The ATmega808/809/1608/1609 devices of the megaAVR® 0-series you have received conform functionally to the current device data sheet (www.microchip.com/DS40002172), except for the anomalies described in this document. The errata described in this document will likely be addressed in future revisions of the ATmega808/809/1608/1609 devices.

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

**Note:** Refer to the Device/Revision ID section in the current device data sheet (www.microchip.com/DS40002172) for more detailed information on Device Identification and Revision IDs for your specific device, or contact your local Microchip sales office for assistance.
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1. Silicon Issue Summary

Legend
- Erratum is not applicable.
X     Erratum is applicable.
*     This silicon revision was never released to production.

Errata Overview

<table>
<thead>
<tr>
<th>Peripheral</th>
<th>Short Description</th>
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<td>ADC</td>
<td>2.3.1 One Extra Measurement Performed After Disabling ADC Free-Running Mode</td>
<td>X</td>
</tr>
<tr>
<td>ADC</td>
<td>2.3.2 ADC Functionality Cannot be Ensured with CLKADC Above 1.5 MHz and a Setting of 25% Duty Cycle</td>
<td>X</td>
</tr>
<tr>
<td>ADC</td>
<td>2.3.3 ADC Performance Degrades with CLKADC Above 1.5 MHz and VDD &lt; 2.7V</td>
<td>X</td>
</tr>
<tr>
<td>TCB</td>
<td>2.4.1 TCA Restart Command Does Not Force a Restart of TCB</td>
<td>X</td>
</tr>
<tr>
<td>TCB</td>
<td>2.4.2 Minimum Event Duration Must Exceed Selected Clock Period</td>
<td>X</td>
</tr>
<tr>
<td>USART</td>
<td>2.5.1 TXD Pin Override Not Released When Disabling the Transmitter</td>
<td>X</td>
</tr>
</tbody>
</table>
2. Silicon Errata

2.1 Errata Details

- Erratum is not applicable.
- X Erratum is applicable.
* This silicon revision was never released to production.

2.2 PORTMUX

2.2.1 SPI SS Pin is Connected to Pin Even if SPI is Configured to Have No Port Connection

The SPI\textsubscript{SS} pin is connected even if NONE is selected in the SPI\textsubscript{SS} field in PORTMUX.TWISPIROUTE. If SPI\textsubscript{n} is operating in Master mode and the SPI\textsubscript{SS} pin goes low, or input is disabled, the SPI\textsubscript{n} will exit Master mode.

Work around

Write the SSD bit in SPI\textsubscript{n}.CTRLB to ‘1’ to ignore the SPI\textsubscript{SS} signal.

Affected Silicon Revisions

<table>
<thead>
<tr>
<th>Rev. A</th>
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</table>

2.3 ADC

2.3.1 One Extra Measurement Performed After Disabling ADC Free-Running Mode

The ADC may perform one additional measurement after clearing ADC\textsubscript{n}.CTRLA.FREERUN.

Work around

Write ADC\textsubscript{n}.CTRLA.ENABLE to ‘0’ to stop the free-running mode immediately.

Affected Silicon Revisions

<table>
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<tr>
<th>Rev. A</th>
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</table>

2.3.2 ADC Functionality Cannot be Ensured with CLK\textsubscript{ADC} Above 1.5 MHz and a Setting of 25% Duty Cycle

The ADC functionality cannot be ensured if CLK\textsubscript{ADC} > 1.5 MHz with ADC\textsubscript{n}.CALIB.DUTYCYC set to ‘1’.

Work around

If ADC is operated with CLK\textsubscript{ADC} > 1.5 MHz, ADC\textsubscript{n}.CALIB.DUTYCYC must be set to ‘0’ (50% duty cycle).

Affected Silicon Revisions

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</table>
2.3.3 ADC Performance Degrades with $\text{CLK}_{\text{ADC}}$ Above 1.5 MHz and $V_{\text{DD}} < 2.7\text{V}$

The ADC INL performance degrades if $\text{CLK}_{\text{ADC}} > 1.5$ MHz and $\text{ADCn.CALIB.DUTYCYC}$ set to ‘0’ for $V_{\text{DD}} < 2.7\text{V}$.

Work around
None.

Affected Silicon Revisions

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<tr>
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2.4 TCB

2.4.1 TCA Restart Command Does Not Force a Restart of TCB

The TCA restart command does not force a restart of the TCB when TCB is running in SYNCUPD mode. TCB is only restarted after a TCA OVF.

Work around
None.

Affected Silicon Revisions

<table>
<thead>
<tr>
<th>Rev. A</th>
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</table>

2.4.2 Minimum Event Duration Must Exceed Selected Clock Period

Event detection will fail if TCBn receives an input event with a high/low period shorter than the period of the selected clock source ($\text{CLKSEL}$ in TCBn.CTRLA).

This applies to the TCB modes (CNTMODE in TCBn.CTRLB) Time-out check and Input Capture Frequency and Pulse-Width Measurement mode.

Work around
Ensure that the high/low period of the input events is equal to or longer than the period of the selected clock source ($\text{CLKSEL}$ in TCBn.CTRLA).

Affected Silicon Revisions

<table>
<thead>
<tr>
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</table>

2.5 USART

2.5.1 TXD Pin Override Not Released When Disabling the Transmitter

Event detection will fail if TCBn receives an input event with a high/low period shorter than the period of the selected clock source ($\text{CLKSEL}$ in TCBn.CTRLA).

The USART will not release the TXD pin override if:
1. The USART transmitter is disabled by writing the TXEN bit in USART.CTRLB to ‘0’ while the USART receiver is disabled (RXEN in USART.CTRLB is ‘0’).

2. Both the USART transmitter and receiver are disabled at the same time by writing the TXEN and RXEN bits in USART.CTRLB to ‘0’.

**Work around**

There are two possible workarounds:

- Make sure the receiver is enabled (RXEN in USART.CTRLB is ‘1’) while disabling the transmitter (writing TXEN in USART.CTRLB to ‘0’)

- Write to any register in the USART after disabling the transmitter. This will start the USART for long enough to release the pin override of the TXD pin

**Affected Silicon Revisions**

<table>
<thead>
<tr>
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3. **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

<table>
<thead>
<tr>
<th>Doc Rev.</th>
<th>Date</th>
<th>Comments</th>
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</table>
| A        | 01/2020| • Document  
          |        |   – Change document structure from one document for the entire megaAVR 0-series to one document per data sheet:  
          |        |     • from: megaAVR-0-series-Errata-and-Clarification-80000777C.pdf  
          |        |     • to: ATmega808_809_1608_1609-Errata-and-Clarification-DS8000868A.pdf  
          |        | – Updated document template  
          |        | • Errata  
          |        |     – The ADC errata, ADC Functionality Cannot be Ensured with ADCCLK Above 1.5 MHz for All Conditions, has been split into two separate erratas and rewritten |

4.2 Appendix - Obsolete Revision History

Note: Due to document structure change from a single megaAVR 0-series to one document per data sheet, the following history from www.microchip.com/DS80000777 is provided as reference.

<table>
<thead>
<tr>
<th>Doc Rev.</th>
<th>Date</th>
<th>Comments</th>
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| C        | 08/2019| • New Errata:  
          |        |     – CPUINT: Interrupt Level 1 Does Not Work  
          |        | Note: Only applicable to ATmega4808/4809 for specific date codes. |
| B        | 07/2019| • Document  
          |        |     – Adding variants with 16 KB and 8 KB Flash  
          |        |     – Adding 40-pin variant of ATmega4809  
          |        |     – Changing document title  
          |        |     – Adding section "Data Sheet Clarifications"  
          |        | • New Errata:  
          |        |     – PORTMUX: SPI SS is Connected to Pin Even if SPI is Configured to Have No Port Connection  
          |        |     – TCB: Minimum Event Duration Must Exceed Selected Clock Period  
          |        |     – USART: TXD Pin Override Not Released When Disabling the Transmitter  
          |        | • Erratum for TCA removed: Issuing a restart will clear the direction bit - the data sheet is describing this correctly. |
| A        | 02/2018| • Initial document release. |
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