
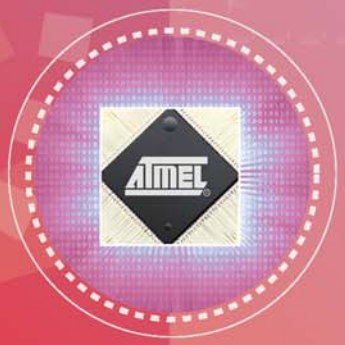

## Microcontrollers
(8-bit and 32-bit)

TouchScreen Technology

Automotive

picoPower™

AVR®
ARM®

High Performance

ASICs

RF

Security Solutions

Nonvolatile Memory

# Atmel® Products Selector Guide
Winter 2008

Everywhere You Are®

# ATMEL PRODUCT GUIDE

**Winter 2008**

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# MICROCONTROLLERS
## AVR® 8-bit RISC
## *ATmega AVR Series*



| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | USI | USART | SPI | TWI | 8-bit Timer | 16-bit Timer | 10-bit ADC | BOD | On-chip Debug. | Self-prog. (S) | Package | VCC | Speed (MHz) | Other | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATmega48 | 4 | 256 | 512 | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | – | Now |
| ATmega48V | 4 | 256 | 512 | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | – | Now |
| ATmega8 | 8 | 512 | 1K | 23 | – | 1 | 1 | 1 | 2 | 1 | 8 | Y | – | S | PDIP, TQFP, QFN, DIE | 4.5-5.5V | 0-16 | – | Now |
| ATmega8L | 8 | 512 | 1K | 23 | – | 1 | 1 | 1 | 2 | 1 | 8 | Y | – | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-8 | – | Now |
| ATmega88 | 8 | 512 | 1K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | – | Now |
| ATmega88V | 8 | 512 | 1K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | – | Now |
| ATmega8515 | 8 | 512 | 512 | 35 | – | 1 | 1 | – | 1 | 1 | – | Y | – | S | PDIP, PLCC, TQFP, QFN, DIE | 4.5-5.5V | 0-16 | XRAM | Now |
| ATmega8515L | 8 | 512 | 512 | 35 | – | 1 | 1 | – | 1 | 1 | – | Y | – | S | PDIP, PLCC, TQFP, QFN, DIE | 2.7-5.5V | 0-8 | XRAM | Now |
| ATmega8535 | 8 | 512 | 512 | 32 | – | 1 | 1 | 1 | 2 | 1 | 8 | Y | – | S | PDIP, PLCC, TQFP, QFN, DIE | 4.5-5.5V | 0-16 | – | Now |
| ATmega8535L | 8 | 512 | 512 | 32 | – | 1 | 1 | 1 | 2 | 1 | 8 | Y | – | S | PDIP, PLCC, TQFP, QFN, DIE | 2.7-5.5V | 0-8 | – | Now |
| ATmega168 | 16 | 512 | 1K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | – | Now |
| ATmega168V | 16 | 512 | 1K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | – | Now |
| ATmega162 | 16 | 512 | 1K | 35 | – | 2 | 1 | – | 2 | 2 | – | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-16 | XRAM | Now |
| ATmega162V | 16 | 512 | 1K | 35 | – | 2 | 1 | – | 2 | 2 | – | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-8 | XRAM | Now |
| ATmega16A | 16 | 512 | 1K | 32 | – | 1 | 1 | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-16 | – | Now |
| ATmega32A | 32 | 1K | 2K | 32 | – | 1 | 1 | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-16 | – | Now |
| ATmega325 | 32 | 1K | 2K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | – | Now |
| ATmega325V | 32 | 1K | 2K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | – | Now |
| ATmega3250 | 32 | 1K | 2K | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 2.7-5.5V | 0-16 | – | Now |
| ATmega3250V | 32 | 1K | 2K | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 1.8-5.5V | 0-8 | – | Now |
| ATmega64 | 64 | 2 | 4 | 54 | – | 2 | 1 | 1 | 2 | 2 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 4.5-5.5V | 0-16 | XRAM | Now |
| ATmega64L | 64 | 2 | 4 | 54 | – | 2 | 1 | 1 | 2 | 2 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-8 | XRAM | Now |
| ATmega640 | 64 | 4 | 8 | 86 | – | 4 | 1+USART | 1 | 2 | 4 | 16 | Y | JTAG | S | TQFP, BGA, DIE | 2.7-5.5V | 0-16 | XRAM | Now |
| ATmega640V | 64 | 4 | 8 | 86 | – | 4 | 1+USART | 1 | 2 | 4 | 16 | Y | JTAG | S | TQFP, BGA, DIE | 1.8-5.5V | 0-8 | XRAM | Now |

Note: 1. All ATmega AVR Series parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *ATmega AVR Series (Continued)*

| Part Number | Flash (Kbytes) | EEPROM (Kbytes) | RAM (Kbytes) | I/O Pins | USI | USART | SPI | TWI | 8-bit Timer | 16-bit Timer | 10-bit ADC | BOD | On-chip Debug. | Self-prog. (S) | Package | VCC | Speed (MHz) | Other | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATmega644 | 64 | 2 | 4 | 32 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | – | Now |
| ATmega644V | 64 | 2 | 4 | 32 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | – | Now |
| ATmega645 | 64 | 2 | 4 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | – | Now |
| ATmega645V | 64 | 2 | 4 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | – | Now |
| ATmega6450 | 64 | 2 | 4 | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 2.7-5.5V | 0-16 | – | Now |
| ATmega6450V | 64 | 2 | 4 | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 1.8-5.5V | 0-8 | – | Now |
| ATmega128 | 128 | 4 | 4 | 53 | – | 2 | 1 | 1 | 2 | 2 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 4.5-5.5V | 0-16 | XRAM | Now |
| ATmega128L | 128 | 4 | 4 | 53 | – | 2 | 1 | 1 | 2 | 2 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-8 | XRAM | Now |
| ATmega1280 | 128 | 4 | 8 | 86 | – | 4 | 1+USART | 1 | 2 | 4 | 16 | Y | JTAG | S | TQFP, BGA, DIE | 2.7-5.5V | 0-16 | XRAM | Now |
| ATmega1280V | 128 | 4 | 8 | 86 | – | 4 | 1+USART | 1 | 2 | 4 | 16 | Y | JTAG | S | TQFP, BGA, DIE | 1.8-5.5V | 0-8 | XRAM | Now |
| ATmega1281 | 128 | 4 | 8 | 54 | – | 2 | 1+USART | 1 | 2 | 4 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | XRAM | Now |
| ATmega1281V | 128 | 4 | 8 | 54 | – | 2 | 1+USART | 1 | 2 | 4 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | XRAM | Now |
| ATmega2561 | 256 | 4 | 8 | 54 | – | 2 | 1+USART | 1 | 2 | 4 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | XRAM | Now |
| ATmega2561V | 256 | 4 | 8 | 54 | – | 2 | 1+USART | 1 | 2 | 4 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | XRAM | Now |
| ATmega2560 | 256 | 4 | 8 | 86 | – | 4 | 1+USART | 1 | 2 | 4 | 16 | Y | JTAG | S | TQFP, BGA, DIE | 2.7-5.5V | 0-16 | XRAM | Now |
| ATmega2560V | 256 | 4 | 8 | 86 | – | 4 | 1+USART | 1 | 2 | 4 | 16 | Y | JTAG | S | TQFP, BGA, DIE | 1.8-5.5V | 0-8 | XRAM | Now |
| ATmega8HVA | 8 | 256 | 512 | 6 | – | – | 1 | – | – | 2 | – | Y | debug-WIRE | S | LGA, TSOP | 1.8-9.0V | 0-4 | 12-bit ADC | Now |
| ATmega16HVA | 16 | 256 | 512 | 6 | – | – | 1 | – | – | 2 | – | Y | debug-WIRE | S | LGA, TSOP | 1.8-9.0V | 0-4 | 12-bit ADC | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRBFLY | AVR Butterfly, ATmega169 Demo Board with LCD and Speaker | Now |
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATAVRRTOS | AVR Real-time Operating System Development Kit | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK500 | STK®500 AVR Starter Kit with AVR Studio® Interface | Now |
| ATSTK501 | STK501 Expansion of STK500 to Support 64-pin megaAVR® Devices | Now |
| ATSTK503 | STK503 Expansion of STK500 for 100-pin megaAVR Devices | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |

Note: 1. All ATmega AVR Series parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *ATmega picoPower™ AVR Series*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | USI | USART | SPI | TWI | 8-bit Timer | 16-bit Timer | 10-bit ADC | BOD | On-chip Debug. | Self-prog. (S) | Package | VCC | Speed (MHz) | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATtiny13A | 1 | 64 | 64 | 6 | 1 | – | – | – | – | – | 4 | Y | debug-WIRE | S | QFN, PDIP, SOIC, Narrow SOIC, DIE | 1.8-5.5V | 0-20 | Now |
| ATtiny48 | 4 | 64 | 256 | 28 | – | – | Y | 1 | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-12 | Now |
| ATtiny88 | 8 | 64 | 512 | 28 | – | – | Y | 1 | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-12 | Now |
| ATmega48P | 4 | 256 | 512 | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATmega48PV | 4 | 256 | 512 | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATmega88P | 8 | 512 | 1K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATmega88PV | 8 | 512 | 1K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATmega168P | 16 | 512 | 1K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATmega168PV | 16 | 512 | 1K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATmega164P | 16 | 512 | 1K | 32 | – | 2 | 1+USART | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATmega164PV | 16 | 512 | 1K | 32 | – | 2 | 1+USART | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATmega165P | 16 | 512 | 1K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | Now |
| ATmega165PV | 16 | 512 | 1K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | Now |
| ATmega169P | 16 | 512 | 1K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | Now |
| ATmega169PV | 16 | 512 | 1K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | Now |
| ATmega324P | 32 | 1K | 2K | 32 | – | 2 | 1+USART | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATmega324PV | 32 | 1K | 2K | 32 | – | 2 | 1+USART | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATmega325P | 32 | 1K | 2K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | Now |
| ATmega325PV | 32 | 1K | 2K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | Now |

Note: 1. All ATmega picoPower AVR Series parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *ATmega picoPower AVR Series (Continued)*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | USI | USART | SPI | TWI | 8-bit Timer | 16-bit Timer | 10-bit ADC | BOD | On-chip Debug. | Self-prog. (S) | Package | VCC | Speed (MHz) | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATmega329P | 32 | 1K | 2K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | Now |
| ATmega329PV | 32 | 1K | 2K | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | Now |
| ATmega3250P | 32 | 1K | 2K | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 2.7-5.5V | 0-16 | Now |
| ATmega3250PV | 32 | 1K | 2K | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 1.8-5.5V | 0-8 | Now |
| ATmega3290P | 32 | 1K | 2K | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 2.7-5.5V | 0-16 | Now |
| ATmega3290PV | 32 | 1K | 2K | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 1.8-5.5V | 0-8 | Now |
| ATmega328P | 32 | 1K | 2K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATmega328PV | 32 | 1K | 2K | 23 | – | 1 | 1+USART | 1 | 2 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATmega644P | 64 | 2K | 4K | 32 | – | 2 | 1+USART | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATmega644PV | 64 | 2K | 4K | 32 | – | 2 | 1+USART | 1 | 2 | 1 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATmega1284P | 128 | 4K | 16K | 32 | – | 2 | 1+USART | 1 | 1 | 2 | 8 | Y | JTAG | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-20 | Sampling |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATAVRRTOS | AVR Real-time Operating System Development Kit | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | Now |
| ATSTK501 | STK501 Expansion of STK500 to Support 64-pin megaAVR Devices | Now |
| ATSTK503 | STK503 Expansion of STK500 for 100-pin megaAVR Devices | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |

Note: 1. All ATmega picoPower AVR Series parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *ATtiny AVR Series*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | USI* | TWI | UART | 8-bit Timer | 16-bit Timer | 10-bit ADC | BOD | On-chip Debug. | In-System(I)/Self-prog. (S) | Package | VCC | Speed (MHz) | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATtiny12 | 1 | 64 | 32 Registers | 6 | – | – | – | 1 | – | – | Y | – | I | PDIP, SOIC, DIE | 4-5.5V | 0-8 | Now |
| ATtiny12L | 1 | 64 | 32 Registers | 6 | – | – | – | 1 | – | – | Y | – | I | PDIP, SOIC, DIE | 2.7-5.5V | 0-4 | Now |
| ATtiny12V | 1 | 64 | 32 Registers | 6 | – | – | – | 1 | – | – | Y | – | I | PDIP, SOIC, DIE | 1.8-5.5V | 0-1 | Now |
| ATtiny13A | 1 | 64 | 64 | 6 | – | – | – | 1 | – | 4 | Y | debug-WIRE | S | PDIP, SOIC, Narrow SOIC, QFN, DIE | 1.8-5.5V | 0-20 | Now |
| ATtiny24 | 2 | 128 | 128 | 12 | 1 | – | – | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, Narrow SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny24V | 2 | 128 | 128 | 12 | 1 | – | – | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, Narrow SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny25 | 2 | 128 | 128 | 6 | 1 | – | – | 2 | – | 4 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny25V | 2 | 128 | 128 | 6 | 1 | – | – | 2 | – | 4 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny26 | 2 | 128 | 128 | 16 | 1 | – | – | 2 | – | 11 | Y | – | I | PDIP, SOIC, QFN, DIE | 4.5-5.5V | 0-16 | Now |
| ATtiny26L | 2 | 128 | 128 | 16 | 1 | – | – | 2 | – | 11 | Y | – | I | PDIP, SOIC, QFN, DIE | 2.7-5.5V | 0-8 | Now |
| ATtiny261 | 2 | 128 | 128 | 16 | 1 | – | – | 1 | 1 | 11 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny261V | 2 | 128 | 128 | 16 | 1 | – | – | 1 | 1 | 11 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny2313 | 2 | 128 | 128 | 18 | 1 | – | 1 | 1 | 1 | – | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny2313V | 2 | 128 | 128 | 18 | 1 | – | 1 | 1 | 1 | – | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny28L | 2 | – | 32 Registers | 11 | – | – | – | 1 | – | – | – | – | – | PDIP, QFN, TQFP, DIE | 2.7-5.5V | 0-4 | Now |
| ATtiny28V | 2 | – | 32 Registers | 11 | – | – | – | 1 | – | – | – | – | – | PDIP, QFN, TQFP, DIE | 1.8-5.5V | 0-1 | Now |

Notes: 1. *USI = Universal Serial Interface.
2. All ATtiny AVR Series parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *ATtiny AVR Series (Continued)*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | USI* | TWI | UART | 8-bit Timer | 16-bit Timer | 10-bit ADC | BOD | On-chip Debug. | In-System(I)/Self-prog. (S) | Package | VCC | Speed (MHz) | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATtiny44 | 4 | 256 | 256 | 12 | 1 | – | – | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, Narrow SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny44V | 4 | 256 | 256 | 12 | 1 | – | – | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, Narrow SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny45 | 4 | 256 | 256 | 6 | 1 | – | – | 2 | – | 4 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny45V | 4 | 256 | 256 | 6 | 1 | – | – | 2 | – | 4 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny461 | 4 | 256 | 256 | 16 | 1 | – | – | 1 | 1 | 11 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny461V | 4 | 256 | 256 | 16 | 1 | – | – | 1 | 1 | 11 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny48 | 4 | 64 | 256 | 28 | – | Y | – | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-12 | Now |
| ATtiny84 | 8 | 512 | 512 | 12 | 1 | – | – | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny84V | 8 | 512 | 512 | 12 | 1 | – | – | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny85 | 8 | 512 | 512 | 6 | 1 | – | – | 2 | – | 4 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny85V | 8 | 512 | 512 | 6 | 1 | – | – | 2 | – | 4 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny861 | 8 | 512 | 512 | 16 | 1 | – | – | 1 | 1 | 11 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 2.7-5.5V | 0-20 | Now |
| ATtiny861V | 8 | 512 | 512 | 16 | 1 | – | – | 1 | 1 | 11 | Y | debug-WIRE | S | PDIP, SOIC, QFN, DIE | 1.8-5.5V | 0-10 | Now |
| ATtiny88 | 8 | 64 | 512 | 28 | – | Y | – | 1 | 1 | 8 | Y | debug-WIRE | S | PDIP, TQFP, QFN, DIE | 1.8-5.5V | 0-12 | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | Now |
| ATSTK505 | STK505 Expansion of STK500 for 14-pin SOIC and 20-pin PDIP AVR Devices | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |

Notes:
1. *USI = Universal Serial Interface.
2. All ATtiny AVR Series parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *Automotive AVR*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | CAN Mess. Obj. | Timers 16-bit | Timers 8-bit | PWM (Channels) | RTC | SPI | USART | TWI (I2C-compatible) | ISP | ADC 10-bit (Channels) | BOD | WDT | Int. RC | HW Mult. | Interrupts | Ext. Interrupts | SPM | VCC | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATtiny167 | 16 | 512 | 512 | 16 | – | 1 | 1 | 4 | – | 1+USI | – | – | – | – | – | – | – | – | – | – | – | 2.7-5.5V | 16 | MLF32, SOIC20, TSSOP20 | -40° C to +150° C for MLF32, TSSOP20; 40° C to +125° C for SOIC20 | Dec. 2008 |
| ATtiny24 | 2 | 128 | 128 | 12 | – | 1 | 1 | 4 | – | USI | – | USI | Y | 8 | Y | Y | Y | – | 17 | 3 | Y | 2.7-5.5V | 16 | MLF20, SOIC14 | -40° C to +125° C | Now |
| ATtiny25 | 2 | 128 | 128 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | | 15 | 2 | Y | 2.7-5.5V | 16 | MLF20, SOIC8 | -40° C to +125° C | Now |
| ATtiny25V | 2 | 128 | 128 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | – | 15 | 2 | Y | 1.8-3.6V | 8 | SOIC8 | -40° C to +85° C | Now |
| ATtiny261 | 2 | 128 | 128 | 16 | – | 1 | 1 | 5 | – | 1+USI | – | USI | Y | 11 | Y | Y | Y | – | – | – | – | 2.7-5.5V | 8 | SOIC20, MLF32, TSSOP20 | -40° C to +150° C for MLF32, TSSOP20; 40° C to +125° C for SOIC20 | Oct. 2008 |
| ATtiny44 | 4 | 256 | 256 | 12 | – | 1 | 1 | 4 | – | USI | – | USI | Y | 8 | Y | Y | Y | – | 17 | 3 | Y | 2.7-5.5V | 16 | MLF20, SOIC14 | -40° C to +125° C | Now |
| ATtiny44V | 4 | 256 | 256 | 12 | – | 1 | 1 | 4 | – | USI | – | USI | Y | 8 | Y | Y | Y | – | 17 | 3 | Y | 1.8-3.6V | 8 | MLF20, SOIC14 | -40° C to +85° C | Now |
| ATtiny45 | 4 | 256 | 256 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | – | 15 | 2 | Y | 2.7-5.5V | 16 | MLF20, SOIC8 | -40° C to +150° C | Now |
| ATtiny45V | 4 | 256 | 256 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | – | 15 | 2 | Y | 1.8-3.6V | 8 | SOIC8 | -40° C to +85° C | Now |
| ATtiny461 | 4 | 256 | 256 | 16 | – | 1 | 2 | 5 | – | USI | – | USI | Y | 11 | Y | Y | Y | – | – | – | Y | 2.7-5.5V | 16 | SOIC20, MLF32, TSSOP20 | -40° C to +150° C for MLF32, TSSOP20; 40° C to +125° C for SOIC20 | Oct. 2008 |
| ATtiny84 | 8 | 512 | 512 | 12 | – | 1 | 1 | 4 | – | USI | – | USI | Y | 8 | Y | Y | Y | – | 17 | 3 | Y | 2.7-5.5V | 16 | MLF20 | -40° C to +125° C | Now |
| ATtiny85 | 8 | 512 | 512 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | – | 15 | 2 | Y | 2.7-5.5V | 16 | MLF20, SOIC8 | -40° C to +125° C | Now |
| ATtiny85V | 8 | 512 | 512 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | – | 15 | 2 | Y | 1.8-3.6V | 8 | SOIC8 | -40° C to +85° C | Now |
| ATtiny861 | 8 | 512 | 512 | 16 | – | 1 | 1 | 5 | – | 1+USI | – | USI | Y | 11 | Y | Y | Y | – | – | – | – | 2.7-5.5V | 16 | SOIC20, MLF32, TSSOP20 | -40° C to +150° C for MLF32, TSSOP20; 40° C to +125° C for SOIC20 | Oct. 2008 |
| ATmega48 | 4 | 256 | 512 | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +125° C | Now |

Note: 1. All Automotive AVR parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *Automotive AVR (Continued)*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | CAN Mess. Obj. | Timers 16-bit | Timers 8-bit | PWM (Channels) | RTC | SPI | USART | TWI (I2C Compatible) | ISP | ADC 10-bit (Channels) | BOD | WDT | Int. RC | HW Mult. | Interrupts | Ext. Interrupts | SPM | VCC | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATmega88 | 8 | 512 | 1K | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +150° C | Now |
| ATmega88V | 8 | 512 | 1K | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 1.8-3.6V | 8 | TQFP32, MLF32 | -40° C to +85° C | Now |
| ATmega164P | 16 | 512 | 1K | 32 | – | 1 | 2 | 6 | Y | 1+USART | 2 | Y | Y | 8 | Y | Y | Y | Y | 31 | 7 | Y | 2.7-5.5V | 16 | TQFP44, MLF44 | -40° C to +125° C | Now |
| ATmega168 | 16 | 512 | 1K | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +150° C | Now |
| ATmega169P | 16 | 512 | 1K | 54 | – | 1 | 2 | 4 | Y | 1+USI | 1 | USI | Y | 8 | Y | Y | Y | Y | 23 | 3 | Y | 2.7-5.5V | 16 | TQFP64, MLF64 | -40° C to +85° C | Now |
| ATmega16M1 | 16 | 1K | 2K | 32 | 6 | 1 | 1 | 6+4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +150° C | Feb. 2009 |
| ATmega324P | 32 | 1K | 2K | 32 | – | 1 | 2 | 6 | Y | 1+USART | 2 | Y | Y | 8 | Y | Y | Y | Y | 31 | 7 | Y | 2.7-5.5V | 16 | TQFP44, MLF44 | -40° C to +125° C | Now |
| ATmega328P | 32 | 1K | 2K | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +125° C | Nov. 2008 |
| ATmega32M1 | 32 | 1K | 2K | 32 | 6 | 1 | 1 | 6+4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +150° C | Oct. 2008 |
| ATmega32C1 | 32 | 1K | 2K | 32 | 6 | 1 | 1 | 4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +150° C | Oct. 2008 |
| ATmega64M1 | 64 | 2K | 4K | 32 | 6 | 1 | 1 | 6+4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +150° C | Jan. 2009 |
| ATmega64C1 | 64 | 2K | 4K | 32 | 6 | 1 | 1 | 4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40° C to +150° C | Jan. 2009 |
| ATmega644P | 64 | 2K | 4K | 32 | – | 1 | 2 | 6 | Y | 1+USART | 2 | Y | Y | 8 | Y | Y | Y | Y | 31 | 7 | Y | 2.7-5.5V | 16 | TQFP44, MLF44 | -40° C to +125° C | Now |
| AT90CAN32 | 32 | 1K | 2K | 53 | 15 | 2 | 2 | 6+2 | Y | 1 | 2 | Y | Y | 8 | Y | Y | Y | Y | 37 | 8 | Y | 2.7-5.5V | 16 | TQFP64, MLF64 | -40° C to +125° C | Now |
| AT90CAN64 | 64 | 2K | 4K | 53 | 15 | 2 | 2 | 6+2 | Y | 1 | 2 | Y | Y | 8 | Y | Y | Y | Y | 37 | 8 | Y | 2.7-5.5V | 16 | TQFP64, MLF64 | -40° C to +125° C | Now |
| AT90CAN128 | 128 | 4K | 4K | 53 | 15 | 2 | 2 | 6+2 | Y | 1 | 2 | Y | Y | 8 | Y | Y | Y | Y | 37 | 8 | Y | 2.7-5.5V | 16 | TQFP64, MLF64 | -40° C to +125° C | Now |
| **Evaluation/Development Kits** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATAVRAUTO102 | AVR Automotive Debugger Kit for CAN-LIN | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATAVRAUTOEK1 | AVR Automotive Evaluation Kit | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATDVK90CAN1 | DVK90CAN1 Development Kit for AT90CAN Devices | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATSTK524 | AVR Automotive Starter Kit for 32 Pins ATmega32M1 – ATmega32C1 | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | | | | | | | | | | | | | | | | | | | | | | | | | Now |

Note: 1. All Automotive AVR parts are RoHS compliant.

# MICROCONTROLLERS (CONTINUED)

## AVR 8-bit RISC (Continued)

### *CAN AVR*™

| Part Number | Flash (Kbytes) | EEPROM (Kbytes) | RAM (Kbytes) | I/O Pins | CAN Message Objects | 16-bit Timers | 8-bit Timers | PWM (Channels) | RTC | SPI | USART | TWI (I2C Compatible) | ISP | 10-bit ADC | BOD | WDT | Int. RC | HW MULT | Interrupts | Interrupts Ext. | SPM | VCC | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT90CAN32 | 32 | 1 | 2 | 53 | 15 | 2 | 2 | 6+2 | 1 | 1 | 2 | 1 | 1 | 8 | 1 | 1 | 1 | 1 | 37 | 8 | 1 | 2.7-5.5V | 16 | MLF64, TQFP64 | -40 to +85° C | Now |
| AT90CAN64 | 64 | 2 | 4 | 53 | 15 | 2 | 2 | 6+2 | 1 | 1 | 2 | 1 | 1 | 8 | 1 | 1 | 1 | 1 | – | – | 1 | 2.7-5.5V | 16 | TQFP64, MLF64 | -40 to +85° C | Now |
| AT90CAN128 | 128 | 4 | 4 | 53 | 15 | 2 | 2 | 6+2 | 1 | 1 | 2 | 1 | 1 | 8 | 1 | 1 | 1 | 1 | 37 | 8 | 1 | 2.7-5.5V | 16 | MLF64, TQFP64 | -40 to +85° C | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATADAPCAN01 | Replacement: STK500/501/AT90CAN128 CAN Adapter | Now |
| ATDVK90CAN1 | DVK90CAN1 Development Kit for AT90CAN Devices | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | Now |
| ATSTK501 | STK501 Expansion of STK500 to Support 64-pin megaAVR Devices | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |

Note: 1. All CAN AVR parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *LCD Control AVR*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Kbytes) | I/O Pins | USI | USART | SPI | TWI | 8-bit Timer | 16-bit Timer | 10-bit ADC | BOD | On-chip Debugging | Self-prog. (S) | Package | VCC | Speed (MHz) | LCD | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATmega169P | 16 | 512 | 1 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | 4x25 | Now |
| ATmega169PV | 16 | 512 | 1 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | 4x25 | Now |
| ATmega329 | 32 | 1K | 2 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | 4x25 | Now |
| ATmega329V | 32 | 1K | 2 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | 4x25 | Now |
| ATmega329P | 32 | 1K | 2 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | 4x25 | Now |
| ATmega329PV | 32 | 1K | 2 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | 4x25 | Now |
| ATmega3290 | 32 | 1K | 2 | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 2.7-5.5V | 0-16 | 4x40 | Now |
| ATmega3290V | 32 | 1K | 2 | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 1.8-5.5V | 0-8 | 4x40 | Now |
| ATmega3290P | 32 | 1K | 2 | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 2.7-5.5V | 0-16 | 4x40 | Now |
| ATmega3290PV | 32 | 1K | 2 | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 1.8-5.5V | 0-8 | 4x40 | Now |
| ATmeg649 | 64 | 2K | 4 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 2.7-5.5V | 0-16 | 4x25 | Now |
| ATmega649V | 64 | 2K | 4 | 54 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, QFN, DIE | 1.8-5.5V | 0-8 | 4x25 | Now |
| ATmega6490 | 64 | 2 | 4 | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 2.7-5.5V | 0-16 | 4x40 | Now |
| ATmega6490V | 64 | 2 | 4 | 69 | 1 | 1 | 1+USI | USI | 2 | 1 | 8 | Y | JTAG | S | TQFP, DIE | 1.8-5.5V | 0-8 | 4x40 | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATAVRBFLY | AVR Butterfly, ATmega169 Demo Board with LCD and Speaker | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | Now |
| ATSTK502 | STK502 Expansion of STK500 for 64-pin LCD AVR Devices | Now |
| ATSTK504 | STK504 Expansion of STK500 for 100-pin LCD AVR Devices | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |

Note: 1. All LCD Control AVR parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *Lighting/Power Control AVR*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | DALI | 16-bit Timers | 8-bit Timers | PWM (Channels) | RTC | SPI | USART | TWI (I2C-compatible) | ISP | ADC 10-bit (Channels) | BOD | WDT | Int. RC | HW MULT | Interrupts | Interrupts Ext. | SPM | VCC | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT90PWM1 | 8 | 512 | 512 | 19 | – | 1 | 1 | 7 | – | 1 | – | – | 1 | 8 | 1 | 1 | 1 | 1 | 26 | 4 | 1 | 2.7-5.5V | 16 | SOIC24 | -40 to +105°C | Now |
| AT90PWM2 | 8 | 512 | 512 | 19 | 1 | 1 | 1 | 7 | 1 | 1 | 1 | – | 1 | 8 | 1 | 1 | 1 | 1 | 29 | 4 | 1 | 2.7-5.5V | 16 | SOIC24 | -40 to +105°C | Now |
| AT90PWM3 | 8 | 512 | 512 | 27 | 1 | 1 | 1 | 10 | 1 | 1 | 1 | – | 1 | 11 | 1 | 1 | 1 | 1 | 29 | 4 | 1 | 2.7-5.5V | 16 | MLF32, SOIC32 | -40 to +105°C | Now |
| AT90PWM81 | 8 | 512 | 256 | 16/20 | – | 1 | – | 4 | – | 1 | – | – | 1 | 11 | 1 | 1 | 1 | 1 | 20 | 3 | 1 | 2.7-5.5V | 16 | MLF32, SOIC20 | -40 to +105/125°C | Now |
| AT90PWM216 | 16 | 512 | 1024 | 19 | 1 | 1 | 1 | 7 | 1 | 1 | 1 | – | 1 | 8 | 1 | 1 | 1 | 1 | 29 | 4 | 1 | 2.7-5.5V | 16 | SOIC24 | -40 to +105°C | Now |
| AT90PWM316 | 16 | 512 | 1024 | 27 | 1 | 1 | 1 | 10 | 1 | 1 | 1 | – | 1 | 11 | 1 | 1 | 1 | 1 | 29 | 4 | 1 | 2.7-5.5V | 16 | MLF32, SOIC32 | -40 to +105°C | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATAVRFBKIT | DALI Controlled Dimmable Fluorescent Demo Kit for AT90PWM2 | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATAVRLI100 | Fluorescent Dimmable Ballast Evaluation Kit with PWM81 | Now |
| ATAVRMC100 | Brushless DC Motor Control Evaluation Kit | Now |
| ATAVRMC200 | Asynchronous AC Induction Motor Control Evaluation Kit | Now |
| ATAVRMC201 | Asynchronous AC Induction Motor for ATAVRMC200 Evaluation Kit | Now |
| ATAVRMC300 | Low Voltage Motor Control Power Evaluation Board (Max 40V) | Now |
| ATAVRMC301 | Motor Control Processor Evaluation Board with the Low Cost ATtinyx61 | Now |
| ATAVRMC303 | Motor Control Processor Evaluation Board with the New High Performance XMEGA | Now |
| ATAVRMC310 | Motor Control Processor Evaluation Board with the ATmega32M1 (with CAN and LIN Interfaces) | Now |
| ATAVRMC321 | Motor Control Evaluation Kit for Low Cost Applications (MC300+MC301+BLDC Motor) | Now |
| ATAVRMC323 | Motor Control Evaluation Kit for CPU Intensive Algorithm (MC300+MC303+BLDC Motor) | Now |
| ATAVRMC320 | Motor Control Evaluation Kit for CAN and LIN Applications (MC300+MC310+BLDC Motor) | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | Now |
| ATSTK520 | STK520 Expansion for STK500 to Support 90PWM Devices | Now |
| ATSTK521 | Expansion Board for STK500 to Support 90PWM81 Devices | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |
| ATSTK600-SOIC | STK600 Add-on to Support the New Devices in SO Packages | Now |

Note: 1. All Lighting/Power Control AVR parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *Smart Battery AVR*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | Battery Prot. | CC-ADC (Resolution) | # Battery Cells | SMBus | Voltage ADC | Highside FET | VCC | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATmega406 | 40 | 512 | 2K | Y | 7 | 2/3/4 | 1 | 6 | P-ch | 4.0-25V | 1 | LQFP48 | -40 to +85° C | Now |
| ATmega8HVA | 8 | 256 | 512 | Y | 7 | 2/1 | SW | 3 | N-ch | 1.8-9V | 4 | LGA36, TSOP28 | -10 to +70° C | Now |
| ATmega16HVA | 16 | 256 | 512 | Y | 7 | 1/1 | SW | 3 | N-ch | 1.8-9V | 4 | LGA36, TSOP28 | -10 to +70° C | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATAVRSB100 | Smart Battery Development Kit for ATmega406 | Now |
| ATAVRBC100 | The BC100 Is a Reference Design that Demonstrates Charging and Discharging of Two Batteries/Battery Packs with a Programmable Charge Voltage of Up to 40V | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |

Note: 1. All Smart Battery AVR parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *USB Controllers AVR*

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | USB Host/OTG | USB DRAM (Bytes) | USB Endpoints | USB Full Speed | USB Low Speed | Timers 16-bit | Timers 8-bit | PWM (Channels) | RTC | SPI | USART | TWI (I2C Compatible) | ISP | ADC 10-bit Channels | BOD | WDT | Int. RC | HW MULT | Interrupts | Interrupts Ext. | SPM | VCC | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT90USB82 | 8 | 512 | 512 | 22 | – | 176 | 4+1 | Y | – | 1 | 1 | 3+1 | – | 1 | 1 | – | Y | – | Y | Y | Y | – | 29 | 8+2x8 | Y | 2.7-5.5V | 16 | MLF32 | -40 to +85° C | Now |
| AT90USB162 | 16 | 512 | 512 | 22 | – | 176 | 4+1 | Y | – | 1 | 1 | 3+1 | – | 1 | 1 | – | Y | – | Y | Y | Y | – | 29 | 8+2x8 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40 to +85° C | Now |
| ATmega16U4 | 16 | 1K | 1.25K | 26 | – | 832 | 6+1 | Y | Y | 2 | 1 | 5+3 +1 | – | 1 | 1 | Y | Y | 12 | Y | Y | Y | Y | 38 | 5+1x8 | Y | 2.7-5.5V | 16 | MLF44 | -40 to +85° C | 4Q2008 |
| ATmega32U4 | 32 | 1K | 2.5K | 26 | – | 832 | 6+1 | Y | Y | 2 | 1 | 5+3 +1 | – | 1 | 1 | Y | Y | 12 | Y | Y | Y | Y | 38 | 5+1x8 | Y | 2.7-5.5V | 16 | TQFP44, MLF44 | -40 to +85° C | Now |
| ATmega32U6 | 32 | 1K | 2.5K | 48 | – | 832 | 6+1 | Y | Y | 2 | 2 | 6+2 | Y | 1 | 1 | Y | Y | 8 | Y | Y | Y | Y | 38 | 5+1x8 | Y | 2.7-5.5V | 16 | TQFP64, MLF64 | -40 to +85° C | Now |
| AT90USB646 | 64 | 2K | 4K | 48 | – | 832 | 6+1 | Y | Y | 2 | 2 | 6+2 | Y | 1 | 1 | Y | Y | 8 | Y | Y | Y | Y | 38 | 8+1x8 | Y | 2.7-5.5V | 16 | MLF64 | -40 to +85° C | Now |
| AT90USB647 | 64 | 2K | 4K | 48 | 1 | 832 | 6+1 | Y | Y | 2 | 2 | 6+2 | Y | 1 | 1 | Y | Y | 8 | Y | Y | Y | Y | 38 | 8+1x8 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40 to +85° C | Now |
| AT90USB1286 | 128 | 4K | 8K | 48 | – | 832 | 6+1 | Y | Y | 2 | 2 | 6+2 | Y | 1 | 1 | Y | Y | 8 | Y | Y | Y | Y | 38 | 8+1x8 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40 to +85° C | Now |
| AT90USB1287 | 128 | 4K | 8K | 48 | 1 | 832 | 6+1 | Y | Y | 2 | 2 | 6+2 | Y | 1 | 1 | Y | Y | 8 | Y | Y | Y | Y | 38 | 8+1x8 | Y | 2.7-5.5V | 16 | TQFP32, MLF32 | -40 to +85° C | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| AT90USBKEY | Demo Kit for AT90USB Devices | Now |
| ATEVK525 | Mass Storage Evaluation Kit for AT90USB Devices (STK525 Add-on) | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | Now |
| ATSTK520 | STK520 Expansion for STK500 to Support 90PWM Devices | Now |
| ATSTK525 | STK525 AVR Starter Kit to Support 64-pin AT90USB Devices | Now |
| ATSTK526 | STK526 AVR Starter Kit to Support 32-pin AT90USB Devices | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |

Note: 1. All USB Controllers AVR parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *XMEGA AVR Series*

| Part Number | Flash (Kbytes) | Boot Code (Kbytes) | EEPROM (Kbytes) | SRAM (Kbytes) | DMA (Channels) | Event (Channels) | I/O Pins | 16-bit Timer | PWM (Channels) | RTC 16-bit | SPI | TWI (I2C-compatible) | USART | ADC 12-bit (Channels) | DAC 12-bit (Channels) | Ana. Comp. | BOD | WDT | Calibrated Int. RC | Interrupts | Ext. Interrupts | JTAG | PDI | VCC | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATxmega64A1 | 64 | 4 | 2 | 4 | 4 | 8 | 78 | 8 | 24 | Y | 4 | 4 | 8 | 2x8 | 2x2 | 4 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 122 | 78 | Y | Y | 1.6-3.6V | 32 | TQFP100, CBGA100 | -40° to +85° C | Sampling |
| ATxmega128A1 | 128 | 8 | 2 | 8 | 4 | 8 | 78 | 8 | 24 | Y | 4 | 4 | 8 | 2x8 | 2x2 | 4 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 122 | 78 | Y | Y | 1.6-3.6V | 32 | TQFP100, CBGA100 | -40° to +85° C | Sampling |
| ATxmega192A1 | 192 | 8 | 4 | 16 | 4 | 8 | 78 | 8 | 24 | Y | 4 | 4 | 8 | 2x8 | 2x2 | 4 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 122 | 78 | Y | Y | 1.6-3.6V | 32 | TQFP100, CBGA100 | -40° to +85° C | 2Q2009 |
| ATxmega256A1 | 256 | 8 | 4 | 16 | 4 | 8 | 78 | 8 | 24 | Y | 4 | 4 | 8 | 2x8 | 2x2 | 4 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 122 | 78 | Y | Y | 1.6-3.6V | 32 | TQFP100, CBGA100 | -40° to +85° C | 2Q2009 |
| ATxmega64A3 | 64 | 4 | 2 | 4 | 4 | 8 | 50 | 7 | 22 | Y | 3 | 2 | 7 | 2x8 | 1x2 | 4 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 102 | 50 | Y | Y | 1.6-3.6V | 32 | TQFP64, MLF64 | -40° to +85° C | 1Q2009 |
| ATxmega128A3 | 128 | 8 | 2 | 8 | 4 | 8 | 50 | 7 | 22 | Y | 3 | 2 | 7 | 2x8 | 1x2 | 4 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 102 | 50 | Y | Y | 1.6-3.6V | 32 | TQFP64, MLF64 | -40° to +85° C | 1Q2009 |
| ATxmega192A3 | 192 | 8 | 4 | 16 | 4 | 8 | 50 | 7 | 22 | Y | 3 | 2 | 7 | 2x8 | 1x2 | 4 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 102 | 50 | Y | Y | 1.6-3.6V | 32 | TQFP64, MLF64 | -40° to +85° C | 1Q2009 |
| ATxmega256A3 | 256 | 8 | 4 | 16 | 4 | 8 | 50 | 7 | 22 | Y | 3 | 2 | 7 | 2x8 | 1x2 | 4 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 102 | 50 | Y | Y | 1.6-3.6V | 32 | TQFP64, MLF64 | -40° to +85° C | 1Q2009 |
| ATxmega16A4 | 16 | 4 | 1 | 2 | 4 | 8 | 36 | 5 | 16 | Y | 2 | 2 | 5 | 1x12 | 1x2 | 2 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 77 | 36 | N | Y | 1.6-3.6V | 32 | TQFP44, MLF44 | -40° to +85° C | 1Q2009 |
| ATxmega32A4 | 32 | 4 | 2 | 4 | 4 | 8 | 36 | 5 | 16 | Y | 2 | 2 | 5 | 1x12 | 1x2 | 2 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 77 | 36 | N | Y | 1.6-3.6V | 32 | TQFP44, MLF44 | -40° to +85° C | 1Q2009 |
| ATxmega64A4 | 64 | 4 | 2 | 4 | 4 | 8 | 36 | 5 | 16 | Y | 2 | 2 | 5 | 1x12 | 1x2 | 2 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 77 | 36 | N | Y | 1.6-3.6V | 32 | TQFP44, MLF44 | -40° to +85° C | 1Q2009 |
| ATxmega128A4 | 128 | 4 | 2 | 8 | 4 | 8 | 36 | 5 | 16 | Y | 2 | 2 | 5 | 1x12 | 1x2 | 2 | Y | Y | 32 MHz, 2 MHz, 32 kHz | 77 | 36 | N | Y | 1.6-3.6V | 32 | TQFP44, MLF44 | -40° to +85° C | 3Q2009 |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATAVRONEKIT | AVR ONE! Development Tool for On-chip Debugging and Programming of all AVR32 Devices | 4Q2008 |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |

Note: 1. All XMEGA AVR Series Control AVR parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR 8-bit RISC (Continued)

### *MCU Wireless – 802.15.4/6LoWPAN/ZigBee® Solutions*

| Part Number | AVR | Radio | Flash (Kbytes) | EEPROM (Kbytes) | RAM (Kbytes) | ISM Band | Sensitivity (dBm) | Output Power (dBm) | VCC | I/Os | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AT86RF230 Bundles** | | | | | | | | | | | |
| ATmega64RZA | ATmega644 | RF230 | 64 | 1 | 4 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 32 | Now |
| ATmega64RZAP | ATmega644P | RF230 | 64 | 1 | 4 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 32 | Now |
| ATmega128RZA | ATmega1281 | RF230 | 128 | 4 | 8 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 54 | Now |
| ATmega128RZB | ATmega1280 | RF230 | 128 | 4 | 8 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 86 | Now |
| ATmega1284RZAP | ATmega1284P | RF230 | 128 | 4 | 16 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 32 | Now |
| ATmega256RZA | ATmega2561 | RF230 | 256 | 4 | 8 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 54 | Now |
| ATmega256RZB | ATmega2560 | RF230 | 256 | 4 | 8 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 86 | Now |
| **AT86RF231 Bundles** | | | | | | | | | | | |
| ATmega644PR231 | ATmega644P | RF231 | 64 | 1 | 4 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 32 | Now |
| ATmega1281R231 | ATmega1281 | RF231 | 128 | 4 | 8 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 54 | Now |
| ATmega1280R231 | ATmega1280 | RF231 | 128 | 4 | 8 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 86 | Now |
| ATmega1284PR231 | ATmega1284P | RF231 | 128 | 4 | 16 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 32 | Now |
| ATmega2561R231 | ATmega2561 | RF231 | 256 | 4 | 8 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 54 | Now |
| ATmega2560R231 | ATmega2560 | RF231 | 256 | 4 | 8 | 2.4 GHz | -101 | 3 | 1.8-3.6V | 86 | Now |
| **AT86RF212 Bundles** | | | | | | | | | | | |
| ATmega644PR212 | ATmega644P | RF212 | 64 | 1 | 4 | 800/900 MHz | -110 | 10 | 1.8-3.6V | 32 | Now |
| ATmega1281R212 | ATmega1281 | RF212 | 128 | 4 | 8 | 800/900 MHz | -110 | 10 | 1.8-3.6V | 54 | Now |
| ATmega1280R212 | ATmega1280 | RF212 | 128 | 4 | 8 | 800/900 MHz | -110 | 10 | 1.8-3.6V | 86 | Now |
| ATmega1284PR212 | ATmega1284P | RF212 | 128 | 4 | 16 | 800/900 MHz | -110 | 10 | 1.8-3.6V | 32 | Now |
| ATmega2561R212 | ATmega2561 | RF212 | 256 | 4 | 8 | 800/900 MHz | -110 | 10 | 1.8-3.6V | 54 | Now |
| ATmega2560R212 | ATmega2560 | RF212 | 256 | 4 | 8 | 800/900 MHz | -110 | 10 | 1.8-3.6V | 86 | Now |
| **Evaluation/Development Kits** | | | | | | | | | | | |
| ATAVRRZRAVEN | 2.4 GHz 802.15.4 Evaluation and Starter Kit | | | | | | | | | | Now |
| ATAVRRAVEN | 2.4 GHZ 802.15.4 Raven Board | | | | | | | | | | Now |
| ATAVRRZUSBSTICK | 2.4 GHZ 802.15.4 USB Stick | | | | | | | | | | Now |
| ATAVRRZ600 | RF Accessory Kit AT86RF230, AT86RF231, AT86RF212 | | | | | | | | | | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | | | | | | | | | | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | | | | | | | | | | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | | | | | | | | | | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | | | | | | | | | | Now |

Note: 1. All MCU Wireless parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR32 32-bit Microcontrollers/Application Processors

## *AP7 Family* (Application Processors)

| Part Number | SRAM (Kbytes) | Vector Multiplier Co-proc. | Ether. MAC 10/100 | USB | LCD Controller | USART | PWM (Channel) | Max I/O Pins | Audio DAC (16-bit) | Ext. Bus Interface | SDRAM Interface | 16-bit Timer | RTC | SPI | Audio | Camera Interf. | PS/2 | SSC | TWI | MCI | Watch. Timer | POR | ECCC | Power Supply (V) | Package | Speed (MHz) | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT32AP7000 | 32 | Y | 2 | 1xHS | 2048x 2048 | 4 | 4 | 160 | Stereo | Y | Y | 6 | 1 | 2 | AC97, 3xI2S | CMOS | Y | 3 | 1 | 1 | Y | Y | Y | 1.65-1.95 Core 3.0-3.6 IO | BGA256 | 150 | Now |
| AT32AP7001 | 32 | Y | 0 | 1xHS | – | 4 | 4 | 90 | Stereo | Y | Y | 6 | 1 | 2 | AC97, 3xI2S | CMOS | Y | 3 | 1 | 1 | Y | Y | Y | 1.65-1.95 Core 3.0-3.6 IO | QFP208 | 150 | Now |
| AT32AP7002 | 32 | Y | 0 | 1xHS | 2048x 2048 | 4 | 4 | 85 | Stereo | Y | Y | 6 | 1 | 2 | AC97, 3xI2S | CMOS | Y | 3 | 1 | 1 | Y | Y | Y | 1.65-1.95 Core 3.0-3.6 IO | BGA196 | 150 | Now |
| AT32AP7200 | 64 | Y | 2 | – | 2048x 2048 | 6 | 4 | 146 | Stereo | Y | Y | 3 | 1 | 4 | AC97, 3xI2S | – | – | 3 | 1 | 1 | Y | Y | Y | 1.08-1.32 Core 3.0-3.6 IO | CTBGA324 | 200 | 4Q20 08 |
| **Evaluation/Development Kits** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ATAVRONEKIT | AVR ONE! Development Tool for On-chip Debugging and Programming of All AVR32 Devices | | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATNGW100 | AVR32 Network Gateway Kit – A Linux® Plug-and-Play Evaluation Platform | | | | | | | | | | | | | | | | | | | | | | | | | | Now |
| ATSTK1000 | Starter Kit for AT32AP7xxx Devices | | | | | | | | | | | | | | | | | | | | | | | | | | Now |

Note: 1. All AP7 Family parts are RoHS compliant.

# Microcontrollers (Continued)

## AVR32 32-bit Microcontrollers (Continued)

### *UC3 Family*

| Part Number | Flash (Kbytes) | RAM (Bytes) | Ether. MAC 10/100 | USB | USB On-the-Go | USART | PWM (Channel) | Max I/O Pins | Ext. Bus Interface | System Bus | Peripheral DAM Ch. | 16-bit Timer | OS Timer | RTC | SPI | SSC | TWI | Watch. Timer | POR | Power Supply (V) | Package | Speed (MHz) | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT32UC3A0128 | 128 | 32 | 1 | 1xFS | Y | 4 | 13 | 109 | 1 | 6 | 7 | 3 | 1 | Y | 2 | 1 | 1 | Y | Y | 3.0-3.6 | QFP144 | 66 | Now |
| AT32UC3A0256 | 256 | 64 | 1 | 1xFS | Y | 4 | 13 | 109 | 1 | 6 | 7 | 3 | 1 | Y | 2 | 1 | 1 | Y | Y | 3.0-3.6 | QFP144 | 66 | Now |
| AT32UC3A0512 | 512 | 64 | 1 | 1xFS | Y | 4 | 13 | 109 | 1 | 6 | 7 | 3 | 1 | Y | 2 | 1 | 1 | Y | Y | 3.0-3.6 | QFP144 | 66 | Now |
| AT32UC3A1128 | 128 | 32 | 1 | 1xFS | Y | 4 | 13 | 69 | 0 | 6 | 7 | 3 | 1 | Y | 2 | 1 | 1 | Y | Y | 3.0-3.6 | QFP100 | 66 | Now |
| AT32UC3A1256 | 256 | 64 | 1 | 1xFS | Y | 4 | 13 | 69 | 0 | 6 | 7 | 3 | 1 | Y | 2 | 1 | 1 | Y | Y | 3.0-3.6 | QFP100 | 66 | Now |
| AT32UC3A1512 | 512 | 64 | 1 | 1xFS | Y | 4 | 13 | 69 | 0 | 6 | 7 | 3 | 1 | Y | 2 | 1 | 1 | Y | Y | 3.0-3.6 | QFP100 | 66 | Now |
| AT32UC3B064 | 64 | 16 | 0 | 1xFS | Y | 3 | 13 | 44 | 0 | 5 | 7 | 3 | 1 | Y | 1 | 1 | 1 | Y | Y | 3.0-3.6 | QFP/ MLF64 | 60 | Now |
| AT32UC3B0128 | 128 | 32 | 0 | 1xFS | Y | 3 | 13 | 44 | 0 | 5 | 7 | 3 | 1 | Y | 1 | 1 | 1 | Y | Y | 3.0-3.6 | QFP/ MLF64 | 60 | Now |
| AT32UC3B0256 | 256 | 32 | 0 | 1xFS | Y | 3 | 13 | 44 | 0 | 5 | 7 | 3 | 1 | Y | 1 | 1 | 1 | Y | Y | 3.0-3.6 | QFP/ MLF64 | 60 | Now |
| AT32UC3B164 | 64 | 16 | 0 | 1xFS | – | 2 | 13 | 28 | 0 | 5 | 7 | 3 | 1 | Y | 1 | 0 | 1 | Y | Y | 3.0-3.6 | QFP/ MLF48 | 60 | Now |
| AT32UC3B1128 | 128 | 32 | 0 | 1xFS | – | 2 | 13 | 28 | 0 | 5 | 7 | 3 | 1 | Y | 1 | 0 | 1 | Y | Y | 3.0-3.6 | QFP/ MLF48 | 60 | Now |
| AT32UC3B1256 | 256 | 32 | 0 | 1xFS | – | 2 | 13 | 28 | 0 | 5 | 7 | 3 | 1 | Y | 1 | 0 | 1 | Y | Y | 3.0-3.6 | QFP/ MLF48 | 60 | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRONEKIT | AVR ONE! Development Tool for On-chip Debugging and Programming of All AVR32 Devices | Now |
| ATEVK1100 | Evaluation Kit for AVR32 UC3A Series | Now |
| ATEVK1101 | Evaluation Kit for AVR32 UC3B Series | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |
| ATSTK600-TQFP48 | The STK600-TQFP48 Contains a Socket Board and Adapter Boards for 48-pins, 0.5 mm Pitch TQFP Devices and Is an Expansion Module for STK600. | Now |
| ATSTK600-TQFP64-2 | The STK600-TQFP64-2 Contains a Socket Board and Adapter Boards for 64-pins, 0.5 mm Pitch TQFP Devices and Is an Expansion Module for STK600. | Now |
| ATSTK600-TQFP100 | The STK600-TQFP100 Contains a Socket Board and Adapter Boards for 100-pins, 0.5 mm Pitch TQFP Devices and Is an Expansion Module for STK600. | Now |
| ATSTK600-TQFP144 | The STK600-TQFP144 Contains a Socket Board and Adapter Boards for 144-pins, 0.5 mm Pitch TQFP Devices and Is an Expansion Module for STK600. | Now |

Note: 1. All UC3 Family parts are RoHS compliant.

# MICROCONTROLLERS (CONTINUED)

## AT91SAM ARM-based Microcontrollers

### *ARM7™-based Microcontrollers*

| Part Number | Flash (Kbytes) | SRAM (Kbytes) | External Bus Interface | Peripheral DMA (Channels) | UART | SPI | TWI | SSC/I2S | MCI | CAN | USB Device | Ethernet MAC 10/100 | Triple-DES/AES Engine | Timers | PWM Controller | High Current Pads | RTC/RTT | 10-bit ADC Channel | 10-bit DAC Channel | Power-On Reset | Brown Out Detection | I/O Voltage Domain (V) | Clock Speed (MHz) | Packages | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT91SAM7L128 | 128 | 6 | – | 11 | 1 | 1 | 1 | – | – | – | – | – | – | 4 | 4 | 4 | 1 | 4 | – | 1 | 1 | 2.5/3.3 | 36 | QFP128, BGA144 | Now |
| AT91SAM7L64 | 64 | 6 | – | 11 | 1 | 1 | 1 | – | – | – | – | – | – | 4 | 4 | 4 | 1 | 4 | – | 1 | 1 | 2.5/3.3 | 36 | QFP128, BGA144 | Now |
| AT91SAM7X512 | 512 | 128 | – | 11 | 3 | 2 | 1 | 1 | – | 1 | FS | 1 | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP100, BGA100 | Now |
| AT91SAM7X256 | 256 | 64 | – | 11 | 3 | 2 | 1 | 1 | – | 1 | FS | 1 | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP100, BGA100 | Now |
| AT91SAM7X128 | 128 | 32 | – | 11 | 3 | 2 | 1 | 1 | – | 1 | FS | 1 | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP100, BGA100 | Now |
| AT91SAM7XC512 | 512 | 128 | – | 11 | 3 | 2 | 1 | 1 | – | 1 | FS | 1 | 1 | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP100, BGA100 | Now |
| AT91SAM7XC256 | 256 | 64 | – | 11 | 3 | 2 | 1 | 1 | – | 1 | FS | 1 | 1 | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP100, BGA100 | Now |
| AT91SAM7XC128 | 128 | 32 | – | 11 | 3 | 2 | 1 | 1 | – | 1 | FS | 1 | 1 | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP100, BGA100 | Now |
| AT91SAM7S512 | 512 | 64 | – | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP64, QFN64 | Now |
| AT91SAM7S256 | 256 | 64 | – | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP64, QFN64 | Now |
| AT91SAM7S128 | 128 | 32 | – | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP64, QFN64 | Now |
| AT91SAM7S64 | 64 | 16 | – | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP64, QFN64 | Now |
| AT91SAM7S321 | 32 | 8 | – | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP64, QFN64 | Now |
| AT91SAM7S32 | 32 | 8 | – | 9 | 3 | 1 | 1 | 1 | – | – | – | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP48, QFN48 | Now |
| AT91SAM7S161 | 16 | 4 | – | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP64, QFN64 | Now |
| AT91SAM7S16 | 16 | 4 | – | 9 | 3 | 1 | 1 | 1 | – | – | – | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 55 | QFP48, QFN48 | Now |
| AT91SAM7SE512 | 512 | 32 | 1 | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 48 | QFP128, BGA144 | Now |
| AT91SAM7SE256 | 256 | 32 | 1 | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 48 | QFP128, BGA144 | Now |
| AT91SAM7SE32 | 32 | 8 | 1 | 11 | 3 | 1 | 1 | 1 | – | – | FS | – | – | 5 | 4 | 4 | 1 | 8 | – | 1 | 1 | 3.3 | 48 | QFP128, BGA144 | Now |
| AT91SAM7A3 | 256 | 32 | – | 19 | 4 | 2 | 1 | 2 | 1 | 2 | FS | – | – | 11 | 8 | – | 1 | 16 | – | 3 | – | 3.3 | 60 | QFP100 | Now |
| AT91M55800A | – | 8 | 1 | 10 | 3 | 1 | – | – | – | – | – | – | – | 7 | – | – | 1 | 8 | 2 | – | – | 3.3/5.0 | 33 | QFP176, BGA176 | Now |
| AT91M42800A | – | 8 | 1 | 8 | 2 | 2 | – | – | – | – | – | – | – | 8 | – | – | 1 | – | – | – | – | 3.3/5.0 | 33 | QFP144, BGA144 | Now |
| AT91FR40162S | 2M | 256 | 1 | 4 | 2 | – | – | – | – | – | – | – | – | 4 | – | – | – | – | – | – | – | 3.3 | 75 | BGA121 | Now |
| AT91R40008 | – | 256 | 1 | 4 | 2 | – | – | – | – | – | – | – | – | 4 | – | – | – | – | – | – | – | 3.3 | 75 | QFP100 | Now |
| AT91M40800 | – | 8 | 1 | 4 | 2 | – | – | – | – | – | – | – | – | 4 | – | – | – | – | – | – | – | 1.8/3.3 | 40 | QFP100 | Now |
| **Evaluation/Development Kits** | | | | | | | | | | | | | | | | | | | | | | | | | |
| AT91SAM7L-EK | Eval. Kit for AT91SAM7L Products (SAM7L128 and SAM7L64); Includes IAR™ Toolchain (32-Kbyte Limited Compiler) | | | | | | | | | | | | | | | | | | | | | | | | On Request |
| AT91SAM7L-EK2 | Eval. Kit for AT91SAM7L Products (SAM7L128 and SAM7L64); Includes IAR Toolchain (32-Kbyte Limited Compiler) | | | | | | | | | | | | | | | | | | | | | | | | March 2008 |
| AT91SAM7S-EK | Eval. Kit for AT91SAM7S Products (SAM7S16 to SAM7S512); Includes IAR Toolchain (32-Kbyte Limited Compiler) | | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91SAM7SE-EK | Eval. Kit for AT91SAM7SE Products (SAM7SE32 to SAM7SE512); Includes IAR Toolchain (32-Kbyte Limited Compiler) | | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91SAM7X-EK | Eval. Kit for AT91SAM7X Products (SAM7X128 to SAM7X512); Includes IAR Toolchain (32-Kbyte Limited Compiler) | | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91SAM7A3-EK | Eval. Kit for AT91SAM7A3 | | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91EB55 | Eval. Kit for AT91M55800A | | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91EB42 | Eval. Kit for AT91M42800A | | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91EB40A | Eval. Kit for AT91FR40162S, AT91R40008 and AT91M40800 | | | | | | | | | | | | | | | | | | | | | | | | Now |

Note: 1. All ARM7-based Microcontrollers parts are RoHS compliant.

# MICROCONTROLLERS (CONTINUED)

## AT91SAM ARM-based Microcontrollers (Continued)

### *ARM9™-based Microcontrollers*

| Part Number | Flash (Kbytes) | SRAM (Kbytes) | Cache Memory (Bytes) | External Bus Interface | Peripheral DMA (Channels) | UART | SPI | TWI | SSC/I2S | MCI | CAN | USB Device | USB Host (Full Speed) | Ethernet MAC 10/100 | LCD Controller | Image Sensor Interface | Timers | PWM Controller | RTC/RTT | 10-bit ADC Channel | I/O Voltage Domain (V) | Clock Speed (MHz) | Packages | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT91SAM9261 | – | 160 | 2x16 | 1 | 19 | 4 | 2 | 1 | 3 | 1 | – | FS | 2 | – | 1 | – | 5 | – | 1 | – | 1.8/3.3 | 240 | BGA217 | Now |
| AT91SAM9261S | – | 16 | 2x16 | 1 | 19 | 4 | 2 | 1 | 3 | 1 | – | FS | 2 | – | 1 | – | 5 | – | 1 | – | 1.8/3.3 | 240 | BGA217 | Now |
| AT91SAM9260 | – | 2x4 | 2x8 | 1 | 24 | 7 | 2 | 1 | 1 | 1 | – | FS | 2 | 1 | – | 1 | 8 | – | 1 | 4 | 1.8/3.3 | 210 | QFP208, BGA217 | Now |
| AT91SAM9R64 | – | 64 | 2x4 | 1 | 18 | 5 | 1 | 1 | 1 | 1 | – | HS | – | – | – | – | 5 | 3 | 2 | 3 | 3.3 | 240 | BGA144 | Now |
| AT91SAM9RL64 | – | 64 | 2x4 | 1 | 22 | 5 | 1 | 2 | 2 | 1 | – | HS | – | – | 1 | – | 5 | 4 | 2 | 6 | 3.3 | 240 | BGA217 | Now |
| AT91SAM9XE512 | 512 | 32 | 16K+8 | 1 | 24 | 6 | 2 | 2 | 1 | 1 | – | FS | 2 | 1 | – | 1 | 8 | – | 1 | 4 | 1.8/3.3 | 210 | QFP208, BGA217 | Now |
| AT91SAM9XE256 | 256 | 32 | 16K+8 | 1 | 24 | 6 | 2 | 2 | 1 | 1 | – | FS | 2 | 1 | – | 1 | 8 | – | 1 | 4 | 1.8/3.3 | 210 | QFP208, BGA217 | Now |
| AT91SAM9XE128 | 128 | 16 | 16K+8 | 1 | 24 | 6 | 2 | 2 | 1 | 1 | – | FS | 2 | 1 | – | 1 | 8 | – | 1 | 4 | 1.8/3.3 | 210 | QFP208, BGA217 | Now |
| AT91SAM9263 | – | 96 | 2x16 | 2 | 22 | 4 | 2 | 1 | 2 | 2 | 1 | FS | 2 | 1 | 1 | 1 | 5 | 4 | 2 | – | 1.8/3.3 | 240 | BGA324 | Now |
| AT91RM9200 | – | 16 | 2x16 | 1 | 20 | 5 | 1 | 1 | 3 | 1 | – | FS | 2 | 1 | – | – | 8 | – | 2 | – | 3.3 | 180 | QFP208, BGA256 | Now |
| **Evaluation/Development Kits** | | | | | | | | | | | | | | | | | | | | | | | | |
| AT91RM9200-EK | Evaluation Kit for AT91RM9200 | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91SAM9263-EK | Evaluation Kit for AT91SAM9263 | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91SAM9261-EK | Evaluation Kit for AT91SAM9261 | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91SAM9260-EK | Evaluation Kit for AT91SAM9260 | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91SAM9RL-EK | Evaluation Kit for AT91SAM9RL64 and AT91SAM9R64 | | | | | | | | | | | | | | | | | | | | | | | Now |
| AT91SAM-ICE | SAM-ICE™ Is a USB JTAG Emulator Designed for All Atmel® AT91 Microcontrollers | | | | | | | | | | | | | | | | | | | | | | | Now |

Note: 1. All ARM9-based Microcontrollers parts are RoHS compliant.

# MICROCONTROLLERS (CONTINUED)

## AT91 Customizable Atmel Processor (CAP) 32-bit ARM-based MCUs

### *CAP ARM-based Microcontrollers*

| Part Number | Clock Freq. (MHz) | Cache Memory (Kbytes) | ROM (Kbytes) | SRAM (Kbytes) | NAND Flash/ECC | SDRAM Controller | DDR RAM Controller | Static Memory Controller | Burst/Cellular RAM | Usable Gates (K) | MP Block SRAM (Kbytes) | MP Block DPRAM (Kbytes) | General Purpose I/O (2) | USB OHCI Host Full Speed Ports | USB Device High Speed UTMI+/PHY Endpoints | USB Device Full Speed Endpoints | Ethernet MAC 10/100 | Image Sensor Interface | LCD Controller | PLL/Osc | Power-on Reset | Shut-down Controller | Watch-dog Timer | Real-time Timer | Battery Backup Registers | SSC | SPI Master/Slave | MMCard, SDCard, SDIO Host | TWI Master/Slave | USART | Debugging UART | CAN 2.0A & B Controller Mailboxes | 16-bit Timer/Counter Channels | 16-bit PWM Channels | AC97 Controller Channels | 10-bit ADC Channels | AES/TDES | 32-bit Parallel I/O Controller | Package | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ARM7TDMI Core** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AT91CAP7S450A | 80 | – | 256 | 160 | 1 | 1 | – | 1 | – | 450 | – | 8 | 90 | – | – | 6 | – | – | – | 1/1 | 2 | 1 | 1 | 1 | 20 | – | 1 | – | – | 2 | 1 | – | 3 | 2 (1) | – | 8 | – | 1 | 144, 176, 208 QFP/ BGA, 225 BGA | Now |
| AT91CAP7S250A | 80 | – | 256 | 160 | 1 | 1 | – | 1 | – | 250 | – | 8 | 90 | – | – | 6 | – | – | – | 1/1 | 2 | 1 | 1 | 1 | 20 | – | 1 | – | – | 2 | 1 | – | 3 | 2 (1) | – | 8 | – | 1 | 144, 176, 208 QFP/ BGA, 225 BGA | Now |
| **ARM926EJ-S Core** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AT91CAP9S500A | 200 | 16/16 | 32 | 32 | 1 | 1 | 1 | 1 | 1 | 500 | 36 | 22 | 77 | 2 | 8 | – | 1 | 1 | 1 | 1/1 | 2 | 1 | 1 | 1 | 4 | 2 | 2 | 2 | 1 | 3 | 1 | 16 | 3 | 4 | 6 | 8 | – | 4 | LFBGA400, TFBGA324 | Now |
| AT91CAP9S250A | 200 | 16/16 | 32 | 32 | 1 | 1 | 1 | 1 | 1 | 250 | 36 | 22 | 77 | 2 | 8 | – | 1 | 1 | 1 | 1/1 | 2 | 1 | 1 | 1 | 4 | 2 | 2 | 2 | 1 | 3 | 1 | 16 | 3 | 4 | 6 | 8 | – | 4 | LFBGA400, TFBGA324 | Now |
| AT91CAP9SC500A | 200 | 16/16 | 32 | 32 | 1 | 1 | 1 | 1 | 1 | 500 | 36 | 22 | 77 | 2 | 8 | – | 1 | 1 | 1 | 1/1 | 2 | 1 | 1 | 1 | 4 | 2 | 2 | 2 | 1 | 3 | 1 | 16 | 3 | 4 | 6 | 8 | 1/1 | 4 | LFBGA400, TFBGA324 | Now |
| AT91CAP9SC250A | 200 | 16/16 | 32 | 32 | 1 | 1 | 1 | 1 | 1 | 250 | 36 | 22 | 77 | 2 | 8 | – | 1 | 1 | 1 | 1/1 | 2 | 1 | 1 | 1 | 4 | 2 | 2 | 2 | 1 | 3 | 1 | 16 | 3 | 4 | 6 | 8 | 1/1 | 4 | LFBGA400, TFBGA324 | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| AT91CAP7X-DK | Development Kit for AT91CAP7 with Xilinx FPGA | Now |
| AT91CAP7A-DK | Development Kit for AT91CAP7 with Altera® FPGA | 4Q2008 |
| AT91CAP7A-STK | Starter Kit for AT91CAP7 with Altera FPGA | Now |
| AT91CAP7X-STK | Starter Kit for AT91CAP7 with Xilinx FPGA | 4Q2008 |
| AT91CAP9A-DK | Development Kit for AT91CAP9 with Altera FPGA | Now |
| AT91CAP9X-DK | Development Kit for AT91CAP9 with Xilinx FPGA | 2H2008 |
| AT91CAP9A-STK | Starter Kit for AT91CAP9 with Altera FPGA | Now |
| AT91CAP9X-STK | Starter Kit for AT91CAP9 with Xilinx FPGA | 2H2008 |

Notes:
1. CAP7 PWMs implemented via timer block.
2. Number of general-purpose I/O for the largest package.
3. All CAP parts are RoHS compliant.
4. Many of the ASIC IP Cores listed on **Page 29** can be integrated into the AT91CAP Metal Programmable Block, together with compatible third-party IPs, and IP blocks developed by the CAP user.

# Microcontrollers (Continued)

## 8051 Architecture

### *CAN Networking*

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| AT89C51CC02 | 8-bit Microcontroller with 4-channel CAN Controller, 16-Kbyte of Flash, 512-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA16-Kbyte | Yes | Now |
| AT89C51CC01 | 8-bit Microcontroller with 15-channel CAN Controller, 32-Kbyte Flash, 1280-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA32-Kbyte | Yes | Now |
| AT89C51CC03 | 8-bit Microcontroller with 15-channel CAN Controller, 64-Kbyte Flash, 2304-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA64-Kbyte | Yes | Now |
| **Development Kits and Tools** | | | |
| AT89STK-06 | Starter Kit for CAN Microcontrollers AT89C51CC01, AT89C51CC02 and AT89C51CC03 | | Now |
| CANADAPT28 | PLCC28 Adapter for AT89C51CC02 to AT89C51CC02 PLCC44 Socket | | Now |

### *Flash (Reprogrammable)*

| Part Number | Description | Memory Size | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT89C2051 | Microcontroller with 2-Kbyte Flash with Analog Comparator | 2K x 8 | Yes | Now |
| AT89C4051 | Microcontroller with 4-Kbyte Flash with Analog Comparator | 4K x 8 | Yes | Now |
| AT89C55WD | Microcontroller with 20-Kbyte Flash, 256-byte RAM, Watchdog Timer | 20K x 8 | Yes | Now |
| AT89C51RC | Microcontroller with 32-Kbyte Flash, 512-byte RAM, Watchdog Timer | 32K x 8 | Yes | Now |

### *Flash ISP (In-System Programmable)*

| Part Number | Description | Memory Size | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT89S51 | In-System Programmable Microcontroller with 4-Kbyte Flash | 4K x 8 | Yes | Now |
| AT89LS51 | 2.7-volt, In-System Programmable Microcontroller with 4-Kbyte Flash | 4K x 8 | Yes | Now |
| AT89S52 | In-System Programmable Microcontroller with 8-Kbyte Flash | 8K x 8 | Yes | Now |
| AT89LS52 | 2-7-volt, In-System Programmable Microcontroller with 8-Kbyte Flash | 8K x 8 | Yes | Now |
| AT89S8253 | In-System Programmable Microcontroller with 12-Kbyte Flash, 256-byte RAM, 2-Kbyte EEPROM, SPI | 12K x 8 | Yes | Now |
| AT89C5115 | Low-pin Count, In-System Programmable Microcontroller with 16-Kbyte Flash, 2-Kbyte EEPROM, 512-byte RAM, 10-bit ADC, PCA | 16K x 8 | Yes | Now |
| AT89C51RB2 | In-System Programmable Microcontroller with 16-Kbyte Flash, 1280-byte RAM, SPI, PCA | 16K x 8 | Yes | Now |
| AT89C51RC2 | In-System Programmable Microcontroller with 32-Kbyte Flash, 1280-byte RAM, SPI, PCA | 32K x 8 | Yes | Now |
| AT89C51IC2 | In-System Programmable Microcontroller with 32-Kbyte Flash, 1280-byte RAM, TWI, SPI, PCA | 32K x 8 | Yes | Now |
| AT89C51AC2 | In-System Programmable Microcontroller with 32-Kbyte Flash, 1280-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA | 32K x 8 | Yes | Now |
| AT89C51AC3 | In-System Programmable Microcontroller with 64-Kbyte Flash, 2048-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA | 64K x 8 | Yes | Now |
| AT89C51RD2 | In-System Programmable Microcontroller with 64-Kbyte Flash, 2048-byte RAM, PCA, SPI | 64K x 8 | Yes | Now |
| AT89C51ED2 | In-System Programmable Microcontroller with 64-Kbyte Flash, 2048-byte RAM, 2-Kbyte EEPROM, PCA, SPI | 64K x 8 | Yes | Now |
| AT89C51ID2 | In-System Programmable Microcontroller with 64-Kbyte Flash, 2048-byte RAM, 2-Kbyte EEPROM, PCA, TWI, SPI | 64K x 8 | Yes | Now |

# Microcontrollers (Continued)

## 8051 Architecture (Continued)

### *Flash ISP (In-System Programmable) (Continued)*

| Part Number | Description | Memory Size | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT89C51RE2 | In-System Programmable Microcontroller with 128-Kbyte Flash, 8192-byte RAM, PCA, SPI, 2 UART | 128K x 8 | Yes | Now |
| **Development Kits and Tools** | | | | |
| AT89ISP | In-System Programmer for AT89S/AT89LP Series | | | Now |
| AT89OCD-01 | On Chip Debug Tool for 8051 Flash Microcontrollers: AT89C51RE2 and Derivatives | | | Now |
| AT89STK-11 | Starter Kit for In-System Programming 8051 Flash Microcontrollers | | | Now |
| FLIP | FLexible In-System Programmer – PC-based Software for In-System Programming of C51-based Flash Microcontrollers – Available in Microsoft® Windows® (Support RS-232, CAN, USB Interfaces), Linux (RS-232 Interface) | | | Now |

### *Flash ISP – Single Cycle Core*

| Part Number | Description | Memory Size | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT89LP2052 | Single-cycle 8051 Core, In-System Programmable Microcontroller with 2-Kbyte Flash, 256-byte RAM, Analog Comparator | 2K x 8 | Yes | Now |
| AT89LP4052 | Single-cycle 8051 Core, In-System Programmable Microcontroller with 4-Kbyte Flash, 256-byte RAM, Analog Comparator | 4K x 8 | Yes | Now |
| AT89LP213 | Single-cycle 8051 Core, In-System Programmable Microcontroller with 2-Kbyte Flash, 128-byte RAM, On-chip Debug, SPI, 14-pin, PWM, Internal RC Oscillator, Analog Comparator | 2K x 8 | Yes | Now |
| AT89LP214 | Single-cycle 8051 Core, In-System Programmable Microcontroller with 2-Kbyte Flash, 128-byte RAM, On-chip Debug, SPI, 14-pin, UART, Analog Comparator, Internal RC Oscillator | 2K x 8 | Yes | Now |
| AT89LP216 | Single-cycle 8051 Core, In-System Programmable Microcontroller with 2-Kbyte Flash, 128-byte RAM, On-chip Debug, SPI, 16-pin, UART, PWM, Analog Comparator, Internal RC Oscillator | 2K x 8 | Yes | Now |
| AT89LP428 | Single-cycle 8051 Core, In-System Programmable Microcontroller with 4-Kbyte Flash, 512-byte Flash Data, 768-byte RAM, On-chip Debug, SPI, 28-/32-pin, UART, PWM, Dual Analog Comparator, Internal RC Oscillator, In-Application Programming | 4K x 8 | Yes | Now |
| AT89LP828 | Single-cycle 8051 Core, In-System Programmable Microcontroller with 8-Kbyte Flash, 1024-byte Flash Data, 768-byte RAM, On-chip Debug, SPI, 28-/32-pin, UART, PWM, Dual Analog Comparator, Internal RC Oscillator, In-Application Programming | 8K x 8 | Yes | Now |
| AT89LP6440 | Single-cycle 8051 Core, In-System Programmable Microcontroller with 64-Kbyte Flash, 8-Kbyte Flash Data, 4-Kbyte RAM, On-chip Debug, SPI, TWI, 40-/44-pin, UART, PWM, Dual Analog Comparator, 8-channel/10-bit ADC, Internal RC Oscillator, In-Application Programming, 2.4 V - 3.6V $V_{CC}$ Range | 64K x 8 | Yes | 4Q2008 |
| **Development Kits** | | | | |
| AT89ISP | In-System Programmer for AT89S/AT89LP Series | | | Now |

### *Lighting Microcontrollers*

| Part Number | Description | Program Memory | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT83EB5114 | Microcontroller with 256-byte RAM, 256-byte EEPROM, 10-bit 6-channel ADC, 16-bit Timers, Analog Comparator, RC Oscillator, Amplifier/Rectifier | 4-Kbyte ROM | Yes | Now |
| **Development Kits** | | | | |
| AT89RFD-10 | Non Dimmable Fluorescent Demo Kit for AT8xEB5114 | | | Now |

# Microcontrollers (Continued)

## 8051 Architecture (Continued)

### *OTP (One Time Programmable)*

| Part Number | Description | Memory Size | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT87C52X2 | Microcontroller with 8-Kbyte OTP | 8K x 8 | Yes | Now |
| AT87C54X2 | Microcontroller with 16-Kbyte OTP | 16K x 8 | Yes | Now |
| AT87C51RB2 | Microcontroller with16-Kbyte Flash, 512-byte RAM, PCA | 16K x 8 | Yes | Now |
| AT87C58X2 | Microcontroller with 32-Kbyte OTP | 32K x 8 | Yes | Now |
| AT87C51RC2 | Microcontroller with 32-Kbyte OTP, 512-byte RAM, PCA | 32K x 8 | Yes | Now |
| AT87C51RD2 | Microcontroller with 64-Kbyte OTP, 1024-byte RAM, PCA | 64K x 8 | Yes | Now |

### *ROM*

| Part Number | Description | Memory Size | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT80C52X2 | Microcontroller with 8-Kbyte ROM | 8K x 8 | Yes | Now |
| AT80C54X2 | Microcontroller with 16-Kbyte ROM | 16K x 8 | Yes | Now |
| AT83C51RB2 | Microcontroller with 16-Kbyte ROM, 1280-byte RAM, PCA, SPI, Keyboard Interface | 16K x 8 | Yes | Now |
| AT80C58X2 | Microcontroller with 32-Kbyte ROM | 32K x 8 | Yes | Now |
| AT83C51RC2 | Microcontroller with 32-Kbyte ROM, 1280-byte RAM, PCA, SPI, Keyboard Interface | 32K x 8 | Yes | Now |
| AT83C51RD2 | Microcontroller with 64-Kbyte ROM, 1024-byte RAM | 64K x 8 | Yes | Now |

### *ROMless*

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| AT80C31X2 | Microcontroller with 128 Bytes of RAM | Yes | Now |
| AT80C32X2 | Microcontroller with 256 Bytes of RAM | Yes | Now |
| AT80C51RA2 | Microcontroller with 512 Bytes of RAM, PCA | Yes | Now |

### *USB Microcontrollers 8051-based*

| Part Number | Description | Program Memory | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT89C5130A | Microcontroller with 1280-byte RAM, 1-Kbyte EEPROM, USB 2.0 (12 Mbps), SPI, TWI, PCA | 16-Kbyte Flash | Yes | Now |
| AT89C5131A | Microcontroller with 1280-byte RAM, 1-Kbyte EEPROM, USB 2.0 (12 Mbps), SPI, TWI, PCA | 32-Kbyte Flash | Yes | Now |
| AT83C5134 | Microcontroller with 1280-byte RAM, USB 2.0 (12 Mbps), 6 Endpoints, SPI, TWI, PCA | 8-Kbyte ROM | Yes | Now |
| AT83C5135 | Microcontroller with 1280-byte RAM, USB 2.0 (12 Mbps), 6 Endpoints, SPI, TWI, PCA | 16-Kbyte ROM | Yes | Now |
| AT83C5136 | Microcontroller with 1280-byte RAM, USB 2.0 (12 Mbps), 6 Endpoints, SPI, TWI, PCA | 32-Kbyte ROM | Yes | Now |
| AT83EC5136 | Microcontroller with 1280-byte RAM, 512-byte EEPROM and USB 2.0 (12 Mbps), 6 Endpoints, SPI, TWI, PCA | 32-Kbyte ROM | Yes | Now |
| AT83EI5136 | Microcontroller with 1280-byte RAM, 32-Kbyte EEPROM and USB 2.0 (12 Mbps), 6 Endpoints, SPI, TWI, PCA | 32-Kbyte ROM | Yes | Now |
| **Development Kits** | | | | |
| AT89STK-05 | Starter Kit for AT89C5130A/AT89C5131A/AT89C5122 USB Microcontroller | | | Now |
| AT89STK-10 | USB Mass Storage Starter Kit for AT89C5130A/AT89C5131A/AT89C5122 USB Microcontrollers | | | Now |

# Microcontrollers (Continued)

## MARC4 4-bit Architecture Microcontrollers

### *4-bit Microcontrollers/MARC4 Family*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATAM862x-TNz3 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5753 in One IC, Temperature Range: -40° C to +125° C, Frequency Range: 310 to 330 MHz | SSO24 | Pb-free Only | Now |
| ATAM862x-TNz4 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5754 in One IC, Temperature Range: -40° C to +125° C, Frequency Range: 429 to 439 MHz | SSO24 | Pb-free Only | Now |
| ATAM862x-TNz8 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5750 in One IC, Temperature Range: -40° C to +125° C, Frequency Range: 868 to 928 MHz | SSO24 | Pb-free Only | Now |
| ATAM893 (MTP Version) | 1.8 to 6.5V, Extended Voltage Range with Very Low Current Consumption for IR and RF Remote Control, Security and Wireless Communication Systems, Sleep Current <1 µA, 4-Kbyte Flash Memory, 2 x 64 Bytes EEPROM, 3 Multifunction Timer, Watchdog, POR & Brown-out, SSI, 16 I/O Lines, $T_{AMB}$ -40° C to +125° C, MTP Version for ATAR080/090/890/092/892 | SSO20 | Pb-free Only | Now |
| ATAM893-D (MTP Version) | 1.8 to 6.5V, Extended Voltage Range with Very Low Current Consumption for IR and RF Remote Control, Security and Wireless Communication Systems, Sleep Current <1 µA, 4-Kbyte Flash Memory, 2 x 64 Bytes EEPROM, 3 Multifunction Timer, Watchdog, POR & Brown-out, SSI, 16 I/O Lines, $T_{AMB}$ -40° C to +125° C, MTP Version for ATAR080/090/890/092/892 | SSO20 | Pb-free Only | Now |
| ATAM894 (MTP Version) | 1.8 to 6.5V, Extended Voltage Range with Very Low Current Consumption for IR and RF Remote Control, Security and Wireless Communication Systems, Sleep Current <1 µA, 8-Kbyte Flash Memory, 2 x 64 Bytes EEPROM, 3 Multifunction Timer, Watchdog, POR & Brown-out, SSI, 16 I/O Lines, $T_{AMB}$ -40° C to +85° C | SSO24 | Pb-free Only | Now |
| ATAR080 | 1.8 to 6.2V, Extended Voltage Range with Very Low Current Consumption for IR and RF Remote Control, Security and Wireless Communication Systems, Very Low Power Consumption in Active, Power-down and Sleep Mode, Watchdog Timer, POR and Brown-out Function, 2 x Multifunctional Timers/Counters Including IR/RF Remote Control Carrier Generation, 2048-byte ROM + 1024 Bytes for Test Purposes, 256 Nibbles RAM, I/O 12 Bi-directional Ports Inclusive 4 High-current Outputs, 8-bit Synchronous Serial Interface, Battery-low Detection, Comparator for Zero Cross Detection, 3 Internal, 4 External Interrupts, 32 kHz Quartz Oscillator, 4 MHz Oscillator (Internal RC, External R, Quartz or Ceramic Resonator, External Clock), Operating Temperature Range $T_{AMB}$ = -40° C to +85° C | SSO20 | Pb-free Only | Now |
| ATAR080-D | See ATAR080, Operating Temperature Range $T_{AMB}$ = -40° C to +125° C | SSO20 | Pb-free Only | Now |
| ATAR090 | 1.8 to 6.2V, Extended Voltage Range with Very Low Current Consumption for IR and RF Remote Control, Security and Wireless Communication Systems, Sleep Current <1 µA, Watchdog Timer, POR and Brown-out Function, 2 x Multifunctional Timers/Counters Including IR/RF Remote Control Carrier Generation, 2048-byte ROM + 1024 Bytes for Test Purposes, 256 Nibbles RAM, I/O 12 Bi-directional Ports Inclusive 4 High-current Outputs, 8-bit Synchronous Serial Interface, Battery-low Detection, Comparator for Zero Cross Detection, 3 Internal, 4 External Interrupts, 32 kHz Quartz Oscillator, 4 MHz Oscillator (Internal RC, External R, Quartz or Ceramic Resonator, External Clock), Operating Temperature Range $T_{AMB}$ = -40° C to +85° C (-40° C to +105° C) (-40° C to +125° C) | SSO20 | Pb-free Only | Now |
| ATAR090-C | See ATAR090, Operating Temperature Range $T_{AMB}$ = -40° C to +105° C | SSO20 | Pb-free Only | Now |
| ATAR090-D | See ATAR090, Operating Temperature Range $T_{AMB}$ = -40° C to +125° C | SSO20 | Pb-free Only | Now |

# Microcontrollers (Continued)

## MARC4 4-bit Architecture Microcontrollers (Continued)

### *4-bit Microcontrollers/MARC4 Family (Continued)*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATAR092 | 1.8 to 6.2V, Extended Voltage Range with Very Low Current Consumption for IR and RF Remote Control, Security and Wireless Communication Systems, Sleep Current <1 µA, Watchdog Timer, POR and Brown-out Function, 3 x Multifunction Timer/Counter with Remote Control Carrier Generation and Biphase, Manchester and Pulse Width Modulator and Demodulator, 4096-byte ROM + 512 Bytes for Test Purposes, 256 Nibbles RAM, I/O 16 Bi-directional Ports Including 4 High-current Outputs, 8-bit Synchronous Serial Interface, Battery Low Detection, Comparator for Zero Cross Detection, 4 Internal, 6 External Interrupts, 32 kHz Quartz Oscillator, 4 MHz Oscillator (Internal RC, External R, Quartz or Ceramic Resonator, External Clock), Operating Temperature Range $T_{AMB}$ = -40° C to +85° C (-40° C to +105° C) (-40° C to +125° C) | SSO20 | Pb-free Only | Now |
| ATAR092-C | See ATAR092, Operating Temperature Range $T_{AMB}$ = -40° C to +105° C | SSO20 | Pb-free Only | Now |
| ATAR092-D | See ATAR092, Operating Temperature Range $T_{AMB}$ = -40° C to +125° C | SSO20 | Pb-free Only | Now |
| ATAR862x-yyy-TNz3 | Complete UHF ASK/FSK Transmitter, ROM Microcontroller and Transmitter PLL T5753 in One IC, Temperature Range: -40° C to +125° C, Frequency Range: 310 to 330 MHz | SSO24 | Pb-free Only | Now |
| ATAR862x-yyy-TNz4 | Complete UHF ASK/FSK Transmitter, ROM Microcontroller and Transmitter PLL T5754 in One IC, Temperature Range: -40° C to +125° C, Frequency Range: 429 to 439 MHz | SSO24 | Pb-free Only | Now |
| ATAR862x-yyy-TNz8 | Complete UHF ASK/FSK Transmitter, ROM Microcontroller and Transmitter PLL T5750 in One IC, Temperature Range: -40° C to +125° C, Frequency Range: 868 to 928 MHz | SSO24 | Pb-free Only | Now |
| ATAR890 | See ATAR090, Additional 512-bit EEPROM (64 Bytes) On-chip, Operating Temperature Range $T_{AMB}$ = -40° C to +85° C (-40° C to +105° C) | SSO20 | Pb-free Only | Now |
| ATAR890-C | See ATAR090, Additional 512-bit EEPROM (64 Bytes) On-chip, Operating Temperature Range $T_{AMB}$ = -40° C to +105° C | SSO20 | Pb-free Only | Now |
| ATAR892 | See ATAR092, Additional 512-bit EEPROM (64 Bytes) On-chip, Operating Temperature Range $T_{AMB}$ = -40° C to +85° C (-40° C to +105° C) | SSO20 | Pb-free Only | Now |
| ATAR892-C | See ATAR092, Additional 512-bit EEPROM (64 Bytes) On-chip, Operating Temperature Range $T_{AMB}$ = -40° C to +105° C | SSO20 | Pb-free Only | Now |
| **Evaluation Kits and Tools** | | | | |
| M4EMUX9X | MARC4 Development System for the ATAR090, ATAR092, ATAR892, ATAR890 and ATAR080 Series, Including the Flash Part ATAM893 and the U9280M | | | Now |

# TOUCH TECHNOLOGY

## Keys and Scrollers

### *Capacitive Touch Controllers for Keys, Slider and/or Wheels*

| Part Number | Technology | Touch Keys | Wheel/Slider Function | Package | Package Size in (mm²) | Voltage | Temperature Range | Inputs/Outputs | Interface | FMEA Self Test & Diag. Features | AKS* | Low Power Mode | Self Calibration | Noise Filtering | Auto Drift Compensation | Spread Spectrum Acquisition | Evaluation Board | Notes | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT100A | QTouch™ | 1 | – | WSON- 6 | 3 x 3 | 2-5V | -40 to +85° C | 0/1 Digital | – | – | – | Yes | Yes | Yes | Yes | Yes | E100S | Replaces QT100 | Now |
| QT220 | QTouch | 2 | – | SSOP-20 | 5 x 7 | 3.9-5.5V | -40 to +85° C | 0/2 Digital | – | – | – | Yes | Yes | Yes | Yes | Yes | E240B | – | Now |
| QT240 | QTouch | 4 | – | SSOP-20 | 5 x 7 | 3.9-5.5V | -40 to +85° C | 0/4 Digital | – | – | – | Yes | Yes | Yes | Yes | Yes | E240B | – | Now |
| QT1080 | QTouch | 8 | – | QFN-32 | 5 x 5 | 2.8-5.0V | -40 to +85° C | 0/8 Digital | – | – | Yes | Yes | Yes | Yes | Yes | Yes | E1080 | – | Now |
| QT1081 | QTouch | 8 | – | QFN-32 | 5 x 5 | 2.8-5.0V | -40 to +85° C | 0/8 Digital | – | – | Yes | Yes | Yes | Yes | Yes | Yes | E1081 | Low Cost QT1080 | Now |
| QT1101 | QTouch | 10 | – | QFN-32 | 5 x 5 | 2.8-5.0V | -40 to +85° C | 0/0 | 1 or 2-wire | – | Yes | Yes | Yes | Yes | Yes | Yes | – | – | Now |
| QT1103 | QTouch | 10 | – | QFN-32 | 5 x 5 | 2.8-5.0V | -40 to +85° C | 0/0 | 1 or 2-wire | – | Yes | Yes | Yes | Yes | Yes | Yes | E1103 | Low Cost QT1101 | Now |
| QT1106 | QTouch | 7 | Yes | QFN-32 | 5 x 5 | 2.8-5.0V | -40 to +85° C | 0/0 | SPI | – | Yes | Yes | Yes | Yes | Yes | Yes | E1106 | Replaces QT411/511 | Now |
| QT60160 | Qmatrix™ | 16 | – | QFN- 32 | 5 x 5 | 1.8-5.5V | -40 to +85° C | 0/0 | I2C-compatible, Parallel Shift Reg. | – | Yes | Yes | Yes | Yes | Yes | Yes | E6240 | – | Now |
| QT60168 | Qmatrix | 16 | – | TQFP-32 | 7 x 7 | 3-5.25V | -40 to +105° C | 0/0 | SPI | Yes | Yes | Yes | Yes | Yes | Yes | Yes | E6248 | Ideal for Home Appliances | Now |
| QT60240 | Qmatrix | 24 | – | QFN-32 | 5 x 5 | 1.8-5.5V | -40 to +85° C | 0/0 | I2C - compatible, Parallel Shift Reg. | – | Yes | Yes | Yes | Yes | Yes | Yes | E6240 | – | Now |
| QT60248 | Qmatrix | 24 | – | TQFP-32 | 7 x 7 | 3-5.25V | -40 to +105° C | 0/0 | SPI | Yes | Yes | Yes | Yes | Yes | Yes | Yes | E6248 | Ideal for Home Appliances | Now |

# TOUCH TECHNOLOGY (CONTINUED)

## Keys and Scrollers (Continued)

### *Capacitive Touch Controllers for Keys, Slider and/or Wheels (Continued)*

| Part Number | Technology | Touch Keys | Wheel/Slider Function | Package | Package Size in (mm²) | Voltage | Temperature Range | Inputs/Outputs | Interface | FMEA Self Test & Diag. Features | AKS* | Low Power Mode | Self Calibration | Noise Filtering | Auto Drift Compensation | Spread Spectrum Acquisition | Evaluation Board | Notes | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT60326 | Qmatrix | 32 | – | TQFP-44 | 9x9 | 4.75-5.25V | -40 to +105° C | 0/0 | SPI, UART | Yes | Yes | Yes | Yes | Yes | Yes | Yes | E6486 | Ideal for Home Appliances | Now |
| QT60486 | Qmatrix | 48 | – | TQFP-44 | 9x9 | 4.75-5.25V | -40 to +105° C | 0/0 | SPI, UART | Yes | Yes | Yes | Yes | Yes | Yes | Yes | E6486 | Ideal for Home Appliances | Now |
| AT42QT2160 | Qmatrix | 16 | Yes | QFN-28 | 4x4 | 1.8-5.5V | -40 to +85° C | 3/11 Digital (PWM o/p) | I2C-compatible | – | Yes | Yes | Yes | Yes | Yes | Yes | AT42EVK 2160A | Ideal for Mobile Devices | Now |
| AT42QT1060 | QTouch | 6 | – | QFN-28 | 4x4 | 1.8-5.5V | -40 to +85° C | 7/7 Digital (PWM o/p) | I2C-compatible | – | Yes | Yes | Yes | Yes | Yes | Yes | AT42EVK 1060 | Guard Channel for Mobile Devices | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| E100S | 1-channel Touch Sense Evaluation Kit Demonstrating the QT100A | Now |
| E240B | 2- and 4-channels Touch Sense Evaluation Kit Demonstrating the QT220 and QT240 | Now |
| E1080 | Discontinued, as the QT1081 Replaces the QT1080. Please See E1081 Evaluation Kit | Disc. |
| E1081 | 10-channels Touch Sense Evaluation Kit Demonstrating the QT1081 | Now |
| E1103 | 8-channels Touch Sense Evaluation Kit Demonstrating the QT1103 | Now |
| E1106 | Touch Sense Evaluation Kit Demonstrating the QT1106 | Now |
| E6240 | 24-channels Touch Sense Evaluation Kit Demonstrating the QT60160 and the QT60240 | Now |
| E6248 | 24-channels Touch Sense Evaluation Kit Demonstrating the QT60168 and the QT60248 | Now |
| E6486 | 48-channls Touch Sense Evaluation Kit Demonstrating the QT60326 and the QT60486 | Now |
| EVK2160A | 16-channels Touch Sense Evaluation Kit Demonstrating the AT42QT2160 | Now |
| EVK1060 | 6-channels Touch Sense Evaluation Kit Demonstrating the AT42QT1060 | Now |

# TOUCH TECHNOLOGY (CONTINUED)

## TouchScreens

### *Capacitive Touch Controllers for TouchScreens*

| Part Number | Technology | Total Channels (X x Y) | Max. TouchScreen Size (In Diag. Inch) | Alternative Configuration | Single Touch/Two Touch | Optimal Sensor | Package | Package Size in ($mm^2$) | Voltage (V) | Temperature Range | Inputs/Outputs | Interface | AKS* | Low Power Mode | Self Calibration | Noise Filtering | Auto Drift Compensation | Spread Spectrum Acquisition | Evaluation Board | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AT42QT4120 | Qfield™ | 12 (4x3) | 3.3-inch | – | Single-Touch | Single ITO Layer | QFN-32 | 5x5 | 1.8 to 5.5V | -40 to +85° C | – | I2C-compatible | – | Yes | Yes | Yes | Yes | Yes | EVK4120A/B | Now |
| AT42QT4160 | Qfield | 16 (4x4) | 4.3-inch | – | Single-Touch | Single ITO Layer | QFN-32 | 5x5 | 1.8 to 5.5V | -40 to +85° C | – | I2C-compatible | – | Yes | Yes | Yes | Yes | Yes | EVK4160A/B | Now |
| AT42QT5320 | Qtwo™ | 32 (8x4) | 4.3-inch | 32 Keys, 4 Sliders, 4 Wheels | Single-/Two Touch | Two ITO Layers | QFN-32 | 5x5 | 1.8 to 5.5V | -40 to +85° C | – | I2C-compatible | Yes | Yes | Yes | Yes | Yes | Yes | EVK5480x | Now |
| AT42QT5480 | Qtwo | 48 (8x6) | 8.0-inch | 48 Keys, 6 Sliders, 6 Wheels | Single-/Two Touch | Two ITO Layers | BGA-49 QFN-44 TQFP-44 | 5x5 7x7 12x12 | 1.8 to 5.5V | -40 to +85° C | 4 Digital Outputs | I2C-compatible | Yes | Yes | Yes | Yes | Yes | No(2) | EVK5480x | Now |
| **Evaluation/Development Kits** | | | | | | | | | | | | | | | | | | | | |
| EVK4120A | Single Touch – TouchScreen Evaluation Kit Demonstrating the AT42QT4120 – 2.8 Screen (4:3 Ratio) – Single ITO Layer | | | | | | | | | | | | | | | | | | | Now |
| EVK4120B | Single Touch – TouchScreen Evaluation Kit Demonstrating the AT42QT4120 – 3.2 Screen (16:9 Ratio) – Single ITO Layer | | | | | | | | | | | | | | | | | | | Now |
| EVK4160A | Single Touch – TouchScreen Evaluation Kit Demonstrating the AT42QT4160 – 3.5 Screen (4:3 Ratio) – Single ITO Layer | | | | | | | | | | | | | | | | | | | Now |
| EVK4160B | Single Touch – TouchScreen Evaluation Kit Demonstrating the AT42QT4160 – 4.3 Screen (16:9 Ratio) – Single ITO Layer | | | | | | | | | | | | | | | | | | | Now |
| EVK5480A | Two Touch™ – TouchScreen Evaluation Kit Demonstrating the AT42QT5480 (QT5320) – 3.3 Screen (3:2 Ratio) – No Shield | | | | | | | | | | | | | | | | | | | Now |
| EVK5480B | Two Touch – TouchScreen Evaluation Kit Demonstrating the AT42QT5480 (QT5320) – 3.3 Screen (3:2 Ratio) – With Shield | | | | | | | | | | | | | | | | | | | Now |
| EVK5480C | Two Touch – TouchScreen Evaluation Kit Demonstrating the AT42QT5480 (QT5320) – 4.3 Screen (16:9 Ratio) – No Shield | | | | | | | | | | | | | | | | | | | Now |
| EVK5480D | Two Touch – TouchScreen Evaluation Kit Demonstrating the AT42QT5480 (QT5320) – 4.3 Screen (16:9 Ratio) – With Shield | | | | | | | | | | | | | | | | | | | Now |
| EVK5480E | PCB-based Two Touch – TouchScreen Demo for AT42QT5480 (QT5320) – 3.1 Screen (18:10 Ratio) – No Shield | | | | | | | | | | | | | | | | | | | Now |

Notes:
1. All capacitive TouchScreen controllers are RoHS compliant
2. No Spread Spectrum Acquisition on the QT5480, as external resonator is used
3. *AKS = Adjacent Key Suppression

# Application-Specific Integrated Circuits (ASICs)

## Customer Specific ICs

### *IP Cores*

| Part Number | Description | Availability |
|---|---|---|
| Memory Blocks | Single-port SRAM, Dual-port SRAM, Register File RAM, FIFO, Diffusion Mask ROM, Metal Mask ROM, Flash, EEPROM | Now |
| MCU/DSP Cores | ARM1176JZF-S™, ARM946E-S™, ARM926EJ-S™, ARM7TDMI® (ARM® Thumb®), TeakDSPCore™, mAgicDSP™ Modular VLIW Computation Core, OakDSPCore®, USP9 Co-processor | Now |
| ARM System Bus Peripherals | Bus Interface, Arbiter, Bridge, Matrix, Cache Memory and Bus Interface Unit, Decoder, Embedded Flash Controllers | Now |
| ARM Peripherals | **Communication:** AC97 Controller, CAN2.0 A/B, 10T/100 Ethernet MAC, Image Sensor Interface, Multimedia Card Interface Master MMC/SD/SDIO/CEATA, Pulse Width Modulator, Serial Peripheral Interface, Synchronous Serial Controller, 2-wire Interface Master/Slave, USART, USART IrDA®, USART ISO 7816, USART Manchester E/D, LIN 1.3/2.0, USB V1.1 Host, Hub and Device, USB 2.0 High-speed Device, USB 2.0 High-speed OTG, 4-wire Touch Screen Controller<br>**Memory Controllers:** Burst Flash Controller, SDR-SDRAM Controller, DDR/LPDDR/SDR/LPSDR-SDRAM Controller, Burst Cellular RAM Controller, Static Memory Controller, ECC, TFT LCD Controller, Segmented LCD Controller<br>**Crypto Engines:** 128/192/256-bit Advanced Encryption Standard, Secure Hash Algorithm 160/224/256/384/512, Triple DES, XTEA, TRNG<br>**System Peripherals:** Advanced Interrupt Controller, Advanced Power Management Controller, Debug Unit, Parallel Input/Output, General Purpose DMA, Peripheral DMA Controller, Quadrature Decoder, Real-time Clock, System Controller, Timer/Counter | Now |
| Analog Cells | General-purpose ADCs, Analog Mux, Analog Input/Output, Analog Power and Ground, PLLs, POR/BOD, Tamper Detectors, Battery Monitor, GSM Voice Codec, Telecom A/D Converter, Telecom D/A Converter, Clock Squarer, Precision Voltage Reference Generator, Bandgap Reference Generator, GSM Baseband Receive Port, GSM Baseband Transmit Port | Now |
| IO Pads | General-purpose, PCI, LVDS, SSTL2, USB1.1 LS & FS, USB2.0 HS, PECL | Now |

### *Process Technology and Libraries*

| Technology | Description | Process Name | Libraries | Availability |
|---|---|---|---|---|
| 0.09 µm | Core Supply: 1.0V<br>Options: 3V, MIM Capacitance, High Poly Resistance, Low Leakage | AT91K | ATC09 | Now |
| 0.13 µm | Core Supply: 1.2V<br>Options: Low Leakage, Mixed, 3V, MIM Capacitance<br>Embedded EEPROM and Flash | AT59K | ATC13 | Now |
| | | AT59.86K<br>AT66.8K | ATC13/EEPROM<br>ATC13/Flash | 2H2008 |
| 0.15 µm | Core Supply: 1.8V, Embedded EEPROM and Flash<br>Options: Low Leakage, Mixed, 3V, MIM Capacitance | AT58.85K | ATC15/EE | Now |
| 0.18 µm | Core Supply: 1.8V<br>Options: Low Leakage, Mixed, 3V, MIM Capacitance<br>Embedded EEPROM and Flash | AT58K<br>AT58.8K | ATC18<br>ATC18/EE | Now |
| 0.35 µm | Core Supply 3.3V<br>Options: Mixed, 5V Embedded EEPROM and Flash<br>Option: HV 15V Devices | AT56K<br>AT56.8K<br>AT56.7K | ATL35<br>ATC35/EE, ATL35/EE<br>ATC35 | Now |
| CAP™ | Customizable Microcontroller | See AT91 CAP in the AT91 Microcontroller Section on Page 20. | | |

## FPGA/CPLD Conversion: ULCs

| Part Number | Technology | Max Kgates | Max I/Os | Supply (Volts) | | Other | Availability |
|---|---|---|---|---|---|---|---|
| | | | | Core | I/O Tolerant | | |
| UA1E | 0.35 µm | 780 | 976 | 3.3 | 5 | Embedded DPRAM, Up to 390-Kbit | Now |
| ATU18 | 0.18 µm | 1000 | 700 | 1.8 | 3.3 | Embedded DPRAM, Up to 847-Kbit | Now |

# AUTOMOTIVE

## Automotive Standard Products

## *Automotive Control*

## Dashboard Dimmer ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U6083B | PWM High-side Driver, f < 2000 Hz, 18 to 100% Duty Cycle, Minimum External Components | DIP8 | Pb-free Only | Now |
| U6084B | PWM High-side Driver, f < 2000 Hz, 0 to 100% Duty Cycle Continuously, for High-performance Applications | SO16 | Pb-free Only | Now |

## Flasher ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA2069 | Flasher with Trailer Control, 20 mΩ Shunt, Output to Control an Additional Pilot Lamp | DIP8, SO8 | Pb-free Only | Now |
| ATA6140 | Twin Relay Flasher for 12/24V Applications, Standby Current <10 µA | SO16 | Pb-free Only | Now |
| U2043B | Lamp Load >10W, 30 mΩ Shunt, Pilot Lamp to $V_{BATT}$ or GND | DIP8, SO8 | Pb-free Only | Now |
| U2044B | Twin Relay Flasher, Lamp Load >10W, 30 mΩ Shunt, Standby Current <10 µA | SO14 | Pb-free Only | Now |
| U6043B | Lamp Load >1W, 18 mΩ Shunt, Load-dump Protected | DIP8, SO8 | Pb-free Only | Now |
| U643B | Lamp Load >1W, 30 mΩ Shunt, Load-dump Protected | DIP8, SO8 | Pb-free Only | Now |

## Lamp-outage Monitoring ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U4793B | 2 Comparators, 44 mV Threshold, Glow-plug Application, ESD Protection Up to 10 kV | DIP8, SO8 | Pb-free Only | Now |
| U479B | 2 Comparators, 8 mV Threshold, Single-lamp Application, ESD Protection Up to 2 kV | DIP8 | Pb-free Only | Now |

## Long-time Timer ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U6032B | Toggle IC for Switch-over Function, Defined Status After POR | DIP8, SO8 | Pb-free Only | Now |
| U6046B | Adjustable Delay Time 4s to 20h, Delay Adjustable with RC Oscillator, R < 650 kW, C < 4700 pF | DIP8, SO8 | Pb-free Only | Now |

# AUTOMOTIVE (CONTINUED)

## Automotive Standard Products (Continued)

## *Automotive Control (Continued)*

## Safety

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| **Fail-Safe ICs** | | | | |
| U6813B | Fail-safe IC, Watchdog Timer, Relay Driver, Lamp Driver and Charge Pump | SO16 | Pb-free Only | Now |
| ATA6842 | Fail-safe System IC with 4-channel Relay Driver, Power Supply, Watchdog | QFN48 | Yes | Now |
| **Airbag ICs** | | | | |
| U6268B | Side Airbag Sensor Dual Interface (Satellite Interface), 50 mA Sensor Supply, Data Transfer by Current Modulation | SO16 | Pb-free Only | Now |

## Watchdog ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA6025 | Watchdog IC with Fail-safe Output, Voltage Monitors, Low-power Consumption in Standby Mode | SO8 | Pb-free Only | Now |
| ATA6020N | Watchdog IC, µP Based, Programmable Via Metal Mask (Based on the ATAR080 Microcontroller) | SO20 | Pb-free Only | Now |
| U5020M | Watchdog Timer, Active and Sleep Mode, 6 Wake-up Inputs, Enable Output | SO16 | Pb-free Only | Now |
| U5021M | Watchdog Timer, Active and Sleep Mode, 1 Wake-up Input, Enable Output | SO8 | Pb-free Only | Now |

## Wiper and Wash Control ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U641B | Wipe/Wash Control with Prewash Delay, INT/WIWA Switches to $V_{BATT}$ | DIP8, SO8 | Pb-free Only | Now |
| U642B | Wipe/Wash Control without Prewash Delay, INT/WIWA Switches to $V_{BATT}$ | DIP8, SO8 | Pb-free Only | Now |

# AUTOMOTIVE (CONTINUED)

## Automotive Standard Products (Continued)

### *Automotive Microcontrollers*

### Automotive AVR

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | CAN Mess. Obj. | Timers 16-bit | Timers 8-bit | PWM (Channels) | RTC | SPI | USART | TWI (I2C Compatible) | ISP | ADC 10-bit (Channels) | BOD | WDT | Int. RC | HW Mult. | Interrupts | Ext. Interrupts | SPM | VCC (V) | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATtiny167 | 16 | 512 | 512 | 16 | – | 1 | 1 | 4 | – | 1+USI | – | – | – | – | – | – | – | – | – | – | – | 2.7-5.5 | 16 | MLF32, SOIC20, TSSOP20 | -40° C to +150° C for MLF32, TSSOP20; -40° C to +125° C for SOIC20 | Dec. 2008 |
| ATtiny24 | 2 | 128 | 128 | 12 | – | 1 | 1 | 4 | – | USI | – | USI | Y | 8 | Y | Y | Y | – | 17 | 3 | Y | 2.7-5.5 | 16 | MLF20, SOIC14 | -40° C to +125° C | Now |
| ATtiny25 | 2 | 128 | 128 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | – | 15 | 2 | Y | 2.7-5.5 | 16 | MLF20, SOIC8 | -40° C to +125° C | Now |
| ATtiny25V | 2 | 128 | 128 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | – | 15 | 2 | Y | 1.8-3.6 | 8 | SOIC8 | -40° C to +85° C | Now |
| ATtiny261 | 2 | 128 | 128 | 16 | – | 1 | 1 | 5 | – | 1+USI | – | USI | Y | 11 | Y | Y | Y | – | – | – | – | 2.7-5.5 | 8 | SOIC20, MLF32, TSSOP20 | -40° C to +150° C for MLF32, TSSOP20; -40° C to +125° C for SOIC20 | Oct. 2008 |
| ATtiny44 | 4 | 256 | 256 | 12 | – | 1 | 1 | 4 | – | USI | – | USI | Y | 8 | Y | Y | Y | – | 17 | 3 | Y | 2.7-5.5 | 16 | MLF20, SOIC14 | -40° C to +125° C | Now |
| ATtiny44V | 4 | 256 | 256 | 12 | – | 1 | 1 | 4 | – | USI | – | USI | Y | 8 | Y | Y | Y | – | 17 | 3 | Y | 1.8-3.6 | 8 | MLF20, SOIC14 | -40° C to +85° C | Now |
| ATtiny45 | 4 | 256 | 256 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | – | 15 | 2 | Y | 2.7-5.5 | 16 | MLF20, SOIC8 | -40° C to +150° C | Now |
| ATtiny45V | 4 | 256 | 256 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | | 15 | 2 | Y | 1.8-3.6 | 8 | SOIC8 | -40° C to +85° C | Now |
| ATtiny461 | 4 | 256 | 256 | 16 | – | 1 | 2 | 5 | – | USI | – | USI | Y | 11 | Y | Y | Y | Y | – | – | – | 2.7-5.5 | 16 | SOIC20, MLF32, TSSOP20 | -40° C to +150° C for MLF32, TSSOP20; -40° C to +125° C for SOIC20 | Oct. 2008 |
| ATtiny84 | 8 | 512 | 512 | 12 | – | 1 | 1 | 4 | – | USI | – | USI | Y | 8 | Y | Y | Y | | 17 | 3 | Y | 2.7-5.5 | 16 | MLF20 | -40° C to +125° C | Now |
| ATtiny85 | 8 | 512 | 512 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | | 15 | 2 | Y | 2.7-5.5 | 16 | MLF20, SOIC8 | -40° C to +125° C | Now |
| ATtiny85V | 8 | 512 | 512 | 6 | – | – | 2 | 4 | – | USI | – | USI | Y | 4 | Y | Y | Y | | 15 | 2 | Y | 1.8-3.6 | 8 | SOIC8 | -40° C to +85° C | Now |
| ATtiny861 | 8 | 512 | 512 | 16 | – | 1 | 1 | 5 | – | 1+USI | – | USI | Y | 11 | Y | Y | Y | – | – | – | – | 2.7-5.5 | 16 | SOIC20, MLF32, TSSOP20 | -40° C to +150° C for MLF32, TSSOP20; -40° C to +125° C for SOIC20 | Oct. 2008 |
| ATmega48 | 4 | 256 | 512 | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +125° C | Now |

Note: 1. All Automotive AVR parts are RoHS compliant.

# AUTOMOTIVE (CONTINUED)

## Automotive Standard Products (Continued)

## *Automotive Microcontrollers (Continued)*

## Automotive AVR (Continued)

| Part Number | Flash (Kbytes) | EEPROM (Bytes) | RAM (Bytes) | I/O Pins | CAN Mess. Obj. | Timers 16-bit | Timers 8-bit | PWM (Channels) | RTC | SPI | USART | TWI (I2C Compatible) | ISP | ADC 10-bit (Channels) | BOD | WDT | Int. RC | HW Mult. | Interrupts | Ext. Interrupts | SPM | VCC (V) | Clock Speed (MHz) | Package | Temperature | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATmega88 | 8 | 512 | 1K | 23 | | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +150° C | Now |
| ATmega88V | 8 | 512 | 1K | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 1.8-3.6 | 8 | TQFP32, MLF32 | -40° C to +85° C | Now |
| ATmega164P | 16 | 512 | 1K | 32 | – | 1 | 2 | 6 | Y | 1+USART | 2 | Y | Y | 8 | Y | Y | Y | Y | 31 | 7 | Y | 2.7-5.5 | 16 | TQFP44, MLF44 | -40° C to +125° C | Now |
| ATmega168 | 16 | 512 | 1K | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +150° C | Now |
| ATmega169P | 16 | 512 | 1K | 54 | – | 1 | 2 | 4 | Y | 1+USI | 1 | USI | Y | 8 | Y | Y | Y | Y | 23 | 3 | Y | 2.7-5.5 | 16 | TQFP64, MLF64 | -40° C to +85° C | Now |
| ATmega16M1 | 16 | 1K | 2K | 32 | 6 | 1 | 1 | 6+4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +150° C | Feb. 2009 |
| ATmega324P | 32 | 1K | 2K | 32 | – | 1 | 2 | 6 | Y | 1+USART | 2 | Y | Y | 8 | Y | Y | Y | Y | 31 | 7 | Y | 2.7-5.5 | 16 | TQFP44, MLF44 | -40° C to +125° C | Now |
| ATmega328P | 32 | 1K | 2K | 23 | – | 1 | 2 | 6 | Y | 1+USART | 1 | Y | Y | 8 | Y | Y | Y | Y | 26 | 5 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +125° C | Nov. 2008 |
| ATmega32M1 | 32 | 1K | 2K | 32 | 6 | 1 | 1 | 6+4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +150° C | Oct. 2008 |
| ATmega32C1 | 32 | 1K | 2K | 32 | 6 | 1 | 1 | 4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +150° C | Oct. 2008 |
| ATmega64M1 | 64 | 2K | 4K | 32 | 6 | 1 | 1 | 6+4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +150° C | Jan. 2009 |
| ATmega64C1 | 64 | 2K | 4K | 32 | 6 | 1 | 1 | 4 | – | 1 | – | – | Y | 11 | Y | Y | Y | Y | 31 | 4 | Y | 2.7-5.5 | 16 | TQFP32, MLF32 | -40° C to +150° C | Jan. 2009 |
| ATmega644P | 64 | 2K | 4K | 32 | – | 1 | 2 | 6 | Y | 1+USART | 2 | Y | Y | 8 | Y | Y | Y | Y | 31 | 7 | Y | 2.7-5.5 | 16 | TQFP44, MLF44 | -40° C to +125° C | Now |
| AT90CAN32 | 32 | 1K | 2K | 53 | 15 | 2 | 2 | 6+2 | Y | 1 | 2 | Y | Y | 8 | Y | Y | Y | Y | 37 | 8 | Y | 2.7-5.5 | 16 | TQFP64, MLF64 | -40° C to +125° C | Now |
| AT90CAN64 | 64 | 2K | 4K | 53 | 15 | 2 | 2 | 6+2 | Y | 1 | 2 | Y | Y | 8 | Y | Y | Y | Y | 37 | 8 | Y | 2.7-5.5 | 16 | TQFP64, MLF64 | -40° C to +125° C | Now |
| AT90CAN128 | 128 | 4K | 4K | 53 | 15 | 2 | 2 | 6+2 | Y | 1 | 2 | Y | Y | 8 | Y | Y | Y | Y | 37 | 8 | Y | 2.7-5.5 | 16 | TQFP64, MLF64 | -40° C to +125° C | Now |

| Evaluation/Development Kits | | |
|---|---|---|
| ATAVRDRAGON | Starter Kit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVRs with 32 Kbytes or Less Flash Memory) | Now |
| ATAVRAUTO102 | AVR Automotive Debugger Kit for CAN-LIN | Now |
| ATAVRAUTOEK1 | AVR Automotive Evaluation Kit | Now |
| ATAVRISP2 | AVRISP Programmer for All AVR ISP Devices | Now |
| ATDVK90CAN1 | DVK90CAN1 Development Kit for AT90CAN Devices | Now |
| ATJTAGICE2 | AVR Low-cost In-Circuit Emulator Supporting All AVR with debugWIRE or JTAG Interface | Now |
| ATSTK500 | STK500 AVR Starter Kit with AVR Studio Interface | Now |
| ATSTK524 | AVR Automotive Starter Kit for 32 Pins ATmega32M1 – ATmega32C1 | Now |
| ATSTK600 | Starter Kit and Development System for AVR and AVR32 | Now |

Note: 1. All Automotive AVR parts are RoHS compliant.

# AUTOMOTIVE (CONTINUED)

## Automotive Standard Products (Continued)

### *Automotive Microcontrollers (Continued)*

### Automotive MARC4 Microcontrollers[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATAM862 | Complete UHF Transmitter, MTP Flash Microcontroller and Transmitter PLL T5753 in One IC, Temperature Range: -40° C to +125° C, Frequency: 315 and 433 MHz | SSO24 | Pb-free Only | Now |
| ATAR862 | Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5753 in One IC, Temperature Range: -40° C to +125° C, Frequency: 315 and 439 MHz | SSO24 | Pb-free Only | Now |
| ATAM862x-TNz3 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5753 in One IC, Frequency Range: 310 to 330 MHz | SSO24 | Pb-free Only | Now |
| ATAM862x-TNz4 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5754 in One IC, Frequency Range: 429 to 439 MHz | SSO24 | Pb-free Only | Now |
| ATAM862x-TNz8 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5750 in One IC, Frequency Range: 868 to 928 MHz | SSO24 | Pb-free Only | Now |
| ATAR862x-yyy-TNz3 | Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5753 in One IC, Frequency Range: 300 to 330 MHz | SSO24 | Pb-free Only | Now |
| ATAR862x-yyy-TNz4 | Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5754 in One IC, Frequency Range: 429 to 439 MHz | SSO24 | Pb-free Only | Now |
| ATAR862x-yyy-TNz8 | Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5750 in One IC, Frequency Range: 868 to 928 MHz | SSO24 | Pb-free Only | Now |

Note: 1. For full 4-bit microcontroller offer, see **Pages 24-25**.

## *CAN/VAN Networking*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA6660 | High-speed CAN Transceiver, Fully Compatible with ISO 11898, High-voltage Bus Protection: 40 to +40V (Qualified for Industrial Use Only) | SO8 | Pb-free Only | Now |
| B10011S | Low-speed CAN Transceiver for High Transmission Levels, 2-wire Interface (TWI), Point-to-point Interface Between Trucks and Trailers, Interface Between Dashboard and Engine, Etc., High Reliability, 27V Operation, Hardware Fault Recognition, Immunity Against Electromagnetic Interference, High Noise Immunity, According to ISO WD 11992-1 | SO16 | Pb-free Only | Now |
| TSS461F | VAN Data Link Controller | SO24 | Yes | Now |
| TSS463C | VAN Data Link Controller with Serial Interface | SO16 | Yes | Now |
| TSSIO16E | VAN Peripheral Circuit – 16 I/Os | SO28 | Yes | Now |

# AUTOMOTIVE (CONTINUED)

## Automotive Standard Products (Continued)

### *LIN Networking*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA6612 | LIN SiP (System-in-Package) Solution Including LIN Transceiver, 5V/50 mA Voltage Regulator, Window Watchdog and AVR ATmega88 Automotive Microcontroller with 8K Flash Memory | QFN48 | Yes | Now |
| ATA6613 | LIN SiP (System-in-Package Solution) Including LIN Transceiver, 5V/50 mA Voltage Regulator, Window Watchdog and AVR ATmega168 Automotive Microcontroller with 16K Flash Memory | QFN48 | Yes | Now |
| ATA6616 | LIN SiP (System-in-Package) Solution Including LIN Transceiver, 5V/50 mA Voltage Regulator, Window Watchdog and AVR ATtiny87 Automotive Microcontroller with 8K Flash Memory | QFN38 | Yes | March 2009 |
| ATA6617 | LIN SiP (System-in-Package) Solution Including LIN Transceiver, 5V/50 mA Voltage Regulator, Window Watchdog and AVR ATtiny167 Automotive Microcontroller with 16K Flash Memory | QFN38 | Yes | Feb. 2009 |
| ATA6622 | LIN System Basis Chip with LIN Transceiver, Integrated 3.3V/50 mA Voltage Regulator and Window Watchdog | QFN20 | Yes | Now |
| ATA6623 | LIN System Basis Chip with LIN Transceiver and Integrated 3.3V/50 mA Voltage Regulator | SO8 | Pb-free Only | Now |
| ATA6624 | LIN System Basis Chip with LIN Transceiver, Integrated 5V/50 mA Voltage Regulator and Window Watchdog | QFN20 | Yes | Now |
| ATA6625 | LIN System Basis Chip with LIN Transceiver and Integrated 5V/50 mA Voltage Regulator | SO8 | Pb-free Only | Now |
| ATA6626 | LIN System Basis Chip with LIN Transceiver and Integrated 5V/50 mA Voltage Regulator without TxD Timeout Timer | QFN20 | Yes | Now |
| ATA6662 | LIN Transceiver, Physical Layer According to Specification 2.0 (Backward Compatible) | SO8 | Pb-free Only | Now |
| ATA6663 | LIN Transceiver, Physical Layer According to Specification 2.1 (Backward Compatible), Also Supporting Low Baud Rates Down to 1 Kbaud | SO8 | Pb-free Only | April 2009 |
| ATA6664 | LIN Transceiver, Physical Layer According to Specification 2.1 (Backward Compatible), Supporting Low Baud Rates Down to 1 Kbaud, with Time-out Function | SO8 | Pb-free Only | April 2009 |
| **Development Boards** | | | | |
| ATA6612-EK | Development Board, LIN SiP (System-in-Package) Solution ATA6612 | | | Now |
| ATA6613-EK | Development Board, LIN SiP (System-in-Package) Solution ATA6613 | | | Now |
| ATA6622-EK | Development Board, LIN System Basis Chip ATA6622 | | | Now |
| ATA6623-EK | Development Board, LIN System Basis Chip ATA6623 | | | Now |
| ATA6624-EK | Development Board, LIN System Basis Chip for ATA6621 and ATA6624 | | | Now |
| ATA6625-EK | Development Board, LIN System Basis Chip for ATA6620 and ATA6625 | | | Now |
| ATA6626-EK | Development Board, LIN System Basis Chip for ATA6626 | | | Now |
| ATA6662-EK | Development Board, LIN Transceiver for ATA6661 and ATA6662 | | | Now |
| ATA6663-EK | Development Board, LIN Transceiver for ATA6663 | | | Now |
| ATA6664-EK | Development Board, LIN Transceiver for ATA6664 | | | Now |

# AUTOMOTIVE (CONTINUED)

## Automotive Standard Products (Continued)

### *Serial EEPROMs*

| Part Number | Density (Kbits) | Organization | VCC (V) | Max Speed (MHz) | Package* | Comments | Availability |
|---|---|---|---|---|---|---|---|
| **2-wire Interface** | | | | | | | |
| AT24C01B | 1 | 128 x 8 | 2.5 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 8 Devices | Now (Replaces AT24C01A/AT24C11) |
| AT24C02B | 2 | 256 x 8 | 2.5 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 8 Devices | Now (Replaces AT24C02) |
| AT34C02C | 2 | 256 x 8 | 2.7 | 0.4 | SOIC | Lower Half Permanent SW Write Protect | Now (Replaces AT34C02) |
| AT24C04B | 4 | 512 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 4 Devices | Now (Replaces AT24C04) |
| AT24C08B | 8 | 1024 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 2 Devices | Now (Replaces AT24C08) |
| AT24C16A | 16 | 2048 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection | Now |
| AT24C32A | 32 | 4096 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 8 Devices | Now |
| AT24C64A | 64 | 8192 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 8 Devices | Now |
| AT24C128 | 128 | 16384 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 4 Devices | Now |
| AT24C256 | 256 | 32768 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 4 Devices | Now |
| **SPI Interface** | | | | | | | |
| AT25010A | 1 | 128 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25020A | 2 | 256 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25040A | 4 | 512 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25080A | 8 | 1024 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25160A | 16 | 2048 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25320A | 32 | 4096 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25640A | 64 | 8192 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25128A | 128 | 16384 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25256A | 256 | 32768 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| **3-wire Interface** | | | | | | | |
| AT93C46 | 1 | 64 x 16/128 x 8 | 2.7 | 2 | SOIC | x8 or x16 Memory Organization | Now |
| AT93C56A | 2 | 128 x 16/256 x 8 | 2.7 | 2 | SOIC | x8 or x16 Memory Organization with Sequential Read | Now |
| AT93C66A | 4 | 256 x 16/512 x 8 | 2.7 | 2 | SOIC | x8 or x16 Memory Organization with Sequential Read | Now |
| AT93C86A | 16 | 1024 x 16/2048 x 8 | 2.7 | 2 | SOIC | x8 or x16 Memory Organization with Sequential Read | Now |

**Other Packages Available on Request.*

*All Automotive Serial EEPROMs Parts are RoHS Compliant.*

# Automotive (Continued)

## Automotive ASSPs

### *Broadcast Radio*

### Audio Receiver ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR4251-T | Low-noise AM/FM Antenna Amplifier, High Dynamic Range for AM and FM, AGC for AM and FM, High Intercept Point 3rd Order for FM, FM Amplifier Adjustable for Various Cable Impedances, High Intercept Point 2nd and 3rd Order for AM, Low Output Impedance for AM, Low Power Consumption | SSO20 | Yes | Now |
| ATR4251-P | Low-noise AM/FM Antenna Amplifier, High Dynamic Range for AM and FM, AGC for AM and FM, High Intercept Point 3rd Order for FM, FM Amplifier Adjustable for Various Cable Impedances, High Intercept Point 2nd and 3rd Order for AM, Low Output Impedance for AM, Low Power Consumption | QFN24 (4 x 4 mm) | Yes | Now |
| ATR4254 | Low-noise AM/FM Antenna Amplifier, Excellent FM Low-noise Performance, FM Amplifier Overload Protection (AGC), AM Low-noise Output Voltage, High Intercept Point 2nd Order for AM | SO16 | Yes | Now |
| ATR4256 | Frequency Synthesizer for Radio Receivers, Three DACs for Automatic Tuner Adjust (e.g., with ATR4255, ATR4258) | SSO20 | Yes | Now |
| ATR4258 | AM/FM Car Radio Receiver for a Global Reception Concept with Digital Tuning and Electronic Filter Adjustment, Pin Compatible to U4255BM, Receiving Condition Analyzer and Adjacent Channel/Multipath Noise Cancellation, Superior Noise Suppression by Software-controlled Filter Adjustment, Completely Integrated FM Demodulator, a Variable Bandfilter Replaces Expensive External Ceramic Filter, Automatic Tuner Adjustment with ATR4256 | SSO44 | No | Now |
| T4260 | AM/FM Tuner Front End for Digital-IF Radio Solutions (Suitable for Standard AM/FM, DRM and IBOC) – Integrated Fast Fractional PLL, Up-/Down-conversion System, IF Frequencies Up to 25 MHz, DACs for Automatic Tuner Alignment, High S/N Ratio, Compatible for 3/5V Microcontrollers | SSO44 | No | Now |
| ATR4262N1 | Highly Flexible Multi-standard Broadcast Radio Front-end IC for AM/FM/DRM/HD Radio, World Tuner Concept Incl. Weather Band, Image Rejection Mixer, Flexible and Economic Filter Concept, Features Double Tuner Application, Automotive Version | QFN48 | Yes | Now |

### Digital Audio Broadcasting (DAB) ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR2730 | L-band Down-converter Inclusive PLL for DAB Receivers | SSO28 | Yes | Now |
| ATR2731 | DAB One-chip Front-end Receiver for VHF Band III Reception, 8.5V Operation, External VCO | SSO44 | Yes | Now |
| ATR2732M3 | Highly Integrated One-chip DAB/DMB Front-end IC for VHF Band III and L-band Reception, 3.3V Operation, Internal VCO, RSSI Indicator | QFN64 | Yes | Now |
| ATR2732M1 | Highly Integrated One-chip DAB/DMB Front-end IC for VHF Band III and L-band Reception, 3.3V Operation, Internal VCO, RSSI Indicator; Automotive Compliant Variant | QFN64 | Yes | Now |
| ATR2740-RQHH | DAB Digital Processing Device, Highly Integrated Digital Device for DAB (Eureka147) Radios, Utilizes ARM7TDMI Processor Core and TeakDSPCore, Integrated ADC and RAM, Supports Large Variety of Interfaces Such as USB, SPI, SSO, USART, I2S, SPDIF, Incorporates Audio and Data Decoder for Full Data Rate of 1.8 Mbit/s | LQFP128 | Yes | Now |
| ATR2740M1-RQHH | DAB Digital Processing Device, Highly Integrated Digital Device for DAB (Eureka147) Radios, Utilizes ARM7TDMI Processor Core and TeakDSPCore, Integrated ADC and RAM, Supports Large Variety of Interfaces Such as USB, SPI, SSO, USART, I2S, SPDIF, Incorporates Audio and Data Decoder for Full Data Rate of 1.8 Mbit/s; Automotive Compliant Variant | LQFP129 | Yes | Now |
| ATR2740-7GHG | DAB Digital Processing Device, Highly Integrated Digital Device for DAB (Eureka147) Radios, Utilizes ARM7TDMI Processor Core, Utilizes TeakDSPCore, Integrated ADC and RAM, Supports Large Variety of Interfaces Such as USB, SPI, SSO, USART, I2S, SPDIF, Incorporates Audio and Data Decoder for Full Data Rate of 1.8 Mbit/s | BGA | Yes | Now |

# AUTOMOTIVE (CONTINUED)

## Automotive ASSPs (Continued)

## *Car Access*

## Car Components[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA3741P2 | UHF Remote Control Receiver for ASK and FSK Systems, All RF Components Integrated, IF Bandwidth 300 kHz | SO20 | Pb-free Only | Now |
| ATA3741P3 | UHF Remote Control Receiver for ASK and FSK Systems, All RF Components Integrated, IF Bandwidth 600 kHz | SO20 | Pb-free Only | Now |
| ATA3742P3 | UHF Remote Control Receiver, RSSI Output for ASK and FSK Systems | SO20 | Pb-free Only | Now |
| ATA5278 | Programmable Antenna Driver for 1A Peak Current (Regulated), LF Baud Rates Up to 8-Kbaud, SPI | QFN28 | Pb-free Only | Now |
| ATA5279 | Six-fold LF Antenna Driver IC | QFN48 | Yes | Now |
| ATA5721 | UHF Receiver for ASK and FSK Systems, 315 MHz, Full Duplex | QFN48 | Yes | 4Q2008 |
| ATA5722 | UHF Receiver for ASK and FSK Systems, 433 to 435 MHz, Full Duplex | QFN48 | Yes | 4Q2008 |
| ATA5723P3 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 315 MHz, 300 kHz Bandwidth, RSSI Pin Compatible to ATA5724, ATA5728 | SSO20 | Pb-free Only | Now |
| ATA5724P3 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 433 MHz, 300 kHz Bandwidth, RSSI Pin Compatible to ATA5723, ATA5728 | SSO20 | Pb-free Only | Now |
| ATA5728P6 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 868 MHz, 600 kHz Bandwidth, RSSI Pin Compatible to ATA5723, ATA5724 | SSO20 | Pb-free Only | Now |
| ATA5743P3 | UHF Remote Control Receiver, High FSK Sensitivity, 5 to 20V Automotive Compatible Data Interface, Data Clock Available for Manchester and Biphase Coded Signals, 300 kHz Bandwidth | SO20, SSO20 | Pb-free Only | Now |
| ATA5743P6 | UHF Remote Control Receiver, High FSK Sensitivity, 5 to 20V Automotive Compatible Data Interface, Data Clock Available for Manchester and Biphase Coded Signals, 600 kHz Bandwidth | SO20, SSO20 | Pb-free Only | Now |
| ATA5744N | UHF Remote Control Receiver for ASK Systems/PWM Mode | SO20, SSO20 | Pb-free Only | Now |
| ATA5745 | Transparent ASK/FSK UHF Receiver IC with Fast RKE/TPMS Switching Rate, Suited to 1 to 20 Kbits/s Manchester FSK with 4 Programmable Bit-rate Ranges, High ASK Sensitivity (-114 dBm at 2.4 Kbits/s), High Blocking Capability, 433 MHz | QFN24 | Pb-free Only | Now |
| ATA5746 | Transparent ASK/FSK UHF Receiver IC with Fast RKE/TPMS Switching Rate, Suited to 1 to 20 Kbits/s Manchester FSK with 4 Programmable Bit-rate Ranges, High ASK Sensitivity (-114 dBm at 2.4 Kbits/s), High Blocking Capability, 315 MHz | QFN24 | Pb-free Only | Now |
| ATA5760N3 | UHF ASK/FSK Receiver, Frequency Receiving Range: 868 to 870 MHz, Highest Integration Level in Market, IF Bandwidth 300 kHz | SO20 | Pb-free Only | Now |
| ATA5760N | UHF ASK/FSK Receiver, Frequency Receiving Range: 868 to 870 MHz, Highest Integration Level in Market, IF Bandwidth 600 kHz | SO20 | Pb-free Only | Now |
| ATA5761N | UHF ASK/FSK Receiver, Frequency Receiving Range: 902 to 928 MHz, Highest Integration Level in Market | SO20 | Pb-free Only | Now |
| ATA5811 | UHF Transceiver for ASK and FSK Systems, 433 to 435 MHz or 868 to 870 MHz | QFN48 | Yes | Now |

Note: 1. For dedicated microcontrollers, see Automotive 4-bit microcontrollers **Page 34.**

# Automotive (Continued)

## Automotive ASSPs (Continued)

### *Car Access (Continued)*

### Car Components (Continued)[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA5812 | UHF Transceiver for ASK and FSK Systems, 315 MHz | QFN48 | Yes | Now |
| ATA5823 | UHF Transceiver for ASK and FSK Systems, 315 MHz, Full Duplex | QFN48 | Yes | Now |
| ATA5824 | UHF Transceiver for ASK and FSK Systems, 433 to 435 MHz or 868 to 870 MHz, Full Duplex | QFN48 | Yes | Now |
| U2270B | Read/Write Base Station IC, 100 to 150 kHz Carrier Frequency, Amplitude Modulation Typically Up to 5-Kbaud, Manchester/Biphase RF/32, RF/64, RF/128 | SO16 | Pb-free Only | Now |
| **Evaluation Kits and Tools** | | | | |
| ATA5723-DK | Receiver Board ATA5723, 315 MHz, no SAW Filter | | | Now |
| ATA5724-DK | Receiver Board ATA5724, 433 MHz, no SAW Filter | | | Now |
| ATA5728-DK | Receiver Board ATA5728, 868 MHz, no SAW Filter | | | Now |
| ATAB5278 | Evaluation Board, LF Antenna Driver, Preferred for Passive Entry Systems | | | Now |
| ATAB5760-N | Receiver Board ATA5760N, 868.3 MHz, No SAW Filter | | | Now |
| ATAB5760-S | Receiver Board ATA5760N, 868.3 MHz, SAW Filter | | | Now |
| ATAB5761-N | Receiver Board ATA5761N, 915 MHz, No SAW Filter | | | Now |
| ATAB5744-N3 | Receiver Board ATA5744N, 315 MHz, No SAW Filter | | | Now |
| ATAB5744-S3 | Receiver Board ATA5744N, 315 MHz, SAW Filter | | | Now |
| ATAB5744-N4 | Receiver Board ATA5744N, 433.92 MHz, No SAW Filter | | | Now |
| ATAB5744-S4 | Receiver Board ATA5744N, 433.93 MHz, SAW Filter | | | Now |
| ATAB5812-3-B | UHF ASK/FSK Transceiver Basestation Board for 315 MHz | | | Now |
| ATAB5811-4-B | UHF ASK/FSK Transceiver Basestation Board for 433.92 MHz | | | Now |
| ATAB5811-8-B | UHF ASK/FSK Transceiver Basestation Board for 868.3 MHz | | | Now |
| ATAB5823-3-B | UHF ASK/FSK Transceiver Basestation Board for 315 MHz | | | Now |
| ATAB5824-4-B | UHF ASK/FSK Transceiver Basestation Board for 433.92 MHz | | | Now |
| ATAB5824-8-B | UHF ASK/FSK Transceiver Basestation Board for 868.3 MHz | | | Now |
| ATAB-LFMB78 | LF Mainboard with AVR for ATAB5278 | | | Now |
| ATAB5279 | Evaluation Board for Six-fold LF Antenna Driver, Preferred for Passive Entry Systems | | | Now |
| ATAB-LF-MB-79 | LF Mainboard with AVR for ATAB5279 | | | Now |
| ATAKSTK511-8 | AVR-based RF Starter Kit for 868 MHz | | | Now |
| ATAKSTK511-9 | AVR-based RF Starter Kit for 915 MHz | | | Now |
| ATAKSTK512-3 | Remote Access Control Kit for Uni-directional Communication at 315 MHz | | | Now |
| ATAKSTK512-4 | Remote Access Control Kit for Uni-directional Communication at 433 MHz | | | Now |
| ATAB-LFTX-MOD1 | Antenna Module for LF TX Systems | | | Now |
| ATAB-RFMB | RF Mainboard with AVR and Interface | | | Now |
| ATAB-SPI-LPT | SPI to Parallel Port (LPT) Interface Board for TRX Basestation Boards | | | Now |
| TMEB8704 | LF RFID IDIC® Evaluation Kit for U2270B and TK5561 | | | Now |

Note: 1. For dedicated microcontrollers, see Automotive 4-bit microcontrollers Page 34.

# AUTOMOTIVE (CONTINUED)

## Automotive ASSPs (Continued)

## *Car Access (Continued)*

## Key Components[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA5749 | Fully Programmable, Fully Integrated Fractional-N PLL RF Transmitter IC Featuring Ultra Low Power Consumption | TSSOP10 | Pb-free Only | Now |
| ATA5756 | UHF ASK/FSK Transmitter IC with Integrated FSK Application, Frequency Range: 313 to 317 MHz, 6 dBm, <1 ms Settling Time, High XTO1 Impedance for Crystal Oscillator Start-up | TSSOP10 | Pb-free Only | Now |
| ATA5757 | UHF ASK/FSK Transmitter IC with Integrated FSK Application, Frequency Range: 432 to 448 MHz, 6 dBm, <1 ms Settling Time, High XTO1 Impedance for Crystal Oscillator Start-up | TSSOP10 | Pb-free Only | Now |
| ATA5771 | Complete Key-fob IC, Including an AVR Microcontroller and an RF Transmitter PLL in One Single IC Package, $f_0$ = 868 MHz to 928 MHz | QFN 24 | Yes | Now |
| ATA5773 | Complete Key-fob IC, Including an AVR Microcontroller and an RF Transmitter PLL in One Single IC Package, $f_0$ = 310 MHz to 350 MHz | QFN 24 | Yes | Now |
| ATA5774 | Complete Key-fob IC, Including an AVR Microcontroller and an RF Transmitter PLL in One Single IC Package, $f_0$ = 429 MHz to 439 MHz | QFN 24 | Yes | Now |
| ATA5811 | UHF Transceiver for ASK and FSK Systems, 433 to 435 MHz or 868 to 870 MHz | QFN48 | Yes | Now |
| ATA5812 | UHF Transceiver for ASK and FSK Systems, 315 MHz | QFN48 | Yes | Now |
| ATA5823 | UHF Transceiver for ASK and FSK Systems, 315 MHz, Full Duplex | QFN48 | Yes | Now |
| ATA5824 | UHF Transceiver for ASK and FSK Systems, 433 to 435 MHz or 868 to 870 MHz, Full Duplex | QFN48 | Yes | Now |
| T5750 | UHF ASK/FSK Transmitter, Frequency Range: 868 to 928 MHz, High Output Power | TSSOP8 | Pb-free Only | Now |
| T5753 | UHF ASK/FSK Transmitter, Frequency Range: 310 to 330 MHz, High Output Power | TSSOP8 | Pb-free Only | Now |
| T5754 | UHF ASK/FSK Transmitter, Frequency Range: 429 to 439 MHz, High Output Power | TSSOP8 | Pb-free Only | Now |
| TK5561 | Read/Write Transponder for Highly Sophisticated Security Applications, 125 kHz Carrier Frequency, Encryption Algorithm, 9 x 32-bit EEPROM, Low-power/Low-voltage CMOS, No Battery Supply, Small Size, Manchester/Biphase, RF/32, RF/64 | Plastic Package (PP) | Pb-free Only | Now |
| U3280M | Transponder Interface for Microcontroller, Contactless Power Supply and Communication Interface, 32 x 16-bit EEPROM, Serial Interface, Field Clock Extractor, Field and Gap Detection for Wake-up and Data | SSO16 | Pb-free Only | Now |
| U9280M | 4-bit Microcontroller Plus Transponder Front End for Combination of Remote Control and Immobilizer Functions, ROM Mask Version for >200 kpcs/a, Maximum Flexibility for Algorithm/ Protocol of Data Transfer, well Suitable in Combination with the U2741B, T5750/53/54, Integrated Power Management (Battery or RF-field Power Supply) | SSO20 | Pb-free Only | Now |
| **Evaluation Kits and Tools** | | | | |
| ATA5749-EK1 | Reference Design for Programmable Transmitter IC ATA5749, 315 MHz | | | Now |
| ATA5749-EK2 | Reference Design for Programmable Transmitter IC ATA5749, 433 MHz | | | Now |
| ATAB5749-3 | Transmitter Board for ATA5749, Fitting to RF Design Kit 315 MHz | | | Now |
| ATAB5749-4 | Transmitter Board for ATA5749, Fitting to RF Design Kit 433 MHz | | | Now |
| ATAB5750-8 | Transmitter Board T5750, 868 MHz | | | Now |
| ATAB5750-9 | Transmitter Board T5750, 915 MHz | | | Now |
| ATAB5753 | Transmitter Board T5753, 315 MHz | | | Now |
| ATAB5754 | Transmitter Board T5754, 433.92 MHz | | | Now |
| ATAB5756 | Reference Design for UHF Transmitter ATA5756, Operation Frequency 315 MHz | | | Now |
| ATAB5757 | Reference Design for UHF Transmitter ATA5757, Operation Frequency 433 MHz | | | Now |
| ATA5771-DK1 | Transmitter Board for ATA5771, 868 MHz | | | 4Q2008 |
| ATA5771-DK2 | Transmitter Board for ATA5771, 915 MHz | | | 4Q2008 |
| ATA5773-DK | Transmitter Board for ATA5773, 315 MHz | | | 4Q2008 |
| ATA5774-DK | Transmitter Board for ATA5774, 433 MHz | | | 4Q2008 |
| ATAKSTK511-8 | AVR-based RF Starter Kit for 868 MHz | | | Now |
| ATAKSTK511-9 | AVR-based RF Starter Kit for 915 MHz | | | Now |
| ATAKSTK512-3 | Remote Access Control Kit for Unidirectional Communication at 315 MHz | | | Now |
| ATAKSTK512-4 | Remote Access Control Kit for Unidirectional Communication at 433 MHz | | | Now |
| TMEB8704 | LF RFID IDIC Evaluation Kit for U2270B and TK5561 | | | Now |

Note: 1. For dedicated microcontrollers, see Automotive 4-bit microcontrollers Page 24.

# Automotive (Continued)

## Automotive ASSPs (Continued)

### *Drivers/High-Temperature Devices*

### High-Temperature Drivers

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA6824 | H-Bridge Gate-Driver with Serial Interface, Window Watchdog and Voltage Regulator with $T_{junction}$ Up to 200° C | QFN32 | Yes | Now |
| ATA6827 | Same as ATA6826, Dedicated for High Temperature Applications with $T_{junction}$ Up to 200° C | QFN18 | Yes | Now |
| ATA6832 | Triple Half-bridge Driver with Serial Input Control and 25 kHz PWM Input, 3 High-side and 3 Low-side Drivers, 1000 mA Current Limitation, Dedicated for High Temperature Applications with $T_{junction}$ Up to 200° C | QFN18 | Yes | Now |
| ATA6834 | BLDC Motor System Basis Chip with 3 Half-bridge Gate Drivers, LIN Interface, Window Watchdog and Voltage Regulator, $T_{junction}$ Up to 200° C | QFN48 | Yes | Now |
| ATA6837 | Hex Half-bridge Driver with Serial Input Control, 650 mA Current Limitation, Dedicated for High-temperature Applications with $T_{junction}$ Up to 200° C | QFN24 | Yes | Now |
| ATA6839 | Hex Half-bridge Driver with Serial Input Control, 1000 mA Current Limitation, Dedicated for High-temperature Applications with $T_{junction}$ Up to 200° C | QFN24 | Yes | Now |
| **Evaluation Kits and Tools** | | | | |
| ATA6824-DK | High-temperature Application Board for H-Bridge DC Motor Control, Board with ATA6824 and ATmega88, Including Application Note | | | Now |
| ATA6827-DK | Application Board for ATA6827; Loads Can Be Easily Adapted; the Design Software Controls the Application Board's SPI Interface Via the PC Parallel Port; the Kit Contains Everything Necessary to Start: Link Cable to PC 25-lead 1:1 and Corresponding Datasheet | | | Now |
| ATA6832-DK | High-temperature Application Board for Fully Integrated BLDC Motor Control, Board with ATA6832, ATA6625 and ATmega88, Including Application Note and BLDC Motor | | | Now |
| ATA6833-DK1 | Application Board for Fully Integrated BLDC Motor Control with ATA6834 and BLDC Motor | | | 4Q2008 |
| ATA6833-DK2 | Control Interface Board for ATA6833-DK1 and ATA6834-DK1 to Allow Stand-alone BLDC Motor Control Operation | | | 4Q2008 |
| ATA6834-DK1 | High-temperature Application Board for Fully Integrated BLDC Motor Control, Board with ATA6834 and BLDC Motor | | | 4Q2008 |

### Standard Drivers

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA6823 | H-Bridge Gate-Driver with LIN Transceiver 2.0, Window Watchdog and 3.3/5V Voltage Regulator | QFN32 | Yes | Now |
| ATA6826 | Triple Half-bridge Driver with Serial Input Control, 3 High-side and 3 Low-side Drivers, 1000 mA Current Limitation | SO14 | Pb-free Only | Now |
| ATA6828 | Triple Half-bridge Driver with Serial Input Control, 3 High-side and 3 Low-side Drivers, 1500 mA Current Limitation | SO14, Heat Slug | Pb-free Only | Now |
| ATA6829 | Dual Triple Driver with Serial Input Control and PWM Input, 3 High-side and 3 Low-side Drivers, 1500 mA Current Limitation | SO16, Heat Slug | Pb-free Only | Now |
| ATA6831 | Triple Half-bridge Driver with Serial Input Control and 25 kHz PWM Input, 3 High-side and 3 Low-side Drivers, 1000 mA Current Limitation | QFN18 | Yes | Now |
| ATA6833 | BLDC Motor System Basis Chip with 3 Half-bridge Gate Drivers, LIN Interface, Window Watchdog and Voltage Regulator | QFN48 | Yes | Now |
| ATA6836 | Hex Half-bridge Driver with Serial Input Control, 650 mA Current Limitation | SO28, QFN24 | Yes | Now |
| ATA6838 | Hex Half-bridge Driver with Serial Input Control, 1000 mA Current Limitation | QFN24 | Yes | Now |
| T6801 | Single-channel Driver, 25 mA Output with Thermal Monitoring, Thermal Shutdown, Short-circuit Protection | SO8 | Pb-free Only | Now |
| T6816 | 40V Dual Hex Driver with Serial Input Control, 6 High-side and 6 Low-side Drivers, 600 mA Current Limitation | SO28 | Pb-free Only | Now |
| T6817 | Dual Triple Driver with Serial Input Control, 3 High-side and 3 Low-side Drivers, 600 mA Current Limitation | SSO20 | Pb-free Only | Now |

# AUTOMOTIVE (CONTINUED)

## Automotive ASSPs (Continued)

## *Drivers/High-Temperature Devices (Continued)*

## Standard Drivers (Continued)

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| T6818 | Triple Half-bridge Driver with Serial Input Control, 3 High-side and 3 Low-side Drivers, 1500 mA Current Limitation | SO14 | Pb-free Only | Now |
| T6819 | Dual Triple Driver with Serial Input Control and PWM Input, 3 High-side and 3 Low-side Drivers, 1500 mA Current Limitation | SO16 | Pb-free Only | Now |
| U6803B | Triple Driver, 3 x 25 mA Output with Thermal Monitoring, Common Thermal Shutdown, Short-circuit Protection | SO8 | Pb-free Only | Now |
| U6805B | Hex Driver, 6 x 25 mA Output with Thermal Monitoring, Common Thermal Shutdown, Short-circuit Protection | SO14 | Pb-free Only | Now |
| U6815BM | Dual Hex Driver with Serial Input Control, 6 High-side and 6 Low-side Drivers, 600 mA Current Limitation | SO28 | Pb-free Only | Now |
| U6820BM | Dual Quad Driver with Serial Input Control, 4 High-side Output Stages, 4 Low-side Output Stages, 50 mA Capability, Current Limitation | SO16 | Pb-free Only | Now |
| **Evaluation Kits and Tools** | | | | |
| ATAB6816 | Application Board for U6815M or T6816; Loads Can Be Easily Adapted; the Design Software Controls the Application Board's SPI Interface Via the PC Parallel Port; the Kit Contains Everything Necessary to Start: Link Cable to PC 25-lead 1:1, Application Note and Corresponding Datasheet | | | Now |
| ATAB6817 | Application Board for T6817; Loads Can Be Easily Adapted; the Design Software Controls the Application Board's SPI Interface Via the PC Parallel Port; the Kit Contains Everything Necessary to Start: Link Cable to PC 25-lead 1:1, Application Note and Corresponding Datasheet | | | Now |
| ATAB6818 | Application Board for T6818; Loads Can Be Easily Adapted; the Design Software Controls the Application Board's SPI Interface Via the PC Parallel Port; the Kit Contains Everything Necessary to Start: Link Cable to PC 25-lead 1:1, Application Note and Corresponding Datasheet | | | Now |
| ATAB6819 | Application Board for T6819; Loads Can Be Easily Adapted; the Design Software Controls the Application Board's SPI Interface Via the PC Parallel Port; the Kit Contains Everything Necessary to Start: Link Cable to PC 25-lead 1:1, Application Note and Corresponding Datasheet | | | Now |
| ATA6826-DK | Application Board for ATA6823; Loads Can Be Easily Adapted; the Design Software Controls the Application Board's SPI Interface Via the PC Parallel Port; the Kit Contains Everything Necessary to Start: Link Cable to PC 25-lead 1:1, Application Note and Corresponding Datasheet | | | Now |
| ATA6823-DK | Application Board for ATA6823 and ATA6824, Including External FETs, DC Motor, Supply Voltage 8 to 18V; Including Microcontroller Board for Generating PWM and Watchdog Signal, Application Note and Corresponding Datasheet | | | Now |
| ATA6831-DK | Application Board for ATA6831; Loads Can Be Easily Adapted; the Design Software Controls the Application Board's SPI Interface Via the PC Parallel Port; the Kit Contains Everything Necessary to Start: Link Cable to PC 25-lead 1:1, Application Note and Corresponding Datasheet | | | Now |
| ATA6833-DK1 | Application Board for Fully Integrated BLDC Motor Control, Board with ATA6833 and BLDC Motor | | | 4Q2008 |
| ATA6833-DK2 | Control Interface Board for ATA6833-DK1 and ATA6834-DK1 to Allow Stand-alone BLDC Motor Control Operation with ATMega32M1 AVR Microcontroller | | | 4Q2008 |

## *Battery Management Systems*

## Measuring and Monitoring Circuits

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA6870 | Battery Cell Measurement IC for LI-Ion and NiMH Battery Systems | QFN48 | Yes | April 2009 |
| ATA6871 | Battery Cell Monitoring IC for LI-Ion Battery Systems | QFN28 | Yes | Feb. 2009 |

# Automotive (Continued)

## Automotive ASSPs (Continued)

### *GPS for Automotive*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR0621P1 | ANTARIS®4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, ROM V5, Up to -158 dBm Sensitivity with External Software, Low Power, Automotive Qualification According to AEC-Q100 | BGA100 (9 x 9 mm) | Yes | Now |
| ATR0622P1 | ANTARIS4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, ROM V5, Up to -150 dBm Sensitivity, Low Power, Automotive Qualification According to AEC-Q100 | QFN56 (8 x 8 mm) | Green | Now |
| ATR0625P1 | ANTARIS4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, SuperSense® ROM V5, Up to -158 dBm Sensitivity, Low Power, Automotive Qualification According to AEC-Q100 | QFN56 (8 x 8 mm) | Green | Now |
| ATR0630P1 | ANTARIS4 Single-chip, 16-channel GPS Engine, RF-receiver, Baseband Controller, ARM7TDMI, RAM, ROM V5, Up to -150 dBm Sensitivity, Automotive Qualification According to AEC-Q100 | BGA96 (7 x 10 mm) | Yes | Now |
| ATR0635P1 | ANTARIS4 Single-chip Device, 16-channel GPS Engine, RF Receiver, Baseband Controller, ARM7TDMI, RAM, SuperSense ROM V5, Up to -158 dBm Sensitivity, Automotive Qualification According to AEC-Q100 | BGA96 | Yes | Now |
| **Development/Evaluation Kits and Tools** | | | | |
| ATR0625-DK1 | ANTARIS4 GPS Design Kit Based on Atmel's ANTARIS4 GPS Module, Chipset ATR0601, ATR0610, ATR0625, 2 Golden Samples Modules, Manufacturing Data, Design Guide | | | Now |
| ATR0625-EK1 | ANTARIS4 GPS Evaluation Kit/Road Test Kit Based on Atmel's ANTARIS4 GPS Module, Chipset ATR0601, ATR0610, ATR0625 | | | Now |

### *Tire Pressure Monitoring ICs*

### LF Antenna Driver IC(1)

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA5276M | Integrated 1.5A Peak Current BCDMOS Antenna Driver IC Dedicated as a 125 kHz Wake-up Channel Transmitter | QFN20 | Pb-free Only | Now |
| **Evaluation Kits and Tools** | | | | |
| ATAB5276 | Evaluation Board, LF Antenna Driver, Preferred for Tire Pressure Monitoring Systems | | | Now |
| ATAB-LFMB76 | LF Mainboard with AVR for ATA5276M | | | Now |
| ATAB-LFTX-MOD1 | Antenna Module for LF TX Systems | | | Now |

### RF Transmitter(1)

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA5749 | Fully Programmable, Fully Integrated Fractional-N PLL RF Transmitter IC Featuring Ultra Low Power Consumption | TSSOP10 | Pb-free Only | Now |

### Microcontroller Transmitter ICs(1)

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA6285 | Complete 8-bit Flash AVR Microcontroller with ATA5756, LF Wake-up and Temperature Sensor Integrated On-chip, Suited for Combination with Simple Capacitive MEMS Sensors; Temperature Range: -40° C to +125° C, Frequency: 315 MHz | QFN32 | Pb-free Only | Samples |
| ATA6286 | Complete 8-bit Flash AVR Microcontroller with ATA5756, LF Wake-up and Temperature Sensor Integrated On-chip, Suited for Combination with Simple Capacitive MEMS Sensors; Temperature Range: -40° C to +125° C, Frequency: 433 MHz | QFN32 | Pb-free Only | Samples |
| **Evaluation Kits and Tools** | | | | |
| ATA6285-EK1 | Application Board for ATA6285 | | | Now |
| ATA6286-EK1 | Application Board for ATA6286 | | | Now |

Note: 1. For dedicated microcontrollers, see Automotive 4-bit microcontrollers Page 34.

# Automotive (Continued)

## Automotive ASSPs (Continued)

### *Tire Pressure Monitoring ICs (Continued)*

### UHF Receiver/Transceiver ICs[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA5721 | UHF Receiver for ASK and FSK Systems, 315 MHz, Full Duplex | QFN48 | Yes | 4Q2008 |
| ATA5722 | UHF Receiver for ASK and FSK Systems, 433 to 435 MHz, Full Duplex | QFN48 | Yes | 4Q2008 |
| ATA5723P3 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 315 MHz, 300 kHz Bandwidth, RSSI Pin Compatible to ATA5724, ATA5728 | SSO20 | Pb-free Only | Now |
| ATA5724P3 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 433 MHz, 300 kHz Bandwidth, RSSI Pin Compatible to ATA5723, ATA5728 | SSO20 | Pb-free Only | Now |
| ATA5728P6 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 868 MHz, 600 kHz Bandwidth, RSSI Pin Compatible to ATA5723, ATA5724 | SSO20 | Pb-free Only | Now |
| ATA5745 | Transparent ASK/FSK UHF Receiver IC with Fast RKE/TPMS Switching Rate, Suited to 1 to 20 Kbits/s Manchester FSK with 4 Programmable Bit-rate Ranges, High ASK Sensitivity (-114 dBm at 2.4 Kbits/s), High Blocking Capability, 433 MHz | QFN24 | Pb-free Only | Now |
| ATA5746 | Transparent ASK/FSK UHF Receiver IC with Fast RKE/TPMS Switching Rate, Suited to 1 to 20 Kbits/s Manchester FSK with 4 Programmable Bit-rate Ranges, High ASK Sensitivity (-114 dBm at 2.4 Kbits/s), High Blocking Capability, 315 MHz | QFN24 | Pb-free Only | Now |
| ATA5811 | UHF Transceiver for ASK and FSK Systems, 433 to 435 MHz or 868 to 870 MHz | QFN48 | Yes | Now |
| ATA5812 | UHF Transceiver for ASK and FSK Systems, 315 MHz | QFN48 | Yes | Now |
| **Evaluation Kits and Tools** | | | | |
| ATA5723-DK | Receiver Board ATA5723, 315 MHz, no SAW Filter | | | Now |
| ATA5724-DK | Receiver Board ATA5724, 433 MHz, no SAW Filter | | | Now |
| ATA5728-DK | Receiver Board ATA5728, 868 MHz, no SAW Filter | | | Now |
| ATA5745-EK | Receiver Board for ATA5745 | | | Now |
| ATA5746-EK | Receiver Board for ATA5746 | | | Now |
| ATAB5811-4-B | UHF ASK/FSK Transceiver Basestation Board for 433.92 MHz | | | Now |
| ATAB5811-8-B | UHF ASK/FSK Transceiver Basestation Board for 868.3 MHz | | | Now |
| ATAB5812-3-B | UHF ASK/FSK Transceiver Basestation Board for 315 MHz | | | Now |
| ATAB5823-3-B | UHF ASK/FSK Transceiver Basestation Board for 315 MHz | | | Now |
| ATAB5824-4-B | UHF ASK/FSK Transceiver Basestation Board for 433.92 MHz | | | Now |
| ATAB5824-8-B | UHF ASK/FSK Transceiver Basestation Board for 868.3 MHz | | | Now |
| ATAB-SPI-LPT | SPI to Parallel Port (LPT) Interface Board for TRX Basestation Boards | | | Now |
| ATAB-STK-F | Flamingo® Interface Board for Connecting RF Boards to STK500 | | | Now |

### UHF Transmitter ICs[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA5756 | UHF ASK/FSK Transmitter, Frequency Range 313 to 317 MHz, 6 dBm/8.1 mA Current in Tx Mode, 2.0V Min. Voltage, -40° C to +125° C | TSSOP10 | Pb-free Only | Now |
| ATA5757 | UHF ASK/FSK Transmitter, Frequency Range 432 to 448 MHz, 6 dBm/8.5 mA Current in Tx Mode, 2.0V Min. Voltage, -40° C to +125° C | TSSOP10 | Pb-free Only | Now |
| **Evaluation Kits and Tools** | | | | |
| ATAB5756 | Reference Design for UHF Transmitter ATA5756, Operation Frequency 315 MHz | | | Now |
| ATAB5757 | Reference Design for UHF Transmitter ATA5757, Operation Frequency 433 MHz | | | Now |

Note: 1. For dedicated microcontrollers, see Automotive 4-bit microcontrollers Page 34.

# GPS

## GPS for Automotive

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR0621P1 | ANTARIS4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, ROM V5, Up to -158 dBm Sensitivity with External Software, Low Power, Automotive Qualification According to AEC-Q100 | BGA100 (9 x 9 mm) | Yes | Now |
| ATR0622P1 | ANTARIS4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, ROM V5, Up to -150 dBm Sensitivity, Low Power, Automotive Qualification According to AEC-Q100 | QFN56 (8 x 8 mm) | Green | Now |
| ATR0625P1 | ANTARIS4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, SuperSense ROM V5, Up to -158 dBm Sensitivity, Low Power, Automotive Qualification According to AEC-Q100 | QFN56 (8 x 8 mm) | Green | Now |
| ATR0630P1 | ANTARIS4 Single-chip, 16-channel GPS Engine, RF-receiver, Baseband Controller, ARM7TDMI, RAM, ROM V5, Up to -150 dBm Sensitivity, Automotive Qualification According to AEC-Q100 | BGA96 (7 x 10 mm) | Yes | Now |
| ATR0635P1 | ANTARIS4 Single-chip Device, 16-channel GPS Engine, RF Receiver, Baseband Controller, ARM7TDMI, RAM, SuperSense ROM V5, Up to -158 dBm Sensitivity, Automotive Qualification According to AEC-Q100 | BGA96 | Yes | Now |
| **Development/Evaluation Kits and Tools** | | | | |
| ATR0625-DK1 | ANTARIS4 GPS Design Kit Based on Atmel's ANTARIS4 GPS Module, Chipset ATR0601, ATR0610, ATR0625, 2 Golden Samples Modules, Manufacturing Data, Design Guide | | | Now |
| ATR0625-EK1 | ANTARIS4 GPS Evaluation Kit/Road Test Kit Based on Atmel's ANTARIS4 GPS Module, Chipset ATR0601, ATR0610, ATR0625 | | | Now |

## Standard GPS

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR0601 | ANTARIS4 GPS RF Receiver, Single IF Front End Concept, Very Low Power, Immune Against RF Interference | QFN24 (4 x 4 mm) | Green | Now |
| ATR0603 | GPS RF Receiver, Single IF Architecture, 1-bit ADC, Very Low Power, Supply Switch for TCXO | QFN24 (4 x 4 mm) | Green | Now |
| ATR0610 | ANTARIS GPS LNA with Integrated Power-up Control and Output Matching (NF Min <1.6 dB) | PLLP (1.6 x 2 mm) | Green | Now |
| ATR0621P | ANTARIS4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, ROM V5, Up to -158 dBm Sensitivity with External Software, Low Power | BGA100 (9 x 9 mm) | Yes | Now |
| ATR0622P | ANTARIS4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, ROM V5, Up to -150 dBm Sensitivity, Low Power | QFN56 (8 x 8 mm) | Green | Now |
| ATR0625P | ANTARIS4 GPS 16-channel Baseband Controller, ARM7TDMI, RAM, SuperSense ROM V5, Up to -158 dBm Sensitivity, Low Power | QFN56 (8 x 8 mm) | Green | Now |
| ATR0635 | ANTARIS4 Single-chip, 16-channel GPS Engine, RF-receiver, Baseband Controller, ARM7TDMI, RAM, SuperSense ROM V5, Up to -158 dBm Sensitivity | BGA96 (7 x 10 mm) | Yes | Now |
| **Development/Evaluation Kits and Tools** | | | | |
| ATR0603-EK1 | GPS-Radio Demoboard for Performance Evaluation | | | Now |
| ATR0610-EK1 | GPS-LNA Demoboard for Performance Evaluation | | | Now |
| ATR0625-DK1 | ANTARIS4 GPS Design Kit Based on Atmel's ANTARIS4 GPS Module, Chipset ATR0601, ATR0610, ATR0625, 2 Golden Samples Modules, Manufacturing Data, Design Guide | | | Now |
| ATR0625-EK1 | ANTARIS4 GPS Evaluation Kit/Road Test Kit Based on Atmel's ANTARIS4 GPS Module, Chipset ATR0601, ATR0610, ATR0625 | | | Now |
| ATR0635-DK1 | ANTARIS4 GPS Design Kit Based on Atmel's ANTARIS4 GPS Module, Chipset ATR0610, ATR0635, 2 Golden Samples Modules, Manufacturing Data, Design Guide | | | Now |
| ATR0635-EK1 | ANTARIS4 GPS Evaluation Kit/Road Test Kit Based on Atmel's ANTARIS4 GPS Module, Chipset ATR0610, ATR0635 | | | Now |

# INDUSTRIAL CONTROL

## AC/DC Motor/Temperature/Illumination Control ICs

### *Clock and Watch ICs*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| e1466D | Clock IC with Digital Trimming, 32 kHz Crystal, Integrated Capacitors, Mask Options 1.1 to 2.2V Supply | DIP8, SO8 | Pb-free Only | Now |
| e5130A | Low Voltage CMOS Driver Circuit, Supply Voltage: 1.1 to 3.6V, 4 Non-inverting Tri-stable Drivers | Die | Pb-free Only | Now |

### *Phase Control ICs*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U2008B | Phase Control + Retrigger, Softstart or Shunt Regulation, Line-voltage Compensation, Minimal External Components | DIP8, SO8 | Pb-free Only | Now |
| U2010B | As U2008B + Softstart, Shunt Regulation, Overload Compensation, Overload Indication, Line-voltage Compensation, Programmable Load-current Limitation | DIP16, SO16 | Pb-free Only | Now |
| U209B | Tacho Control IC, as U2008B + f/V Converter, Reference Voltage – Applications: All Tacho Control AC Motors | DIP14, SO16 | Pb-free Only | Now |
| U211B | The Worldwide Standard IC for Tacho AC Motor Control, as U209B + Foldback | DIP18, SO16 | Pb-free Only | Now |

### *Sensor-controlled Timer ICs*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U2100B | Timer for AC Line Applications: Motion Sensors, Fans, Hand Dryer, Stair Light, 2-wire and 3-wire Applications, Triac and Relay Switching on AC Line | DIP8, SO8 | Pb-free Only | Now |
| U2102B | IGBT/FET Control Timer for Advanced Dimmer and Motion Sensor Applications, Programmable Trigger Window, Reverse Phase Control and Electronic Fuse | DIP16, SO16 | Pb-free Only | Now |

### *Zero Crossing Switching IC*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| T2117 | Standard Zero Crossing Switch, Low-cost Application, Adjustable Ramp | DIP8, SO8 | Pb-free Only | Now |

# MILITARY AND AEROSPACE

## Military & Avionics

### *ASICs and FPGAs*

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| MH1 | 0.35 Micron 1.6M Used Gates Sea of Gates/Embedded Arrays | Plastic Package | Now |
| ATC18M | 0.18 Micron 5.5M Gates Cell-based | Plastic Package | Now |
| AT40KAL040 | FPGA 40K ASIC Gates and 18-Kbit SRAM | Yes | Now |
| SERVICE | FPGA to ASIC Conversion | Plastic Package | Now |

### *Space Radiation Tolerant/Hard ASICs and FPGAs*

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| MH1RT | Rad Hard 0.35 Micron 1.6M Used Gates Sea of Gates/Embedded Gates | Yes (Except for MCGA Package) | Now |
| ATC18RHA | Rad Hard 0.18 Micron 5.5M Gates Cell-based | Yes (Except for MCGA Package) | Now |
| AT40KEL040 | Rad Hard FPGA 40K ASIC Gates and 18-Kbit SRAM | Yes | Now |
| ATF280E | Rad Hard FPGA 280K ASIC Gates and 115-Kbit SRAM | Yes (Except for MCGA Package) | 1Q2009 |
| SERVICE | FPGA to ASIC Conversion | Yes | Now |

### *Space Radiation Tolerant/Hard Communication ICs*

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| 29C516E | Rad Tolerant 16-bit Flow through EDAC Error Detection and Correction Unit | Yes | Now |
| T7906E | Rad Tolerant Single Point-to-Point IEEE® 1355 High-speed Controller (SMCS Lite) | Yes | Now |
| TSS901E | Rad Tolerant Triple Point-to-Point IEEE1355 High-speed Controller (SMCS) | Yes | Now |
| AT7908E | Rad Hard CAN Controller | Yes | Now |
| AT7909E | Single Chip TeleMetry and TeleCommand (SCTMTC) | Yes | Now |
| AT7910E | SpaceWire Router | Yes | Now |
| AT7911E | Triple SpaceWire links High Speed Controller (SMCS332SPW) | Yes | Now |
| AT7912E | Single SpaceWire links High Speed Controller (SMCS116SPW) | Yes | Now |
| AT7913E | SpaceWire Remote Terminal Controller | Yes | 4Q2008 |

# MILITARY AND AEROSPACE (CONTINUED)

## Military & Avionics (Continued)

### *Space Radiation Tolerant/Hard Memories*

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| AT61162E | Rad Hard 2-Mbit x 8 SRAM Cube (3.3V, 40 ns, 90 mA) | Yes | Now |
| AT60142F | Rad Hard 512K x 8 Very Low Power CMOS SRAM (3.3V, 15 ns, 180 mA) | Yes | Now |
| AT60142G | Rad Hard 512K x 8 Very Low Power CMOS SRAM (3.3V, <15 ns, 180 mA) | Yes | 2H2009 |
| AT60142FT | Rad Hard 512K x 8 Very Low Power CMOS SRAM (3.3/5V Tolerant, 17 ns, 170 mA) | Yes | Now |
| AT68166F | Rad Hard 16-Mbit SRAM Multi-chip Module (3.3V, 20 ns, 180 mA/Byte) | Yes | Now |
| AT68166F | Rad Hard 16-Mbit SRAM Multi-chip Module (3.3V, 18 ns, 180 mA/Byte) | Yes | Now |
| AT68166G | Rad Hard 16-Mbit SRAM Multi-chip Module (3.3V, <18 ns, 180 mA/Byte) | Yes | 2H2009 |
| AT68166FT | Rad Hard 16-Mbit SRAM Multi-chip Module (3.3V/5V Tolerant, 25 ns, 170 mA/Byte) | Yes | Now |
| AT68166FT | Rad Hard 16-Mbit SRAM Multi-chip Module (3.3V/5V Tolerant, 20 ns, 170 mA/Byte) | Yes | Now |
| M65608E | Rad Tolerant 128K x 8 Very Low Power CMOS SRAM (5V, 30 ns, 130 mA) | Yes | Now |
| M65609E | Rad Hard 128K x 8 Very Low Power CMOS SRAM (3.3V, 40 ns, 50 mA) | Yes | Now |
| M67025E | Rad Tolerant High-speed 8K x 16 Dual-port RAM (5V, 30 ns, 200 mA) | Yes | Now |
| M67206H | Rad Tolerant High-speed 16K x 9 Parallel FIFO (5V, 15 ns, 120 mA) | Yes | Now |
| M672061H | Rad Tolerant High-speed 16K x 9 Parallel FIFO with Programmable Flag (5V, 15 ns, 120 mA) | Yes | Now |
| M67204H | Rad Tolerant High-speed 4K x 9 CMOS Parallel FIFO (5V, 15 ns, 120 mA) | Yes | Now |
| AT28C010-12DK | Rad Tolerant 128K x 8 EEPROM (5V, 120 ns, 50 mA) | Yes | Now |
| AT17LV010-10DP | Rad Tolerant 1-Mbit Serial EEPROM (FPGA Configurator) (3.3V, 100 ns, 5 mA Read) | Yes | Now |
| AT69170E | Rad Tolerant 4-Mbit Serial EEPROM (FPGA Configurator) (3.3V, 70 ns, 70 mA Write, 5 mA Read) | Yes | 1Q2009 |

### *Space Radiation Tolerant/Hard Processors and DSP*

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| 80C32E | 80C51, Radiation Tolerant 8-bit Microcontroller ROMless | Yes | Now |
| TSC21020F | ADI21020-compatible, Radiation and SEU Hardened 32-bit Floating Point DSP | Yes | Now |
| TSC695F | Radiation Hard 32-bit SPARC® Single-chip V7 Processor (5V, 20 MIPS) | Yes | Now |
| TSC695FL | Radiation Hard 32-bit SPARC Single-chip V7 Processor (3.3V, 12 MIPS) | Yes | Now |
| AT697E | Radiation Hard 32-bit SPARC V8 Processor (90 MIPS) | Yes (Except for MCGA Package) | Now |
| AT697F | Radiation Hard 32-bit SPARC V8 Processor (90 MIPS) | Yes (Except for MCGA Package) | 1Q2009 |

# MULTIMEDIA

## BD/HD-DVD/DVD/CD Storage Chipsets

### *BD/HD-DVD/DVD/CD Front Monitor Diodes*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR1840 | Front Monitor OEIC for Blu-ray/HD-DVD/ DVD/CD | QFN Open, 3 x 3 mm | Yes | Now |
| ATR1841 | Front Monitor OEIC for Blu-ray/HD-DVD/ DVD/CD, I2C-compatible for Gain Setting and Gain Adjustment | QFN Open, 3 x 3 mm | Yes | Now |
| ATR1842 | Front Monitor OEIC for Blu-ray/HD-DVD/ DVD/CD with SPI Interface for Gain Setting and Gain Adjustment | QFN Open, 3 x 3 mm | Yes | Now |

### *BD/HD-DVD/DVD/CD Laser Driver ICs*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR0826 | Three-channel Combo Laser Driver with RF Oscillator and Two Optional Outputs, Total Output Current to 500/150 mA, Rise/Fall Time 0.8 ns, Control of Swing and Frequency by 3 External Resistors, NER Enable | SSO16, QFN16 | Yes | Now |
| ATR0834T | Four-channel Low Head Room LVDS Laser Driver with RF Oscillator and Two Optional Outputs, Total Output Current to 700 mA, Rise/Fall Time 0.8 ns, Control of Swing and Frequency by 4 External Resistors, NER Enable, Internal Termination | QFN24 | Yes | Now |
| ATR0849 | Four-channel LVDS Laser Driver with RF Oscillator and Two Optional Outputs, Total Output Current to 700 mA, Rise/Fall Time 0.8 ns, Control of Swing and Frequency by 4 External Resistors, NER Enable, Internal Termination | QFN24 | Yes | Now |
| ATR0881 | 3-output Laser Driver with 5 Channels and Serial Interface. Flexible Gain Adjustment and Oscillator Settings Via Serial Interface | QFN24 | Yes | Now |
| ATR0885 | 3-output Laser Driver for Blu-ray/DVD/CD Player | QFN24 | Yes | Now |

### *BD/HD-DVD/DVD/CD Photo Detector ICs*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR0874 | 2 Wavelength PDIC® (650 nm and 780 nm) for CD-RW and DVD±RW, 10 Channels with 4 Configurable Gain Steps, 150 MHz Data Bandwidth, 12 Photo Diode Pattern | QFN OPEN 4 x 3.5 | Yes | Now |
| ATR1874 | 2 Wavelength PDIC (650 nm and 780 nm) for CD-RW and DVD±RW, 10 Channels with 4 Configurable Gain Steps, 150 MHz Data Bandwidth, 12 Photo Diode Pattern | QFN OPEN 4 x 3.5 | Yes | Now |

## Dream® Sound Synthesis ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATSAM9708 | 128-voice Integrated Sound Synthesizer | LQFP144 | Yes | Now |
| ATSAM2553 | Integrated Digital Musical Instrument | LQFP128 | Yes | Now |
| ATSAM2533 | Low-power Synthesizer with Effects and Built-in RAM | LQFP100 | Yes | Now |
| ATSAM2195 | Low-power Single-chip Synthesizer with Effects | QFN44 | Yes | Now |
| ATSAM3703 | High Performance Low-cost Effects DSP | LQFP80 | Yes | Now |
| ATSAM3303B | GM-Lite Synthesizer/Professional Effects DSP | LQFP100 | Yes | Now |
| ATSAM3108B | 8-channel Multiprocessing DSP | LQFP64 | Yes | Now |
| ATSAM3308B | Multi-purpose Audio DSP | LQFP100 | Yes | Now |
| ATSAM3516 | High Performance Keyboard Synthesizer | LQFP144 | Yes | Jan. 2009 |
| ATSAM3716 | Multiple Stream Compressed Audio Player | LQFP128 | Yes | Jan. 2009 |
| ATSAM3816 | Professional Audio Multiple Purpose Processor | LQFP144 | Yes | Jan. 2009 |

# MULTIMEDIA (CONTINUED)

## IR Control ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA2525R | IR Receiver IC Optimized for Standard Remote Control Solutions, Supply Voltage 5V | Wafer | N/A | Now |
| ATA2526P | IR Receiver IC Optimized for Standard Remote Control Solutions, Supply Voltage 3 - 5V | Wafer | N/A | Now |
| T2525N | IR Receiver IC with Extensive Range of Options to Meet Special Remote Control Requirements, Supply Voltage 5V | Wafer | N/A | Now |
| T2526N | IR Receiver IC with Extensive Range of Options to Meet Special Remote Control Requirements, Supply Voltage 3 - 5V | Wafer | N/A | Now |
| U2538B | IR Preamplifier, Typically 0.55 mA Standby Current, 20 to 60 kHz, Only 3 External Components Required, Packaged | SO8 | Pb-free Only | Now |

## Video – TV/VCR ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| **Sound IF ICs** | | | | |
| U2860B | Double FM Demodulator (Stereo), VS = 5V, Completely Alignment-free | SO14 | Pb-free Only | Now |
| U2861B | FM Demodulator (Mono), VS = 5V, Completely Alignment-free | SO14 | Pb-free Only | Now |
| **Video and Sound IF ICs** | | | | |
| TDA4470 | Multi-standard Video IF (Neg/Pos) and Quasi Parallel Sound Processing (FM, NICAM, AM), VS = 5V, FPLL Detection, AFC, Alignment-free AM Demodulator, Three IF Inputs | SO28, SSO28 | Pb-free Only | Now |

# NONVOLATILE MEMORY

## EPROM Standard Products – Industrial OTP EPROMs

| Part Number | Density | Organization | VCC (V) | Speed (ns) | Package |
|---|---|---|---|---|---|
| AT27BV256 | 256-Kbit | x8 | 2.7 - 3.6 | 70 | PLCC (32), TSOP (28) |
| AT27LV256A | 256-Kbit | x8 | 3.0 - 3.6 | 55, 90 | PLCC (32), TSOP (28) |
| AT27C256R | 256-Kbit | x8 | 4.5 - 5.5 | 45, 70 | PLCC (32), PDIP (28), TSOP (28) |
| AT27BV512 | 512-Kbit | x8 | 2.7 - 3.6 | 70 | PLCC (32), TSOP (28) |
| AT27LV512A | 512-Kbit | x8 | 3.0 - 3.6 | 90 | PLCC (32), TSOP (28) |
| AT27C512R | 512-Kbit | x8 | 4.5 - 5.5 | 45, 70 | PLCC (32), PDIP (28), TSOP (28) |
| AT27C516 | 512-Kbit | x16 | 4.5 - 5.5 | 45 | PLCC (44) |
| AT27BV010 | 1-Mbit | x8 | 2.7 - 3.6 | 90 | PLCC (32), TSOP (32) |
| AT27BV1024 | 1-Mbit | x16 | 2.7 - 3.6 | 90, 120 | PLCC (44) |
| AT27LV010A | 1-Mbit | x8 | 3.0 - 3.6 | 70 | PLCC (32), TSOP (32) |
| AT27C010 | 1-Mbit | x8 | 4.5 - 5.5 | 45, 70 | PLCC (32), PDIP (32), TSOP (32) |
| AT27C1024 | 1-Mbit | x16 | 4.5 - 5.5 | 45, 70 | PLCC (44), PDIP (40) |
| AT27BV020 | 2-Mbit | x8 | 2.7 - 3.6 | 90 | PLCC (32), TSOP (32) |
| AT27LV020A | 2-Mbit | x8 | 3.0 - 3.6 | 120 | PLCC (32), TSOP (32) |
| AT27C020 | 2-Mbit | x8 | 4.5 - 5.5 | 55, 90 | PLCC (32), PDIP (32), TSOP (32) |
| AT27C2048 | 2-Mbit | x16 | 4.5 - 5.5 | 55, 90 | PLCC (44), PDIP (40) |
| AT27BV040 | 4-Mbit | x8 | 2.7 - 3.6 | 120 | PLCC (32) |
| AT27LV040A | 4-Mbit | x8 | 3.0 - 3.6 | 90 | PLCC (32), TSOP (32) |
| AT27C040 | 4-Mbit | x8 | 4.5 - 5.5 | 70, 90 | PLCC (32), PDIP (32), TSOP (32) |
| AT27C4096 | 4-Mbit | x16 | 4.5 - 5.5 | 55, 90 | PLCC (44), PDIP (40) |
| AT27C080 | 8-Mbit | x8 | 4.5 - 5.5 | 90 | PLCC (32), PDIP (32), TSOP (32) |

*All Industrial OTP EPROMs Parts are RoHS Compliant.*

# NONVOLATILE MEMORY (CONTINUED)

## Flash Memory

| Part Number | Density (Mbit) | Organization | VCC (V) | Speeds (ns) | Package | Description | Availability |
|---|---|---|---|---|---|---|---|
| AT29LV512 | 0.5 | 64K x 8 | 3.0-3.6 | 120 | 32PLCC, 32TSOP | – | Now |
| AT29C512 | 0.5 | 64K x 8 | 4.5-5.5 | 70, 90 | 32PLCC, 32TSOP | – | Now |
| AT29BV010A | 1 | 128K x 8 | 2.7-3.6 | 120, 150 | 32PLCC, 32TSOP | – | Now |
| AT29C010A | 1 | 128K x 8 | 4.5-5.5 | 70, 90 | 32PLCC, 32TSOP | – | Now |
| AT29BV020 | 2 | 256K x 8 | 2.7-3.6 | 120, 150 | 32PLCC, 32TSOP | – | Now |
| AT29LV020 | 2 | 256K x 8 | 3.0-3.6 | 100, 200 | 32PLCC, 32TSOP | – | Now |
| AT29C020 | 2 | 256K x 8 | 4.5-5.5 | 70, 120 | 32PLCC, 32TSOP | – | Now |
| AT29BV040A | 4 | 512K x 8 | 2.7-3.6 | 200 | 32PLCC, 32TSOP | – | Now |
| AT29LV040A | 4 | 512K x 8 | 3.0-3.6 | 150 | 32PLCC, 32TSOP | – | Now |
| AT29C040A | 4 | 512K x 8 | 4.5-5.5 | 90, 120 | 32PLCC, 32TSOP | – | Now |
| AT49LV1024A | 1 | 64K x 16 | 3.0-3.6 | 45 | 40VSOP | – | Now |
| AT49F1024A | 1 | 64K x 16 | 4.5-5.5 | 45 | 40VSOP | – | Now |
| AT49BV040B | 4 | 512K x 8 | 2.7-3.6 | 70 | 32PLCC, 32TSOP, 32VSOP | Bottom Boot (5V and 2.7V Tolerant) | Now |
| AT49BV040B | 4 | 512K x 8 | 4.5-5.5 | 55 | 32PLCC, 32TSOP | Bottom Boot (5V and 2.7V Tolerant) | Now |
| AT49BV802D(T) | 8 | 512K x 16/1M x 8 | 2.7-3.6 | 70 | 48CBGA, 48TSOP | (T) – Top Boot | Now |
| AT49SV163D(T) | 16 | 1M x 16 | 1.65-1.95 | 80 | 48CBGA, 48TSOP | (T) – Top Boot | Now |
| AT49BV160D(T) | 16 | 1M x 16 | 2.7-3.6 | 70 | 48TSOP | (T) – Top Boot | Now |
| AT49BV160S(T) | 16 | 1M x 16 | 2.7-3.6 | 70 | 64CBGA | (T) – Top Boot | Now |
| AT49BV163D(T) | 16 | 1M x 16/2M x 8 | 2.7-3.6 | 70 | 48CBGA, 48TSOP | (T) – Top Boot | Now |
| AT49SV322D(T) | 32 | 2M x 16 | 1.65-1.95 | 80 | 48CBGA, 48TSOP | (T) – Top Boot | Now |
| AT49BV320D(T) | 32 | 2M x 16 | 2.7-3.6 | 70 | 47CBGA, 48TSOP | (T) – Top Boot | Now |
| AT49BV320S(T) | 32 | 2M x 16 | 2.7-3.6 | 70 | 64CBGA | (T) – Top Boot | Now |
| AT49BV322D(T) | 32 | 2M x 16/4M x 8 | 2.7-3.6 | 70 | 48CBGA, 48TSOP | (T) – Top Boot | Now |
| AT49BV640D(T) | 64 | 4M x 16 | 2.7-3.6 | 70 | 48CBGA | (T) – Top Boot | Now |
| AT49BV642D(T) | 64 | 4M x 16 | 2.7-3.6 | 70 | 48TSOP | (T) – Top Boot | Now |
| AT49BV640S(T) | 64 | 4M x 16 | 2.7-3.6 | 70 | 64CBGA | (T) – Top Boot | Now |

*All Flash Parts are RoHS Compliant.*

# NONVOLATILE MEMORY (CONTINUED)

## Parallel EEPROM

### *Die Products*

| Part Number | Density | VCC (V) | Speed (ns) |
|---|---|---|---|
| AT28BV64B-DWF | 64-Kbit | 2.7 - 3.6 | 200 |
| AT28C64B-DWF & AT28HC64B-DWF | 64-Kbit | 4.5 - 5.5 | 70, 150 |
| AT28BV256-DWF | 256-Kbit | 2.7 - 3.6 | 200 |
| AT28C256-DFWM(1)(2) | 256-Kbit | 4.5 - 5.5 | 200 |
| AT28HC256-DFWM(1)(2) | 256-Kbit | 4.5 - 5.5 | 120 |
| AT28C010-DFWM(1)(2) | 1-Mbit | 4.5 - 5.5 | 200 |

Notes: 1. To be used for Military Applications only.
2. Military Die Information Request Form Needs to be completed and submitted to Atmel by customer. Contact Atmel Sales for a Form.

### *Industrial Products*

| Part Number | Density | Organization | VCC (V) | Speed (ns) | Package |
|---|---|---|---|---|---|
| AT28BV64B | 64-Kbit | x8 | 2.7 - 3.6 | 200 | PLCC (32), TSOP (28), SOIC (28) |
| AT28C64B | 64-Kbit | x8 | 4.5 - 5.5 | 150 | PLCC (32), TSOP (28), SOIC (28), PDIP (28) |
| AT28HC64B | 64-Kbit | x8 | 4.5 - 5.5 | 70 | PLCC (32), TSOP (28), SOIC (28) |
| AT28BV256 | 256-Kbit | x8 | 2.7 - 3.6 | 200 | PLCC (32), TSOP (28), SOIC (28) |
| AT28C256 | 256-Kbit | x8 | 4.5 - 5.5 | 150 | PLCC (32), TSOP (28), SOIC (28), PDIP (28) |
| AT28C256E & AT28C256F | 256-Kbit | x8 | 4.5 - 5.5 | 150 | PLCC (32), TSOP (28), SOIC (28) |
| AT28HC256 | 256-Kbit | x8 | 4.5 - 5.5 | 70, 90 | PLCC (32), TSOP (28), SOIC (28) |
| AT28HC256E | 256-Kbit | x8 | 4.5 - 5.5 | 70, 120 | PLCC (32), TSOP (28), SOIC (28) |
| AT28HC256F | 256-Kbit | x8 | 4.5 - 5.5 | 90 | PLCC (32), TSOP (28), SOIC (28) |
| AT28LV010 | 1-Mbit | x8 | 3.0 - 3.6 | 200 | PLCC (32), TSOP (32) |
| AT28C010 & AT28C010E | 1-Mbit | x8 | 4.5 - 5.5 | 120, 150 | PLCC (32), TSOP (32) |

### *Military Products*

| Part Number | Density | Organization | VCC (V) | Speed (ns) | Package |
|---|---|---|---|---|---|
| AT28C256/AT28HC256 | 256-Kbit | x8 | 4.5 - 5.5 | 70, 90, 120 | 28CDIP, 28Flatpack, 32LCC, 28PGA |
| AT28C256E/AT28HC256E | 256-Kbit | x8 | 4.5 - 5.5 | 70, 90, 120 | 28CDIP, 28Flatpack, 32LCC, 28PGA |
| AT28C256F/AT28HC256F | 256-Kbit | x8 | 4.5 - 5.5 | 70, 90, 120 | 28CDIP, 28Flatpack, 32LCC, 28PGA |
| AT28C010/AT28C010E | 1-Mbit | x8 | 4.5-5.5 | 120, 150, 200, 250 | 28CDIP, 28Flatpack, 32/44LCC, 30PGA |
| 5962-88525 (EEPROM DSCC Military) | 256-Kbit | x8 | 4.5-5.5 | 150, 200, 250 | 28CDIP, 28Flatpack, 32LCC, 28PGA |
| 5962-88634 (EEPROM DSCC Military) | 256-Kbit | x8 | 4.5-5.5 | 70, 90, 120 | 28CDIP, 28Flatpack, 32LCC, 28PGA |
| 5962-38267 (EEPROM DSCC Military) | 1-Mbit | x8 | 4.5-5.5 | 120, 150, 200 | 28CDIP, 28Flatpack, 32/44LCC, 30PGA |

*All Industrial Parallel EEPROMs Parts are RoHS Compliant.*

# NONVOLATILE MEMORY (CONTINUED)

## Serial EEPROMs – Automotive

| Part Number | Density (Kbits) | Organization | VCC (V) | Max Speed (MHz) | Package* | Comments | Availability |
|---|---|---|---|---|---|---|---|
| **2-wire Interface** | | | | | | | |
| AT24C01B | 1 | 128 x 8 | 2.5 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 8 Devices | Now (Replaces AT24C01A/AT24C11) |
| AT24C02B | 2 | 256 x 8 | 2.5 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 8 Devices | Now (Replaces AT24C02) |
| AT34C02C | 2 | 256 x 8 | 2.7 | 0.4 | SOIC | Lower Half Permanent SW Write Protect | Now (Replaces AT34C02) |
| AT24C04B | 4 | 512 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 4 Devices | Now (Replaces AT24C04) |
| AT24C08B | 8 | 1024 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 2 Devices | Now (Replaces AT24C08) |
| AT24C16A | 16 | 2048 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection | Now |
| AT24C32A | 32 | 4096 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 8 Devices | Now |
| AT24C64A | 64 | 8192 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 8 Devices | Now |
| AT24C128 | 128 | 16384 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 4 Devices | Now |
| AT24C256 | 256 | 32768 x 8 | 2.7 | 0.4 | SOIC | Full Array Write Protection Cascade Up to 4 Devices | Now |
| **SPI Interface** | | | | | | | |
| AT25010A | 1 | 128 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25020A | 2 | 256 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25040A | 4 | 512 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25080A | 8 | 1024 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25160A | 16 | 2048 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25320A | 32 | 4096 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25640A | 64 | 8192 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25128A | 128 | 16384 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25256A | 256 | 32768 x 8 | 2.7 | 5 | SOIC | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| **3-wire Interface** | | | | | | | |
| AT93C46 | 1 | 64 x 16/128 x 8 | 2.7 | 2 | SOIC | x8 or x16 Memory Organization | Now |
| AT93C56A | 2 | 128 x 16/256 x 8 | 2.7 | 2 | SOIC | x8 or x16 Memory Organization with Sequential Read | Now |
| AT93C66A | 4 | 256 x 16/512 x 8 | 2.7 | 2 | SOIC | x8 or x16 Memory Organization with Sequential Read | Now |
| AT93C86A | 16 | 1024 x 16/2048 x 8 | 2.7 | 2 | SOIC | x8 or x16 Memory Organization with Sequential Read | Now |

**Other Packages Available on Request.*

*All Automotive Serial EEPROMs Parts are RoHS Compliant.*

# NONVOLATILE MEMORY (CONTINUED)

## Serial EEPROMs Standard Products

| Part Number | Density (Kbits) | Organization | VCC (V) | Max Speed (MHz) | Package | Comments | Availability |
|---|---|---|---|---|---|---|---|
| **2-wire Interface** | | | | | | | |
| AT24C01B | 1 | 128 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, SOT23, dBGA2, DFN (MAP), XDFN*, Die/Wafer | Full Array Write Protection Cascade Up to 8 Devices | Now |
| AT24C02B | 2 | 256 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, SOT23, dBGA2, DFN (MAP), XDFN*, Die/Wafer | Full Array Write Protection Cascade Up to 8 Devices | Replaces AT24C02 |
| AT24HC02B | 2 | 256 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, Die/Wafer | 1/2 Array Write Protection Cascade Up to 8 Devices | Replaces AT24C02A |
| AT34C02C | 2 | 256 x 8 | 1.7 | 0.4 | SOIC, TSSOP, dBGA2, DFN (MAP), Die/Wafer | Lower Half SW Write Protect with Reversible SW Protection | Replaces AT34C02/ AT34C02B |
| AT24C04B | 4 | 512 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, SOT23, dBGA2, DFN (MAP), XDFN*, Die/Wafer | Full Array Write Protection Cascade Up to 4 Devices | Replaces AT24C04 |
| AT24HC04B | 4 | 512 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, Die/Wafer | 1/2 Array Write Protection Cascade Up to 4 Devices | Replaces AT24C04A |
| AT24C08B | 8 | 1024 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, SOT23, dBGA2, DFN (MAP), XDFN*, Die/Wafer | Full Array Write Protection Cascade Up to 2 Devices | Replaces AT24C08A |
| AT24C16B | 16 | 2048 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, SOT23, dBGA2, DFN (MAP), XDFN*, Die/Wafer | Full Array Write Protection | Replaces AT24C16/ AT24C164 |
| AT24C32C | 32 | 4096 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | Full Array Write Protection Cascade Up to 8 Devices | Replaces AT24C32A |
| AT24C64B | 64 | 8192 x 8 | 1.8, 2.7 | 0.4 | PDIP, SOIC, TSSOP, Die/Wafer | 1/4 Array Write Protection, Cascadable Up to 8 Devices | Now |
| AT24C64C | 64 | 8192 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | Full Array Write Protection Cascade Up to 8 Devices | Replaces AT24C64A |
| AT24C128B | 128 | 16384 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | Full Array Write Protection Cascade Up to 8 Devices | Replaces AT24C128 |
| AT24C256B | 256 | 32768 x 8 | 1.8 | 1 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), Die/Wafer | Full Array Write Protection Cascade Up to 8 Devices | Replaces AT24C256 |
| AT24C512B | 512 | 65536 x 8 | 1.8, 2.5 | 1 | PDIP, SOIC, TSSOP, dBGA2, DFN (SAP), Die/Wafer | Full Array Write Protection Cascade Up to 8 Devices | Replaces AT24C512 |
| AT24C1024B | 1-Mbit | 131072 x 8 | 1.8, 2.5 | 1 | PDIP, SOIC, TSSOP, DFN (SAP), dBGA2, Die/Wafer | Full Array Write Protection Cascade Up to 4 Devices | Replaces AT24C1024 |
| **SPI Interface** | | | | | | | |
| AT25010A | 1 | 128 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25010B | 1 | 128 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 2Q2009 (Replaces AT25010A) |
| AT25020A | 2 | 256 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25020B | 2 | 256 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 2Q2009 (Replaces AT25020A) |

* Available on Request

*All Serial EEPROMs Parts are RoHS Compliant.*

# NONVOLATILE MEMORY (CONTINUED)

## Serial EEPROMs Standard Products (Continued)

| Part Number | Density (Kbits) | Organization | VCC (V) | Max Speed (MHz) | Package | Comments | Availability |
|---|---|---|---|---|---|---|---|
| **SPI Interface (Continued)** | | | | | | | |
| AT25040A | 4 | 512 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25040B | 4 | 512 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 2Q2009 (Replaces AT25040A) |
| AT25080A | 8 | 1024 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25080B | 8 | 1024 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 4Q2008 (Replaces AT25080A) |
| AT25160A | 16 | 2048 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25160B | 16 | 2048 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 4Q2008 (Replaces AT25160A) |
| AT25320A | 32 | 4096 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25320B | 32 | 4096 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 1Q2009 (Replaces AT25320A) |
| AT25640A | 64 | 8192 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25640B | 64 | 8192 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 1Q2009 (Replaces AT25640A) |
| AT25128A | 128 | 16384 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, DFN (SAP), Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now |
| AT25128B | 128 | 16384 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (SAP), Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 2Q2009 (Replaces AT25128A) |
| AT25256A | 256 | 32768 x 8 | 1.8, 2.7 | 20 | PDIP, SOIC, TSSOP, DFN (SAP), Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now (Replaces AT25HP256) |
| AT25256B | 256 | 32768 x 8 | 1.8 | 20 | PDIP, SOIC, TSSOP, dBGA2, DFN (SAP), Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | 2Q2009 (Replaces AT25256A) |
| AT25512 | 512 | 65536 x 8 | 1.8 | 20 | SOIC, TSOP, dBGA2, DFN, Die/Wafer | SPI Mode 0 and 3, SW/HW Write Protect | Now (Replaces AT25HP512) |
| **3-wire Interface** | | | | | | | |
| AT93C46D | 1 | 64 x 16/ 128 x 8 | 1.8 | 2 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), XDFN*, Die/Wafer | x8 or x16 Organization | Replaces AT93C46 |
| AT93C46E | 1 | 64 x 16 | 1.8 | 2 | PDIP, SOIC, TSSOP | x16 Organization | Replaces AT93C46A |
| AT93C56A | 2 | 128 x 16/ 256 x 8 | 1.8, 2.7 | 2 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), Die/Wafer | x8 or x16 Organization with Sequential Read | Now |
| AT93C66A | 4 | 256 x 16/ 512 x 8 | 1.8, 2.7 | 2 | PDIP, SOIC, TSSOP, dBGA2, DFN (MAP), Die/Wafer | x8 or x16 Organization with Sequential Read | Now |
| AT93C86A | 16 | 1024 x 16/ 2048 x 8 | 1.8, 2.7 | 2 | PDIP, SOIC, TSSOP, DFN (MAP), Die/Wafer | x8 or x16 Organization with Sequential Read | Now |

* Available on Request

*All Serial EEPROMs Parts are RoHS Compliant.*

# NONVOLATILE MEMORY (CONTINUED)

## Serial Flash Memory

### *DataFlash® Page Erase Serial Flash*

| Part Number | Density (Mbits) | VCC Min (V) | Interface Architecture | Speed (MHz) | SRAM/Buffers | Protection | Sector Lockdown | Serial Number | Packages | Availability |
|---|---|---|---|---|---|---|---|---|---|---|
| **Page-erase, Byte-alterable, 2.7 to 3.6V – Industrial Temperature Grades** | | | | | | | | | | |
| AT45DB011D | 1-Mbit | 2.7 | Serial (SPI Bus) | 66 | 1 (256/264 Bytes) | Individual Sector | x | x | S(8S2)-SS(8S1)-M(8MA1) | Now |
| AT45DB021D | 2-Mbit | 2.7 | Serial (SPI Bus) | 66 | 1 (256/264 Bytes) | Individual Sector | x | x | S(8S2)-SS(8S1)-M(8MA1) | Now |
| AT45DB041D | 4-Mbit | 2.7 | Serial (SPI Bus) | 66 | 2 (256/264 Bytes Each) | Individual Sector | x | x | S(8S2)-SS(8S1)-M(8M1-A) | Now |
| AT45DB081D | 8-Mbit | 2.7 | Serial (SPI Bus) | 66 | 2 (256/264 Bytes Each) | Individual Sector | x | x | S(8S2)-SS(8S1)-M(8M1-A) | Now |
| AT45DB161D | 16-Mbit | 2.7 | Serial (SPI Bus) | 66 | 2 (512/528 Bytes Each) | Individual Sector | x | x | S(8S2)-M(8M1-A)-T(28T)-C(24C1) | Now |
| AT45DB321D | 32-Mbit | 2.7 | Serial (SPI Bus) | 66 | 2 (512/528 Bytes Each) | Individual Sector | x | x | S(8S2)-MW(8MW)-M(8M1-A)-T(28T)-C(24C1) | Now |
| AT45DB642D | 64-Mbit | 2.7 | Dual/SPI/Rapid8® | 66/50 | 2 (1024/1056 Bytes Each) | Individual Sector | x | x | CN(8CN3)-T(28T) | Now |
| **Page-erase, Byte-alterable, Low Battery Voltage, 2.5 to 3.6V – Industrial Temperature Grades** | | | | | | | | | | |
| AT45DB041D-2.5 | 4-Mbit | 2.5 | Serial (SPI Bus) | 50 | 2 (256/264 Bytes Each) | Individual Sector | x | x | S(8S2)-SS(8S1)-M(8M1-A) | Now |
| AT45DB081D-2.5 | 8-Mbit | 2.5 | Serial (SPI Bus) | 50 | 2 (256/264 Bytes Each) | Individual Sector | x | x | S(8S2)-SS(8S1)-M(8M1-A) | Now |
| AT45DB161D-2.5 | 16-Mbit | 2.5 | Serial (SPI Bus) | 50 | 2 (512/528 Bytes Each) | Individual Sector | x | x | S(8S2)-M(8M1-A)-T(28T) | Now |
| **DataFlash Cards** | | | | | | | | | | |
| **Page-erase, Byte-alterable, 2.7 to 3.6V – Industrial Temperature Grades** | | | | | | | | | | |
| AT45DCB002D | 2-Mbyte | 2.7 | Serial (SPI Bus) | 66 | 2 (528 Bytes Each) | Individual Sector | x | x | 7DF1 | Now |
| AT45DCB004D | 4-Mbyte | 2.7 | Serial (SPI Bus) | 66 | 2 (528 Bytes Each) | Individual Sector | x | x | 7DF1 | Now |
| AT45DCB008D | 8-Mbyte | 2.7 | Serial (SPI Bus) | 66 | 2 (1056 Bytes Each) | Individual Sector | x | x | 7DF1 | Now |

### *Uniform Block Erase Serial Flash*

| Part Number | Density (Mbits) | VCC Min (V) | Interface Architecture | Speed (MHz) | Min Erase (Kbytes) | Protection | Sector Lockdown | Serial Number | Dual Bit I/O | Packages | Availability |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Uniform Block Erase Serial Flash, 2.7 to 3.6 – Industrial Temperature Grades** | | | | | | | | | | | |
| AT25F512A | 0.5 | 2.7 | Serial (SPI Bus) | 33 | 32 | Full Array | | | | SS(8S1)-Y4(8Y4) | Now |
| AT25F512B | 0.5 | 2.7 | Serial (SPI Bus) | 70 | 4 | Full Array | | x | | SS(8S1)-MA(8MA3) | Now |
| AT25FS010 | 1 | 2.7 | Serial (SPI Bus) | 50 | 4 | 1/32, 1/16, 1/8, 1/4, 1/2, Full Array | | | | SS(8S1)-Y7(8Y7) | Now |
| AT25F2048 | 2 | 2.7 | Serial (SPI Bus) | 33 | 64 | 1/4, 1/2, Full Array | | | | SS(8S1)-Y7(8Y7) | Now |
| AT25DF021 | 2 | 2.7 | Serial (SPI Bus | 70 | 4 | Individual Sector | | x | | SS(8S1)-M(8MA1) | Now |
| AT25DF041A | 4 | 2.7/2.3 | Serial (SPI Bus) | 70 | 4 | Individual Sector | | | | S(8S2)-SS(8S1)-M(8MA1) | Now |
| AT26DF081A | 8 | 2.7 | Serial (SPI Bus) | 70 | 4 | Individual Sector | | | | S(8S2)-SS(8S1) | Now |
| AT25DF081 | 8 | 1.65 | Serial (SPI Bus) | 66 | 4 | Individual Sector | | | | SS(8S1)-M(8MA1)-U(11U1) | Now |
| AT26DF161A | 16 | 2.7 | Serial (SPI Bus) | 70 | 4 | Individual Sector | | | | S(8S2)-SS(8S1)-M(8M1-A) | Now |
| AT25DF161 | 16 | 2.7 | Serial (SPI Bus)/Dual I/O | 100 | 4 | Individual Sector | x | x | x | S(8S2)-SS(8S1)-M(8MA1) | 4Q2008 |
| AT25DF321 | 32 | 2.7 | Serial (SPI Bus) | 70 | 4 | Individual Sector | | | | S(8S2)-S3(16S) | Now |
| AT25DF321A | 32 | 2.7 | Serial (SPI Bus)/Dual I/O | 100 | 4 | Individual Sector | x | x | x | S(8S2)-S3(16S)-M(8MA1) | 1Q2009 |
| AT25DF641 | 64 | 2.7 | Serial (SPI Bus)/Dual I/O | 100 | 4 | Individual Sector | x | x | x | MW(8MW)-S3(16S) | Now |

Notes:
1. Package Designator: **C – CBGA**: 9C1, 9-ball, 5 x 5 x 1.2 mm; 24C1, 24-ball, 6 x 8 x 1.4 mm. **CN – CASON**: 8CN3, 8-pad, 6 x 8 mm (Footprint Compatible with 8-pin SOIC, EIAJ). **M, MA, MW – MLF/UDFN/VDFN**: 8M1-A, 8-pad, 5 x 6 x 1.0 mm (Footprint Compatible to 8-pin SOIC, JEDEC); 8MA1, 8-pad 5 x 6 x 0.6 mm (UDFN); 8MA3, 8-pad, 2 x 3 x 0.6 mm (UDFN/USON); 8MW, 8-pad, 6 x 8 mm (MLF/VDFN) (Footprint Compatible to 8-pin EIAJ SOIC); 8MW1, 8-pad, 6 x 8 x 1.0 mm Very Thin Dual (VDFN). **R – SOIC**: 28R, 28-lead, 0.330 Wide (Not Recommended for New Designs). **SS – SOIC (Narrow)**: 8S1, 8-lead, 0.150" Wide. **S – SOIC**: 8S2, 8-lead, 0.208 Wide. **S3 – SOIC**: 16S, 16-lead, 0.300" Wide Body. **T – TSOP** (Type 1): 28T, 28-lead, 8 x 13.4 mm. **11U1 – WLCSP**, 11-ball. **Y7 – UTSAP**: 8Y7, 8-lead, 6 x 4.90 mm Body. **7DF1 –** 7-pad, 2.5 mm Pitch, 24 x 32 x 1.4 mm Body DataFlash Card.
2. **Green (RoHS Compliance)** Packaging Available for All Serial Flash Memory Products.

# POWER MANAGEMENT

## Power Management

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| AT73C202 | Power and Battery Management Unit for Wireless Devices | Yes | Now |
| AT73C203 | Power Management IC for Datacom Platforms | Yes | Now |
| AT73C204 | Power Management IC for Smartphones and PDAs | Yes | Now |
| AT73C205 | Smart Battery Charger | Yes | Now |
| AT73C206 | Audio and Power Management IC with Battery Charger for Smartphones | Yes | Now |
| AT73C209 | Power Management and Audio Interface for Portable Devices | Yes | Now |
| AT73C211 | Small Integration Power Management Unit | Yes | Now |
| AT73C212 | Medium Integration Power Management Unit | Yes | Now |
| AT73C213 | Audio Interface for Portable Devices | Yes | Now |
| AT73C214 | Small Integration Power Management Unit with Battery Charger | Yes | Now |
| AT73C221 | Power Management IC for 1.8V IO Chipset | Yes | Now |
| AT73C224 | Universal PMU for Li-Ion and Alkaline Battery Powered Device | Yes | Now |
| AT73C236 | 5V Input Supply Tiny Power Management for Wireless Modules | Yes | Now |
| AT73C237 | 5V Input Supply Tiny Power Management for Wireless Modules with Hibernate Mode | Yes | Now |
| AT73C238 | Tiny Power Management for Wireless Modules with Hibernate Mode | Yes | Now |
| AT73C239 | Tiny Power Management for Wireless Modules | Yes | Now |

# PROGRAMMABLE LOGIC

## Field Programmable Gate Arrays (FPGAs)

### *AT40K Series*

| Part Number | Description | Registers | Usable Gates | Frequency (MHz) | RAM (bits) | RoHS Compliance | Availability |
|---|---|---|---|---|---|---|---|
| **Standard Voltage (5V)** | | | | | | | |
| AT40K05 | 128 I/O Pins, 5-volt, Very Low Power | 256 | 5-10K | 250 | 2,048 | No | Now |
| AT40K10 | 192 I/O Pins, 5-volt, Very Low Power | 576 | 10-20K | 250 | 4,096 | No | Now |
| AT40K20 | 256 I/O Pins, 5-volt, Very Low Power | 1,024 | 20-30K | 250 | 8,192 | No | Now |
| AT40K40 | 384 I/O Pins, 5-volt, Very Low Power | 2,304 | 40-50K | 250 | 18,432 | No | Now |
| **Low-voltage Enhanced Performance (3.3V)** | | | | | | | |
| AT40K05AL | 128 I/O Pins, 3.3-volt, Very Low Power | 512 | 5-10K | 250 | 2,048 | Contact Atmel | Now |
| AT40K10AL | 192 I/O Pins, 3.3-volt, Very Low Power | 896 | 10-20K | 250 | 4,096 | Yes | Now |
| AT40K20AL | 256 I/O Pins, 3.3-volt, Very Low Power | 1,440 | 20-30K | 250 | 8,192 | Yes | Now |
| AT40K40AL | 384 I/O Pins, 3.3-volt, Very Low Power | 2,690 | 40-50K | 250 | 18,432 | Pb-free Only | Now |
| **Software/Hardware Tools** | | | | | | | |
| **Hardware** | | | | | | | |
| ATDH40M | AT40K Prototyping Board, 1 Daughter Board | | | | | | Now |
| ATDH40D84 | Daughter Board – 84PLCC | | | | | | Now |
| ATDH40D100 | Daughter Board – 100VQFP | | | | | | Now |
| ATDH40D144 | Daughter Board – 144TQFP | | | | | | Now |
| ATDH40D208 | Daughter Board – 208PQFP | | | | | | Now |

## FPGA Configuration Memory

### *FPGA Serial Configuration EEPROM*

| Part Number | Description | Memory Size | RoHS Compliance | Availability |
|---|---|---|---|---|
| **Standard (3.3 – 5V)** | | | | |
| AT17LV65 | 65-Kbit FPGA Configuration EEPROM | 65,536 x 1 | Yes(1) | Now |
| AT17LV128 | 128-Kbit FPGA Configuration EEPROM | 131,072 x 1 | Yes(1) | Now |
| AT17LV256 | 256-Kbit FPGA Configuration EEPROM | 262,144 x 1 | Yes | Now |
| AT17LV512 | 512-Kbit FPGA Configuration EEPROM | 524,288 x 1 | Yes | Now |
| AT17LV512A | 512-Kbit FPGA Configuration EEPROM, Altera Pinout | 524,288 x 1 | Yes | Now |
| AT17LV010 | 1-Mbit FPGA Configuration EEPROM | 1,048,576 x 1 | Yes | Now |
| AT17LV010A | 1-Mbit FPGA Configuration EEPROM, Altera Pinout | 1,048,576 x 1 | Yes | Now |
| AT17LV002 | 2-Mbit FPGA Configuration EEPROM | 2,097,152 x 1 | Yes | Now |
| AT17LV002A | 2-Mbit FPGA Configuration EEPROM, Altera Pinout | 2,097,152 x 1 | Yes | Now |
| AT17LV040 | 4-Mbit FPGA Configuration EEPROM | 4,194,304 x 1 | Yes | Now |

Note: 1. Replacement RoHS is the AT17LV256.

# PROGRAMMABLE LOGIC (CONTINUED)

## FPGA Configuration Memory (Continued)

### *FPGA Serial Configuration EEPROM (Continued)*

| Part Number | Description | Memory Size | RoHS Compliance | Availability |
|---|---|---|---|---|
| **Low-cost NTP (3.3V)** | | | | |
| AT17N256 | 256-Kbit FPGA Configuration Memory | 262,144 x 1 | No | Now |
| AT17N512 | 512-Kbit FPGA Configuration Memory | 524,288 x 1 | No | Now |
| AT17N010 | 1-Mbit FPGA Configuration Memory | 1,048,576 x 1 | No | Now |
| AT17N002 | 2-Mbit FPGA Configuration Memory | 2,097,152 x 1 | No | Now |
| AT17N040 | 4-Mbit FPGA Configuration Memory | 4,194,304 x 1 | No | Now |
| **Flash-based (3.3V)** | | | | |
| AT17F040 | 4-Mbit FPGA Configuration Flash | 4,194,304 x 1 | Yes | Now |
| AT17F040A | 4-Mbit FPGA Configuration Flash, Altera Pinout | 4,194,304 x 1 | Yes | Now |
| AT17F080 | 8-Mbit FPGA Configuration Flash | 8,388,608 x 1 | Yes | Now |
| AT17F080A | 8-Mbit FPGA Configuration Flash, Altera Pinout | 8,388,608 x 1 | Yes | Now |
| AT17F16 | 16-Mbit FPGA Configuration Flash | 16,777,216 x 1 | Yes | Now |
| AT17F16A | 16-Mbit FPGA Configuration Flash, Altera Pinout | 16,777,216 x 1 | Yes | Now |
| AT17F32 | 32-Mbit FPGA Configuration Flash | 33,554,432 x 1 | Yes | Now |
| AT17F32A | 32-Mbit FPGA Configuration Flash, Altera Pinout | 33,554,432 x 1 | Yes | Now |
| **In-System Programmable and Flash-based (3.3V)** | | | | |
| AT18F010 | 1-Mbit FPGA Configuration Flash with ISP, Pin Compatible with Xilinx Platform Flash | 1,048,576 x 1 | Yes | Now |
| AT18F002 | 2-Mbit FPGA Configuration Flash with ISP, Pin Compatible with Xilinx Platform Flash | 2,097,152 x 1 | Yes | Now |
| AT18F040 | 4-Mbit FPGA Configuration Flash with ISP, Pin Compatible with Xilinx Platform Flash | 4,194,304 x 1 | Yes | Now |
| AT18F080 | 8-Mbit FPGA Configuration Flash with ISP, Pin Compatible with Xilinx Platform Flash | 7,340,032 x 1 | Yes | Now |
| **Software/Hardware Tools** | | | | |
| ATDH2200E | Configurator Programming Kit, CPS ISP Software, 8-lead LAP and 20 PLCC Adapter | | | Now |
| AT18F-DK3 | Configurator Programming Kit for AT18F Family | | | Now |
| ATDH1151VPC | ISP Cable for AT18F with Converter | | | Now |
| ATF15XXDK3-SAX20 | 20-lead TSSOP Adapter with AT18F Converter to Be Used with ATF15XX-DK3 Kit | | | Now |
| ATDH2221 | 20-lead SOIC (8-lead DIP Adapter) | | | Now |
| ATDH2222 | 20-lead PLCC (8-lead DIP Adapter) | | | Now |
| ATDH2223 | 8-lead SOIC (8-lead DIP Adapter) | | | Now |
| ATDH2224 | 44-lead PQFP (8-lead DIP Adapter) | | | Now |
| ATDH2225 | ISP Download Cable | | | Now |
| ATDH2226A | 32-lead PQFP (8-lead DIP Adapter), Altera Pinout | | | Now |
| ATDH2227 | 44-lead PLCC (8-lead DIP Adapter) | | | Now |
| ATDH2227A | 44-lead PLCC (8-lead DIP Adapter), Altera Pinout | | | Now |
| ATDH2228 | 8-lead LAP (8-lead DIP Adapter) | | | Now |

# PROGRAMMABLE LOGIC (CONTINUED)

## Programmable Logic Devices (PLDs)

## *SPLDs/CPLDs*

| Part Number | Description | Packages | Speeds (ns) | RoHS Compliance | Availability |
|---|---|---|---|---|---|
| **5-volt Electrically Erasable** | | | | | |
| ATF16V8B | 8 FFs, 8 I/O Pins, Standard-power | 20-lead | 10, 15 | Yes | Now |
| ATF16V8BQ(L) | 8 FFs, 8 I/O Pins, Quarter-power, Low-power | 20-lead | 15 | Yes | Now |
| ATF16V8C | 8 FFs, 8 I/O Pins, Standard-power | 20-lead | 5-7.5 | Yes | Now |
| ATF16V8CZ | 8 FFs, 8 I/O Pins, Zero-power | 20-lead | 12, 15 | Yes | Now |
| ATF20V8B | 8 FFs, 8 I/O Pins, Standard-power | 24-, 28-lead | 10, 15 | Yes | Now |
| ATF20V8BQ(L) | 8 FFs, 8 I/O Pins, Quarter-power, Low-power | 24-, 28-lead | 15 | Yes | Now |
| ATF22V10C | 10 FFs, 10 I/O Pins, Standard-power | 24-, 28-lead | 5 - 15 | Yes | Now |
| ATF22V10CQ(Z) | 10 FFs, 10 I/O Pins, Quarter-power, Zero-power | 24-, 28-lead | 15-20 | Yes | Now |
| ATF22V10CZ | 10 FFs, 10 I/O Pins, Zero-power | 24-, 28-lead | 12, 15 | No | Now |
| ATF750C(L) | 20 FFs, 10 I/O Pins, Standard and Low-power | 24-, 28-lead | 7.5-15 | Yes | Now |
| ATF2500C | 48 FFs, 24 I/O Pins, Standard-power | 40-, 44-lead | 15-20 | Yes | Now |
| ATF1500A(L) | 32 Macrocell, Standard and Low-power, 5V | 44-lead | 7.5-20 | Yes | Now |
| ATF1502AS(L) | 32 Macrocell with ISP, Standard and Low-power, 5V | 44-lead | 7.5-25 | Yes | Now |
| ATF1504AS(L) | 64 Macrocell with ISP, Standard and Low-power, 5V | 44-, 68-, 84-, 100-lead | 7.5-20 | Yes | Now |
| ATF1508AS(L) | 128 Macrocell with ISP, Standard and Low-power, 5V | 84-, 100-, 128-lead | 7.5-20 | Yes | Now |
| **5-volt Electrically Erasable for Military and Aerospace Applications** | | | | | |
| ATF22V10B | 10 FFs, 10 I/O Pins, Standard-power | 24-, 28-lead | 15 | No | Now |
| ATF22V10C | 10 FFs, 10 I/O Pins, Standard-power | 24-, 28-lead | 10, 15 | No | Now |
| ATF750C | 20 FFs, 10 I/O Pins, Standard Power | 24-, 28-lead | 10, 15 | No | Now |
| ATF2500C | 48 FFs, 24 I/O Pins, Standard-power | 40-, 44-lead | 20 | No | Now |
| 5962-89841 (EPLD, DSCC Military) | 10 FFs, 10 I/O Pins, Standard-power | 24-, 28-lead | 10, 15 | No | Now |
| 5962-07201 (EPLD, DSCC Military) | 20 FFs, 10 I/O Pins, Standard Power | 24-, 28-lead | 10, 15 | No | Now |
| **Low-voltage (3.3V) Electrically Erasable** | | | | | |
| ATF16LV8C | 8 FFs, 8 I/O Pins, Low-voltage | 20-lead | 10, 15 | Yes | Now |
| ATF22LV10C | 10 FFs, 10 I/O Pins, Low-voltage | 24-, 28-lead | 10, 15 | Yes | Now |
| ATF22LV10CZ | 10 FFs, 10 I/O Pins, Low-voltage, Zero-power | 24-, 28-lead | 25 | No | Now |
| ATF22LV10CQZ | 10 FFs, 10 I/O Pins, Low-voltage, Quarter-power, Zero-power | 24-, 28-lead | 30 | Yes | Now |
| ATF750LVC | 20 FFs, 10 I/O Pins, 3.3V Standard Power | 24-, 28-lead | 15 | Yes | Now |
| ATF1502ASV | 32 Macrocells with ISP, 32 I/O Pins | 44-lead | 15 | Yes | Now |
| **Low-voltage, 3.3V Low Power** | | | | | |
| ATF1504ASV(L) | 64 Macrocells with ISP, Low-voltage and Low-power, 3.3V | 44-, 84-, 100-lead | 15-20 | Yes | Now |
| ATF1508ASV(L) | 128 Macrocells with ISP, Low-voltage and Low-power, 3.3V | 84-, 100-lead | 15-20 | Yes | Now |
| ATF1508RE | 128 Macrocells with ISP, High Speed, Ultra Low-power, 3.3V | 100-lead | 5, 7 | Yes | Now |
| **5-volt EPROM-based** | | | | | |
| ATV750B(L) | 20 FFs, 10 I/O Pins, Standard and Low-power | 24-, 28-lead | 15-10 | Yes | Military Only |
| **1.8-volt, Low Power CPLD** | | | | | |
| ATF1502BE | 32 Macrocells with ISP, 1.8-volt, High Speed and Very Low-power | 44-lead | 5, 7 | Yes | Now |
| ATF1504BE | 64 Macrocells with ISP, 1.8-volt, High Speed and Very Low-power | 44-, 100-lead | 5, 7 | Yes | Now |
| ATF1508BE | 128 Macrocells with ISP, 1.8-volt, High Speed and Very Low-power | 100-lead, 132-BGA | 5, 7 | Yes | Now |

# PROGRAMMABLE LOGIC (CONTINUED)

## Programmable Logic Devices (PLDs) (Continued)

### *SPLDs/CPLDs (Continued)*

| Part Number | Description | Availability |
|---|---|---|
| **Software** | | |
| ATDS1500PC | Licensed Version of Altium® Tools (VHDL, CUPL® Schematic) for ProChip Designer® | Now |
| ATDS1000PC | Atmel – WinCUPL (Includes CUPL, Compiler, Place and Route) | Now |
| ATDS15xxKSW1 | Annual License for Mentor Graphics® Precision® Synthesis and ModelSim® Tools for ProChip Designer | Now |
| **Hardware** | | |
| ATDH1150VPC | Atmel – ISP Kit Software and Cable (3 or 5V) | Now |
| ATF15xxDK3-SAJ44 | Atmel – 44-lead PLCC Adapter for ATF15xx-DK3 Kit | Now |
| ATF15xxDK3-SAJ84 | Atmel – 84-lead PLCC Adapter for ATF15xx-DK3 Kit | Now |
| ATF15xxDK3-SAA100 | Atmel – 100-lead TQFP Adapter for ATF15xx-DK3 Kit | Now |
| ATF15xxDK3-SAA128 | Atmel – 128-lead LQFP Adapter for ATF15xx-DK3 Kit | Now |
| **Development Kits** | | |
| ATF15xx-DK3 | CPLD Development Programming Kit (Includes Software, 2 Sample PLDs, 44-lead TQFP Socket Adapter and ISP Cable) | Now |

## Field Programmable System-Level Integration Circuits (FPSLIC®) – AVR, FPGA & SRAM on a Single Chip

### *AT94K Series*

| Part Number | FPGA Gates | FreeRAM (Bits) | FPGA I/O[1] | Program/Data SRAM (Bytes) | RoHS Compliance | Availability |
|---|---|---|---|---|---|---|
| AT94K05AL Micro FPSLIC | 5K | 2,048 | Up to 96 | 4-16K/4-16K | Yes | Now |
| AT94K10AL | 10K | 4,096 | Up to 192 | 20-32K/4-16K | Yes | Now |
| AT94K40AL | 40K | 18,432 | Up to 384 | 20-32K/4-16K | Yes | Now |
| **Software** | | | | | | |
| ATDS94KSW1 | AT94K Series Design System Annual Subscription | | | | | Now |
| **Hardware** | | | | | | |
| ATSTK94 | FPSLIC Starter Kit, Cable, Software (4-month Software License) | | | | | Now |
| ATSTK594 | FPSLIC Add-on Card to STK500 | | | | | Now |
| ATDH2225 | ISP Download Cable (For Configurator, Included in FPSLIC Starter Kit) | | | | | Now |
| ATDH94DNG | Hardware Dongle (If No Network Card to Key License Off) | | | | | Now |

Note: 1. There are up to 16 AVR programmable I/Os on each device, plus several dedicated AVR I/Os.

### *AT94S Secure Series*

| Part Number | FPGA Gates | FreeRAM (Bits) | FPGA I/O | Program/Data SRAM (Bytes) | RoHS Compliance | Availability |
|---|---|---|---|---|---|---|
| AT94S05AL Micro FPSLIC | 5K | 2,048 | Up to 95 | 4-16K/4-16K | Yes | Now |
| AT94S10AL | 10K | 4,096 | Up to 120 | 20-32K/4-16K | Yes | Now |
| AT94S40AL | 40K | 18,432 | Up to 384 | 20-32K/4-16K | Yes[1] | Now |

Note: 1. Available in lead-free; not RoHS compliant.

# Radio Frequency (RF) ICs

## Communications

### *Cellular/Infrastructure ICs*[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U2790B-N | 1000 MHz Quadrature Modulator for Digital Cellular Radio Systems, Very Low Power Consumption (Typically 150 mW), 0 dBm O/P Level | SO16 | Pb-free Only | Now |
| U2793B-N | 30 to 300 MHz Quadrature Modulator for Digital Cellular Radio Systems and Hybrid Fiber Coax Applications, Current Consumption 15 mA at 5V | SSO20 | Pb-free Only | Now |
| U2794B-N | 1000 MHz Quadrature Demodulator for Cellular Phones and Hybrid Fiber Coax Applications, Low DC Offset $f_{IN}$ = 70 to 1000 MHz | SSO20 | Pb-free Only | Now |

Note: 1. Demo boards are available on request.

### *Private Mobile Radios (PMRs)*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR0981 | Monolithic SiGe Tx/Rx Front-end IC, Frequency Range 300 MHz to 500 MHz; It Consists of a Low-Noise Amplifier (LNA) and a Power Amplifier (PA) with Good Power-added Efficiency (PAE) | PSSO20 | Pb-free Only | Now |

### *Corded Phone ICs*

#### High-end Telephone ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U4089B | Multi-standard Feature Phone Circuit with Voice Switch, Speech Circuit, Speaker Amplifier | SSO44 | Yes | Now |
| U4090B | Multi-standard Feature Phone Circuit with Voice Switch, Speech Circuit, DC/DC Converter, Speaker Amplifier | SSO44 | Yes | Now |
| U4091BM | Multi-standard Feature Phone IC, Bus Controlled, DTMF, Voice Switch, Interface to Cordless Phones and Answering Machines | SSO44 | Yes | Now |

#### Modular Telephone ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U4082B | Voice-switched Circuit, Fast Channel Switching for Quasi Duplex Operation | SO28 | Yes | Now |
| U4083B | Low-power Audio Amplifier, Low Current Consumption | SO8 | Yes | Now |

### *Cordless Phone ICs*

#### CT0/900 MHz

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| U3600BM | CT0 Programmable Transceiver, One-chip RF, IF and CT0, Programmable PLL, Adjustment Free | SSO44 | Pb-free Only | Now |

# RADIO FREQUENCY (RF) ICS (CONTINUED)

## Communications (Continued)

## DECT/DCT RF ICs

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATR2806 | 2.4 GHz Transceiver, Low IF Architecture, VCO and Voltage Regulator On-chip | QFN32 | Yes | Now |
| ATR2807 | 3.3 GHz VCO/PLL, Voltage Regulator | QFN32 | Yes | Now |
| ATR2808 | 2.9 GHz Transceiver, Non-blind-slot Operation, VCO and Voltage Regulator On-chip, Open Loop Modulation | QFN48 | Yes | Now |
| ATR2809 | 5.8 GHz Down-conversion Triple-balanced Mixer with High LO Rejection | QFN16 | Yes | Now |
| ATR2820 | 5.8 GHz Transceiver, Low IF Architecture, VCO and Voltage Regulator On-chip | QFN32 | Yes | Now |
| ATR7035 | 5.8 GHz PA with 27 dBm Output Power | QFN16 | Yes | Now |
| ATR7039 | Up-converting Mixer with Buffer Amplifier for 5.8 GHz Applications | QFN16 | Yes | Now |
| ATR7040 | 5.8 GHz PA with 25 dBm Output Power | QFN16 | Yes | Now |
| T2803 | 2.4 GHz Transceiver, Non-blind-slot Operation, VCO and Voltage Regulator On-chip, Open Loop Modulation, Wide Band 2.4 GHz TRX | QFN48 | Yes | Now |
| T7024 | DECT/DCT 2.4 GHz Tx/Rx Front End IC | PSSO20, QFN20 | Yes | Now |
| T7026 | 2.4 GHz LNA/PA | QFN20 | Yes | Now |

## Industrial, Scientific and Medical (ISM)

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| T7024 | ISM 2.4 GHz Tx/Rx Front End, $P_{OUT}$ = 23 dBm, NF = 2 dBm | PSSO20, QFN20 | Yes | Now |
| ATR2406 | Single-chip RF Transceiver, 2.400-2.483 GHz ISM Band, 3 dBm Output Power, 93 dBm Receiver Sensitivity, Fully Integrated Design, No External SAW Filter Needed, Digital Baseband Interface for Easy Interconnection to 8-bit AVR Flash Microcontrollers, 32-pin QFN (5 x 5 x 0.9 mm) | QFN32 | Yes | Now |

# Radio Frequency (RF) ICs (Continued)

## Smart RF[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA5423 | UHF Transceiver for ASK and FSK Systems, 315 MHz | QFN44 | Yes | Now |
| ATA5425 | UHF Transceiver for ASK and FSK Systems, 345 MHz | QFN44 | Yes | Now |
| ATA5428 | UHF Transceiver for ASK and FSK Systems, 433 MHz or 868 MHz | QFN44 | Yes | Now |
| ATA5429 | UHF Transceiver for ASK and FSK Systems, 915 MHz | QFN44 | Yes | Now |
| ATAR862x-yyy-TNz3 | Complete UHF ASK/FSK Transmitter, ROM Microcontroller and Transmitter PLL T5753 in One IC, Frequency Range: 310 to 330 MHz | SSO24 | Pb-free Only | Now |
| ATAR862x-yyy-TNz4 | Complete UHF ASK/FSK Transmitter, ROM Microcontroller and Transmitter PLL T5754 in One IC, Frequency Range: 429 to 439 MHz | SSO24 | Pb-free Only | Now |
| ATAR862x-yyy-TNz8 | Complete UHF ASK/FSK Transmitter, ROM Microcontroller and Transmitter PLL T5750 in One IC, Frequency Range: 868 to 928 MHz | SSO24 | Pb-free Only | Now |
| ATAM862x-TNz3 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5753 in One IC, Frequency Range: 310 to 330 MHz | SSO24 | Pb-free Only | Now |
| ATAM862x-TNz4 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5754 in One IC, Frequency Range: 429 to 439 MHz | SSO24 | Pb-free Only | Now |
| ATAM862x-TNz8 | Complete UHF ASK/FSK Transmitter, Flash Microcontroller and Transmitter PLL T5750 in One IC, Frequency Range: 868 to 928 MHz | SSO24 | Pb-free Only | Now |
| ATR2406 | Single-chip RF Transceiver, 2.400-2.483 GHz ISM Band, 3 dBm Output Power, 93 dBm Receiver Sensitivity, Fully Integrated Design, No External SAW Filter Needed, Digital Baseband Interface for Easy Interconnection to 8-bit AVR Flash Microcontrollers, 32-pin QFN (5 x 5 x 0.9 mm) | QFN32 | Yes | Now |
| ATA5723P3 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 315 MHz, 300 kHz Bandwidth, RSSI Pin Compatible to ATA5724, ATA5728 | SSO20 | Pb-free Only | Now |
| ATA5724P3 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 433 MHz, 300 kHz Bandwidth, RSSI Pin Compatible to ATA5723, ATA5728 | SSO20 | Pb-free Only | Now |
| ATA5728P6 | Highly Integrated UHF Remote Control Receiver, ASK/FSK, 868 MHz, 600 kHz Bandwidth, RSSI Pin Compatible to ATA5723, ATA5724 | SSO20 | Pb-free Only | Now |
| ATA5743P3 | UHF Remote Control Receiver, High FSK Sensitivity, 5 to 20V Automotive Compatible Data Interface, Data Clock Available for Manchester and Biphase Coded Signals, 300 kHz Bandwidth | SO20 SSO20 | Pb-free Only | Now |
| ATA5743P6 | UHF Remote Control Receiver, High FSK Sensitivity, 5 to 20V Automotive Compatible Data Interface, Data Clock Available for Manchester and Biphase Coded Signals, 600 kHz Bandwidth | SO20 SSO20 | Pb-free Only | Now |
| ATA5744N | UHF Remote Control Receiver for ASK Systems/PWM Mode | SO20, SSO20 | Pb-free Only | Now |
| ATA8201 | Transparent ASK/FSK UHF Receiver IC with Fast RKE/TPMS Switching Rate, Suited to 1 to 20 Kbits/s Manchester FSK with 4 Programmable Bit-rate Ranges, High FSK Sensitivity (-114 dBm at 2.4 Kbits/s), High Blocking Capability, 315 MHz | QFN24 | Pb-free Only | Now |
| ATA8202 | Transparent ASK/FSK UHF Receiver IC with Fast RKE/TPMS Switching Rate, Suited to 1 to 20 Kbits/s Manchester FSK with 4 Programmable Bit-rate Ranges, High FSK Sensitivity (-114 dBm at 2.4 Kbits/s), High Blocking Capability, 433 MHz | QFN24 | Pb-free Only | Now |
| ATA8401 | UHF ASK/FSK Transmitter, Frequency Range: 310 to 350 MHz, High Output Power | TSSOP8 | Pb-free Only | Now |
| ATA8402 | UHF ASK/FSK Transmitter, Frequency Range: 429 to 439 MHz, High Output Power | TSSOP8 | Pb-free Only | Now |
| ATA8403 | UHF ASK/FSK Transmitter, Frequency Range: 868 to 928 MHz, High Output Power | TSSOP8 | Pb-free Only | Now |
| ATA5760N3 | UHF ASK/FSK Receiver, Frequency Receiving Range: 868 to 870 MHz, Highest Integration Level in Market, IF Bandwidth 300 kHz | SO20 | Pb-free Only | Now |
| ATA5760N | UHF ASK/FSK Receiver, Frequency Receiving Range: 868 to 870 MHz, Highest Integration Level in Market, IF Bandwidth 600 kHz | SO20 | Pb-free Only | Now |

Note: 1. For Other Smart RF Products, see “Car Access” and “Tire Pressure Monitoring” sections.

# Radio Frequency (RF) ICs (Continued)

## Smart RF (Continued)[1]

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| ATA5761N | UHF ASK/FSK Receiver, Frequency Receiving Range: 902 to 928 MHz, Highest Integration Level in Market | SO20 | Pb-free Only | Now |
| U2741B | UHF Remote Control Transmitter for ASK and FSK Systems, On-chip PLL Transmitter with Integrated VCO | SSO16 | Pb-free Only | Now |
| ATA2745 | UHF ASK Transmitter, Frequency Range: 310 to 440 MHz, Supply Voltage: 2.2 to 4V, Temperature Range: -40° C to +85° C | SSO16 | Pb-free Only | Now |
| ATA3741P2 | UHF Remote Control Receiver for ASK and FSK Systems, All RF Components Integrated, IF Bandwidth 300 kHz | SO20 | Pb-free Only | Now |
| ATA3741P3 | UHF Remote Control Receiver for ASK and FSK Systems, All RF Components Integrated, IF Bandwidth 600 kHz | SO20 | Pb-free Only | Now |
| ATA3742P3 | UHF Remote Control Receiver, RSSI Output for ASK and FSK Systems | SO20 | Pb-free Only | Now |
| ATA3745 | UHF ASK Receiver, Frequency Range: 310 to 440 MHz, Supply Voltage: 4.5 to 5.5V, Temperature Range: -40° C to 85° C | SO20 | Pb-free Only | Now |
| **Evaluation Kits and Tools** | | | | |
| ATA5723-DK | Receiver Board ATA5723, 315 MHz, no SAW Filter | | | Now |
| ATA5724-DK | Receiver Board ATA5724, 433 MHz, no SAW Filter | | | Now |
| ATA5728-DK | Receiver Board ATA5728, 868 MHz, no SAW Filter | | | Now |
| ATA8201-EK | Evaluation Board for Flexible RF Receiver ATA8201, 315 MHz | | | Now |
| ATA8202-EK | Evaluation Board for Flexible RF Receiver ATA8202, 433 MHz | | | Now |
| ATAB-SPI-LPT | SPI to Parallel Port (LPT) Interface Board | | | Now |
| ATAB5423-3-B | UHF ASK/FSK Transceiver Basestation Board for 315 MHz | | | Now |
| ATAB5428-4-B | UHF ASK/FSK Transceiver Basestation Board for 433.92 MHz | | | Now |
| ATAB5428-8-B | UHF ASK/FSK Transceiver Basestation Board for 868.3 MHz | | | Now |
| ATAB5429-9-B | UHF ASK/FSK Transceiver Basestation Board for 915 MHz | | | Now |
| ATAB5423-3-WB | UHF TRx Application Board, 315 MHz | | | Now |
| ATAB5428-4-WB | UHF TRx Application Board, 433 MHz | | | Now |
| ATAB5428-8-WB | UHF TRx Application Board, 868 MHz | | | Now |
| ATAB5429-9-WB | UHF TRx Application Board, 915 MHz | | | Now |
| ATAB-RFMB | RF Mainboard with AVR Microcontroller and Interfaces | | | Now |
| ATAKSTK511-8 | AVR-based RF Transmitter & Receiver Starter Kit, 868 MHz, Tx Using T5750 and Rx Using T5760 | | | Now |
| ATAKSTK511-9 | AVR-based RF Transmitter & Receiver Starter Kit, 915 MHz, Tx Using T5750 and Rx Using T5761 | | | Now |
| ATAKSTK512-3 | AVR-based RF Transmitter & Receiver Starter Kit with AES Encryption, 315 MHz, Tx Using T5753 and Rx Using T5743 | | | Now |
| ATAKSTK512-4 | AVR-based RF Transmitter & Receiver Starter Kit with AES Encryption, 434 MHz, Tx Using T5754 and Rx Using T5743 | | | Now |
| ATAB5744-N3 | ASK Receiver Board ATA5744N, 315 MHz, No SAW Filter | | | Now |
| ATAB5744-N4 | ASK Receiver Board ATA5744N, 433.92 MHz, No SAW Filter | | | Now |
| ATAB5744-S3 | ASK Receiver Board ATA5744N, 315 MHz, SAW Filter | | | Now |
| ATAB5744-S4 | ASK Receiver Board ATA5744N, 433.93 MHz, SAW Filter | | | Now |
| ATAB5743P3-S3 | ASK/FSK Receiver Board ATA5743, 315 MHz, 300 kHz BW, SAW Filter | | | Now |
| ATAB5743P3-S4 | ASK/FSK Receiver Board ATA5743, 433.92 MHz, 300 kHz BW, SAW Filter | | | Now |
| ATAB5743P6-S3 | ASK/FSK Receiver Board ATA5743, 315 MHz, 600 kHz BW, SAW Filter | | | Now |
| ATAB5743P6-S4 | ASK/FSK Receiver Board ATA5743, 433.92 MHz, 600 kHz BW, SAW Filter | | | Now |

Note: 1. For Other Smart RF Products, **see "Car Access" and "Tire Pressure Monitoring"** sections.

# Radio Frequency (RF) ICs (Continued)

## Smart RF (Continued)[1]

| Part Number | Description | Availability |
|---|---|---|
| **Evaluation Kits and Tools (Continued)** | | |
| ATAB5750-8 | ASK/FSK Transmitter Board T5750, 868.3 MHz | Now |
| ATAB5750-9 | ASK/FSK Transmitter Board T5750, 915 MHz | Now |
| ATAB5753 | ASK/FSK Transmitter Board T5753, 315 MHz | Now |
| ATAB5754 | ASK/FSK Transmitter Board T5754, 433.92 MHz | Now |
| ATAB5760-N | ASK/FSK Receiver Board ATA5760N, 868.3 MHz, No SAW Filter | Now |
| ATAB5760-S | ASK/FSK Receiver Board ATA5760N, 868.3 MHz, SAW Filter | Now |
| ATAB5761-N | ASK/FSK Receiver Board ATA5761N, 915 MHz, No SAW Filter | Now |
| ATAB8401 | RF Transmitter Board ATA8401, 315 MHz | Now |
| ATAB8402 | RF Transmitter Board ATA8402, 433 MHz | Now |
| ATAB8403-8 | RF Transmitter Board ATA8403, 868 MHz | Now |
| ATAB8403-9 | RF Transmitter Board ATA8403, 915 MHz | Now |
| ATR2406-DEV-KIT2 | RF Evaluation Kit for ATR2406 Includes Reference Design Based on ATR2406 and ATmega88 | Now |
| ATR2406-DEV-BOARD | Low-cost Reference Design Board for ATR2406 | Now |

Note: 1. For Other Smart RF Kits and Tools, **see "Car Access" and "Tire Pressure Monitoring"** sections.

## Z-Link® – 802.15.4/ZigBee Solutions

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| AT86RF230 | Fully Integrated, Low-power 2.4 GHz Transceiver Designed for Low-cost IEEE 802.15.4-based as Well as Wireless Networks Application, Including ZigBee; Receive Sensitivity Better than -101 dBm, Programmable Transmit Power Up to +3 dBm, Integrated Crystal Oscillator, LNA, Tx/Rx Switch, PLL-loop Filter; Automatic VCO & Filter Calibration, SPI Interface; Offering Easy System Design in Approach; Residing in a 32 Low Profile, Lead-free QFN Package | Yes | Now |
| AT86RF212 | The AT86RF212 is a Low-power, Low-voltage 800/900 MHz Transceiver Specially Designed for Low-cost IEEE 802.15.4, ZigBee, and High Data Rate ISM Applications. The AT86RF212 is a True SPI-to-Antenna Solution. RF-critical Components Except the Antenna, Crystal, and De-coupling Capacitors are Integrated On-chip. MAC and AES Hardware Accelerators Improve Overall System Power Efficiency and Timing | Yes | Now |
| AT86RF236 | The AT86RF231 is a Feature-rich, Low-power 2.4 GHz Radio Transceiver Designed for Industrial and Consumer ZigBee/IEEE 802.15.4 and High Data Rate 2.4 GHz ISM Band Applications. The Radio Transceiver is a True SPI-to-antenna Solution. All RF-critical Components Except the Antenna, Crystal and De-coupling Capacitors are Integrated On-chip. | Yes | Now |
| **Evaluation Kits** | | | |
| Evaluation Kits are Available for Pre-qualified Customers | | | Contact Atmel for Availability |

Note: 1. Additional Z-Link products can be found in the **"MCU Wireless – 802.15.4/6LoWPAN/ZigBee® Solutions" section on page 15**.

# SECURITY SOLUTIONS ICS

## Crypto & Secure Memories

### *CryptoMemory® – Embedded (2-wire Interface)*
### *CryptoMemory – Smart Cards (ISO 7816-3, T = 0)*

| Part Number | Description | Organization (Bytes) | Voltage | RoHS Compliance | Availability |
|---|---|---|---|---|---|
| AT88SC0104CA | 1-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-Wire I2C-Compliant Protocols | 4 x 32 | 2.7-5.5 | Yes | Now |
| AT88SC0204CA | 2-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-Wire I2C-Compliant Protocols | 4 x 64 | 2.7-5.5 | Yes | Now |
| AT88SC0404CA | 4-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-Wire I2C-Compliant Protocols | 4 x 128 | 2.7-5.5 | Yes | Now |
| AT88SC0808CA | 8-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-Wire I2C-Compliant Protocols | 8 x 128 | 2.7-5.5 | Yes | Now |
| AT88SC0104C | 1-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 4 x 32 | 2.7-5.5 | Yes | Now |
| AT88SC0204C | 2-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 4 x 64 | 2.7-5.5 | Yes | Now |
| AT88SC0404C | 4-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 4 x 128 | 2.7-5.5 | Yes | Now |
| AT88SC0808C | 8-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 8 x 128 | 2.7-5.5 | Yes | Now |
| AT88SC1616C | 16-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 16 x 128 | 2.7-5.5 | Yes | Now |
| AT88SC3216C | 32-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 16 x 256 | 2.7-5.5 | Yes | Now |
| AT88SC6416C | 64-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 16 x 512 | 2.7-5.5 | Yes | Now |
| AT88SC12816C | 128-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 16 x 1024 | 2.7-5.5 | Yes | Now |
| AT88SC25616C | 256-Kbit User Memory with Authentication and Encryption, ISO 7816-3 Asynchronous and Synchronous 2-wire Protocols | 16 x 2048 | 2.7-5.5 | Yes | Now |
| **Evaluation/Development Kits** | | | | | |
| AT88SC-ADK1 Aris++ | 1K to 256K CryptoMemory Demonstration, Evaluation and Full Development Kit for Embedded AVR | | | | Now |
| AT88SC-ADK2 Aris+ | 1K to 256K Low Cost CryptoMemory Complete Development Kit | | | | Now |
| AT88SC-DK1 Aris | 1K to 256K CryptoMemory Adaptor and Development Kit for Embedded Applications | | | | Now |
| AT88SC-SDK1 Tuema | 1K to 256K CryptoMemory Development Kit for Smart Cards | | | | Now |

## *Embedded Crypto Solutions CD*

| Part Number | Description | Availability |
|---|---|---|
| AT88INFO-CD | Single Source for Information on CryptoMemory, CryptoRF, CryptoCompanion, RF Reader, and Kit Information | Now |

# SECURITY SOLUTIONS ICS (CONTINUED)

## Crypto & Secure Memories (Continued)

### *Secure Memory – Smart Cards (ISO 7816-3, T = 0)*

| Part Number | Description | Organization | Voltage | RoHS Compliance | Availability |
|---|---|---|---|---|---|
| **Secure Memory ICs with Password** | | | | | |
| AT88SC102 | 1K EEPROM with Password Security, Two 512-bit Zones | 2 (512 x 1) | 2.7 - 5.5 | Yes | Now(1) |
| AT88SC1003 | 1K EEPROM with Password Security, Three Zones | 2 (256 x 1) + 512 x 1 | 2.7 - 5.5 | Yes | Now(1) |
| **Secure Memory ICs with Password and Authentication** | | | | | |
| AT88SC153 | 1.5K EEPROM with Authentication, Three 512-bit Zones | 3 (512 x 1) | 2.7 - 5.5 | Yes | Now(1) |
| AT88SC1608 | 16K EEPROM with Authentication, Eight 2-Kbit Zones | 8 (2K x 1) | 2.7 - 5.5 | Yes | Now(1) |

Note: 1. Not Recommended for New Designs.

### *CryptoCompanion (Host Side Security IC, 2-wire Interface) for CryptoMemory and CryptoRF*

| Part Number | Features | EEPROM Memory (Kbits) | Voltage | RoHS Compliance | Availability |
|---|---|---|---|---|---|
| AT88SC016 | Secure Host Side Key Storage and Management for CryptoMemory and Crypto RF, RNG, SHA-1 | 4 | 2.7 - 3.3 | Yes | Now |

## Embedded Security

### *Trusted Platform Module (TPM)/PC Security*

| Part Number | Description | I/O Interface | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT97SC3203 | Fully V1.2 TCG-compliant Security Processor, Microsoft Windows Vista® Logo Compliant, Secure Key Generation and Storage (15 to 21 RSA® Keys, Depending on Key Mix and Size), RNG, SHA-1, 2048/RSA Sign-in 500 ms | LPC | Yes | Now |
| AT97SC3203S | Fully V1.2 TCG-compliant Security Processor, Optimized for Embedded Systems, Secure Key Generation and Storage (15 to 21 RSA Keys, Depending on Key Mix and Size), RNG, SHA-1, 2048/RSA Sign-in 500 ms | SMBus | Yes | Now |
| AT97SC3204 | Fully V1.2 TCG-compliant Security Processor, Microsoft Windows Vista Logo Compliant, Secure Key Generation and Storage (15 to 21 RSA Keys, Depending on Key Mix and Size), RNG, SHA-1, 2048/RSA Sign-in 200 ms | LPC | Yes | Now |
| AT97SC3204T | Fully V1.2 TCG-compliant Security Processor, Optimized for Embedded Systems, Secure Key Generation and Storage (15 to 21 RSA Keys, Depending on Key Mix and Size), RNG, SHA-1, 2048/RSA Sign-in 200 ms, I2C-compatible | TWI | Yes | Now |
| AT97SC3204P | Fully V1.2 TCG-compliant Security Processor, Optimized for Embedded Systems, Secure Key Generation and Storage (15 to 21 RSA Keys, Depending on Key Mix and Size), RNG, SHA-1, 2048/RSA Sign-in 200 ms | SPI | Yes | Now |

# SECURITY SOLUTIONS ICS (CONTINUED)

## RF Identification

### *RF Identification/Immobilization – 100 - 150 kHz*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| **Transponder ICs 125 kHz (100 to 150 kHz)** | | | | |
| e5561 | RFID Read/Write IDIC for Highly Sophisticated Security Demands “Copy Protection”, 256-bit R/W Memory, Up to 128-bit Secret Key for Authentication Password Protection, Different Codings and Bit-rates | Wafer | Pb-free Only | Now |
| ATA5567 | RFID Read/Write IDIC for Contactless Identification, Backward Compatible to 5551 and 5557, 64-bit Unique TAG ID, Improved Operating Performance, High Temperature Data Retention, Optional 75 pF Capacitor On-chip, Programmable | Sawn Wafer on Foil, DIT, SO8, Micromodule | Pb-free Only | Now |
| ATA5558 | RFID Read/Write IDIC for Contactless Identification, 1-Kbit Read/Write IC with Integrated Anticollision Functionality, ASK Modulation | Sawn Wafer on Foil, Wafer, DIT | Pb-free Only | Now |
| ATA5570 | RFID Read/Write IDIC for Contactless Identification, Multifunctional 330-bit Read/Write, External Resistor-sensor Input, Threshold Detection | Wafer, DIT, SO8 | Pb-free Only | Now |
| ATA5577M1 | RFID Read/Write IDIC for Contactless Identification, Backward Compatible to 5551, 5557 and 5567 in Most Common Modes. 64-bit Unique TAG ID, Improved Operating Performance, High Temperature Data Retention, up to 330 pF Trimmed Capacitor On-chip. ISO 11784 and ISO 11785 Compatible | Sawn Wafer on Foil, DIT, Micromodule | Pb-free Only | Now |
| ATA5577M2 | RFID Read/Write IDIC with Gold-bumped Mega Pads for Contactless Identification, Backward Compatible to 5551, 5557 and 5567 in Most Common Modes. 64-bit Unique TAG ID, Improved Operating Performance, High Temperature Data Retention, up to 330 pF Trimmed Capacitor On-chip. ISO 11784 and ISO 11785 Compatible | Sawn Gold-bumped Wafer on Foil, DIT | Pb-free Only | Now |
| **Reader IC** | | | | |
| U2270B | Read/Write Base Station IC, 100 to 150 kHz Carrier Frequency, Amplitude Modulation Typically Up to 5-Kbaud, Manchester/Biphase RF/32, RF/64, RF/128 | SO16 | Pb-free Only | Now |
| **Transponders** | | | | |
| TK5551 | Read/Write Transponder, Option Configurable, 125 kHz, AOR Feature for Multi-tag Access | Plastic Package (PP) | Pb-free Only | Now |
| TK5561 | Read/Write Transponder for Highly Sophisticated Security Applications, 125 kHz Carrier Frequency, Encryption Algorithm, 9 x 32-bit EEPROM, Low-power/Low-voltage CMOS, No Battery Supply, Small Size, Manchester/Biphase, RF/32, RF/64 | Plastic Package (PP) | Pb-free Only | Now |
| ATA5558 | RFID Read/Write IDIC Transponder for Contactless Identification, 1-Kbit Read/Write IC with Integrated Anticollision Functionality, ASK Modulation | Plastic Package PAE (Formerly PP) | Pb-free Only | Now |
| ATA5577M1 | RFID Read/Write IDIC Transponder for Contactless Identification, Backward Compatible to 5551, 5557 and 5567 in Most Common Modes. 64-bit Unique TAG ID, Improved Operating Performance, High Temperature Data Retention | Plastic Package PAE (Formerly PP) | Pb-free Only | 4Q2008 |
| U3280M | Transponder Interface for Microcontroller, Contactless Power Supply and Communication Interface, 32 x 16-bit EEPROM, Serial Interface, Field Clock Extractor, Field and Gap Detection for Wake-up and Data | SSO16 | Pb-free Only | Now |
| U9280M | 4-bit Microcontroller Plus Transponder Front End for Combination of Remote Control and Immobilizer Functions, ROM Mask Version for >200 kpcs/a, Maximum Flexibility for Algorithm/Protocol of Data Transfer, Well Suitable in Combination with the U2741B, Integrated Power Management (Battery or RF-field Power Supply) | SSO20 | Pb-free Only | Now |

# Security Solutions ICs (Continued)

## RF Identification (Continued)

### *RF Identification/Immobilization – 100 - 150 kHz (Continued)*

| Part Number | Description | Package | RoHS Compliance | Availability |
|---|---|---|---|---|
| **Micromodule** | | | | |
| ATA5567 | NOA3 Module, RFID Read/Write IDIC for Contactless Identification, Backward Compatible to 5551 and 5557, 64-bit Unique TAG ID | Micromodule | Pb-free Only | Now |
| ATA5577M1 | NOA3 Module, RFID Read/Write IDIC Module for Contactless Identification, Backward Compatible to 5551, 5557 and 5567 in Most Common Modes. 64-bit Unique TAG ID, Improved Operating Performance, High Temperature Data Retention, 330 pF Capacitor Integrated in Module | Micromodule | Pb-free Only | 4Q2008 |
| **Development/Evaluation Kits and Tools** | | | | |
| TMEB8704 | Design Kit for 125 kHz, Supports the x55xx Family Including the 5561 Authentication | | | Now |
| ATAK2270 | Design Kit for 125 kHz, Supports the x55xx Family Including the ATA5567 Extended Mode | | | Now |
| ATAK2270UG | Kit for Upgrade from TMEB8704 to ATAK2270 | | | Now |
| ATA2270-EK1 | Evaluation Kit for 125 kHz, Supports the ATA5567 Extended Mode, ATA5577, ATA5558, Animal-ID, Stand-alone and PC-operated | | | Now |
| ATAB5570 | Development Board for 125 kHz, Supports the ATA5570 | | | Now |

# SECURITY SOLUTIONS ICS (CONTINUED)

## Secure Microcontrollers

### *Secure Microcontrollers – AT90SC Family*[1]

| Part Number | RAM (Kbytes) | ROM (Kbytes) | Flash (Kbytes) | EEPROM (Kbytes) | Voltage (V) | Asym. Crypto Engine | Other Features | Availability |
|---|---|---|---|---|---|---|---|---|
| **AVR-based** | | | | | | | | |
| AT90SC6418RU | 2 | 64 | N/A | 18 | 2.7 - 5.5 | No | RNG, One Timer | Now |
| AT90SC12036RU | 3 | 120 | N/A | 36 | 2.7 - 5.5 | No | RNG, One Timer | Now |
| **secureAVR®-based** | | | | | | | | |
| AT90SC9604RU | 2 | 96 | N/A | 4 | 2.7 - 5.5 | No | Hardware DES/TDES, CRC, Common Criteria EAL4+, EMVCo Approval | Now |
| AT90SC9608RT | 4 | 96 | N/A | 8 | 2.7 - 5.5 | No | Hardware DES/TDES, CRC, Common Criteria EAL4+, EMVCo Approval | Now |
| AT90SC9618RT | 4 | 96 | N/A | 18 | 2.7 - 5.5 | No | Hardware DES/TDES, CRC, Common Criteria EAL4+, EMVCo Approval | Now |
| AT90SC16018RU | 4 | 160 | N/A | 18 | 2.7 - 5.5 | No | Hardware DES/TDES, CRC, EMVCo Target | 1Q2009 |
| AT90SC19236RU | 4 | 192 | N/A | 36 | 1.62 - 5.5 | No | Hardware DES/TDES, CRC | Now |
| AT90SC3636U | 6 | N/A | 36 | 36 | 1.62 - 5.5V | No | Hardware DES/TDES, CRC | Now |
| AT90SC25672RU | 6 | 256 | N/A | 72 | 1.62 - 5.5 | No | Hardware DES/TDES, CRC | Now |
| AT90SC128112RU | 4 | 128 | N/A | 112 | 1.62 - 5.5 | No | RNG, CRC | Now |
| AT90SC288144RU | 6 | 288 | N/A | 144 | 1.62 - 5.5 | No | Hardware DES/TDES, CRC | Now |
| **secureAVR-based with PKI** | | | | | | | | |
| AT90SC1818CT | 5 | N/A | 18 | 18 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC | Now |
| AT90SC3636CT-USB | 8 | N/A | 36 | 36 | 1.62 - 5.5 | Yes | On-chip USB V2.0 Full-speed Interface, Hardware DES/TDES, CRC | Now |
| AT90SC9618RCT | 4 | 96 | N/A | 18 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, Common Criteria EAL4+, EMVCo | Now |
| AT90SC12836RCT | 5 | 128 | N/A | 36 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, Common Criteria EAL4+, ZKA, EMVCo Approvals | Now |
| AT90SC13612RCU | 4.5 | 136 | N/A | 12 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, SPI, Common Criteria EAL5+, EMVCo and ZKA Targets | Now |
| AT90SC20818RCU | 4.5 | 208 | N/A | 18 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, Common Criteria EAL5+ and EMVCo Targets | Now |
| AT90SC24036RCU | 6 | 240 | N/A | 36 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, Common Criteria EAL5+ and EMVCo Targets | 1Q2009 |
| AT90SC25672RCT | 8 | 256 | N/A | 72 | 1.62 - 5.5 | Yes | Hardware DES/TDES, CRC, Common Criteria EAL4+, EMVCo Targets | Now |
| AT90SC25672RCT-USB | 8 | 256 | N/A | 72 | 1.62 - 5.5 | Yes | On-chip USB V2.0 Full-speed Interface, Hardware DES/TDES, CRC, Common Criteria EAL4+ | Now |
| AT90SC28848RCU | 8 | 288 | N/A | 48 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, SPI, Common Criteria EAL5+, ZKA Approval, EMVCo Target | Now |
| AT90SC28872RCU | 8 | 288 | N/A | 72 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, SPI, Common Criteria EAL5+, ZKA Approval, EMVCo Target | Now |
| AT90SC144144CT | 8 | N/A | 144 | 144 | 1.62 - 5.5 | Yes | Hardware DES/TDES, CRC, SPI, Common Criteria EAL4+ Target | Now |
| AT90SC320288RCT | 8 | 320 | N/A | 288 | 1.62 - 5.5 | Yes | Hardware DES/TDES, CRC, SPI, Common Criteria EAL4+ Target | Now |

Note: 1. Green (RoHS Compliance) Packaging Available for All AT90SC Products.

# SECURITY SOLUTIONS ICS (CONTINUED)

## Secure Microcontrollers (Continued)

### *Secure Microcontrollers – AT90SC Family (Continued)*[1]

| Part Number | RAM (Kbytes) | ROM (Kbytes) | Flash (Kbytes) | EEPROM (Kbytes) | Voltage (V) | Asym. Crypto Engine | Other Features | Availability |
|---|---|---|---|---|---|---|---|---|
| **secureAVR-based, Contactless** | | | | | | | | |
| AT90SC6404RFT | 1.2 | 64 | N/A | 4 | N/A | No | ISO 14443 B Contactless Interface, Hardware DES/TDES, CRC, EMVCo Approval | Now |
| AT90SC6408RFT | 1.2 | 64 | N/A | 8 | 2.7 - 5.5 | No | Hardware DES/TDES, CRC, Common Criteria EAL4+, EMVCo Approval, Contact and ISO 14443 B Contactless Interfaces | Now |
| AT90SC12872RCFT | 5.2 | 128 | N/A | 72 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, Common Criteria EAL5+, EMVCo Approval, Contact and ISO 14443 B Contactless Interfaces | Now |
| AT90SC256144RCFT | 8.2 | 256 | N/A | 144 | 2.7 - 5.5 | Yes | Hardware DES/TDES, CRC, Common Criteria EAL5+ Target, Contact and ISO 14443 B Contactless Interfaces | Now |
| **Evaluation/Development Kits: Emulation Platform Support** | | | | | | | | |
| ATV™ 2/ATV4/ATV4P-xxxx | Voyager™ Development Tool Base Platform for AT90SC Family Microprocessors | | | | | | | Now |

Note: 1. Green (RoHS Compliance) Packaging Available for All AT90SC Products.

### *Secure Microcontrollers – AT90M Family*[1]

| Part Number | RAM (Kbytes) | ROM (Kbytes) | Flash (Kbytes) | EEPROM (Kbytes) | Voltage (V) | Asym. Crypto Engine | Other Features | Availability |
|---|---|---|---|---|---|---|---|---|
| **secureAVR-based, Machine to Machine** | | | | | | | | |
| AT90M19236RU | 4 | 192 | N/A | 36 | 1.62 - 5.5 | No | Hardware DES/TDES, CRC, Extended Temperature Range -40° C/+105° C | 4Q2008 |
| AT90M25672RU | 6 | 256 | N/A | 72 | 1.62 - 5.5 | No | Hardware DES/TDES, CRC, Extended Temperature Range -40° C/+105° C | Now |
| AT90M288144RU | 6 | 288 | N/A | 144 | 1.62 - 5.5 | No | Hardware DES/TDES, CRC, Extended Temperature Range -40° C/+105° C | 4Q2008 |

Note: 1. Green (RoHS Compliance) Packaging Available for All AT90SC Products.

### *Secure Microcontrollers – AT91SC Family*[1]

| Part Number | RAM (Kbytes) | ROM (Kbytes) | Flash (Kbytes) | EEPROM (Kbytes) | Voltage (V) | Asym. Crypto Engine | Other Features | Availability |
|---|---|---|---|---|---|---|---|---|
| AT91SC512384RCT | 24 | 512 | N/A | 384 | 1.62 - 5.5 | Yes | Hardware DES/TDES, CRC 16 and 32, SPI, USB 2.0 Full Speed or USB IC, NAND Flash Interface, SWP Interface | Now |
| AT91SC512384RCT-8M | 24 | 512 | N/A | 384 | 1.62 - 5.5 | Yes | Hardware DES/TDES, CRC 16 and 32, SPI, USB 2.0 Full Speed or USB IC, External Flash, SWP Interface | Now |
| AT91SC512384RCT-128M | 24 | 512 | N/A | 384 | 1.62 - 5.5 | Yes | Hardware DES/TDES, CRC 16 and 32, SPI, USB 2.0 Full Speed or USB IC, External Flash, SWP Interface | Now |
| AT91SC192192CT-USB | 24 | N/A | 192 | 192 | 1.62 - 5.5 | Yes | Hardware DES/TDES, CRC 16 and 32, SPI, USB 2.0 Full Speed or USB IC, NAND Flash Interface, SWP Interface | Now |
| AT91SC464384RCU | 18 | 464 | N/A | 384 | 1.62 - 5.5 | Yes | Hardware DES/TDES, SWP Interface, Common Criteria EAL4+, EMVCo Approval | Now |
| **Evaluation/Development Kits: Emulation Platform Support** | | | | | | | | |
| ATV4P-xxxx | Voyager Development Tool Base Platform for AT91SC Family Microprocessors | | | | | | | Now |

Note: 1. Green (RoHS Compliance) Packaging Available for All AT91SC Products.

# SECURITY SOLUTIONS ICS (CONTINUED)

## Secure Microcontrollers (Continued)

### *Secure Microcontrollers – AT91SO Family*[1]

| Part Number | RAM (Kbytes) | ROM (Kbytes) | ADC | EEPROM (Kbytes) | Voltage (V) | Package | Other Features | Availability |
|---|---|---|---|---|---|---|---|---|
| AT91SO110 | 100 | 32 | Yes | 256 | 2.7 - 3.3 | BGA 256 | GPIOs, USARTs, Smart Card Reader Interfaces, USB, SPI High Speed, Timers, RTC, Hardware DES/TDES and AES, SHAn, CRC | 1Q2009 |
| AT91SO111 | 100 | 32 | Yes | 256 | 2.7 - 3.3 | BGA 256 | Single Package-solution Embedding 2 Chips: the AT91SO110 and the AT83C26 Analog Interface | 1Q2009 |
| AT91SO100 | 100 | 32 | No | 256 | 2.7 - 3.3 | BGA 256 | GPIOs, USARTs, Smart Card Reader Interfaces, USB, SPI, Timers, RTC, Hardware DES/TDES and AES, SHAn, CRC, Common Criteria EAL4+ | Now |
| AT91SO101 | 100 | 32 | No | 256 | 2.7 - 3.3 | BGA 256 | Single Package-solution Embedding 2 Chips: the AT91SO100 and the AT83C26 Analog Interface | Now |
| AT91SO50 | 100 | 32 | No | 256 | 2.7 - 3.3 | BGA 208 | AT91SO100 with Secure External Bus Disconnected (Smaller Package) | Now |
| AT91SO51 | 100 | 32 | No | 256 | 2.7 - 3.3 | BGA 208 | AT91SO50 with AT83C26 Analog Interface | Now |
| AT91SO25 | 100 | 32 | No | 256 | 2.7 - 3.3 | BGA 144 | AT91SO50 in Smaller Package | Now |
| **Evaluation/Development Kits** | | | | | | | | |
| AT91SO101-DB1 | Development Board | | | | | | | Now |
| AT91SO101-MEZ | Mezzanine Board (External Memory Board: 4 Mbytes of Flash/512 Kbytes of RAM) | | | | | | | Now |
| AT91SO101-ICE | JTAG Board (External CPLD to Decrypt Communication Between SO101 and JTAG) | | | | | | | Now |
| AT91SO101-DBMEZ | AT91SO101-DB1 + AT91SO101-MEZ | | | | | | | Now |
| AT91SO101-DBICE | AT91SO101-DB1 + AT91SO101-ICE | | | | | | | Now |
| AT91SO101-KITAM | AT91SO101-DB1 + AT91SO101-MEZ + AT91SO101-ICE | | | | | | | Now |

Note: 1. Green (RoHS Compliance) Packaging Available for All AT91SO Products.

### *Secure ASSP – AT98SC Family*[1]

| Part Number | RAM | ROM | Com | EEPROM (Kbytes) | Voltage (V) | Package | Other Features | Availability |
|---|---|---|---|---|---|---|---|---|
| **Secure Turnkey Solutions** | | | | | | | | |
| AT98SC004U | N/A | N/A | SPI, I2C-compatible, ISO 7816 | 4 | 2.7 - 5.5 | SOIC-8, DFN8 | Secure Flexible Data Storage Management, High Level Cryptographic Services (3DES, RSA, AES, ECC) | 4Q2008 |
| AT98SC016CU | N/A | N/A | SPI, TWI, ISO 7816 | 16 | 1.62 - 5.5 | QFN20, SOIC-8 | Secure Flexible Data Storage Management, High Level Cryptographic Services (3DES, RSA, AES, ECC) | Now |
| AT98SC032CT-USB | N/A | N/A | USB 2.0, CCID | 32 | 1.62 - 5.5 | QFN44, SOIC-8 | Secure Flexible Data Storage Management, High Level Cryptographic Services (3DES, RSA, AES, ECC) | Now |
| AT98SC064CT-USB | N/A | N/A | USB 2.0, CCID, ISO 7816 | 64 | 1.62 - 5.5 | QFN44, SOIC-8 | Secure Flexible Data Storage Management, High Level Cryptographic Services (3DES, RSA, AES, ECC) | 4Q2008 |
| **Starter Kits** | | | | | | | | |
| AT98SC-STK01-004R | Starter Kit for AT98SC004U with Samples in SOIC8 Package | | | | | | | 4Q2008 |
| AT98SC-STK01-016Z | Starter Kit for AT98SC016CU with Samples in QFN20 Package | | | | | | | Now |
| AT98SC-STK01-016R | Starter Kit for AT98SC016CU with Samples in SOIC8 Package | | | | | | | Now |
| AT98SC-STK01-032Z | Starter Kit for AT98SC032CT-USB with Samples in QFN44 Package | | | | | | | Now |
| AT98SC-STK01-032R | Starter Kit for AT98SC032CT-USB with Samples in SOIC8 Package | | | | | | | Now |
| AT98SC-STK01-064R | Starter Kit for AT98SC064CT-USB with Samples in SOIC8 Package | | | | | | | Now |
| AT98SC-STK01-064Z | Starter Kit for AT98SC064CT-USB with Samples in QFN44 Package | | | | | | | Now |

Note: 1. Green (RoHS Compliance) Packaging Available for All AT98SC Products.

# SECURITY SOLUTIONS ICS (CONTINUED)

## Secure RF Memory

### *CryptoRF (ISO 14443 Type B 13.56 MHz) – Secure RF Memory*

| Part Number | Description | Organization (Bytes) | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT88SC0404CRF | Contactless 4-Kbit User Memory with Authentication and Encryption | 4 x 128 | Yes | Now |
| AT88SC0808CRF | Contactless 8-Kbit User Memory with Authentication and Encryption | 8 x 128 | Yes | Now |
| AT88SC1616CRF | Contactless 16-Kbit User Memory with Authentication and Encryption | 16 x 128 | Yes | Now |
| AT88SC3216CRF | Contactless 32-Kbit User Memory with Authentication and Encryption | 16 x 256 | Yes | Now |
| AT88SC6416CRF | Contactless 64-Kbit User Memory with Authentication and Encryption | 16 x 512 | Yes | Now |
| **Evaluation/Development Kits** | | | | |
| AT88SC6416CRF-DK | 1K to 64K CryptoRF Development Kit – Replaced by AT88SCRF-ADK2 Keen+ in November 2008 | | | Now |
| AT88SCRF-ADK1 Yuma+ | 1K to 64K CryptoRF Development Kit | | | Now |
| AT88SCRF-ADK2 Keen+ | Low-cost Development Kit for CryptoMemory and CryptoCompanion Chips on an AVR Platform | | | Nov. 2008 |
| AT88CRF-S7DK2P | CryptoRF Demonstration Kit with SkyeTek® Reader and Software Technology | | | Now |

### *13.56 MHz Reader IC (ISO 14443 Type B, SPI and 2-wire Interface)*

| Part Number | Features | Voltage | RoHS Compliance | Availability |
|---|---|---|---|---|
| AT88RF1354 | 13.56 MHz Reader IC Performs Encoding, Timing, and Protocol Functions | 3.3V, 5.0V | Yes | Now |

# SECURITY SOLUTIONS ICs (CONTINUED)

## *Smart Card Reader ICs*

| Part number | RAM (Bytes) | ROM (Kbytes) | Flash (Kbytes) | Code RAM (Kbytes) | EEPROM (Bytes) | Voltage | Com Interface | Other features | Availability |
|---|---|---|---|---|---|---|---|---|---|
| **8051 Microcontrollers** | | | | | | | | | |
| AT83C5121 | 512 | 16 | – | – | N/A | 2.85 - 5.5 | UART | Support Cards Class A/B/C | Now |
| AT85C5121 | 512 | – | – | 16 | N/A | 2.85 - 5.5 | UART | CRAM = Executable RAM for Debug and Development Support Cards Class A/B/C | Now |
| AT89C5121 | 512 | – | 16 | – | N/A | 2.85 - 5.5 | UART | Support Cards Class A/B/C | Now |
| AT83R5122 | 768 | 32 | – | – | N/A | 3.0 - 5.5 | UART, USB 2.0, SPI | Support Cards Class A/B/C, Keyboard Interface, SPI, External Program Memory | Now |
| AT85C5122 | 768 | – | – | 32 | N/A | 3.0 - 5.5 | UART, USB 2.0, SPI | CRAM = Executable RAM for Debug and Development Support Cards Class A/B/C, Keyboard Interface, SPI, External Program Memory | Now |
| AT89C5122 | 768 | – | 32 | – | N/A | 3.0 - 5.5 | UART, USB 2.0, SPI | Support Cards Class A/B/C, Keyboard Interface, SPI, External Program Memory | Now |
| AT83C5123 | 768 | 30 | – | – | 512 | 3.0 - 5.5 | UART, USB 2.0 | Support Cards Class A/B/C | Now |
| AT83C5127 | 768 | 16 | – | – | 512 | 3.0 - 5.5 | UART, USB 2.0 | Support Cards Class A/B/C | Now |
| **AVR-based** | | | | | | | | | |
| AT90SCR100 | 4K | – | 64K | – | 4K | 2.7 - 5.5 | UART, USB 2.0, 2SPI, TWI | Support Cards Class A/B/C and USB Cards, Keyboard Interface, SPI, High-speed SPI | 4Q2008 |
| **Starter Kit** | | | | | | | | | |
| T89C5121-SK1 | Starter Kit for T89C5121 Smart Card Reader Microcontroller | | | | | | | | Now |
| AT89STK-03 | Starter Kit for AT8xC5122/23/27 USB Smart Card Reader Microcontrollers | | | | | | | | Now |
| AT90SCR-STK01 | Starter Kit for AT90SCR100 Smart Card Reader Microcontroller | | | | | | | | 4Q2008 |

## *Smart Card Reader ICs – Interface*

| Part Number | Description | RoHS Compliance | Availability |
|---|---|---|---|
| AT83C26 | Multiple Smart Card Interface (2 Full Smart Cards and 3 SAMs) | Yes | Now |
| **Starter Kits** | | | |
| AT89STK-09 | Starter Kit for the AT83C26 Multiple Smart Card Interface | | Now |

## *Smart Card Reader ICs – Ready-to-Use Solutions*

| Part Number | Description | Availability |
|---|---|---|
| AT83C25OK | Pre-certified Smart Card Reader Solution for PMCIA Link with Omnikey® EMV2000 Firmware | Now |
| AT83C21GC | Pre-certified Smart Card Reader Solution for Serial Link with Gemalto™ GemCore® EMV2000 Firmware | Now |
| AT83C22OK | Pre-certified Smart Card Reader Keyboard Solution for USB Link with Omnikey EMV2000 Firmware | Now |
| AT83C23OK | Low-pin Count Pre-certified Smart Card Reader Solution for USB Link with Omnikey EMV2000 Firmware | Now |
| **Evaluation/Development Kits** | | |
| AT89RFD-02 | USB Smart Card Reader Reference Design with Omnikey Firmware for AT83C22OK/23OK | Now |
| AT89RFD-05 | Serial Smart Card Reader Reference Design with Gemalto GemCore Software for AT83C21GC | Now |
| AT89RFD-06 | PCMCIA Smart Card Reader Reference Design with Omnikey Firmware for AT83C25OK | Now |

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