



## Product Change Notification / SYST-29JTVS463

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**Date:**

30-Nov-2021

**Product Category:**

8-bit Microcontrollers

**PCN Type:**

Silicon Die Revision

**Notification Subject:**

ERRATA - PIC16(L)F15354/55 Family Silicon Errata and Data Sheet Clarification Silicon Die Revision Addition

**Affected CPNs:**

[SYST-29JTVS463\\_Affected\\_CPN\\_11302021.pdf](#)

[SYST-29JTVS463\\_Affected\\_CPN\\_11302021.csv](#)

**Notification Text:**

SYST-29JTVS463

Microchip has released a new Product Documents for the PIC16(L)F15354/55 Family Silicon Errata and Data Sheet Clarification of devices. If you are using one of these devices please read the document located at [PIC16\(L\)F15354/55 Family Silicon Errata and Data Sheet Clarification](#).

**Notification Status:** Final

**Description of Change:** 1) Added Silicon Revision A4

**Impacts to Data Sheet:** None

**Reason for Change:** To Improve Productivity

**Change Implementation Status:** Complete

**Estimated First Ship Date:** 28 Dec 2021

NOTE: Please be advised that after the estimated first ship date customers may receive pre and post change parts.

**Markings to Distinguish Revised from Unrevised Devices:** Traceability Code

## Attachments:

[PIC16\(L\)F15354/55 Family Silicon Errata and Data Sheet Clarification](#)

Please contact your local [Microchip sales office](#) with questions or concerns regarding this notification.

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Affected Catalog Part Numbers (CPN)

PIC16F15354-E/5NVAO  
PIC16F15354-E/ML  
PIC16F15354-E/MV  
PIC16F15354-E/SO  
PIC16F15354-E/SP  
PIC16F15354-E/SS  
PIC16F15354-E/SSVAO  
PIC16F15354-I/ML  
PIC16F15354-I/MV  
PIC16F15354-I/SO  
PIC16F15354-I/SP  
PIC16F15354-I/SS  
PIC16F15354T-E/5NVAO  
PIC16F15354T-E/ML  
PIC16F15354T-E/SSVAO  
PIC16F15354T-I/ML  
PIC16F15354T-I/MV  
PIC16F15354T-I/SO  
PIC16F15354T-I/SS  
PIC16F15354T-I/SSC01  
PIC16F15355-E/ML  
PIC16F15355-E/MV  
PIC16F15355-E/SO  
PIC16F15355-E/SP  
PIC16F15355-E/SS  
PIC16F15355-E/SSVAO  
PIC16F15355-I/ML  
PIC16F15355-I/MV  
PIC16F15355-I/SO  
PIC16F15355-I/SP  
PIC16F15355-I/SS  
PIC16F15355-I/SSVAO  
PIC16F15355T-E/ML  
PIC16F15355T-E/MV  
PIC16F15355T-E/SS  
PIC16F15355T-E/SSV01  
PIC16F15355T-E/SSVAO  
PIC16F15355T-I/ML  
PIC16F15355T-I/MV  
PIC16F15355T-I/SO  
PIC16F15355T-I/SS  
PIC16F15355T-I/SSVAO  
PIC16LF15354-E/ML  
PIC16LF15354-E/MV  
PIC16LF15354-E/SO  
PIC16LF15354-E/SP

PIC16LF15354-E/SS  
PIC16LF15354-I/ML  
PIC16LF15354-I/MV  
PIC16LF15354-I/SO  
PIC16LF15354-I/SP  
PIC16LF15354-I/SS  
PIC16LF15354T-E/ML  
PIC16LF15354T-I/ML  
PIC16LF15354T-I/MV  
PIC16LF15354T-I/SO  
PIC16LF15354T-I/SS  
PIC16LF15355-E/5NVAO  
PIC16LF15355-E/ML  
PIC16LF15355-E/MV  
PIC16LF15355-E/SO  
PIC16LF15355-E/SP  
PIC16LF15355-E/SS  
PIC16LF15355-I/ML  
PIC16LF15355-I/MV  
PIC16LF15355-I/SO  
PIC16LF15355-I/SP  
PIC16LF15355-I/SS  
PIC16LF15355T-E/5NVAO  
PIC16LF15355T-E/ML  
PIC16LF15355T-E/MV021  
PIC16LF15355T-I/MV  
PIC16LF15355T-I/MV020  
PIC16LF15355T-I/SO  
PIC16LF15355T-I/SS

Affected Catalog Part Numbers (CPN)

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PIC16F15354-E/ML  
PIC16F15354-E/MV  
PIC16F15354-E/SO  
PIC16F15354-E/SP  
PIC16F15354-E/SS  
PIC16F15354-E/SSVAO  
PIC16F15354-I/ML  
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PIC16F15354-I/SS  
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PIC16LF15354-E/SO  
PIC16LF15354-E/SP

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PIC16LF15354T-I/ML  
PIC16LF15354T-I/MV  
PIC16LF15354T-I/SO  
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PIC16LF15355-E/5NVAO  
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PIC16LF15355-E/SO  
PIC16LF15355-E/SP  
PIC16LF15355-E/SS  
PIC16LF15355-I/ML  
PIC16LF15355-I/MV  
PIC16LF15355-I/SO  
PIC16LF15355-I/SP  
PIC16LF15355-I/SS  
PIC16LF15355T-E/5NVAO  
PIC16LF15355T-E/ML  
PIC16LF15355T-E/MV021  
PIC16LF15355T-I/MV  
PIC16LF15355T-I/MV020  
PIC16LF15355T-I/SO  
PIC16LF15355T-I/SS

## PIC16(L)F15354/55 Family Silicon Errata and Data Sheet Clarifications

The PIC16(L)F15354/55 family devices that you have received conform functionally to the current Device Data Sheet (DS40001853D), 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)F15354/55 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® X IDE and Microchip's programmers, debuggers, and emulation tools, which are available at the Microchip corporate website ([www.microchip.com](http://www.microchip.com)).

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

1. Using the appropriate interface, connect the device to the hardware debugger.
2. Open an MPLAB X IDE project.
3. Configure the MPLAB X IDE project for the appropriate device and hardware debugger.
4. 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)F15354/55 silicon revisions are shown in [Table 1](#).

**TABLE 1: SILICON DEVREV VALUES**

Part Number	Device ID <sup>(1)</sup>	Revision ID for Silicon Revision <sup>(2)</sup>		
		A2	A3	A4
PIC16F15354	30ACh	2002h	2003h	2004h
PIC16LF15354	30ADh	2002h	2003h	2004h
PIC16F15355	30AEh	2002h	2003h	2004h
PIC16LF15355	30AFh	2002h	2003h	2004h

**Note 1:** The Device IDs (DEVID and DEVREV) are located at addresses 8006h and 8005h, respectively. They are shown in hexadecimal in the format "DEVID DEVREV".

**2:** Refer to the "PIC16(L)F153XX Memory Programming Specification" (DS40001838) 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 <sup>(1)</sup>		
				A2	A3	A4
Analog-to-Digital Converter (ADC)	ADC Positive Voltage Reference	1.1	Using FVR as the positive voltage reference to the ADC can cause missing codes in the conversion result.	X	X	X
Development Support	Data Breakpoints	2.1	Data breakpoints are not available on Banks 32 through 63.	X		
Windowed Watchdog Timer (WWDT)	Watchdog Timer Clock Source	3.1	WWDT does not work with SOSC as the clock source.	X		
Electrical Specifications	Minimum VDD Specification for LF Devices	4.1	VDDMIN specifications are changed for LF devices only.	X	X	X
	Fixed Voltage Reference (FVR) Accuracy	4.2	FVR output tolerance may be higher than specified at temperatures below -20°C.	X	X	X
	ADC Offset Error	4.3	ADC Offset Error specification changed.	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: Analog-to-Digital Converter (ADC)

#### 1.1 ADC Positive Voltage Reference

Using the FVR as the positive voltage reference to the ADC can cause an increase in missing codes.

##### Work around

1. Increase the bit conversion time, known as TAD, to 8 us.
2. Use VDD as the positive voltage reference to the ADC.

##### Affected Silicon Revisions

A2	A3	A4					
X	X	X					

### 2. Module: Development Support

#### 2.1 Data Breakpoints

Data breakpoints are not available on Banks 32 through 63. Any breakpoints that are placed in Banks 32 through 63 will fail to be recognized.

##### Work around

None.

##### Affected Silicon Revisions

A2	A3	A4					
X							

### 3. Module: Windowed Watchdog Timer (WWDT)

#### 3.1 WWDT Clock Source Selection

When the WDTCS <2:0> bits of the WDTCON1 register are set to 'b010', selecting the Secondary Oscillator SOSC 32 kHz, as the clock source, the WWDT does not operate.

##### Work around

Use the LFINTOSC or MFINTOSC clock sources for the WWDT.

##### Affected Silicon Revisions

A2	A3	A4					
X							

### 4. Module: Electrical Specifications

#### 4.1 Minimum VDD Specifications for LF Devices

VDDMIN at -40°C to +25°C = 2.3V. (See [TABLE 37-1: Supply Voltage](#) on the following page for reference.)

##### Work around

None

##### Affected Silicon Revisions

A2	A3	A4					
X	X	X					

#### 4.2 Fixed Voltage Reference (FVR) Accuracy

At temperatures below -20°C, the output voltage for the FVR may be greater than the levels specified in the data sheet. This will apply to all three gain amplifier settings (1X, 2X, 4X). The affected parameter numbers found in the data sheet are: FVR01 (1X gain setting), FVR02 (2X gain setting), and FVR03 (4X gain setting).

##### Work around

None

##### Affected Silicon Revisions

A2	A3	A4					
X	X	X					

#### 4.3 ADC Offset Error

The table containing the Offset Error specification (AD04:EOFF) for the Analog-to-Digital Converter is modified. The updated value for Offset Error specification is +/- 3.0 LSB.

##### Work around

None

##### Affected Silicon Revisions

A2	A3	A4					
X	X	X					

**TABLE 37-1: SUPPLY VOLTAGE**

PIC16LF15354/15355			Standard Operating Conditions (Unless Otherwise Stated)				
Param. No.	Sym.	Characteristic	Min.	Typ.†	Max.	Units	Conditions
D002	VDD		1.8	—	3.6	V	FOSC ≤ 16 MHz, +25°C ≤ TA ≤ +125°C
			2.3	—	3.6	V	FOSC ≤ 16 MHz, -40°C ≤ TA ≤ +25°C
			2.5	—	3.6	V	FOSC > 16 MHz

## Data Sheet Clarifications

The following typographic corrections and clarifications are to be noted for the latest version of the device data sheet (DS40001853D):

<b>Note:</b> Corrections are shown in <b>bold</b> . Where possible, the original bold text formatting has been removed for clarity.
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None.

## **APPENDIX A: DOCUMENT REVISION HISTORY**

### **Rev H Document (11/2021)**

Added silicon revision A4.

### **Rev G Document (03/2021)**

Updated Table 2 and 37-1 and Section 4.1 Minimum VDD Specification. Other minor corrections.

#### **Data Sheet Clarifications:**

Added Module 2: Electrical Specifications.

### **Rev F Document (11/2020)**

Added Table 37-1; Updated Sections 4.1 and 4.3.

### **Rev E Document (09/2020)**

Added Silicon Revision A3; Other minor corrections.

### **Rev D Document (03/2018)**

Data Sheet Clarifications: Added Module 1: Analog-to-Digital Converter. Other minor corrections.

### **Rev C Document (08/2017)**

Added Module 4: Electrical Specifications

#### **Data Sheet Clarifications:**

Added Modules 1 and 2. Other minor corrections.

### **Rev B Document (01/2017)**

Removed Module 1: Oscillators. Added Module 3: Windowed Watchdog Timer (WWDT). Other minor corrections.

### **Rev A Document (10/2016)**

Initial release of this document.

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