PIC16(L)F1507 Family
Silicon Errata and Data Sheet Clarification

The PIC16(L)F1507 family devices that you have received conform functionally to the current Device Data Sheet (DS40001586**C**), except for the anomalies described in this document.

The silicon issues discussed in the following pages are for silicon revisions with the Device and Revision IDs listed in Table 1. The silicon issues are summarized in Table 2.

The errata described in this document will be addressed in future revisions of the PIC16(L)F1507 silicon.

Note:	This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current. Only the issues indicated in the last column of Table 2 apply to the current silicon revision (**A4**).

Data Sheet clarifications and corrections start on page 5, following the discussion of silicon issues.

The silicon revision level can be identified using the current version of MPLAB® IDE and Microchip's programmers, debuggers, and emulation tools, which are available at the Microchip corporate web site (www.microchip.com).

For example, to identify the silicon revision level using MPLAB IDE in conjunction with a hardware debugger:

1. Using the appropriate interface, connect the device to the hardware debugger.
2. Open an MPLAB IDE project.
3. Configure the MPLAB IDE project for the appropriate device and hardware debugger.
4. Based on the version of MPLAB IDE you are using, do one of the following:
   a) For MPLAB IDE 8, select *Programmer > Reconnect*.
   b) For MPLAB X IDE, select *Window > Dashboard* and click the **Refresh Debug Tool Status** icon ( ).
5. Depending on the development tool used, the part number *and* Device Revision ID value appear in the **Output** window.

Note:	If you are unable to extract the silicon revision level, please contact your local Microchip sales office for assistance.

The DEVREV values for the various PIC16(L)F1507 silicon revisions are shown in Table 1.

TABLE 1: SILICON DEVREV VALUES

Part Number	DEVICE ID<13:0>			
	DEV<8:0>(1)	REV<4:0> Silicon Revision(2)		
		A2	A3	A4
PIC16F1507	10 1101 000	0 0010	0 0011	0 0100
PIC16LF1507	10 1101 110	0 0010	0 0011	0 0100

Note 1: The Device ID is located in the configuration memory at address 8006h.

2: Refer to the *"PIC12(L)F1501/PIC16(L)F150X Memory Programming Specification"* (DS41573) for detailed information on Device and Revision IDs for your specific device.

TABLE 2: SILICON ISSUE SUMMARY

Module	Feature	Item Number	Issue Summary	Affected Revisions(1)		
				A2	A3	A4
Oscillator	HFINTOSC Ready/Stable bit	1.1	Bits remained set to '1' after initial trigger.	X		
Oscillator	Clock Switching	1.2	Clock switching fails.	X		
Low-Dropout (LDO) Voltage Regulator	Low-Power Sleep mode	2.1	Unexpected Resets may occur at ambient temperatures below 0°C.	X	X	X
Fixed Voltage Reference (FVR)	Gain Amplifier Output	3.1	Use of FVR module can cause device Reset.	X	X	
Fixed Voltage Reference (FVR)	Parameter	3.2	4x Gain setting output tolerance is +7% and -3%.	X	X	X

Note 1: Only those issues indicated in the last column apply to the current silicon revision.

Silicon Errata Issues

Note: This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current. Only the issues indicated by the shaded column in the following tables apply to the current silicon revision (**A4**).

1. Module: Oscillator

1.1 OSCSTAT bits: HFIOFR and HFIOFS

When HFINTOSC is selected, the HFIOFR and HFIOFS bits will become set when the oscillator becomes ready and stable. Once these bits are set they become “stuck”, indicating that HFINTOSC is always ready and stable. If the HFINTOSC is disabled, the bits fail to be cleared.

Work around

None.

Affected Silicon Revisions

A2	A3	A4					
X							

1.2 Clock Switching

When switching clock sources between an INTOSC clock source and an external clock source operating at a different power mode, one corrupted instruction may be executed after the switch occurs.

Work around

When clock switching from an external oscillator clock source, first switch to 16 MHz HFINTOSC. Once running at 16 MHz HFINTOSC, configure IRCF to run at desired frequency.

When clock switching from an INTOSC to an external oscillator clock source, first switch from desired INTOSC frequency to HFINTOSC High-Power mode (8 MHz or 16 MHz). Once running from HFINTOSC, switch to the external oscillator clock source.

Affected Silicon Revisions

A2	A3	A4					
X							

2. Module: Low-Dropout (LDO) Voltage Regulator

2.1 Low-Power Sleep mode at Ambient Temperatures Below 0°C

Under the following conditions:

- ambient temperatures below 0°C
- while in Sleep mode
- VREGCON configured for Low-Power Sleep mode (VREGPM = 1)

On very rare occasions, the LDO voltage will drop below the minimum V_{DD}, causing unexpected device Resets.

Work around

For applications that operate at ambient temperatures below 0°C, use the LDO voltage regulator in Normal-Power mode (VREGPM = 0).

Affected Silicon Revisions

A2	A3	A4					
X	X	X					

3. Module: Fixed Voltage Reference (FVR)

3.1 Gain Amplifier Output

When using the FVR module, if the gain amplifier outputs are set via the CDAFVR or ADFVR bits in FVRCON while the module is disabled (FVREN = 0), the internal oscillator frequency may shift, device current consumption can increase, and a Brown-out Reset may occur.

Work around

Set the FVREN bit of FVRCON to enable the module prior to adjusting the amplifier output selections with the CDAFVR and ADFVR bits. If switching from the 4x output setting to the 1x output setting, select the 2x output setting as an intermediary step. Always set the amplifier output selections to off (‘00’) before disabling the FVR module.

Affected Silicon Revisions

A2	A3	A4					
X	X						

3.2 Output Tolerance

The max. and min. values for the V_{FVR} parameter are within +7% and -3% of the nominal value for the 4x gain setting only.

Work around

None.

Affected Silicon Revisions

A2	A3	A4					
X	X	X					

Data Sheet Clarifications

The following typographic corrections and clarifications are to be noted for the latest version of the device data sheet (DS40001586**C**):

Note:	Corrections are shown in **bold**. Where possible, the original bold text formatting has been removed for clarity.

None.

APPENDIX A: DOCUMENT REVISION HISTORY

Rev A Document (02/2012)

Initial release of this document.

Rev B Document (06/2012)

Added MPLAB X IDE.

Data Sheet Clarifications: Added Modules 1 (Oscillator) and 2 (Memory).

Rev C Document (07/2012)

Added Modules 2 and 3.

Rev D Document (09/2012)

Added Silicon Revision A3.

Rev E Document (02/2013)

Added Silicon Revision A4.

Data Sheet Clarifications: Revised Modules 1 and 2; Added Module 3 (Ports).

Rev F Document (09/2015)

Added Module 3.2; Other minor corrections.

Data Sheet Clarifications: Removed Modules 1 and 2; Data Sheet updated.

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- Microchip is willing to work with the customer who is concerned about the integrity of their code.
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