THE MICROCHIP PICmicro™ MCU ADVANTAGE

OTP   *Enhanced* **EEPROM**   **ROM**
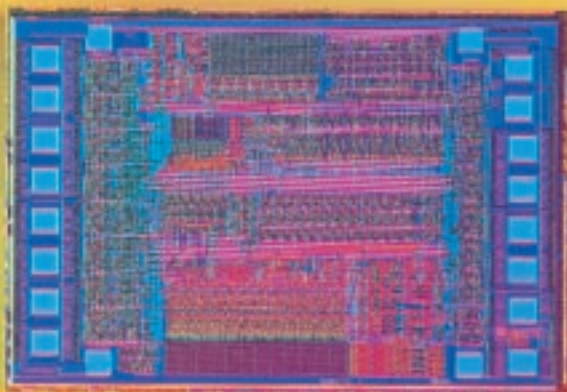
FLASH

MICROCHIP

MICROCHIP DELIVERS IT.

PICmicro™ – the world's most popular 8-bit RISC microcontrollers (MCU) – are available in OTP, EEPROM, *Enhanced* FLASH and ROM memory configurations to offer you the only complete 8-bit RISC MCU solution on the market today.

Our 8-bit RISC MCU architecture has become a worldwide standard, with half-a-billion PICmicro devices and 100,000 development systems shipped since 1990. The Company launched more than 58 new PICmicro OTP, EEPROM, FLASH and ROM products to market in the last two years alone. And Microchip's product breadth continues to expand with 44 new RISC-based MCUs on the way.

Only Microchip PICmicro's provide superior performance, a seamless migration path between product families, multiple memory technologies within the same pinout and feature set, and comprehensive development tools that easily allow simple product enhancements or modifications. All this to help you build a solid design foundation, now and in the future.

UNDER PRESSURE?

Only Microchip provides complete embedded control solutions that combine time-to-market advantages with high performance and increased functionality. With Microchip as your partner, you can be assured of having reliable products, technology and support to meet your design and application challenges.

Delivery In Weeks, Not Months. The advantages begin with quick delivery – Microchip and its worldwide network of distributors deliver the products you need, when you want them.

Reduced Time to Revenue. Our global network of experienced field application engineers and technical support personnel helps streamline the design process so your products spend less time in development and more time generating revenue.

Maximized Profit. Microchip PICmicro's, available off-the-shelf, provide the flexibility you need to reduce the total cost of designing.
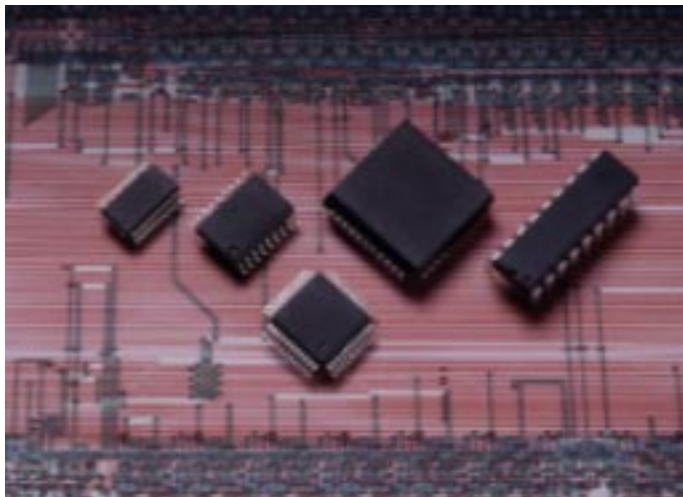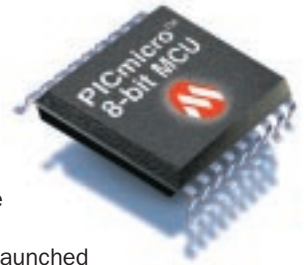
Microchip's 8-bit RISC MCU architecture has become a worldwide standard, with half -a-billion PICmicro MCU devices shipped since 1990.
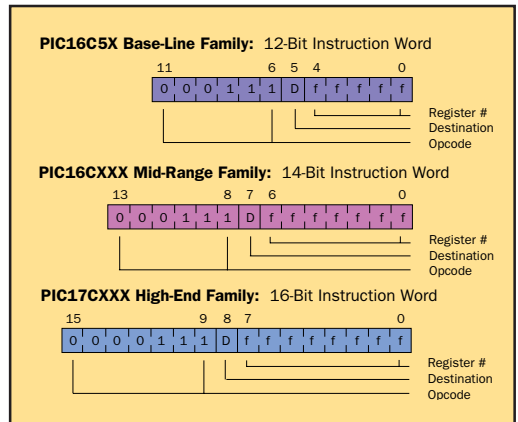
A MODERN RISC ARCHITECTURE YOU CAN BUILD ON

Short lead times, flexible OTP technology and a high-performance RISC architecture which outperforms CISC-based competitors provide key design advantages for your embedded system applications. All PICmicro MCUs employ a modified RISC architecture and powerful instruction set that dramatically reduce development cycle time and costs. By combining RISC features with a modified Harvard dual-bus architecture, Microchip's fast and flexible 8 MIPS PICmicro core is the most popular architecture for new MCU designs. Seamless migration between product families and a simple instruction set make PICmicro MCUs the logical choice for designs requiring flexibility and performance.

Advantages

- 12-, 14- and 16-bit wide instructions are upward compatible and tailored to maximize processing efficiency and boost performance.
- Instructions and data are transferred on separate buses, avoiding processing bottlenecks.
- Two-stage pipelining enables one instruction to be executed while the next instruction is fetched.
- Single wide-word instructions increase software code efficiency and reduce required program memory.
- With few and simpler instructions, programming and debugging tasks are easy and fast to learn and perform.
- Upward device compatibility allows customers to retain capital investment in code development and development tool resources.

PICmicro MCU FAMILY INSTRUCTION ARCHITECTURE

PIC16C5X Base-Line Family: 12-Bit Instruction Word

11				6	5	4				0
0	0	0	1	1	1	D	f	f	f	f	f

Register #
Destination
Opcode

PIC16CXXX Mid-Range Family: 14-Bit Instruction Word

13				8	7	6					0
0	0	0	1	1	1	D	f	f	f	f	f	f

Register #
Destination
Opcode

PIC17CXXX High-End Family: 16-Bit Instruction Word

15				9	8	7						0
0	0	0	0	1	1	1	D	f	f	f	f	f	f	f	f

Register #
Destination
Opcode

FEATURE-RICH ON-CHIP PERIPHERAL SET

Want options? We've got them. The PICmicro MCU family offers a wide range of products with broad on-chip peripheral features including:

- **Communications Peripherals.** Allowing embedded systems to interface with any protocol standard in the industry.
- **Display Peripherals.** To help system engineers simplify user interfaces in complex system applications.
- **Timing Peripherals.** Allowing for precision control designs, simplified interrupt handling and reduced software development time.
- **Analog Peripherals.** To provide real-world interfaces, allow for temperature and voltage compensation and improve noise rejection.

FLEXIBLE PROGRAMMING OPTIONS

As the world's leading supplier of field-programmable MCUs, Microchip has made many innovative programming options available for the embedded systems manufacturer. These programming options give the broadest range of flexibility to meet the unique requirements
of your specific design – at all stages of product development, prototyping and production.

- **One-Time-Programmable (OTP).** PICmicro OTP MCUs are manufactured in high volumes without customer specific software and can be shipped immediately for custom programming. This is useful for customers who need rapid time to market and the flexibility for frequent software updates.

- **Quick Turn Programming (QTP).** Microchip offers a QTP programming service for factory production orders. This service is for users who choose not to program a medium to high quantity of units themselves and whose code patterns have stabilized.

- **Serialized Quick Turn Programming (SQTPˢᴹ).** SQTP is a unique, flexible programming option that allows Microchip to program serialized, random or pseudo-random numbers into each device. Serial programming allows each device to have a unique number which can serve as an entry-code, password or ID number.

- **In-Circuit Serial Programming (ICSP™).** Microchip supports several methods of ICSP on its PICmicro MCUs. ICSP allows you to better respond to changing market conditions by leaving the MCU program memory blank until just prior to system shipment. The devices can then be programmed in-circuit during or after final assembly. Additionally, Microchip's *Enhanced* FLASH MCUs – with high-endurance program memory – allow in-circuit erase and reprogramming to maximize software update flexibility.

- **Electrically Reprogrammable.** Microchip offers *Enhanced* FLASH MCUs which allow unlimited erase and reprogramming of the MCU program memory. This feature can be very useful for more complex systems with longer product lives.

- **Masked ROM.** Microchip offers Masked ROM versions of many of its most popular MCUs, giving customers the lowest cost option for high volume products with stable firmware.

COMPLETE DEVELOPMENT SUPPORT

Microchip is committed to providing useful and innovative solutions for embedded system designs. The Company has the industry's most comprehensive set of development tools which allow system engineers to quickly prototype, make code changes and get designs out the door faster than ever before. In addition, more than 125 third party suppliers provide application development systems and tools to support the popular PICmicro architecture.

THE COMPLETE PRODUCT SOLUTION

For most manufacturers, getting the product to market quickly has become the number one goal as global markets have become more competitive. Time-to-market challenges put pressure on all functions within the manufacturing process: Development, Procurement, Manufacturing and Marketing/Sales.

The PICmicro MCU "Complete Product Solution" addresses the differing needs of all four functions. The availability of several different memory technologies provide an optimal solution for each function during all stages of a product's production life. The Complete Product Solution consists of powerful architecture, flexible memory technologies, comprehensive easy-to-use development tools, complete technical documentation, and post design-in support through a worldwide sales and distribution network.

THE COMPLETE PRODUCT SOLUTION ADVANTAGES

	FEATURE	BENEFIT
DEVELOPMENT	Flexible Memory Technology	Multiple memory configurations make it easy to choose the right memory technology to match market dynamics and product life cycles.
	Off-the-Shelf Product Availability	Programmable devices, development tools and technical support are available *NOW*.
	Comprehensive Development Tools	Allows faster, more efficient development across the entire PICmicro MCU Family.
PROCUREMENT	Flexible Memory Technology	Maximizes profitability through varying price ranges and minimizes downtime through availability of distributor stock.
	Off-the-Shelf Product Availability	Allows for consistent delivery of short-lead time products.
	Broad Product Portfolio	Offers a wide-range of devices from 8- to 68-pins throughout three compatible core architectures and modern peripheral sets.
MANUFACTURING	Flexible Memory Technology	Allows In-Circuit Programming (ICP) to personalize a system at end of line. This allows minimal scrap by building only what the end customer needs.
	Off-the-Shelf Product Availability	Provides short leadtime to meet unforecasted upsides and minimize equipment downtime.
	World-Class Quality	Results in low/zero re-work and field related issues.
MARKETING/SALES	Flexible Memory Technology	Offers customized solutions with short reaction time.
	Off-the-Shelf Product Availability	Allows quicker response to opportunities with existing or new customers.
	Ongoing Product Enhancement	Offers a seamless migration path between PICmicro families, multiple memory technologies within the same pinout and feature set which lead to reduced component costs.

THE SOLUTION YOU NEED

Microchip Technology Inc. is the worldwide leader in low-cost, high-performance embedded control technology. The combination of 8-bit RISC MCUs, advanced OTP, EEPROM, FLASH and ROM memory technologies and the industry's most comprehensive set of development tools provide the basis for Microchip's MCU leadership.

The high level of integration offered by PICmicro MCUs can reduce external component count and development costs, enhance system reliability, reduce electromagnetic interference, minimize power consumption and quicken time to market.

In addition, the Microchip global network of experienced field application engineers and technical support personnel provides technical product and system assistance to further streamline design, prototype and production activities. PICmicro MCUs offer upward compatible instruction sets, a broad variety of peripherals and a wide range of packaging styles and voltage ranges – all to meet today's demanding embedded system requirements.

Visit our Web Site at www.microchip.com or call your nearest Microchip sales representative now to find out more.

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