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MICROCHIP

Success Factors of a MCU Company

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Microchip Technology Inc.

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China Marketing Director
MIPS

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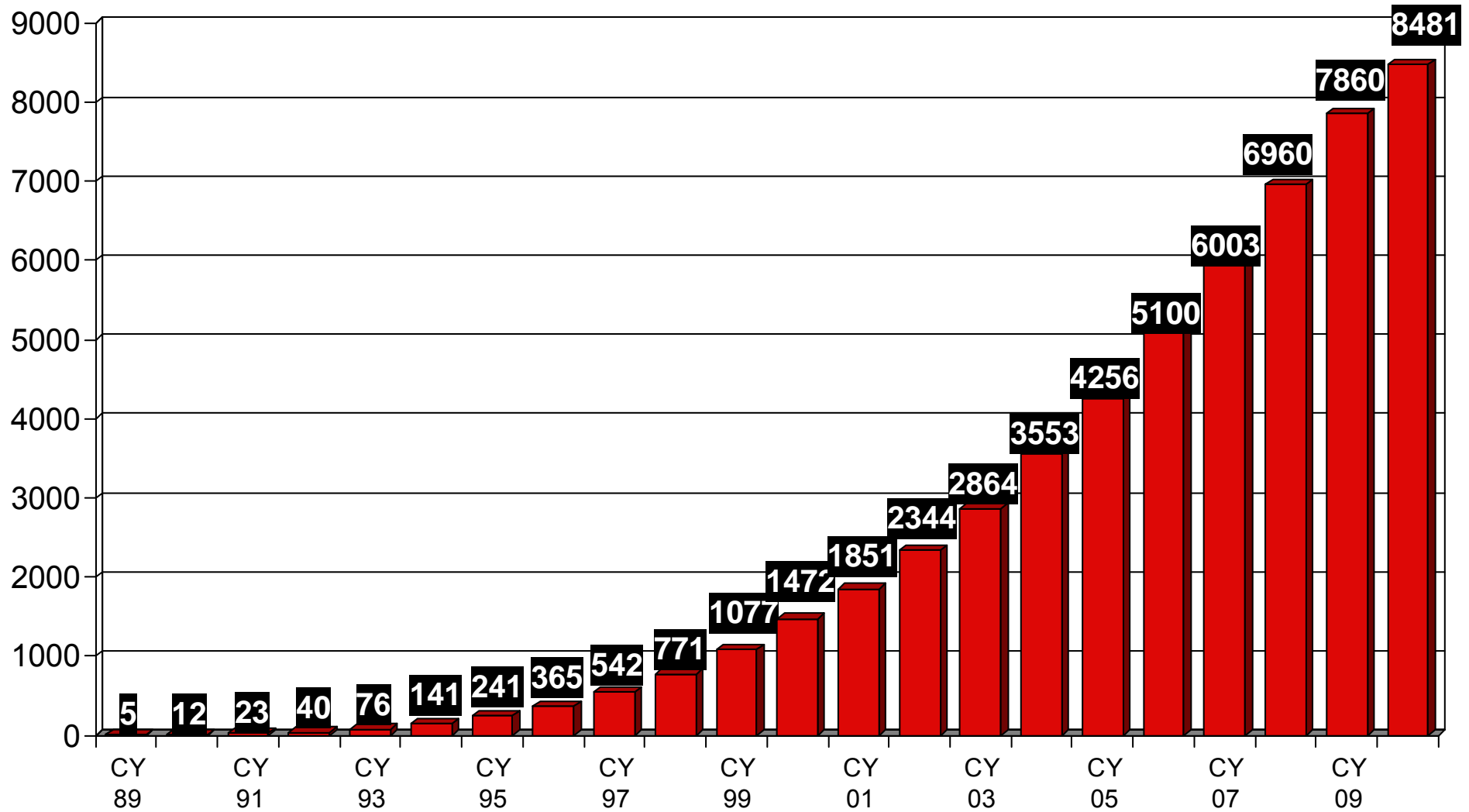
What Defines Success in the Embedded MCU Market?

- **Providing a powerful, scalable architecture**
- **Expanding portfolio of leadership products**
- **Supporting all stages of development**
- **Being a reliable & dependable vendor**

Making it easy for customers to succeed



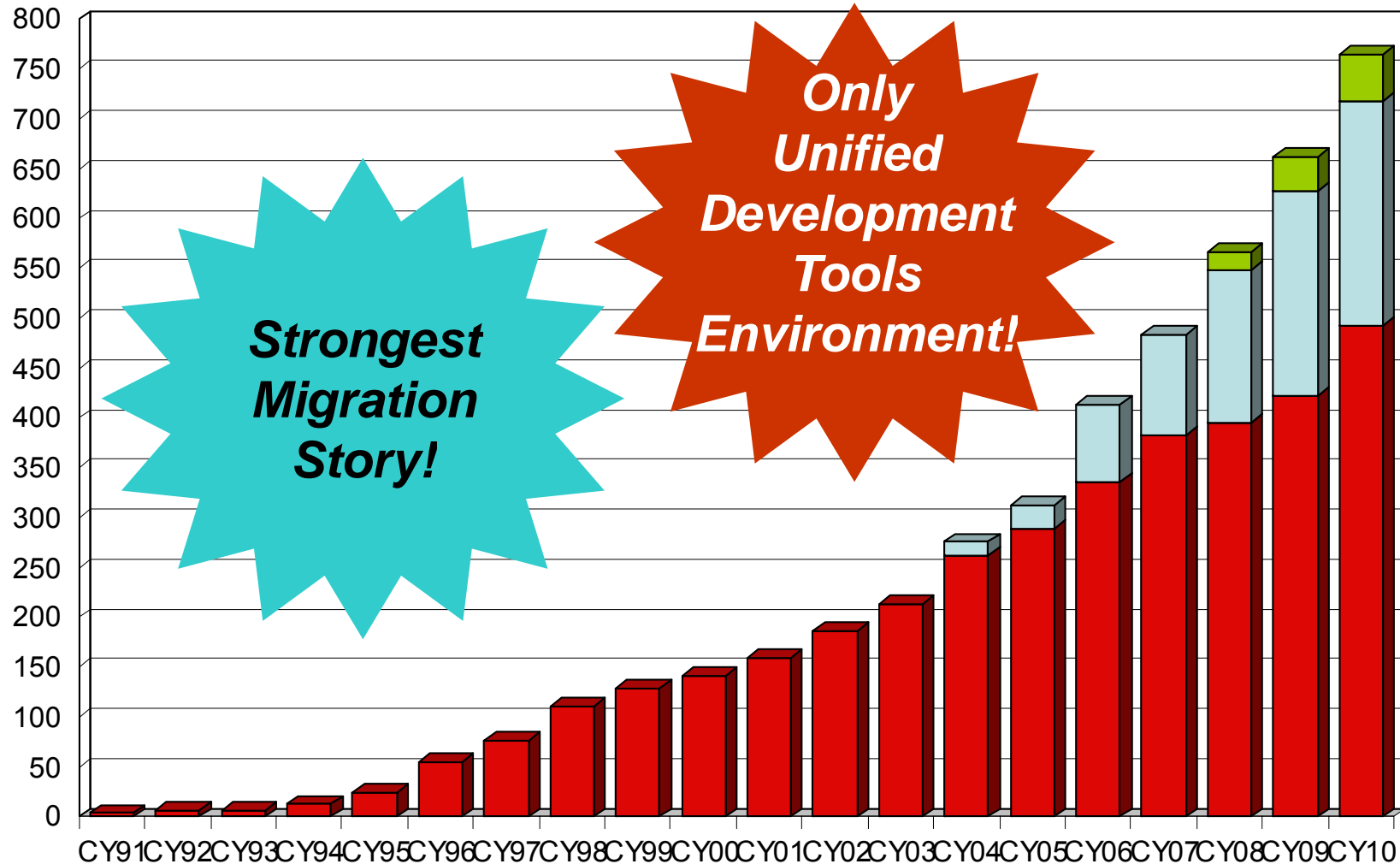
Cumulative MCU Shipments (MU)





MCU Product Portfolio Growth

8-Bit 16-bit 32-bit All MCUs & DSCs





Worldwide 8-Bit Microcontroller Market Share (Dollars)

| No. | 1991 Rank | 1992 Rank | 1993 Rank | 1996 Rank | 1998 Rank | 2001 Rank | 2003-05 Rank | 2006-09 Rank |
|-----|-------------|-------------|-------------|-------------|------------|------------|--------------|--------------|
| 1 | Motorola | Motorola | Motorola | Motorola | Motorola | Motorola | Motorola | Microchip |
| 2 | Intel | Intel | NEC | NEC | NEC | Hitachi | Renesas | NEC |
| 3 | Philips | Philips | Philips | Philips | ST-Micro | NEC | Microchip | ST-Micro |
| 4 | Mitsubishi | NEC | Hitachi | Hitachi | Philips | Microchip | NEC | Freescale |
| 5 | NEC | Mitsubishi | Mitsubishi | Mitsubishi | Hitachi | ST-Micro | ST-Micro | Atmel |
| 6 | Hitachi | Hitachi | Intel | Toshiba | Mitsubishi | Philips | Atmel | Renesas |
| 7 | Toshiba | Toshiba | Toshiba | Matsushita | Microchip | Toshiba | Toshiba | NXP |
| 8 | Siemens | TI | Matsushita | SGS-Thomson | Toshiba | Atmel | Philips | Cypress |
| 9 | TI | SGS-Thomson | TI | Intel | Siemens | Matsushita | Fujitsu | Sony |
| 10 | Matsushita | Matsushita | Siemens | Microchip | TI | Sanyo | Infineon | Fujitsu |
| 11 | National | Siemens | Ricoh | Siemens | Fujitsu | Samsung | Sanyo | Panasonic |
| 12 | SGS-Thomson | National | SGS-Thomson | Fujitsu | Sanyo | Mitsubishi | Samsung | Toshiba |
| 13 | Ricoh | Ricoh | Microchip | TI | Matsushita | Infineon | Matsushita | Samsung |
| 14 | MHS | MHS/Temic | Sharp | Sony | Atmel | Sony | Sony | Datang |
| 15 | IIT | Sharp | Oki | Zilog | Zilog | TI | Sunplus | Si Labs |
| 16 | Sharp | Zilog | Zilog | Sharp | Sharp | Fujitsu | Micronas | Holtek |
| 17 | Fujitsu | Oki | National | Temic | Sony | Sunplus | Novatek | Infineon |
| 18 | Oki | Microchip | Fujitsu | Sanyo | Intel | Zilog | Intel | Elan |
| 19 | Zilog | Fujitsu | Sanyo | National | National | Novatek | Holtek | Winbond |
| 20 | Sony | IIT | Sony | Oki | LG Semi | Micronas | Winbond | Denso |
| 23 | Microchip | | | | | | | |



What is PIC32 “Direction”



- **Keep it Compatible**
 - Keep the essence of a PIC[®] MCU
- **Give it More**
 - High-performance MIPS[®] M4K[®] core
 - More memory options
 - Rich peripherals
 - Choices of tools, operating systems and software
- **Make it Easy**
 - Easy to migrate
 - Easy to start
 - Easy to buy



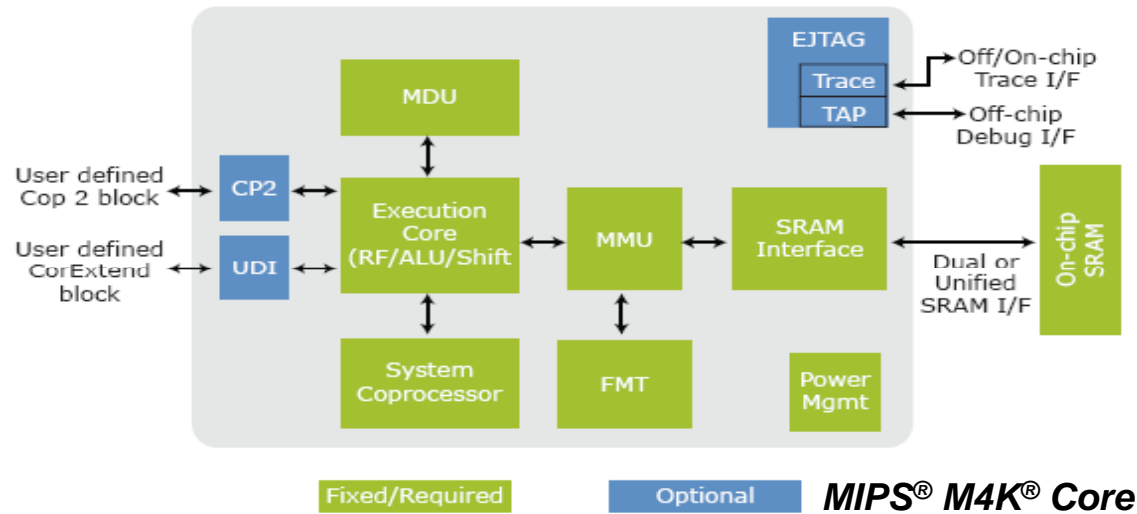
PIC32 & MIPS: The Logical Choice



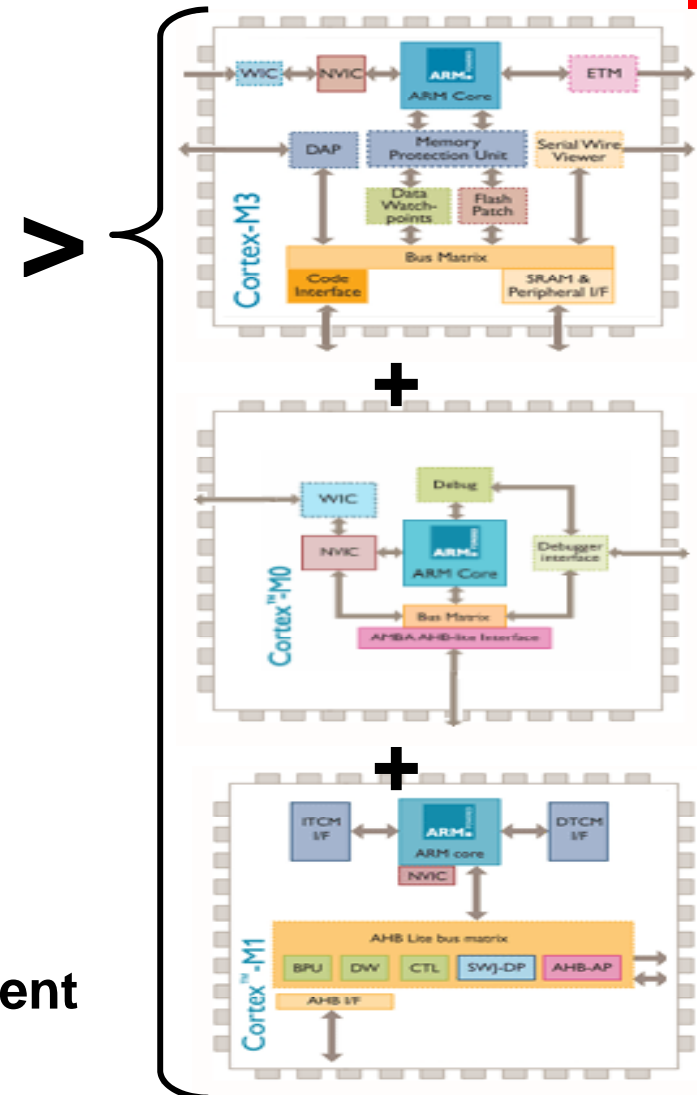
- Performance Leading Cores
- Rich Roadmap for growth
- Scalable Architecture
- Large Ecosystem
- Leadership Products
- World-class Peripherals
- Strong Financial Viability
- Broad Sales Network



Pursue Technology Advancement and differentiation



- 1 core beats the need for 3
- With more features, more options
- Higher performance, more efficiency
- Lower power, smaller area
- Large ecosystem
- Single development-system requirement
- Experience in design





PIC32 Delivers the Performance

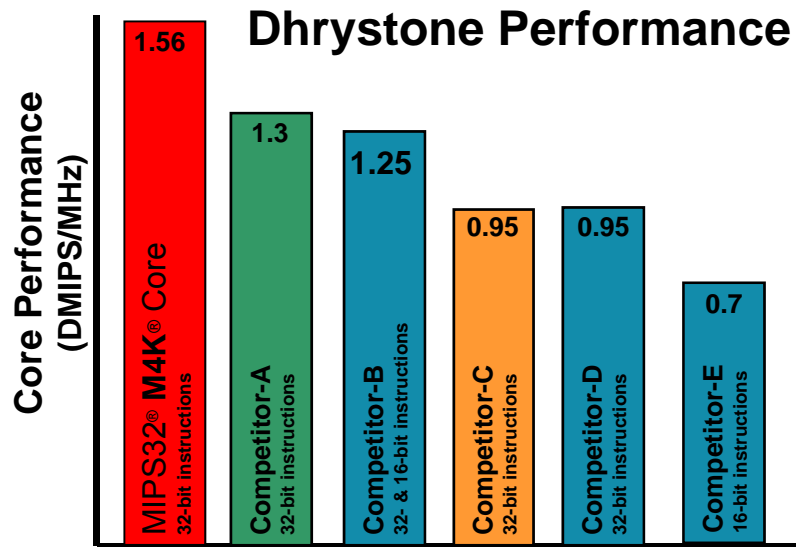
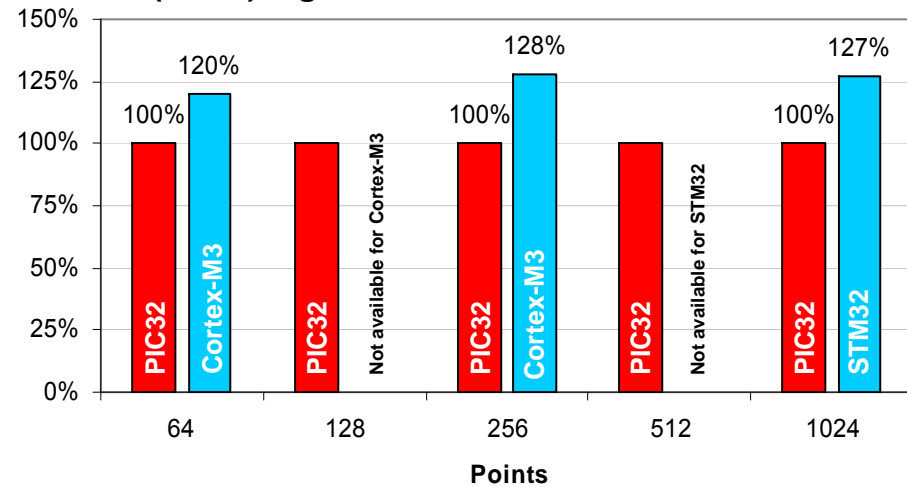


EEMBC CoreMark™ Score

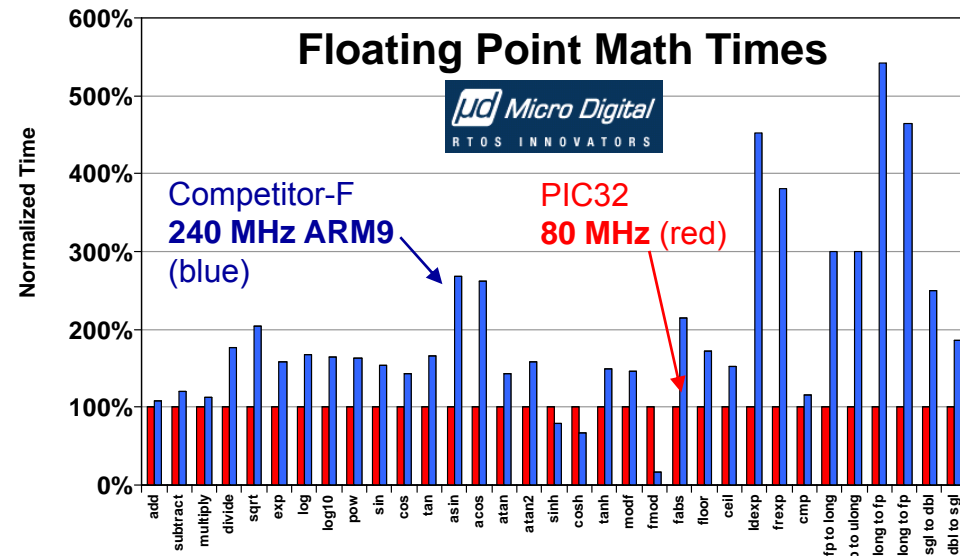
| | | |
|-----------|--------|-------|
| PIC32 | 80MHz | 183.7 |
| Cortex-M3 | 100MHz | 175.2 |

www.coremark.org

FFT (16-bit) Algorithm Times PIC32 vs. Cortex-M3

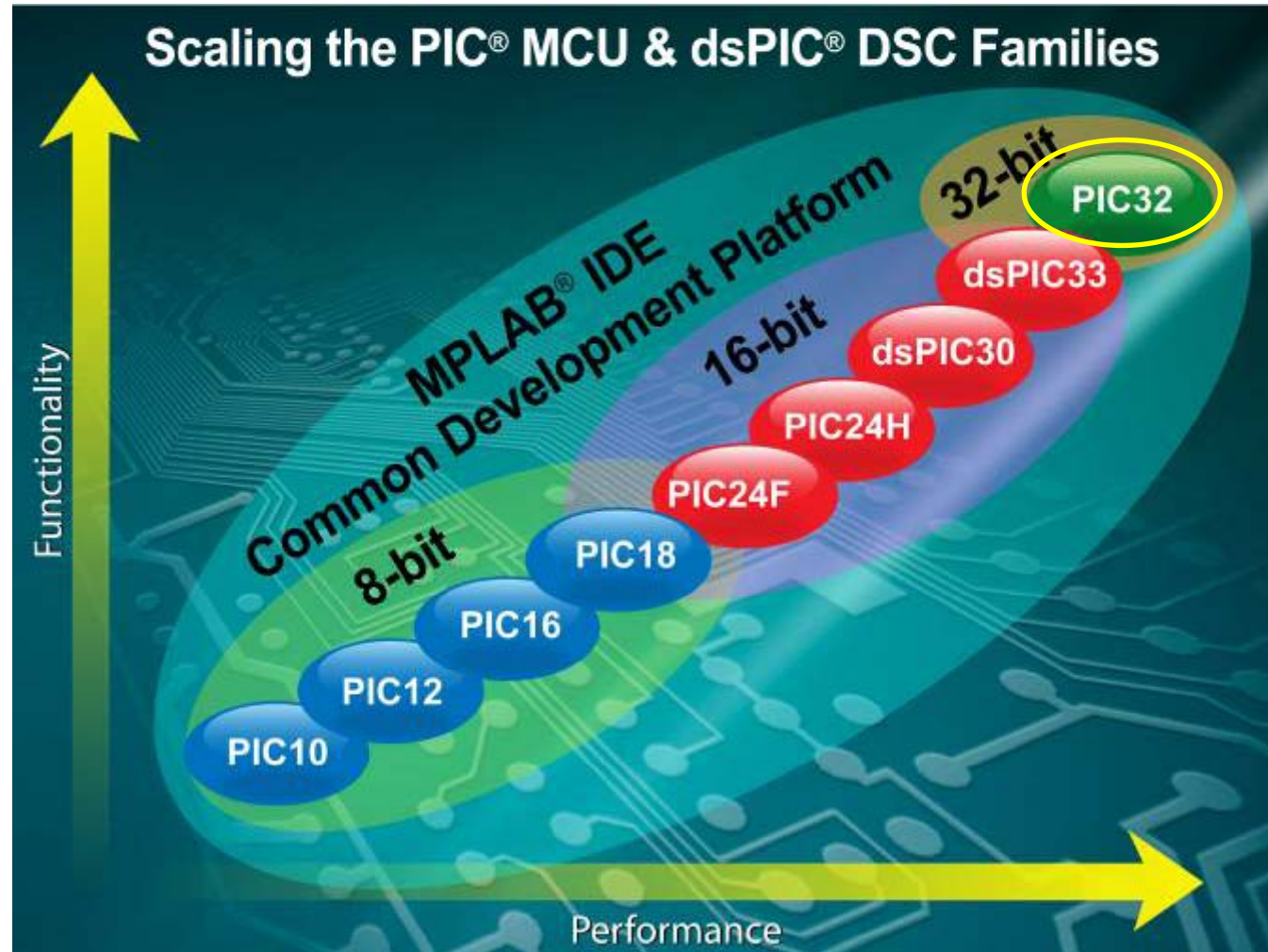


Source: Vendor Published Specifications



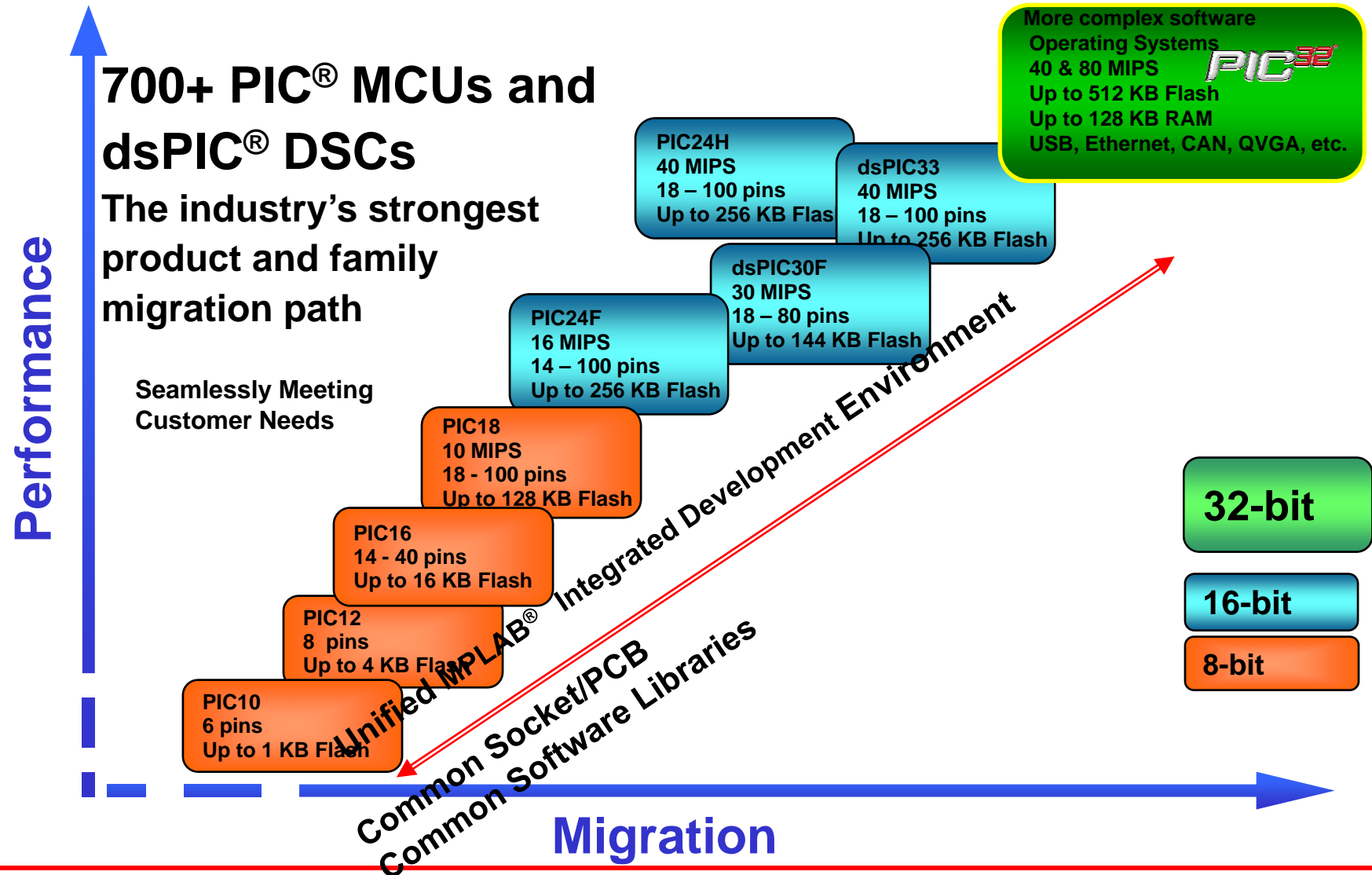


Microchip's MCU & DSC Families





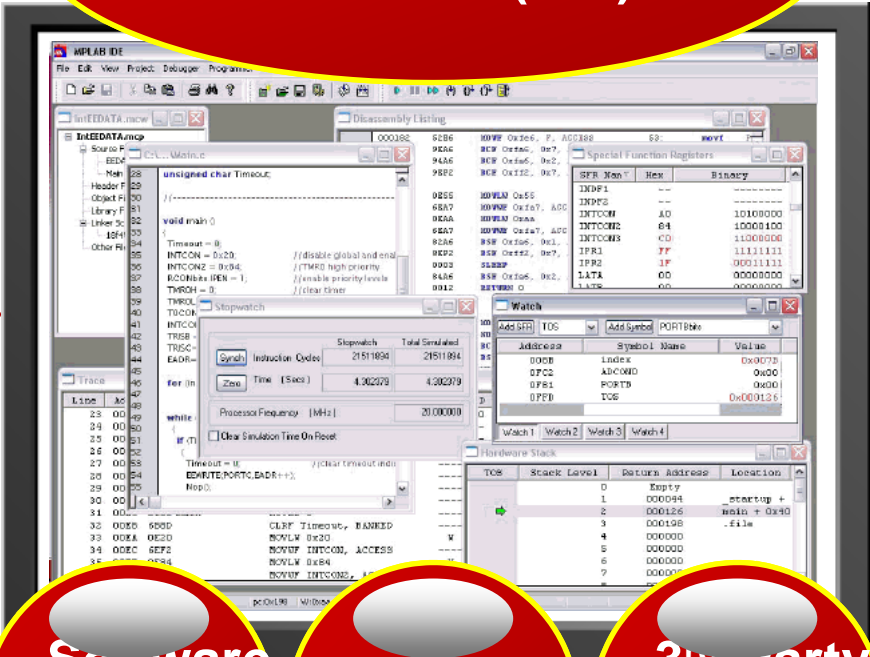
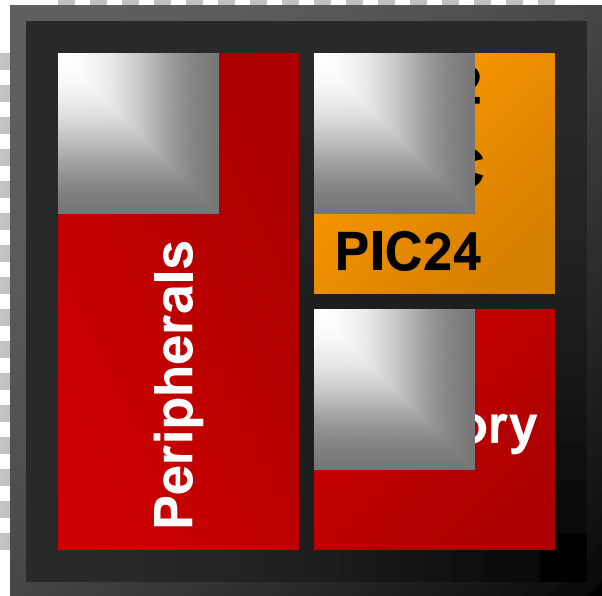
Microchip MCU Solutions





The PIC[®] Microcontroller Development Platform

Integrated Development Environment (IDE)



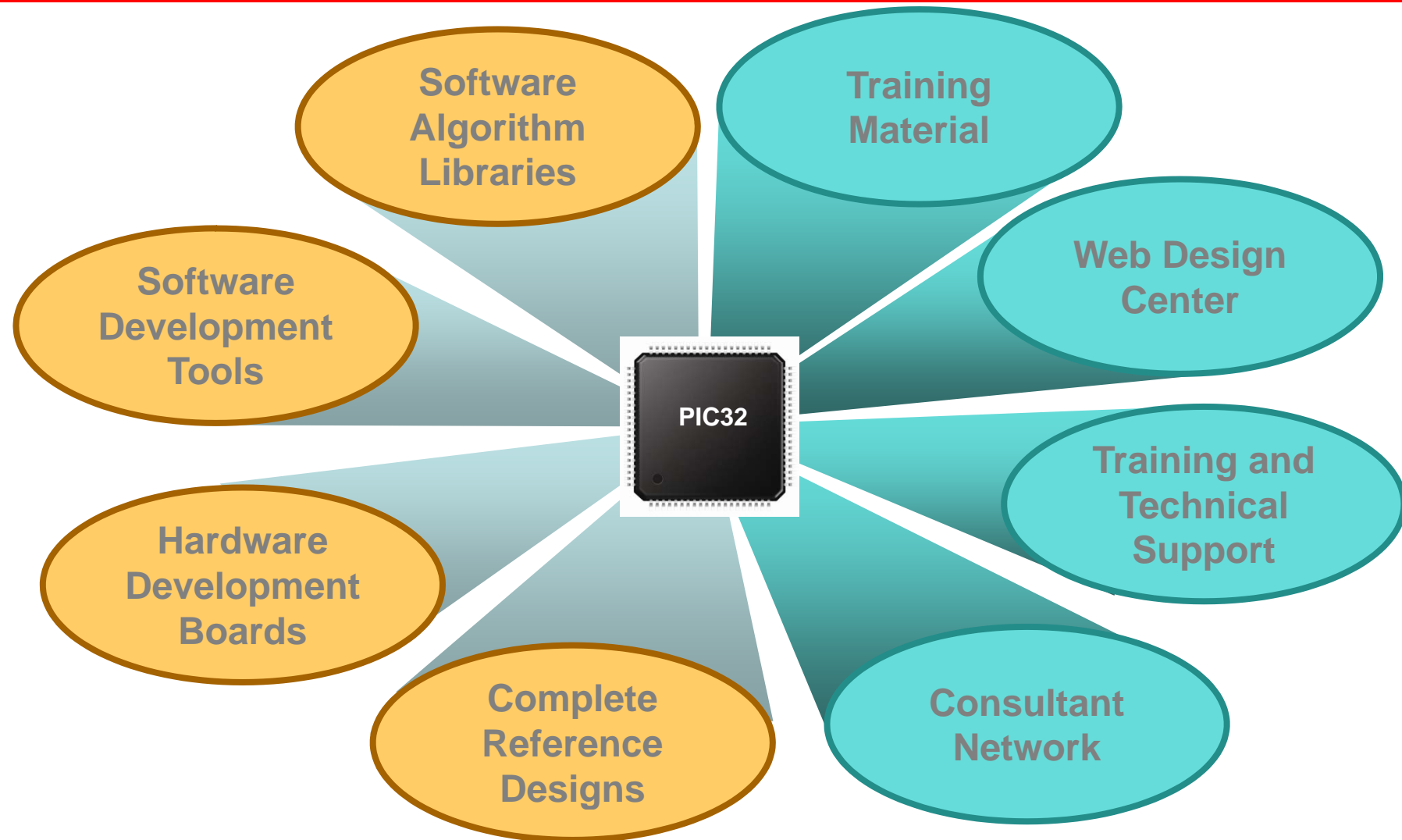
Software Libraries

Compiler

3rd-Party Support



Whole Product Solution





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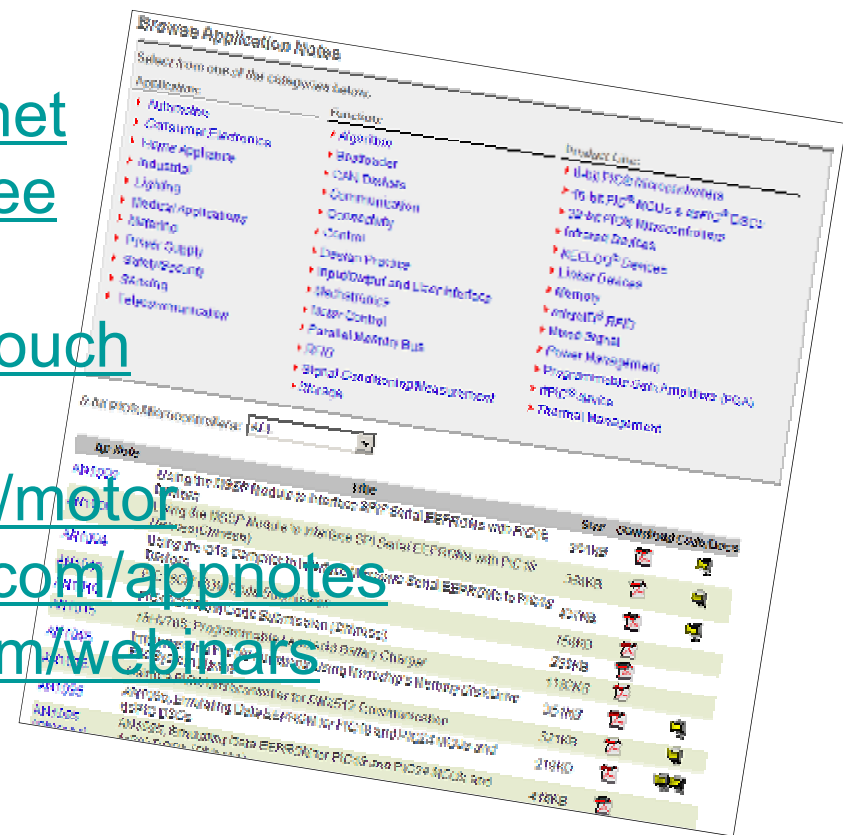
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[Development Tools]

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Microchip Software Libraries

- Two TCP/IP Libraries
- AES 128-, 196- and 256-bit Encryption Library
- Full Peripheral Library in C Compilers
- Advanced Graphics Library
- USB Embedded Host, Device and On-the-Go Library
- MiWi™ Wireless Protocol Stacks (802.15.4)
- Two File System libraries
- Audio Library
- Bootloaders
- DSP Library*
- Floating Point Library*

Free & Source-Code Form

(* Binary only)

**supported by
Microchip**

Microchip Tools

- MPLAB® X IDE (free)
- MPLAB C Compiler
- HI-TECH C® Compiler

Third Party Software



Micrium
Empowering Embedded Systems



expresslogic

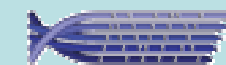


RAMEX
International A/S



Macraigor Systems
Complete JTAG Debug Support

LAUTERBACH



blue river
software

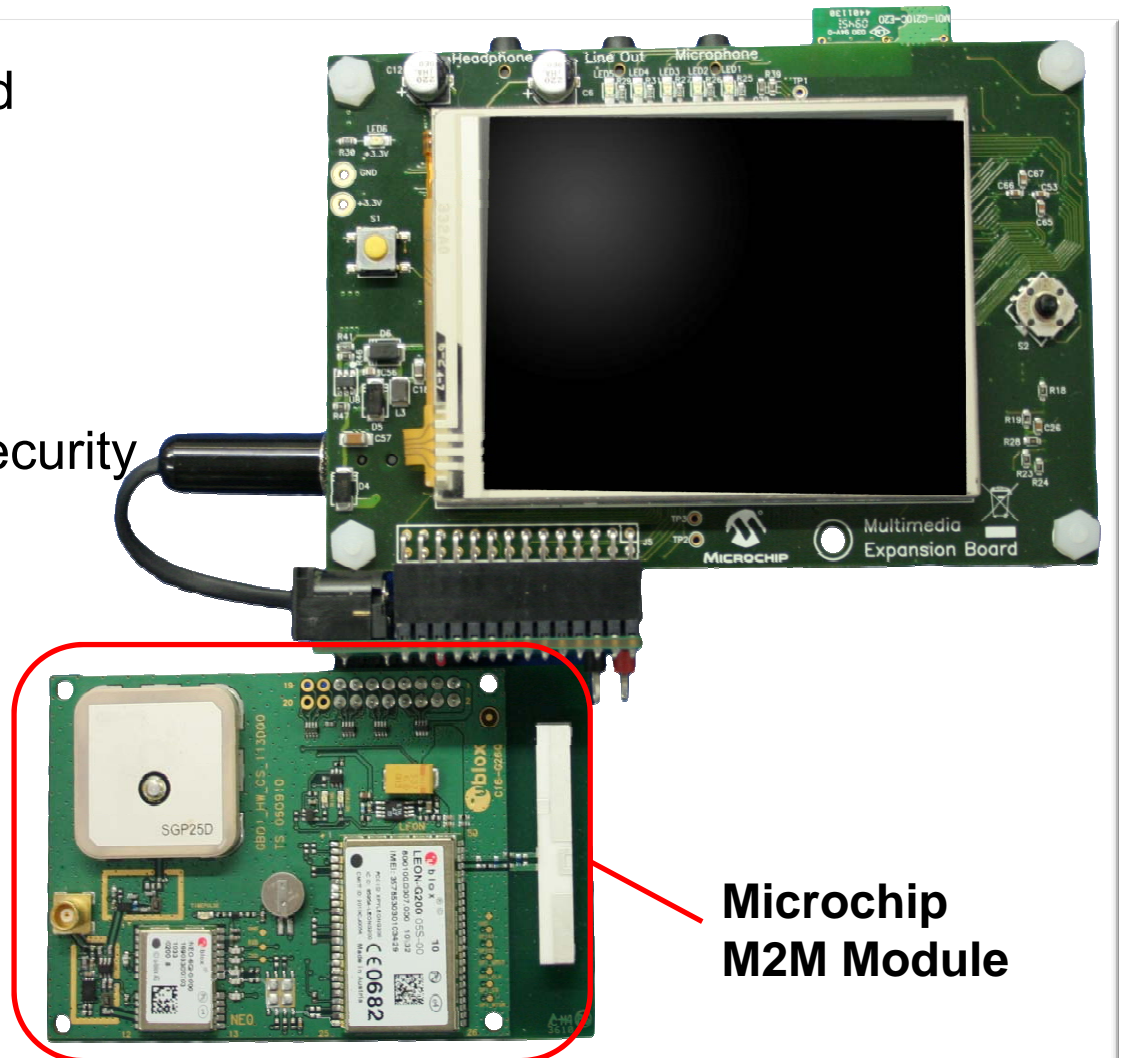
ASHLING
THE SOFTWARE DEVELOPMENT PARTNER





Machine-to-Machine (M2M) PICtail™ Plus Daughter Board

- Part # AC320011
- M2M PICtail™ Daughter Board enables:
 - GSM Text / Phone
 - GPRS Data communications
 - GPS Navigation
- Vehicle Fleet Management, Security and location-based services
- Plugs directly into Multimedia Expansion Board (part # DM320005)
- Demos combining position tracking, Graphics, SMS, Ethernet & 802.11 Wi-Fi® connectivity

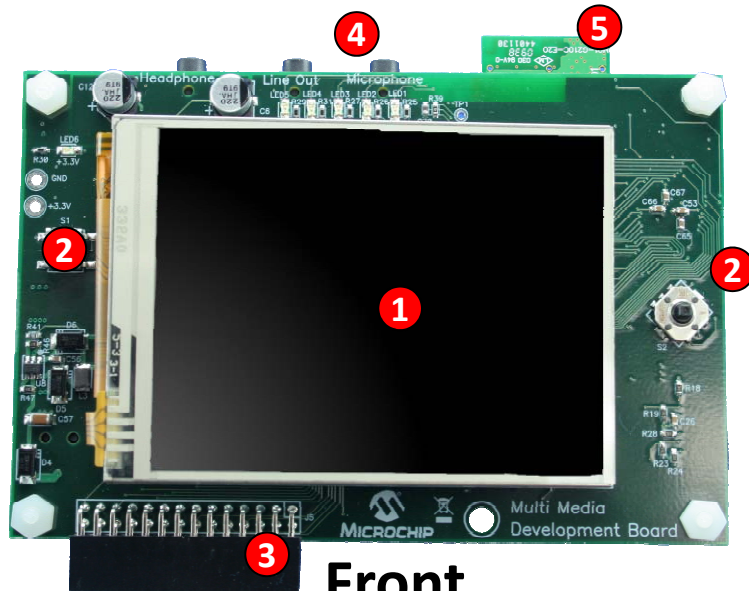


**Microchip
M2M Module**



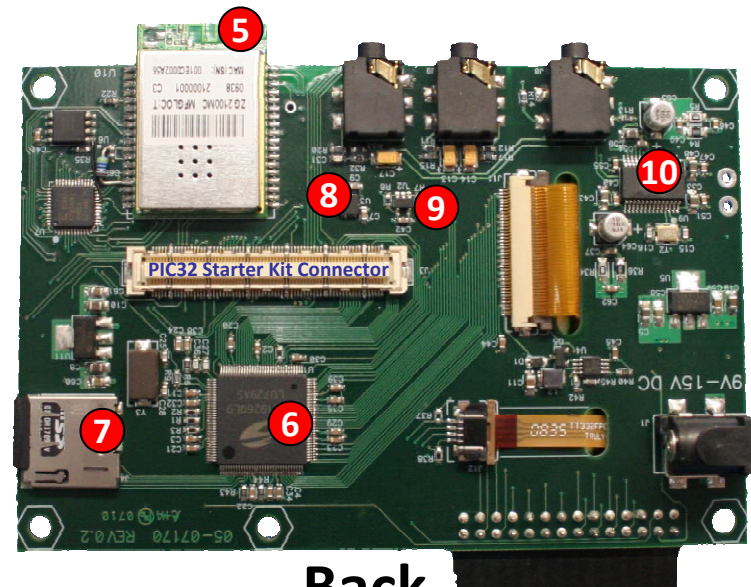
Multimedia Expansion Board

Use with any PIC32 Starter Kit



Front

1. 3.2 inch QVGA touch screen
2. Four-way joystick (S2) and fire button
3. PICtail™ expansion connector
4. Headphone, Line out, Microphone Jacks
5. Integrated Wi-Fi® Module



Back

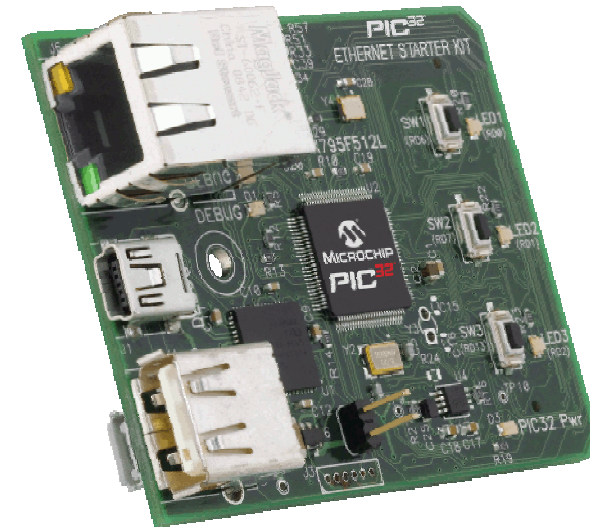
6. Graphics Controller (SSD1926)
7. MicroSD card slot
8. Accelerometer/temp. sensor
9. SPI Flash 2 MBytes
10. 24-bit audio codec (WM8731)

Part # **DM32005**



PIC32 Ethernet Starter Kit

- Part # DM320004
- Integrated debugger/programmer
- USB Powered
- 10/100 Ethernet Development using PIC32 MCUs
- USB host, device, Dual Role and OTG
- Online tools & software download
- Support for Windows® XP and Windows Vista (32 & 64-bit)
- PIC32 MCU with 128 KB RAM
- Enables addition of PIC32 Expansion Board





Being a Reliable & Dependable Vendor

- **Financially solid, stable and well managed**
 - 80 consecutive quarters of profitability
 - No layoffs during last down turn
- **Non-commissioned sales force**
 - Objectivity towards solving customer problems
- **Competitive lead times**
 - Often $\frac{1}{4}$ to $\frac{1}{2}$ of the industry
- **Long product life**
 - 20-year old products still in production
- **Support throughout entire design cycle**



Microchip China Activities

- We won business from various applications like handled scanner, tea/coffee maker, power electric device, image process for security box, GUI products for solar inverter/industrial equipments etc.
- We setup PIC32 joint lab with universities, will publish PIC32 books
- We have translation team who translate English document to Chinese
- We organized PIC32 contest in China
- We have PIC32 expertise in China

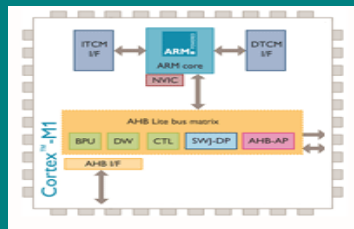


Experience we can Learn from ARM

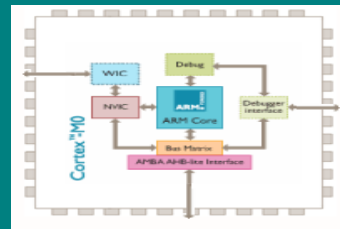
ARM 告诉我们的经验

品牌 & 开发工具环境

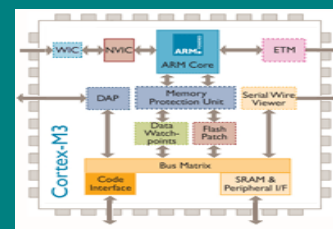
ARM MCU



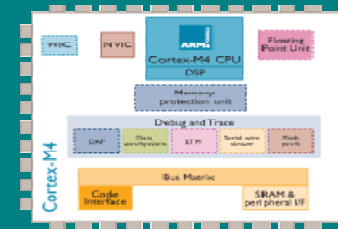
Cortex-M0



Cortex-M1



Cortex-M3



Cortex-M4

- ❖ ARM Cortex M系列处理器的指令集互不兼容
 - 但是这个问题似乎可以被完全屏蔽
- ❖ 架构兼容性重要吗?

嵌入式开发方法的演变

- ❖ 架构细节曾经很重要
- ❖ 正日渐变得不重要
- ❖ 开发环境变得很重要
- ❖ 芯片公司的整体服务很关键

