 5 µA

PERIPHERAL BUS

- 14 Channels 10/12-bit ADC (300/200 ksps)
- 5-bit DAC
- Analog Comparators (2)
- Dedicated Timer (1) / Total Timers (7)
- MCCP (6-PWM/IC/OC/Timer) (1)
- SCCP (1-PWM/IC/OC/Timer) (2)
- UART with LIN (2)
- SPI with I²S (2)
- Configurable Logic Cell (CLC) (2)
- RTCC
- CRC
- WDT & BOR

Peripheral Pin Select (PPS)

- 20-pin: QFN, SSOP
- 28-pin: UQFN (4 x 4), QFN (6 x 6), SOIC, SSOP, SPDIP
- 36-pin: QFN (6 x 6)
- 40-pin: UQFN (5 x 5) with 36 I/O

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Development Tools

Explorer 16/32 Development Board (DM240001-2)

The Explorer 16/32 Development Board is a flexible and convenient development, demonstration and testing platform for 16-bit PIC24 MCUs, dsPIC® DSCs and 32-bit PIC32 MCUs. It features all the necessary hardware to begin developing and debugging a complete embedded application. The board accepts Processor Plug-In Modules (PIMs) designed for the Explorer 16 or Explorer 16/32 Development Boards for easy device swapping. In addition to the hardware features provided by the board, hardware expansion is possible through the use of PICtail™ Plus daughter cards and mikroBUS™ accessory boards.
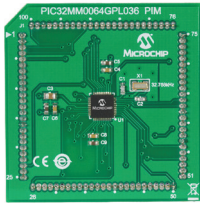
### PIC32MM0064GPL036 Plug-In Module (MA320020)

This PIM is designed to plug into the Explorer 16 or Explorer 16/32 Development Boards and demonstrates the capabilities of the PIC32MM "GPL" family of low-power and low-cost devices. The PIM includes the PIC32MM0064GPL036 40-pin UQFN device, which has the most memory and highest pin-count of all devices in this family. This PIM can be used for evaluation and development for all members in this family. The entire family of PIC32MM devices is supported by Microchip's development ecosystem including the MPLAB X IDE and the MPLAB XC32 Compiler.

MPLAB Code Configurator

Microchip's MPLAB Code Configurator enables easy peripheral set-up, device configuration and pin mapping.

- Plug-in for MPLAB X Integrated Development Enviornment (IDE)
- Easy peripheral and pin configuration
- Generates easy-to-read code with a single click
- Significantly reduces software development times
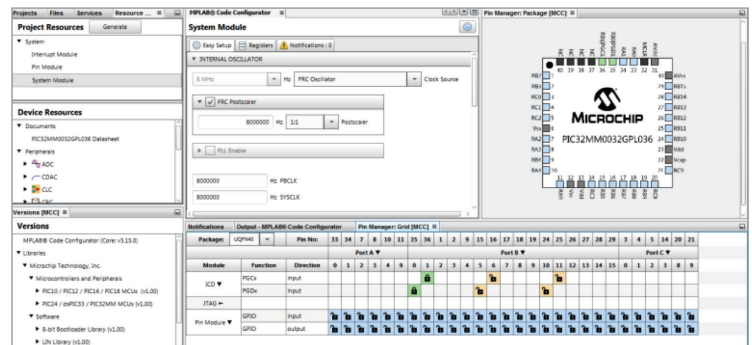
PIC32MM Products

Part Number	Flash	Pins	Packages
PIC32MM0016GPL020	16 KB	20	QFN, SSOP
PIC32MM0032GPL020	32 KB	20	QFN, SSOP
PIC32MM0064GPL020	64 KB	20	QFN, SSOP
PIC32MM0016GPL028	16 KB	28	UQFN, QFN, SOIC, SSOP
PIC32MM0032GPL028	32 KB	28	UQFN, QFN, SOIC, SSOP
PIC32MM0064GPL028	64 KB	28	UQFN, QFN, SOIC, SSOP, SPDIP
PIC32MM0016GPL036	16 KB	36	QFN, UQFN
PIC32MM0032GPL036	32 KB	36	QFN, UQFN
PIC32MM0064GPL036	64 KB	36	QFN, UQFN

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