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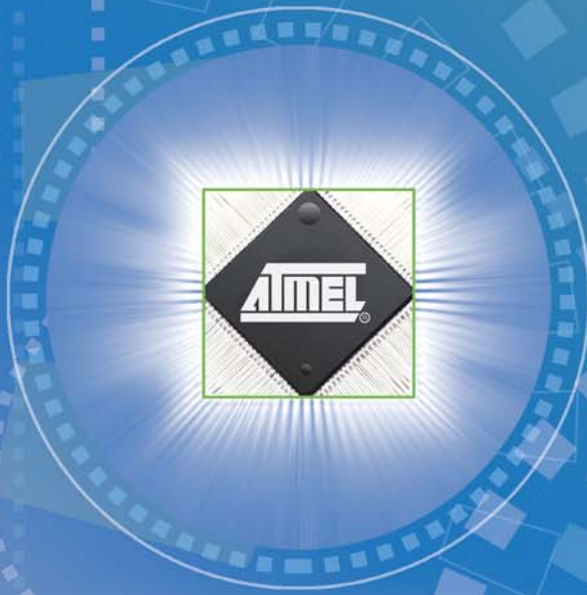
Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





Microcontrollers
(8-bit and 32-bit)

Security Solutions

ASICs

RF

Automotive

Nonvolatile Memory



➔ **Atmel® Products Selection Guide**
January 2008



Everywhere You Are®

ATMEL PRODUCT GUIDE

January 2008

Atmel Corporation • 2325 Orchard Parkway • San Jose, CA 95131
TEL: (408) 441-0311 • FAX: (408) 487-2600
Web Site: <http://www.atmel.com>



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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 (V)	Speed (MHz)	Other	Availability
ATmega48	4	256	512	23	-	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	-	Now
ATmega48V	4	256	512	23	-	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	-	Now
ATmega8	8	512	1K	23	-	1	1	1	2	1	8	Y	-	S	PDIP, TQFP, QFN, DIE	4.5-5.5	0-16	-	Now
ATmega8L	8	512	1K	23	-	1	1	1	2	1	8	Y	-	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-8	-	Now
ATmega88	8	512	1K	23	-	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	-	Now
ATmega88V	8	512	1K	23	-	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	-	Now
ATmega8515	8	512	512	35	-	1	1	-	1	1	-	Y	-	S	PDIP, PLCC, TQFP, QFN, DIE	4.5-5.5	0-16	XRAM	Now
ATmega8515L	8	512	512	35	-	1	1	-	1	1	-	Y	-	S	PDIP, PLCC, TQFP, QFN, DIE	2.7-5.5	0-8	XRAM	Now
ATmega8535	8	512	512	32	-	1	1	1	2	1	8	Y	-	S	PDIP, PLCC, TQFP, QFN, DIE	4.5-5.5	0-16	-	Now
ATmega8535L	8	512	512	32	-	1	1	1	2	1	8	Y	-	S	PDIP, PLCC, TQFP, QFN, DIE	2.7-5.5	0-8	-	Now
ATmega168	16	512	1K	23	-	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	-	Now
ATmega168V	16	512	1K	23	-	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	-	Now
ATmega162	16	512	1K	35	-	2	1	-	2	2	-	Y	JTAG	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-16	XRAM	Now
ATmega162V	16	512	1K	35	-	2	1	-	2	2	-	Y	JTAG	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-8	XRAM	Now
ATmega16	16	512	1K	32	-	1	1	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	4.5-5.5	0-16	-	Now
ATmega16L	16	512	1K	32	-	1	1	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-8	-	Now
ATmega32	32	1K	2K	32	-	1	1	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	4.5-5.5	0-16	-	Now
ATmega32L	32	1K	2K	32	-	1	1	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-8	-	Now
ATmega325	32	1K	2K	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	-	Now
ATmega325V	32	1K	2K	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	-	Now
ATmega3250	32	1K	2K	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	2.7-5.5	0-16	-	Now
ATmega3250V	32	1K	2K	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	1.8-5.5	0-8	-	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 (V)	Speed (MHz)	Other	Availability
ATmega64	64	2	4	54	-	2	1	1	2	2	8	Y	JTAG	S	TQFP, QFN, DIE	4.5-5.5	0-16	XRAM	Now
ATmega64L	64	2	4	54	-	2	1	1	2	2	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-8	XRAM	Now
ATmega640	64	4	8	86	-	4	1+USART	1	2	4	16	Y	JTAG	S	TQFP, BGA, DIE	2.7-5.5	0-16	XRAM	Now
ATmega640V	64	4	8	86	-	4	1+USART	1	2	4	16	Y	JTAG	S	TQFP, BGA, DIE	1.8-5.5	0-8	XRAM	Now
ATmega644	64	2	4	32	-	1	1+USART	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	-	Now
ATmega644V	64	2	4	32	-	1	1+USART	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	-	Now
ATmega645	64	2	4	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	-	Now
ATmega645V	64	2	4	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	-	Now
ATmega6450	64	2	4	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	2.7-5.5	0-16	-	Now
ATmega6450V	64	2	4	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	1.8-5.5	0-8	-	Now
ATmega128	128	4	4	53	-	2	1	1	2	2	8	Y	JTAG	S	TQFP, QFN, DIE	4.5-5.5	0-16	XRAM	Now
ATmega128L	128	4	4	53	-	2	1	1	2	2	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-8	XRAM	Now
ATmega1280	128	4	8	86	-	4	1+USART	1	2	4	16	Y	JTAG	S	TQFP, BGA, DIE	2.7-5.5	0-16	XRAM	Now
ATmega1280V	128	4	8	86	-	4	1+USART	1	2	4	16	Y	JTAG	S	TQFP, BGA, DIE	1.8-5.5	0-8	XRAM	Now
ATmega1281	128	4	8	54	-	2	1+USART	1	2	4	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	XRAM	Now
ATmega1281V	128	4	8	54	-	2	1+USART	1	2	4	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	XRAM	Now
ATmega2561	256	4	8	54	-	2	1+USART	1	2	4	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	XRAM	Now
ATmega2561V	256	4	8	54	-	2	1+USART	1	2	4	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	XRAM	Now
ATmega2560	256	4	8	86	-	4	1+USART	1	2	4	16	Y	JTAG	S	TQFP, BGA, DIE	2.7-5.5	0-16	XRAM	Now
ATmega2560V	256	4	8	86	-	4	1+USART	1	2	4	16	Y	JTAG	S	TQFP, BGA, DIE	1.8-5.5	0-8	XRAM	Now
Evaluation/Development Kits																			
ATAVRBFLY	AVR Butterfly, ATmega169 Demo Board with LCD and Speaker																		Now
ATAVRDRAGON	Starterkit Supporting On-chip Debugging and Programming for AVR (AVR Dragon Supports OCD for All AVR's 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
ATJTAGIC2	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

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 (V)	Speed (MHz)	Availability
ATmega48P	4	256	512	23	–	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	Sampling
ATmega48PV	4	256	512	23	–	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	Sampling
ATmega88P	8	512	1K	23	–	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	Sampling
ATmega88PV	8	512	1K	23	–	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	Sampling
ATmega168P	16	512	1K	23	–	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	Sampling
ATmega168PV	16	512	1K	23	–	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	Sampling
ATmega164P	16	512	1K	32	–	2	1+USART	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	Now
ATmega164PV	16	512	1K	32	–	2	1+USART	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	Now
ATmega165P	16	512	1K	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	Now
ATmega165PV	16	512	1K	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	Now
ATmega324P	32	1K	2K	32	–	2	1+USART	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	Now
ATmega324PV	32	1K	2K	32	–	2	1+USART	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	Now
ATmega325P	32	1K	2K	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	Now
ATmega325PV	32	1K	2K	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	Now
ATmega3250P	32	1K	2K	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	2.7-5.5	0-16	Now
ATmega3250PV	32	1K	2K	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	1.8-5.5	0-8	Now
ATmega328P	32	1K	2K	23	–	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	Now
ATmega328PV	32	1K	2K	23	–	1	1+USART	1	2	1	8	Y	debug-WIRE	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	Now
ATmega644P	64	2K	4K	32	–	2	1+USART	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	2.7-5.5	0-20	Now
ATmega644PV	64	2K	4K	32	–	2	1+USART	1	2	1	8	Y	JTAG	S	PDIP, TQFP, QFN, DIE	1.8-5.5	0-10	Now

Evaluation/Development Kits

ATAVRDRAGON	Starterkit 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

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*	UART	8-bit Timer	16-bit Timer	10-bit ADC	BOD	On-chip Debug.	In-System()/Self-prog. (S)	Package	VCC (V)	Speed (MHz)	Availability
ATtiny11	1	–	32 Registers	6	–	–	1	–	–	–	–	–	PDIP, SOIC, DIE	4-5.5	0-6	Now
ATtiny11L	1	–	32 Registers	6	–	–	1	–	–	–	–	–	PDIP, SOIC, DIE	2.7-5.5	0-2	Now
ATtiny12	1	64	32 Registers	6	–	–	1	–	–	Y	–	I	PDIP, SOIC, DIE	4-5.5	0-8	Now
ATtiny12L	1	64	32 Registers	6	–	–	1	–	–	Y	–	I	PDIP, SOIC, DIE	2.7-5.5	0-4	Now
ATtiny12V	1	64	32 Registers	6	–	–	1	–	–	Y	–	I	PDIP, SOIC, DIE	1.8-5.5	0-1	Now
ATtiny13	1	64	64	6	–	–	1	–	4	Y	debug-WIRE	S	PDIP, SOIC, Narrow SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny13V	1	64	64	6	–	–	1	–	4	Y	debug-WIRE	S	PDIP, SOIC, Narrow SOIC, QFN, DIE	1.8-5.5	0-10	Now
ATtiny15L	1	64	32 Registers	6	–	–	2	–	4	Y	–	I	PDIP, SOIC, DIE	2.7-5.5	1.6	Now
ATtiny24	2	128	128	12	1	–	1	1	8	Y	debug-WIRE	S	PDIP, Narrow SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny24V	2	128	128	12	1	–	1	1	8	Y	debug-WIRE	S	PDIP, Narrow SOIC, QFN, DIE	1.8-5.5	0-10	Now
ATtiny25	2	128	128	6	1	–	2	–	4	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny25V	2	128	128	6	1	–	2	–	4	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	1.8-5.5	0-10	Now
ATtiny26	2	128	128	16	1	–	2	–	11	Y	–	I	PDIP, SOIC, QFN, DIE	4.5-5.5	0-16	Now
ATtiny26L	2	128	128	16	1	–	2	–	11	Y	–	I	PDIP, SOIC, QFN, DIE	2.7-5.5	0-8	Now
ATtiny261	2	128	128	16	1	–	1	1	11	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny261V	2	128	128	16	1	–	1	1	11	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	1.8-5.5	0-10	Now
ATtiny2313	2	128	128	18	1	1	1	1	–	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny2313V	2	128	128	18	1	1	1	1	–	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	1.8-5.5	0-10	Now

- Notes:
- *USI = Universal Serial Interface.
 - 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*	UART	8-bit Timer	16-bit Timer	10-bit ADC	BOD	On-chip Debug.	In-System(I)/Self-prog. (S)	Package	VCC (V)	Speed (MHz)	Availability
ATtiny28L	2	-	32 Registers	11	-	-	1	-	-	-	-	-	PDIP, QFN, TQFP, DIE	2.7-5.5	0-4	Now
ATtiny28V	2	-	32 Registers	11	-	-	1	-	-	-	-	-	PDIP, QFN, TQFP, DIE	1.8-5.5	0-1	Now
ATtiny44	4	256	256	12	1	-	1	1	8	Y	debug-WIRE	S	PDIP, Narrow SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny44V	4	256	256	12	1	-	1	1	8	Y	debug-WIRE	S	PDIP, Narrow SOIC, QFN, DIE	1.8-5.5	0-10	Now
ATtiny45	4	256	256	6	1	-	2	-	4	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny45V	4	256	256	6	1	-	2	-	4	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	1.8-5.5	0-10	Now
ATtiny461	4	256	256	16	1	-	1	1	11	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny461V	4	256	256	16	1	-	1	1	11	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	1.8-5.5	0-10	Now
ATtiny84	8	512	512	12	1	-	1	1	8	Y	debug-WIRE	S	PDIP, QFN, DIE	2.7-5.5	0-20	Now
ATtiny84V	8	512	512	12	1	-	1	1	8	Y	debug-WIRE	S	PDIP, QFN, DIE	1.8-5.5	0-10	Now
ATtiny85	8	512	512	6	1	-	2	-	4	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny85V	8	512	512	6	1	-	2	-	4	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	1.8-5.5	0-10	Now
ATtiny861	8	512	512	16	1	-	1	1	11	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	2.7-5.5	0-20	Now
ATtiny861V	8	512	512	16	1	-	1	1	11	Y	debug-WIRE	S	PDIP, SOIC, QFN, DIE	1.8-5.5	0-10	Now

Evaluation/Development Kits

ATAVRDRAGON	Starterkit 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	STK [®] 500 AVR Starter Kit with AVR Studio [®] Interface	Now
ATSTK505	STK505 Expansion of STK500 for 14-pin SOIC and 20-pin PDIP AVR Devices	Now

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

MICROCONTROLLERS (CONTINUED)

AVR 8-bit RISC (Continued)

Automotive AVR

Part Number	Description	Package	Availability
AT90CAN32	AVR Microcontroller with 32-Kbyte Flash MCU, 15-message Objects CAN Controller, 2-Kbyte RAM, 1-Kbyte EEPROM, 10-bit ADC, TWI, Up to 16 MIPS, LIN-capable UART, -40 to +125°C Qualified	QFN64, QFP64	Now
AT90CAN64	AVR Microcontroller with 64-Kbyte Flash MCU, 15-message Objects CAN Controller, 4-Kbyte RAM, 2-Kbyte EEPROM, 10-bit ADC, TWI, Up to 16 MIPS, LIN-capable UART -40 to +125°C Qualified	QFN64, QFP64	Now
AT90CAN128	AVR Microcontroller with 128-Kbyte Flash MCU, 15-message Objects CAN Controller, 4-Kbyte RAM, 4-Kbyte EEPROM, 10-bit ADC, TWI, Up to 16 MIPS, LIN-capable UART -40 to +125°C Qualified	QFN64, QFP64	Now
ATtiny24	AVR Microcontroller with 2-Kbyte Flash MCU, 128-byte RAM, 128-byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, -40 to +125°C Qualified	SOIC14, QFN20	Now
ATtiny25	AVR Microcontroller with 2-Kbyte Flash MCU, 128-byte RAM, 128-byte EEPROM, 10-bit ADC, Up to 16 MIPS, Internal Calibrated Oscillator, -40 to +125°C Qualified	SO8	Now
ATtiny44	AVR Microcontroller with 4-Kbyte Flash MCU, 256-byte RAM, 256-byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, -40 to +125°C Qualified	SOIC14, QFN20	Now
ATtiny45	AVR Microcontroller with 4-Kbyte Flash MCU, 256-byte RAM, 256-byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, SO8 (-40 to +125°C Qualified), QFN20 (-40 to +150°C Qualified)	SO8, QFN20	Now
ATtiny84	AVR Microcontroller with 8-Kbyte Flash MCU, 512-byte RAM, 512-byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, -40 to +125°C Qualified	QFN20	Feb. 2008
ATtiny85	AVR Microcontroller with 8-Kbyte Flash MCU, 512-byte RAM, 512-byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, -40 to +125°C Qualified	SO8	Now
ATmega48	AVR Microcontroller with 4-Kbyte Flash MCU, 512-byte RAM, 256-byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable UART, Internal Calibrated Oscillator, -40 to +125°C Qualified	QFN32, QFP32	Now
ATmega88	AVR Microcontroller with 8-Kbyte Flash MCU, 1-Kbyte RAM, 512-byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable UART, Internal Calibrated Oscillator, QFP32 (-40 to +125°C Qualified), QFN32 (-40 to +150°C Qualified)	QFN32, QFP32	Now
ATmega168	AVR Microcontroller with 16-Kbyte Flash MCU, 1-Kbyte RAM, 512-byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, QFP32 (-40 to +125°C Qualified), QFN32 (-40 to +150°C Qualified)	QFP32, QFN32	Now
ATmega164P	AVR Microcontroller with 16-Kbyte Flash MCU, 1-Kbyte RAM, 512 byte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, -40 to +125°C Qualified	QFN44, TQFP44	Now
ATmega324P	AVR Microcontroller with 32-Kbyte Flash MCU, 2-Kbyte RAM, 1-Kbyte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, -40 to +125°C Qualified	QFN44, TQFP44	Now
ATmega644P	AVR Microcontroller with 64-Kbyte Flash MCU, 4-Kbyte RAM, 2-Kbyte EEPROM, 10-bit ADC, Up to 16 MIPS, LIN-capable USI, Internal Calibrated Oscillator, -40 to +125°C Qualified	QFN44, TQFP44	Now
Evaluation/Development Kits			
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
ATJTAGIC2	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

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 (V)	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	2.7-5.5	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	2.7-5.5	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	2.7-5.5	16	MLF64, TQFP64	-40 to +85°C	Now

Evaluation/Development Kits

ATADAPCAN01	Replacement: STK500/501/90CAN128 CAN Adapter																							Now
ATDVK90CAN1	DVK90CAN1 Development Kit for AT90CAN Devices																							Now
ATJTAGIC2	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

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

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 (V)	Speed (MHz)	LCD	Availability
ATmega169P	16	512	1	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	4x25	Now
ATmega169PV	16	512	1	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	4x25	Now
ATmega329	32	1K	2	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	4x25	Now
ATmega329V	32	1K	2	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	4x25	Now
ATmega329P	32	1K	2	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	4x25	Now
ATmega329PV	32	1K	2	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	4x25	Now
ATmega3290	32	1K	2	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	2.7-5.5	0-16	4x40	Now
ATmega3290V	32	1K	2	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	1.8-5.5	0-8	4x40	Now
ATmega3290P	32	1K	2	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	2.7-5.5	0-16	4x40	Now
ATmega3290PV	32	1K	2	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	1.8-5.5	0-8	4x40	Now
ATmeg649	64	2K	4	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	2.7-5.5	0-16	4x25	Now
ATmega649V	64	2K	4	54	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, QFN, DIE	1.8-5.5	0-8	4x25	Now

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

MICROCONTROLLERS (CONTINUED)

AVR 8-bit RISC (Continued)

LCD Control AVR (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 (V)	Speed (MHz)	LCD	Availability
ATmega6490	64	2	4	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	2.7-5.5	0-16	4x40	Now
ATmega6490V	64	2	4	69	1	1	1+USI	USI	2	1	8	Y	JTAG	S	TQFP, DIE	1.8-5.5	0-8	4x40	Now

Evaluation/Development Kits

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

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

Lighting/Pulse Width Modulation 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 (V)	Clock Speed (MHz)	Package	Temperature	Availability
AT90PWM1	8	512	512	19	-	1	1	7	-	1	-	-	1	8	1	1	1	1	26	4	1	2.7-5.5	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	2.7-5.5	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	2.7-5.5	16	MLF32, SOIC32	-40 to +105°C	Now
AT90PWM216	16	512	1024	19	1	1	1	7	1	1	1	-	1	8	1	1	1	1	29	4	1	2.7-5.5	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	2.7-5.5	16	MLF32, SOIC32	-40 to +105°C	Now

Evaluation/Development Kits

ATAVRFBKIT	DALI Controlled Dimmable Fluorescent Demo Kit for AT90PWM2																		Now
ATAVRISP2	AVRISP Programmer for All AVR ISP Devices																		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
ATSTK500	STK500 AVR Starter Kit with AVR Studio Interface																		Now
ATSTK520	STK520 Expansion for STK500 to Support 90 PWM Devices																		Now

Note: 1. All Lighting/Pulse Width Modulation 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 (V)	Clock Speed (MHz)	Package	Temperature	Availability
ATmega406	40	512	2K	Y	7	2/3/4	1	6	P-ch	4.0-25	1	LQFP48	-40 to +85°C	Now
ATmega16HVA	16	256	512	Y	7	1/2	SW	3	N-ch	1.8-9	4	LGA36, TSOP28	-10 to +70°C	Sampling

Evaluation/Development Kits														
ATAVRSB100	Smart Battery Development Kit for Atmega406													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.

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 (V)	Clock Speed (MHz)	Package	Temperature	Availability
AT90USB82	8	512	512	22	-	176	4	1	-	1	1	5	-	1	1	-	1	-	1	1	1	1	29	10	1	2.7-5.5	16	MLF32	-40 to +85°C	Now
AT90USB162	16	512	512	22	-	176	4	1	-	1	1	5	-	1	1	-	1	-	1	1	1	1	29	10	1	2.7-5.5	16	MLF32, TQFP32	-40 to +85°C	Now
AT90USB646	64	2K	4K	48	-	832	7	1	1	2	2	6+2	1	1	1	1	1	8	1	1	1	1	38	9	1	2.7-5.5	16	MLF64	-40 to +85°C	Now
AT90USB647	64	2K	4K	48	1	832	7	1	1	2	2	6+2	1	1	1	1	1	8	1	1	1	1	38	9	1	2.7-5.5	16	MLF64, TQFP64	-40 to +85°C	Now
AT90USB1286	128	4K	8K	48	-	832	7	1	1	2	2	6+2	1	1	1	1	1	8	1	1	1	1	38	9	1	2.7-5.5	16	MLF64	-40 to +85°C	Now
AT90USB1287	128	4K	8K	48	1	832	7	1	1	2	2	6+2	1	1	1	1	1	8	1	1	1	1	38	9	1	2.7-5.5	16	MLF64, TQFP64	-40 to +85°C	Now

Evaluation/Development Kits																
AT90USBKEY	Demo Kit for AT90USB Devices															Now
ADEVK525	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 90 PWM 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

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

MICROCONTROLLERS (CONTINUED)

AVR 8-bit RISC (Continued)

Z-Link (ZigBee) AVR

Part Number	AVR	Radio	Flash (Kbytes)	EEPROM (Kbytes)	RAM (Kbytes)	ISM Band (GHz)	Sensitivity (dBm)	Output Power (dBm)	VCC (V)	I/Os	Availability
ATmega64RZA	ATmega644	RF230	64	1	4	2.4	-101	3	1.8-3.6	32	Now
ATmega64RZAP	ATmega644	RF230	64	1	4	2.4	-101	3	1.8-3.6	32	Sampling
ATmega128RZA	ATmega1281	RF230	128	4	8	2.4	-101	3	1.8-3.6	54	Now
ATmega128RZB	ATmega1280	RF230	128	4	8	2.4	-101	3	1.8-3.6	86	Now
ATmega256RZA	ATmega2561	RF230	256	4	8	2.4	-101	3	1.8-3.6	54	Now
ATmega256RZB	ATmega2560	RF230	256	4	8	2.4	-101	3	1.8-3.6	86	Now
Evaluation/Development Kits											
ATAVRZ200	Z-Link Demonstration Kit										Now
ATAVRZ502	Z-Link RF Accessory 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

Note: 1. All Z-link ZigBee AVR parts are RoHS compliant.

MICROCONTROLLERS (CONTINUED)

AVR32 32-bit Microcontrollers

AP7000 Series

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	AC97	Camera Interf.	PS/2	SSC	TWI	MCI	Watch. Timer	POR	ECCC	Power Supply (V)	Package	Speed (MHz)	Availability
AT32AP7000	32	Y	2	1xHS	2048x2048	4	4	160	Stereo	Y	Y	6	1	3	1	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	3	1	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	1xS	2048x2048	4	4	85	Stereo	Y	Y	6	1	3	1	CMOS	Y	3	1	1	Y	Y	Y	1.65-1.95 Core 3.0-3.6 IO	BGA196	150	Now

Evaluation/Development Kits

ATNGW100	AVR32 Network Gateway Kit – A Linux Plug and Play Evaluation Platform	Now
ATSTK1000	Starter Kit for AT32AP7xxx Devices	Now

Note: 1. All AP7000 Series parts are RoHS compliant.

UC3 Series

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 Layers	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	7	109	1	6	15	3	1	Y	2	1	1	Y	Y	3.0-3.6	QFP144	66	Sampling
AT32UC3A0256	256	64	1	1xFS	Y	4	7	109	1	6	15	3	1	Y	2	1	1	Y	Y	3.0-3.6	QFP144	66	Sampling
AT32UC3A0512	512	64	1	1xFS	Y	4	7	109	1	6	15	3	1	Y	2	1	1	Y	Y	3.0-3.6	QFP144	66	Sampling
AT32UC3A1128	128	32	1	1xFS	Y	4	7	69	0	6	15	3	1	Y	2	1	1	Y	Y	3.0-3.6	QFP100	66	Sampling
AT32UC3A1256	256	64	1	1xFS	Y	4	7	69	0	6	15	3	1	Y	2	1	1	Y	Y	3.0-3.6	QFP100	66	Sampling
AT32UC3A1512	512	64	1	1xFS	Y	4	7	69	0	6	15	3	1	Y	2	1	1	Y	Y	3.0-3.6	QFP100	66	Sampling
AT32UC3B064	64	16	0	1xFS	Y	3	7	44	0	5	7	3	1	Y	1	1	1	Y	Y	3.0-3.6	QFP/MLF64	60	Limited Sampling
AT32UC3B0128	128	32	0	1xFS	Y	3	7	44	0	5	7	3	1	Y	1	1	1	Y	Y	3.0-3.6	QFP/MLF64	60	Limited Sampling
AT32UC3B0256	256	32	0	1xFS	Y	3	7	44	0	5	7	3	1	Y	1	1	1	Y	Y	3.0-3.6	QFP/MLF64	60	Limited Sampling
AT32UC3B164	64	16	0	1xFS	-	2	7	28	0	5	7	3	1	Y	1	0	1	Y	Y	3.0-3.6	QFP/MLF48	60	Limited Sampling
AT32UC3B1128	128	32	0	1xFS	-	2	7	28	0	5	7	3	1	Y	1	0	1	Y	Y	3.0-3.6	QFP/MLF48	60	Limited Sampling
AT32UC3B1256	256	32	0	1xFS	-	2	7	28	0	5	7	3	1	Y	1	0	1	Y	Y	3.0-3.6	QFP/MLF48	60	Limited Sampling

Evaluation/Development Kits

ADEVK1100	Evaluation Kit for AVR32 UC3A Series	Now
ADEVK1101	Evaluation Kit for AVR32 UC3B Series	Now

Note: 1. All UC3 Series 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/12S	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

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

MICROCONTROLLERS (CONTINUED)

AT91SAM ARM-based Microcontrollers (Continued)

ARM7-based Microcontrollers (Continued)

Part Number	Flash (Bytes)	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
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	Evaluation Kit for AT91SAM7L Products (SAM7L128 and SAM7L64); Includes IAR® Toolchain (32-Kbyte Limited Compiler)																						On Request		
AT91SAM7L-EK2	Evaluation Kit for AT91SAM7L Products (SAM7L128 and SAM7L64); Includes IAR Toolchain (32-Kbyte Limited Compiler)																						March 2008		
AT91SAM7S-EK	Evaluation Kit for AT91SAM7S Products (SAM7S16 to SAM7S512); Includes IAR Toolchain (32-Kbyte Limited Compiler)																						Now		
AT91SAM7SE-EK	Evaluation Kit for AT91SAM7SE Products (SAM7SE32 to SAM7SE512); Includes IAR Toolchain (32-Kbyte Limited Compiler)																						Now		
AT91SAM7X-EK	Evaluation Kit for AT91SAM7X Products (SAM7X128 to SAM7X512); Includes IAR Toolchain (32-Kbyte Limited Compiler)																						Now		
AT91SAM7A3-EK	Evaluation Kit for AT91SAM7A3																						Now		
AT91EB55	Evaluation Kit for AT91M55800A																						Now		
AT91EB42	Evaluation Kit for AT91M42800A																						Now		
AT91EB40A	Evaluation 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 Frequency (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 UTM ₁ /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 Markup Registers	SSC	SPI Master/Slave	MMC/SD/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
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ARM7TDMI Core

AT91CAP7S450A	80	-	256	160	1	1	1	1	450	-	8	90	-	-	6	-	-	-	1/1	2	1	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	1	250	-	8	90	-	-	6	-	-	-	1/1	2	1	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	500	36	160	77	2	8	-	1	1	1	1/1	2	1	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	250	36	160	77	2	8	-	1	1	1	1/1	2	1	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	500	36	160	77	2	8	-	1	1	1	1/1	2	1	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	250	36	160	77	2	8	-	1	1	1	1/1	2	1	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	2Q2008
AT91CAP7A-STK	Starter Kit for AT91CAP7 with Altera FPGA	March 2008
AT91CAP7X-STK	Starter Kit for AT91CAP7 with Xilinx FPGA	2Q2008
AT91CAP9A-DK	Development Kit for AT91CAP9 with Altera FPGA	Now
AT91CAP9X-DK	Development Kit for AT91CAP9 with Xilinx FPGA	1H2008
AT91CAP9A-STK	Starter Kit for AT91CAP9 with Altera FPGA	Now
AT91CAP9X-STK	Starter Kit for AT91CAP9 with Xilinx FPGA	1H2008

- 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. Any of the ASIC IP Cores listed on [Page 22](#) 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	Program Flash Memory	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, PCA	16-Kbyte	Yes	Now
AT89C51CC01	8-bit Microcontroller with 15-channel CAN Controller, 32-Kbyte Flash, 1280-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	32-Kbyte	Yes	Now
AT89C51CC03	8-bit Microcontroller with 15-channel CAN Controller, 64-Kbytes Flash, 2304-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	64-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

MICROCONTROLLERS (CONTINUED)

8051 Architecture (Continued)

Flash ISP (In-System Programmable) (Continued)

Part Number	Description	Memory Size	RoHS Compliance	Availability
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
AT89C51RE2	In-System Programmable Microcontroller with 128-Kbyte Flash, 8192-byte RAM, PCA, SPI, 2 UART	128K x 8	Yes	1Q2008

Development Kits and Tools				
AT89ISP	In-System Programmer for AT89S 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	Samples 1Q2008
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	Samples 1Q2008

Development Kits				
AT89ISP	In-System Programmer for AT89S Series			Now

MICROCONTROLLERS (CONTINUED)

8051 Architecture (Continued)

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
AT89EB5114	Microcontroller with 256-byte RAM, 256-byte EEPROM, 10-bit 6-channel ADC, 16-bit Timers, Analog Comparator, RC Oscillator, Amplifier/Rectifier	4-Kbyte Flash	Yes	Now
Development Kits				
AT89RFD-10	Non Dimmable Fluorescent Demo Kit for AT8xEB5114			Now

OTP (One Time Programmable)

Part Number	Description	Memory Size	RoHS Compliance	Availability
AT87C52X2	Microcontroller with 8-Kbyte OTP	8K x 8	Yes	Now
AT87C5103	Low-pin Count Microcontroller with 12-Kbyte OTP, 512-byte RAM, SPI, PCA	12K x 8	Yes	Now
AT87C54X2	Microcontroller with 16-Kbyte OTP	16K x 8	Yes	Now
AT87C51RB2	Microcontroller with 16-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
AT87251G2D	C251 Microcontroller with 32-Kbyte OTP, 1024-byte RAM, SPI, TWI, EWC	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
AT83C5103	Low-pin Count, Microcontroller with 12-Kbyte ROM, 512-byte RAM, SPI, PCA	12K 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
ATC83251G2D	C251 Microcontroller with 32-Kbyte ROM, 1024-byte RAM, SPI, TWI, EWC	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
AT80251G2D	C251 Microcontroller with 1024 Bytes of RAM, SPI, TWI, EWC	Yes	Now