MICROCHIP

Product Change Notification / SYST-18RKTE085

Date:

24-Aug-2020

Product Category:

8-bit Microcontrollers

PCN Type:

Document Change

Notification Subject:

ERRATA - PIC18F25/45/55Q43 Silicon Errata and Data Sheet Clarifications

Affected CPNs:

SYST-18RKTE085_Affected_CPN_08242020.pdf
SYST-18RKTE085_Affected_CPN_08242020.csv

Notification Text:

SYST-18RKTE085

Microchip has released a new Product Documents for the PIC18F25/45/55Q43 Silicon Errata and Data Sheet Clarifications of devices. If you are using one of these devices please read the document located at PIC18F25/45/55Q43 Silicon Errata and Data Sheet Clarifications.

Notification Status: Final

Description of Change: Adding silicon revision B2.

Impacts to Data Sheet: None

Reason for Change: To Improve Productivity

Change Implementation Status: Complete

Date Document Changes Effective: 24 Aug 2020

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

Attachments:

PIC18F25/45/55Q43 Silicon Errata and Data Sheet Clarifications

Please contact your local Microchip sales office with questions or concerns regarding this notification.

Terms and Conditions:

If you wish to <u>receive Microchip PCNs via email</u> please register for our PCN email service at our PCN home page select register then fill in the required fields. You will find instructions about registering for Microchips PCN email service in the PCN FAQ section.

If you wish to <u>change your PCN profile, including opt out,</u> please go to the PCN home page select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

Affected Catalog Part Numbers (CPN)

PIC18F25Q43-E/ML
PIC18F25Q43-E/SO
PIC18F25Q43-E/SP
PIC18F25Q43-E/SS
PIC18F25Q43-E/STX
PIC18F25Q43-I/ML
PIC18F25Q43-I/SO
PIC18F25Q43-I/SP
PIC18F25Q43-I/SS
PIC18F25Q43-I/STX
PIC18F25Q43T-I/ML
PIC18F25Q43T-I/SO
PIC18F25Q43T-I/SS
PIC18F25Q43T-I/STX
PIC18F45Q43-E/ML
PIC18F45Q43-E/MP
PIC18F45Q43-E/P
PIC18F45Q43-E/PT
PIC18F45Q43-I/ML
PIC18F45Q43-I/MP
PIC18F45Q43-I/P
PIC18F45Q43-I/PT
PIC18F45Q43T-I/ML
PIC18F45Q43T-I/MP
PIC18F45Q43T-I/PT
PIC18F55Q43-E/6LX
PIC18F55Q43-E/PT
PIC18F55Q43-I/6LX
PIC18F55Q43-I/PT
PIC18F55Q43T-I/6LX
PIC18F55Q43T-I/PT

PIC18F25/45/55Q43

PIC18F25/45/55Q43 Silicon Errata and Data Sheet Clarifications

The PIC18F25/45/55Q43 devices you have received conform functionally to the current device data sheet (DS40002170C), 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 PIC18F25/45/55Q43 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	
		B0	B2
PIC18F25Q43	0x73C0	0xA040	0xA042
PIC18F45Q43	0x73E0	0xA040	0xA042
PIC18F55Q43	0x7400	0xA040	0xA042

Important: Refer to the **Device/Revision ID** section in the current **"PIC18FXXQ43 Family Programming Specification"** (DS40002079) 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	
				B0	**B2**
ADCC	Capacitive Voltage Divider	1.1.1	CVD is only functional on PORTA[2:0] and PORTB[4:0]	X	
Oscillator	XT mode	1.2.1	Maximum clock frequency limited to 2 MHz for XT mode	X	X
I²C	I²C	1.3.1	I2CxADR0/1/2/3 registers have incorrect Reset value	X	X
SRAM	SRAM Read-Back	1.4.1	SRAM read-back can be incorrect	X	
Note: Only those issues indicated in the last column apply to the current silicon revision.					

Table of Contents

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: Analog-to-Digital Converter with Computation (ADCC)

1.1.1 Capacitive Voltage Divider (CVD)

The CVD feature is only functional on PORTA[2:0] and PORTB[4:0]. This feature is not recommended for use on any other pins.

Work around
None.

Affected Silicon Revisions

B0	B2
X	

1.2 Module: Oscillator

1.2.1 Maximum Clock Frequency Limited to 2 MHz for XT Mode

The maximum clock frequency for the intermediate gain setting that supports quartz crystal and ceramic resonator operation (XT mode) is being reduced from 4 MHz to 2 MHz.

Work around
For crystal or resonator frequencies above 2 MHz, use HS mode.

Affected Silicon Revisions

B0	B2
X	X

1.3 Module: I²C

1.3.1 I2CxADR0/1/2/3 Registers Have Incorrect Reset Value

The I2CxADR0/1/2/3 registers reset to 0xFF when the I2CxMD is enabled instead of 0x00.

Work around
None.

Affected Silicon Revisions

B0	B2
X	X

1.4   Module: SRAM

1.4.1   SRAM Read-Back

Following a device power-up sequence, there is a possibility that some SRAM locations will not return the expected written value but will read back '00' instead.

Work around

None. The device can only recover by power cycling.

This erroneous condition can be detected by running the following code that writes non-zero values to SRAM and then verifies that the returned read values are not '00'. If a returned value is '00', the application code has to be put into a safe state until a POR event occurs. This code has to be executed immediately after power-up. If the test passes, the device operation will be normal.

```
// SRAM test

FSR0 = 0xcff;          // Write data into RAM address for devices up to 2K RAM
INDF0 = 0x55;
PROD = INDF0;          // Read back data
if (PROD == 0){
    SAFE_STATE();      // RAM incorrectly read, suspend operation and go to Safe state
}

//For devices with more than 2K of SRAM, add the following code
FSR0 = 0x14ff;         // Write data into RAM
INDF0 = 0x55;
PROD = INDF0;          // Read back data
if (PROD == 0){
    SAFE_STATE();      // RAM incorrectly read, suspend operation and go to Safe state
}

//For devices with more than 4K of SRAM, add the following code
FSR0 = 0x24ff;         // Write data into RAM
INDF0 = 0x55;
PROD = INDF0;          // Read back data
if (PROD == 0){
    SAFE_STATE();      // RAM incorrectly read, suspend operation and go to Safe state
}
```

Affected Silicon Revisions

B0	B2
X	

2. Data Sheet Clarifications

The following typographic corrections and clarifications are to be noted for the latest version of the device data sheet (DS40002170C):

Note:

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

2.1 None

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

3.   Appendix A: Revision History

Doc Rev.	Date	Comments
F	08/2020	Adding silicon revision B2.
E	06/2020	Adding silicon erratum item 1.4.1.
D	06/2020	Adding silicon erratum item 1.3.1.
C	04/2020	Adding XT mode erratum and Temperature Indicator data sheet clarification.
B	02/2020	Add working pins for CVD.
A	12/2019	Initial document release.

Microchip Devices Code Protection Feature

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families 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 Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is 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 products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

The Microchip Website

Microchip provides online support via our website at www.microchip.com/. This website is used to make files and information easily available to customers. Some of the content available includes:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip design partner program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

Product Change Notification Service

Microchip's product change notification service helps keep customers current on Microchip products. Subscribers will receive email notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, go to www.microchip.com/pcn and follow the registration instructions.

Customer Support

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Embedded Solutions Engineer (ESE)
- Technical Support

Customers should contact their distributor, representative or ESE for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in this document.

Technical support is available through the website at: www.microchip.com/support

Microchip Devices Code Protection Feature

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families 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 Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is 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 products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Quality Management System

For information regarding Microchip's Quality Management Systems, please visit www.microchip.com/quality.

Worldwide Sales and Service

AMERICAS	ASIA/PACIFIC	ASIA/PACIFIC	EUROPE
Corporate Office	**Australia - Sydney**	**India - Bangalore**	**Austria - Wels**
2355 West Chandler Blvd.	Tel: 61-2-9868-6733	Tel: 91-80-3090-4444	Tel: 43-7242-2244-39
Chandler, AZ 85224-6199	**China - Beijing**	**India - New Delhi**	Fax: 43-7242-2244-393
Tel: 480-792-7200	Tel: 86-10-8569-7000	Tel: 91-11-4160-8631	**Denmark - Copenhagen**
Fax: 480-792-7277	**China - Chengdu**	**India - Pune**	Tel: 45-4485-5910
Technical Support:	Tel: 86-28-8665-5511	Tel: 91-20-4121-0141	Fax: 45-4485-2829
www.microchip.com/support	**China - Chongqing**	**Japan - Osaka**	**Finland - Espoo**
Web Address:	Tel: 86-23-8980-9588	Tel: 81-6-6152-7160	Tel: 358-9-4520-820
www.microchip.com	**China - Dongguan**	**Japan - Tokyo**	**France - Paris**
Atlanta	Tel: 86-769-8702-9880	Tel: 81-3-6880- 3770	Tel: 33-1-69-53-63-20
Duluth, GA	**China - Guangzhou**	**Korea - Daegu**	Fax: 33-1-69-30-90-79
Tel: 678-957-9614	Tel: 86-20-8755-8029	Tel: 82-53-744-4301	**Germany - Garching**
Fax: 678-957-1455	**China - Hangzhou**	**Korea - Seoul**	Tel: 49-8931-9700
Austin, TX	Tel: 86-571-8792-8115	Tel: 82-2-554-7200	**Germany - Haan**
Tel: 512-257-3370	**China - Hong Kong SAR**	**Malaysia - Kuala Lumpur**	Tel: 49-2129-3766400
Boston	Tel: 852-2943-5100	Tel: 60-3-7651-7906	**Germany - Heilbronn**
Westborough, MA	**China - Nanjing**	**Malaysia - Penang**	Tel: 49-7131-72400
Tel: 774-760-0087	Tel: 86-25-8473-2460	Tel: 60-4-227-8870	**Germany - Karlsruhe**
Fax: 774-760-0088	**China - Qingdao**	**Philippines - Manila**	Tel: 49-721-625370
Chicago	Tel: 86-532-8502-7355	Tel: 63-2-634-9065	**Germany - Munich**
Itasca, IL	**China - Shanghai**	**Singapore**	Tel: 49-89-627-144-0
Tel: 630-285-0071	Tel: 86-21-3326-8000	Tel: 65-6334-8870	Fax: 49-89-627-144-44
Fax: 630-285-0075	**China - Shenyang**	**Taiwan - Hsin Chu**	**Germany - Rosenheim**
Dallas	Tel: 86-24-2334-2829	Tel: 886-3-577-8366	Tel: 49-8031-354-560
Addison, TX	**China - Shenzhen**	**Taiwan - Kaohsiung**	**Israel - Ra'anana**
Tel: 972-818-7423	Tel: 86-755-8864-2200	Tel: 886-7-213-7830	Tel: 972-9-744-7705
Fax: 972-818-2924	**China - Suzhou**	**Taiwan - Taipei**	**Italy - Milan**
Detroit	Tel: 86-186-6233-1526	Tel: 886-2-2508-8600	Tel: 39-0331-742611
Novi, MI	**China - Wuhan**	**Thailand - Bangkok**	Fax: 39-0331-466781
Tel: 248-848-4000	Tel: 86-27-5980-5300	Tel: 66-2-694-1351	**Italy - Padova**
Houston, TX	**China - Xian**	**Vietnam - Ho Chi Minh**	Tel: 39-049-7625286
Tel: 281-894-5983	Tel: 86-29-8833-7252	Tel: 84-28-5448-2100	**Netherlands - Drunen**
Indianapolis	**China - Xiamen**		Tel: 31-416-690399
Noblesville, IN	Tel: 86-592-2388138		Fax: 31-416-690340
Tel: 317-773-8323	**China - Zhuhai**		**Norway - Trondheim**
Fax: 317-773-5453	Tel: 86-756-3210040		Tel: 47-72884388
Tel: 317-536-2380			**Poland - Warsaw**
Los Angeles			Tel: 48-22-3325737
Mission Viejo, CA			**Romania - Bucharest**
Tel: 949-462-9523			Tel: 40-21-407-87-50
Fax: 949-462-9608			**Spain - Madrid**
Tel: 951-273-7800			Tel: 34-91-708-08-90
Raleigh, NC			Fax: 34-91-708-08-91
Tel: 919-844-7510			**Sweden - Gothenberg**
New York, NY			Tel: 46-31-704-60-40
Tel: 631-435-6000			**Sweden - Stockholm**
San Jose, CA			Tel: 46-8-5090-4654
Tel: 408-735-9110			**UK - Wokingham**
Tel: 408-436-4270			Tel: 44-118-921-5800
Canada - Toronto			Fax: 44-118-921-5820
Tel: 905-695-1980			
Fax: 905-695-2078			