AVR524: Migration from ATmega64 to ATmega64A

1 Introduction

In order to optimize the manufacturing process and to further reduce current consumption, an optimized version of ATmega64 has been introduced.

The ATmega64A is a functionally identical, drop-in replacement for the ATmega64. 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.

ATmega64 and ATmega64A 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 ATmega64A 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 ATmega64A datasheet.

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	ATmega64	ATmega64A	Change
Active	V_{CC}=3V, f=4 MHz	4.1 mA	2.5 mA	- 39%
	V_{CC}=5V , f=8 MHz	15,5 mA	9 mA	- 42%
Idle	V_{CC}=3V, f=4 MHz	2 mA	0.7 mA	- 65%
	V_{CC}=5V , f=8 MHz	8 mA	2.8 mA	- 65%
Reset	V_{CC}=3V, f=4 MHz	3 mA	2.5 mA	- 17%
	V_{CC}=5V , f=8 MHz	13 mA	7.8 mA	- 40%

2.2 VOL Levels

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

Table 2-2. Changes to VOL and VOH Levels

Symbol	Parameter	Condition	ATmega64		ATmega64A		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

3 Datasheet Changes

For a summary of changes, see the datasheet revision history at the end of the ATmega64A datasheet.

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