



## Product Change Notification - SYST-13EVOX211

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**Date:**

14 Jun 2019

**Product Category:**

8-bit Microcontrollers

**Affected CPNs:****Notification subject:**

ERRATA - PIC18F27/47Q10 Family Silicon Errata and Data Sheet Clarifications

**Notification text:**

SYST-13EVOX211

Microchip has released a new DeviceDoc for the PIC18F27/47Q10 Family Silicon Errata and Data Sheet Clarifications of devices. If you are using one of these devices please read the document located at [PIC18F27/47Q10 Family Silicon Errata and Data Sheet Clarifications](#).

**Notification Status:** Final

**Description of Change:** Initial document release

**Impacts to Data Sheet:** None

**Reason for Change:** To Improve Productivity

**Change Implementation Status:** Complete

**Date Document Changes Effective:** 14 Jun 2010

**NOTE:** Please be advised that this is a change to the document only the product has not been changed.

**Markings to Distinguish Revised from Unrevised Devices:** N/A

**Attachment(s):**

[PIC18F27/47Q10 Family Silicon Errata and Data Sheet Clarifications](#)

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Affected Catalog Part Numbers (CPN)

PIC18F27Q10-E/ML  
PIC18F27Q10-I/ML  
PIC18F27Q10-I/SO  
PIC18F27Q10-I/SP  
PIC18F27Q10-I/SS  
PIC18F27Q10-I/STX  
PIC18F27Q10T-I/ML  
PIC18F27Q10T-I/SO  
PIC18F27Q10T-I/SS  
PIC18F27Q10T-I/STX  
PIC18F47Q10-I/MP  
PIC18F47Q10-I/P  
PIC18F47Q10-I/PT  
PIC18F47Q10T-I/MP  
PIC18F47Q10T-I/PT

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**PIC18F27/47Q10 Family Silicon Errata and Data Sheet Clarifications**

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The PIC18F27/47Q10 devices that you have received conform functionally to the current device data sheet (DS40002043C), 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 the table below.

The errata described in this document will be addressed in future revisions of the PIC18F27/47Q10 silicon.

**Note:** This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current.

**Table 1. Silicon Device Identification**

Part Number	Device ID	Revision ID
		A4
PIC18F27Q10	0x7100	0xA044
PIC18F47Q10	0x70E0	0xA044



**Important:** Refer to the **Device/Revision ID** section in the current “**PIC18F2X/4XQ10 Memory Programming Specification**” (DS40001874) for more detailed information on Device Identification and Revision IDs for your specific device.

**Table 2. Silicon Issue Summary**

Module	Feature	Item No.	Issue Summary	Affected Revisions
				A4
Electrical Specifications	Temperature Range	1.1.1	Industrial temperature range only	X
Electrical Specifications	Sleep Current	1.1.2	Higher current after DFM write	X
Resets	MCLR Flag	1.2.1	POR may set MCLR flag by mistake	X
CWG	Auto-Shutdown Sources	1.3.1	CLC2 and CLC6 not available	X
ADCC	FVR Reference	1.4.1	Missing codes when FVR used as reference	X
ADCC	Burst Average	1.4.2	ADCNT may not increment	X
ADCC	ADCRC (FRC) Oscillator	1.4.3	Oscillator continues to run in sleep after conversion	X
ADCC	CVD	1.4.4	Unreliable high/low conversion results with small sample and hold capacitor selections	X
ADCC	Input SlewRate	1.4.5	Unreliable conversion results with fast falling slew rate	X
Windowed Watchdog Timer	Window Operation	1.5.1	Window feature of the WWDT does not operate correctly in DOZE mode	X
NVM	NVMERR	1.6.1	NVMERR bit is set by device Reset after being cleared by software	X

.....continued

Module	Feature	Item No.	Issue Summary	Affected Revisions
				A4
Oscillator	HFINTOSC	1.7.1	5% variation over temperature range	X
<b>Note:</b> Only those issues indicated in the last column apply to the current silicon revision.				

## 1. Silicon Errata Issues



**Notice:** This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current. Only the issues indicated by the bold font in the following tables apply to the current silicon revision.

### 1.1 Module: Electrical Specifications

#### 1.1.1 Industrial Temperature Range Only

Extended temperature range devices are not released.

##### Work around

Operate at or below 85 degrees Celsius.

##### Affected Silicon Revisions

<b>A4</b>							
<b>X</b>							

#### 1.1.2 Sleep Current - Higher Sleep Current after DFM Write Operation

When performing a DFM write operation during Sleep mode, once the write operation has completed, the system clock will stay active. This means that while the device remains in this state, a higher Sleep current will be experienced.

##### Work around

Once the DFM write operation is completed, wake the device out of Sleep mode and re-execute a new Sleep command.

##### Affected Silicon Revisions

<b>A4</b>							
<b>X</b>							

### 1.2 Module: Resets

#### 1.2.1 RMCLR Flag in PCON0 Register by Mistake

On an initial power-up of the device, or when executing a software Reset, the PCON0 flag bit for MCLR Reset (RMCLR) may be improperly cleared by a Power-on Reset (POR) or software Reset (RI), thereby indicating a false MCLR event.

##### Work around

None.

### Affected Silicon Revisions

<b>A4</b>							
<b>X</b>							

### 1.3 Module: Complementary Waveform Generator (CWG)

#### 1.3.1 CWG Auto-Shutdown Sources

Shutdown sources AS6E (CLC2\_out) and AS7E (CLC6\_out) are not available.

##### Work around

Route the CLC output through PPS to an output pin and use the AS0E source selection (Pin selected by CWGxPPS) and PPS controls to select the same pin as the shutdown source.

##### Affected Silicon Revisions

A4							
X							

### 1.4 Module: Analog-to-Digital Converter with Computation (ADCC)

#### 1.4.1 Missing Codes with FVR Reference

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

##### Work around

##### Method 1:

Increase the bit conversion time, known as TAD, to 8  $\mu$ s or higher.

##### Method 2:

Use  $V_{DD}$  as the positive voltage reference to the ADC.

##### Affected Silicon Revisions

A4							
X							

#### 1.4.2 ADC<sup>2</sup> Burst Average Mode

When the ADC<sup>2</sup> is operated in Burst Average mode (ADMD = 0b011 in the ADCON2 register) while enabling non-continuous operation and double-sampling (ADCONT = 0 in the ADCON0 register and ADDSEN = 1 in the ADCON1 register), the value in the ADCNT register does not increment beyond '0b1' toward the value in the ADRPT register.

##### Work around

When operating the ADC<sup>2</sup> in Burst Average mode with double-sampling, enable continuous operation of the module (ADCONT = 1 in the ADCON0 register) and set the Stop-on-Interrupt bit (ADSOI bit in the ADCON3 register). After the interrupt occurs, perform appropriate threshold calculations in the software and re-trigger ADC<sup>2</sup> as necessary.

If the CPU is in Low-Power Sleep mode, alternatively the ADC<sup>2</sup> in non-continuous Burst Average mode can be operated with single ADC conversion (ADDSEN = 0 in the ADCON1 register) compromising noise



immunity for lower power consumption by preventing the device from waking up to perform threshold calculations in the software.

#### Affected Silicon Revisions

A4							
X							

#### 1.4.3 ADCRC (FRC) Oscillator Operation in Sleep

If the part is in Sleep and the ADCRC (FRC) oscillator is used as clock source to the ADC, the oscillator continues to run after the conversion is complete. This will increase the current consumption in Sleep mode. The oscillator will stop after the device exits Sleep mode and resumes normal code execution.

#### Work around

None.

#### Affected Silicon Revisions

A4							
X							

#### 1.4.4 Unreliable High/Low CVD Conversion Results with Small Sample and Hold Capacitor Selections

When the sample and hold capacitor selection is less than half the available maximum then the apparent low precharge appears to fail resulting in a low conversion result greater than the high conversion result.

#### Work around

Select sample and hold values greater than half the available maximum when using the CVD feature.

#### Affected Silicon Revisions

A4							
X							

#### 1.4.5 Unreliable Conversion Results with Fast Falling Slew Rate

When the ADC input falls by greater than 3.2V, with a slew rate faster than  $-11\text{V}/\mu\text{s}$ , the next ADC conversion will have the MSb improperly set. This is likely to happen when the ADC input channel is switched from one with a high input level to another with a low input level.

#### Work around

When switching between input channels, discard the first conversion result after the switch. Subsequent conversions will not be affected.

#### Affected Silicon Revisions

A4							
X							

## 1.5 Module: Windowed Watchdog Timer (WWDT)

### 1.5.1 Window Operation in DOZE Mode

When the Windowed mode of operation is enabled in DOZE mode, a window violation error is issued even though the window is open and has been armed. This condition occurs only when the window size is set to a value other than 100% open.

#### Work around

Method 1:

Use the Windowed mode of operation in any other than DOZE mode. If disabling the DOZE mode is not an option, use the WWDT module without the Window being enabled.

Method 2:

If the device is in DOZE mode, perform the arming process for the window in NORMAL mode and return to the DOZE mode.

Method 3:

If there is an ISR in the application code, the arming within the window can be done inside the ISR with the ROI bit of the CPUDOZE register being set.

#### Affected Silicon Revisions

A4							
X							

## 1.6 Module: Nonvolatile Memory (NVM)

### 1.6.1 NVMERR

When a Reset is issued while an NVM high voltage operation is in progress, the NVMERR bit in the NVMCON0 register is set as expected. After clearing the NVMERR bit, if a Reset reoccurs, the NVMERR bit is set again regardless of whether an NVM operation is in progress or not. A successful write operation will clear the NVMERR condition.

#### Work around

None.

#### Affected Silicon Revisions

A4							
X							

## 1.7 Module: Oscillator

### 1.7.1 Internal HFINTOSC Oscillator Varies Up To 5%

The internal HFINTOSC oscillator varies in frequency up to 5% over the voltage and temperature range.

**Work around**

For systems requiring more precision, use an external crystal or ceramic resonator in one of the External Oscillator modes.

**Affected Silicon Revisions**

<b>A4</b>							
<b>X</b>							

## **2. Data Sheet Clarifications**

### **2.1 None**

There are no known data sheet clarifications as of this publication date.

**3. Revision History**

Doc Rev.	Date	Comments
A	04/2019	Initial document release.

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