



Product Change Notification / SYST-31QXLM454

Date:

07-Apr-2023

Product Category:

Microprocessors

PCN Type:

Document Change

Notification Subject:

ERRATA - SAM9X7 Series Silicon Errata and Data Sheet Clarifications

Affected CPNs:

[SYST-31QXLM454_Affected_CPN_04072023.pdf](#)

[SYST-31QXLM454_Affected_CPN_04072023.csv](#)

Notification Text:

SYST-31QXLM454

Microchip has released a new Errata for the SAM9X7 Series Silicon Errata and Data Sheet Clarifications of devices. If you are using one of these devices please read the document located at [SAM9X7 Series Silicon Errata and Data Sheet Clarifications](#).

Notification Status: Final

Description of Change: First issue.

Impacts to Data Sheet: None

Reason for Change: To Improve Productivity

Change Implementation Status: Complete

Date Document Changes Effective: 07 April 2023

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:

[SAM9X7 Series 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 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)

SAM9X75-I/4PB

SAM9X70-I/4PB

SAM9X72-I/4PB

SAM9X75T-I/4PB

SAM9X70T-I/4PB

SAM9X72T-I/4PB

SAM9X7 Series Silicon Errata and Data Sheet Clarifications

SAM9X7 Series

The SAM9X7 Series device that you have received conforms functionally to the current Device Data Sheet (DS60001813), 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 following table. The silicon issues are summarized in [1. Silicon Issue Summary](#).

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

Data Sheet clarifications and corrections (if applicable) are located in [6. Data Sheet Clarifications](#), following the discussion of silicon issues.

The Device and Revision ID values for the SAM9X7 Series silicon device are shown in the following table.

Table 1. SAM9X7 Series Silicon Device Identification

Part Number	Silicon Revision	Device Identification	
		DBGU_CIDR[31:0]	DBGU_EXID[31:0]
SAM9X70-I/4PB	A0	0x89750030	0x00000080
SAM9X70T-I/4PB			0x00000080
SAM9X72-I/4PB			0x00000082
SAM9X72T-I/4PB			0x00000082
SAM9X75-I/4PB			0x00000085
SAM9X75T-I/4PB			0x00000085
SAM9X70-V/4PB			0x00000080
SAM9X70T-V/4PB			0x00000080
SAM9X72-V/4PB			0x00000082
SAM9X72T-V/4PB			0x00000082
SAM9X75-V/4PB			0x00000085
SAM9X75T-V/4PB			0x00000085
SAM9X75-V/4PBVAO			0x00000085
SAM9X75T-V/4PBVAO			0x00000085

Note: Refer to the "Chip Identifier" and "Product Identification System" sections in the current device data sheet (DS60001813) for detailed information on chip identification and version for your specific device.

1. Silicon Issue Summary

Table 1-1. Silicon Issue Summary

Module	Item/Feature	Summary	Affected Silicon Revisions		
			A0		
LCDC	LCDC Register Write Protection status incorrect on some registers	WPVS does not rise when a write protect violation occurs on some registers.	X		
PMC	PLL_INT Interrupt Enable has no effect	PMC_IER.PLL_INT is ineffective.	X		
	Delay to first establish PCK	After a reset, a delay elapses before the PCK is established.	X		
	PCK and GCLK Ready status issue	The PCK and GCLK Ready signals are only affected by the enable/disable of the clock.	X		
	Incorrect MCK intermediate state when switching clocks	MCK shows MAINCK clock cycles after a clock change from PLL to Slow Clock.	X		
RSTC	RSTC_SR.RSTTYP not showing GENERAL_RST	RSTTYP shows BACKUP_RST instead of GENERAL_RST.	X		
SMC	Register Write Protection not effective on SMC_OCMS register	The register write protection is ineffective on SMC_OCMS.	X		

2. LCD Controller (LCDC)

2.1 LCDC Register Write Protection status incorrect on some registers

WPVS bit does not rise when a write protect violation occurs on the following registers:

LCDC_HEOVTAP10Px [x=0..15]

LCDC_HEOVTAP32Px [x=0..15]

LCDC_HEOHTAP10Px [x=0..15]

LCDC_HEOHTAP32Px [x=0..15]

Note the protection is effective even if the status bit does not rise.

Work Around

None.

Affected Silicon Revisions

A0							
X							

3. Power Management Controller (PMC)

3.1 PLL_INT Interrupt Enable has no effect

The PLL_INT interrupt bit in Interrupt Enable register PMC_IER has no effect.

Work Around

Use the LOCKx and UNLOCKx bits in PMC_PLL_IER, PMC_PLL_IDR, PMC_PLL_IMR and PMC_PLL_ISR0 to manage the interrupt behavior.

For example, to handle an interrupt event associated with the PLLA lock status:

1. Configure and enable the PMC interrupt as usual for all peripherals in the system.
2. Enable the interrupt source by setting PMC_PLL_IER.LOCKA.
3. When a PMC interrupt event raises, use the PMC_PLL_ISR0 and PMC_PLL_IMR registers to detect if LOCKA was the trigger.
4. Perform the required operations and manage the interrupt exit as usual, using PMC_PLL_IDR.LOCKA and the PMC interrupt system functions.

Affected Silicon Revisions

A0							
X							

3.2 Delay to first establish PCK

When enabling a PCK after a reset, the delay before establishing the PCK with the correct frequency is 255 cycles of the PCK source clock. Once this delay has elapsed, and as long as the core reset is not asserted, there is no more additional delay when disabling/enabling the PCK.

Work Around

None.

Affected Silicon Revisions

A0							
X							

3.3 PCK and GCLK Ready status issue

The PCK and GCLK Ready signals are only affected by the enable/disable of the corresponding clock (PMC_SCER.PCKx, PMC_SCDR.PCKx or PMC_SR.GCLKEN).

A Ready signal at '1' does not imply the clock is correctly established with the required frequency, hence the Ready status is not affected by the modification of the source or the dividing ratio of the clock. This means that:

1. modifying PMC_PCKx.CSS or PMC_PCKx.PRES does not make PMC_SR.PCKRDYx fall,
2. modifying PMC_PCR.GCLKCSS or PMC_PCR.GCLKDIV does not make PMC_SR.GCLKRDY fall.

Work Around

None.

Affected Silicon Revisions

A0							
X							

3.4 Incorrect MCK intermediate state when switching clocks

When the MCK source is changed from PLL to Slow Clock, MCK shows some MAINCK clock cycles.

Work Around

None.

Affected Silicon Revisions

A0							
X							

4. Reset Controller (RSTC)

4.1 RSTC_SR.RSTTYP not showing GENERAL_RST

In the Status register (RSTC_SR), the RSTTYP field shows BACKUP_RST instead of GENERAL_RST.

Work Around

None

Affected Silicon Revisions

A0							
X							

5. Static Memory Controller (SMC)

5.1 Register Write Protection Not Effective on SMC_OCMS Register

The register SMC_OCMS is not write-protected when the bit WPEN is set in SMC_WPMR.

Work Around

None

Affected Silicon Revisions

A0							
X							

6. Data Sheet Clarifications

6.1 OTP Controller (OTPC)

6.1.1 OTPC Dependency to Main RC Oscillator

The main RC oscillator must be turned on prior to reading or writing the OTP memory.

7. Revision History

7.1 DS80001082A - 03/2023

First issue

Microchip Information

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 products:

- Microchip products meet the specifications contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is secure when used in the intended manner, within operating specifications, and under normal conditions.
- Microchip values and aggressively protects its intellectual property rights. Attempts to breach the code protection features of Microchip product is strictly prohibited and may violate the Digital Millennium Copyright Act.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of its code. Code protection does not mean that we are guaranteeing the product is "unbreakable". Code protection is constantly evolving. Microchip is committed to continuously improving the code protection features of our products.

Legal Notice

This publication and the information herein may be used only with Microchip products, including to design, test, and integrate Microchip products with your application. Use of this information in any other manner violates these terms. Information regarding device applications 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. Contact your local Microchip sales office for additional support or, obtain additional support at www.microchip.com/en-us/support/design-help/client-support-services.

THIS INFORMATION IS PROVIDED BY MICROCHIP "AS IS". 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 ANY IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTIES RELATED TO ITS CONDITION, QUALITY, OR PERFORMANCE.

IN NO EVENT WILL MICROCHIP BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL, OR CONSEQUENTIAL LOSS, DAMAGE, COST, OR EXPENSE OF ANY KIND WHATSOEVER RELATED TO THE INFORMATION OR ITS USE, HOWEVER CAUSED, EVEN IF MICROCHIP HAS BEEN ADVISED OF THE POSSIBILITY OR THE DAMAGES ARE FORESEEABLE. TO THE FULLEST EXTENT ALLOWED BY LAW, MICROCHIP'S TOTAL LIABILITY ON ALL CLAIMS IN ANY WAY RELATED TO THE INFORMATION OR ITS USE WILL NOT EXCEED THE AMOUNT OF FEES, IF ANY, THAT YOU HAVE PAID DIRECTLY TO MICROCHIP FOR THE INFORMATION.

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

AgileSwitch, APT, ClockWorks, The Embedded Control Solutions Company, EtherSynch, Flashtec, Hyper Speed Control, HyperLight Load, Libero, motorBench, mTouch, Powermite 3, Precision Edge, ProASIC, ProASIC Plus, ProASIC Plus logo, Quiet-Wire, SmartFusion, SyncWorld, Temux, TimeCesium, TimeHub, TimePictra, TimeProvider, TrueTime, 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, Augmented Switching, BlueSky, BodyCom, Clockstudio, CodeGuard, CryptoAuthentication, CryptoAutomotive, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, Espresso T1S, EtherGREEN, GridTime, IdealBridge, In-Circuit Serial Programming, ICSP, INICnet, Intelligent Paralleling, IntelliMOS, Inter-Chip Connectivity, JitterBlocker, Knob-on-Display, KoD, maxCrypto, maxView, 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, RTAX, RTG4, SAM-ICE, Serial Quad I/O, simpleMAP, SimpliPHY, SmartBuffer, SmartHLS, SMART-I.S., storClad, SQL, SuperSwitcher, SuperSwitcher II, Switchtec, SynchroPHY, Total Endurance, Trusted Time, TSHARC, USBCheck, VariSense, VectorBlox, VeriPHY, ViewSpan, WiperLock, XpressConnect, 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.

© 2023, Microchip Technology Incorporated and its subsidiaries. All Rights Reserved.

ISBN: 978-1-6683-2099-0

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 2355 West Chandler Blvd. Chandler, AZ 85224-6199 Tel: 480-792-7200 Fax: 480-792-7277 Technical Support: www.microchip.com/support Web Address: www.microchip.com	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	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	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: 47-72884388 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
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			