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AVR523: Migration from ATmega8 to ATmega8A



8-bit **AVR**[®]
Microcontrollers

1 Introduction

In order to optimize the manufacturing process and to further reduce current consumption, an optimized version of ATmega8 has been introduced.

The ATmega8A is a functionally identical, drop-in replacement for the ATmega8. All devices are subject to the same qualification process and same set of production tests, but as the manufacturing process is not the same some electrical characteristics differ.

ATmega8 and ATmega8A have separate datasheets. This application note outlines the differences between the two devices and the datasheets. There is also a detailed change log to assist the user at the end of the ATmega8A datasheet. Remember to always use the latest revision of the device datasheet.

Minor differences in typical characteristics are not discussed in this document as long as the low and high limits remain the same. For detailed information about the typical characteristics, see sections "Electrical Characteristics" and "Typical Characteristics" of the device datasheets.

Note: This application note serves as a guide to ease migration. For complete device details, always refer to the most recent version of the ATmega8A datasheet.

Application Note

Rev. 8164A-AVR-05/09



2 Changes in Characteristics

This section outlines major differences in characteristics that may have an effect on the application in which the device is used. For detailed information, refer to the most recent version of the device datasheets.

2.1 Current Consumption

Active and Idle mode current consumption of the device has been reduced significantly. The tables below present typical current consumption figures at room temperature. All values are taken from device datasheets, unless otherwise noted.

Table 2-1. Typical Current Consumption of Device at Room Temperature

Mode	Condition	ATmega8	ATmega8A	Change
Active	$V_{CC}=3V$, $f=4$ MHz	3 mA	2mA	- 33%
	$V_{CC}=5V$, $f=8$ MHz	11 mA	6 mA	- 45%
Idle	$V_{CC}=3V$, $f=4$ MHz	1 mA	0.5 mA	- 50%
	$V_{CC}=5V$, $f=8$ MHz	4.5 mA	2.2 mA	- 51%

2.2 VOL Levels

In Table 2-2 are listed differences in output voltage levels.

Table 2-2. Changes to VOL and VOH Levels

Symbol	Parameter	Condition	ATmega8		ATmega8A		Units
			Min	Max	Min	Max	
V_{OL}	Output Low Voltage (Ports A - G)	$I_{OL}=20mA$, $V_{CC}=5V$	-	0.7	-	0.9	V
		$I_{OL}=10mA$, $V_{CC}=3V$	-	0.5	-	0.6	V

2.3 Voltage Reference Levels

In Table 2-3 are listed differences in reference voltage levels.

Table 2-3. Changes to Internal Voltage Reference Levels

Symbol	Parameter	ATmega8			ATmega8A			Unit
		Min	Typ	Max	Min	Typ	Max	
V_{INT}	Internal Voltage Reference	2.3	2.56	2.7	2.3	2.56	2.8	V

3 Datasheet Changes

For a summary of changes, see the revision history at the end of the ATmega8A datasheet.



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