
PIC16C781/782 Rev. B1 Silicon/Data Sheet Errata

The PIC16C781/782 parts you have received conform functionally to the Device Data Sheet (DS41171A), except for the anomalies described below.

Note: The silicon revision of a specific component is identified by its manufacture date code: YYWW, YY is the year of manufacture and WW is the specific work week. All material with a date code of 0228 or earlier is revision B1 silicon, and subject to the Errata contained in this document. Any components with a latter date code will be silicon revision B3 or latter and will be covered in a separate Errata. For additional information concerning date codes, refer to the packaging information section of the PIC16C781/782 data sheet (DS41171A).

1. Module: Programmable Switch Mode Controller (PSMC)

In the Pulse Width Mode (PWM) when a comparator threshold crossing event occurs after the minimum duty cycle time (Min DC) and coincident with a PSMC clock edge, the pulse output of the PSMC will immediately and correctly go to the inactive state. One PSMC clock period later, the output may incorrectly become active and remain active until the pulse terminates at the completion of the maximum duty cycle time (Max DC).

Work around

If possible, use the Pulse Skipping Mode (PSM). If your application requires PWM, then please contact your local Microchip representative.

2. Module: Voltage Comparator

When the voltage comparator inputs are subjected to fast rise time pulses, some units exhibit a momentary invalid state on their output. The probability of generating an invalid output state is dependant upon four factors:

1. Pulse slew rate
2. Supply Voltage (V_{DD})
3. Ambient Temperature
4. Reference Voltage (V_{COMMON_MODE})

Figures 1 through 5 show the input slew rate limits for normal operation of the voltage comparators in Fast mode, for a variety of Common mode voltages, supply voltages and ambient temperatures.

If the PSMC is used in conjunction with the voltage comparators, an invalid voltage comparator output state can cause the premature termination of PSMC output pulses.

Work around

The pulse rise time of inputs to the voltage comparators should be less than the limits shown in Figures 1 through 5 for the specific conditions of operation (supply voltage, temperature, Common mode voltage). The values shown are for pulses with a constant rise time. For pulses with compound rise times (pulses with non-linear or changing slopes), the limits may be different.

Note: The area below the line for any given temperature is the safe operating area.

PIC16C781/782

FIGURE 1: VOLTAGE COMPARATOR INPUT, MAXIMUM SLEW RATE AT VDD = 5.5V

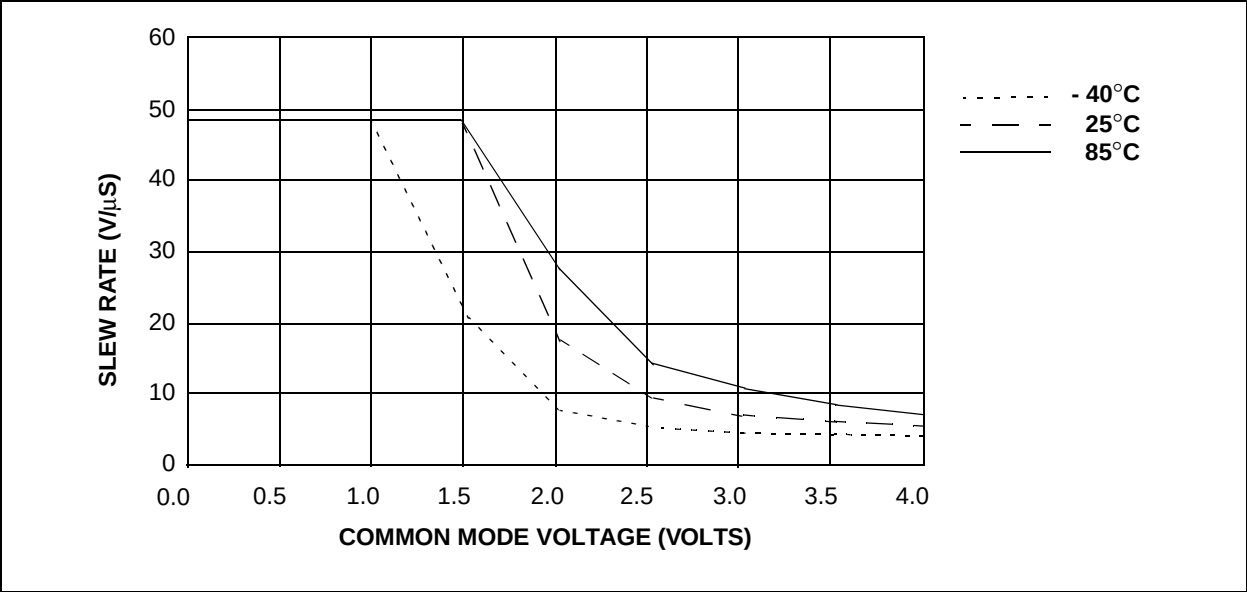


FIGURE 2: VOLTAGE COMPARATOR INPUT, MAXIMUM SLEW RATE AT VDD = 5.5V

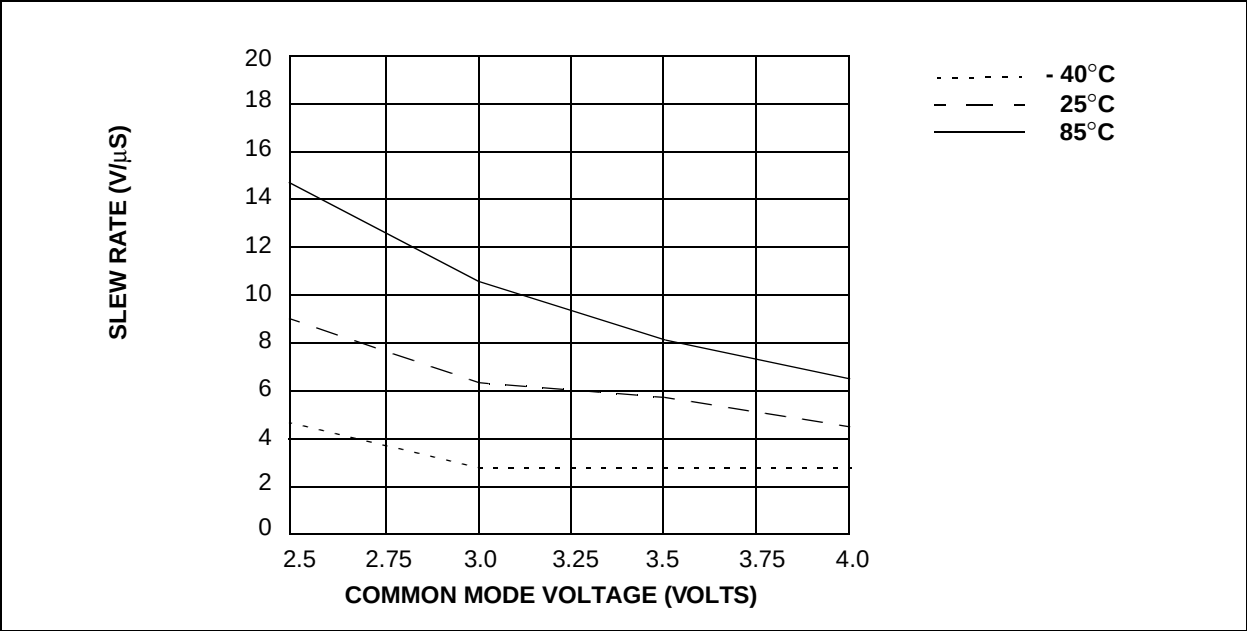


FIGURE 3: VOLTAGE COMPARATOR INPUT, MAXIMUM SLEW RATE AT VDD = 4.0V

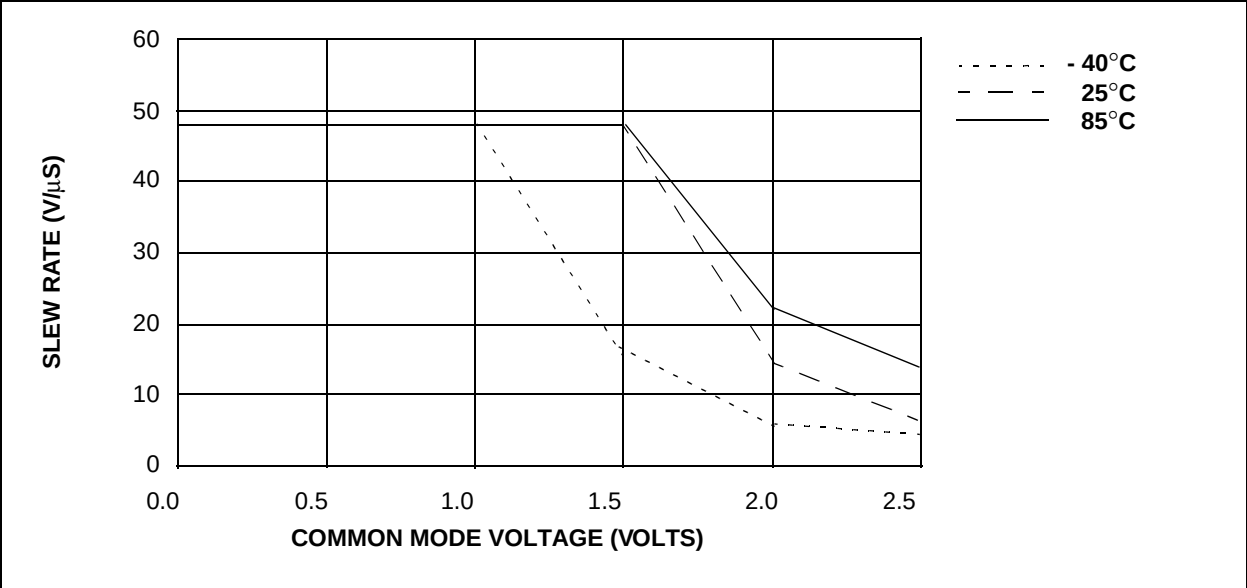
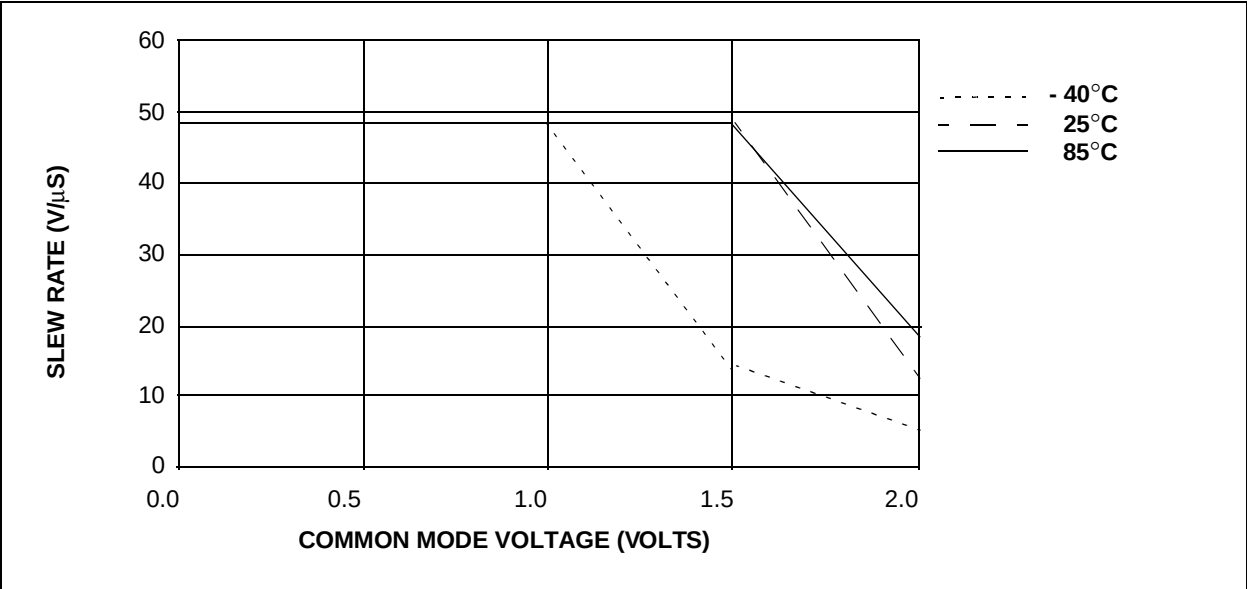
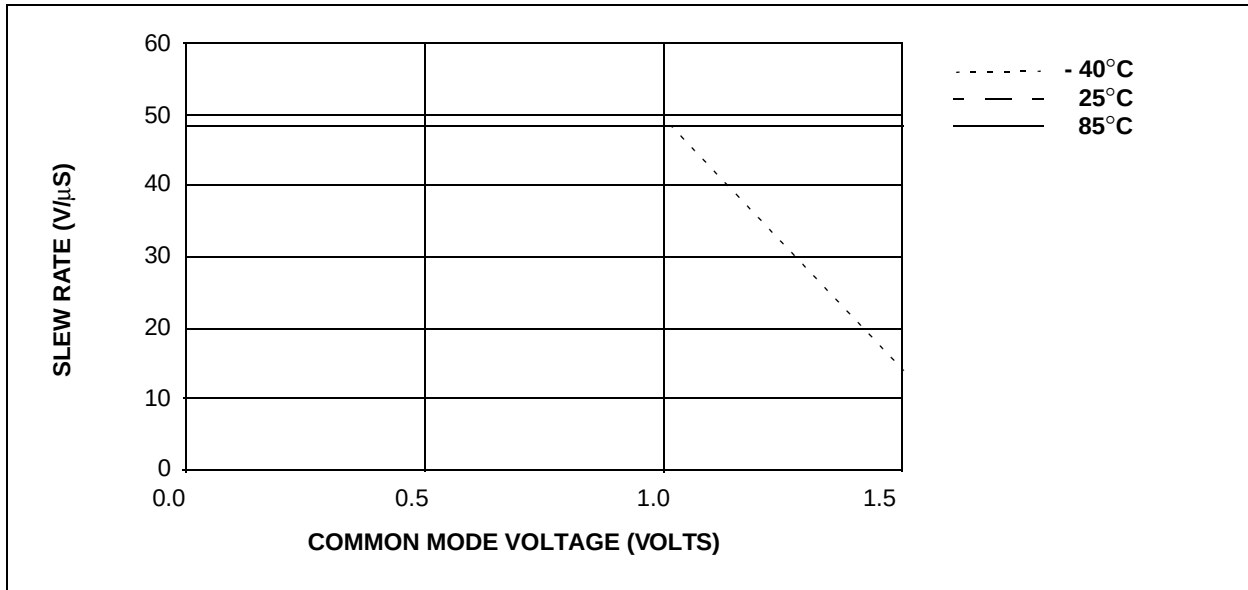


FIGURE 4: VOLTAGE COMPARATOR INPUT, MAXIMUM SLEW RATE AT VDD = 3.5V



PIC16C781/782

FIGURE 5: VOLTAGE COMPARATOR INPUT, MAXIMUM SLEW RATE AT $V_{DD} = 3.0V$



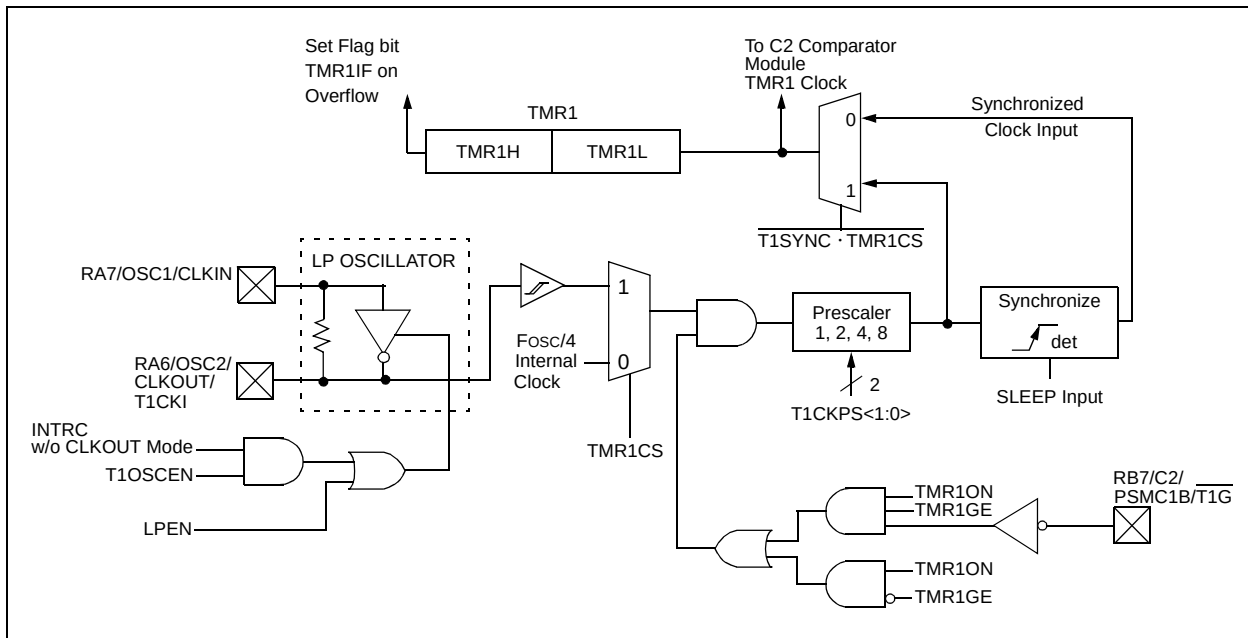
3. Module: Timer1

Exception to Figure 6-2 on page 58 of the data sheet.

The Timer1 gate function controls the flow of clock pulses to the Timer1 prescaler, not the Timer1 counter, as specified in Figure 6-2. Figure 6-2 below shows the Timer1 gate circuitry as it exists now.

Note: To implement synchronized sampling for a Delta Sigma converter, use the software implementation as described in Application Note AN700.

FIGURE 6-2: TIMER1 ON THE PIC16C781/782 BLOCK DIAGRAM



Clarifications/Corrections to the Data Sheet:

In the Device Data Sheet (DS41171A), the following clarifications and corrections should be noted.

1. Module: I/O Ports

Exception to Figure 3-6 on page 32.

When the RA5 pin is configured as the external MCLR input (CONFIG<MCLRE> = 1), the port bit will read as set (RA<5> = 1), not cleared, as specified in Figure 3-6.

2. Module: Digital-to-Analog Converter

Correction to Example 10-1 on page 81.

The following line of code:

```
"BSF    ANSEL,1      ;set RB1 as analog"
```

Should be:

```
"BSF    ANSEL,5      ;set RB1 as analog"
```

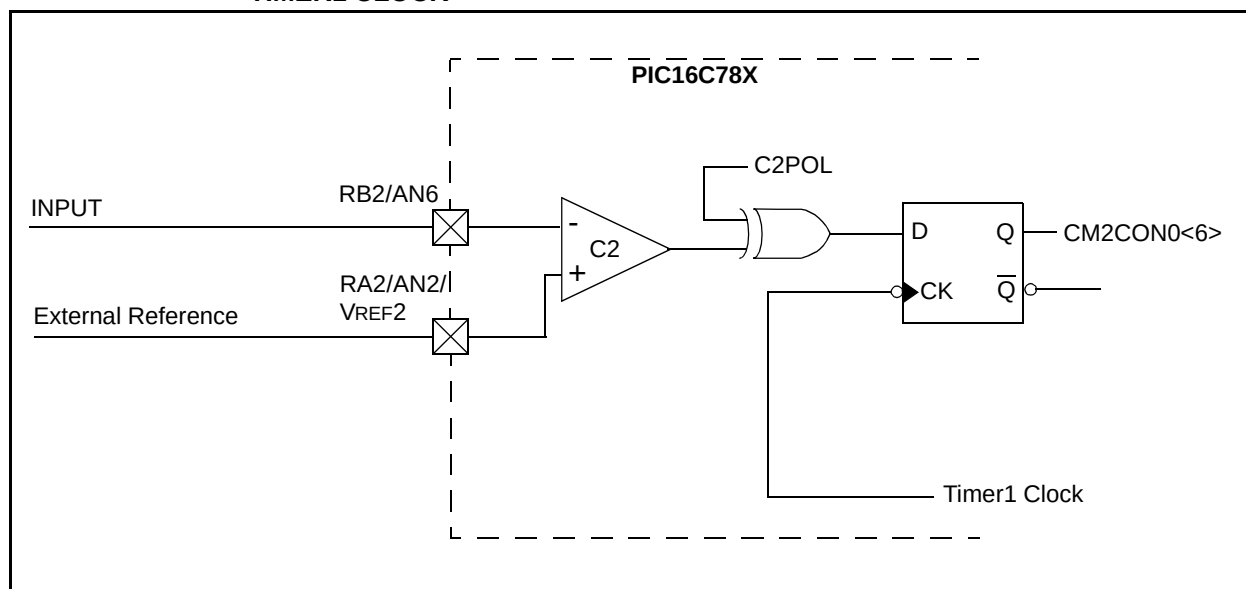
Note: DAC output function overrides ANSEL and TRISB register control of the port pin.

3. Module: Comparator Module

Correction to Figure 12-3 on page 95.

The synchronizing clock signal is supplied by the Timer1 clock, not the RA6 pin as shown in Figure 12-3.

FIGURE 12-3: COMPARATOR C2 CONFIGURATION WITH OUTPUT SYNCHRONIZED TO TIMER1 CLOCK



PIC16C781/782

REVISION HISTORY

Rev A Document (1/02)

Original errata document, which includes clarifications/corrections to Data Sheet Items 1, 2, 3 and 4.

Rev B Document (6/02)

Added Item 1 to page 1.

Rev C Document (7/01)

Added Figures 1 through 5. Added Item 2, Voltage Comparator to page 1.

Note the following details of the code protection feature on PICmicro® MCUs.

- The PICmicro family meets the specifications contained in the Microchip Data Sheet.
- Microchip believes that its family of PICmicro microcontrollers is one of the most secure products of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the PICmicro microcontroller in a manner outside the operating specifications contained in the data sheet. The person doing so may be engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as “unbreakable”.
- Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our product.

If you have any further questions about this matter, please contact the local sales office nearest to you.

Information contained in this publication regarding device applications and the like is intended through suggestion only and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. No representation or warranty is given and no liability is assumed by Microchip Technology Incorporated with respect to the accuracy or use of such information, or infringement of patents or other intellectual property rights arising from such use or otherwise. Use of Microchip's products as critical components in life support systems is not authorized except with express written approval by Microchip. No licenses are conveyed, implicitly or otherwise, under any intellectual property rights.

Trademarks

The Microchip name and logo, the Microchip logo, KEELOQ, MPLAB, PIC, PICmicro, PICSTART, and PRO MATE are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

FilterLab, microID, MXDEV, MXLAB, PICMASTER, SEEVAL and The Embedded Control Solutions Company are registered trademarks of Microchip Technology Incorporated in the USA.

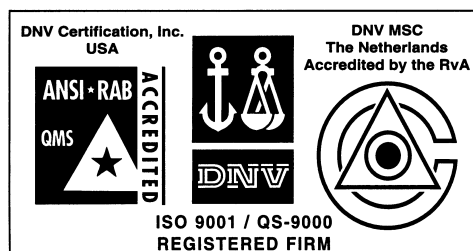
dsPIC, dsPICDEM.net, ECONOMONITOR, FanSense, FlexROM, fuzzyLAB, In-Circuit Serial Programming, ICSP, ICEPIC, microPort, Migratable Memory, MPASM, MPLIB, MPLINK, MPSIM, PICC, PICDEM, PICDEM.net, rPIC, Select Mode and Total Endurance are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

Serialized Quick Turn Programming (SQTP) is a service mark of Microchip Technology Incorporated in the U.S.A.

All other trademarks mentioned herein are property of their respective companies.

© 2002, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

 Printed on recycled paper.



Microchip received QS-9000 quality system certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona in July 1999 and Mountain View, California in March 2002. The Company's quality system processes and procedures are QS-9000 compliant for its PICmicro® 8-bit MCUs, KEELOQ® code hopping devices, Serial EEPROMs, microperipherals, non-volatile memory and analog 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.
Chandler, AZ 85224-6199
Tel: 480-792-7966 Fax: 480-792-4338

Atlanta

500 Sugar Mill Road, Suite 200B
Atlanta, GA 30350
Tel: 770-640-0034 Fax: 770-640-0307

Boston

2 Lan Drive, Suite 120
Westford, MA 01886
Tel: 978-692-3848 Fax: 978-692-3821

Chicago

333 Pierce Road, Suite 180
Itasca, IL 60143
Tel: 630-285-0071 Fax: 630-285-0075

Dallas

4570 Westgrove Drive, Suite 160
Addison, TX 75001
Tel: 972-818-7423 Fax: 972-818-2924

Detroit

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

Kokomo

2767 S. Albright Road
Kokomo, Indiana 46902
Tel: 765-864-8360 Fax: 765-864-8387

Los Angeles

18201 Von Karman, Suite 1090
Irvine, CA 92612
Tel: 949-263-1888 Fax: 949-263-1338

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

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

China - Beijing

Microchip Technology Consulting (Shanghai)
Co., Ltd., Beijing Liaison Office
Unit 915
Bei Hai Wan Tai Bldg.
No. 6 Chaoyangmen Beidajie
Beijing, 100027, No. China
Tel: 86-10-85282100 Fax: 86-10-85282104

China - Chengdu

Microchip Technology Consulting (Shanghai)
Co., Ltd., Chengdu Liaison Office
Rm. 2401, 24th Floor,
Ming Xing Financial Tower
No. 88 TIDU Street
Chengdu 610016, China
Tel: 86-28-86766200 Fax: 86-28-86766599

China - Fuzhou

Microchip Technology Consulting (Shanghai)
Co., Ltd., Fuzhou Liaison Office
Unit 28F, World Trade Plaza
No. 71 Wusi Road
Fuzhou 350001, China
Tel: 86-591-7503506 Fax: 86-591-7503521

China - Shanghai

Microchip Technology Consulting (Shanghai)
Co., Ltd.
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

China - Shenzhen

Microchip Technology Consulting (Shanghai)
Co., Ltd., Shenzhen Liaison Office
Rm. 1315, 13/F, Shenzhen Kerry Centre,
Renminnan Lu
Shenzhen 518001, China
Tel: 86-755-2350361 Fax: 86-755-2366086

China - Hong Kong SAR

Microchip Technology Hongkong Ltd.
Unit 901-6, 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'Shaugnessey Road
Bangalore, 560 025, India
Tel: 91-80-2290061 Fax: 91-80-2290062

Japan

Microchip Technology Japan K.K.
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 135-882
Tel: 82-2-554-7200 Fax: 82-2-558-5934

Singapore

Microchip Technology Singapore Pte Ltd.
200 Middle Road
#07-02 Prime Centre
Singapore, 188980
Tel: 65-6334-8870 Fax: 65-6334-8850

Taiwan

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

EUROPE

Austria

Microchip Technology Austria GmbH
Durisolstrasse 2
A-4600 Wels
Austria
Tel: 43-7242-2244-399
Fax: 43-7242-2244-393

Denmark

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

France

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

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

Italy

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

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

05/16/02