



## Product Change Notification / SYST-12SEUY484

---

**Date:**

13-Aug-2020

**Product Category:**

16-Bit - Microcontrollers and Digital Signal Controllers

**PCN Type:**

Document Change

**Notification Subject:**

ERRATA - dsPIC33CK64MC105 Family Silicon Errata and Data Sheet Clarification

**Affected CPNs:**

[SYST-12SEUY484\\_Affected\\_CPN\\_08132020.pdf](#)

[SYST-12SEUY484\\_Affected\\_CPN\\_08132020.csv](#)

**Notification Text:**

SYST-12SEUY484

Microchip has released a new Product Documents for the dsPIC33CK64MC105 Family Silicon Errata and Data Sheet Clarification of devices. If you are using one of these devices please read the document located at [dsPIC33CK64MC105 Family Silicon Errata and Data Sheet Clarification](#).

**Notification Status:** Final

**Description of Change:** Initial version of this document; issued for revision A1.

**Impacts to Data Sheet:** None

**Reason for Change:** To Improve Productivity

**Change Implementation Status:** Complete

**Date Document Changes Effective:** 13 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:

[dsPIC33CK64MC105 Family Silicon Errata and Data Sheet Clarification](#)

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

## Terms and Conditions:

If you wish to [receive Microchip PCNs via email](#) 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 [change your PCN profile, including opt out](#), 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)

DSPIC33CK64MC105-E/M4  
DSPIC33CK64MC105-E/PT  
DSPIC33CK64MC105-H/M4  
DSPIC33CK64MC105-H/PT  
DSPIC33CK64MC105-I/M4  
DSPIC33CK64MC105-I/PT  
DSPIC33CK64MC105T-E/M4  
DSPIC33CK64MC105T-E/PT  
DSPIC33CK64MC105T-I/M4  
DSPIC33CK64MC105T-I/PT

## dsPIC33CK64MC105 Family Silicon Errata and Data Sheet Clarification

The dsPIC33CK64MC105 family devices that you have received conform functionally to the current Device Data Sheet (DS70005399C), 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 dsPIC33CK64MC105 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 (**A1**).

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 website ([www.microchip.com](http://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 dsPIC33CK64MC105 silicon revisions are shown in [Table 1](#).

**TABLE 1: SILICON DEVREV VALUES**

Part Number	Device ID <sup>(1)</sup>	Revision ID for Silicon Revision
		A1
dsPIC33CK32MP102	0x9900	0x0001
dsPIC33CK32MP103	0x9901	
dsPIC33CK32MP105	0x9902	
dsPIC33CK64MP102	0x9910	
dsPIC33CK64MP103	0x9911	
dsPIC33CK64MP105	0x9912	

**Note 1:** The Device IDs (DEVID and DEVREV) are located at the last two implemented addresses of configuration memory space. They are shown in hexadecimal in the format “DEVID DEVREV”.

# dsPIC33CK64MC105

TABLE 2: SILICON ISSUE SUMMARY

Module	Feature	Item Number	Issue Summary	Affected Revisions
				A1
CPU	div.sd Instruction	1.	When using the signed 32-by-16-bit division instruction, div.sd, the Overflow bit is not getting set when an overflow occurs.	X
I <sup>2</sup> C	Interrupt	2.	In Slave mode, an incorrect interrupt is generated with DHEN = 1.	X
I <sup>2</sup> C	Idle	3.	SFRs are reset in Idle mode.	X
Oscillator	VCO Dividers	4.	Main and auxiliary PLL external VCO dividers can fail to output the clock signal.	X
PWM	Time Base Capture	5.	PWM Capture Status (CAP) flag will not set again under certain conditions.	X
UART	Sleep	6.	When waking from Sleep with a UART reception, SLPEN needs to be set in addition to WAKE = 1.	X
UART	IrDA <sup>®</sup>	7.	IrDA not functional.	X

## 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 (**A1**).

### 1. Module: CPU

When using the Signed 32-by-16-Bit Division instruction, `div.sd`, the Overflow bit may not always get set when an overflow occurs. This erratum only affects operations in which at least one of the following conditions is true:

- Dividend and divisor differ in sign
- Dividend > 0x3FFFFFFF, or
- Dividend < 0xC0000000

#### Work around

The application software must perform both the following actions to handle possible undetected overflow conditions:

- a) The value of the dividend must always be constrained to be in the following range:  
 $0xC0000000 \leq \text{Dividend} \leq 0x3FFFFFFF$ .
- b) If the dividend and divisor differ in sign (e.g., dividend is negative and divisor is positive), then after executing the `div.sd` instruction or the compiler built-in function, `__builtin_divsd()`, inspect the sign of the resultant quotient. If the quotient is found to be a positive number, then treat it as an overflow condition.

#### Affected Silicon Revisions

<b>A1</b>								
<b>X</b>								

### 2. Module: I<sup>2</sup>C

In Slave mode with `DHEN = 1` (Data Hold Enable), if software sends a NACK, a Slave interrupt is asserted at the 9th falling edge of the clock.

#### Work around

Software should ignore the Slave interrupt that is asserted after sending a NACK.

#### Affected Silicon Revisions

<b>A1</b>								
<b>X</b>								

### 3. Module: I<sup>2</sup>C

In Slave mode, the SFRs are reset when the device is in Idle and the module is set for discontinuous in Idle (`I2CSIDL`).

#### Work around

None.

#### Affected Silicon Revisions

<b>A1</b>								
<b>X</b>								

### 4. Module: Oscillator

At PLL start-up, the main PLL VCO dividers may occasionally halt and not provide a clock output. The VCO dividers can be selected as clock sources for different peripheral modules, including the ADC, PWM, DAC, UART, etc. VCO divider outputs, `Fvco/2`, `Fvco/3`, `Fvco/4`, `FVCO DIV`, are affected.

#### Work around

1. Use another clock source, such as the `FOSC` or PLL Output (`FPOLLO`) instead of the VCO dividers.
2. If the application requires the VCO divider, test the clock source before using the peripheral in the end application. System resources, including a timer, I/O pin state or interrupts, can be used to detect and verify peripheral activity for presence of the VCO divider clock output. Any type of Reset may recover the VCO divider clock (Software Reset, WDT, MCLR or POR).

#### Affected Silicon Revisions

<b>A1</b>								
<b>X</b>								

# dsPIC33CK64MC105

---

## 5. Module: PWM

When using a PWM Control Input (PCI) to trigger a time base capture, the Capture Status flag, CAP (PGxSTAT[5]), may not set again under certain conditions. When a subsequent PWM capture event occurs while, or just after, reading the current capture value from the PGxCAP register, the Capture Status Flag, CAP, will not set again.

### Work around

Read the PWM Generator Capture (PGxCAP) register at a known time to avoid the condition. The timing of the PGxCAP read operation can be scheduled by using PWM Generator x interrupt or any of the PWM event interrupts corresponding to the PCI event that triggered the time base capture. Read the PGxCAP value after the CAP bit has set within the interrupt.

### Affected Silicon Revisions

A1								
X								

## 6. Module: UART

When waking from Sleep with a UART reception, SLPEN needs to be set in addition to WAKE = 1.

### Work around

Set the SLPEN bit in addition to WAKE before entering Sleep.

### Affected Silicon Revisions

A1								
X								

## 7. Module: UART

The IrDA module is not functional.

### Work around

None.

### Affected Silicon Revisions

A1								
X								

## Data Sheet Clarifications

The following typographic corrections and clarifications are to be noted for the latest version of the device data sheet (DS70005399C):

<p><b>Note:</b> Corrections are shown in <b>bold</b>. Where possible, the original bold text formatting has been removed for clarity.</p>
---

None.



# dsPIC33CK64MC105

---

## APPENDIX A: DOCUMENT REVISION HISTORY

Rev A Document (8/2020)

Initial version of this document; issued for revision A1.

---

**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.

---

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

### Trademarks

The Microchip name and logo, the Microchip logo, Adaptec, AnyRate, AVR, AVR logo, AVR Freaks, BesTime, BitCloud, chipKIT, chipKIT logo, CryptoMemory, CryptoRF, dsPIC, FlashFlex, flexPWR, HELDO, IGLoo, JukeBlox, KeeLoq, Klear, LANCheck, LinkMD, maXStylus, maXTouch, MediaLB, megaAVR, Microsemi, Microsemi logo, MOST, MOST logo, MPLAB, OptoLyzer, PackeTime, PIC, picoPower, PICSTART, PIC32 logo, PolarFire, Prochip Designer, QTouch, SAM-BA, SenGenuity, SpyNIC, SST, SST Logo, SuperFlash, Symmetricom, SyncServer, Tachyon, TempTrackr, TimeSource, tinyAVR, UNI/O, Vectron, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

APT, ClockWorks, The Embedded Control Solutions Company, EtherSynch, FlashTec, Hyper Speed Control, HyperLight Load, IntelliMOS, Libero, motorBench, mTouch, Powermite 3, Precision Edge, ProASIC, ProASIC Plus, ProASIC Plus logo, Quiet-Wire, SmartFusion, SyncWorld, Temux, TimeCesium, TimeHub, TimePictra, TimeProvider, Vite, WinPath, and ZL are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, BlueSky, BodyCom, CodeGuard, CryptoAuthentication, CryptoAutomotive, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, EtherGREEN, In-Circuit Serial Programming, ICSP, INICnet, Inter-Chip Connectivity, JitterBlocker, KlearNet, KlearNet logo, memBrain, Mindi, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICKit, PICtail, PowerSmart, PureSilicon, QMatrix, REAL ICE, Ripple Blocker, SAM-ICE, Serial Quad I/O, SMART-I.S., SQI, SuperSwitcher, SuperSwitcher II, Total Endurance, TSHARC, USBCheck, VariSense, ViewSpan, WiperLock, Wireless DNA, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

The Adaptec logo, Frequency on Demand, Silicon Storage Technology, and Symmcom are registered trademarks of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2020, Microchip Technology Incorporated, All Rights Reserved.

ISBN: 978-1-5224-6544-7

For information regarding Microchip's Quality Management Systems, please visit [www.microchip.com/quality](http://www.microchip.com/quality).



# MICROCHIP

## 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:  
<http://www.microchip.com/support>  
Web Address:  
[www.microchip.com](http://www.microchip.com)

#### Atlanta

Duluth, GA  
Tel: 678-957-9614  
Fax: 678-957-1455

#### Austin, TX

Tel: 512-257-3370

#### Boston

Westborough, MA  
Tel: 774-760-0087  
Fax: 774-760-0088

#### Chicago

Itasca, IL  
Tel: 630-285-0071  
Fax: 630-285-0075

#### Dallas

Addison, TX  
Tel: 972-818-7423  
Fax: 972-818-2924

#### Detroit

Novi, MI  
Tel: 248-848-4000

#### Houston, TX

Tel: 281-894-5983

#### Indianapolis

Noblesville, IN  
Tel: 317-773-8323  
Fax: 317-773-5453  
Tel: 317-536-2380

#### Los Angeles

Mission Viejo, CA  
Tel: 949-462-9523  
Fax: 949-462-9608  
Tel: 951-273-7800

#### Raleigh, NC

Tel: 919-844-7510

#### New York, NY

Tel: 631-435-6000

#### San Jose, CA

Tel: 408-735-9110  
Tel: 408-436-4270

#### Canada - Toronto

Tel: 905-695-1980  
Fax: 905-695-2078

### ASIA/PACIFIC

**Australia - Sydney**  
Tel: 61-2-9868-6733

**China - Beijing**  
Tel: 86-10-8569-7000

**China - Chengdu**  
Tel: 86-28-8665-5511

**China - Chongqing**  
Tel: 86-23-8980-9588

**China - Dongguan**  
Tel: 86-769-8702-9880

**China - Guangzhou**  
Tel: 86-20-8755-8029

**China - Hangzhou**  
Tel: 86-571-8792-8115

**China - Hong Kong SAR**  
Tel: 852-2943-5100

**China - Nanjing**  
Tel: 86-25-8473-2460

**China - Qingdao**  
Tel: 86-532-8502-7355

**China - Shanghai**  
Tel: 86-21-3326-8000

**China - Shenyang**  
Tel: 86-24-2334-2829

**China - Shenzhen**  
Tel: 86-755-8864-2200

**China - Suzhou**  
Tel: 86-186-6233-1526

**China - Wuhan**  
Tel: 86-27-5980-5300

**China - Xian**  
Tel: 86-29-8833-7252

**China - Xiamen**  
Tel: 86-592-2388138

**China - Zhuhai**  
Tel: 86-756-3210040

### ASIA/PACIFIC

**India - Bangalore**  
Tel: 91-80-3090-4444

**India - New Delhi**  
Tel: 91-11-4160-8631

**India - Pune**  
Tel: 91-20-4121-0141

**Japan - Osaka**  
Tel: 81-6-6152-7160

**Japan - Tokyo**  
Tel: 81-3-6880-3770

**Korea - Daegu**  
Tel: 82-53-744-4301

**Korea - Seoul**  
Tel: 82-2-554-7200

**Malaysia - Kuala Lumpur**  
Tel: 60-3-7651-7906

**Malaysia - Penang**  
Tel: 60-4-227-8870

**Philippines - Manila**  
Tel: 63-2-634-9065

**Singapore**  
Tel: 65-6334-8870

**Taiwan - Hsin Chu**  
Tel: 886-3-577-8366

**Taiwan - Kaohsiung**  
Tel: 886-7-213-7830

**Taiwan - Taipei**  
Tel: 886-2-2508-8600

**Thailand - Bangkok**  
Tel: 66-2-694-1351

**Vietnam - Ho Chi Minh**  
Tel: 84-28-5448-2100

### EUROPE

**Austria - Wels**  
Tel: 43-7242-2244-39  
Fax: 43-7242-2244-393

**Denmark - Copenhagen**  
Tel: 45-4485-5910  
Fax: 45-4485-2829

**Finland - Espoo**  
Tel: 358-9-4520-820

**France - Paris**  
Tel: 33-1-69-53-63-20  
Fax: 33-1-69-30-90-79

**Germany - Garching**  
Tel: 49-8931-9700

**Germany - Haan**  
Tel: 49-2129-3766400

**Germany - Heilbronn**  
Tel: 49-7131-72400

**Germany - Karlsruhe**  
Tel: 49-721-625370

**Germany - Munich**  
Tel: 49-89-627-144-0  
Fax: 49-89-627-144-44

**Germany - Rosenheim**  
Tel: 49-8031-354-560

**Israel - Ra'anana**  
Tel: 972-9-744-7705

**Italy - Milan**  
Tel: 39-0331-742611  
Fax: 39-0331-466781

**Italy - Padova**  
Tel: 39-049-7625286

**Netherlands - Drunen**  
Tel: 31-416-690399  
Fax: 31-416-690340

**Norway - Trondheim**  
Tel: 47-7288-4388

**Poland - Warsaw**  
Tel: 48-22-3325737

**Romania - Bucharest**  
Tel: 40-21-407-87-50

**Spain - Madrid**  
Tel: 34-91-708-08-90  
Fax: 34-91-708-08-91

**Sweden - Gothenberg**  
Tel: 46-31-704-60-40

**Sweden - Stockholm**  
Tel: 46-8-5090-4654

**UK - Wokingham**  
Tel: 44-118-921-5800  
Fax: 44-118-921-5820