ATmega48A/PA/88A/PA/168A/PA/328/P

ATmega48A/PA/88A/PA/168A/PA/328/P Silicon Errata and Data Sheet Clarification

Introduction

The ATmega48A/PA/88A/PA/168A/PA/328/P devices you have received conform functionally to the current device data sheet (www.microchip.com/DS40002061), except for the anomalies described in this document. The erratas described in this document will likely be addressed in future revisions of the ATmega48A/PA/88A/PA/168A/PA/328/P devices.

Note:

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

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1. Silicon Issue Summary

Legend

- **-** Erratum is not applicable.
- **X** Erratum is applicable.

Peripheral	Short Description	Valid for Silicon Revision								
		ATmega48A/PA		ATmega88A/PA		ATmega168A/PA		ATmega328/P		
		Rev. D (1)	Rev. E	Rev. F (1)	Rev. G	Rev. E (1)	Rev. L	Rev. A	Rev. B	Rev. D
System Clock and Clock Options	2.2.1 Unstable 32 kHz Oscillator	-	-	-	-	-	-	X	X	-
TWI	2.3.1 TWI Data Setup Time Can Be Too Short	X	X	X	X	X	X	-	-	X
Analog Comparator	2.4.1 Analog MUX Can Be Turned Off When Setting the ACME Bit	X	X	X	X	X	X	X	X	X

Note:

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

The following silicon revisions were never released to production:

- ATmega48A/PA
  - Rev. A-C
- ATmega88A/PA
  - Rev. A-E
- ATmega168A/PA
  - Rev. A-D
  - Rev. F-K
- ATmega328/P
  - Rev. C

2. Silicon Errata Issues

2.1 Errata Details

- **-** Erratum is not applicable.
- **X** Erratum is applicable.

2.2 System Clock and Clock Options

2.2.1 Unstable 32 kHz Oscillator

The 32 kHz oscillator does not work as a system clock and if it used as an asynchronous timer, it is inaccurate.

Work around

None.

Affected Silicon Revisions

ATmega48A/PA	
Rev. D	Rev. E
-	-

ATmega88A/PA	
Rev. F	Rev. G
-	-

ATmega168A/PA	
Rev. E	Rev. L
-	-

ATmega328/P		
Rev. A	Rev. B	Rev. D
X	X	-

2.3 TWI - Two-Wire Interface

2.3.1 TWI Data Setup Time Can Be Too Short

When running the device as a TWI slave with a system clock above 2 MHz, the data setup time for the first bit after ACK may, in some cases, be too short. This may cause a false start or stop condition on the TWI line.

Work around

Insert a delay between setting TWDR and TWCR.

Affected Silicon Revisions

ATmega48A/PA	
Rev. D	Rev. E
X	X

ATmega88A/PA	
Rev. F	Rev. G
X	X

ATmega168A/PA	
Rev. E	Rev. L
X	X

ATmega328/P		
Rev. A	Rev. B	Rev. D
-	-	X

2.4 AC - Analog Comparator

2.4.1 Analog MUX Can Be Turned Off When Setting the ACME Bit

If the ACME (Analog Comparator Multiplexer Enabled) bit in ADCSRB is set while MUX3 in ADMUX is '1' (ADMUX[3:0]=1xxx), all MUXs are turned off until the ACME bit is cleared.

Work around

Clear the MUX3 bit before setting the ACME bit.

Affected Silicon Revisions

ATmega48A/PA	
Rev. D	Rev. E
X	X

ATmega88A/PA	
Rev. F	Rev. G
X	X

ATmega168A/PA	
Rev. E	Rev. L
X	X

ATmega328/P		
Rev. A	Rev. B	Rev. D
X	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/DS40002061).

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

3.1 None

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

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
A	09/2020	Initial release of this document. • Content moved from the data sheet and restructured to the new document template • Updated the die revision list to reflect die revisions in production

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