

Introduction

The ATxmega256A3U/192A3U/128A3U/64A3U devices you have received conform functionally to the current device data sheet (ww1.microchip.com/downloads/en/DeviceDoc/Atmel-8386-8-and-16-bit-AVR-Microcontroller-ATxmega64A3U-128A3U-192A3U-256A3U_datasheet.pdf), except for the anomalies described in this document. The errata described in this document will likely be addressed in future revisions of the ATxmega256A3U/192A3U/128A3U/64A3U devices.

Note:

- This document summarizes all the silicon errata issues from all silicon revisions, previous and current

1. Silicon Issue Summary

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

Peripheral	Short Description	Valid for Silicon Revision			
		ATxmega256A3U	ATxmega192A3U	ATxmega128A3U	ATxmega64A3U
		Rev. G ⁽¹⁾			Rev. I ⁽¹⁾
AWeX	2.2.1. AWeX Fault Protection Restore is Not Done Correctly in Pattern Generation Mode	X			-
DAC	2.3.1. The DAC Channel 1 Has Not Been Calibrated in The XMEGA Devices Released Before April 2012	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 AWeX – Advanced Waveform eXtension

2.2.1 AWeX Fault Protection Restore is Not Done Correctly in Pattern Generation Mode

When a fault is detected, the OUTOVEN register is cleared. When the fault condition is solved, OUTOVEN is restored according to the corresponding enabled DTI channels, which doesn't affect Common Waveform Channel Mode (CWCM), as the OUTOVEN is correct after restoring from fault. For Pattern Generation Mode (PGM), OUTOVEN should instead have been restored according to the DTLSBUF register.

Work Around

For CWCM, no workaround is required.

For PGM in latched mode, disable the DTI channels before returning from the fault condition. Then, set the correct OUTOVEN value and enable the DTI channels before the direction (DIR) register is written to re-enable the correct outputs.

For PGM in cycle-by-cycle mode, there is no workaround.

Affected Silicon Revisions

ATxmega256A3U/192A3U/128A3U
Rev. G
X
ATxmega64A3U
Rev. I
-

2.3 DAC – 12-bit Digital to Analog Converter

2.3.1 The DAC Channel 1 Has Not Been Calibrated in The XMEGA® Devices Released Before April 2012

The DAC Channel 1 has not been calibrated in the XMEGA devices released before April 2012.

Work Around

None.

Affected Silicon Revisions

ATxmega256A3U/192A3U/128A3U
Rev. G
X
ATxmega64A3U
Rev. I
-

3. Data Sheet Clarifications

Note the following typographic corrections and clarifications for the latest version of the device data sheet (ww1.microchip.com/downloads/en/DeviceDoc/Atmel-8386-8-and-16-bit-AVR-Microcontroller-ATxmega64A3U-128A3U-192A3U-256A3U_datasheet.pdf).

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

3.1 Errata Section in Data Sheet is no Longer Valid

A clarification for the Errata section in the device data sheet has been made.

The errata content has been moved to a separate document, *ATxmega256A3U/192A3U/128A3U/64A3U Silicon Errata and Data Sheet Clarifications* (this document).

See the *Silicon Errata Issues* section of this document for the latest errata.

3.2 Ordering Information

3.2.1 Ordering Information

A clarification for the Ordering Information section in the device data sheet has been made, removing all invalid ordering codes.

The updated table is shown below.

Ordering code	Flash (bytes)	EEPROM (bytes)	SRAM (bytes)	Speed (MHz)	Power supply	Package ^(1,2,3)	Temp.
ATxmega256A3U-AU	256K + 8K	4K	16K	32	1.6 - 3.6V	64A	-40°C - 85°C
ATxmega256A3U-AUR ⁽⁴⁾	256K + 8K	4K	16K				
ATxmega192A3U-AU	192K + 8K	2K	16K				
ATxmega192A3U-AUR ⁽⁴⁾	192K + 8K	2K	16K				
ATxmega128A3U-AU	128K + 8K	2K	8K				
ATxmega128A3U-AUR ⁽⁴⁾	128K + 8K	2K	8K				
ATxmega64A3U-AU	64K + 4K	2K	4K				
ATxmega64A3U-AUR ⁽⁴⁾	64K + 4K	2K	4K				
ATxmega256A3U-MH	256K + 8K	4K	16K			64M2	
ATxmega256A3U-MHR ⁽⁴⁾	256K + 8K	4K	16K				
ATxmega192A3U-MH	192K + 8K	2K	16K				
ATxmega192A3U-MHR ⁽⁴⁾	192K + 8K	2K	16K				
ATxmega128A3U-MH	128K + 8K	2K	8K				
ATxmega128A3U-MHR ⁽⁴⁾	128K + 8K	2K	8K				
ATxmega64A3U-MH	64K + 4K	2K	4K				
ATxmega64A3U-MHR ⁽⁴⁾	64K + 4K	2K	4K				
ATxmega256A3U-AN	256K + 8K	4K	16K	32	1.6 - 3.6V	64A	-40°C - 105°C
ATxmega256A3U-ANR ⁽⁴⁾	256K + 8K	4K	16K				
ATxmega192A3U-AN	192K + 8K	2K	16K				
ATxmega192A3U-ANR ⁽⁴⁾	192K + 8K	2K	16K				

Notes:

1. This device can also be supplied in wafer form. Contact your local Microchip sales office for detailed ordering information.
2. Pb-free packaging complies with the European Directive for Restriction of Hazardous Substances (RoHS directive). It is also halide-free and fully Green.
3. For packaging information, see "*Packaging information*".
4. Tape and Reel.

Package Type	
64A	64-lead, 14 x 14 mm body size, 1.0 mm body thickness, 0.8 mm lead pitch, thin profile plastic quad flat package (TQFP)
64M2	64-pad, 9 x 9 x 1.0 mm body, lead pitch 0.50 mm, 7.65 mm exposed pad, quad flat no-lead package (QFN)

3.3 Electrical Characteristics

3.3.1 Electrical Characteristics - ATxmega64A3U

A clarification has been made for the electrical characteristics for ATxmega64A3U, removing all traces of 105°C characteristics.

The following tables are affected:

- *Table 36-2* in the General Operating Conditions section
- *Table 36-4* in the Current Consumption section
- *Table 36-20* in the Flash and EEPROM Memory Characteristics section

Functional changes are shown in **bold**.

Table 36-2 General Operating Conditions

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
V _{CC}	Power supply voltage		1.60		3.6	V
AV _{CC}	Analog supply voltage		1.60		3.6	V
T _A	Temperature range	85°C	-40		85	°C
		105°C	-40		105	
T _j	Junction temperature	85°C	-40		105	°C
		105°C	-40		125	

Table 36-4 Current Consumption For Active Mode And Sleep Modes

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
I _{CC}	Active power consumption ⁽¹⁾	32 kHz, Ext. Clk	V _{CC} = 1.8V		50	μA
			V _{CC} = 3.0V		125	
		1 MHz, Ext. Clk	V _{CC} = 1.8V		250	
			V _{CC} = 3.0V		520	
		2 MHz, Ext. Clk	V _{CC} = 1.8V		450	mA
			V _{CC} = 3.0V		0.9	
		32 MHz, Ext. Clk		9.5	15	mA
	Idle power consumption ⁽¹⁾	32 kHz, Ext. Clk	V _{CC} = 1.8V		3.0	μA
			V _{CC} = 3.0V		4.8	
		1 MHz, Ext. Clk	V _{CC} = 1.8V		75	
			V _{CC} = 3.0V		140	
		2 MHz, Ext. Clk	V _{CC} = 1.8V		145	mA
			V _{CC} = 3.0V		275	
		32 MHz, Ext. Clk		4.4	7.0	mA

.....continued

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
I _{CC}	Power-down power consumption	T = 25°C	V _{CC} = 3.0V	0.1	1.0	μA
		T = 85°C		1.6	5.0	
		T = 105°C		1.6	7	
		WDT and Sampled BOD enabled, T = 25°C	V _{CC} = 3.0V	1.3	3.0	
		WDT and Sampled BOD enabled, T = 85°C		2.5	7.0	
		WDT and Sampled BOD enabled, T = 105°C		2.5	8	
	Power-save power consumption ⁽²⁾	RTC from ULP clock, WDT and sampled BOD enabled, T = 25°C	V _{CC} = 1.8V	1.2		μA
			V _{CC} = 3.0V	1.3		
		RTC from 1.024 kHz, low power 32.768 kHz TOSC, T = 25°C	V _{CC} = 1.8V	0.6	2	
			V _{CC} = 3.0V	0.7	2	
		RTC from low power 32.768 kHz TOSC, T = 25°C	V _{CC} = 1.8V	0.8	3	
			V _{CC} = 3.0V	1.0	3	
	Reset power consumption	Current through RESET pin subtracted	V _{CC} = 3.0V	150		μ

Notes:

1. All Power Reduction Registers set.
2. Maximum limits are based on characterization and not tested in production.

Table 36-20 Endurance And Data Retention

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
	Flash	Write/Erase cycles	25°C	10K		Cycle
			85°C	10K		
			105°C	2K		
		Data retention	25°C	100		Year
			85°C	25		
			105°C	10		
	EEPROM	Write/Erase cycles	25°C	100K		Cycle
			85°C	100K		
			105°C	30K		
		Data retention	25°C	100		Year
			85°C	25		
			105°C	10		

3.3.2 Electrical Characteristics - ATxmega128A3U

A clarification has been made for the electrical characteristics for ATxmega128A3U, removing all traces of 105°C characteristics.

The following tables are affected:

- *Table 36-34* in the General Operating Conditions section
- *Table 36-36* in the Current Consumption section
- *Table 36-52* in the Flash and EEPROM Memory Characteristics section

Functional changes are shown in **bold**.

Table 36-34 General Operating Conditions

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
V _{CC}	Power supply voltage		1.60		3.6	V
AV _{CC}	Analog supply voltage		1.60		3.6	V
T _A	Temperature range	85°C	-40		85	°C
		105°C	-40		105	
T _j	Junction temperature	85°C	-40		105	°C
		105°C	-40		125	

Table 36-36 Current Consumption For Active Mode And Sleep Modes

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
I _{CC}	Active power consumption ⁽¹⁾	32 kHz, Ext. Clk	V _{CC} = 1.8V	60		μA
			V _{CC} = 3.0V	140		
		1 MHz, Ext. Clk	V _{CC} = 1.8V	280		
			V _{CC} = 3.0V	600		
		2 MHz, Ext. Clk	V _{CC} = 1.8V	510	600	mA
			V _{CC} = 3.0V	1.1	1.5	
	Idle power consumption ⁽¹⁾	32 kHz, Ext. Clk		10.5	15	μA
		1 MHz, Ext. Clk	V _{CC} = 1.8V	4.3		
			V _{CC} = 3.0V	4.8		
		2 MHz, Ext. Clk	V _{CC} = 1.8V	78		
			V _{CC} = 3.0V	147		
		32 MHz, Ext. Clk	V _{CC} = 1.8V	156	250	
			V _{CC} = 3.0V	293	600	
				4.7	7	mA

.....continued

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
I _{CC}	Power-down power consumption	T = 25°C	V _{CC} = 3.0V	0.1	1.0	μA
		T = 85°C		1.75	5.0	
		T = 105°C		4	8	
		WDT and sampled BOD enabled, T = 25°C	V _{CC} = 3.0V	1.2	3.0	
		WDT and sampled BOD enabled, T = 85°C		3.1	7	
		WDT and sampled BOD enabled, T = 105°C		5.3	10	
	Power-save power consumption ⁽²⁾	RTC from ULP clock, WDT and sampled BOD enabled, T = 25°C	V _{CC} = 1.8V	1.2		μA
			V _{CC} = 3.0V	1.3		
		RTC from 1.024 kHz low power 32.768 kHz TOSC, T = 25°C	V _{CC} = 1.8V	0.5	2	
			V _{CC} = 3.0V	0.7	2	
		RTC from low power 32.768 kHz TOSC, T = 25°C	V _{CC} = 1.8V	0.9	3	
			V _{CC} = 3.0V	1.2	3.5	
	Reset power consumption	Current through RESET pin subtracted	V _{CC} = 3.0V	150		μA

Notes:

1. All Power Reduction Registers set.
2. Maximum limits are based on characterization and not tested in production.

Table 36-52 Endurance And Data Retention

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
	Flash	Write/Erase cycles	25°C	10K		Cycle
			85°C	10K		
			105°C	2K		
		Data retention	25°C	100		Year
			85°C	25		
			105°C	10		
	EEPROM	Write/Erase cycles	25°C	100K		Cycle
			85°C	100K		
			105°C	30K		
		Data retention	25°C	100		Year
			85°C	25		
			105°C	10		

3.4 Typical Characteristics

3.4.1 Typical Characteristics - ATxmega64A3U/ATxmega128A3U

A clarification for the *Typical Characteristics* section in the device data sheet has been made.

Typical characterizations @105°C are not applicable for neither ATxmega64A3U or ATxmega128A3U.

4. Document Revision History

Note: The document revision is independent of the silicon revision.

4.1 Revision History

Doc. Rev.	Date	Comments
A	01/2024	Initial document release • Errata content moved from the data sheet and restructured to the new document template • Added new rev I for ATxmega64A3U • Data sheet clarifications added: – Ordering Information – Electrical Characteristics: • ATxmega64A3U • ATxmega128A3U – Typical Characteristics

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