MICROCHIP

PIC32 Microcontroller Family
with USB On-The-Go

www.microchip.com/PIC32

Introducing the PIC32™ Microcontroller

Building on the heritage of Microchip Technology's world-leading 8- and 16-bit PIC® microcontrollers, the PIC32 family delivers 32-bit performance and more memory to solve increasingly complex embedded system design challenges.

More Performance & Memory

Power your RTOS, Touch Screens and Complex Applications

- 80 MHz, 1.56 DMIPS/MHz M4K Core
- 512K Flash with pre-fetch cache
- 32K RAM for data and program execution
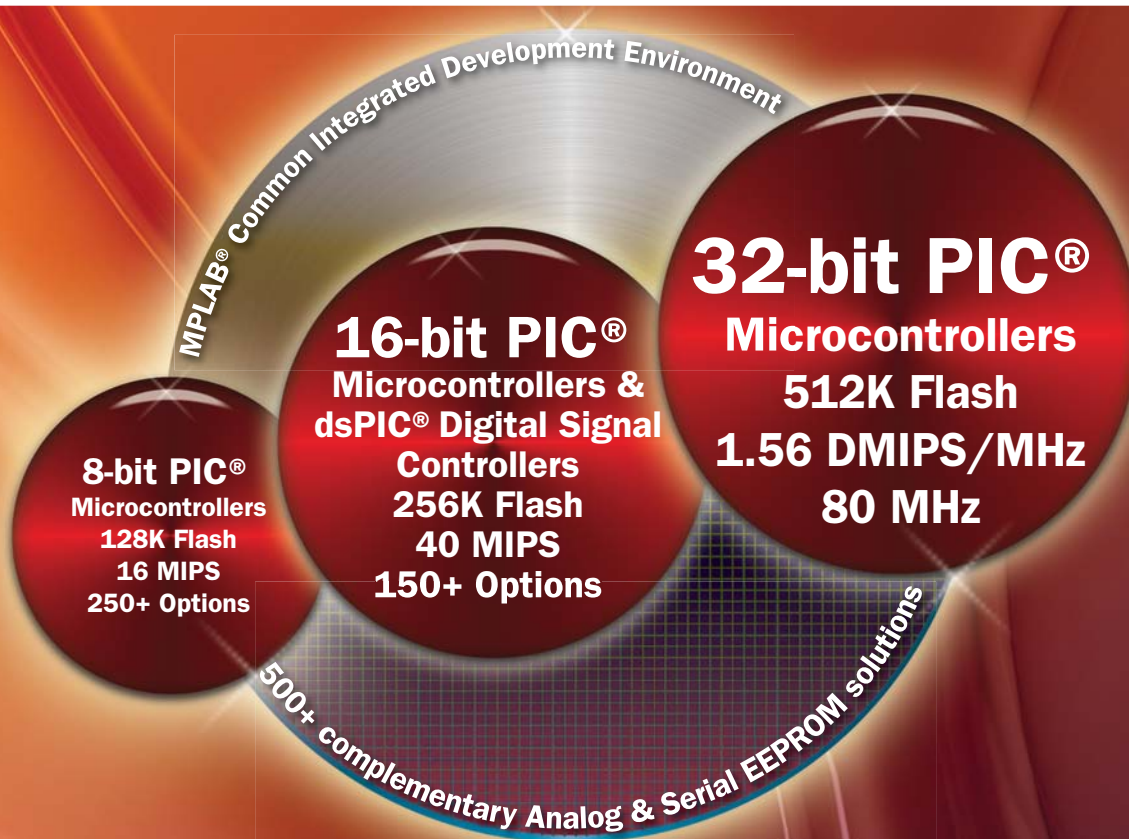- Fast interrupts and context switch

More Compatibility

Create Scalable Products in a Consistent Environment

- Common MPLAB® development tools
- Pin & peripheral compatible with 16-bit PIC MCUs
- Peripheral libraries compatible with 16-bit PIC MCUs
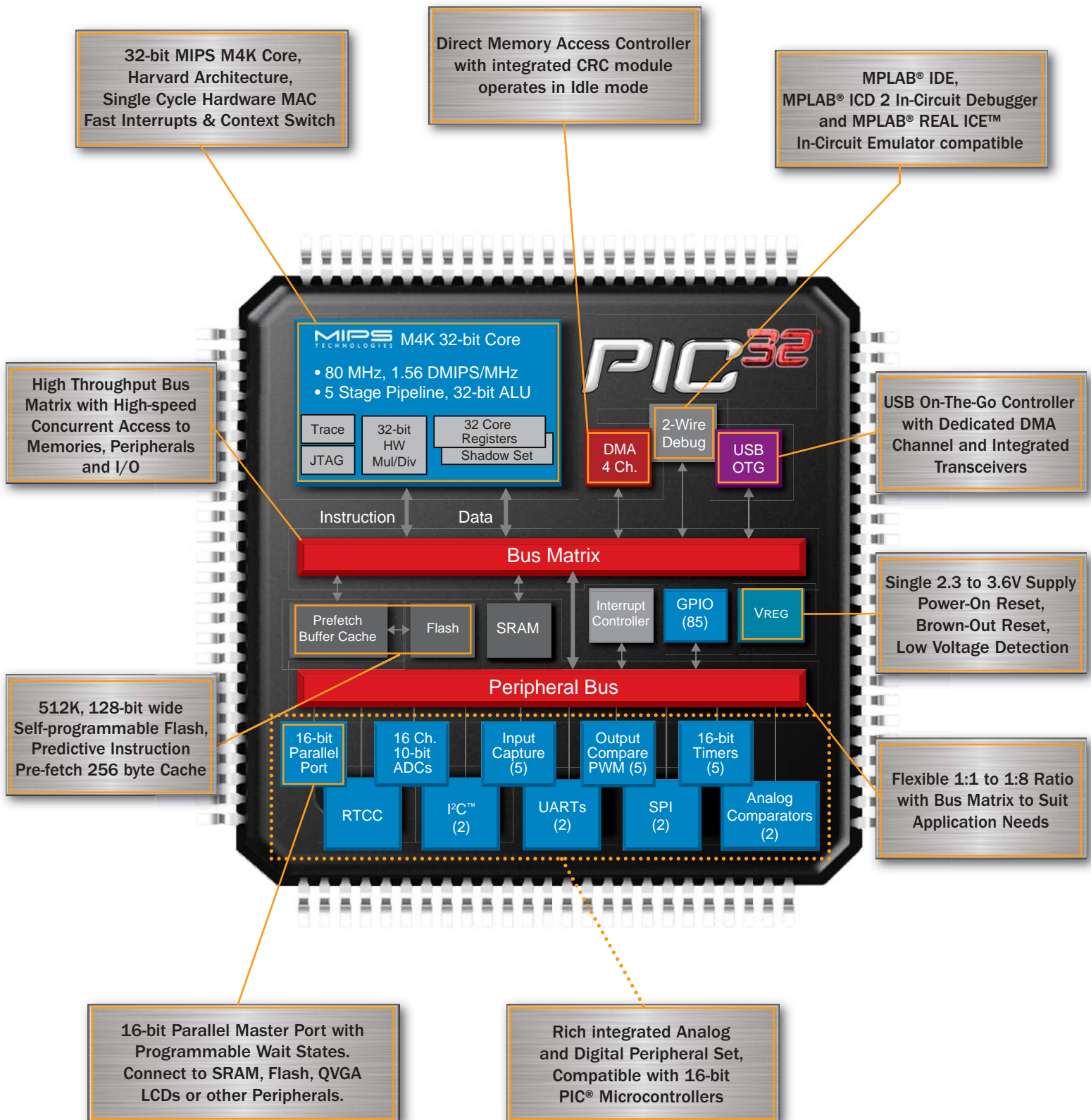- Common look and feel in ~500 PIC MCUs

More Cost Effective

Shorten Your Projects and Reuse Hardware, Software and Tools

- Free USB, TCP/IP, graphics and file system source code
- Common Explorer 16 development platform
- $49.99 starter kit with free C compiler
- Hardware trace for less than $80

More Design Options

Simplify Your System Design Through Integration

- Extensive analog and digital peripherals
- USB device, host and On-The-Go functionality
- 4 channel DMA controller with CRC
- 16-bit parallel master port

MPLAB® Common Integrated Development Environment

8-bit PIC®
Microcontrollers
128K Flash
16 MIPS
250+ Options

16-bit PIC®
Microcontrollers &
dsPIC® Digital Signal
Controllers
256K Flash
40 MIPS
150+ Options

32-bit PIC®
Microcontrollers
512K Flash
1.56 DMIPS/MHz
80 MHz

500+ complementary Analog & Serial EEPROM solutions

www.microchip.com/PIC32

32-bit MIPS M4K Core,
Harvard Architecture,
Single Cycle Hardware MAC
Fast Interrupts & Context Switch

Direct Memory Access Controller
with integrated CRC module
operates in Idle mode

MPLAB® IDE,
MPLAB® ICD 2 In-Circuit Debugger
and MPLAB® REAL ICE™
In-Circuit Emulator compatible

High Throughput Bus
Matrix with High-speed
Concurrent Access to
Memories, Peripherals
and I/O

512K, 128-bit wide
Self-programmable Flash,
Predictive Instruction
Pre-fetch 256 byte Cache

USB On-The-Go Controller
with Dedicated DMA
Channel and Integrated
Transceivers

Single 2.3 to 3.6V Supply
Power-On Reset,
Brown-Out Reset,
Low Voltage Detection

Flexible 1:1 to 1:8 Ratio
with Bus Matrix to Suit
Application Needs

16-bit Parallel Master Port with
Programmable Wait States.
Connect to SRAM, Flash, QVGA
LCDs or other Peripherals.

Rich integrated Analog
and Digital Peripheral Set,
Compatible with 16-bit
PIC® Microcontrollers

MIPS TECHNOLOGIES M4K 32-bit Core

- 80 MHz, 1.56 DMIPS/MHz
- 5 Stage Pipeline, 32-bit ALU

Trace
JTAG
32-bit HW Mul/Div
32 Core Registers
Shadow Set

2-Wire Debug
DMA 4 Ch.
USB OTG

PIC32™

Instruction   Data

Bus Matrix

Prefetch Buffer Cache   Flash
SRAM
Interrupt Controller
GPIO (85)
VREG

Peripheral Bus

16-bit Parallel Port
16 Ch. 10-bit ADCs
Input Capture (5)
Output Compare PWM (5)
16-bit Timers (5)

RTCC
I²C™ (2)
UARTs (2)
SPI (2)
Analog Comparators (2)

Developing with the PIC³² Microcontroller

Microchip is the only silicon vendor with a full 8-, 16- and 32-bit microcontroller portfolio supported by a unified development environment. The MPLAB® IDE is free and easy to use.

PIC³² Starter Kit - *Only 49.99^USD$!* (DM320001)

Getting started is easy with the fully integrated PIC³² Starter Kit featuring simple installation, getting started tutorial and PIC³² Starter Kit board with easy USB connection to your PC. The Starter Kit includes:

- MPLAB IDE and MPLAB C32 C Compiler†
- PIC³² Starter Board with Integrated Debugger
- Code Examples, Documentation, Tutorials and Sample Projects
- PIC³² USB Starter Board (DM320003) available for $55.

†Student Edition has **no code size limit** and full optimizations with a 60 day time limit. After 60 days some optimizations are disabled.

PIC³² Development Tools

Explorer 16 Development Board (DM240001)
A low-cost modular development system for Microchip's 16- and 32-bit microcontrollers.
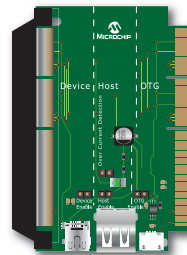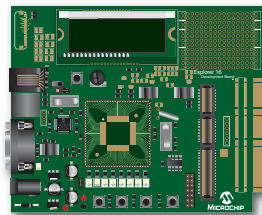
USB PICtail™ Plus Daughter Board (AC164131)
Enables USB connectivity when using the PIC³² USB PIM in conjunction with the Explorer 16 board.

PIC³² Plug-in Modules General Purpose (MA320001) USB OTG (MA320002)
Enables development with PIC³² in conjunction with the Explorer 16 Development Board. The PIMs feature 80 MHz, 512K Flash, 32K RAM, 100-pin devices.
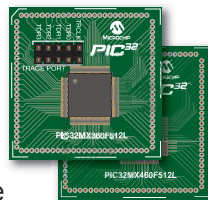
PICkit™ 2 Device Programmer (PG164120)
Supports programming of PIC³² microcontrollers. Features full-speed USB support and firmware upgradeability in a low-cost tool.

MPLAB REAL ICE™ In-Circuit Emulation System (DV244005)
A high-speed emulator, debugger and programmer supporting Microchip's 8-, 16- and 32-bit microcontrollers. Optional instruction trace kit available for the PIC³² family.

MPLAB ICD 2 In-Circuit Debugger (DV164007)
In-circuit debugging supports Microchip's 8-, 16- and 32-bit microcontrollers.

MPLAB® Integrated Development Environment (IDE) (SW007002)
FREE!
Free unified development environment supporting all PIC® microcontrollers.

MPLAB C32 C Compiler (SW006015)
Optimized C Compiler with full peripheral libraries. Free evaluation version available.

www.microchip.com/PIC32

Microchip Software Libraries
www.microchip.com/pic32libraries

Connectivity	FREE Microchip TCP/IP with SSL	Now
	FREE Microchip TCP/IP with BSD Sockets	Now
	FREE IrDA® Stack	Planned
	FREE ZigBee® Protocol Stack	Planned
	FREE MiWi™ Protocol Stack	Now
USB	FREE USB Host	Now
	FREE USB Device	Now
	FREE USB Class Drivers – HID, MSD, CDC, Custom, etc.	Now
	FREE USB On-The-Go	Q3'08
Graphics	FREE Microchip Graphics Library	Now
CAN	FREE Standalone CAN Library	Now
Speech	FREE Speex Speech Encoding/Decoding Library	Q3'08
	FREE ADPCM Encoding/Decoding Library	Now
Encryption	FREE Public Key Cryptography Library (RSA)	Now
Basic Libraries	FREE 32-bit File System Library	Q3'08
	FREE 16-bit File System Library	Now
	FREE Math Library	Now
	FREE Peripheral Library	Now
	FREE EEPROM Emulation	Now

*Third party software information is available at: www.microchip.com/pic32libraries

Third-party Application Software and Hardware Support

IDE, C/C++ Compiler and Debugger

Green Hills SOFTWARE, INC.   ASHLING THE DEVELOPMENT SYSTEMS COMPANY   HI-TECH SOFTWARE   LAUTERBACH   Macraigor Systems Complete JTAG Debug Support

Embedded RTOS Support

Micriµm Empowering Embedded Systems   expresslogic   CMX SYSTEMS   SEGGER   freeRTOS   PUMPKIN REAL-TIME SOFTWARE

Graphics GUI Support

easyGUI   RAMTEX   Micriµm Empowering Embedded Systems   SEGGER

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