

PIC16C74B Rev. A Silicon Errata Sheet

The PIC16C74B (Rev. A) parts you have received conform functionally to the Device Data Sheet (DS30605A), except for the anomalies described below.

All the problems listed here will be addressed in future revisions of the PIC16C74B silicon.

1. Module: RESET

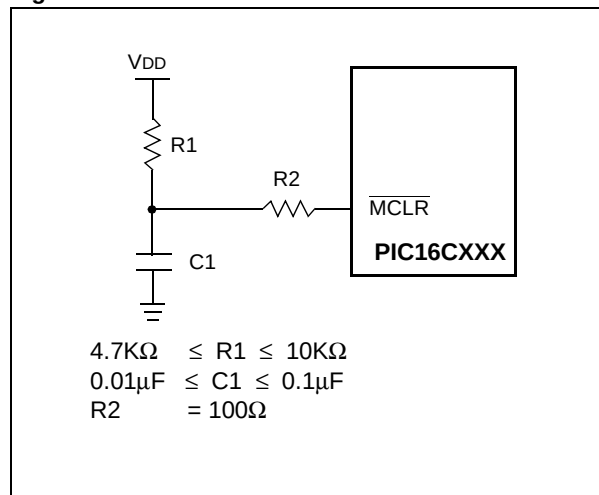
The minimum specification for the $\overline{\text{MCLR}}$ must be met in order to RESET the PIC16CXXX. If a $\overline{\text{MCLR}}$ pulse occurs that is less than the minimum specification (parameter #30), improper device operation can occur.

If the minimum specification cannot be met, then an external circuit must be used to insure that any pulse width less than the specification will be filtered before it reaches the $\overline{\text{MCLR}}$ pin.

Work Around

A possible circuit is shown in Figure 1. Proper design validation needs to be done to ensure desired operation over the applications operating conditions.

Figure 1: $\overline{\text{MCLR}}$ External Circuit



Note: As with any windowed EPROM device, please cover the window at all times, except when erasing.

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2. Module: OSCILLATOR

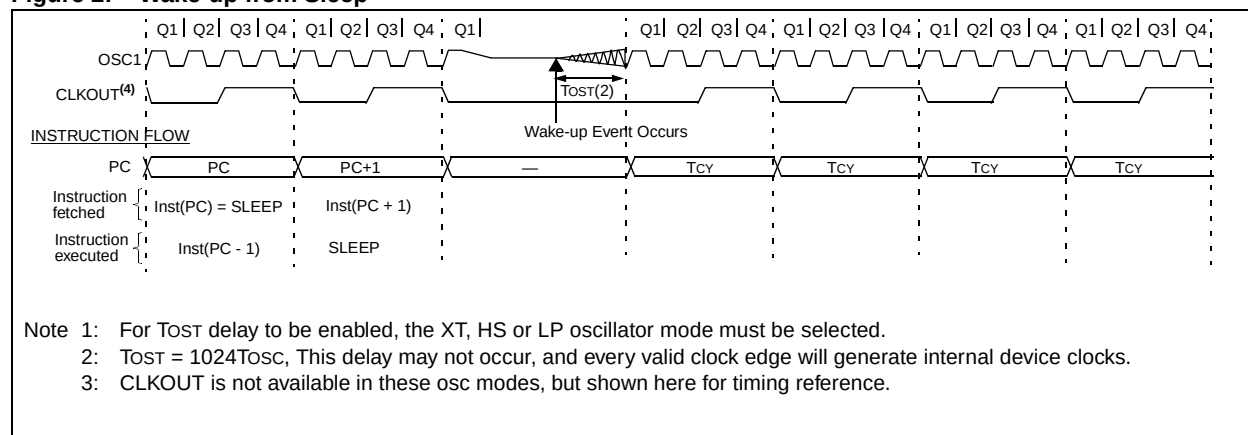
The Oscillator Start-up Timer (T_{OST}) delay may not occur when the device wakes-up from sleep.

Figure 2 shows the start-up of the crystal after the event that causes the device to wake up from sleep mode (as specified in device data sheet). The start-up time (T_{OST}) may not occur.

The events that wake-up the device from sleep are:

- An interrupt
- A WDT overflow (wake-up)
- A Brown-out Reset
- A $\overline{MCLR}$ reset

Figure 2: Wake-up from Sleep



In applications where time based measurements are started immediately after wake-up from sleep, the suggested work around should be implemented.

Work Around

After the SLEEP instruction, do a software delay of 256 T_{CY} (same as 1024 T_{OSC}). At the Reset and Interrupt vector addresses, test to see if the device woke from sleep (the $\overline{TO}$ and $\overline{PD}$ bits), and if the device did wake from sleep, ensure that the total cycle delay is 256 T_{CY} .

3. Module: TMR1

When operating in external clock mode (TMR1CS is set), reading either of the timer 1 registers (TMR1H or TMR1L) may cause the timer not to increment as expected. This occurs for both synchronous and asynchronous inputs.

The scenarios which display this are:

- When a read operation of the TMR1H register occurs, the TMR1L register may not increment.
- When a read operation of the TMR1L register occurs, the TMR1H register may not increment. This improper operation is only an issue when the TMR1L register increments from FFh to 00h (FFh → 00h) during the read of the TMR1L register.

Work Around

Do not read either the TMR1H or the TMR1L registers when operating in external clock mode (TMR1CS is set). If the application needs to read the 16-bit counter, evaluate if this function can be moved to the TMR0 or one of the other timer resources on the device.

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Clarifications/Corrections to the Data Sheet:

In the Device Data Sheet (DS30605A), the following clarifications and corrections should be noted:

1. Figure 3 and Figure 4 are additions to the data sheet to show the area of operation. These figures replace the Cross Reference of Device Specs for Oscillator Modes Table in the Electrical Specification section.

Figure 3 shows the voltage vs. frequency operation for the PIC16CXXX devices. Devices marked with a "-04" operate up to 4 MHz, while devices marked with a "-20" operate up to 20 MHz. The entire shaded region is the valid operating region.

Figure 4 shows the voltage vs. frequency operation for the PIC16LCXXX devices. The devices marked with a "-04" operate up to 4 MHz at the minimum supplied voltage. The devices also operate at a higher frequency (10 MHz) and at a higher voltage (3V). The entire shaded region is the valid operating region.

2. The supply voltages and power-down currents have been improved to the values shown in Table 1.

TABLE 1: DC SPECIFICATION CHANGES FROM DATA SHEET

Parm No.	Symbol	Characteristic	New Specification			Data Sheet Specification			Units
			Min	Typ	Max	Min	Typ	Max	
D001A	VDD	Supply Voltage ⁽¹⁾	4.0	—	5.5	4.5	—	5.5	V
D001	VDD	Supply Voltage (LC devices) ^(2, 3)	VDDAPPMIN	—	5.5	N.A.	—	N.A.	V
D021	IPD	Power-down Current (LC devices)	—	0.9	3.0	—	0.9	5.0	μA
D021A			—	0.9	3.0	—	0.9	5.0	μA

Note 1: HS oscillator mode

2: VDDAPPMIN is the minimum voltage of the PICmicro® in the application

VDDAPPMIN ≥ 2.5 V

3: FMAX = (12 MHz/V) (VDDAPPMIN - 2.5V) + 4 MHz

FMAX ≤ 10 MHz

Figure 3: PIC16CXXX Voltage-Frequency Graph

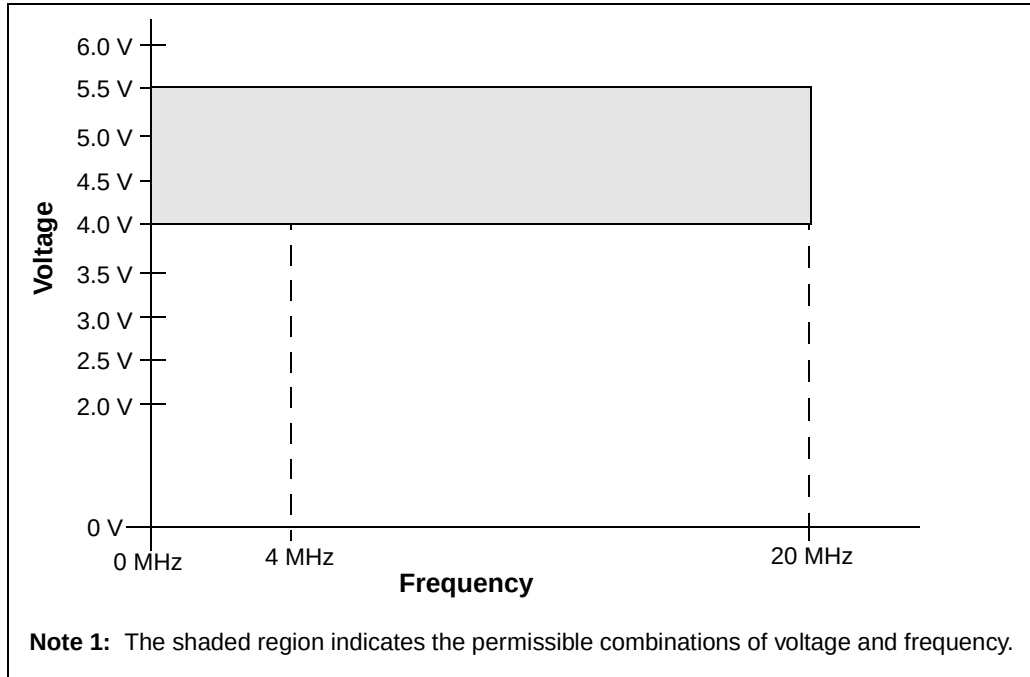
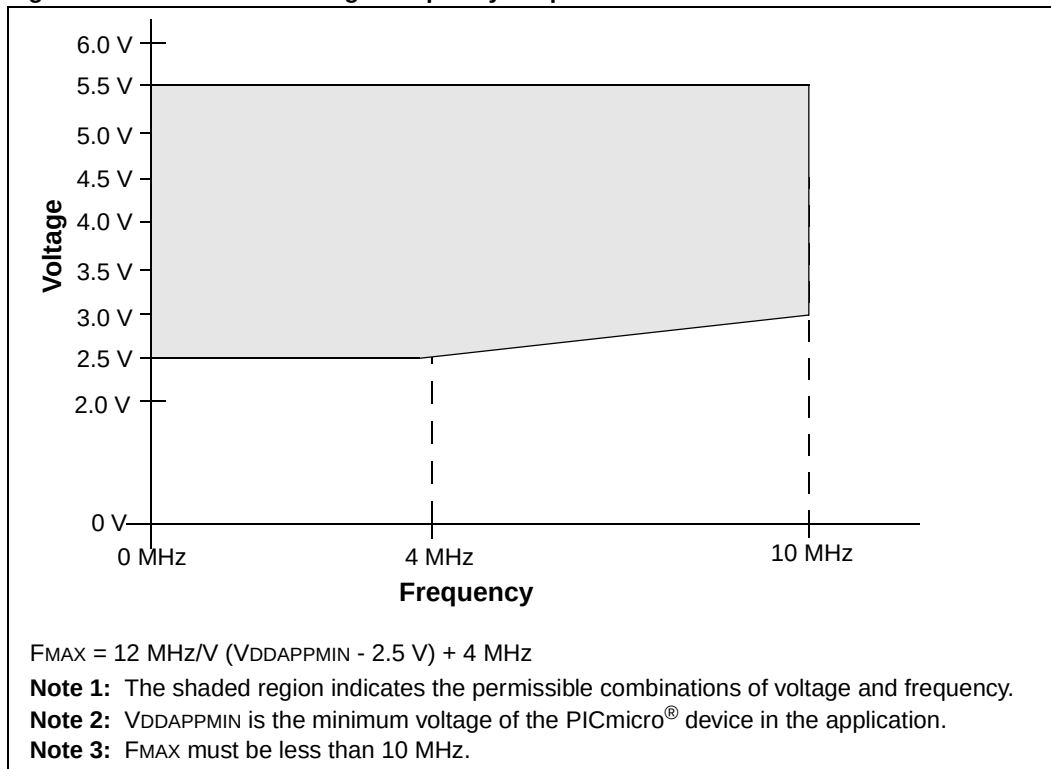


Figure 4: PIC16LCXXX Voltage-Frequency Graph



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- 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.

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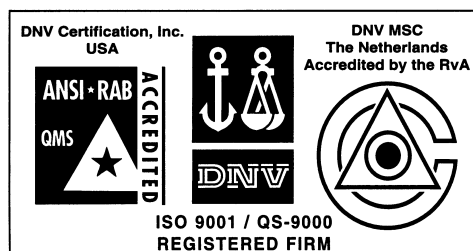
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WORLDWIDE SALES AND SERVICE

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: 480-792-7456

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
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Chicago

333 Pierce Road, Suite 180
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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: 86-28-6766200 Fax: 86-28-6766599

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

Hong Kong

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: 65-334-8870 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

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

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

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