MICROCHIP

Presented by:
Rainer Neumann
Senior Key Account Manager

Corporate Overview

- Leading semiconductor manufacturer:
  - Of high-performance, field-programmable, 8-, 16- & 32-bit Microcontrollers and 16-bit Digital Signal Controllers
  - Of Analog & Interface products
  - Of related Memory products
  - For high-volume embedded control applications
- $1.04B in product sales in FY08
- More than 4,900 employees
- Headquartered near Phoenix in Chandler, AZ

"The Silicon Desert"

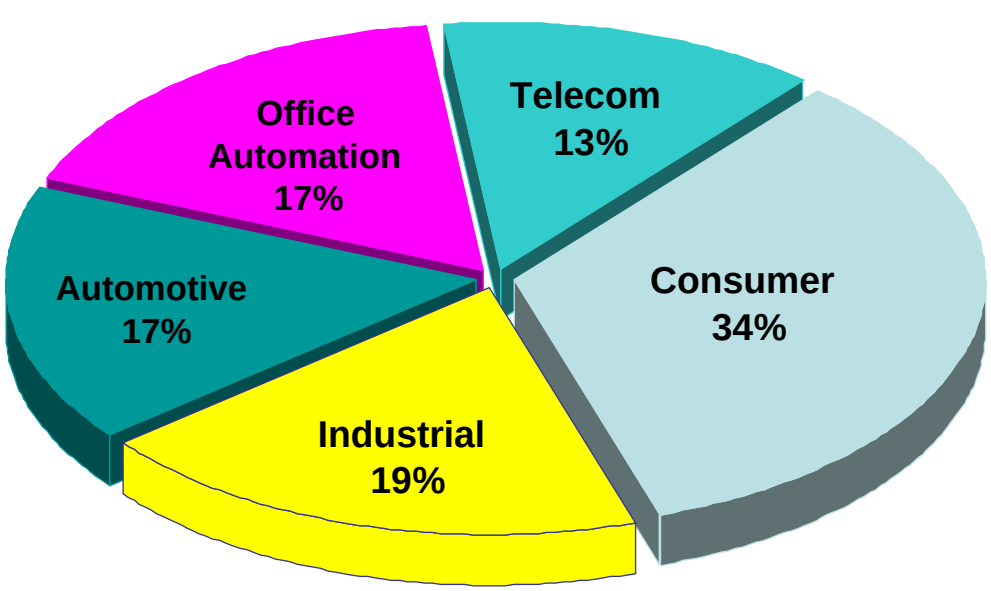
Worldwide Technical Support Centers

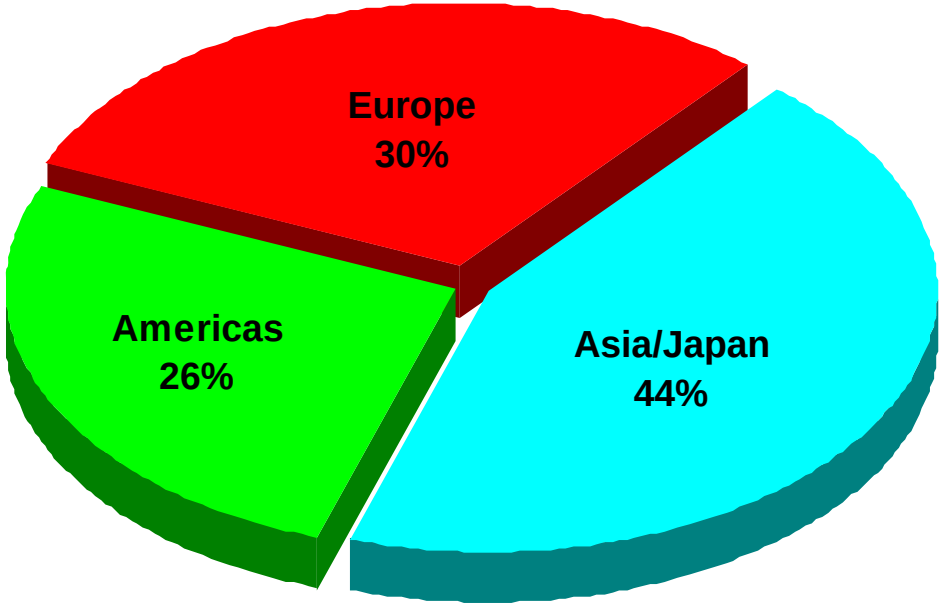
Worldwide Technical Training

- 37 Regional Training Centers
- Over 140 different topics
- Greater than 4,000 classes offered worldwide
- In excess of 32,000 classroom attendees
- 11 MASTERs conferences
- More than 120 Web seminars available on demand

Global Development Centers

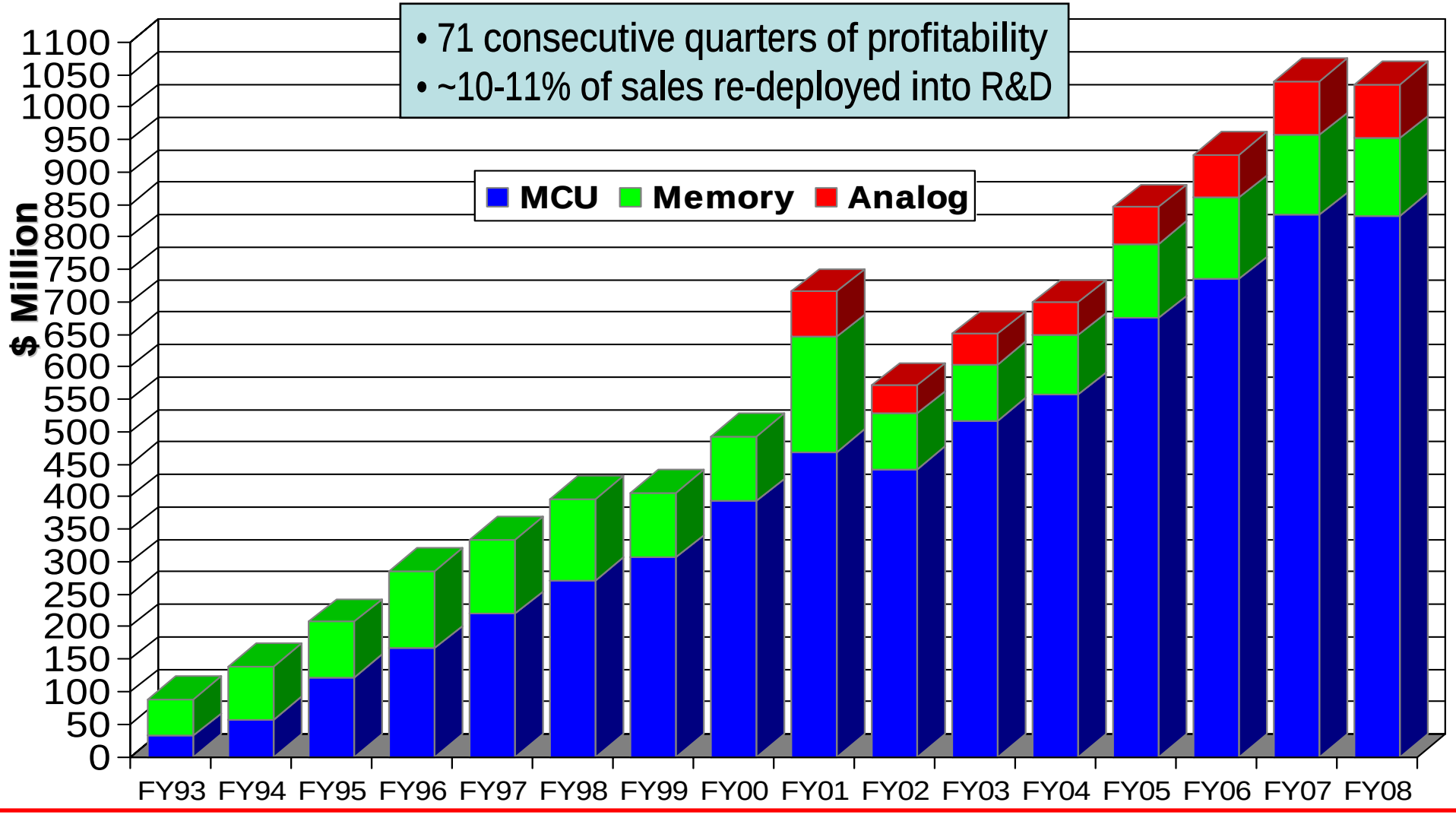
Balanced Revenue





> 63,000 customers worldwide

Annual Net Sales Growth



Worldwide Manufacturing Locations

Microchip Academic Program

Microchip Academic Program

“Encourage Educators to select Microchip products and technology for the classroom”

- Expand reach down to K-12 level (grade - high school)
- Microchip enables lab set-ups and turn-key training solutions
- New Academic Partner Program for qualified universities
- Universities as authorized Microchip training centers
- Certified Microchip course material
- IC Wiki collaboration

MICROCHIP
Academic Program

Microchip Academic Program

- **85 schools/universities in 20 countries are now Microchip Academic Partners**
- **99 text books written about PIC® MCU products in 10 languages**
- **Making it easy for our partners:**
  - Automated tool discounts on microchipDIRECT
  - Access to labs, curriculum and course material
  - Academic discounts at Regional Training Centers and technical MASTERS conferences
  - Free Software and Samples
  - 24-hour technical support

Product Portfolio:

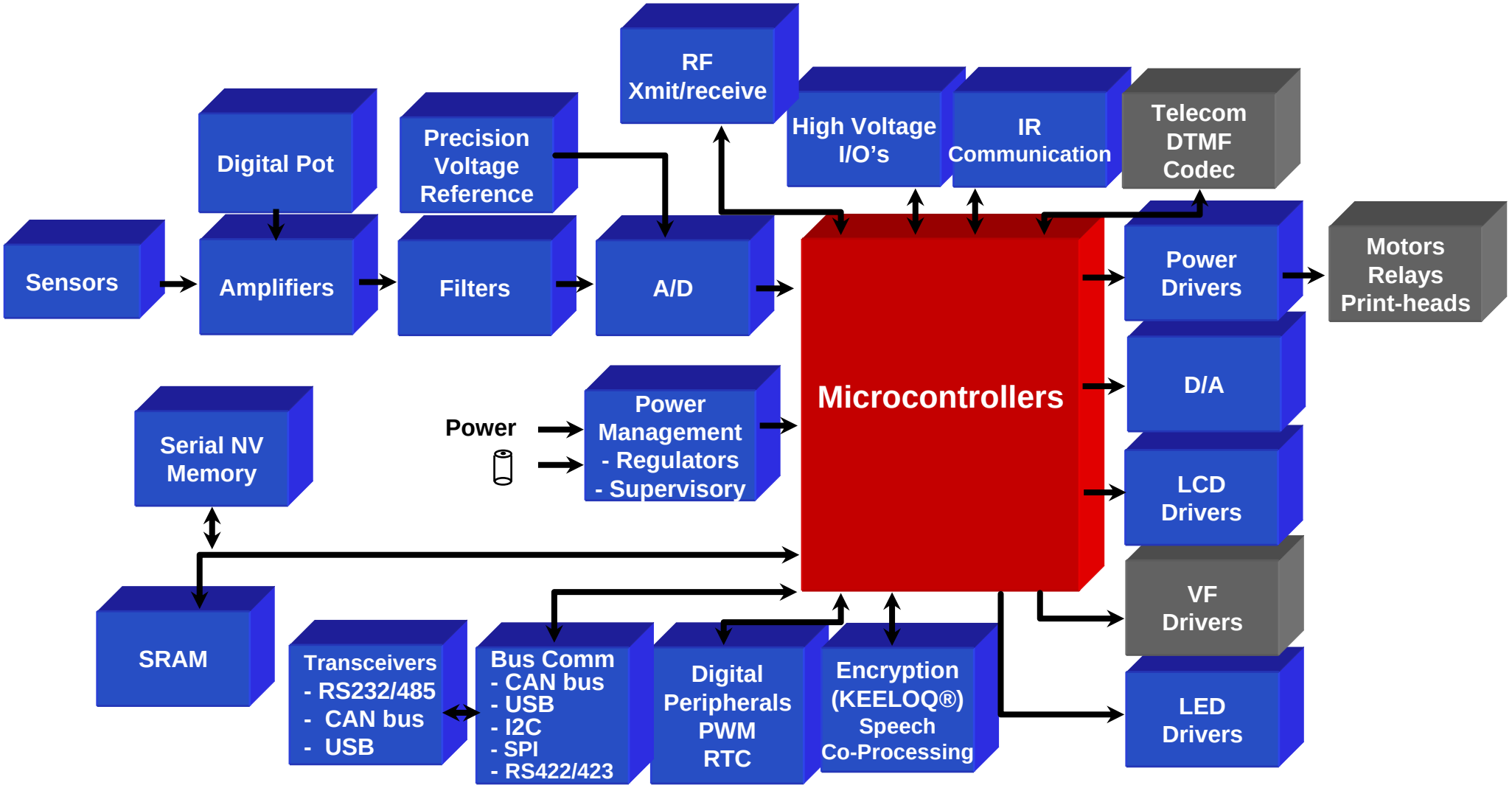
8-/16-/32-bit Microcontrollers

Analog & Interface

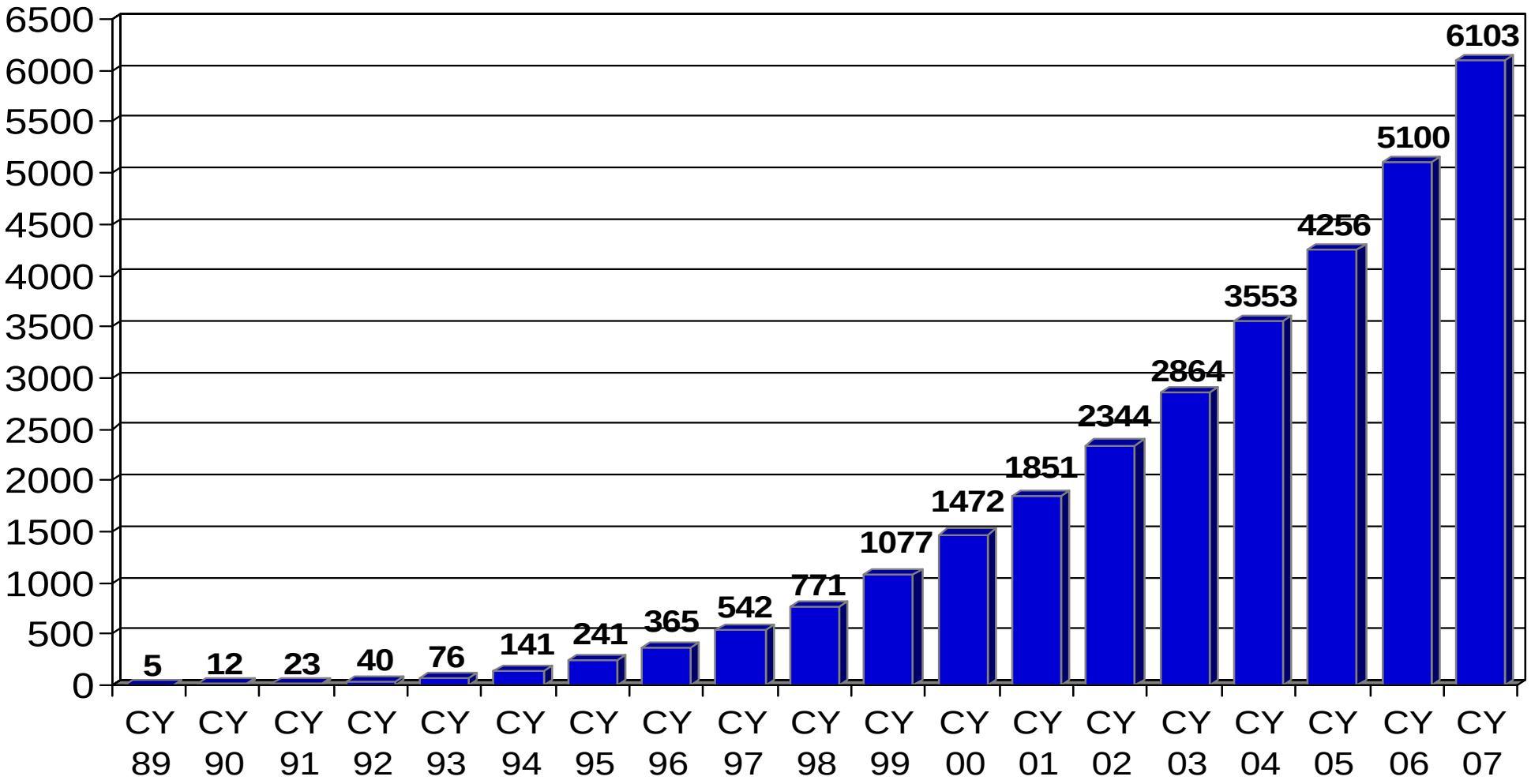
RF Products

Memory Products

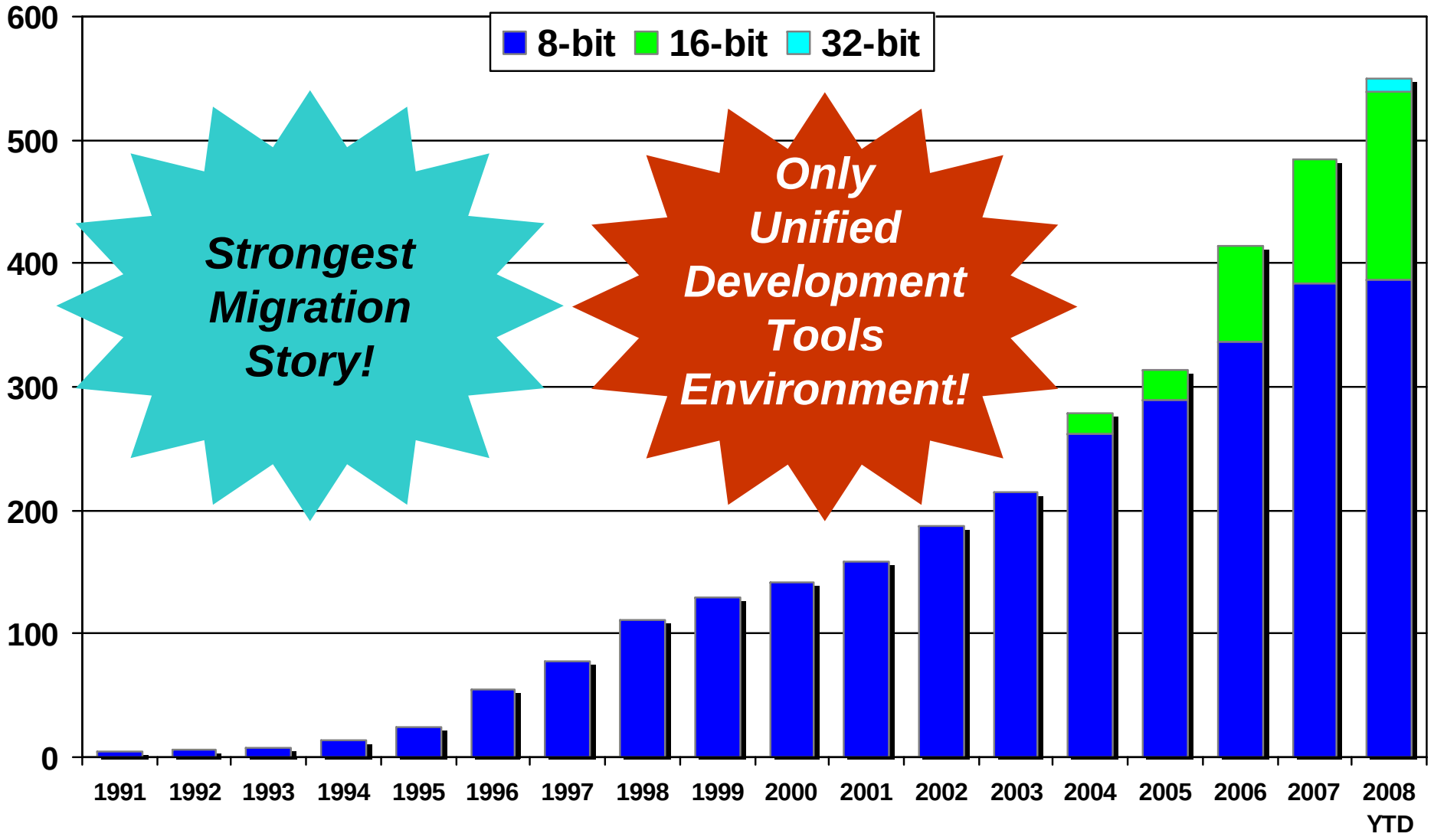
Universe of Embedded Control



Cumulative PIC® MCU Shipments (MU)



MCU Product Portfolio Growth

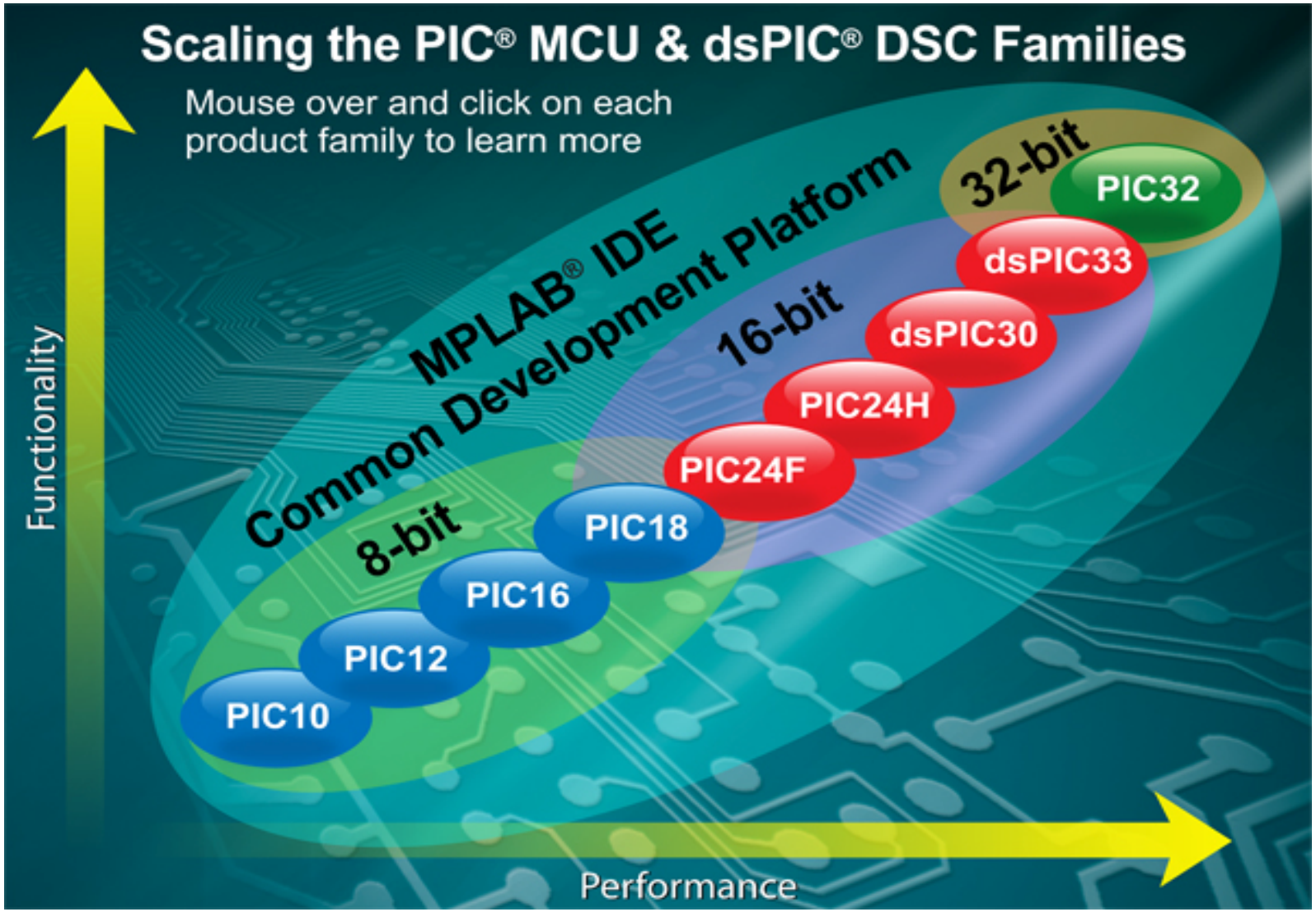


Worldwide 8-Bit Microcontroller Market Share (Dollars)

No.	1991 Rank	1992 Rank	1993 Rank	1996 Rank	1998 Rank	2001 Rank	2003-05 Rank	2006-07 Rank
1	Motorola	Motorola	Motorola	Motorola	Motorola	Motorola	Motorola	**Microchip**
2	Intel	Intel	NEC	NEC	NEC	Hitachi	Renesas	Freescale
3	Philips	Philips	Philips	Philips	ST-Micro	NEC	**Microchip**	Renesas
4	Mitsubishi	NEC	Hitachi	Hitachi	Philips	**Microchip**	NEC	NEC
5	NEC	Mitsubishi	Mitsubishi	Mitsubishi	Hitachi	ST-Micro	ST-Micro	Atmel
6	Hitachi	Hitachi	Intel	Toshiba	Mitsubishi	Philips	Atmel	ST-Micro
7	Toshiba	Toshiba	Toshiba	Matsushita	**Microchip**	Toshiba	Toshiba	NXP
8	Siemens	TI	Matsushita	SGS-Thomson	Toshiba	Atmel	Philips	Toshiba
9	TI	SGS-Thomson	TI	Intel	Siemens	Matsushita	Fujitsu	Fujitsu
10	Matsushita	Matsushita	Siemens	**Microchip**	TI	Sanyo	Infineon	Sony
11	National	Siemens	Ricoh	Siemens	Fujitsu	Samsung	Sanyo	Matsushita
12	SGS-Thomson	National	SGS-Thomson	Fujitsu	Sanyo	Mitsubishi	Samsung	Cypress
13	Ricoh	Ricoh	**Microchip**	TI	Matsushita	Infineon	Matsushita	Samsung
14	MHS	MHS/Temic	Sharp	Sony	Atmel	Sony	Sony	Holtek
15	IIT	Sharp	Oki	Zilog	Zilog	TI	Sunplus	Si-Labs
16	Sharp	Zilog	Zilog	Sharp	Sharp	Fujitsu	Micronas	Sanyo
17	Fujitsu	Oki	National	Temic	Sony	Sunplus	Novatek	Micronas
18	Oki	**Microchip**	Fujitsu	Sanyo	Intel	Zilog	Intel	Novatek
19	Zilog	Fujitsu	Sanyo	National	National	Novatek	Holtek	Infineon
20	Sony	IIT	Aony	Oki	LG Semi	Micronas	Winbond	Zilog
23	**Microchip**							

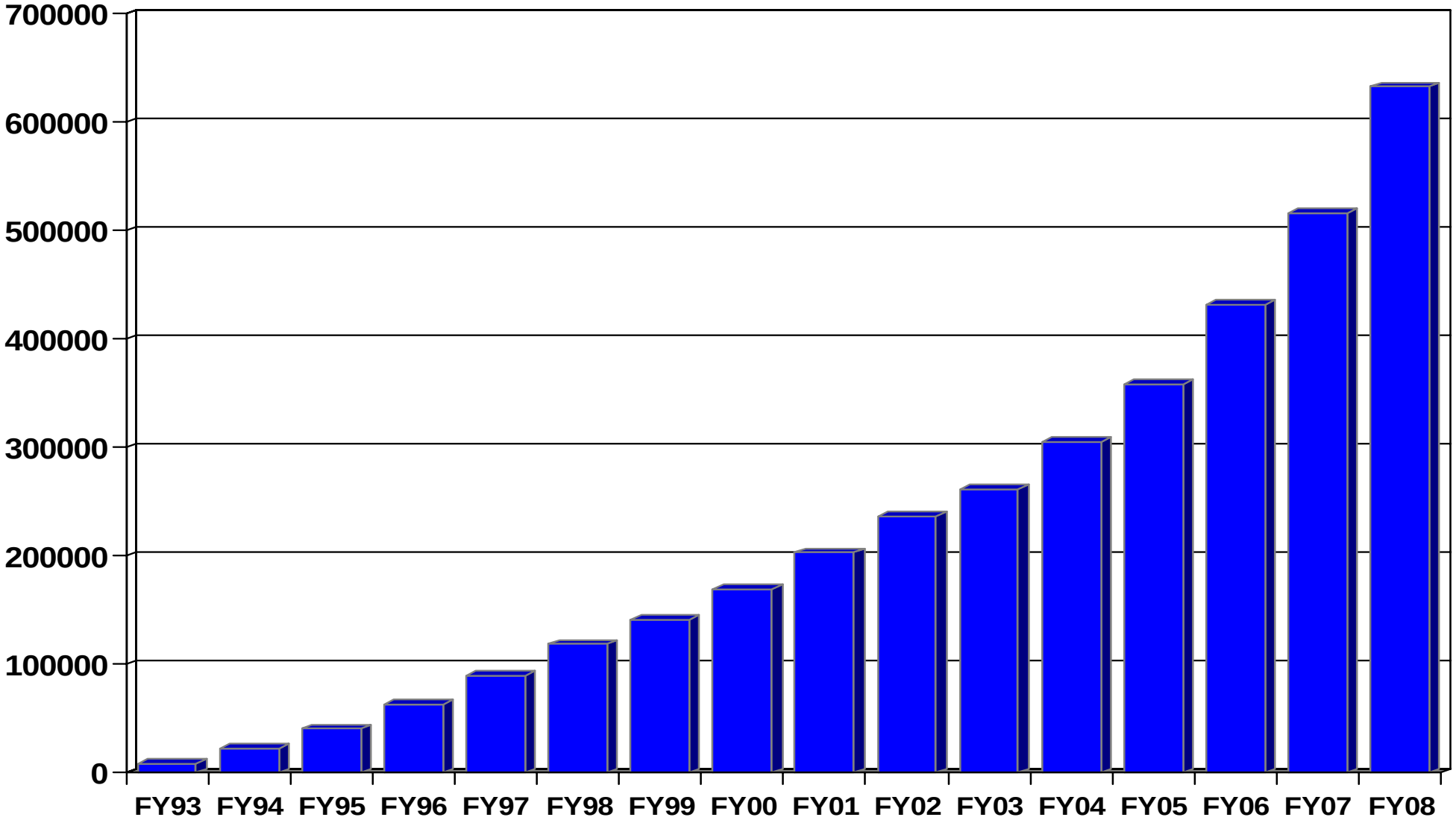
Based on dollar shipment volume 1991-2007, Source: Dataquest and Microchip

Microchip's MCU Families

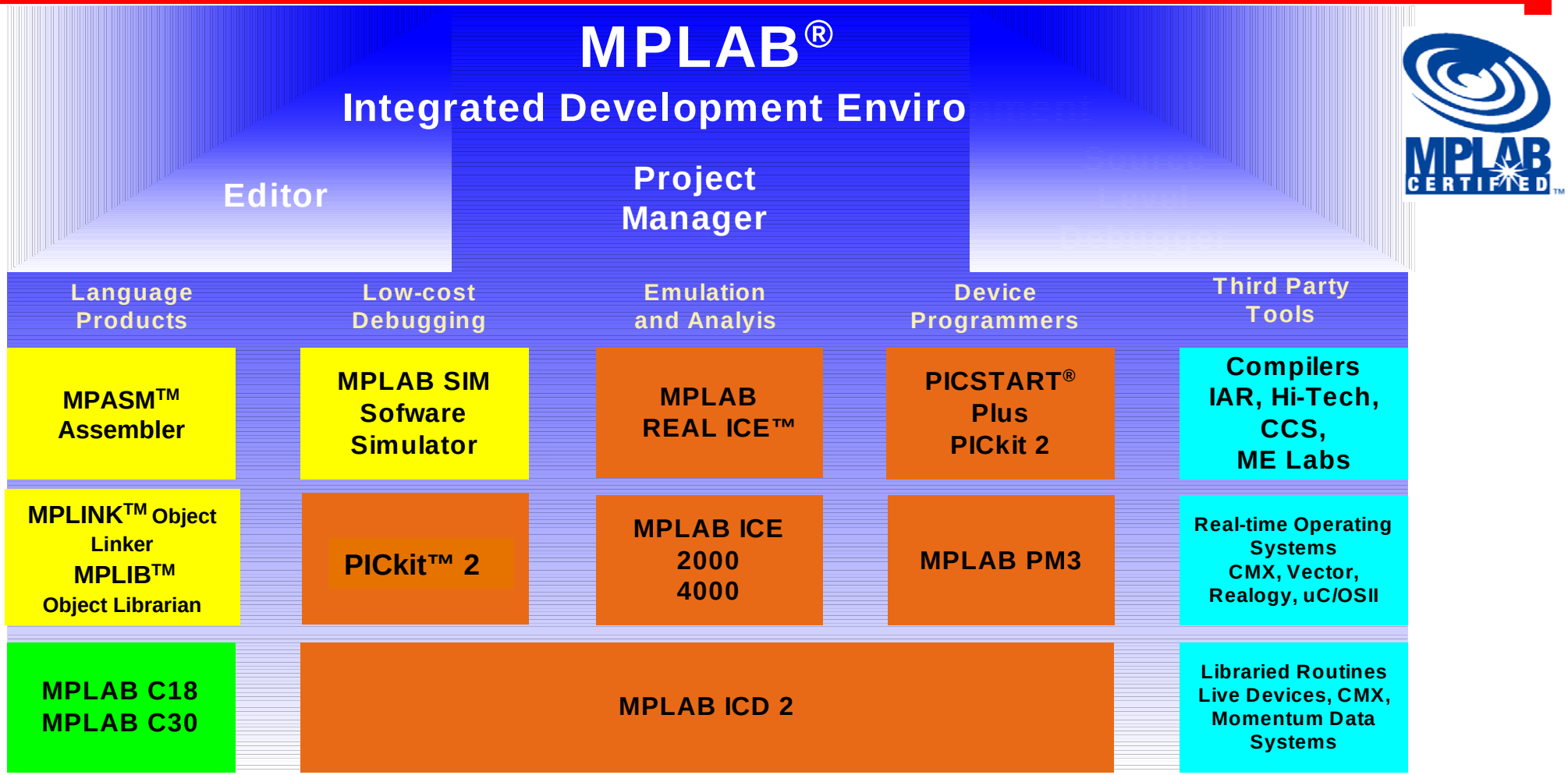


Development Tool Support

Cumulative Development Tools Shipped

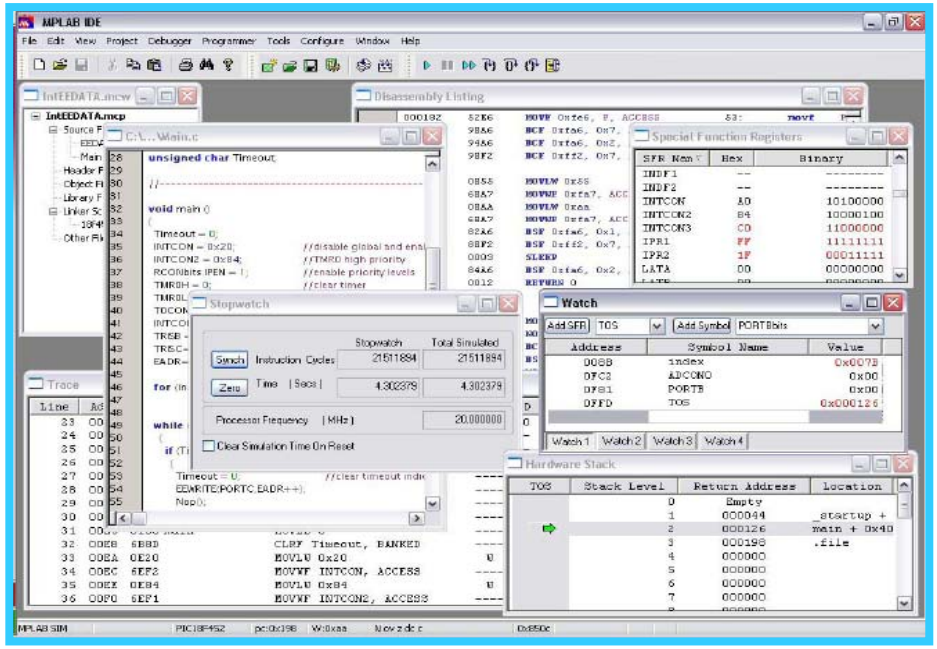


One Development Environment



Uniquely supporting 8, 16 and 32 bit processors within one integrated development environment!

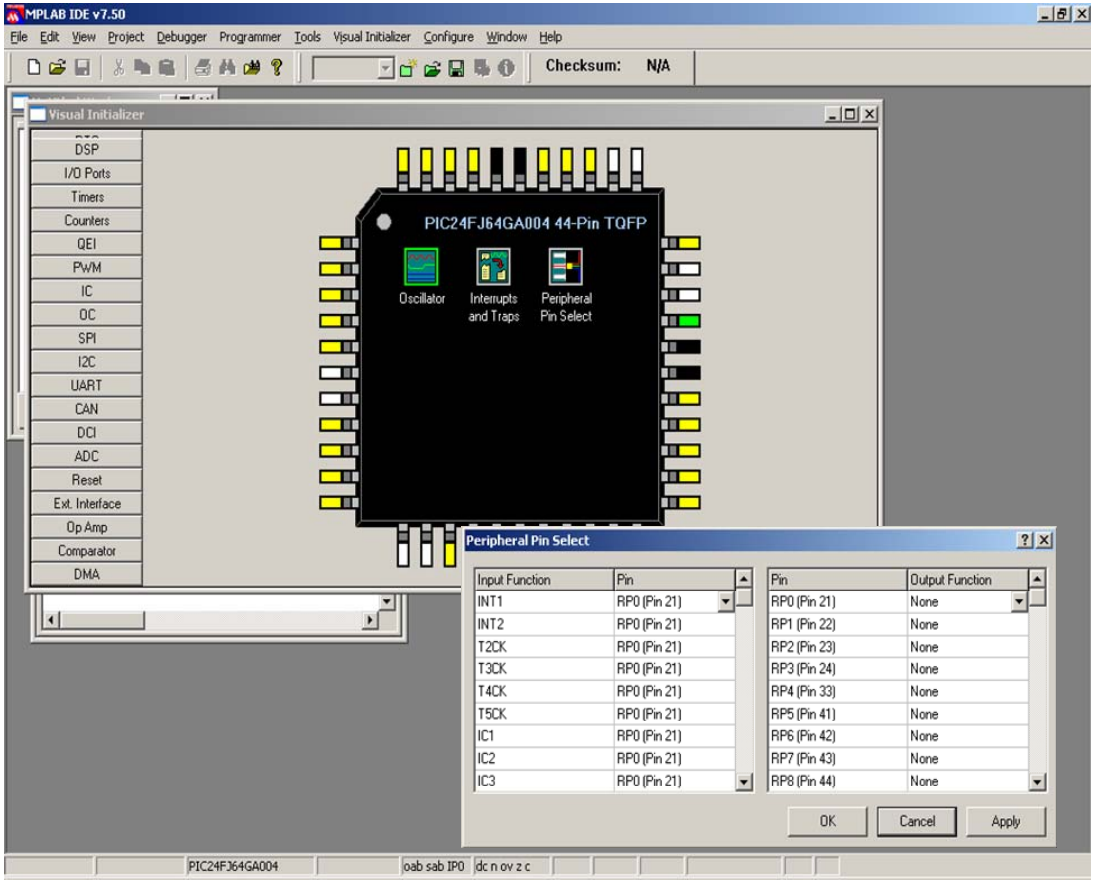
MPLAB® IDE Advantages



- MPLAB IDE
  - **Supports all PIC® MCUs and dsPIC® DSCs**
  - **Supports all Microchip's hardware development tools**

- MPLAB IDE offers a complete, integrated tool suite
  - **Editor, Debugger, Simulator and VDI**
- MPLAB IDE is easy-to-use and **FREE!**

Free Initialization Tool: Visual Device Initializer



- **Component of MPLAB® Integrated Development Environment**
- **Graphic support for Peripheral Pin Select initialization & other device peripherals**
- **Generates initialization code to configure peripherals and reduces initialization errors**
- **Generates pin and interrupt usage reports**
- **Reduces initial set up time**

- **Red pins have a conflict**
- **Yellow pins require assignment**
- **Green pins are properly assigned**

Tools Start-up Costs

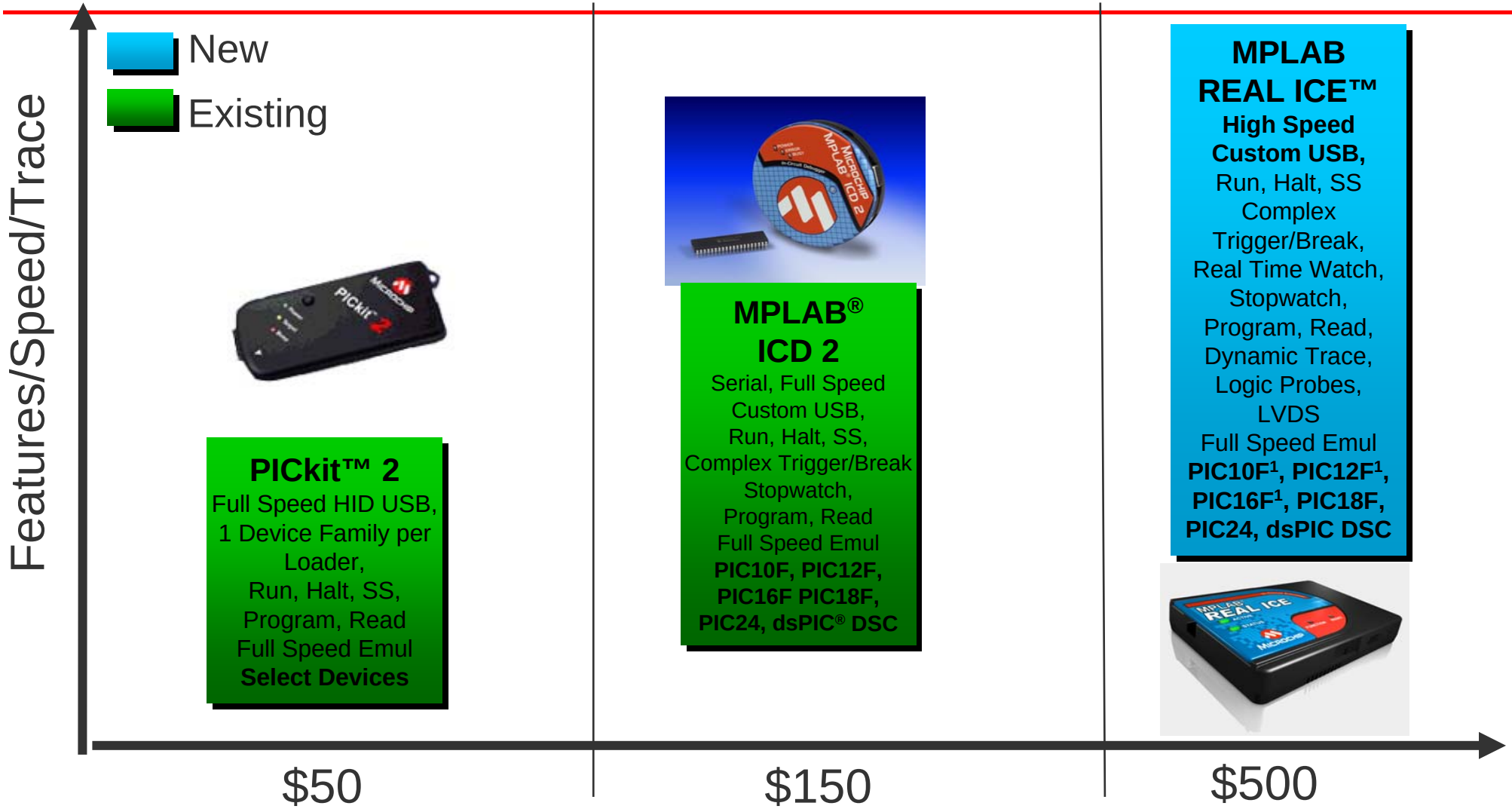
Writing Code	Programmer's Editor	Free
Debugging Code	MPLAB® Assembler	Free
	MPLAB C Compiler for PIC18 Student Edition	Free
	MPLAB C Compiler for PIC24 MCUs and dsPIC® DSCs Student Edition	Free
	Visual Device Initializer	Free
	Software Simulator	Free
	Maintenance/Upgrade	Free

Software development environment set up at no cost!

- **All software include free upgrades and support**
- **Free Student Editions**
- **Common development environment for all Microchip MCUs & DSCs**

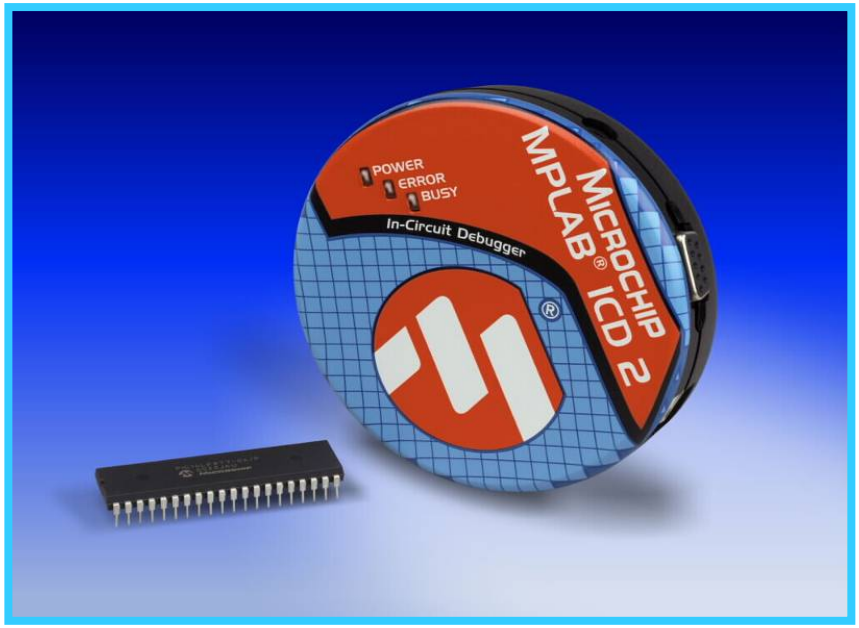
In-Circuit Debuggers and Emulators

Emulation Roadmap



MPLAB® ICD 2 In-Circuit Debugger

- MPLAB IDE compatible
- Flash upgradeable
- Single step
- Up to 3 breakpoints
- USB connect and powered or RS-232



DV164005 MPLAB ICD 2 Module	List $159.99
DV164007 MPLAB ICD 2 Module w/Supply	List $189.99
DV164033 MPLAB ICD 2 + Explorer 16	List $299.99

MPLAB® REAL ICE™ Probe Kit

- MPLAB IDE compatible
- Standard Driver Board
- 3 Complex Breakpoints
- 4 Real Time Data Watchpoints
- Stack/WDT/Sleep Breakpoints
- USB High Speed Connection

DV244005 MPLAB REAL ICE List $499.98

PICkit™ 2 Flash Starter Kit

- Programmer supports 125 PIC® MCU devices
  - **PIC24 & dsPIC33**
  - **Baseline, Mid-range, PIC18F and PIC18J**
- PICkit 2 Tutorials
- Debugging Support
  - **Many PIC12, PIC16 and PIC18 supported now**
  - **PIC24 Coming Soon!**

DV164120 PICkit 2 Low Pin Count Demo	List $49.99
PG164120 PICkit Programmer	List $34.99

New
In-Circuit Debugger

MPLAB® ICD 3 – Next Generation HW Debug Tool

- **Debugger/Programmer Solution for Flash devices**
- **Offers great performance at a reasonable price point**
- **Full device support**
- **Many other Improvements**
  - Capability to provide limited target power (100 ma)
  - Fast – USB HS, HW accelerator, SRAM
  - SW breakpoints (1000)

MPLAB® ICD 3

- **Microchip PIC® MCU products**
  - PIC32MX
    - 32-bit family, 80 MIPS, advanced debugging
  - dsPIC33F, PIC24H/PIC24F, dsPIC30F
    - 16-bit family, 16-40 MIPS performance, standard ICD debugging
  - PIC18F/FJ/ enhanced
    - 8-bit family, 10-12 MIPS performance, standard ICD debugging
  - PIC16F/12F/10F
    - 8-bit family, 10 MIPS performance, standard ICD debugging
  - PIC24/18F ‘K’ Series
    - 16/8-bit, Newest technology, offers wider voltage supply range

MPLAB® ICD 3

- **Completely USB powered**
  - High power device consumes 220 ma of power
  - Requires USB self-powered hubs
- **No RS232 serial port**
  - Not present in most personal computers
  - Slower interface --not practical anymore
- **No external power supply required**

Production Programmer

MPLAB® PM3 Universal Programmer

- Production-grade programmer for PIC® MCUs and dsPIC® DSCs
- Stand-alone operation
- ICSP™ built in
- Fast programming
- SQTP^{SM} support
- SD/MMC support

DV007004 MPLAB PM3 Universal Programmer
List $895.00

8bit Demo Boards

8-bit Demonstration Boards

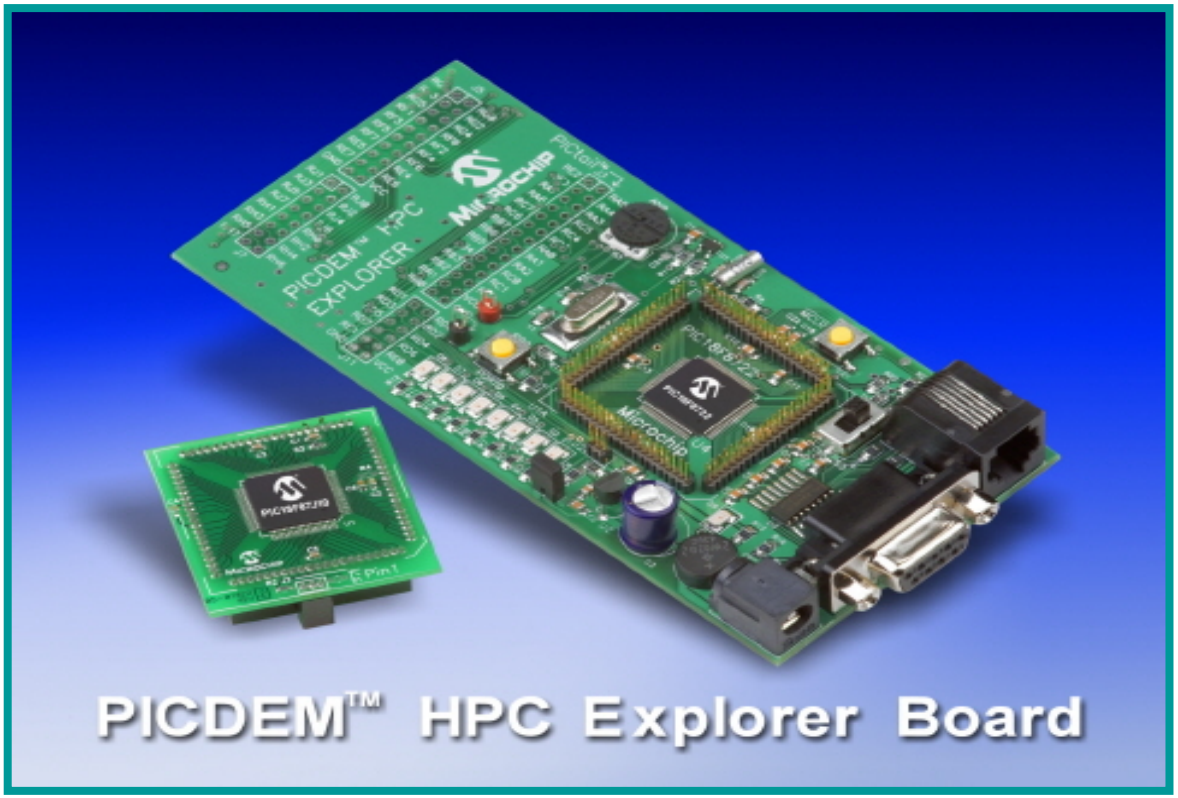
Products	Description	Part No.
8-bit devices	PICDEM™ HPC Explorer board	DM183022
	PIC18J Demo board for PICkit2	DM164120-5
	PICDEM™ LCD2 Demo board	DM163030
	PICDEM 2 PLUS	DM163022
	PICDEM.net™ 2 Demo board	DM163024
	PICDEM™ FS USB PIC18F4550 Demo board	DM163025
	PIC18F87J50 FS USB Plug-in Module	MA180021
	PIC18F K20 Demo Board	DM164124

PICDEM™ 2 Plus Board

- **Demonstrates the capabilities of 18-, 28- and 40-pin PIC16 and PIC18 devices**
- **MPLAB® Real ICE™ and MPLAB ICD2 connector**
- **2 x 16 LCD display**
- **Active RS232 port**

DM163022 (Board Only) $99.99

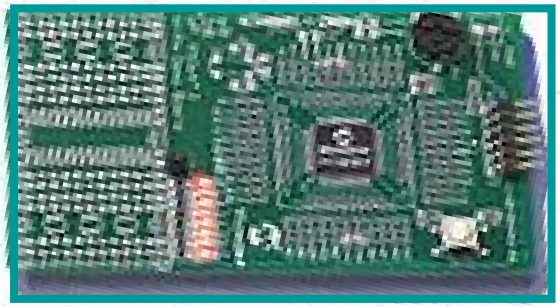
PIC18 J-series
Demo & Development Boards
PICDEM™ HPC Explorer Board +PIM



- PICDEM HPC Explorer DM183022
- Features a PIC18F8722 microcontroller
- Supports PIC18 J-series with Plug-in Module MA180011-MA180016

DM183022 (Board with unpopulated PIM)	$59.99
MA180011-MA180016 (PIM)	$25.00

PIC18 J Demo Board & PICkit™ 2 Programmer



- **PICkit 2 Programmer #PG164120**
  - Package includes PICkit 2 Programming Software, MPLAB® IDE software, an A to mini-B USB cable, lessons for programming PIC® MCUs
- **PIC18J Demo Board #DM164120-5**
  - Features PIC18F87J10
  - Used to evaluate PIC18 64- to 80-pin devices

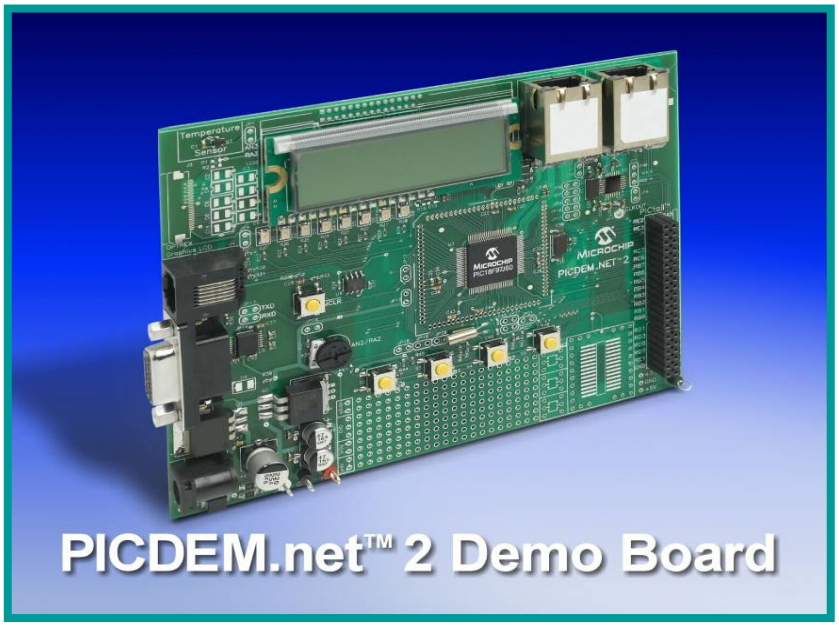
PG164120	$34.99
DM164120-5	$35.00

PICDEM™ LCD2 Demo Board

- **PIC18F85J90 on board**
- **Plug-in Module pack available**
  - PIC18F8490, PIC16F917, PIC16F946
- **Battery based operation**
  - 3V Button Cell
- **3V LCD Glass**
  - Icons, numbers, bar
  - Alphanumeric/starburst
  - Custom glass capability
- **Booster capability**
  - Contrast control, dimming
- **RS-232, POT, switches**

DM163030 $125.00

PICDEM.net™ 2 Demonstration Board

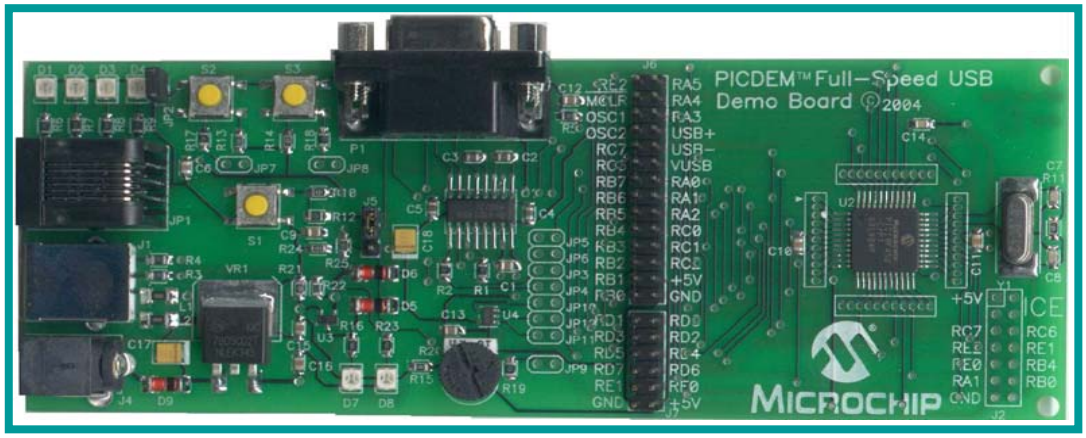


- Populated with PIC18F97J60
- PICtail™ connector
- Alpha-numeric LCD Display
- Programmable buttons/LEDS
- Ethernet Connectors
- Temp Sensor
- USART
- ICSP™ Programming
- Real-Time Clock

DM163024

$165.00

PICDEM™ FS USB PIC18F4550 Demonstration and Evaluation Board

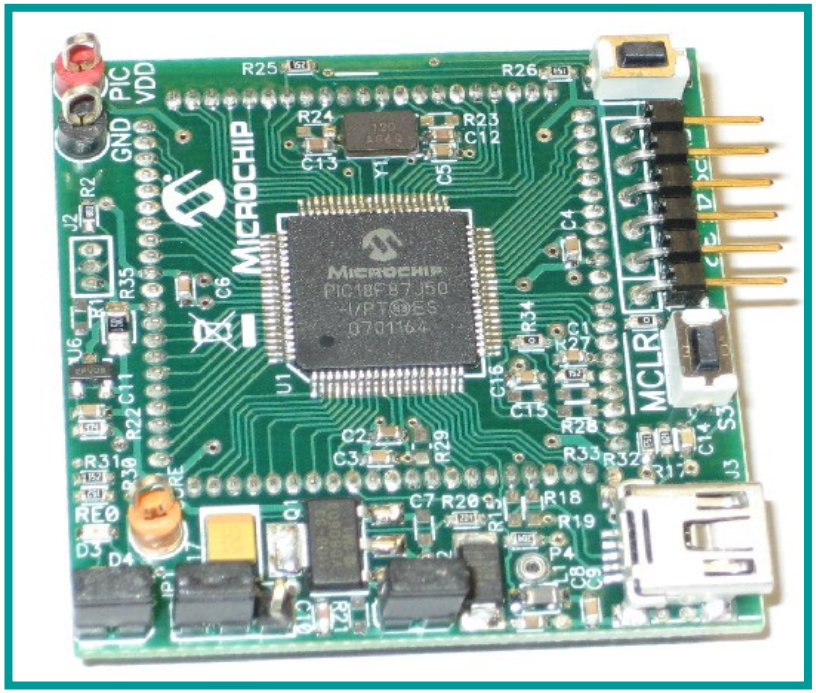


- Demo board for PIC18F4550
- Connection to MPLAB® ICD2
- 2 LEDs for status display
- Expansion connector compatible with PICtail™ daughter boards
- Temperature sensor TC77
- SPI connector/interface

DM163025

$59.99

PIC18F87J50 FS USB Plug-in Module

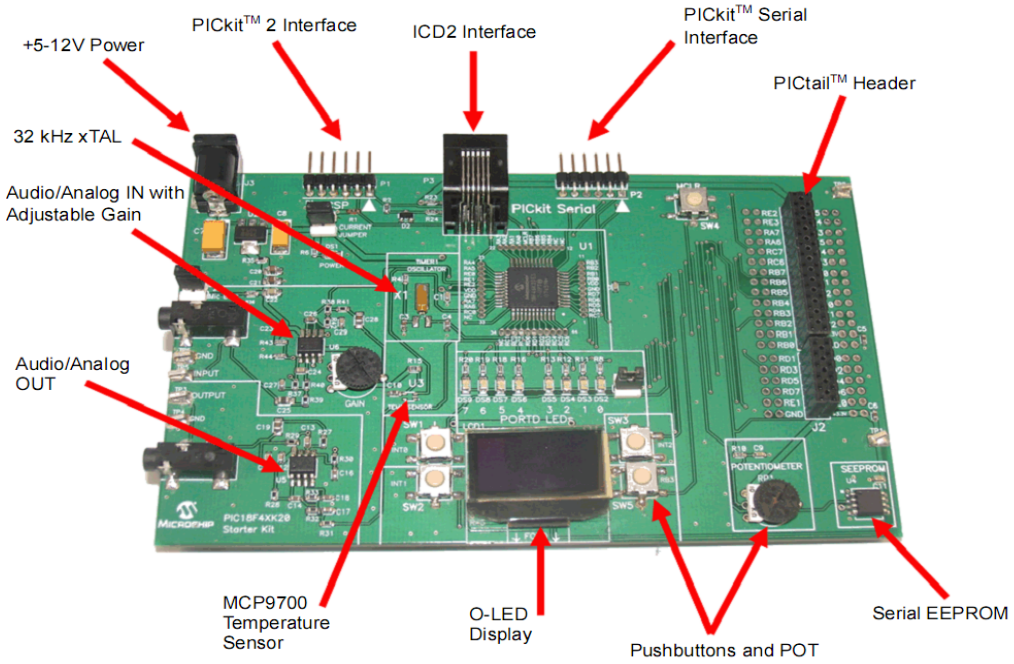


- Can be operated stand-alone or plugged in to the HPC explorer board
- In stand-alone operation, it is recommended to obtain the RJ-11 to ICSP™ adapter

MA180021

$45.00

PIC18FK20 Demo Board



- Demo board for PIC18FXXK20 Family
- Connection to
  - MPLAB® ICD2 and PICkit™ 2
- OLED Display
- Expansion connector for PICtail daughter boards
- MCP9700 Temp Sensor
- Audio Input and Output Circuits

DM164124

$99.98

16bit development Boards

16-bit Development Boards

Description	Part No.
MPLAB® Starter Kit for dsPIC™ DSCs	DM330001
MPLAB® Starter Kit for PIC24F	DM240011
Explorer 16 Development Board	**DM240001/2**
16-bit 28-pin Starter Board	DM300027
dsPICDEM™ MC1 Motor Control Development Board	**DM300020**
PICDEM™ MC LV Development Board (DSC)	**DM183021**
dsPICDEM SMPS Buck Development Board	**DM300023**
dsPICDEM 1.1 Plus General Purpose Development Board	**DM300024**
dsPICDEM 2 Development Board	**DM300018**
dsPICDEM.net™ 1 and dsPICDEM.net 2 Connectivity Development Boards	**DM30004-1/2**

MPLAB Starter Kit for dsPIC® DSC

Include

- **dsPIC33FJ256GP506 device on board**
  - Audio & Speech Demonstrations
    - Record, playback and capture of audio
- **MPLAB® w/In Circuit Debug.**
- **A USB connection between the board and the PC**

DM330001 $59.98

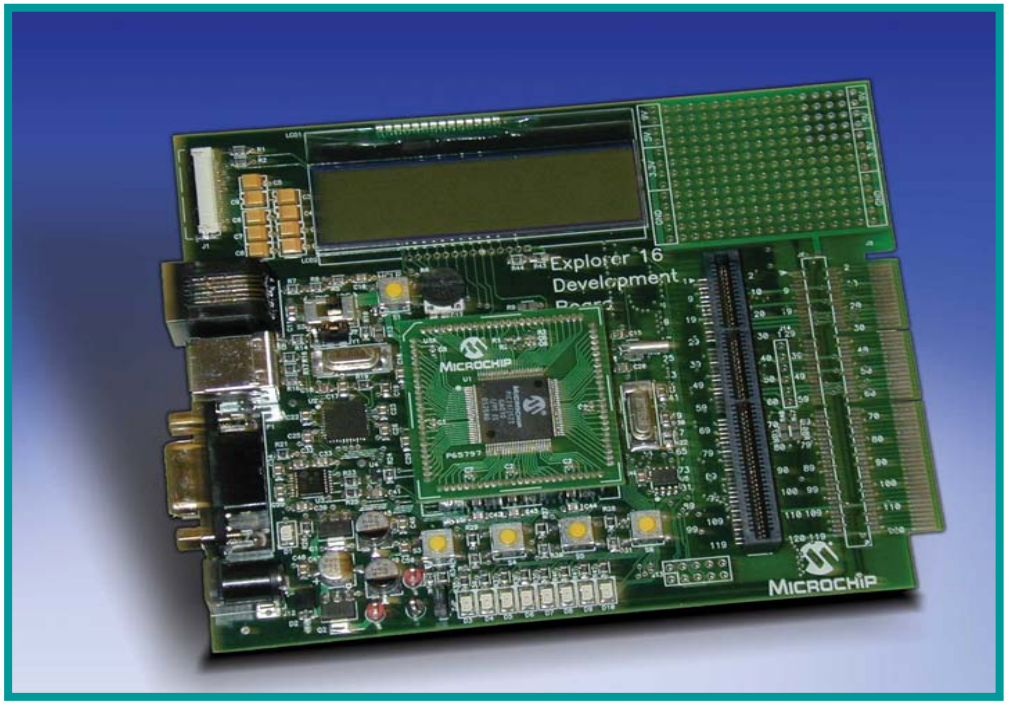
MPLAB® Starter Kit for PIC24F

DM240011

USD $59.98

- **USB device and host connectors, a tri-color LED, a capacitive touch pad and an OLED display**
- **Menu driven demonstration software supports data logging, thumb drive and graphics applications**

Explorer 16 Development Board



- **Supports all PIC24 and dsPIC33F Families**
- **MPLAB® ICD 2 and MPLAB REAL ICE™ Emulation Interface**
- **Alpha-numeric LCD**
- **PICtail™ Plus connector to allow easy system expansion**

DM240001 (100-pin)	$129.99
DM240002 (44-pin)	$129.99
DV164033 (100-pin + MPLAB ICD 2)	$299.99

16-Bit 28-pin Starter Board

- **Supports 28-pin PIC24 and dsPIC33F Families**
- **MPLAB® ICD 2 and MPLAB REAL ICE™ Emulation Interface**
- **Ideal Prototyping Tool**

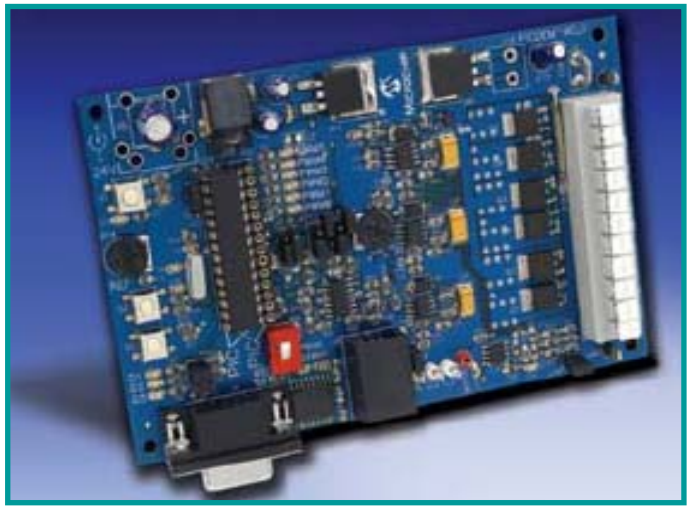
DM300027 (Board Only)	$79.99
DV164027 (Board + MPLAB ICD 2)	$239.98

dsPICDEM™ MC1 Motor Control Development Board

- **Quick prototyping of BLDC, ACIM, PMSM, SR and UPS applications**
- **Requires dsPICDEM MC1 and an optional power module**
  - The dsPICDEM™ MC1H 3-Phase High- Voltage Power Module (DM300021) supports AC line-powered applications
  - The dsPICDEM MC1L 3-Phase Low-Voltage Power Module (DM300022) supports DC-powered applications up to 48V
- **Flexible System for Motor Control Development**

DM300020 (Supports dsPIC30F6010)	**$300.00**
DM300021MC1H 3-Phase High Voltage Power Module	**$129.99**
DM300022 MC1L 3-Phase Low Voltage Power Module	**$700.00**
AC3000203-Phase BLDC Low Voltage Motor (24V)	**$120.00**
AC3000213-Phase ACIM High Voltage Motor (208/460V)	**$120.00**

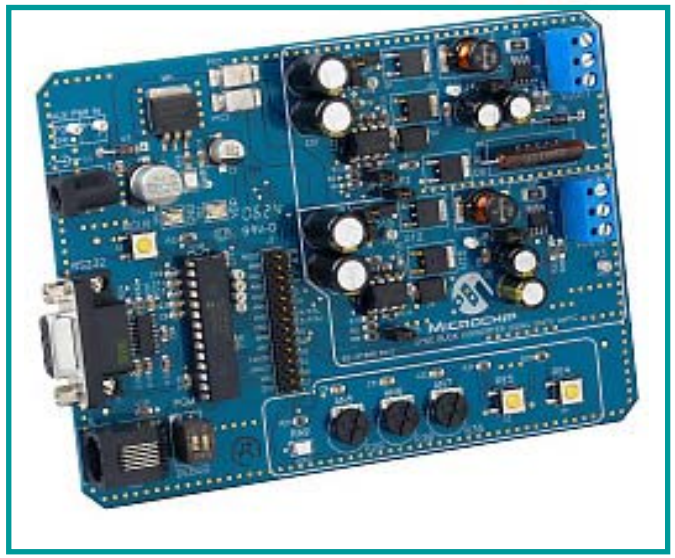
PICDEM™ MC LV Development Board (DSC)



- Cost-effective method for development of Sensored or Sensorless BLDC motor control applications
- A 28-pin, dsPIC30F3010 device on board
- Over-current protection and temperature sensor with I²C™ interface, 3-phase voltage source inverter bridge
- 9 LEDs, 3 for generic status indication and 6 for PWM indication; speed control potentiometer
- Test points for motor current and back EMF sensing
- Supports maximum motor ratings of 48V and 2.2A
- The board is capable of controlling motors rated up to 48V and 2.2 amps
- Comes with two pre-programmed, Flash-based devices for easy development
- Comes with a free Motor Control Graphical User Interface (MC-GUI)

DM183021	$129.99
AC002013 24V Power supply	$50.00
AC300020 Motor, 24V BLDC	$120.00

dsPICDEM™ SMPS Buck Development Board

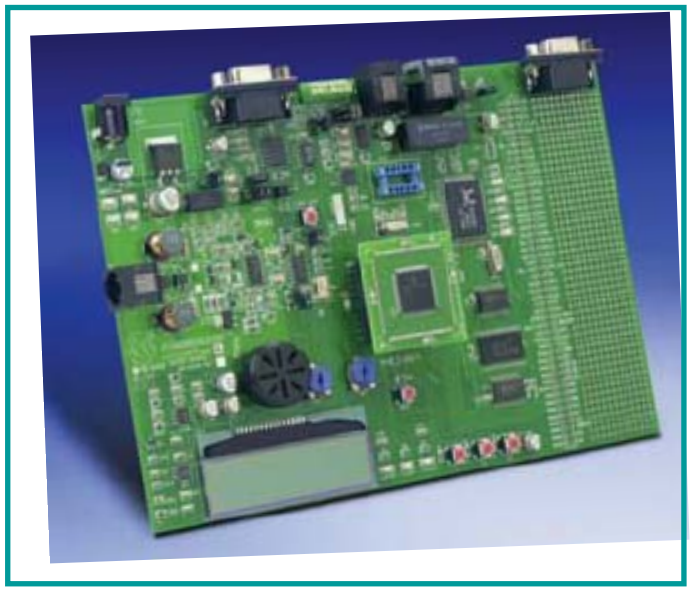


- An easy and economical way to evaluate the dsPIC30F202x/1010 SMPS & Digital Power Conversion family
- Prototyping platform to investigate digital power conversion and digital SMPS design
- Socketed dsPIC30F2020 on board
- Input voltage range 7V to 15V (nominal 9V)
- User can enable a dynamic output load to investigate transient response
- User potentiometers to simulate application features such as voltage trim, remote voltage sense, voltage tracking, current sharing, etc.
- Example software for implementing digital dual synchronous buck converter

DM300023

$149.99

dsPICDEM.net™ 1 and 2 Connectivity Development Boards



- **A basic platform for developing and evaluating both connectivity and non-connectivity based requirements**
  - dsPICDEM.net 1 supports FCC/JATE PSTN countries
  - dsPICDEM.net 2 supports CTR-21 PSTN countries
- **Support both the Public Switched Telephone Network (PSTN) and 10-Base T MAC/PHY interfaces**
- **Include ITU-T compliant V.22bis/V.22 modem demonstration code**
- **Includes a dsPIC30F6014 plug-in module**
- **UART and CAN, LEDs, switches, potentiometers and LCD display**
- **Full featured dsPICDEM.net board configuration and control demo**
- **CMX-MicroNet Web Server & CMX-MicroNet FTP Server**

DM300004-1/2 $389.99

Application Notes and Library Support

Application Notes / Library Support for PIC18 Microchip Devices

	Description	App. Note	PICtail™
Basic	Using the MSSP module to interface the SPI serial EEPROMS with PIC18 devices	AN1000	NA
	Implementing File I/O Functions Using Microchip's Memory Disk Drive File System	AN1045	NA
	Internal RC Oscillator Calibration	AN244	NA
	DTMF Detection Using PIC18 Microcontrollers	AN257	NA
	Speed Control of 3-Phase Induction Motor Using PIC18 Microcontrollers	AN843	NA
	Implementing a PID Controller Using a PIC18 MCU	AN937	NA
	Implementing a LIN Master/Slave Node Driver on a PIC18 MCU with USART	AN235/864	NA
Peripherals	USB mass storage device using a PIC® MCU	AN1003	AC164122
	PIC18C ECAN C Routines	AN878	NA
	Migrating Applications to USB from RS-232 with minimal impact on PC software	AN956	AC164122
	External Memory Interfacing Techniques for the PIC18F8XXX	AN869	NA
	TCP/IP	AN833/870	AC164121
	ZigBee™ stack	AN965	AC163027
	MiWi™ stack	AN1066	AC163027
	EEPROM emulation	AN1095	NA

Software and Application Notes General Purpose

	Description	SW/AN #	PIC24	dsPIC® DSC
Basic	MPLAB® C30 Math Libraries (FP, INT)	MPLAB C Compiler	✓	✓
	MPLAB C30 Fractional		✓	✓
	Peripherals		✓	✓
	DSP			✓
Memory	Memory Disk Drive (FAT 16)	AN1045	✓	✓
	SD/MMC Interface	AN1003	✓	
	FAT 32	CQ2 2008	✓	✓
	EEPROM Emulation	AN1095	✓	✓
	Serial Bootloader for PIC24F	AN1157	✓	
	Bootloader for dsPIC and PIC24H	AN1094	✓	✓
	Graphics Library	AN1136	✓	✓
Encrypt.	Triple DES/AES	AN1044	✓	✓
	Asymmetric Key Encryption (NTRU)	SW300055	✓	✓
	Symmetric Key Encryption (NTRU)	SW300050	✓	✓

Software and Application Notes Connectivity

	Description	SW/AN #	PIC24	dsPIC® DSC
USB – OTG	USB Embedded Host Stack	AN1140	✓	
	USB Embedded Host Stack Programmers Guide	AN1141	✓	
	USB Mass Storage Class on an Embedded Host	AN1142	✓	
	Using a USB Flash Drive on an Embedded Host	AN1145	✓	
	USB Mass Storage on an Embedded Device	AN1163	✓	
	USB CDC Class on an Embedded Device	AN1164	✓	
	USB Generic Function on an Embedded Device	AN1166	✓	
	USB HID Class on an Embedded Device	AN1169	✓	
Wireless	IrDA® Protocol Stack	AN1071	✓	✓
	MiWi™ Wireless Stack	AN1066	✓	✓
	ZigBee™ Wireless Stack	AN965	✓	✓
Wired	TCP/IP Stack	AN833/AN870	✓	✓
	Soft Modem	SW300003		✓

Software and Application Notes Speech and Audio

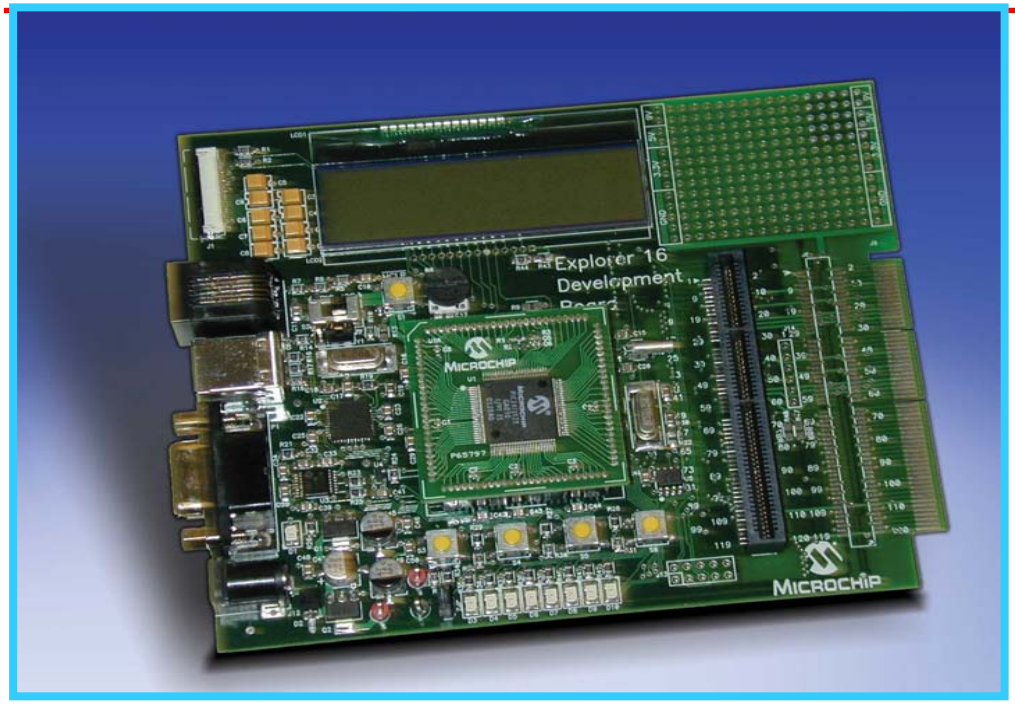
	Description	SW/AN #	PIC24	dsPIC® DSC
Speech	IMA ADPCM Speech Coding/Decoding	AN643	✓	✓
	G.711 Speech Coding/Decoding	SW300026	✓	✓
	Speech Recognition	SW300010		✓
	SPEEX 8 KHz Speech Coding/Decoding	SW300070		✓
	SPEEX 16 KHz Speech Coding/Decoding			✓
	G.726A Speech Coding/Decoding	SW300090		✓
Audio	Noise Suppression	SW300040		✓
	Acoustic Echo Cancellation (AEC)	SW300060		✓
	Line Echo Cancellation (LEC)	SW300080		✓

Software and Application Notes Motor Control

	Description	SW/AN #	dsPIC® DSC
Motor Control	Sensorless Control of a BLDC Motor	AN901	✓
	Vector Control of an ACIM	AN908	✓
	Sensored Control of a BLDC Motor	AN957	✓
	Introduction to ACIM Control	AN984	✓
	Sensorless Control of a BLDC Motor	AN992	✓
	Sinusoidal Control of a PSM Motor	AN1017	✓
	Implementing Power Factor Correction	AN1106	✓
	Sensorless BLDC Control with Back-EMF Filtering	AN1160	✓
	Sensorless FOC of an ACIM	AN1162	✓
	Dual Shunt Sensorless FOC of a PMSM	AN1078	✓
	Sensorless Control of of a BLDC with BEMF	AN1083	✓
	PFC + Dual Shunt Sensorless FOC for a PMSM	ANXXXX	CQ2
	Single Shunt Sensorless FOC of a PMSM	ANXXXX	CQ2
	Field Weakening Sensorless FOC for an ACIM	ANXXXX	CQ2

Explorer 16
+
PicTail Boards

Explorer 16 Development Board

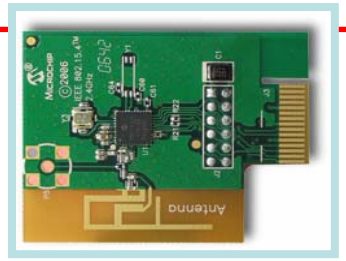


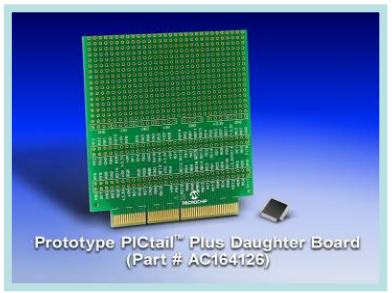
- **Supports all PIC24 and dsPIC33F Families**
- **MPLAB® ICD 2 and MPLAB REAL ICE™ Emulation Interface**
- **Alpha-numeric LCD**
- **PICtail™ Plus connector to allow easy system expansion**

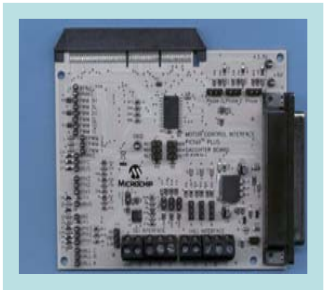
DM240001 (100-pin)	$129.99
DM240002 (44-pin)	$129.99
DV164033 (100-pin + MPLAB ICD 2)	$299.99

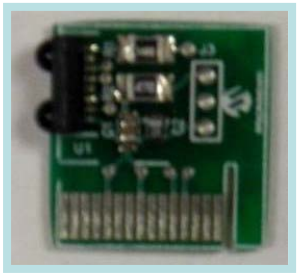
PICtail™ Plus Ease System Evaluation

Description	Part No.
Wireless PICtail Plus	AC163027-4
SD/MMC Interface	AC164122
Ethernet TCP/IP	AC164123
IrDA® Standard	AC164124
Speech Playback	AC164125
Prototyping	AC164126
Graphic PICtail Plus	AC164127
Motor Control PICtail Plus	AC164128
ECAN/LIN PICtail Plus	AC164130
USB PICtail Plus	AC164131









Wireless PICtail™ Plus Board Part Number AC163027-4

MICROCHIP **AN965**

Microchip Stack for the ZigBee™ Protocol

Microchip provides two free Wireless Networking Protocol Stacks. The ZigBee™ Protocol Stack can be used for applications requiring inter-operability with other manufacturers. The MiWi™ Wireless Stack is a Microchip proprietary stack enabling low cost controllers for wireless networks. Both stacks are free when used with Microchip MCUs.

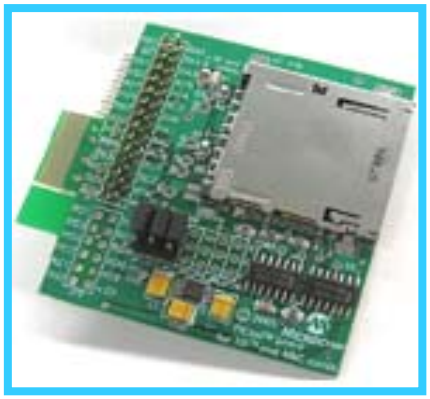
MICROCHIP **AN1066**

MiWi™ Wireless Networking Protocol Stack

SD PICtail™ Plus Daughter Board Part Number AC164122

MICROCHIP **AN1045**

Implementing File I/O Functions Using Microchip's Memory Disk Drive File System Library



AN1045 Implementing File I/O Functions Using Microchip's Memory Disk Drive File System Library and AN1003 USB Mass Storage Device. Using a PIC® MCU provides both the software and hardware support needed to integrate removable memory drives into your system. Removable Flash-based memory like SD, CF Cards and USB
Thumb Drives can provide cost-effective storage for large files.

MICROCHIP **AN1003**

USB Mass Storage Device Using a PIC® MCU

Author: *Gurinder Singh*
Microchip Technology Inc.

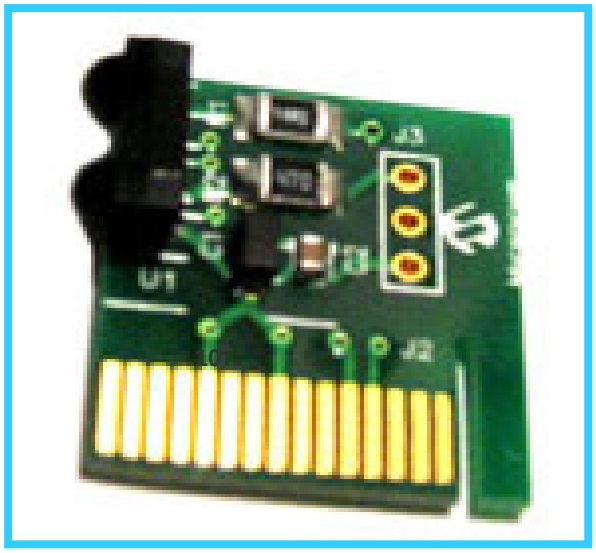
- Files created using FAT16, FAT32 or NTFS file format supported (see "References").
- SD and MMC cards supported (see "References").

Ethernet PICtail™ Plus Board Part Number AC164123

Ethernet Design Center

Microchip's Ethernet Design Center provides a central location for the hardware, software and support material regarding Microchip's Ethernet solutions. An integral part of the Ethernet solution is Microchip's *free* TCP/IP software stack optimized for the PIC18, PIC24 MCU and dsPIC® DSC families. The stack is modular in design and is written in the 'C' programming language. Effective implementations can be accomplished in approximately 20 – 120 KB of code.

IrDA® PICtail™ Plus Board Part Number AC164124



MICROCHIP **AN1071**

IrDA® Standard Stack for Microchip 16-Bit Microcontrollers

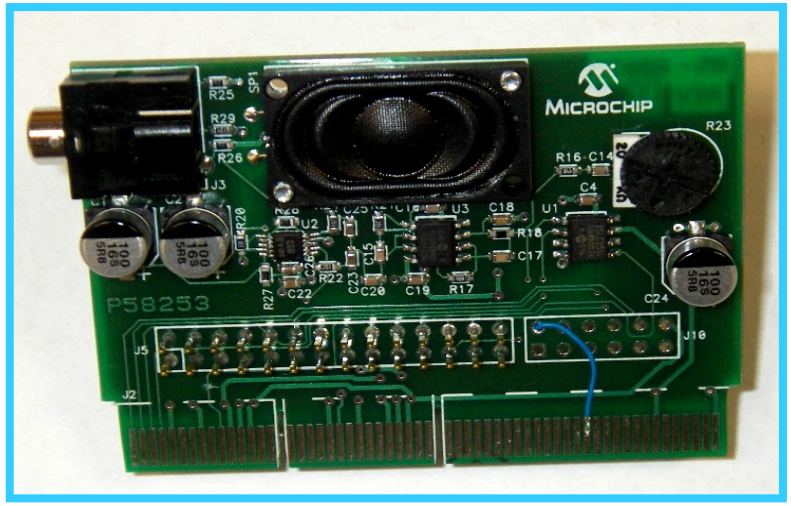
The IrDA stack is available for free download from the App Notes and Source Code link under Design on the Home page – then check under Infrared Devices.

The IrDA PICtail™ Plus Daughter Board is designed to operate in conjunction with Microchip's Explorer 16 or other development boards with a PICtail Plus connector and AN1071 IrDA Standard Stack for Microchip 16-bit devices to create an IrDA-enabled development and evaluation platform. The IrDA Stack is written to operate with the IrDA-enabled UARTs on the 16-bit PIC24 MCUs and dsPIC33 DSCs.

Speech PICtail™ Plus Board Part Number AC164125

MICROCHIP **AN643**

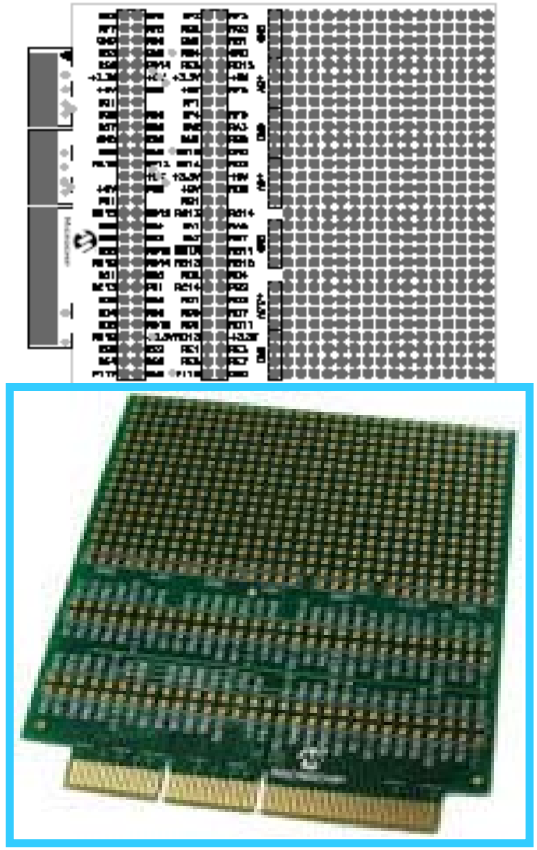
Adaptive Differential Pulse Code Modulation Using PIC® Microcontrollers



In the past, adding speech recording and playback capability to a product meant using a digital signal processor or specialized audio chip. Using a simplified Adaptive Differential Pulse Code Modulation (ADPCM) algorithm, these audio capabilities can be added to any PIC® MCU or dsPIC® digital signal controller. This application note covers the ADPCM compression and decompression algorithms.

PICtail™ Plus Prototype Board AC164126

- 8 mm x 8 mm breadboard
- Card-edge connector
- Compatible with the PICtail Plus connector on Explorer 16 development board
- Contains 3 blank boards



Graphics PICtail™ Plus AC164127

MICROCHIP

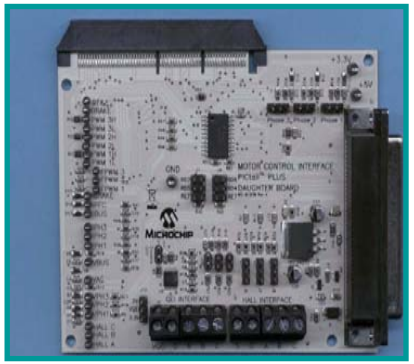
AN1136

How to Use Widgets in Microchip Graphics Library

The Graphics PICtail Plus is the hardware support platform for Microchip's Free Graphic Library. AN1136 explains the use of the Graphics Library, which can be found at www.microchip.com/graphics. The graphics library provides a designer with the software required to develop a GUI, drive a QVGA Display and read a touch screen display.

PICtail™ Plus Motor Control Part Number AC164128

Motor Control Design Center



Microchip's Motor Control Design Center provides a central location for the hardware, software and support material regarding Microchip's Motor Control solutions. This site provides valuable resources required to complete your motor control design including: Applications By Motor Type & Technical Documentation.

Application Notes form an integral part of this site and one such app note is shown here.

MICROCHIP **AN1078**

Sensorless Field Oriented Control of PMSM Motors

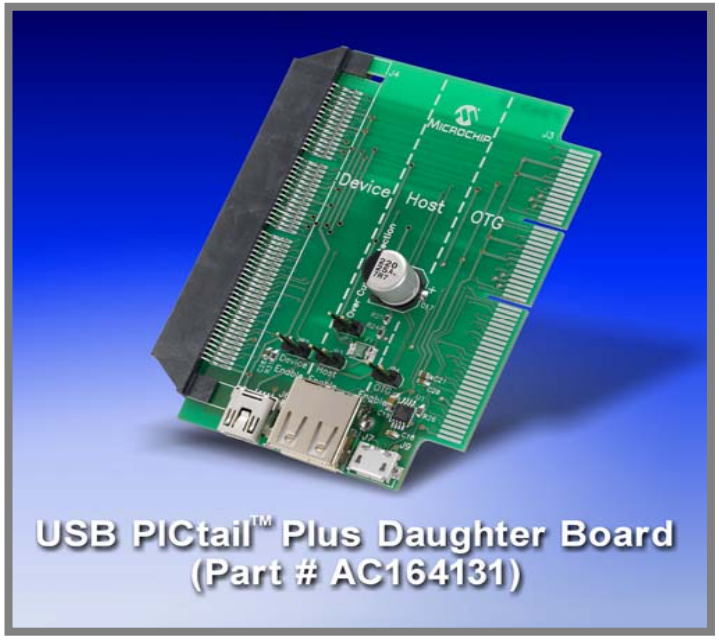
AN1078 illustrates the Software-based-Implementation of Sensorless, field oriented control of PMSM MOTORS using Microchip's digital signal controllers.

This PICtail Plus Motor Control Daughter Card interfaces with Explorer 16 (DM240001) and the HV/LV Power Module (DM300021 and DM300022). It has a variety of test points that will make debugging of your application easier. It also has hardware support for sensor and sensor-less applications such as Hall sensors, optical encoder, back EMF and current sensing.

USB PICtail™ Plus AC164131

USB Design Center

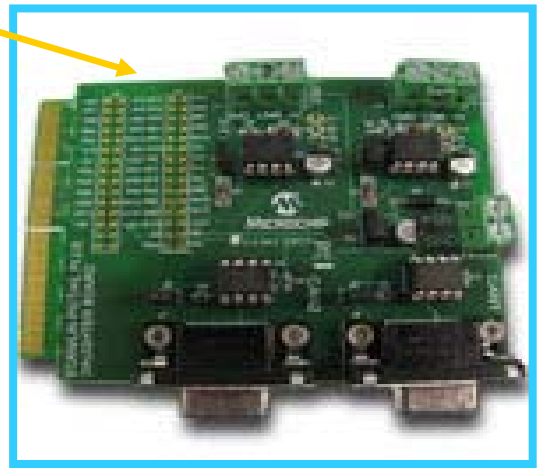
www.microchip.com/usb



The USB PICtail Plus Daughter Board provides a platform for USB embedded host, peripheral and OTG for all Microchip controllers with the USB OTG peripheral. Supporting the USB products is a USB Design Center that includes more than 10 application notes. Most of the application notes include free source code. Class driver support is currently available for HID and MSD classes.

ECAN/LIN PICtail Plus Daughter Board- AC164130

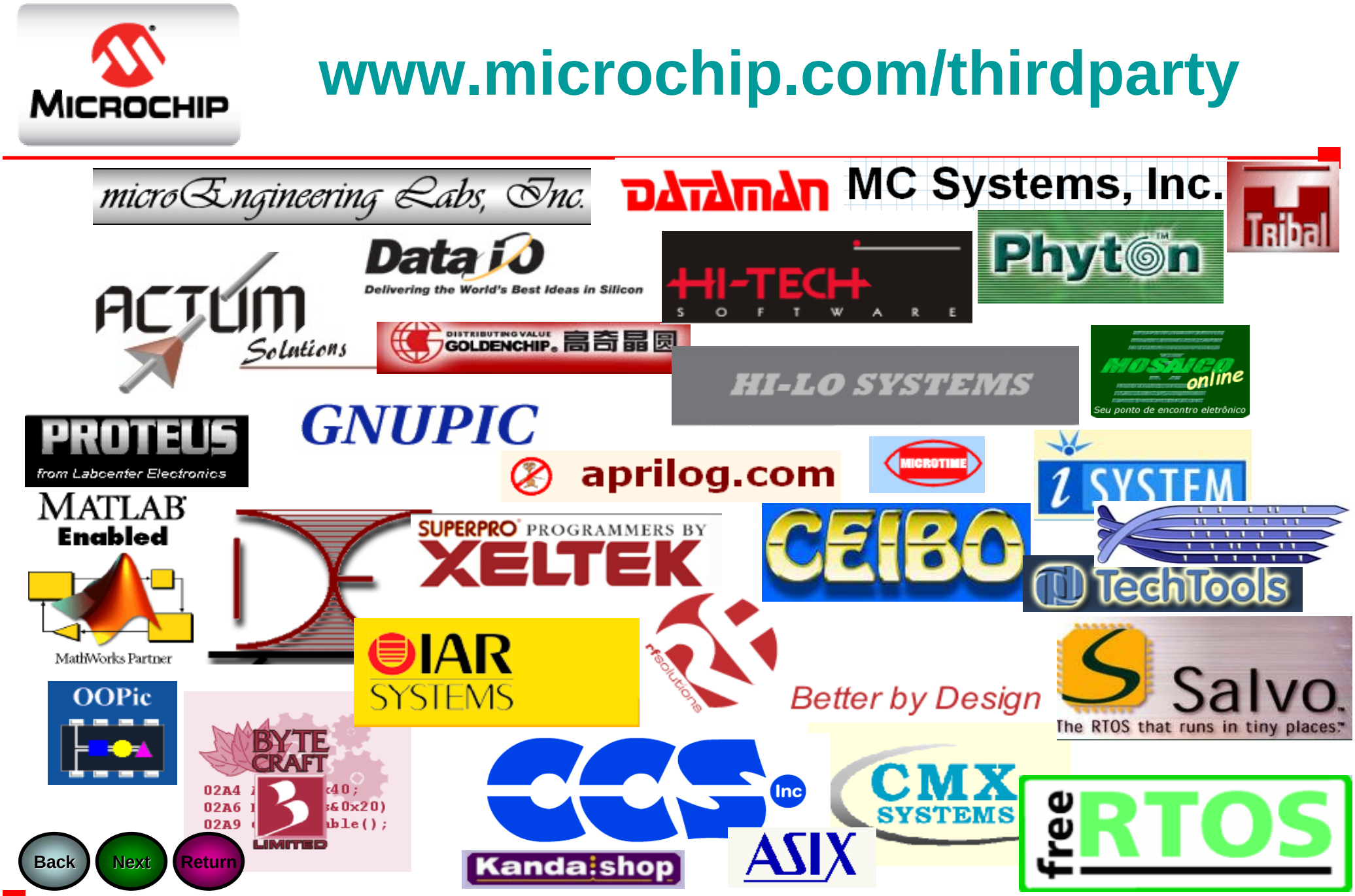
- Supports 2 CAN & 2 LIN channels
- Connector to Explorer 16 Development Board
- Automotive, Industrial & Control Applications



The ECAN/LIN PICtail™ Plus Daughter Board is used with the Explorer 16 Development. Board to facilitate rapid implementation and evaluation of applications that use Controller Area Network (CAN) and Local Interconnect Network (LIN) interfaces and are implemented on dsPIC33F Digital Signal Controllers and PIC24H 16-bit microcontrollers

3rd Party Tools & Software

www.microchip.com/thirdparty



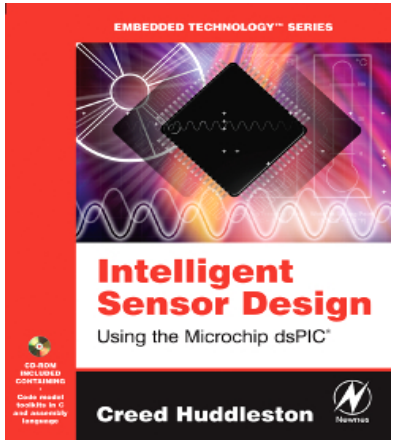
PIC24 MCU/dsPIC® DSC 3rd Party Software Tools

IDE	Compiler	
IAR Embedded Workbench	C/EC++	PIC18 PIC24 dsPIC® DSC
High-tide	C v9.60	PIC18 PIC24 dsPIC DSC PIC32
C Windows IDE	C	PIC18 PIC24 dsPIC DSC PIC32

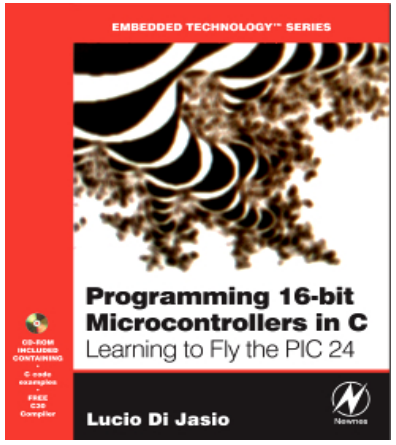
Third Party 16-bit Libraries and RTOS Support

	Library/Tool Name	PIC18	dsPIC33F	PIC24H	PIC24F
RTOS	CMX-Tiny+™		✓	✓	✓
	CMX-RTX™		✓	✓	✓
	CMX-Scheduler™		✓	✓	✓
	Micrium - µCOS II		✓	✓	✓
	freeRTOS™	✓	✓	✓	✓
	Segger – embOS		✓	✓	✓
	Express Logic – ThreadX®		✓	✓	✓
	AVIX-RT		✓	✓	✓
Graph.Connectivity	TCP/IP (CMX)		✓	✓	✓
	CANbedded (Vector-Informatik)	✓	✓	✓	
	OsCAN (Vector-Informatik)	✓	✓	✓	
	CAN (Vector)	✓	✓	✓	
	Segger – emWIN		✓	✓	✓
	RamTeX – GUI Lib		✓	✓	✓

PIC24-related Books



- by Creed Huddleston
- www.newnespress.com
- $59.95



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