

## 18/20 Pin, 8-Bit CMOS FLASH Microcontroller with Comparators and A/D Product Brief

### High Performance RISC CPU:

- Only 35 single word instructions to learn
- All single-cycle instructions, except for program branches which are two-cycle
- Operating speed:
  - DC - 20 MHz clock input
  - DC - 200 ns instruction cycle
- Up to 2K x 14 FLASH program memory
- 128 x 8 general purpose registers (SRAM)
- 64 x 8 on-chip EEPROM data memory
- Eight levels deep hardware stack
- Interrupt capability
- Direct, Indirect and Relative Addressing modes

### Peripheral Features:

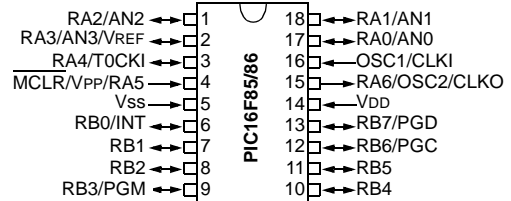
- High current sink/source (25 mA/25 mA)
- Timer0 module: 8-bit timer/counter with 8-bit prescaler
- Four channel, 8-bit Analog-to-Digital Converter (ADC) module
- Two analog comparators with:
  - Programmable on-chip voltage reference
  - Programmable input multiplexing from device inputs and internal voltage reference
  - Comparator outputs are externally accessible

### Special Microcontroller Features:

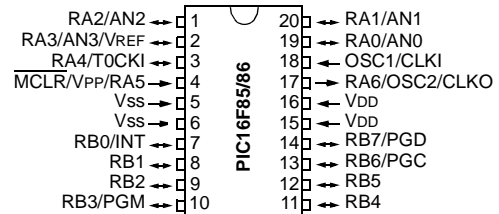
- Power-on Reset (POR), Power-up Timer (PWRT) and Oscillator Start-up Timer (OST)
- Watchdog Timer (WDT) with its own on-chip RC oscillator for reliable operation
- Power saving SLEEP mode
- Selectable oscillator options
- Serial In-Circuit Programming (ICSP™) via two pins
- Only single 5V supply required for programming
- Processor read/write access to program memory
- Brown-out Reset circuitry
- In-Circuit Debug (ICD) via two pins

### Pin Diagrams:

#### 18-Pin DIP, SOIC



#### 20-Pin SSOP



- 1000 erase/write cycle Enhanced FLASH program memory
- 100,000 erase/write cycle data EEPROM memory
- Data EEPROM retention greater than 40 years

### CMOS Technology:

- Low power, high speed CMOS FLASH technology
- Fully static design
- Wide operating voltage range (2.0V to 5.5V)
- Industrial and automotive temperature
- Low power consumption

### Packages:

- 18-pin plastic DIP (300 mil)
- 18-pin plastic SOIC
- 20-pin plastic SSOP

Device	Program Memory		Data SRAM (Bytes)	Data EEPROM	I/O	Timers	Anl Comp	A/D	BOR
	Bytes	# of Single Word Instructions							
PIC16F85	1792	1024	128 x 8	64 x 8	15	1; 8-bit	2	4 ch; 8-bit	Yes
PIC16F86	3584	2048	128 x 8	64 x 8	15	1; 8-bit	2	4 ch; 8-bit	Yes

# PIC16F85/86

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NOTES:

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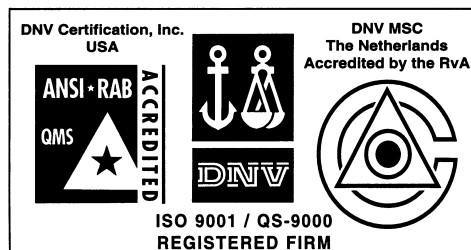
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Microchip received QS-9000 quality system certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona in July 1999. The Company's quality system processes and procedures are QS-9000 compliant for its PICmicro® 8-bit MCUs, KEELOQ® code hopping devices, Serial EEPROMs and microperipheral products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001 certified.



## WORLDWIDE SALES AND SERVICE

### AMERICAS

#### Corporate Office

2355 West Chandler Blvd.  
Chandler, AZ 85224-6199  
Tel: 480-792-7200 Fax: 480-792-7277  
Technical Support: 480-792-7627  
Web Address: <http://www.microchip.com>

#### Rocky Mountain

2355 West Chandler Blvd.  
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#### Dayton

Two Prestige Place, Suite 130  
Miamisburg, OH 45342  
Tel: 937-291-1654 Fax: 937-291-9175

#### Detroit

Tri-Atria Office Building  
32255 Northwestern Highway, Suite 190  
Farmington Hills, MI 48334  
Tel: 248-538-2250 Fax: 248-538-2260

#### Los Angeles

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Irvine, CA 92612  
Tel: 949-263-1888 Fax: 949-263-1338

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Analog Product Sales  
1300 Terra Bella Avenue  
Mountain View, CA 94043-1836  
Tel: 650-968-9241 Fax: 650-967-1590

#### New York

150 Motor Parkway, Suite 202  
Hauppauge, NY 11788  
Tel: 631-273-5305 Fax: 631-273-5335

#### San Jose

Microchip Technology Inc.  
2107 North First Street, Suite 590  
San Jose, CA 95131  
Tel: 408-436-7950 Fax: 408-436-7955

#### Toronto

6285 Northam Drive, Suite 108  
Mississauga, Ontario L4V 1X5, Canada  
Tel: 905-673-0699 Fax: 905-673-6509

### ASIA/PACIFIC

#### China - Beijing

Microchip Technology Beijing Office  
Unit 915  
New China Hong Kong Manhattan Bldg.  
No. 6 Chaoyangmen Beidajie  
Beijing, 100027, No. China  
Tel: 86-10-85282100 Fax: 86-10-85282104

#### China - Shanghai

Microchip Technology Shanghai Office  
Room 701, Bldg. B  
Far East International Plaza  
No. 317 Xian Xia Road  
Shanghai, 200051  
Tel: 86-21-6275-5700 Fax: 86-21-6275-5060

#### Hong Kong

Microchip Asia Pacific  
RM 2101, Tower 2, Metroplaza  
223 Hing Fong Road  
Kwai Fong, N.T., Hong Kong  
Tel: 852-2401-1200 Fax: 852-2401-3431

#### India

Microchip Technology Inc.  
India Liaison Office  
Divyasree Chambers  
1 Floor, Wing A (A3/A4)  
No. 11, O'Shaughnessey Road  
Bangalore, 560 025, India  
Tel: 91-80-2290061 Fax: 91-80-2290062

#### Japan

Microchip Technology Intl. Inc.  
Benex S-1 6F  
3-18-20, Shinyokohama  
Kohoku-Ku, Yokohama-shi  
Kanagawa, 222-0033, Japan  
Tel: 81-45-471-6166 Fax: 81-45-471-6122

#### Korea

Microchip Technology Korea  
168-1, Youngbo Bldg. 3 Floor  
Samsung-Dong, Kangnam-Ku  
Seoul, Korea  
Tel: 82-2-554-7200 Fax: 82-2-558-5934

### ASIA/PACIFIC (continued)

#### Singapore

Microchip Technology Singapore Pte Ltd.  
200 Middle Road  
#07-02 Prime Centre  
Singapore, 188980  
Tel: 65-334-8870 Fax: 65-334-8850

#### Taiwan

Microchip Technology Taiwan  
11F-3, No. 207  
Tung Hua North Road  
Taipei, 105, Taiwan  
Tel: 886-2-2717-7175 Fax: 886-2-2545-0139

### EUROPE

#### Australia

Microchip Technology Australia Pty Ltd  
Suite 22, 41 Rawson Street  
Epping 2121, NSW  
Australia  
Tel: 61-2-9868-6733 Fax: 61-2-9868-6755

#### Denmark

Microchip Technology Denmark ApS  
Regus Business Centre  
Lautrup høj 1-3  
Ballerup DK-2750 Denmark  
Tel: 45 4420 9895 Fax: 45 4420 9910

#### France

Arizona Microchip Technology SARL  
Parc d'Activite du Moulin de Massy  
43 Rue du Saule Trapu  
Batiment A - 1er Etage  
91300 Massy, France  
Tel: 33-1-69-53-63-20 Fax: 33-1-69-30-90-79

#### Germany

Arizona Microchip Technology GmbH  
Gustav-Heinemann Ring 125  
D-81739 Munich, Germany  
Tel: 49-89-627-144 0 Fax: 49-89-627-144-44

#### Germany

Analog Product Sales  
Lochhamer Strasse 13  
D-82152 Martinsried, Germany  
Tel: 49-89-895650-0 Fax: 49-89-895650-22


#### Italy

Arizona Microchip Technology SRL  
Centro Direzionale Colleoni  
Palazzo Taurus 1 V. Le Colleoni 1  
20041 Agrate Brianza  
Milan, Italy  
Tel: 39-039-65791-1 Fax: 39-039-6899883

#### United Kingdom

Arizona Microchip Technology Ltd.  
505 Eskdale Road  
Winkersley Triangle  
Wokingham  
Berkshire, England RG41 5TU  
Tel: 44 118 921 5869 Fax: 44-118 921-5820

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