AVR531: Migrating from ATtiny261/461/861 to ATtiny261A/461A/861A

8-bit AVR® Microcontrollers

Application Note

1 Introduction

In order to optimize the manufacturing process and to further reduce current consumption, an optimized version of ATtiny261/461/861 has been introduced.

The ATtiny261A/461A/861A is a functionally identical, drop-in replacement for the ATtiny261/461/861. 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.

ATtiny261/461/861 and ATtiny261A/461A/861A 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 ATtiny261A/461A/861A 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 ATtiny261A/461A/861A data sheet.

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2 Changes in Characteristics

This section outlines such 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 data sheets.

2.1 Current Consumption

Active and Idle mode current consumption of the device have been reduced. The table below present typical current consumption figures at room temperature. All values are taken from device datasheets.

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

Mode	Condition	ATtiny261/461/861	ATtiny261A/461A/861A	Change
Active	V_{CC} = 2V, f = 1 MHz	400 µA	200 µA	-50 %
	V_{CC} = 3V, f = 4 MHz	2 mA	1.2 mA	-40 %
	V_{CC} = 5V, f = 8 MHz	6 mA	3.6 mA	-40 %
Idle	V_{CC} = 2V, f = 1 MHz	100 µA	35 µA	-65 %
	V_{CC} = 3V, f = 4 MHz	400 µA	250 µA	-40 %
	V_{CC} = 5V, f = 8 MHz	1.5 mA	0.9 mA	-40 %

2.2 Reset

The table below summarizes the differences between the reset circuitry of ATtiny261/461/861 and that of ATtiny261A/461A/861A.

Table 2-2. Changes in Power-On Reset

Symbol	ATtiny261/461/861			ATtiny261A/461A/861A			Unit
	Min	Typ	Max	Min	Typ	Max	
V_{POR}	0.7	1.0	1.4	1.1	1.4	1.6	V
V_{POA}	0.05	0.9	1.3	0.6	1.3	1.6	V
SR_{ON}	0.01	-	4.5	0.01	-	-	V/ms

3 New or Updated Bits and Registers

The following table illustrates bits that have changed since ATtiny261/461/861. Some bits were marked as reserved in ATtiny261/461/861 and some bits have another use in ATtiny261A/461A/861A.

Table 3-1. New or Updated Bits and Registers in ATtiny261A/461A/861A

Addr.	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0x35	MCUCR	BODS					BODSE		
0x31	OSCCAL	CAL7 (1)							

Notes: 1. ATtiny261/461/861 was equipped with two, overlapping frequency ranges while ATtiny261A/461A/861A has one, continuous frequency range

4 Datasheet Changes

For a summary of changes, see the revision history at the end of the ATtiny261A/461A/861A data sheet.

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