Product Change Notification / SYST-18KBTK823

Date:

24-Nov-2020

Product Category:

8-bit Microcontrollers

PCN Type:

Silicon Die Revision

Notification Subject:

ERRATA - AVR32DA28/32/48 Silicon Errata and Data Sheet Clarification

Affected CPNs:

SYST-18KBTK823_Affected_CPN_11242020.pdf
SYST-18KBTK823_Affected_CPN_11242020.csv

Notification Text:

SYST-18KBTK823

Microchip has released a new Product Documents for the AVR32DA28/32/48 Silicon Errata and Data Sheet Clarification of devices. If you are using one of these devices please read the document located at AVR32DA28/ 32/ 48 Silicon Errata and Data Sheet Clarification.

Notification Status: Final

Description of Change:
This revision includes the following updates to Data Sheet Clarifications:
1) Add new device revision (A4)
2) Added errata:
– Device: Some Reserved Fuse Bits Are '1'
– Device: CRC Check During Reset Initialization Is not Functional
– CCL: The LINK Input Source Selection for LUT3 Is not Functional on 28- and 32-Pin Device
– RSTCTRL: BOD Registers not Reset When UPDI Is Enabled
– TCA: Restart Will Reset Counter Direction in NORMAL and FRQ Mode
– TCB: CCMP and CNT Registers Operate as 16-Bit Registers in 8-Bit PWM Mode
– TCD: Asynchronous Input Events not Working When TCD Counter Prescaler Is Used
– USART: Start-of-Fra

Impacts to Data Sheet: None

Reason for Change: To Improve Productivity

Change Implementation Status: Complete

Date Document Changes Effective: 24 Nov 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:

AVR32DA28/32/48 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)

AVR32DA28-E/SO
AVR32DA28-E/SP
AVR32DA28-E/SS
AVR32DA28-I/SO
AVR32DA28-I/SP
AVR32DA28-I/SS
AVR32DA28T-E/SO
AVR32DA28T-E/SS
AVR32DA28T-I/SO
AVR32DA28T-I/SS
AVR32DA32-E/PT
AVR32DA32-E/RXB
AVR32DA32-I/PT
AVR32DA32-I/RXB
AVR32DA32T-E/PT
AVR32DA32T-E/RXB
AVR32DA32T-I/PT
AVR32DA32T-I/RXB
AVR32DA48-E/6LX
AVR32DA48-E/PT
AVR32DA48-I/6LX
AVR32DA48-I/PT
AVR32DA48T-E/6LX
AVR32DA48T-E/PT
AVR32DA48T-I/6LX
AVR32DA48T-I/PT

AVR32DA28/32/48

Silicon Errata and Data Sheet Clarification

The AVR32DA28/32/48 devices you have received conform functionally to the current device data sheet (www.microchip.com/DS40002228), except for the anomalies described in this document. The errata described in this document will likely be addressed in future revisions of the AVR32DA28/32/48 devices.

Notes:

- This document summarizes all the silicon errata issues from all revisions of silicon, previous as well as current
- Refer to the Device/Revision ID section in the current device data sheet (www.microchip.com/DS40002228) for more detailed information on Device Identification and Revision IDs for your specific device, or contact your local Microchip sales office for assistance

1. Silicon Issue Summary

Legend

-   Erratum is not applicable.

X   Erratum is applicable.

Peripheral	Short Description	Valid for Silicon Revision	
		Rev. A3[1]	Rev. A4
Device	2.2.1 Some Reserved Fuse Bits Are '1'	X	-
Device	2.2.2 CRC Check During Reset Initialization Is not Functional	X	-
CCL	2.3.1 The LINK Input Source Selection for LUT3 Is not Functional on 28- and 32-Pin Devices	X	X
PORT	2.4.1 Digital Input on Pin Automatically Disabled When Pin Selected for Analog Input	X	X
RSTCTRL	2.5.1 BOD Registers not Reset When UPDI Is Enabled	X	X
TCA	2.6.1 Restart Will Reset Counter Direction in NORMAL and FRQ Mode	X	X
TCB	2.7.1 CCMP and CNT Registers Operate as 16-Bit Registers in 8-Bit PWM Mode	X	X
TCD	2.8.1 Asynchronous Input Events not Working When TCD Counter Prescaler Is Used	X	X
TWI	2.9.1 The Output Pin Override Does not Function as Expected	X	X
USART	2.10.1 Open-Drain Mode Does not Work When TXD Is Configured as Output	X	X
USART	2.10.2 Start-of-Frame Detection Can Unintentionally Be Enabled in Active Mode When RXCIF Is '0'	X	X
ZCD	2.11.1 All ZCD Output Selection Bits Are Tied to the ZCD0 Bit	X	X

Note:

1. This revision is the initial release of the silicon.

2.   Silicon Errata Issues

2.1   Errata Details

-   Erratum is not applicable.

X   Erratum is applicable.

2.2   Device

2.2.1   Some Reserved Fuse Bits Are '1'

The default fuse values may be not compliant with the data sheet. The fuse values will read out as listed below:

- OSCCFG = `0x78` (The device will use the OSCHF clock source)
- SYSCFG0 = `0xF2`
- SYSCFG1 = `0xF8`

Work Around
None.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	-

2.2.2   CRC Check During Reset Initialization Is not Functional

The CRCSRC bit field in the SYSCFG0 fuse is ignored during Reset initialization. A CRC check will not be performed during Reset initialization. CRCSCAN is only available from the software.

Work Around
None.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	-

2.3   CCL - Configurable Custom Logic

2.3.1   The LINK Input Source Selection for LUT3 Is not Functional on 28- and 32-Pin Devices

The LINK option (INSELn in LUT3CTRLB or LUT3CTRLC is '`0x2`') does not work; the output from LUT0 will not get connected as an input to LUT3. This occurs only on 28-pin and 32-pin devices.

Work Around
Connect LUT0 output to LUT3 input using the Event System.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.4 PORT - I/O Configuration

2.4.1 Digital Input on Pin Automatically Disabled When Pin Selected for Analog Input

If an input pin is selected to be analog input, the digital input function for those pins is automatically disabled.

Work Around

None

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.5 RSTCTRL - Reset Controller

2.5.1 BOD Registers not Reset When UPDI Is Enabled

If the UPDI is enabled, the VLMCTRL, INTCTRL, and INTFLAGS registers in BOD will not be reset by other reset sources than POR.

Work Around

None

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.6 TCA - 16-Bit Timer/Counter Type A

2.6.1 Restart Will Reset Counter Direction in NORMAL and FRQ Mode

When the TCA is configured to a NORMAL or FRQ mode (WGMODE in TCAn.CTRLB is '0x0' or '0x1'), a RESTART command or Restart event will reset the count direction to default. The default is counting upwards.

Work Around

None.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.7 TCB - 16-Bit Timer/Counter Type B

2.7.1 CCMP and CNT Registers Operate as 16-Bit Registers in 8-Bit PWM Mode

When the TCB is operating in 8-bit PWM mode (CNTMODE in TCBn.CTRLB is '`0x7`'), the low and high bytes for the CNT and CCMP registers operate as 16-bit registers for read and write. They cannot be read or written independently.

Work Around

Use 16-bit register access. Refer to the data sheet for further information.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.8 TCD - 12-Bit Timer/Counter Type D

2.8.1 Asynchronous Input Events not Working When TCD Counter Prescaler Is Used

When the TCD is configured to use asynchronous input events (CFG in TCDn.EVCTRLx is '`0x2`') and the TCD Counter Prescaler (CNTPRES in TCDn.CTRLA) is different from '`0x0`', events can be missed.

Work Around

Use the TCD Synchronization Prescaler (SYNCPRES in TCDn.CTRLA) instead of the TCD Counter Prescaler. Alternatively, use synchronous input events (CFG in TCDn.EVCTRLx is not '`0x2`') if the input events are longer than one CLK_TCD_CNT cycle.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.9 TWI - Two-Wire Interface

2.9.1 The Output Pin Override Does not Function as Expected

When TWI is enabled, it overrides the output pin driver, but not the output value. The output on the line will always be high when the value in the PORTx.OUT register is '`1`' for the pins corresponding to the SDA or SCL.

Work Around

Ensure that the values in the PORTx.OUT register corresponding to the SCL and SDA pins are '`0`' before enabling the TWI.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.10 USART - Universal Synchronous and Asynchronous Receiver and Transmitter

2.10.1 Open-Drain Mode Does not Work When TXD Is Configured as Output

When configured as an output, the USART TXD pin can drive the pin high regardless of whether the Open-Drain mode is enabled or not.

Work Around

Configure the TXD pin as an input by writing the corresponding bit in PORTx.DIR to '0' when using Open-Drain mode.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.10.2 Start-of-Frame Detection Can Unintentionally Be Enabled in Active Mode When RXCIF Is '0'

The Start-of-Frame Detector can unintentionally be enabled when the device is in Active mode and when the Receive Complete Interrupt Flag (RXCIF) in the USARTn.STATUS register is '0'. If the Receive Data (RXDATA) registers are read while receiving new data, RXCIF is cleared, and the Start-of-Frame Detector will be enabled and falsely detects the following falling edge as a start bit. When the Start-of-Frame Detector detects a start condition, the frame reception is restarted, resulting in corrupt received data. Note that the USART Receive Start Interrupt Flag (RXSIF) always is '0' when in Active mode. No interrupt will be triggered.

Work Around

Disable Start-of-Frame Detection by writing '0' to the Start-of-Frame Detection Enable (SFDEN) bit in the USART Control B (USARTn.CTRLB) register when the device is in Active mode. Enable it again by writing the bit to '1' before transitioning to Standby sleep mode. This work around depends on a protocol preventing a new incoming frame when re-enabling Start-of-Frame Detection. Re-enabling Start-of-Frame Detection, while a new frame is already incoming, will result in corrupted received data.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

2.11 ZCD - Zero-Cross Detector

2.11.1 All ZCD Output Selection Bits Are Tied to the ZCD0 Bit

The Zero Cross Detector n Output (ZCDn) bits in the Pin Position (PORTMUX.ZCDROUTEA) register are tied to ZCD0. Any write to ZCD0 will be reflected in the ZCD1 and ZCD2 as well. Writing to ZCD1 and/or ZCD2 has no effect.

Work Around

Use the Event System or CCL to make the output of ZCD1 or ZCD2 available on a pin.

Affected Silicon Revisions

Rev. A3	Rev. A4
X	X

3.   Data Sheet Clarifications

The following typographic corrections and clarifications are to be noted for the latest version of the device data sheet (www.microchip.com/DS40002228).

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

3.1   Data Sheet Clarifications

None.

4. Document Revision History

Note: The data sheet clarification document revision is independent of the die revision and the device variant (last letter of the ordering number).

4.1 Revision History

Doc. Rev.	Date	Comments
B	11/2020	• Add new device revision (A4) • Added errata: 　– Device: *Some Reserved Fuse Bits Are '1'* 　– Device: *CRC Check During Reset Initialization Is not Functional* 　– CCL: *The LINK Input Source Selection for LUT3 Is not Functional on 28- and 32-Pin Device* 　– RSTCTRL: *BOD Registers not Reset When UPDI Is Enabled* 　– TCA: *Restart Will Reset Counter Direction in NORMAL and FRQ Mode* 　– TCB: *CCMP and CNT Registers Operate as 16-Bit Registers in 8-Bit PWM Mode* 　– TCD: *Asynchronous Input Events not Working When TCD Counter Prescaler Is Used* 　– USART: *Start-of-Frame Detection Can Unintentionally Be Enabled in Active Mode When RXCIF Is '0'*
A	06/2020	Initial document release

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 specifications contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is secure when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods being used in attempts to breach the code protection features of the Microchip devices. We believe that these methods require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Attempts to breach these code protection features, most likely, cannot be accomplished without violating Microchip's intellectual property rights.
- Microchip is willing to work with any customer who is concerned about the integrity of its code.
- 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. 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.

Legal Notice

Trademarks

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	**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	**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
Atlanta Duluth, GA Tel: 678-957-9614 Fax: 678-957-1455	**China - Guangzhou** Tel: 86-20-8755-8029 **China - Hangzhou** Tel: 86-571-8792-8115	**Korea - Daegu** Tel: 82-53-744-4301 **Korea - Seoul** Tel: 82-2-554-7200	**Germany - Garching** Tel: 49-8931-9700 **Germany - Haan** Tel: 49-2129-3766400
Austin, TX Tel: 512-257-3370	**China - Hong Kong SAR** Tel: 852-2943-5100	**Malaysia - Kuala Lumpur** Tel: 60-3-7651-7906	**Germany - Heilbronn** Tel: 49-7131-72400
Boston Westborough, MA Tel: 774-760-0087 Fax: 774-760-0088	**China - Nanjing** Tel: 86-25-8473-2460 **China - Qingdao** Tel: 86-532-8502-7355	**Malaysia - Penang** Tel: 60-4-227-8870 **Philippines - Manila** Tel: 63-2-634-9065	**Germany - Karlsruhe** Tel: 49-721-625370 **Germany - Munich** Tel: 49-89-627-144-0 Fax: 49-89-627-144-44
Chicago Itasca, IL Tel: 630-285-0071 Fax: 630-285-0075	**China - Shanghai** Tel: 86-21-3326-8000 **China - Shenyang** Tel: 86-24-2334-2829	**Singapore** Tel: 65-6334-8870 **Taiwan - Hsin Chu** Tel: 886-3-577-8366	**Germany - Rosenheim** Tel: 49-8031-354-560 **Israel - Ra'anana** Tel: 972-9-744-7705
Dallas Addison, TX Tel: 972-818-7423 Fax: 972-818-2924	**China - Shenzhen** Tel: 86-755-8864-2200 **China - Suzhou** Tel: 86-186-6233-1526	**Taiwan - Kaohsiung** Tel: 886-7-213-7830 **Taiwan - Taipei** Tel: 886-2-2508-8600	**Italy - Milan** Tel: 39-0331-742611 Fax: 39-0331-466781 **Italy - Padova** Tel: 39-049-7625286
Detroit Novi, MI Tel: 248-848-4000	**China - Wuhan** Tel: 86-27-5980-5300	**Thailand - Bangkok** Tel: 66-2-694-1351	**Netherlands - Drunen** Tel: 31-416-690399 Fax: 31-416-690340
Houston, TX Tel: 281-894-5983	**China - Xian** Tel: 86-29-8833-7252	**Vietnam - Ho Chi Minh** Tel: 84-28-5448-2100	**Norway - Trondheim** Tel: 47-72884388
Indianapolis Noblesville, IN Tel: 317-773-8323 Fax: 317-773-5453 Tel: 317-536-2380	**China - Xiamen** Tel: 86-592-2388138 **China - Zhuhai** Tel: 86-756-3210040		**Poland - Warsaw** Tel: 48-22-3325737 **Romania - Bucharest** Tel: 40-21-407-87-50
Los Angeles Mission Viejo, CA Tel: 949-462-9523 Fax: 949-462-9608 Tel: 951-273-7800			**Spain - Madrid** Tel: 34-91-708-08-90 Fax: 34-91-708-08-91
Raleigh, NC Tel: 919-844-7510			**Sweden - Gothenberg** Tel: 46-31-704-60-40
New York, NY Tel: 631-435-6000			**Sweden - Stockholm** Tel: 46-8-5090-4654
San Jose, CA Tel: 408-735-9110 Tel: 408-436-4270			**UK - Wokingham** Tel: 44-118-921-5800 Fax: 44-118-921-5820
Canada - Toronto Tel: 905-695-1980 Fax: 905-695-2078			