

USB

Imaging

ASICs

Multimedia

**ATMEL** **PRODUCT GUIDE**

Automotive

Aerospace

Programmable Logic

**JUNE 2003**

Microcontrollers



**Everywhere You Are<sup>SM</sup>**

ASSPs

Communications ICs

Wireless

Memory

Security & Smart Card ICs

Biometrics

ASIC IP Cores



**ATMEL** **PRODUCT GUIDE**

**June 2003**



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## Application Specific Standard Products (ASSPs)

### Aerospace

#### Military & Avionics ASICs and FPGAs

Part Number	Description	Availability
MG2	0.5 Micron 500K Used Gates Sea of Gates	Now
MH1	0.35 Micron 1.6M Used Gates Sea of Gates/Embedded Arrays	Now
ATC18M	0.18 Micron 7M Gates Cell-based	June 2004
AT40KAL040	FPGA 40K Gates and 18-Kbit SRAM	Now

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

Part Number	Description	Availability
MG2RT	Rad Tolerant 0.5 Micron 300K Used Gates Sea of Gates	Now
MG2RTP	Rad Hard 0.5 Micron 200K Used Gates Sea of Gates	Now
MH1RT	Rad Hard 0.35 Micron 1.6M Used Gates Sea of Gates/Embedded Gates	Now
ATC18RHA	Rad Hard 0.18 Micron 7M Gates Cell-based	June 2004
AT40KEL040	Rad Hard FPGA 40K Gates and 18-Kbit SRAM	Now

#### Space Radiation Tolerant/Hard Memories

Part Number	Description	Availability
AT61162E	Radiation Hard 2-Mbit x 8 SRAM Cube (3.3V, 40 ns, 90 mA)	Now
AT60142E	Rad Tolerant 512K x 8 Very Low Power CMOS SRAM (3.3V, 20 ns, 180 mA)	Now
M65608E	Rad Tolerant 128K x 8 Very Low Power CMOS SRAM (5V, 30 ns, 130 mA)	Now
M65609E	Rad Hard 128K x 8 Very Low Power CMOS SRAM (3.3V, 40 ns, 50 mA)	Now
M67025E	Rad Tolerant High Speed 8K x 16 Dual Port RAM (5V, 30 ns, 200 mA)	Now
M67206H	Rad Tolerant High Speed 16K x 9 Parallel FIFO (5V, 15 ns, 120 mA)	Now
M672061H	Rad Tolerant High Speed 16K x 9 Parallel FIFO with Programmable Flag (5V, 15 ns, 120 mA)	Now
M67204H	Rad Tolerant High Speed 4K x 9 CMOS Parallel FIFO (5V, 15 ns, 120 mA)	Now
ATC28C010-12DK	Rad Tolerant 128K x 8 EEPROM	July 2003
ATC17LV010-10DP	Rad Tolerant 1-Mbit EEPROM	July 2003

## Aerospace (Continued)

### Space Radiation Tolerant Standard ASICs

Part Number	Description	Availability
29C516E	16-bit Flow through EDAC Error Detection and Correction Unit	Now
T7906E	Single Point-to-Point IEEE 1355 High Speed Controller (SMCS Lite)	Now
TSS901E	Triple Point-to-Point IEEE1355 High Speed Controller (SMCS)	Now
AT7908E	CAN Controller	July 2003

### Space Radiation Tolerant/Hard Processors and DSP

Part Number	Description	Availability
80C32E	80C51, Radiation Tolerant 8-bit Microcontroller ROMless	Now
TSC21020F	ADI21020-compatible, Radiation and SEU Hardened 32-bit Floating Point DSP	Now
TSC695F	Radiation Hard 32-bit SPARC Single-chip Processor	Now
AT697E	Radiation Hard 32-bit SPARC V8 Processor (100 MIPS)	June 2004

## High-reliability Microprocessors

### PowerPC® Family

Part Number	Description	Availability
PC107A	32-bit RISC, PCI Bridge/Memory Controller, 66, 83 and 100 MHz, 503-ball PBGA Package	Now
PC745B/755B/755C	32-bit RISC Microprocessor from 300 to 400 MHz, 255-ball PBGA (for PC745B), 360-ball PBGA and 360-ball CBGA (for PC755B) Packages	Now
PC7410	32-bit RISC Microprocessor with AltiVec™ 400 and 450 MHz, 360-ball CBGA and 360-ball CI-CGA Packages	Now
PC7447	32-bit RISC Microprocessor with AltiVec 600 - 800 MHz, 360-ball CBGA Package	Sept. 2003
PC8240	32-bit RISC Integrated Processor, 200 MHz, 352-ball TBGA Package	Now
PC8245	32-bit RISC Integrated Processor, 300 MHz, 352-ball TBGA Package	Now
PC8540	32-bit RISC Integrated Processor with Rapid I/O, 600 - 800 MHz, 575 PBGA Package	Sept. 2003
TSPC603R	32-bit RISC, PowerPC 603e RISC Microprocessor 166, 200 and 300 MHz, 255-ball CBGA, 255-ball CI-CBGA and 240-lead MQUAD Packages	Now
TSPC106A	32-bit RISC, PCI Bus Bridge/Memory Controller, 66 and 83 MHz, 303-ball CBGA and 303-ball CI-CBGA with Solder Column Interposer (SCI) Packages	Now
TSPC740A/750A	32-bit RISC Microprocessor 200 and 266 MHz, 255-ball CBGA (for TSP740A), 360-ball CBGA (for TSPC750A) and CI-CBGA with Solder Column Interposer (SCI) Packages	Now
PC7457	32-bit RISC Microprocessor with AltiVec 800 MHz, 360-ball CBGA Package	Sept. 2003

## High-reliability Microprocessors (Continued)

### 68000 Family

Part Number	Description	Availability
TS68C429A	CMOS ARINC® 429 Multichannel Receiver/Transmitter, 84-lead PGA and 132-lead CQFP Packages	Now
TS68020	HCMOS 32-bit Virtual Memory Microprocessor, 114-lead PGA and 132-lead CQFP Packages	Now
TS68040	Third-generation 32-bit Microprocessor, 179-lead PGA and 196-lead CQFP Packages	Now
TS68882	CMOS 32-bit Enhanced Floating-point Co-processor, 68-lead PGA and 68-lead CQFP Packages	Now

### ARINC Controller Family

Part Number	Description	Availability
EF4442	ARINC 429 Multichannel Buffer Receiver (RTA), 28-lead DIL and 28-lead DIP Packages	Now

### High-reliability MCU and Clock Drivers

Part Number	Family	Description	Availability
TS68302	MCU	Integrated Multiprotocol Processor (IMP), 132-lead PGA and 132-lead CQFP Packages	Now
TS68332	MCU	High-performance 32-bit Integrated Microcontroller, 132-lead PGA and 132-lead CQFP Packages	Now
TS68EN360	MCU	32-bit QUAD Integrated Communication Controller, 241-lead PGA and 240-lead CQFP Packages	Now
TSPC860SR	MCU	PowerQUICC Communication Controller 66 MHz, ATM Support, 357-ball PBGA Package	Now
PC8265	MCU	PowerQUICC Integrated PowerPC Processor 266 MHz, 480-ball TBGA Package	Now
TS88915T	Clock Drivers	Low Skew CMOS PLL Clock Driver Tri-state 70 and 100 MHz Versions, 29-lead PGA and 28-lead LDCC Packages	Now



## Automotive & Industrial

### Automotive

#### Body Electronics

##### Dashboard Dimmer ICs

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

##### Flasher ICs

Part Number	Package	Description	Availability
ATA6140	SO16	Twin Relay Flasher for 12/24V Applications, Standby Current $< 10 \mu\text{A}$	Now
U2043B	DIP8, SO8	Lamp Load $> 10\text{W}$ , $30 \text{ m}\Omega$ Shunt, Improved EMC, Pilot Lamp	Now
U2044B	DIP14, SO14	Lamp Load $> 10\text{W}$ , $30 \text{ m}\Omega$ Shunt, Standby Current $< 10 \mu\text{A}$ , Twin Relay Flasher	Now
U6043B	DIP8, SO8	Lamp Load $> 1\text{W}$ , $18 \text{ m}\Omega$ Shunt, Improved EMC, Load-dump Protected	Now
U6432B	SO8	Lamp Load $> 1\text{W}$ , $18 \text{ m}\Omega$ Shunt, Low Current Consumption in Standby Mode $< 10 \mu\text{A}$	Now
U6433B	SO8	Lamp Load $> 1\text{W}$ , $18 \text{ m}\Omega$ Shunt, Improved EMC, Load-dump Protected	Now
U643B	DIP8, SO8	Lamp Load $> 1\text{W}$ , $30 \text{ m}\Omega$ Shunt, Improved EMC, Load-dump Protected	Now

##### Lamp-Outage Monitoring ICs

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

##### Long-Time Timer ICs

Part Number	Package	Description	Availability
U6032B	DIP8, SO8	Toggle IC for Switch-over Function, Defined Status after POR	Now
U6046B	DIP8, SO8	Adjustable Delay Time 4s to 20h, Delay Adjustable with RC Oscillator, $R < 650 \text{ k}\Omega$ , $C < 4700 \text{ pF}$	Now

##### Wiper and Wash Control ICs

Part Number	Package	Description	Availability
U641B	DIP8, SO8	Wipe/Wash Control with Prewash Delay, INT/WIWA Switches to $V_{\text{BATT}}$	Now
U642B	DIP8, SO8	Wipe/Wash Control without Prewash Delay, INT/WIWA Switches to $V_{\text{BATT}}$	Now

## Automotive (Continued)

### Driver ICs

Part Number	Package	Description	Availability
ATA6830	QFN28	Intelligent Stepper Motor Driver, Typical Application Headlamp Adjustment	Now
T6801	SO8	Single-channel Driver, 25 mA Output with Thermal Monitoring, Thermal Shutdown, Short-circuit Protection	Now
T6816	SO28	40V Dual Hexdriver with Serial Input Control, 6 High-side and 6 Low-side Drivers, 600 mA Current Limitation	Now
T6817	SSO20	Dual Triple Driver with Serial Input Control, 3 High-side and 3 Low-side Drivers, 600 mA Current Limitation	Now
T6818	SO14	Triple Half-bridge Driver with Serial Input Control, 3 High-side and 3 Low-side Drivers, 1500 mA Current Limitation	Now
T6819	SO16	Dual Triple Driver with Serial Input Control and PWM Input, 3 High-side and 3 Low-side Drivers, 1500 mA Current Limitation	Now
T6828	SO14 Heat Slug	Triple Half-bridge Driver with Serial Input Control, 3 High-side and 3 Low-side Drivers, 1500 mA Current Limitation	Now
T6829	SO16 Heat Slug	Dual Triple Driver with Serial Input Control and PWM Input, 3 High-side and 3 Low-side Drivers, 1500 mA Current Limitation	Now
U6803B	SO8	Triple Driver, 3 x 25 mA Output with Thermal Monitoring, Common Thermal Shutdown, Short-circuit Protection	Now
U6805B	SO14	Hex Driver, 6 x 25 mA Output with Thermal Monitoring, Common Thermal Shutdown, Short-circuit Protection	Now
U6815BM	SO28	Dual Hexdriver with Serial Input Control, 6 High-side and 6 Low-side Drivers, 600 mA Current Limitation	Now
U6820BM	SO16	Dual Quad Driver with Serial Input Control, 4 High-side Output Stages, 4 Low-side Output Stages, 50 mA Capability, Current Limitation	Now

## Automotive (Continued)

### Networking/Multiplexing ICs

Part Number	Package	Description	Availability
ATA6660	SO8	High Speed CAN Transceiver, Fully Compatible to ISO 11898, High Voltage Bus Protection -40 to +40V	Now
B10011S	SO16	Low-speed CAN Transceiver for High Transmission Levels, Two-wire Bus Interface, 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	Now
TSS461C		Vehicle Area Network (VAN) Data Link Controller	Now
TSS463-AA		Vehicle Area Network (VAN) Data Link Controller with Serial Interface	Now
TSSIO16E		Vehicle Area Network (VAN) Peripheral Circuit – 16 I/Os	Now
U6812B	SO16	Single-ended Bus Transceiver (ISO 9141) with Triple Buffer, Wide Operating-voltage Range, K-interface According to ISO 9141, 250K Baud Rate, 3 x 40 mA Integrated Buffers	Now
T89C51CC02	SOIC24, SOIC28, PLCC28, VQFP32	16-Kbyte Flash MCU with 4 Message Objects CAN Controller, 512-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	Now
T89C51CC01	VQFP44, PLCC44, CABGA64	32-Kbyte Flash MCU with 15 Message Objects CAN Controller, 1280-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	Now
AT89C51CC03	PLCC44, VQFP44	64-Kbyte Flash MCU with 15 Message Objects CAN Controller, 2304-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	Dec. 2003

### Watchdog ICs

Part Number	Package	Description	Availability
T6020M	SO20	Watchdog IC, $\mu$ P Based, Programmable via Metal Mask (Based on Microcontroller ATAR080)	Now
U5020M	SO16	Watchdog Timer, Active and Sleep Mode, 6 Wake-up Inputs, Enable Output	Now
U5021M	SO8	Watchdog Timer, Active and Sleep Mode, 1 Wake-up Input, Enable Output	Now

### Safety ICs

Part Number	Package	Description	Availability
<b>Fail-Safe ICs</b>			
U6808B	SO8	Fail-safe IC, Watchdog Timer and Relay Driver	Now
U6809B	SO20	Fail-safe IC, Watchdog Timer, Relay Driver and Lamp Driver	Now
U6813B	SO16	Fail-safe IC, Watchdog Timer, Relay Driver, Lamp Driver and Charge Pump	Now
<b>Airbag ICs</b>			
U6268B	SO16	Side Airbag Sensor Dual Interface (Satellite Interface), 50 mA Sensor Supply, Data Transfer by Current Modulation	Now

## Automotive (Continued)

### Car Access<sup>(1)</sup>

Part Number	Package	Description	Availability
ATA5811	QFN44	UHF Transceiver for ASK and FSK Systems, 433.868 MHz	Now
ATA5812	QFN44	UHF Transceiver for ASK and FSK Systems, 315 MHz	Now
ATAR862x-yyy-TNz3	SSO24	Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5753 in One IC, Temperature Range -40°C to +125°C, Frequency Range 300 to 330 MHz	Now
ATAR862x-yyy-TNz4	SSO24	Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5754 in One IC, Temperature Range -40°C to +125°C, Frequency Range 429 to 439 MHz	Now
ATAR862x-yyy-TNz8	SSO24	Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5750 in One IC, Temperature Range -40°C to +125°C, Frequency Range 868 to 928 MHz	Now
T48C862x-R3-TN	SSO24	Complete UHF Transmitter, Flash Microcontroller and Transmitter PLL T5753 in One IC, Temperature Range -40°C to +125°C, Frequency Range 300 to 330 MHz	Now
T48C862x-R4-TN	SSO24	Complete UHF Transmitter, Flash Microcontroller and Transmitter PLL T5754 in One IC, Temperature Range -40°C to +125°C, Frequency Range 429 to 439 MHz	Now
T48C862x-R8-TN	SSO24	Complete UHF Transmitter, Flash Microcontroller and Transmitter PLL T5750 in One IC, Temperature Range -40°C to +125°C, Frequency Range 868 to 928 MHz	Now
T5743P3	SO20	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	Now
T5743P6	SO20	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	Now
T5744N	SO20, SSO20	UHF Remote Control Receiver for ASK Systems/PWM Mode	Now
T5750	TSSOP8	UHF ASK/FSK Transmitter, Frequency Range 868 to 928 MHz, High Output Power	Now
T5753	TSSOP8	UHF ASK/FSK Transmitter, Frequency Range 310 to 330 MHz, High Output Power	Now

Note: 1. For dedicated microcontrollers for Car Access Applications, see "4-bit Microcontrollers/MARC4 Family" on pages 66-67.

## Automotive (Continued)

### Car Access<sup>(1)</sup> (Continued)

Part Number	Package	Description	Availability
T5754	TSSOP8	UHF ASK/FSK Transmitter, Frequency Range 429 to 439 MHz, High Output Power	Now
T5760	SO20	UHF ASK/FSK Receiver, Frequency Receiving Range 868 to 870 MHz, Highest Integration Level in Market	Now
TK5561	Plastic Package (PP)	Read/Write Transponder for Highly Sophisticated Security Applications, 125 kHz Carrier Frequency, Encryption Algorithm, 9 × 32-bit EEPROM, Low-power/Low-voltage CMOS, no Battery Supply, Small Size, Manchester/Biphase, RF/32, RF/64	Now
U2270B	SO16	Read/Write Base Station IC, 100 kHz to 150 kHz Carrier Frequency, Amplitude Modulation Typically Up to 5K Baud, Manchester/Biphase RF/32, RF/64, RF/128	Now
U2741B	SSO16	UHF Remote Control Transmitter for ASK and FSK Systems, On-chip PLL Transmitter with Integrated VCO	Now
U2745B	SSO16	UHF ASK Transmitter, Frequency Range 310 to 440 MHz, Supply Voltage 2.2 to 4.0V, Temperature Range -40°C to +85°C	Now
U3280M	SSO16	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	Now
U3741BM	SO20	UHF Remote Control Receiver for ASK and FSK Systems, All RF Components Integrated	Now
U3742BM	SO20	UHF Remote Control Receiver, RSSI Output for ASK and FSK Systems	Now
U3745BM	SO20	UHF ASK Receiver, Frequency Range 310 to 440 MHz, Supply Voltage 4.5 to 5.5V, Temperature Range -40°C to 85°C	Now
U4311B-FS	SSO20 (0.65)	RF Receiver, 10.7 MHz, IF Amplifier, AM + FM Demodulator, Non-inverting Clamping Comparator, Low Power Consumption, Typically 1.0 mA, 105°C	Now
U9280M	SSO20	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)	Now

Note: 1. For dedicated microcontrollers for Car Access Applications, see "4-bit Microcontrollers/MARC4 Family" on pages 66-67.

## Automotive (Continued)

### Car Access – Evaluation Kits and Tools<sup>(1)</sup>

Part Number	Description	Availability
ATAB5743-S4	Receive Board T5743, 433.92 MHz, SAW Filter	Now
ATAB5743-S3	Receive Board T5743, 315 MHz, SAW Filter	Now
ATAB5750-8	Transmitter Board T5750, 868.3 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
ATAB5760-N	Receiver Board T5760, 868.3 MHz, No SAW Filter	Now
ATAB5760-S	Receiver Board T5760, 868.3 MHz, SAW Filter	Now
ATAB5761-N	Receiver Board T5761, 915 MHz, No SAW Filter	Now
ATAK5750-60-N	Design Kit 868 MHz for T5750 and T5760, No SAW Filter	Now
ATAK5750-60-5	Design Kit 868 MHz for T5750 and T5760, SAW Filter	Now
ATAK5750-61-N	Design Kit 915 MHz for T5750 and T5761, No SAW Filter	Now
ATAK5753-43-S	Design Kit 315 MHz for T5753 and T5743, SAW Filter	Now
ATAK5754-43-S	Design Kit 433.92 MHz for T5754 and T5743, SAW Filter	Now
TMEBX741A	Design Kit 433.92 MHz, 300 kHz Bandwidth, ASK Transmitter for U2741B and U3741BM	Now
TMEBX741B	Design Kit 433.92 MHz, 600 kHz Bandwidth, ASK and FSK Transmitter for U2741B and U3741BM	Now
TMEBX741C	Design Kit 315 MHz, 300 kHz Bandwidth, ASK	Now
TMEBX741D	Design Kit 315 MHz, 600 kHz Bandwidth, ASK and FSK	Now
TMEBX745A	Design Kit 433.92 MHz, 600 kHz Bandwidth, ASK, for U2745B/U3745BM	Now
TMEBX745B	Design Kit 315 MHz, 600 kHz Bandwidth, ASK, for U2745B/U3745BM	Now
ATAB5744-N3	Receiver Board T5744, 315 MHz, No SAW Filter	Now
ATAB5744-S3	Receiver Board T5744, 315 MHz, SAW Filter	Now
ATAB5744-N4	Receiver Board T5744, 433.92 MHz, No SAW Filter	Now
ATAB5744-S4	Receiver Board T5744, 433.93 MHz, SAW Filter	Now

Note: 1. For dedicated microcontrollers for Car Access Applications, see “4-bit Microcontrollers/MARC4 Family” on pages 66-67.

## Automotive (Continued)

### Tire Pressure Monitoring<sup>(1)</sup>

Part Number	Package	Description	Availability
ATAR862x-yyy-TNz3	SSO24	Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5753 in One IC, Temperature Range -40°C to +125°C, Frequency Range 300 to 330 MHz	Now
ATAR862x-yyy-TNz4	SSO24	Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5754 in One IC, Temperature Range -40°C to +125°C, Frequency Range 429 to 439 MHz	Now
ATAR862x-yyy-TNz8	SSO24	Complete UHF Transmitter, ROM Microcontroller and Transmitter PLL T5750 in One IC, Temperature Range -40°C to +125°C, Frequency Range 868 to 928 MHz	Now
T48C862x-R3-TN	SSO24	Complete UHF Transmitter, Flash Microcontroller and Transmitter PLL T5753 in One IC, Temperature Range -40°C to +125°C, Frequency Range 300 to 330 MHz	Now
T48C862x-R4-TN	SSO24	Complete UHF Transmitter, Flash Microcontroller and Transmitter PLL T5754 in One IC, Temperature Range -40°C to +125°C, Frequency Range 429 to 439 MHz	Now
T48C862x-R8-TN	SSO24	Complete UHF Transmitter, Flash Microcontroller and Transmitter PLL T5750 in One IC, Temperature Range -40°C to 125°C, Frequency Range 868 to 928 MHz	Now
T5743P3	SO20	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	Now
T5743P6	SO20	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	Now
T5744	SO20, SSO20	UHF Remote Control Receiver for ASK Systems/PWM Mode	Now
T5753-6AQ	TSSOP8	UHF ASK/FSK Transmitter, Frequency Range 310 to 330 MHz, High Output Power	Now
T5754-6AQ	TSSOP8	UHF ASK/FSK Transmitter, Frequency Range 429 to 439 MHz, High Output Power	Now
T5760	SO20	UHF ASK/FSK Receiver, Frequency Receiving Range 868 to 870 MHz, Highest Integration Level in Market	Now
T5761	SO20	UHF ASK/FSK Receiver, Frequency Receiving Range 902 to 928 MHz, Highest Integration Level in Market	Now
U3741BM	SO20	UHF Remote Control Receiver for ASK and FSK Systems – All RF Components Integrated	Now
U3742BM	SO20	UHF Remote Control Receiver, RSSI Output for ASK and FSK Systems	Now

Note: 1. For dedicated microcontrollers for Tire Pressure Monitoring Applications, see “4-bit Microcontrollers/MARC4 Family” on pages 66-67.

## Automotive (Continued)

### Tire Pressure Monitoring – Evaluation Kits and Tools<sup>(1)</sup>

Part Number	Description	Availability
ATAB5743-S4	Receiver Board T5743, 433.92 MHz, SAW Filter	Now
ATAB5743-S3	Receiver Board T5743, 315 MHz, SAW Filter	Now
ATAB5750-8	Transmitter Board T5750, 868.3 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
ATAB5760-N	Receiver Board T5760, 868.3 MHz, No SAW Filter	Now
ATAB5760-S	Receiver Board T5760, 868.3 MHz, SAW Filter	Now
ATAB5761-N	Receiver Board T5761, 915 MHz, No SAW Filter	Now
ATAK5750-60-N	Design Kit 868 MHz for T5750 and T5760, No SAW Filter	Now
ATAK5750-61-N	Design Kit 915 MHz for T5750 and T5761, No SAW Filter	Now
ATAK5753-43-S	Design Kit 315 MHz for T5753 and T5743, SAW Filter	Now
ATAK5754-43-S	Design Kit 433.92 MHz for T5754 and T5743, SAW Filter	Now
TMEBX741A	Design Kit 433.92 MHz, 300 kHz Bandwidth, ASK Transmitter for U2741B and U3741BM	Now
TMEBX741B	Design Kit 433.92 MHz, 600 kHz Bandwidth, ASK and FSK Transmitter for U2741B and U3741BM	Now
TMEBX741C	Design Kit 315 MHz, 300 kHz Bandwidth, ASK	Now
TMEBX741D	Design Kit 315 MHz, 600 kHz Bandwidth, ASK and FSK	Now
ATAB5744-N3	Receiver Board T5744, 315 MHz, No SAW Filter	Now
ATAB5744-S3	Receiver Board T5744, 315 MHz, SAW Filter	Now
ATAB5744-N4	Receiver Board T5744, 433.92 MHz, No SAW Filter	Now
ATAB5744-S4	Receiver Board T5744, 433.93 MHz, SAW Filter	Now

Note: 1. For dedicated microcontrollers for Tire Pressure Monitoring Applications, see “4-bit Microcontrollers/MARC4 Family” on pages 66-67.



## Industrial Tools

### Battery Charge IC

Part Number	Package	Description	Availability
U2403B	DIP8, SO8	Current Source and Smart Timer for Slow Charge, Cost-minimized Charge Concepts for Car Adapter, Cordless Phone, Low-cost Charger	Now

### Phase Control ICs

Part Number	Package	Description	Availability
U2008B	DIP8, SO8	Phase Control + Retrigger, Softstart or Shunt Regulation, Line-voltage Compensation, Minimal External Components	Now
U2010B	DIP16, SO16	As U2008B + Softstart, Shunt Regulation, Overload Compensation, Overload Indication, Line-voltage Compensation, Programmable Load-current Limitation	Now
U209B	DIP14, SO16	Tacho Control IC, As U2008B + f/V Converter, Reference Voltage – Applications: All Tacho Control AC Motors	Now
U211B	DIP18, SO16	The Worldwide Standard IC for Tacho AC Motor Control, As U209B + Foldback	Now
U490B	DIP8, SO8	One-shot Power Control for Electric Staplers, Mains Sync. and Phase-controlled Thyristor Ignition	Now

### Sensor-Controlled Timer ICs

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

### Zero Crossing Switching IC

Part Number	Package	Description	Availability
T2117	DIP8, SO8	Standard Zero Crossing Switch, Low-cost Application, Adjustable Ramp	Now

## Industrial (Continued)

### Clock and Watch ICs

Part Number	Package	Description	Availability
e1217X	Dice	Standard Low-cost CMOS Watch IC, 32 kHz Crystal, Mask Options Available, High Oscillator Stability	Now
e1466D	Dice, DIP8	Clock IC with Digital Trimming, 32 kHz Crystal, Integrated Capacitors, Mask Options 1.1 to 2.2V Supply	Now
e1467D	Dice	Clock IC with Digital Trimming, 32 kHz Crystal, Same as e1466D, but with Alarm Function	Now
e5130A	Dice	Low Voltage CMOS Driver Circuit, Supply Voltage 1.1 to 3.6V, 4 Non-inverting Tri-stable Drivers	Now

### IR Receiver ICs

Part Number	Package	Description	Availability
T2525N	Wafer	IR Receiver Circuit, 5V, no External Components Required, High Noise Suppression, High Sensitivity	Now
T2526N	Wafer	IR Receiver Circuit, 2.7 to 5.5V, no External Components Required, High Noise Suppression, High Sensitivity	Now
T2527N	Wafer	IR Receiver Circuit, 2.7 to 3.6V, High Bandpass Accuracy, High ESD Capability, no External Components Required, High Noise Suppression, High Sensitivity	Now
U2535B	SO8	IR Preamplifier, Typically 0.26 mA Standby Current, 20 kHz to 100 kHz, Low Power Consumption	Now
U2538B	SO8	IR Preamplifier, Typically 0.55 mA Standby Current, 20 kHz to 60 kHz, Only 3 External Components Required	Now

## Communications ICs

### Wireless LAN

Part Number	Description	Availability
AT76C502A-OT144	11-Mbit WLAN Media Access Controller, IEEE 802.11b Standard, Provides All Processing and Functionality Needed for the MAC Protocol of Wireless LANs, Auto Fallback to 5.5, 2, 1, PCMCIA Interface	Now
AT76C503A-OT128	11-Mbit WLAN Media Access Controller, IEEE 802.11b Standard, Provides All Processing and Functionality Needed for the MAC Protocol of Wireless LANs, Auto Fallback to 5.5, 2, 1, USB Interface	Now
AT76C504-OZ160	11-Mbit WLAN Media Access Controller + Baseband, IEEE 802.11b Standard, Provides All Processing and Functionality Needed for the Integrated MAC + BB Chip with PCMCIA	Now
AT76C505-OZ128	11-Mbit WLAN Media Access Controller + Baseband, IEEE 802.11b Standard, Provides All Processing and Functionality Needed for the Integrated MAC + BB Chip with PCMCIA	Now
AT76C506-OZ160	11-Mbit WLAN Media Access Controller + Baseband, IEEE 802.11b Standard, Provides All Processing and Functionality Needed for the Integrated MAC + BB Chip with PCI/mini-PCI Interface	Now
AT76C504A-OCT176	Shrink of AT76C504 with Integrated AES, TKIP and 160K Bytes of SRAM	Aug. 2003
AT76C505A-OCT144	Shrink of AT76C505 with Integrated AES, TKIP and 160K Bytes of SRAM	Aug. 2003
AT76C506A-OCT176	Shrink of AT76C506 with Integrated AES, TKIP and 160K Bytes of SRAM	Aug. 2003
AT76C507-OCT144	WLAN (802.11b) MAC + Baseband with a USB Host Controller Interface, Includes AES and TKIP in Hardware	Aug. 2003
AT76C509-OZ208	A Low-cost Access Point Chip for WLAN (802.11b) Applications Based on Single ARM with Integrated MAC + Baseband and 10/100 Ethernet, Includes AES and TKIP in Hardware	July 2003
AT76C514	WLAN MAC + Dual BB (CCK + OFDM), Capable of Supporting 802.11a/b/g, Includes in Hardware, AES and TKIP for Security, 32-bit Cardbus Interface, Package to be Determined	Dec. 2003
AT76C515	WLAN MAC + Dual BB (CCK + OFDM), Capable of Supporting USB 2.0, Includes in Hardware, AES and TKIP for Security, 32-bit Cardbus Interface, Package to be Determined	Dec. 2003
AT76C516	WLAN MAC + Dual BB (CCK + OFDM), Capable of Supporting PCI/mini-PCI, Includes in Hardware, AES and TKIP for Security, 32-bit Cardbus Interface, Package to be Determined	Dec. 2003
AT76C510-0Q128/ AT76C510-OT128	Single Chip with Two ARM7 CPUs that Bridges Wireless (802.11b) to 10/100 Ethernet (802.3)	Now
AT76C511-0L208	Shrink of the AT76C510 with Further Integration (Additional 10/100, UART, 32-bit EMI to SDRAM, SPI)	Now
AT76C512-0V280	A high-performance multiband (802.11b and 802.11a) Access Point with Integrated MAC and Basebands	Dec. 2003
ATR3515	5 GHz SiGe PA for WLAN 802.11a, Linear $P_{out} = 18$ dBm, QFN16 Package	Sept. 2003
T7031	2.4 GHz SiGe WLAN PA with Power Detection for 802.11b and 802.11g, Linear $P_{out\ max} = 18$ dBm, $V_{CC} = 2.7$ to $3.6$ V, QFN16 Package	July 2003

# Wireless LAN (Continued)

## Evaluation/Development Kits (Available for Prequalified Customers)

Part Number	Description	Availability
AT76C510-EK-RFMD	Kit Includes: Bridge Access PT Board with Integrated Intersil Radio, Two Antennas, USB Cable, Firmware, Software Manual (Does not Include any Client Cards)	Now <sup>(1)</sup>
AT76C511-EK-RFMD	Kit Includes: One Bridge/Access Point Evaluation Board with the RFMD Front-end Radio and Two Antennas, Two Ethernet Cables, Power Adapter, User Guide, Technical Guide, Firmware and Software Utilities	Now
AT76C504-EK-RFMD	Kit Includes: Two PCMCIA Evaluation Cards with Integrated Radio-Based on RF 3000, User Guides, Drivers – Firmware and Software Utilities	Now <sup>(1)</sup>
AT76C505-EK-RFMD	Kit Includes: Two USB Evaluation Cards with Integrated Radio-Based on RF 3000, User Guides, Drivers – Firmware and Software Utilities	Now <sup>(1)</sup>
AT76C506-EK-RFMD	Kit Includes: Two mini-PCI Evaluation Cards with Integrated Radio-Based on RF 3000, User Guides, Drivers – Firmware and Software Utilities	Now <sup>(1)</sup>

Note: 1. Call Atmel for Availability.

# Bluetooth™

Part Number	Description	Availability
ATR2902	Bluetooth Low IF Single-chip Transceiver	March 2004
T7023	Bluetooth/ISM 2.4 GHz Power Amplifier, P <sub>OUT</sub> = 23 dBm, QFN16 Package	Now
T7024	Bluetooth/ISM 2.4 GHz TX/RX Front End, P <sub>OUT</sub> = 23 dBm, NF = 2 dB, PSSO20 and QFN20 Packages	Now
T7025	Bluetooth/ISM 2.4 GHz Power Amplifier, P <sub>OUT</sub> = 23 dBm, Digital Power Control, QFN16 Package	Now
AT76C552-1-0Z176/ AT76C552-1-0L176	Bluetooth Baseband and MAC, PCMCIA	Now <sup>(1)</sup>
AT76C553-1-0Z144/ AT76C553-2-0Z082/ AT76C553-3-0Z082 (MCM)	Bluetooth Baseband and MAC, USB Interface	Now <sup>(1)</sup>
AT76C554-3-0Z144/ AT76C554-2-0Z082/ AT76C554-1-0Z082 (MCM)	Bluetooth Baseband and MAC, UART Interface	Now <sup>(1)</sup>

## Evaluation/Development Kits (Available for Prequalified Customers)

AT76C551-EK	Kit Includes: Two PCMCIA Cards, Software Utilities, Firmware, Drivers, Software Manual (Silicon Wave Radio), Documentation	Now <sup>(2)</sup>
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Notes: 1. Minimum Order Requirement.  
2. Call Atmel for Availability.

## Cellular Phone ICs

### CDMA

Part Number	Package	Description	Availability
T0372	4 x 4 mm Module	3V Power Amplifier Module for AMPS/Cell Band CDMA Handhelds, High Power Added Efficiency, Two Quiescent Current States, CMOS Compatible Control Logic Inputs	Now
T0377	4 x 4 mm Module	3V Power Amplifier Module for PCS Band CDMA Handhelds, High Power Added Efficiency, Two Quiescent Current States, CMOS Compatible Control Logic Inputs	Now

### GSM

Part Number	Package	Description	Availability
U2896B	SSO36	GSM, DCS, PCS Transmitter, Modulation Loop Concept, Symmetrical Inputs/Outputs, Variable Charge-pump Current	Now

### Power Amplifier ICs

Part Number	Package	Description	Availability
T0930	PSSOP16	2W CW Power Amplifier, 2.4V Single Supply Voltage, 47% PAE	Now

## Corded Phone ICs

### High-end Telephone ICs

Part Number	Package	Description	Availability
U3900BM	SSO44	Multi-standard Feature Phone IC, Bus Controlled, DTMF, Voice Switch, CLASS, Interface to Cordless Phones and Answering Machines	Now
U4089B	SSO44	Multi-standard Feature Phone Circuit with Voice Switch, Speech Circuit, Speaker Amplifier	Now
U4090B	SSO44	Multi-standard Feature Phone Circuit with Voice Switch, Speech Circuit, DC/DC Converter, Speaker Amplifier	Now
U4091BM	SSO44	Multi-standard Feature Phone IC, Bus Controlled, DTMF, Voice Switch, Interface to Cordless Phones and Answering Machines	Now

### Low-end Telephone ICs

Part Number	Package	Description	Availability
U3761MB-T	SSO44	One-chip Telephone, Low-voltage Speech Circuit, Dialer 3 + 10 Memories	Now

### Modular Telephone ICs

Part Number	Package	Description	Availability
U4037B-N	SO24	Microcontroller-controlled Speech and Ringer IC, Double Power Supply for Ringer and Speech Function	Now
U4082B	SO28	Voice-switched Circuit, Fast Channel Switching for Quasi Duplex Operation	Now
U4083B	SO8	Low-power Audio Amplifier, Low Current Consumption	Now

## Cordless Phone ICs

### CT0/900 MHz

Part Number	Package	Description	Availability
U3600BM	SSO44	CT0 Programmable Transceiver, One-chip RF, IF and CT0, Programmable PLL, Adjustment Free	Now

### CT2

Part Number	Package	Description	Availability
U7001BG	SSO20	GaAs Front End, LNA, Switch and PA Integrated	Now

## Cordless Phone ICs (Continued)

### DECT/DCT RF ICs

Part Number	Package	Description	Availability
ATR2806	QFN32	2.4 GHz Transceiver, Low IF Architecture	Dec. 2003
T2801	QFN48	Transceiver for DECT Application, Non-blind-slot Solution, VCO and Voltage Regulator Integrated, Few External Components	Now
T2802	QFN48	2.4 GHz Transceiver, Non-blind-slot Operation, VCO and Voltage Regulator On-chip	Now
T2803	QFN48	2.4 GHz Transceiver, Non-blind-slot Operation, VCO and Voltage Regulator On-chip, Open Loop Modulation, Wide Band 2.4 GHz TRX	Now
T2813	QFN48	2.4 GHz Transceiver, Non-blind-slot Operation, VCO and Voltage Regulator On-chip, Open Loop Modulation, Narrow Band 2.4 GHz TRX with 95 Channels	Now
T7024	PSSO20, QFN20	DECT/DCT 2.4 GHz TX/RX Front End IC	Now
T7026	QFN20	2.4 GHz LNA/PA	Now
U2761B	SSO28	DECT RX/IF IC, Integrated Receive Path, 2.7 to 4.6V	Now
U2785B	SSO28	DECT TX/PLL, PLL, and Closed Loop Modulation, 2.7 to 4.6V	Now
U2786B	SSO28	DECT TX/PLL, PLL, and Closed Loop Modulation, 2.7 to 4.6V, $f_{\text{CLOCK}} = 13.8 \text{ MHz}$	Now
U7004B	SSO20	SiGe DECT Front End, Power Amplifier and LNA, 2.7 to 4.6V	Now
U7006B	PSSOP16	High Efficiency SiGe PA/LNA with Control Management of Antenna Switch, Power Amplifier and LNA, 2.7 to 4.6V	Now

### ISM Front End ICs

Part Number	Package	Description	Availability
T0930	PSSOP16	2W CW Power Amplifier, 2.4V Single Supply Voltage, 47% PAE	Now
T0931	Flipchip	2W CW Power Amplifier, 2.4V Single Supply Voltage, 47% PAE	Now
T0980	PSSO16	SiGe Front End for FRS Family Radio, Power Amplifier and LNA (300 to 500 MHz)	Now
T7024	PSSO20, QFN20	ISM 2.4 GHz TX/RX Front End, $P_{\text{OUT}} = 23 \text{ dBm}$ , $\text{NF} = 2 \text{ dB}$	Now
U2766B	SSO28	900 MHz ISM Band Receiver, Single Conversion, 10.7 MHz IF, PLL Demodulator	Now

## Infrastructure ICs

Part Number	Package	Description	Availability
ATR0785	TSSOP16	800 to 1000 MHz High Linearity Active Receive Mixer for Infrastructure Digital Communication Systems, Broadband Resistance of 50 $\Omega$ on All I/O Ports, High LO to RF Isolation, Active Mixer with Conversion Gain	Now
ATR0786	TSSOP16	1800 to 2100 MHz High Linearity Active Receive Mixer for Infrastructure Digital Communication Systems, Broadband Resistance of 50 $\Omega$ on All I/O Ports, High LO to RF Isolation, Active Mixer with Conversion Gain	Now
ATR0787	TSSOP16	2100 to 2500 MHz High Linearity Active Receive Mixer for Infrastructure Digital Communication Systems, Broadband Resistance of 50 $\Omega$ on All I/O Ports, High LO to RF Isolation, Active Mixer with Conversion Gain	Now
ATR0797	TSSOP16	IF Receiver/Demodulator, 65 to 300 MHz for Infrastructure Digital Communication Systems, Gain Control in 20 dB Steps, Very Low I/Q Amplitude and Phase Error, High Linearity	Now
T0780	TSSOP16	800 to 1000 MHz High Linearity Active Receive Mixer for Infrastructure Digital Communication Systems, Broadband Resistance of 50 $\Omega$ on All I/O Ports, High LO to RF Isolation, Active Mixer with Conversion Gain	Now
T0781	TSSOP16	1700 to 2000 MHz High Linearity Active Receive Mixer for Infrastructure Digital Communication Systems, Broadband Resistance of 50 $\Omega$ on All I/O Ports, High LO to RF Isolation, Active Mixer with Conversion Gain	Now
T0790	TSSOP16	Direct Quadrature Modulator, 800 to 2500 MHz for Infrastructure Digital Communication Systems, Very Good Carrier and Side Band Suppression, Supports Wide Band Base Input, Very Low Noise Floor Performance	Now
U2790B	SO16	1000 MHz Quadrature Modulator for Digital Cellular Radio Systems, Very Low Power Consumption (Typically 150 mW), 0 dBm O/P Level	Now
U2793B	SSO20	30 to 300 MHz Quadrature Modulator for Digital Cellular Radio Systems and Hybrid Fibre Coax Applications, Current Consumption 15 mA at 5V	Now
U2794B	SSO20	1000 MHz Quadrature Demodulator for Cellular Phones and Hybrid Fiber Coax Applications, Low DC Offset $f_{IN} = 70$ to 1000 MHz	Now
U2795B	SO8	2500 MHz Up- and Down-conversion Mixer for DECT, PCN and WLAN Applications, Supply Voltage 2.7 to 5.5V, Single-ended Output, no Balun Required, Input and Output Impedance Programmable, IP3 Programmable	Now
U2796B	SO8	2000 MHz Down-conversion Mixer, Supply Voltage 2.7 to 5.5V, Very Good Isolation Characteristics, Current Consumption 3.2 mA	Now



## Internet Appliances & VoIP

### Smart Internet Appliance Processors (SIAP™)

Part Number	Description	Availability
AT75C220	Smart Internet Appliance Processor – Includes an ARM7®, an Oak DSP and two Ethernet MACs in a 208-lead PQFP and 256-ball PBGA packages	Now
AT75C140	Smart Internet Appliance Processor – Includes an ARM7 and two Ethernet MACs in a 208-lead PQFP and 256-ball PBGA packages	Now
AT76C901-0G217	IP Telephony Chip (VoIP) for Business Telephones (Wireless Over 802.11b) Includes Two ARM7's, an Oak DSP and Voice Codec	Now
<b>Development Tools</b>		
AT75C220-DK-SMEC	Development Kit for AT75C220 in 208-lead PQFP	Now
AT75C140-DK	Development Kit for AT75C140 in 256-ball PBGA	Now
AT76C901-DK	Kit Includes: Main Board, Memory Board, Software and Documentation	Now <sup>(1)</sup> Upon Request

Note: 1. Call Atmel for Availability.

## Smart RF<sup>(1)</sup>

Part Number	Description	Availability
AT86RF211	Single-chip FSK Transceiver for ISM Applications from 400 to 930 MHz (Includes Frequency Hopping), Output Power > 12 dBm, Fast and Accurate Synthesizer Simple 100% Digital Interface, 48-lead TQFP	Now
AT86RF401U	RF Wireless Data Transmitter, 315 MHz, OOK/ASK, PLL-based RF Transmitter and 8-bit AVR Microcontroller Core on Single Die, 2-volt Operation, 2-Kbyte Flash Program, 128-byte EEPROM, 20-lead TSSOP	Now
AT86RF401E	RF Wireless Data Transmitter, 433 MHz, OOK/ASK, PLL-based RF Transmitter and 8-bit AVR Microcontroller Core on Single Die, 2-volt Operation, 2-Kbyte Flash Program, 128-byte EEPROM, 20-lead TSSOP	Now
AT86RF401X	RF Wireless Data Transmitter, 250 to 450 MHz, OOK/ASK, PLL-based RF Transmitter and 8-bit AVR Microcontroller Core on Single Die, 2-volt Operation, 2-Kbyte Flash Program, 128-byte EEPROM, 20-lead TSSOP	Now

### Development/Evaluation Kits and Tools

AT86RF211-DK433107	433 MHz Frequency, 2 AVR Boards (Each of Them with Daughter Board), Embedded Demos for Immediate Use, In-System Programming Possibility, PC Interface, AVR Software Tool Kit	Now
AT86RF211-DK868107	868 MHz Frequency, 2 AVR Boards (Each of Them with Daughter Board), Embedded Demos for Immediate Use, In-System Programming Possibility, PC Interface, AVR Software Tool Kit	Now
AT86RF211-DK915107	915 MHz Frequency, 2 AVR Boards (Each of Them with Daughter Board), Embedded Demos for Immediate Use, In-System Programming Possibility, PC Interface, AVR Software Tool Kit	Now
AT86RF211-DB433107	433 MHz Frequency Daughter Board, Full Implementation for Highest Performances and Selectivity (Narrow Band Applications Only), Included in the AT86RF211-DK433107	Now
AT86RF211-DB868107	868 MHz Frequency Daughter Board, Full Implementation for Highest Performances and Selectivity (Narrow Band Applications Only), Included in the AT86RF211-DK868107	Now
AT86RF211-DB915107	915 MHz Frequency Daughter Board, Full Implementation for Highest Performances and Selectivity (Narrow Band Applications Only), Included in the AT86RF211-DK915107	Now
AT86RF211-DB433LT	433 MHz Frequency Daughter Board, Full Implementation with Lead-through Components for Cost Reduction Purpose (Narrow Band Applications Only), Compatible with DK AVR Mother Board	Now

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

## Smart RF (Continued)<sup>(1)</sup>

Part Number	Description	Availability
<b>Development/Evaluation Kits and Tools (Continued)</b>		
AT86RF211-DB868LT	868 MHz Frequency Daughter Board, Full Implementation with Lead-through Components for Cost Reduction Purpose (Narrow Band Applications Only), Compatible with DK AVR Mother Board	Now
AT86RF211-DB915LT	915 MHz Frequency Daughter Board, Full Implementation with Lead-through Components for Cost Reduction Purpose (Narrow Band Applications Only), Compatible with DK AVR Mother Board	Now
AT86RF211DB-BIBAND	Dual-band Daughter Board with Printed Antenna and Inductors, which Can Be Used at 868 and 915 MHz with the Same Hardware, Compatible with DK AVR Mother Board	Now
AT86RF211DB-868LNA	868 MHz Frequency Daughter Board, Features a LNA, a SAW Filter, Printed Antenna and Inductors, Compatible with DK AVR Mother Board	Now
AT86RF211DB-915LNA	915 MHz Frequency Daughter Board, Features a LNA, a SAW Filter, Printed Antenna and Inductors, Compatible with DK AVR Mother Board	Now
AT86RF211-TRIBAND	Tri-band Daughter Board with Printed Antenna and Inductors that Can Be Used at 433, 868 and 915 MHz with the Same PCB Layout, Compatible with DK AVR Mother Board	Now
AT86RF401U-EK1	315 MHz Transmitter Evaluation Kit for AT86RF401U – Kit Contains: Sample Transmitter PCB, Two Sample Devices, a Programming Dongle/Cable Assembly and CD-ROM Containing all the Tools Necessary to Develop Software for the AT86RF401U	Now
AT86RF401E-EK1	433.92 MHz Transmitter Evaluation Kit for AT86RF401E – Kit Contains: Sample Transmitter PCB, Two Sample Devices, a Programming Dongle/Cable Assembly and CD-ROM Containing all the Tools Necessary to Develop Software for the AT86RF401E	Now
AT86RF401X-EK1	250 to 450 MHz Transmitter Evaluation Kit for AT86RF401X – Kit Contains: Sample Transmitter PCB, Two Sample Devices, a Programming Dongle/Cable Assembly and CD-ROM Containing all the Tools Necessary to Develop Software for the AT86RF401X	Now
ATAK4015744U	315 MHz RF Control System Evaluation Kit for AT86RF401 and T5744 – Kit Contains: Sample Transmitter and Receiver PCBs, Two Samples of Each Device, a Programming Dongle/Cable Assembly and CD-ROM Containing all the Tools Necessary to Develop Software for the RF Control System	Now
ATAK4015744E	433.92 MHz RF Control System Evaluation Kit for AT86RF401 and T5744 – Kit Contains: Sample Transmitter and Receiver PCBs, Two Samples of Each Device, a Programming Dongle/Cable Assembly and CD-ROM Containing all the Tools Necessary to Develop Software for the RF Control System	Now

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

## GPS

Part Number	Package	Description	Availability
ATRO600	QFN28	GPS RF Receiver, Single IF Front End Concept, Very Low Power	Now
ATRO610	PLL (1.6 x 2 mm)	GPS LNA with Integrated Power-up Control and Output Match ( $NF_{min} < 1.6$ dB)	Now
ATRO620	BGA100	GPS 16-channel Baseband Controller, ARM7TDMI, RAM, ROM	Now

## Multimedia & Imaging

### Cameras & Camera Modules

#### Linescan Cameras

Part Number	Description	Availability
<b>AKYLA™</b>		
AKYLAMD20LV1010	3CCD Color Camera LVDS 1024 Pixels 10 µm Pixel Size, Up to 18000 l/s	Now
AKYLAMD20 LV1014	3CCD Color Camera LVDS 1024 Pixels 14 µm Pixel Size, Up to 18000 l/s	Now
AKYLAMD20 LV2010	3CCD Color Camera LVDS 2048 Pixels 10 µm Pixel Size, Up to 18000 l/s	Now
AKYLAMD20CL1010	3CCD Color Camera, Camera Link 1024 Pixels 10 µm Pixel Size, Up to 18000 l/s	Now
AKYLAMD20CL1014	3CCD Color Camera, Camera Link 1024 Pixels 14 µm Pixel Size, Up to 18000 l/s	Now
AKYLAMD20CL2010	3CCD Color Camera, Camera Link 2048 Pixels 10 µm Pixel Size, Up to 18000 l/s	Now
AKYLAMD30LV1010	3CCD Color Camera LVDS 1024 Pixels 10 µm Pixel Size, Up to 27000 l/s	Now
AKYLAMD30LV1014	3CCD Color Camera LVDS 1024 Pixels 14 µm Pixel Size, Up to 27000 l/s	Now
AKYLAMD30LV2010	3CCD Color Camera LVDS 2048 Pixels 10 µm Pixel Size, Up to 27000 l/s	Now
AKYLAMD30CL1010	3CCD Color Camera, Camera Link 1024 Pixels 10 µm Pixel Size, Up to 27000 l/s	Now
AKYLAMD30CL1014	3CCD Color Camera, Camera Link 1024 Pixels 14 µm Pixel Size, Up to 27000 l/s	Now
AKYLAMD30CL2010	3CCD Color Camera, Camera Link 2048 Pixels 10 µm Pixel Size, Up to 27000 l/s	Now
<b>AVIIVA™</b>		
AVIIVAC2CL4010	Color Camera, 2 Taps Sensor, Camera Link, 4096 Pixels, 10 µm Pixel Size	Now
AVIIVAC2LV4010	Color Camera, 2 Taps Sensor, LVDS, 4096 Pixels, 10 µm Pixel Size	Now
AVIIVAM2LV0514	Monochrome Camera, 2 Taps Sensor, LVDS, 512 Pixels, 14 µm Pixel Size	Now
AVIIVAM2LV1010	Monochrome Camera, 2 Taps Sensor, LVDS, 1024 Pixels, 10 µm Pixel Size	Now
AVIIVAM2LV1014	Monochrome Camera, 2 Taps Sensor, LVDS, 1024 Pixels, 14 µm Pixel Size	Now
AVIIVAM2LV2010	Monochrome Camera, 2 Taps Sensor, LVDS, 2048 Pixels, 10 µm Pixel Size	Now
AVIIVAM2LV2014	Monochrome Camera, 2 Taps Sensor, LVDS, 2048 Pixels, 14 µm Pixel Size	Now
AVIIVAM2LV4010	Monochrome Camera, 2 Taps Sensor, LVDS, 4096 Pixels, 10 µm Pixel Size	Now
AVIIVAM2CL0514	Monochrome Camera, 2 Taps Sensor, Camera Link, 512 Pixels, 14 µm Pixel Size	Now
AVIIVAM2CL1010	Monochrome Camera, 2 Taps Sensor, Camera Link, 1024 Pixels, 10 µm Pixel Size	Now
AVIIVAM2CL1014	Monochrome Camera, 2 Taps Sensor, Camera Link, 1024 Pixels, 14 µm Pixel Size	Now
AVIIVAM2CL2010	Monochrome Camera, 2 Taps Sensor, Camera Link, 2048 Pixels, 10 µm Pixel Size	Now
AVIIVAM2CL2014	Monochrome Camera, 2 Taps Sensor, Camera Link, 2048 Pixels, 14 µm Pixel Size	Now
AVIIVAM2CL4010	Monochrome Camera, 2 Taps Sensor, Camera Link, 4096 Pixels, 10 µm Pixel Size	Now
AVIIVAM4CL2014	Monochrome Camera, 4 Taps Sensor, Camera Link, 2048 Pixels, 14 µm Pixel Size	Oct. 2003
AVIIVAM4CL6007	Monochrome Camera, 4 Taps Sensor, Camera Link, 6144 Pixels, 7 µm Pixel Size	Oct. 2003
AVIIVAM4CL8007	Monochrome Camera, 4 Taps Sensor, Camera Link, 8192 Pixels, 7 µm Pixel Size	Oct. 2003

## Cameras & Camera Modules (Continued)

### Full Frame Cameras

Part Number	Description	Availability
CAMELIA® 4M	4 Megapixel Digital Camera, 12-bit Output, 2048 x 2048 Pixels	Now
CAMELIA Color 4M	4 Megapixel Digital Color Camera, 3 x 12-bit Output, 2048 x 2048 Pixels	Now
CAMELIA M18MLV	8 Megapixel Digital Camera, 12-bit Output, 3500 x 2300 Pixels LVDS	Now
CAMELIA M18MCL	8 Megapixel Digital Camera, 12-bit Output, 3500 x 2300 Pixels Camera Link	Now
CAMELIA C18MLV	8 Megapixel Digital Color Camera, 3 x 12-bit Output, 3500 x 2300 Pixels LVDS	Now
CAMELIA C18MCL	8 Megapixel Digital Color Camera, 3 x 12-bit Output, 3500 x 2300 Pixels Camera Link	Now

## Digital Camera Solutions

### Imaging Multimedia and Digital Broadcasting

Part Number	Description	Availability
AT76C110-0C280	Highly Integrated Solution for Digital Cameras, Supports Either CCD or CMOS Imagers, Image Display, Processing, Compression and Storage, Overall Camera Management, Based on ARM7, 30 Frame/sec Video, 15 Frame/sec Capture Mode, Supports ≤16 Megapixel Imagers, Interface to 16 - 256 SDRAM	Now
AT76C111-0C280	Digital Camera Single-chip (SD Support, 32 Bytes of Internal RAM), Shrink of AT76C110-0C280 – Not Pin-to-pin Compatible with AT76C110-0C280	Now
AT76C112-0Z208	Flash Card Playback Device, Supports Compact Flash, MMC/SD/SSFP/PC/Memory Stick®, JPEG Compression	Now
AT76C113-	Digital Camera Single-chip, Greater Processing Power, USB Host/Slave, 84 MHz ARM Subsystem with Full Cache Support, DMA Engines to Transfer Data to/from All Peripherals, Not Need for External Program Flash, 1.8V Core and 3.3V I/O	Now
AT76C113-Options	AT76C113S-0Z208 <2-Mpixel, 128-Mbyte Maximum SDRAM, No USB Host AT76C113U-0Z208 <2-Mpixel, 128-Mbyte Maximum SDRAM, USB Host AT76C113H-0Z208 <2-Mpixel, 512-Mbyte Maximum SDRAM, No USB Host AT76C113HU-0Z208 <2-Mpixel, 512-Mbyte Maximum SDRAM, USB Host AT76C113P-0Z208 Playback, <2-Mpixel, 512-Mbyte Maximum SDRAM, No USB Host AT76C113PU-0Z208 Playback, <2-Mpixel, 128-Mbyte Maximum SDRAM, USB Host	Now
AT76C114-0Z280	Digital Camera Single-chip, Greater Processing Power, 120 MHz ARM9 Subsystem with MPEG4 Hardware Support at 30 pps VGA Resolution, DMA Engines to Transfer Data to/from All Peripherals 1.8V Core and 3.3V I/O	Oct. 2003

### Imaging Evaluation Kits

Call Atmel for Availability.

## CCD Image Sensors

### CCD Linear Arrays

Part Number	Description	Antiblooming	Availability
TH7804A	1024 Pixels, 13 x 13 Pixel Size, 6000 MHz Dynamic Range, 20 MHz Maximum Data Rate, 2 Outputs	No	Now
TH7813A	1024 Pixels, 10 x 10 Pixel Size, 6600 MHz Dynamic Range, 50 MHz Maximum Data Rate, 2 Outputs	Yes	Now
TH7814A	2048 Pixels, 10 x 10 Pixel Size, 6600 MHz Dynamic Range, 50 MHz Maximum Data Rate, 2 Outputs	Yes	Now
TH7815A	4096 Pixels, 10 x 10 Pixel Size, 5300 MHz Dynamic Range, 50 MHz Maximum Data Rate, 2 Outputs	Yes	Now
TH7834C	12000 Pixels, 6.5 x 6.5 Pixel Size, 10000 MHz Dynamic Range, 20 MHz Maximum Data Rate, 4 Outputs	Yes	Now
TH7841A	2048 Pixels, 13 x 11 Pixel Size, 6000 MHz Dynamic Range, 20 MHz Maximum Data Rate, 2 Outputs	No	Now

### CCD Area Arrays: Frame Transfer Image Sensors

Part Number	TV Standard	Description	Antiblooming	Availability
TH7887A	Progressive	1:1 Image Ratio, 1024 Lines, 1024 Pixels per Line, 10000 MHz Dynamic Range, 20 MHz Maximum Data Rate, 4 Outputs	Yes	Now
TH7888A	Progressive	1:1 Image Ratio, 1024 Lines, 1024 Pixels per Line, 1000 MHz Dynamic Range, 20 MHz Maximum Data Rate, 1 or 2 Outputs	Yes	Now

### CCD Area Arrays: Full Frame Image Sensors

Part Number	Description	Availability
TH7899M	2048 x 2048 Pixels, 14 x 14 $\mu$ m Pixel Size, 4 x 20 MHz Maximum Data Rate	Now
AT71200M	3500 x 2300 Pixels, Monochrome and Color CCD 10 x 10 $\mu$ m Pixel Size, 4 x 25 MHz Maximum Data Rate	Now

## DREAM® Sound Synthesis

### DREAM Sound Synthesis ICs

Part Number	Package	Description	Availability
ATSAM9703	TQFP100	Professional Integrated Synthesizer	Now
ATSAM9707	TQFP144	Integrated Sound Studio	Now
ATSAM9708	TQFP144	128-voice Integrated Sound Synthesizer	Now
ATSAM9713	TQFP80	Low-cost Integrated Synthesis with Effects	Now
ATSAM9733	PQFP100	Integrated Synthesizer with Effects	Now
ATSAM9743	PQFP100	Single-chip Music System	Now
ATSAM9753	TQFP144	Integrated Digital Musical Instrument	Now
ATSAM9773	TQFP80	Single-chip Synthesizer with Effects, Serial Interface	Now
ATSAM9793	PQFP100	Single-chip Synthesizer with Effects, Parallel Interface	Now

## MP3 Player

### MP3 Decoder

Part Number	Description	Availability
AT89C51SND1	Microcontroller with 64-Kbyte Flash and 4-Kbyte Bootloader, 2304-byte RAM, MP3 Decoder, 2-wire Interface (TWI), USB, SPI, I2S, Man Machine Interface, 10-bit ADC	Now
AT83C51SND1	Microcontroller with 64-Kbyte ROM and 2304-byte RAM, MP3 Decoder, TWI, USB, SPI, I2S, Man Machine Interface, 10-bit ADC	Now
<b>Development Kits</b>		
AT89DVK-04	AT89C51SND1 MP3 Development Kit	Now
AT89RFD-01	AT89C51SND1 MP3 Player Reference Design	Now

# Audio

## Audio Receiver ICs

Part Number	Package	Description	Availability
U2510B	SDIP28	All-band AM/FM Receiver and Audio Amplifier, 1W AF Output Power, DC Mode Control for AM, FM, and Tape, Superior Strong-signal Behavior	Now
U4065B	SO24	High-performance FM Front End without RF Preamplifier, Unique Interference Sensor, New AGC Concept with 3 Loops	Now
U4254BM	SO16	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	Now
U4255BM	SSO44	AM/FM Car Radio Receiver with Digital Tuning and Electronic Filter Adjustment, 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 U4256BM	Now
U4256BM	SSO20	Frequency Synthesizer for Radio Receivers, Three DACs for Automatic Tuner Adjust (e.g., with U4255BM, T4258)	Now
U4285BM	SSO20	AM/FM PLL (for RDS Application), High Signal-to-noise Ratio, 4 Switching Outputs, Integrated Push-pull Stage, Fast Response Time (for RDS)	Now
U4289BM	SO16	AM/FM PLL (for RDS Application), Reference Oscillator Up to 15 MHz, High Signal-to-noise Ratio, 1 Switching Output, Integrated Loop-push-pull Stage	Now
TDA1083	DIP16	AM/FM Receiver and Audio Amplifier, 0.7W AF Output Power, High AM Sensitivity, FM/IF Amplifier	Now
T4258	SSO44	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 U4256BM	Now
T4260	SSO44	AM/FM Tuner Front End for Digital Radio Solutions – 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	Now

## Digital Audio Broadcasting (DAB) ICs

Part Number	Package	Description	Availability
U2730B	SSO28	L-band Down-converter Inclusive PLL for DAB Receivers, High Linear Amplifier, AGC Dynamic Range >30 dB, VCO, 4 Reference Divide Factors Selectable, Mixer, Tri-state Phase Detector with Programmable Charge Pump	Now
U2731B	SSO44	DAB One-chip Front-end Receiver with High Integration Level	Now
U2739M	TQFP100	DAB One-chip Channel and Source Decoder, Supports Mode I, II, III and IV According to ETS 300401 – User-defined Synchronization Strategy – Power Supply 3.3V	Now



## Video

### Digital Video Broadcast (DVB™)

Part Number	Description	Availability
T90FJR	Dual Common Interface Hardware Controller – CIMaX™	Now
AT76C651B-OT144	Integrated DVB-compliant QAM Demodulator with Integrated ADC (Annex A, C Support)	Now <sup>(1)</sup>

Note: 1. Minimum Order Requirement.

### TV/VCR ICs

Part Number	Package	Description	Availability
<b>Sound IF ICs</b>			
U2860B	DIP14, SO14	Double FM Demodulator (Stereo), $V_S = 5V$ , Completely Alignment-free	Now
U2861B	DIP14, SO14	FM Demodulator (Mono), $V_S = 5V$ , Completely Alignment-free	Now
U4468B	DIP16	QSS + AM Demodulator, $V_S = 5V$ , PLL-controlled QSS Mixer	Now
U4488B	DIP16	QSS + AM Demodulator, $V_S = 5V$ , PLL-controlled QSS Mixer, Two IF Inputs	Now
<b>Video and Sound IF ICs</b>			
TDA4470	SDIP28, SO28	Multi-standard Video IF (Neg/Pos) and Quasi Parallel Sound Processing (FM, NICAM, AM), $V_S = 5V$ , FPLL Detection, AFC, Alignment-free AM Demodulator, Three IF Inputs, Pin Compatible with TDA4472	Now
TDA4472	SDIP28, SO28	Video IF (Neg) and Quasi Parallel Sound Processing (FM, NICAM), $V_S = 5V$ , FPLL Detection, AFC, Three IF Inputs, Pin Compatible with TDA4470	Now
TDA4474	SDIP30	Multi-standard Video IF (Neg/Pos) and Quasi Parallel Sound Processing (FM, NICAM, AM), $V_S = 5V$ , FPLL Detection, AFC, Alignment-free AM Demodulator, Four IF Inputs	Now

## DVD/CD Storage Chipsets

### Storage Products – Digital Versatile Disk

Part Number	Description	Package	Availability
AT78C1501	DVD/CD Interface Controller Ultra DMA 66 Mbps	208-lead LQFP	Now
AT78C1502	DVD/CD Servo Controller	128-lead LQFP	Now
AT78C1503	DVD/CD Read Channel 160 Mbps	100-lead LQFP	Now

### DVD/CD Laser Driver ICs

Part Number	Description	Package	Availability
ATR0801	Five Channel Laser Driver with Voltage Inputs, RF Oscillator and Two Optional Outputs, Total Output Current to 300 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 4 External Resistors, Gain = 100	SSO24, QFN28	Now
ATR0805	Five Channel Laser Driver with RF Oscillator and Two Optional Outputs, Total Output Current to 300 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 4 External Resistors, Gain = 100	SSO24, QFN28	Now
ATR0808	Three Channel Laser Driver with RF Oscillator and Two Optional Outputs, Total Output Current to 500 mA, Rise/Fall Time 0.8 ns, Control of Swing and Frequency by 3 External resistors	SSO16, QFN16	Now
ATR0811	Three Channel Laser Driver with Voltage Inputs and RF Oscillator, Total Output Current to 300 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 2 External Resistors, Gain 40/100/100 mA/V	SSO16, QFN16	Now
ATR0818	Three Channel Laser Driver with RF Oscillator, Total Output Current to 500 mA, Rise/Fall Time 0.8 ns, Control of Frequency and Swing by 2 External Resistors, Gain 40/100/100 mA/V	SSO16, QFN16	Now
T0800	Five Channel Laser Driver with RF Oscillator and Two Optional Outputs, Total Output Current to 300 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 4 External Resistors, Gain = 100	SSO24, QFN28	Now
T0806	Three Channel Laser Driver with RF Oscillator and Two Optional Outputs, Total Output Current to 300 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 3 External Resistors, Gain = 100	SSO16, QFN16	Now
T0810	Three Channel Laser Driver with RF Oscillator and APC Amplifier, Total Output Current to 200 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 2 External Resistors, Gain = 400	SSO16	Now
T0815	Three Channel Laser Driver with RF Oscillator and APC Amplifier, Total Output Current to 300 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 2 External Resistors, Gain = 400	SSO16	Now
T0816	Three Channel Laser Driver with RF Oscillator, Total Output Current to 300 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 2 External Resistors, Gain = 100 to 250	SSO16, QFN16	Now
T0820	Four Channel Laser Driver with RF Oscillator, Total Output Current to 300 mA, Rise Time 1.0 ns, Fall Time 1.1 ns, Control of Frequency and Swing by 2 External Resistors, Gain = 100	SSO16	Now

## Security and Smart Card ICs

### RF Identification

#### RF Identification/Immobilization – 125 kHz

Part Number	Package	Description	Availability
<b>Transponder ICs 125 kHz (100 to 150 kHz)</b>			
e5530	DOW, Noncut, DIT, SO8	RFID Read-only IDIC <sup>®</sup> , Up to 128-bit ROM, Different Codings/ Modulations and Bitrates FDX-B, ISO 11784/11785 Compatible	Now
e5561	DOW Noncut	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 Bitrates	Now
T5554	Die on Stick, Tape	RFID Read/Write IDIC for Contactless Operation – Suited for Direct Coil Connection, Compatible to x5551, Capacitance On-chip (Up to 220 pF), Au-Mega Pads for Thermo Compression Bonding Method	Now
T5557	DOW Noncut, DIT, SO8, Micromodule	RFID Read/Write IDIC for Contactless Identification, Backward Compatible to x5551 (330-bit R/W Memory), 64-bit Unique TAG ID, Improved Operating Performance, High Temperature Data Retention, Optional 75 pF Capacitor On-chip, ISO 11784/11785, Programmable	Now
<b>Reader IC</b>			
U2270B	SO16	Read/Write Base Station IC, 100 to 150 kHz Carrier Frequency, Amplitude Modulation Typically Up to 5K Baud, Manchester/Biphase RF/32, RF/64, RF/128	Now
<b>Transponders</b>			
TK5530	Plastic Package (PP)	Read-only Transponder, 125 kHz, Low-power/Low-voltage CMOS, no Battery Supply, Small Size, 128-bit ROM, RF/32, Manchester, Defined Header	Now
TK5551	Plastic Package (PP)	Read/Write Transponder, Option Configurable, 125 kHz, AOR Feature for Multi-tag Access	Now
TK5552	Plastic Package (PP)	125 kHz Read/Write Transponder, Manchester RF/16, RF/32, 1-Kbit EEPROM	Now
TK5561	Plastic Package (PP)	Read/Write Transponder for Highly Sophisticated Security Applications, 125 kHz Carrier Frequency, Encryption Algorithm, 9 × 32-bit EEPROM, Low-power/Low-voltage CMOS, no Battery Supply, Small Size, Manchester/Biphase, RF/32, RF/64	Now
U3280M	SSO16	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	Now
U9280M	SSO20	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)	Now

## RF Identification (Continued)

### RF Identification/Immobilization – 125 kHz (Continued)

Part Number	Package	Description	Availability
<b>Transponder Module</b>			
T5551	Module	Read/Write Transponder Module, Function Equal to x5551, Integrated Capacitor with 330/435 pF	Now
T5552	Module	Read/Write Transponder Module with 1-Kbit Memory, Options Configurable, 435 pF Capacitor Integrated	Now
T5557	Module	NOA2 Module, RFID Read/Write IDIC for Contactless Identification, Backward Compatible to e5551 (330 bit R/W Memory), 64-bit Unique TAG ID	Now
<b>Development/Evaluation Kits and Tools</b>			
TMEB8704	Design Kit for 125 kHz, Supports the x55xx RFID Product Family		Now

## Embedded Security

### PC Security

Part Number	I/O Interface	Description	Availability
AT97SC3201	LPC	Fully TCG/TCPA Compliant Security Processor, Secure Key Storage (10+ Keys), RNG, SHA-1, Software Auditing, 1024/RSA Sign-in 100 ms	Now

## Secure RF Memories Smart Card ICs

### Smart Card ICs – CryptoRF™ Memory (ISO14443 Type B 13.56 MHz)

Part Number	Organization	Description	Availability
AT88SC0104CRF	4 x 32 Bytes	Contactless 1-Kbit User Memory with Authentication and Encryption	Now
AT88SC0204CRF	4 x 64 Bytes	Contactless 2-Kbit User Memory with Authentication and Encryption	Now
AT88SC0404CRF	4 x 128 Bytes	Contactless 4-Kbit User Memory with Authentication and Encryption	Now
AT88SC0808CRF	8 x 128 Bytes	Contactless 8-Kbit User Memory with Authentication and Encryption	Now
AT88SC1616CRF	16 x 128 Bytes	Contactless 16-Kbit User Memory with Authentication and Encryption	Now
AT88SC3216CRF	16 x 256 Bytes	Contactless 32-Kbit User Memory with Authentication and Encryption	Now
AT88SC6416CRF	16 x 512 Bytes	Contactless 64-Kbit User Memory with Authentication and Encryption	Now
<b>Evaluation/Development Kits</b>			
AT88SC6416CRF-DK	1K to 64K	CryptoRF Development Kit	Now
AT88SC6416CRF-EK	1K to 64K	CryptoRF Evaluation Kit	Now

### Smart Card ICs – Secure RF Memory

Part Number	EEPROM Memory	Features	Availability
AT88RF020	2K Bits	13.56 MHz, ISO 14443B Compliant RFID Transponder	Now
AT88RF001	256 Bits	13.56 MHz RFID External Memory Interface Chip	Now
<b>Evaluation/Development Kit</b>			
AT88RF020-DK	Secure RF Evaluation and Development Kit		Sept. 2003

## Secure Memories

### Smart Card ICs – CryptoMemory® (Asynchronous Secure Memory)

Part Number	Organization	Voltage	Description	Availability
AT88SC0104C	4 x 32 Bytes	2.7 - 5.5V	1-Kbit User Memory with Authentication and Encryption	Now
AT88SC0204C	4 x 64 Bytes	2.7 - 5.5V	2-Kbit User Memory with Authentication and Encryption	Now
AT88SC0404C	4 x 128 Bytes	2.7 - 5.5V	4-Kbit User Memory with Authentication and Encryption	Now
AT88SC0808C	8 x 128 Bytes	2.7 - 5.5V	8-Kbit User Memory with Authentication and Encryption	Now
AT88SC1616C	16 x 128 Bytes	2.7 - 5.5V	16-Kbit User Memory with Authentication and Encryption	Now
AT88SC3216C	16 x 256 Bytes	2.7 - 5.5V	32-Kbit User Memory with Authentication and Encryption	Sept. 2003
AT88SC6416C	16 x 512 Bytes	2.7 - 5.5V	64-Kbit User Memory with Authentication and Encryption	Sept. 2003
AT88SC12816C	16 x 1024 Bytes	2.7 - 5.5V	128-Kbit User Memory with Authentication and Encryption	Sept. 2003
AT88SC25616C	16 x 2048 Bytes	2.7 - 5.5V	256-Kbit User Memory with Authentication and Encryption	Sept. 2003
<b>Evaluation/Development Kits</b>				
AT88SC1616C-EK	1K to 16K CryptoMemory Evaluation Kit			Now
AT88SC1616C-DK	1K to 16K CryptoMemory Development Kit Including Source Code			Now
AT88SC25616C-EK	1K to 256K CryptoMemory Evaluation Kit			Sept. 2003
AT88SC25616C-DK	1K to 256K CryptoMemory Development Kit, Including Source Code			Sept. 2003

## Secure Memories (Continued)

### Smart Card ICs – Secure Memory

Part Number	Organization	Voltage	Description	Availability
<b>Secure Memory ICs with Password</b>				
AT88SC102	2 (512 x 1)	2.7 - 5.5V	1K EEPROM with Password Security, Two 512-bit Zones	Now
AT88SC1003	2 (256 x 1) + 512 x 1	4.5 - 5.5V	1K EEPROM with Password Security, Three Zones	Now
<b>Secure Memory ICs with Password and Authentication</b>				
AT88SC153	3 (512 x 1)	2.7 - 5.5V	1.5K EEPROM with Authentication, Three 512-bit Zones	Now
AT88SC1608	8 (2K x 1)	2.7 - 5.5V	16K EEPROM with Authentication, Eight 2-Kbit Zones	Now
<b>Evaluation/Development Kits</b>				
AT88SC153-EK	AT88SC153 Evaluation Kit and Application Examples			Now
AT88SC153-DK	AT88SC153 Development Kit Including Secure Function			Now
AT88SC1608-EK	AT88SC1608 Evaluation Kit and Application Examples			Now
AT88SC1608-DK	AT88SC1608 Development Kit Including Secure Function			Now

### Smart Card ICs – Serial Memory

Part Number	Organization	Voltage	Description	Availability
<b>Serial EEPROMs (2-wire)</b>				
AT24C01ASC	128 x 8	2.7 - 5.5V	2-wire, 1-Kbit Serial EEPROM	Now
AT24C02SC	256 x 8	2.7 - 5.5V	2-wire, 2-Kbit Serial EEPROM	Now
AT24C04SC	512 x 8	2.7 - 5.5V	2-wire, 4-Kbit Serial EEPROM	Now
AT24C08SC	1,024 x 8	2.7 - 5.5V	2-wire, 8-Kbit Serial EEPROM	Now
AT24C16SC	2,048 x 8	2.7 - 5.5V	2-wire, 16-Kbit Serial EEPROM	Now
AT24C32SC	4,096 x 8	2.7 - 5.5V	2-wire, 32-Kbit Serial EEPROM	Now
AT24C64SC	8,192 x 8	2.7 - 5.5V	2-wire, 64-Kbit Serial EEPROM	Now
AT24C128SC	16,384 x 8	2.7 - 5.5V	2-wire, 128-Kbit Serial EEPROM	Now
AT24C256SC	32,768 x 8	2.7 - 5.5V	2-wire, 256-Kbit Serial EEPROM	Now
AT24C512SC	65,536 x 8	2.7 - 5.5V	2-wire, 512-Kbit Serial EEPROM	Now
AT24C1024SC	131,072 x 8	2.7 - 5.5V	2-wire, 1,024-Kbit Serial EEPROM	Now
<b>Serial EEPROMs (3-wire)</b>				
AT93C46SC	128 x 8/64 x 16	2.7 - 5.5V	3-wire, 1-Kbit Serial EEPROM	Now

## Secure Microcontrollers

### Secure Microcontrollers for Smart Card Applications – AT90SC Family<sup>(1)</sup>

Part Number	RAM	ROM	Flash	EEPROM	Voltage	Asym. Crypto Engine	Other Features	Availability
<i>secureAVR™-based</i>								
AT90SC4802R	1K	48K	0	2K	2.7 - 5.5V	No	Hardware DES/TDES, CRC, Common Criteria EAL4+ and VL3 <sup>(2)</sup> Target	Now
AT90SC6404R	2K	64K	0	4K	2.7 - 5.5V	No	Hardware DES/TDES, CRC, Common Criteria EAL4+ and VL3 <sup>(2)</sup> Target	Now
AT90SC9608RC	3K	96K	0	8K	2.7 - 5.5V	Yes	Hardware DES/TDES, CRC, Common Criteria EAL4+ and VL3 <sup>(2)</sup> Target	Now
AT90SC9616RC	3K	96K	0	16K	2.7 - 5.5V	Yes	Hardware DES/TDES, CRC, Common Criteria EAL4+ and VL3 <sup>(2)</sup> Target	Now
AT90SC3232CS	3K	0	32K	32K	2.7 - 5.5V	Yes	Hardware DES/TDES, CRC, Common Criteria EAL4+ Target, SPI	Now
AT90SC19264RC	6K	192K	0	64K	2.7 - 5.5V	Yes	Hardware DES/TDES, Crypto Library, CRC, Common Criteria EAL4+ Awarded	Now
AT90SC25636R	6K	256K	0	36K	2.7 - 5.5V	No	Hardware DES/TDES, CRC	Now
AT90SC25672R	6K	256K	0	72K	2.7 - 5.5V	No	Hardware DES/TDES, CRC	Now
AT90SC9636R	4K	96K	0	36K	2.7 - 5.5V	No	Hardware DES/TDES, CRC	Now
AT90SC19236R	4K	192K	0	36K	2.7 - 5.5V	No	Hardware DES/TDES, CRC	Now

Notes: 1. All AT90SC family products have OTP (One Time Programmable) EEPROM area, RNG, “out of bounds” detectors and side channel attack countermeasures.

2. VL3: Visa Level 3.



## Secure Microcontrollers (Continued)

### Secure Microcontrollers for Smart Card Applications – AT90SC Family<sup>(1)</sup> (Continued)

Part Number	RAM	ROM	Flash	EEPROM	Voltage	Asym. Crypto Engine	Other Features	Availability
<b>Secure MCUs</b>								
AT90SC4816R	1.5K	48K	0	16K	2.7 - 5.5V	No		Now
AT90SC3232	1.5K	0	32K	32K	2.7 - 5.5V	No		Now
AT90SC6432R	2K	64K	0	32K	2.7 - 5.5V	No		Now
AT90SC320856	1.5K	32K	8K	56K	2.7 - 5.5V	No		Now
AT90SC6464C	3K	0	64K	64K	2.7 - 5.5V	Yes	Hardware DES/TDES, CRC, Common Criteria EAL1+ and VL3 <sup>(2)</sup> Awarded	Now
AT90SC6464C-USB	3K	0	64K	64K	2.7 - 5.5V	Yes	On-chip USB Full-speed Interface, CRC, Hardware DES/TDES, ECC Accelerator, Crypto Library (AES 128/128, SHA256)	Now

#### Development Tools

##### Emulation Platform Support

ATV1-xxxx	Voyager Development Tool Base Platform for the AT90SC and AT91SC Families Microprocessors							Now
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##### USB Evaluation Board

AT90SC6464C	ATDONGLE-EV1 – USB Full-speed Evaluation Board							Now
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- Notes:
1. All AT90SC family products have OTP (One Time Programmable) EEPROM area, RNG, “out of bounds” detectors and side channel attack countermeasures.
  2. VL3: Visa Level 3.

### Secure Microcontrollers for Smart Card Applications – AT91SC Family<sup>(1)</sup>

Part Number	RAM	ROM	Flash	EEPROM	Voltage	Asym. Crypto Engine	Other Features	Availability
AT91SC25672RC	8K	256K	0	72K	2.7 - 5.5V	Yes	Hardware DES/TDES, CRC, Common Criteria EAL4+ Target	Sept. 2003

#### Development Tools

##### Emulation Platform Support

ATV1-xxxx	Voyager Development Tool Base Platform for the AT90SC and AT91SC Families Microprocessors							Now
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- Note:
1. ARM 32-bit RISC SecurCore™ family-based product. All AT91SC family products have OTP (One Time Programmable) EEPROM area, RNG, “out of bounds” detectors, memory encryption and side channel attack countermeasures.

## Secure Microcontrollers (Continued)

### Secure Microcontrollers for Smart Card Applications – AT05SC Family<sup>(1)</sup>

Part Number	RAM	ROM	Flash	EEPROM	Voltage	Asym. Crypto Engine	Other Features	Availability
AT05SC1604R	1K	16K	0	4K	2.7 - 5.5V	No	VL3 and Common Criteria EAL4+ Awarded <sup>(2)</sup>	Now
AT05SC2408R	512	24K	0	8K	2.7 - 5.5V	No		Now
AT05SC3208R	1K	32K	0	8K	2.7 - 5.5V	No	Hardware DES/TDES, Common Criteria EAL4+ Awarded	Now

#### Development Tools

AT05SC-EM3R	Emulation Modules for all AT05SC Family Microprocessors							Now
AT05SC-SIM	Simulator for all AT05SC family Microprocessors							Now

Notes: 1. All AT05SC family products have OTP (One Time Programmable) EEPROM area, RNG, “out of bounds” detectors, memory encryption and side channel attack countermeasures.  
 2. VL3: Visa Level 3.

## Biometrics

### FingerChip®

Part Number	Voltage	Description	Evaluation Board	Availability
FCD4B14C	3.3 to 5.0V	500 dpi, 0.4 mm x 14.0 mm Digital Fingerprint Linear Sensor, 2240 Pixels (8 x 280) Image Array, Digital Output (On-chip ADC) 20-lead DIL Package	“Sweepie” USB Scanner	Now
AT77C101B-CB01C	3.3 to 5.0V	500 dpi, 0.4 mm x 14.0 mm Digital Fingerprint Linear Sensor, 2240 Pixels (8 x 280) Image Array, Digital Output (On-chip ADC)	“Bioki” USB Scanner	Now
AT77C101B-CB02C	3.3 to 5.0V	500 dpi, 0.4 mm x 14.0 mm Digital Fingerprint Linear Sensor, 2240 Pixels (8 x 280) Image Array, Digital Output (On-chip ADC) with Board to Flex Connector		Now

## Other ASSPs

### Power Management

Part Number	Description	Availability
<b>Management</b>		
AT73C202	Power and Battery Management Unit for Wireless Platforms	Now
<b>Regulators</b>		
RE023	2.6V/160 mA LDO Voltage Regulator	Now
RE024	2.8V/160 mA Dual-mode LDO Voltage Regulator	Now
RE025	Programmable 2.8V or 2.9V/30 mA Low-noise LDO Voltage Regulator	Now
RE027	2.8V/130 mA Low-noise LDO Voltage Regulator	Now
RE028	4.5V 30 mA LDO Voltage Regulator	Now
RE029	1.8V 80 mA Dual-mode LDO Regulator	Now
RE030	1.75 to 2.1V 180 mA Dual-mode LDO Regulator	Now
RE031	2.5V/5 mA Low Quiescent Current LDO Voltage Regulator	Now
DCDC005	Asynchronous Step Up/Down DCDC Regulator Controller 3.1V, 3.2V, 3.3V and 3.4V Programmable Output Voltage, 520 mA Maximum Load Current	Now
DCDC011	Synchronous Buck DCDC Regulator Controller 0.87V, 0.9V, 1.1V and 1.2V Programmable Output Voltage, 1.2A Maximum Load Current	Now
DCDC012	Synchronous Buck DCDC Regulator Controller 1.8V, 2.5V, 8V Programmable Output Voltage, 300 mA Maximum Load Current with Integrated Switches	Now

### Broadband Communications

#### Broadband Data Converters

Part Number	Description	Evaluation Board	Availability
TS8388BF	8-bit Resolution, 1000 Msps Sampling Rate, 1500 MHz Input Bandwidth, 1 GSPS 8-bit A/D Converter in 68-lead CQFP Package	TSEV8388BF	Now
TS8388BG	8-bit Resolution, 1000 Msps Sampling Rate, 1800 MHz Input Bandwidth, 1 GSPS A/D Converter in 72-ball CBGA Package	TSEV8388BG	Now
TS83102GOGL	10-bit Resolution, 2 Gsps Sampling Rate, 3.4 GHz Input Bandwidth, 2 Gsps 10-bit A/D Converter in 148-ball CBGA Package	TSXEV83102GOGL	Now
AT76CL610	6-bit Resolution, 1 Gsps Sampling Rate, 700 MHz Input Bandwidth Dual-1 Gsps 6-bit A/D Converter in 80-lead TQFP Package	AT76CL610-EB	Now
AT84AD001BTD	8-bit Resolution, 1 Gsps Sampling Rate, 1 GHz Input Bandwidth Dual-1 Gsps 8-bit A/D Converter in 144-lead TQFP Package	AT84AD001TD-EB	Now
TS8308500GL	8-bit Resolution, 500 Msps Sampling Rate, 1 GHz Input Bandwidth A/D Converter in 68-Ball CBGA Package	TSEV8308500GL	Now
TSX86101G2GS	10-bit Resolution, 1.2 Gsps Sampling Rate, with Integrated MUX 1:4 (Speed Ratio) in 255-Ball Ci-CGA Package	TSEV86101G2GS	Samples

#### DMUX for Broadband ADC

Part Number	Description	Evaluation Board	Availability
TS81102G0	8 to 10-bit Resolution, 2 Gsps Maximum Input Sampling Rate, 1:8/1:4 Speed Ratio, $\pm 5V$ Power Supply, 8 to 10-bit 2 GSPS DEMUX	TSEV81102G0TP	Now

## USB Controllers

### AT43/AT76 Series AVR USB Microcontrollers, USB Hubs and USB Host

Part Number	Description	Availability
<b>USB Microcontrollers and Hubs</b>		
AT43301	Low-cost, Self- and Bus-powered, Full-speed Hub Controller with Ganged Port Power Switching and Global Overcurrent Protection, 24-lead SOIC or 24-lead LQFP	Now
AT43312A	Self- and Bus-powered, Full-speed Hub Controller with Individual Port Power Switching and Overcurrent Protection, 32-lead SOIC or 32-lead LQFP	Now
AT43USB325E	Multimedia Keyboard Controller with Embedded 4-port Hub, 16K Bytes of Program RAM and Support for 20 x 8 Keyboard Matrix, 64-lead LQFP	Now
AT43USB326	Multimedia Keyboard Controller with Embedded 2-port Hub, 16K Bytes of Program ROM and Support for 18 x 8 Keyboard Matrix, 48-lead LQFP	Now
AT43USB320A	Full-speed USB Microcontroller with a 12 MIPS AVR, 3-function Endpoints, Embedded 4-port Hub, UART and Support for Up to 64K Bytes of External RAM or ROM, 100-lead LQFP	Now
AT43USB353M	Full-speed USB Controller with an 12/24 MIPS AVR, 4-function Endpoints, Embedded 2-port Hub, 12-channel 10-bit ADC, PWM and 24K Bytes of Program ROM, 48-lead LQFP	Now
AT43USB355E	Full-speed USB Microcontroller with a 12 MIPS AVR, 4-function Endpoints, 2-port Hub, 12-channel 10-bit ADC, PWM and 24K Bytes of Program RAM, 64-lead LQFP	Now
AT43USB355M	Full-speed USB Microcontroller with a 12 MIPS AVR, 4-function Endpoints, 2-port Hub, 12-channel 10-bit ADC, PWM and 24K Bytes of Program ROM, 64-lead LQFP	Now
AT43USB351M	Low-/Full-speed Configurable USB Microcontroller with a 1.5/12/24 MIPS AVR, 5-function Endpoints, 12-channel 10-bit ADC, PWM and 24K Bytes of Program ROM, 48-lead LQFP	Now
AT76C711-0T64/ AT76C711-0Z64	Full-speed USB to Fast Serial Asynchronous Bridge-based on a High-speed AVR Microcontroller	Now
<b>USB Host</b>		
AT43USB370	Full-speed USB 2.0 Compliant Host/Function Processor with Embedded USB Host and Function Firmware Stack	Now
<b>Evaluation/Development Kits</b>		
AT43DK301	Evaluation Kit for AT43301	Now
AT43DK312A	Evaluation Kit for AT43312A	Now
AT76C711-EK	Evaluation Kit Includes: Board, Firmware, Drivers, Schematics, Demo Software and Manual	Now
AT43DK320A	Development Kit for AT43USB320A	Now
AT43DK325	Development Kit for AT43USB325/AT43USB326	Now
AT43DK326	Evaluation Kit for AT43USB326	Now
AT43DK355	Development Kit for AT43USB355E/AT43USB355M/AT43USB353M/AT43USB351M	Now
AT43DK370	Development Kit for AT43USB370	Now

## ASICs

### ASICs

Technology	Description	Process Name	Libraries	Availability
0.13 $\mu\text{m}$	Low Leakage, High Voltage, High Speed	AT59K	ATC13	Dec. 2003
0.18 $\mu\text{m}$	Low Leakage, High Speed Embedded EEPROM	AT58K AT58.8K	ATC18 ATC18/EE	Now Sept. 2003
0.21 $\mu\text{m}$	High Speed	AT57.5K	ATC20	Now
0.25 $\mu\text{m}$	High Speed Embedded EEPROM	AT57K AT57.8K	ATC25, ATL25 ATC25/EE	Now
0.35 $\mu\text{m}$	High Speed Double Poly Embedded EEPROM	AT56K AT56.7K AT56.8K	ATC35, ATL35 ATC35, ATL35 ATC35/EE, ATL35/EE	Now
0.60 $\mu\text{m}$	5V	AT26K	ATL60, ATLS60	Now

### ASIC IP Cores

Part Number	Description	Availability
Memory Blocks	RAM, Dual-port RAM, SRAM, Dual-port SRAM, ROM, Flash, EEPROM, FIFO	Now
MCU/DSP Cores	ARM920T <sup>TM</sup> , ARM946E-S <sup>TM</sup> , ARM7TDMI <sup>®</sup> (ARM <sup>®</sup> Thumb <sup>®</sup> ), MIPS64 <sup>TM</sup> , AVR, OakDSPCore <sup>®</sup> , PalmDSPCore <sup>®</sup> , TeakDSPCore <sup>®</sup> , mAgic Modular VLIW Computation Core, AT8032 MCU, 5Kf <sup>TM</sup> , 8051	Now
ARM System Bus Peripherals	Bus Interface, Arbiter, Bridge, Cache Memory and Bus Interface Unit, Decoder	Now
ARM Peripherals	<b>Communication:</b> CAN2.0 A/B, 10T/100 Ethernet MAC, 1394 (Firewire), Multimedia Card Interface, 32/64-bit PCI, Serial Peripheral Interface, Synchronous Serial Controller, 2-wire Interface (TWI), USART, USART IrDA, USART ISO7816, USB V1.1 Host, Hub and Device <b>Memory Controllers:</b> Burst Flash Controller, SDRAM Controller, Static Memory Controller <b>Crypto Engines:</b> 128-bit Advanced Encryption Standard, Triple DES <b>System Peripherals:</b> Advanced Interrupt Controller, Advanced Power Management Controller, Debug Unit, Parallel Input/Output, Peripheral Data Controller (DMA), Real-time Clock, System Timer, Timer/Counter	Now
AVR-compatible 8-bit Peripherals	Real-time Clock, Serial Peripheral Interface, Timer/Counter, UART, USB V1.1 Device, Watchdog Timer	Now
Analog Cells	ADC, Bandgap Reference, Comparator, DAC, LCD Driver, OpAmp, Oscillator, PLL, POR, Brown-out Detector, Analog Mux	Now

## ASICs (Continued)

### ASIC IP Cores (Continued)

Part Number	Description	Availability
Wireless Baseband	ASF01	GSM Voice Codec
	AD023	10-bit 100 Ksps Telecom A/D Converter
	CP028	13 to 26 MHz Clock Squarer
	VR029	Precision Voltage Reference Generator
	DA038	10-bit 1 Msps Telecom D/A Converter
Macrocells	AT40K FPGA	Now

### FPGA/CPLD Conversion: ULCs

Part Number	Technology	Max Kgates	Max I/Os	Supply (Volts)		Other	Availability
				Core	I/O Tolerant		
UG2	0.5 $\mu\text{m}$	360	420	5	5		Now
UA1	0.35 $\mu\text{m}$	1400	700	3.3	5		Now
UA1E	0.35 $\mu\text{m}$	780	976	3.3	5	Embedded DPRAM Up to 390-Kbit	Now
UA2	0.25 $\mu\text{m}$	3800	976	2.5	3.3		Now
	0.18 $\mu\text{m}$	10000	1020	1.8	3.3		Now

## Memory

### DataFlash®

Part Number	Speed (MHz)	Density	Description	Availability
<b>Battery-Voltage™ (2.7 to 3.6V)</b>				
AT45DB011B	20	1-Mbit	2.7-volt Serial Interface (SPI) Flash with One 264-byte SRAM Buffer	Now
AT45DB021B	20	2-Mbit	2.7-volt Serial Interface (SPI) Flash with Two 264-byte SRAM Buffers	Now
AT45DB041B	20	4-Mbit	2.7-volt Serial Interface (SPI) Flash with Two 264-byte SRAM Buffers	Now
AT45DB081B	20	8-Mbit	2.7-volt Serial Interface (SPI) Flash with Two 264-byte SRAM Buffers	Now
AT45DB161B	20	16-Mbit	2.7-volt Serial Interface (SPI) Flash with Two 528-byte SRAM Buffers	Now
AT45DB321B	20	32-Mbit	2.7-volt Serial Interface (SPI) Flash with Two 528-byte SRAM Buffers	Now
AT45DB642	20/5	64-Mbit	2.7-volt Dual-interface Flash with Two 1,056-byte SRAM Buffers	Now
AT45DB1282	40/20	128-Mbit	2.7-volt Dual-interface (RapidS™, Rapid8™) Flash with Two 1,056-byte SRAM Buffers	Now
<b>Low Battery-Voltage (2.5 to 3.6V)</b>				
AT45DB041B-2.5	15	4-Mbit	2.5-volt Serial Interface (SPI) Flash with Two 264-byte SRAM Buffers	Now
AT45DB081B-2.5	15	8-Mbit	2.5-volt Serial Interface (SPI) Flash with Two 264-byte SRAM Buffers	Now
AT45DB161B-2.5	15	16-Mbit	2.5-volt Serial Interface (SPI) Flash with Two 512-byte SRAM Buffers	Now
<b>DataFlash Cards</b>				
AT45DCB002	20	2M-byte	2.7-volt Serial Interface (SPI) DataFlash Card	Now
AT45DCB004	20	4M-byte	2.7-volt Serial Interface (SPI) DataFlash Card	Now
AT45DCB008	20	8M-byte	2.7-volt Serial Interface (SPI) DataFlash Card	Now

## Memory (Continued)

### Flash Memory

Part Number	Organization	Speeds	Description	Availability
<b>1.8V Flash (1.65 to 1.9V Single-voltage Read and Write)</b>				
AT49SN6416(T)	4M x 16	54 MHz/90 ns, 20 ns Page Mode	64-Mbit, 1.8-volt Sectorized/Concurrent Flash (Top Boot) with Burst and Page Mode	Now
<b>Battery-Voltage (2.7 to 3.6V Single-voltage Read and Write)</b>				
AT29BV010A	128K x 8	120 - 150 ns	1-Mbit, 2.7-volt Small Sectorized Flash	Now
AT29BV020	256K x 8	120 - 150 ns	2-Mbit, 2.7-volt Small Sectorized Flash	Now
AT29BV040A	512K x 8	200 - 250 ns	4-Mbit, 2.7-volt Small Sectorized Flash	Now
AT49BV512	64K x 8	90 - 120 ns	512-Kbit, 2.7-volt Boot Flash	Now
AT49BV001A(N)(T)	128K x 8	70 ns	1-Mbit, 2.7-volt Parametric Flash (No Reset, Top Boot)	Now
AT49BV001(N)(T)	128K x 8	90 - 120 ns	1-Mbit, 2.7-volt Parametric Flash (No Reset, Top Boot)	Now
AT49BV002A(N)(T)	256K x 8	70 ns	2-Mbit, 2.7-volt Parametric Flash (No Reset, Top Boot)	Now
AT49BV2048B	128K x 16	55 - 70 ns	2-Mbit, 2.7-volt Parametric Flash	Now
AT49BV040A	512K x 8	70 ns	4-Mbit, 2.7-volt Boot Flash	Now
AT49BV040	512K x 8	90 - 120 ns	4-Mbit, 2.7-volt Boot Flash	Now
AT49BV4096A	256K x 16/ 512K x 8	90 ns	4-Mbit, 2.7-volt Parametric Flash	Now
AT49BV008A(T)	1M x 8	90 ns	8-Mbit, 2.7-volt Parametric Flash	Now
AT49BV8192A(T)	512K x 16/ 1M x 8	90 ns	8-Mbit, 2.7-volt Parametric Flash (Top Boot)	Now
AT49BV160C(T)	1M x 16	70 - 80 ns	16-Mbit, 3.0-volt Sectorized Flash (Top Boot)	Now
AT49BV162A(T)	1M x 16/ 2M x 8	70 - 80 ns	16-Mbit, 3.0-volt Sectorized Flash (Top Boot)	Now
AT49BV320A(T)	2M x 16	70 - 80 ns	32-Mbit, 2.7-volt Sectorized (Top Boot)	Now
AT49BV322A(T)	2M x 16/ 4M x 8	70 - 80 ns	32-Mbit, 2.7-volt Sectorized (Top Boot)	Now
AT49BN6416(T)	4M x 16	66 MHz/70 ns, 20 ns Page Mode	64-Mbit, 2.7-volt Sectorized/Concurrent Flash (Top Boot) with Burst and Page Mode	Now
AT49BV6416(T)	4M x 16	70 - 90 ns	64-Mbit, 2.7-volt Sectorized/Concurrent Flash (Top Boot) with Page Mode	Now



## Memory (Continued)

### Flash Memory (Continued)

Part Number	Organization	Speeds	Description	Availability
<b>Low-voltage (3.0 to 3.6V Single-voltage Read and Write)</b>				
AT29LV256	32K x 8	150 - 200 ns	256-Kbit, 3.0-volt Small Sector Flash	Now
AT29LV512	64K x 8	120 - 150 ns	512-Kbit, 3.0-volt Small Sector Flash	Now
AT29LV010A	128K x 8	120 - 150 ns	1-Mbit, 3.0-volt Small Sector Flash	Now
AT29LV1024	64K x 16	150 - 250 ns	1-Mbit, 3.0-volt Small Sector Flash	Now
AT29LV020	256K x 8	100 - 120 ns	2-Mbit, 3.0-volt Small Sector Flash	Now
AT29LV040A	512K x 8	120 - 150 ns	4-Mbit, 3.0-volt Small Sector Flash	Now
AT49LV001(N)(T)	Not Recommended for New Designs, Use AT49BV001A(N)(T)			
AT49LV1024	64K x 16	55 - 90 ns	1-Mbit, 3.0-volt Boot Flash	Now
AT49LV1025	64K x 16	55 - 90 ns	1-Mbit, 3.0-volt Boot Flash	Now
AT49LV002(N)(T)	Not Recommended for New Designs, Use AT49BV002A(N)(T)			
AT49LV2048B	128K x 16	45 ns	2-Mbit, 3.0-volt Parametric Flash	Now
AT49LV040	Not Recommended for New Designs, Use AT49BV040A(N)			
AT49LV4096A	256K x 16/ 512K x 8	70 ns	4-Mbit, 3.0-volt Parametric Flash	Now
AT49LV008A(T)	1M x 8	70 ns	8-Mbit, 3.0-volt Flash (Top Boot)	Now
AT49LV8192A(T)	512K x 16/ 1M x 8	70 ns	8-Mbit, 3.0-volt Flash (Top Boot)	Now
<b>Standard Voltage (4.5 to 5.5V Single-voltage Read and Write)</b>				
AT29C256	32K x 8	70 - 120 ns	256-Kbit, 5.0-volt Small Sector Flash	Now
AT29C257	32K x 8	70 - 120 ns	256-Kbit, 5.0-volt Small Sector Flash	Now
AT29C512	64K x 8	70 - 90 ns	512-Kbit, 5.0-volt Small Sector Flash	Now
AT29C010A	128K x 8	70 - 120 ns	1-Mbit, 5.0-volt Small Sector Flash	Now
AT29C1024	64K x 16	70 - 120 ns	1-Mbit, 5.0-volt Small Sector Flash	Now
AT29C020	256K x 8	90 - 120 ns	2-Mbit, 5.0-volt Small Sector Flash	Now
AT29C040A	512K x 8	90 - 150 ns	4-Mbit, 5.0-volt Small Sector Flash	Now

## Memory (Continued)

### Flash Memory (Continued)

Part Number	Organization	Speeds	Description	Availability
AT49F512	64K x 8	50 - 70 ns	512-Kbit, 5.0-volt Boot Flash	Now
AT49F001A(N)(T)	128K x 8	55 ns	1-Mbit, 5.0-volt Parametric Flash (No Reset, Top Boot)	Now
AT49F001(N)(T)	128K x 8	55 - 120 ns	1-Mbit, 5.0-volt Parametric Flash (No Reset, Top Boot)	Now
AT49F1024	64K x 16	35 - 70 ns	1-Mbit, 5.0-volt Boot Flash	Now
AT49F1025	64K x 16	35 - 70 ns	1-Mbit, 5.0-volt Boot Flash	Now
AT49F002A(N)(T)	256K x 8	55 ns	2-Mbit, 5.0-volt Parametric Flash (No Reset, Top Boot)	Now
AT49F2048B	128K x 16/ 256K x 8	45 ns	2-Mbit, 5.0-volt Parametric Flash	Now
AT49F040A	512K x 8	55 ns	4-Mbit, 5.0-volt Boot Flash (Top Boot)	Now
AT49F040	512K x 8	55 - 90 ns	4-Mbit, 5.0-volt Boot Flash (Top Boot)	Now
AT49F4096A	256K x 16/ 512K x 8	90 ns	4-Mbit, 5.0-volt Parametric Flash	Now
AT49F008A(T)	1M x 8	90 ns	8-Mbit, 5.0-volt Boot Flash (Top Boot)	Now
AT49F8192A(T)	512K x 16/ 1M x 8	90 ns	8-Mbit, 5.0-volt Flash (Top Boot)	Now

## Memory (Continued)

### Serial EEPROM

Part Number	Organization	Density	V <sub>CC</sub>	Interface Type	Package Options	Other	Availability
AT24C01	128 x 8	1K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Non-Cascadable	Now
AT24C01A	128 x 8	1K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP, SOT23	Full Array Write Protection	Now
AT24C02	256 x 8	2K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Full Array Write Protection	Now
AT24C02A	256 x 8	2K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Upper Half Array Write Protection	Now
AT24C04	512 x 8	4K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Full Array Write Protection	Now
AT24C04A	512 x 8	4K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Upper Half Array Write Protection	Now
AT24C08	Not Recommended for New Designs, Use AT24C08A						
AT24C08A	1024 x 8	8K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Full Array Write Protection	Now
AT24C128	16384 x 8	128K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, LAP, dBGA, MAP	Full Array Write Protection	Now
AT24C16	Not Recommended for New Designs, Use AT24C16A						
AT24C16A	2048 x 8	16K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Full Array Write Protection	Now
AT24C164	2048 x 8	16K	1.8, 2.7	2-wire	PDIP, SOIC	Cascadable Feature	Now
AT24C21	128 x 8	1K	2.5	2-wire	PDIP, SOIC	Dual Mode, Plug and Play Operation	Now
AT24C256	32768 x 8	256K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, LAP, dBGA	Full Array Write Protection	Now
AT24C32	Not Recommended for New Designs, Use AT24C32A						

## Memory (Continued)

### Serial EEPROM (Continued)

Part Number	Organization	Density	V <sub>CC</sub>	Interface Type	Package Options	Other	Availability
AT24C32A	4096 x 8	32K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Full Array Write Protection	Now
AT24C512	65536 x 8	512K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, LAP, dBGA	Cascadable Feature	Now
AT24C64	Not Recommended for New Designs, Use AT24C64A						
AT24C64A	8192 x 8	64K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Full Array Write Protection	Now
AT24CS128	16384 x 8	128K	1.8, 2.7	2-wire	PDIP, SOIC	Cascadable Feature, Permanent Software Write Protection	Now
AT25010	Not Recommended for New Designs, Use AT25010A						
AT25010A	128 x 8	1K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, MAP	Supports SPI Mode 0 and 3	Now
AT25020	Not Recommended for New Designs, Use AT25020A						
AT25020A	256 x 8	2K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, MAP	Supports SPI Mode 0 and 3	Now
AT25040	Not Recommended for New Designs, Use AT25040A						
AT25040A	512 x 8	4K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, MAP	Supports SPI Mode 0 and 3	Now
AT25080	Not Recommended for New Designs, Use AT25080A						
AT25080A	1024 x 8	8K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, MAP	Supports SPI Mode 0 and 3	Now
AT25128	16384 x 8	128K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, LAP, dBGA	Supports SPI Mode 0 and 3	Now
AT25160	Not Recommended for New Designs, Use AT25160A						
AT25160A	2048 x 8	16K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, MAP	Supports SPI Mode 0 and 3	Now
AT25256	32768 x 8	256K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, LAP, dBGA	Supports SPI Mode 0 and 3	Now

## Memory (Continued)

### Serial EEPROM (Continued)

Part Number	Organization	Density	V <sub>CC</sub>	Interface Type	Package Options	Other	Availability
AT25HP256	32768 x 8	256K	1.8, 2.7	SPI	PDIP, SOIC, LAP, dBGGA	Supports SPI Mode 0 and 3, High Speed, Page Write Only	Now
AT25320	Not Recommended for New Designs, Use AT25320A						
AT25320A	4096 x 8	32K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, MAP	Supports SPI Mode 0 and 3	Now
AT25640	Not Recommended for New Designs, Use AT25640A						
AT25640A	8192 x 8	64K	1.8, 2.7	SPI	PDIP, SOIC, TSSOP, MAP	Supports SPI Mode 0 and 3	Now
AT25HP512	65536 x 8	512K	1.8, 2.7	SPI	PDIP, SOIC, LAP, dBGGA	Supports SPI Mode 0 and 3, High Speed, Page Write Only	Now
AT25F512	65536 x 8	512K	2.7	SPI	SOIC	Supports SPI Mode 0 and 3, High Speed, Byte Writable	Now
AT25F1024	131072 x 8	1M	2.7	SPI	SOIC	Supports SPI Mode 0 and 3, High Speed, Byte Writable	Now
AT25P1024	131072 x 8	1M	2.7	SPI	SOIC, LAP	Supports SPI Mode 0 and 3, Page Write Only	Now
AT25F2048	262144 x 8	2M	2.7	SPI	SOIC	Supports SPI Mode 0 and 3, Page Write Only	Oct. 2003
AT34C02	256 x 8	2K	1.8, 2.7	2-wire	PDIP, SOIC, TSSOP, MAP	Lower Half Permanent Software Write Protect	Now
AT93C46	64 x 16/ 128 x 8	1K	1.8, 2.7	3-wire	PDIP, SOIC, TSSOP, MAP	x8 or x16 Organization	Now
AT93C46A	64 x 16	1K	2.5, 2.7	3-wire	PDIP, SOIC, TSSOP, MAP	x16 Organization	Now

## Memory (Continued)

### Serial EEPROM (Continued)

Part Number	Organization	Density	V <sub>CC</sub>	Interface Type	Package Options	Other	Availability
AT93C46C	64 x 16	1K	2.5, 2.7	3-wire	PDIP, SOIC	x16 Organization, Schmitt Trigger	Now
AT93C56	128 x 16/ 256 x 8	2K	1.8, 2.7	3-wire	PDIP, SOIC, TSSOP, MAP		Now
AT93C66	256 x 16/ 512 x 8	4K	1.8, 2.7	3-wire	PDIP, SOIC, TSSOP, MAP		Now
AT93C86	1024 x 16/ 2048 x 8	16K	2.7	3-wire	PDIP, SOIC, TSSOP	Schmitt Trigger and Sequential Read	Now
AT24C1024	131072 x 8	1M	2.7	2-wire	PDIP, SOIC, LAP, dBGA	Cascadable Feature	Now

## Memory (Continued)

### Parallel EEPROMs

Part Number	Organization	Speeds	Description	Availability
AT28C16	2K x 8	150 ns	16-Kbit EEPROM	Now
AT28C16E	2K x 8	150 ns	16-Kbit EEPROM with Extended Endurance and Fast Write	Now
AT28C17	2K x 8	150 ns	16-Kbit EEPROM with Ready/Busy	Now
AT28C17E	2K x 8	150 ns	16-Kbit EEPROM with Ready/Busy and Extended Endurance and Fast Write	Now
AT28HC64B	8K x 8	70 - 120 ns	64-Kbit EEPROM with 64-byte Page and Software Data Protection, Commercial/Industrial/Automotive	Now
AT28BV64B	8K x 8	200 - 250 ns	64-Kbit EEPROM with 64-byte Page and Software Data Protection, 2.7-volt, Commercial/Industrial/Automotive	Now
AT28C64	8K x 8	120 - 250 ns	64-Kbit EEPROM (Use AT28C64B for New Designs)	Now
AT28C64E	8K x 8	120 - 250 ns	64-Kbit EEPROM with Extended Endurance and Fast Write (Use AT28C64B for New Designs)	Now
AT28C64X	8K x 8	120 - 250 ns	64-Kbit EEPROM without Ready/Busy (Use AT28C64B for New Designs)	Now
AT28C64B	8K x 8	150 - 250 ns	64-Kbit EEPROM with 64-byte Page and Software Data Protection, Commercial/Industrial/Automotive	Now
AT28HC256	32K x 8	70 - 120 ns	256-Kbit EEPROM with 64-byte Page and Software Data Protection, Commercial/Industrial/Military/Automotive	Now
AT28HC256E	32K x 8	70 - 120 ns	256-Kbit EEPROM with Extended Endurance, Commercial/Industrial/Military	Now
AT28HC256F	32K x 8	70 - 120 ns	256-Kbit EEPROM with Fast Write, Commercial/Industrial/Military/Automotive	Now
AT28BV256	32K x 8	200 - 250 ns	256-Kbit EEPROM with 64-byte Page and Software Data Protection, 2.7-volt, Commercial/Industrial/Automotive	Now
AT28C256F	32K x 8	150 - 250 ns	256-Kbit EEPROM with Fast Write, Commercial/Industrial/Military/Automotive	Now
AT28C256	32K x 8	150 - 250 ns	256-Kbit EEPROM with 64-byte Page and Software Data Protection, Commercial/Industrial/Military/Automotive	Now
AT28C256E	32K x 8	150 - 250 ns	256-Kbit EEPROM with Extended Endurance, Commercial/Industrial/Military	Now

## Memory (Continued)

### Parallel EEPROMs (Continued)

Part Number	Organization	Speeds	Description	Availability
AT28LV010	128K x 8	200 - 250 ns	1-Mbit EEPROM with 128-byte Page and Software Data Protection, 3.0-volt, Commercial/Industrial/Automotive	Now
AT28C010	128K x 8	120 - 250 ns	1-Mbit EEPROM with 128-byte Page and Software Data Protection, Commercial/Industrial/Military/Automotive	Now
AT28C010E	128K x 8	120 - 250 ns	1-Mbit EEPROM with 128-byte Page, Extended Endurance and Software Data Protection, Commercial/Industrial/Military/Automotive	Now
AT28C040	512K x 8	200 - 250 ns	4-Mbit EEPROM with 256-byte Page and Software Data Protection	Now
5962-88525	32K x 8	Reference SMD	Reference SMD	Now
5962-88634	32K x 8	Reference SMD	Reference SMD	Now
5962-38267	128K x 8	Reference SMD	Reference SMD	Now

### Parallel EEPROM Die Product

Part Number	V <sub>CC</sub>	Device T <sub>AA</sub>	Package Configuration
AT28BV64B-W	2.7 - 3.6V	250 ns	Die
AT28BV64B-DWF	2.7 - 3.6V	250 ns	Wafer
AT28BV256-W	2.7 - 3.6V	250 ns	Die
AT28BV256-DWF	2.7 - 3.6V	250 ns	Wafer
AT28C64B-W	4.5 - 5.5V	200 ns	Die
AT28C64B-DWF	4.5 - 5.5V	200 ns	Wafer
AT28HC64B-W	4.5 - 5.5V	120 ns	Die
AT28HC64B-DWF	4.5 - 5.5V	120 ns	Wafer
AT28C256-WM <sup>(1)</sup>	4.5 - 5.5V	200 ns	Die
AT28C256-DFWM <sup>(1)</sup>	4.5 - 5.5V	200 ns	Wafer
AT28HC256-WM <sup>(1)</sup>	4.5 - 5.5V	120 ns	Die
AT28HC256-DFWM <sup>(1)</sup>	4.5 - 5.5V	120 ns	Wafer
AT28C010-WM <sup>(1)</sup>	4.5 - 5.5V	200 ns	Die
AT28C010-DFWM <sup>(1)</sup>	4.5 - 5.5V	200 ns	Wafer

Note: 1. To be used for Military Applications only.



## Memory (Continued)

### EPROMs

Part Number	Organization	Speeds	Description	Availability
<b>Battery-Voltage (2.7 to 3.6V)</b>				
AT27BV256	32K x 8	70 - 150 ns	256-Kbit, 2.7-volt to 3.6-volt EPROM	Now
AT27BV512	64K x 8	70 - 150 ns	512-Kbit, 2.7-volt to 3.6-volt EPROM	Now
AT27BV010	128K x 8	90 - 150 ns	1-Mbit, 2.7-volt to 3.6-volt EPROM	Now
AT27BV1024	64K x 16	90 - 150 ns	1-Mbit, 2.7-volt to 3.6-volt EPROM	Now
AT27BV020	256K x 8	90 - 150 ns	2-Mbit, 2.7-volt to 3.6-volt EPROM	Now
AT27BV040	512K x 8	120 - 150 ns	4-Mbit, 2.7-volt to 3.6-volt EPROM	Now
AT27BV4096	256K x 16	120 - 150 ns	4-Mbit, 2.7-volt to 3.6-volt EPROM	Now
<b>Low-voltage (3.0 to 3.6V)</b>				
AT27LV256A	32K x 8	55 - 150 ns	256-Kbit, 3.0-volt EPROM	Now
AT27LV512A	64K x 8	70 - 150 ns	512-Kbit, 3.0-volt EPROM	Now
AT27LV520	64K x 8	70 - 90 ns	512-Kbit, Latched 3.0-volt EPROM	Now
AT27LV010A	128K x 8	70 - 150 ns	1-Mbit, 3.0-volt EPROM	Now
AT27LV020A	256K x 8	90 - 150 ns	2-Mbit, 3.0-volt EPROM	Now
AT27LV040A	512K x 8	90 - 150 ns	4-Mbit, 3.0-volt EPROM	Now
<b>Standard Voltage (5.0V)</b>				
AT27C256R	32K x 8	45 - 150 ns	256-Kbit, 5.0-volt EPROM	Now
AT27C512R	64K x 8	45 - 150 ns	512-Kbit, 5.0-volt EPROM	Now
AT27C516	32K x 16	45 - 100 ns	512-Kbit, 5.0-volt EPROM	Now
AT27C010(L)	128K x 8	45 - 150 ns	1-Mbit, 5.0-volt EPROM Standard and Low-power	Now
AT27C1024	64K x 16	45 - 150 ns	1-Mbit, 5.0-volt EPROM	Now
AT27C020	256K x 8	55 - 150 ns	2-Mbit, 5.0-volt EPROM	Now
AT27C2048	128K x 16	55 - 150 ns	2-Mbit, 5.0-volt EPROM	Now
AT27C040	512K x 8	70 - 150 ns	4-Mbit, 5.0-volt EPROM	Now
AT27C4096	256K x 16	55 - 150 ns	4-Mbit, 5.0-volt EPROM	Now
AT27C080	1M x 8	90 - 150 ns	8-Mbit, 5.0-volt EPROM	Now
<b>Automotive Grade (-40° C to +125° C)</b>				
AT27C256R	32K x 8	70 - 150 ns	256-Kbit, 5.0-volt EPROM	Now
AT27C512R	64K x 8	70 - 150 ns	512-Kbit, 5.0-volt EPROM	Now
AT27C010	128K x 8	90 - 150 ns	1-Mbit, 5.0-volt EPROM	Now
AT27C1024	64K x 16	90 - 150 ns	1-Mbit, 5.0-volt EPROM	Now
AT27C020	256K x 8	90 - 150 ns	2-Mbit, 5.0-volt EPROM	Now

## Microcontrollers

### 80C51 8-bit Microcontrollers

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

Part Number	Memory Size	Description	Availability
AT89S51	4K x 8	In-System Programmable Microcontroller with 4-Kbyte Flash	Now
AT89LS51	4K x 8	2.7-volt, In-System Programmable Microcontroller with 4-Kbyte Flash	Now
AT89S52	8K x 8	In-System Programmable Microcontroller with 8-Kbyte Flash	Now
AT89LS52	8K x 8	2.7-volt, In-System Programmable Microcontroller with 8-Kbyte Flash	Now
AT89S8252	8K x 8	In-System Programmable Microcontroller with 8-Kbyte Flash and 2-Kbyte EEPROM	Now
AT89LS8252	8K x 8	2.7-volt, In-System Programmable Microcontroller with 8-Kbyte Flash and 2-Kbyte EEPROM	Now
AT89S53	12K x 8	In-System Programmable Microcontroller with 12-Kbyte Flash	Now
AT89LS53	12K x 8	2.7-volt, In-System Programmable Microcontroller with 12-Kbyte Flash	Now
AT89C51RB2	16K x 8	In-System Programmable Microcontroller with 16-Kbyte Flash and 1280-byte RAM, SPI, PCA	Now
T89C5115	16K x 8	Low-pin Count, In-System Programmable Microcontroller with 16-Kbyte Flash and 2-Kbyte EEPROM, 512-byte RAM, 10-bit ADC, PCA	Now
AT89C51RC2	32K x 8	In-System Programmable Microcontroller with 32-Kbyte Flash and 1280-byte RAM, SPI, PCA	Now
T89C51AC2	32K x 8	In-System Programmable Microcontroller with 32-Kbyte Flash and 1280-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	Now
AT89C51RD2	64K x 8	In-System Programmable Microcontroller with 64-Kbyte Flash and 2048-byte RAM, PCA, SPI	Now
AT89C51ED2	64K x 8	In-System Programmable Microcontroller with 64-Kbyte Flash and 2048-byte RAM, 2-Kbyte EEPROM, PCA, SPI	Now
AT89C5131	32K x 8	In-System Programmable Microcontroller with 32-Kbyte Flash and 1250-byte RAM, 1-Kbyte EEPROM, USB2.0, SPI, PCA,	Now
AT89C5132	64K x 8	In-System Programmable Microcontroller with 64-Kbyte Flash and 1280-byte RAM, USB, SPI, IDE, 10-bit ADC, I2S, MMC	Now

## 80C51 8-bit Microcontrollers (Continued)

### Flash

Part Number	Memory Size	Description	Availability
AT89C2051	2K x 8	Microcontroller with 2-Kbyte Flash, 20-lead Package	Now
AT89C4051	4K x 8	Microcontroller with 4-Kbyte Flash, 20-lead Package	Now
AT89C51	4K x 8	Microcontroller with 4-Kbyte Flash	Now
AT89LV51	4K x 8	2.7-volt, Microcontroller with 4-Kbyte Flash	Now
AT89C52	8K x 8	Microcontroller with 8-Kbyte Flash	Now
AT89LV52	8K x 8	2.7-volt, Microcontroller with 8-Kbyte Flash	Now
AT89C55WD	20K x 8	Microcontroller with 20-Kbyte Flash	Now
AT89LV55	20K x 8	2.7-volt, Microcontroller with 20-Kbyte Flash	Now
AT89C51RC	32K x 8	Microcontroller with 32-Kbyte Flash and 512-byte RAM	Now

### One Time Programmable (OTP)

Part Number	Memory Size	Description	Availability
AT87C5111	4K x 8	Low-pin Count Microcontroller with 4-Kbyte OTP and A/D, SPI, PCA	Now
AT87C5112	8K x 8	Microcontroller with 8-Kbyte OTP and A/D, SPI, PCA	Now
TS87C52X2	8K x 8	Microcontroller with 8-Kbyte OTP	Now
AT87C5103	12K x 8	Low-pin Count Microcontroller with 12-Kbyte OTP, 512-byte RAM, SPI, PCA	Now
TS87C54X2	16K x 8	Microcontroller with 16-Kbyte OTP	Now
T87C5101	16K x 8	Low-pin Count Microcontroller with 16-Kbyte OTP and 512-byte RAM	Now
TS87C51RB2	16K x 8	Microcontroller with 16-Kbyte Flash and 512-byte RAM, PCA	Now
TS87C58X2	32K x 8	Microcontroller with 32-Kbyte OTP	Now
TS87C51RC2	32K x 8	Microcontroller with 32-Kbyte OTP and 512-byte RAM, PCA	Now
TSC87251G2D	32K x 8	C251 Microcontroller with 32-Kbyte OTP, 1024-byte RAM, SPI, 2-wire Interface (TWI), EWC	Now
TS87C51RD2	64K x 8	Microcontroller with 64-Kbyte OTP and 1024-byte RAM, PCA	Now

## 80C51 8-bit Microcontrollers (Continued)

### ROM

Part Number	Memory Size	Description	Availability
AT83C5111	4K x 8	Low-pin Count, Microcontroller with 4-Kbyte ROM and A/D, PCA	Now
AT83C5112	8K x 8	Microcontroller with 8-Kbyte ROM and A/D, PCA	Now
TS80C52X2	8K x 8	Microcontroller with 8-Kbyte ROM	Now
T83C5102	8K x 8	Low-pin Count, Microcontroller with 8-Kbyte ROM and 512-byte RAM	Now
AT83C5103	12K x 8	Low-pin Count, Microcontroller with 12-Kbyte ROM, 512-byte RAM, SPI, PCA	Now
TS80C54X2	16K x 8	Microcontroller with 16-Kbyte ROM	Now
T83C5101	16K x 8	Low-pin Count Microcontroller with 16-Kbyte ROM	Now
TSC83251G1D	16K x 8	C251 Microcontroller with 16-Kbyte ROM, 1024-byte RAM, SPI, 2-wire Interface (TWI), EWC	Now
TS80C58X2	32K x 8	Microcontroller with 32-Kbyte ROM	Now
TS83C51RC2	32K x 8	Microcontroller with 32-Kbyte ROM and 512-byte RAM	Now
TSC83251G2D	32K x 8	C251 Microcontroller with 32-Kbyte ROM, 1024-byte RAM, SPI, TWI, EWC	Now
TS83C51RD2	64K x 8	Microcontroller with 64-Kbyte ROM and 1024-byte RAM	Now

### ROMless

Part Number	Description	Availability
TS80C31X2	Microcontroller with 128 Bytes of RAM	Now
TS80C32X2	Microcontroller with 256 Bytes of RAM	Now
T80C5112	Microcontroller with 256 Bytes of RAM and SPI, PCA	Now
T80C51RA2	Microcontroller with 512 Bytes of RAM and PCA	Now
T80C51RD2	Microcontroller with 1024 Bytes of RAM and PCA	Now
TSC80251G2D	C251 Microcontroller with 1024 Bytes of RAM and SPI, TWI, EWC	Now
T80C51ID2	Microcontroller with 1280 Bytes of RAM and SPI, TWI, PCA	Now

## 80C51 8-bit Microcontrollers (Continued)

### Application Specific

Part Number	Program Memory	Description	Availability
<b>MP3 Decoder</b>			
AT89C51SND1	64-Kbyte Flash, 4-Kbyte Bootloader	Microcontroller with 2304-byte RAM and an MP3 Decoder, 2-wire Interface (TWI), USB, SPI, I2S, Man Machine Interface, 10-bit ADC	Now
AT83C51SND1	64-Kbyte ROM	Microcontroller with 2304-byte RAM and an MP3 Decoder, TWI, USB, SPI, I2S, Man Machine Interface, 10-bit ADC	Now
<b>Smart Card Reader</b>			
T83C5121	16-Kbyte ROM,	Microcontroller with Multi-protocol Smart Card Interface, 512-byte RAM, ISO7816, DC/DC, UART	Now
T85C5121	16-Kbyte Code RAM, 16-Kbyte Bootloader	Microcontroller with Multi-protocol Smart Card Interface, 512-byte RAM, ISO7816, DC/DC, UART	Now
T89C5121	16-Kbyte Flash, 16-Kbyte Bootloader	Microcontroller with Multi-protocol Smart Card Interface, 512-byte RAM, ISO7816, DC/DC, UART	Now
AT83C5122	32-Kbyte ROM	Microcontroller with Multi-protocol Smart Card Interface, 768-byte RAM, ISO7816, DC/DC, USB, SPI	Now
AT85C5122	32-Kbyte Code RAM	Microcontroller with Multi-protocol Smart Card Interface, 768-byte RAM, ISO7816, DC/DC, USB, SPI	Now
AT89C5122	32-Kbyte Flash	Microcontroller with Multi-protocol Smart Card Interface, 768-byte RAM, ISO7816, DC/DC, USB, SPI	Now
AT83C5123	16-Kbyte ROM	Microcontroller with Multi-protocol Smart Card Interface, 768-byte RAM, ISO7816, DC/DC, USB, Optional EEPROM 256 Bytes	Now
AT83C24	N/A	Level Shifter, DC/DC, TWI	Now
AT83C25OK	N/A	Pre-certified Smart Card Reader Solution for PMCIA Link with OMNIKEY® Software	Now
AT83C21GC	N/A	Pre-certified Smart Card Reader Solution for Serial Link with GemCore® Software	Now
AT83C22OK	N/A	Pre-certified Smart Card Reader Keyboard Solution for USB Link with OMNIKEY Firmware	Now
AT83C23OK	N/A	Low-Pin Count Pre-certified Smart Card Reader Solution for USB Link with OMNIKEY Firmware	Now
<b>CAN Networking</b>			
T89C51CC02	16-Kbyte Flash	Microcontroller with 4-Channel CAN Controller and 16-Kbyte of Flash, 512-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	Now
T89C51CC01	32-Kbyte Flash	8-bit Microcontroller with 15-Channel CAN Controller and 32-Kbyte Flash, 1280-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	Now
AT89C51CC03	64-Kbyte Flash	8-bit Microcontroller with 15-Channel CAN Controller and 64-Kbytes Flash, 2304-byte RAM, 2-Kbyte EEPROM, 10-bit ADC, PCA	Dec. 2003
<b>@Web TCP/IP Modules</b>			
ATWebSEG-32		RS232 to Ethernet Gateway 10/100 Base-T, Support TCP, UDP, IP, ARP, ICMP, Ethernet MAC	Now

## 80C51 8-bit Microcontrollers (Continued)

### Development Kits and Tools for the 8051 Family

Part Number	Description	Availability
FLIP	FLexible In-System Programmer – PC-based Software for In-System Programming of C51-based Flash Microcontrollers – Available in Windows® (Support RS232, CAN, USB Interfaces) and Linux® (RS232 Interface)	Now
ATWEBEVK-01	@Web PSTN51S Evaluation Kit for PSNT/GPRS Modem TCP/IP Software Solution  Royalty-free TCP/IP Stack for C51 Flash Microcontrollers	Now
ATWEBDVK-02	@Web LAN51H Development Kit for Hardwired TCP/IP Ethernet Solutions – Optional Modules Including: Remote Control (RC), VoIP (VOIP), Network Web Cam (WC)	Now
FLASH-EMULATOR1	In-circuit Emulation and Development Kit for AT89C51RB2, RC2, RD2 Flash Microcontrollers	Now
AT89DVK-03	In-circuit Emulation and Development Kit for AT83C5111 and AT87C5111	Now
T89C5121-SK1	Starter Kit for T89C5121 Card Reader Microcontroller	Now
CAN-DEMOARD1	Demo Kit for CAN Microcontrollers T89C51CC01, CC02	Now
CANADAPT28	PLCC28 Adapter for T89C51CC02 to T89C51CC02 PLCC44 Socket	Now
AT89DVK-04	AT89C51SND1 MP3 Development Kit	Now
AT89RFD-01	AT89C51SND1 MP3 Player Reference Design	Now
AT89RFD-02	USB Smart Card Reader Reference Design with OMNIKEY Firmware for AT83C5122OK/23OK	July 2003
AT89RFD-05	Serial Smart Card Reader Reference Design with GemCore Software for AT83C5121GC	July 2003
AT89RFD-06	PCMCIA Smart Card Reader Reference Design with OMNIKEY Firmware for AT83C5125OK	Sept. 2003
AT89STK-03	Starter Kit for AT8xC522/23 USB Smart Card Reader Microcontrollers	July 2003
AT89STK-05	Starter Kit for AT89C5131 USB Microcontroller	Sept. 2003
AT89ISP	In-System Programmer for AT89S Series	Now

## AT91 ARM® Thumb Microcontrollers

### AT91 Series

Part Number	Description	Availability
<b>ARM7TDMI-based</b>		
AT91RM3400	96-Kbyte SRAM, 256-Kbyte ROM, USB 2.0 Full-speed Device, MMC Interface, 10 Serial Comm Channels, 9 Timers, RTC, 20-channel PDC, On-chip Oscillator + PLL, Advanced Clock and Power Management, 100-lead TQFP Package, Industrial Temperature	Now
AT91M55800A	8-Kbyte SRAM, Slow, Standby and Power-down Modes, On-chip Oscillator + PLL, 6 Timers, RTC with Battery Backup, 3 USARTs, 1 SPI, Watchdog, 8-channel PDC, 8-channel 10-bit ADC, 2-channel 10-bit DAC, 41 MHz, 176-lead TQFP or 176-ball BGA Package, Industrial Temperature	Now
AT91M42800A	8-Kbyte SRAM, Slow, Standby and Power-down Modes, On-chip Oscillator + PLL, 9 Timers, 2 USARTs, 2 SPIs, Watchdog, 8-channel PDC, 33 MHz, 144-lead TQFP or 144-ball BGA Package, Industrial Temperature	Now
AT91FR40162	2-Mbyte Flash, 256-Kbyte SRAM, Standby and Power-down Modes, 3 Timers, 2 USARTs, Watchdog, 4-channel PDC, 82 MHz, 121-ball BGA Package, Industrial Temperature	Now
AT91FR4042	512-Kbyte Flash, 256-Kbyte SRAM, Standby and Power-down Modes, 3 Timers, 2 USARTs, Watchdog, 4-channel PDC, 82 MHz, 121-ball BGA Package, Industrial Temperature	Now
AT91R40008	256-Kbyte SRAM, Standby and Power-down Modes, 3 Timers, 2 USARTs, Watchdog, 4-channel PDC, 82 MHz, 100-lead TQFP Package, Industrial Temperature	Now
AT91M40800	8-Kbyte SRAM, Standby and Power-down Modes, 3 Timers, 2 USARTs, Watchdog, 4-channel PDC, 47 MHz, 100-lead TQFP Package, Industrial Temperature	Now
AT91M43300	3-Kbyte SRAM, Standby and Power-down Modes, 6 Timers, 3 USARTs, MPI, SPI, Watchdog, 8-channel PDC, 29 MHz, 144-lead TQFP Package, Industrial Temperature	Now
AT91M63200	2-Kbyte SRAM, MPI, Including 1-Kbyte DPRAM, Standby and Power-down Modes, 6 Timers, 3 USARTs, SPI, Watchdog, 8-channel PDC, 29 MHz, 176-lead TQFP Package, Industrial Temperature	Now
<b>ARM920T-based</b>		
AT91RM9200	Two 16-Kbyte I & D Caches, MMU, 16-Kbyte SRAM, 128-Kbyte ROM, 10/100 EMAC with DMA, USB 2.0 Full-speed Host and Device, CompactFlash®, SmartMedia® and MMC Interface, 10 Serial Comm Channels, 9 Timers, RTC, 20-channel PDC, On-chip Oscillator + PLL, Advanced Clock and Power Management, Embedded Trace, 208-lead PQFP or 256-ball BGA package, Industrial Temperature	Now
<b>Evaluation and Development Kits</b>		
AT91RM9200-DK	Development Kit for AT91RM9200	Now
AT91RM3400-DK	Development Kit for AT91RM3400	Dec. 2003
AT91EB55	Support for the AT91M55800A	Now
AT91EB42	Support for the AT91M42800A	Now
AT91EB40A	Support for the AT91FR40162, AT91FR4042, AT91R40008 and AT91M40800	Now
AT91EB63	Support for the AT91M63200, AT91M43300	Now
AT91MEC01	Universal Memory Extension Card	Now

# **AVR® Flash Microcontrollers**

## **AT90 Series**

<b>Part Number</b>	<b>Flash (Kbytes)</b>	<b>EEPROM (Bytes)</b>	<b>RAM (Bytes)</b>	<b>I/O Pins</b>	<b>Package</b>	<b>V<sub>CC</sub> (V)</b>	<b>Speed (MHz)</b>	<b>Other</b>	<b>Availability</b>
AT90S1200	1	64	32 Registers	15	PDIP, SOIC, SSOP, DIE	2.7 - 6.0	0 - 12	One 8-bit Timer, ISP	Now <sup>(1)</sup>
AT90S2313	2	128	128	15	PDIP, SOIC, DIE	2.7 - 6.0	0 - 10	UART, One 8-bit and One 16-bit Timers, ISP	Now <sup>(1)</sup>
AT90S2323	2	128	128	3	PDIP, SOIC, DIE	4.0 - 6.0	0 - 10	One 8-bit Timer, ISP	Now
AT90LS2323	2	128	128	3	PDIP, SOIC, DIE	2.7 - 6.0	0 - 4	One 8-bit Timer, ISP	Now
AT90S2343	2	128	128	5	PDIP, SOIC, DIE	4.0 - 6.0	0 - 10	One 8-bit Timer, ISP	Now
AT90LS2343	2	128	128	5	PDIP, SOIC, DIE	2.7 - 6.0	0 - 4	One 8-bit Timer, ISP	Now

Note: 1. Designs on AT90S1200/2313 will have to be converted to the ATtiny2313 early 2004.

## **ATtiny Series**

<b>Part Number</b>	<b>Flash (Kbytes)</b>	<b>EEPROM (Bytes)</b>	<b>RAM (Bytes)</b>	<b>I/O Pins</b>	<b>Package</b>	<b>V<sub>CC</sub> (V)</b>	<b>Speed (MHz)</b>	<b>Other</b>	<b>Availability</b>
ATtiny11	1		32 Registers	6	PDIP, SOIC, DIE	4.0 - 5.5	0 - 6	One 8-bit Timer, ISP at 5V	Now <sup>(1)</sup>
ATtiny11L	1		32 Registers	6	PDIP, SOIC, DIE	2.7 - 5.5	0 - 2	One 8-bit Timer, ISP at 5V	Now <sup>(1)</sup>
ATtiny12	1	64	32 Registers	6	PDIP, SOIC, DIE	4.0 - 5.5	0 - 8	One 8-bit Timer, Brown-out Detector, ISP	Now <sup>(1)</sup>
ATtiny12L	1	64	32 Registers	6	PDIP, SOIC, DIE	2.7 - 5.5	0 - 4	One 8-bit Timer, Brown-out Detector, ISP	Now <sup>(1)</sup>
ATtiny12V	1	64	32 Registers	6	PDIP, SOIC, DIE	1.8 - 5.5	0 - 1	One 8-bit Timer, Brown-out Detector, ISP	Now <sup>(1)</sup>

Note: 1. Designs on ATtiny11 and ATtiny12 will have to be converted to the ATtiny13 early 2004.



## AVR Flash Microcontrollers (Continued)

### ATtiny Series (Continued)

Part Number	Flash (Kbytes)	EEPROM (Bytes)	RAM (Bytes)	I/O Pins	Package	V <sub>CC</sub> (V)	Speed (MHz)	Other	Availability
ATtiny13	1	64	64	6	PDIP, SOIC, DIE	1.8 - 5.5	0 - 16	One 8-bit Timer, 4 Channels of 10-bit ADC, Brown-out Detector, ISP	Sept. 2003
ATtiny15L	1	64	32 Registers	6	PDIP, SOIC, DIE	2.7 - 5.5	1.6	Two 8-bit Timer, 4 Channels of 10-bit ADC, Brown-out Detector, ISP	Now
ATtiny26	2	128	128	16	PDIP, SOIC, MLF, DIE	4.5 - 5.5	0 - 16	USI, Two 8-bit Timers, 11 Channels of 10-bit ADC, Brown-out Detector, ISP	Now
ATtiny26L	2	128	128	16	PDIP, SOIC, MLF, DIE	2.7 - 5.5	0 - 8	USI, Two 8-bit Timers, 11 Channels of 10-bit ADC, Brown-out Detector, ISP	Now
ATtiny2313	2	128	128	18	PDIP, SOIC, MLF, DIE	1.8 - 5.5	0 - 16	UART, One 8-bit and One 16-bit Timers, Brown- out Detector, ISP	Dec. 2003
ATtiny28L	2		32 Registers	20	PDIP, TQFP, MLF, DIE	2.7 - 5.5	0 - 4	One 8-bit Timer	Now
ATtiny28V	2		32 Registers	20	PDIP, TQFP, MLF, DIE	1.8 - 5.5	0 - 1	One 8-bit Timer	Now

## AVR Flash Microcontrollers (Continued)

### ATmega Series

Part Number	Flash (Kbytes)	EEPROM (Bytes)	RAM (Bytes)	I/O Pins	Package	V <sub>CC</sub> (V)	Speed (MHz)	Other	Availability
ATmega8	8	512	1K	23	PDIP, TQFP, MLF, DIE	4.5 - 5.5	0 - 16	SPI, UART, TWI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, Self-Programming Memory	Now
ATmega8L	8	512	1K	23	PDIP, TQFP, MLF, DIE	2.7 - 5.5	0 - 8	SPI, UART, TWI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, Self-Programming Memory	Now
ATmega8515	8	512	512	35	PDIP, PLCC, TQFP, MLF, DIE	4.5 - 5.5	0 - 16	SPI, UART, One 8-bit and One 16-bit Timers, Brown-out Detector, Self-Programming Memory	Now
ATmega8515L	8	512	512	35	PDIP, PLCC, TQFP, MLF, DIE	2.7 - 5.5	0 - 8	SPI, UART, One 8-bit and One 16-bit Timers, Brown-out Detector, Self-Programming Memory	Now
ATmega8535	8	512	512	32	PDIP, PLCC, TQFP, MLF, DIE	4.5 - 5.5	0 - 16	SPI, UART, TWI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, Self-Programming Memory	Now

## AVR Flash Microcontrollers (Continued)

### ATmega Series (Continued)

Part Number	Flash (Kbytes)	EEPROM (Bytes)	RAM (Bytes)	I/O Pins	Package	V <sub>CC</sub> (V)	Speed (MHz)	Other	Availability
ATmega8535L	8	512	512	32	PDIP, PLCC, TQFP, MLF, DIE	2.7 - 5.5	0 - 8	SPI, UART, TWI, Two 8-bit and One 16-bit Timers, 8 Channels of 10- bit ADC, Brown- out Detector, Self- Programming Memory	Now
ATmega162	16	512	1K	35	PDIP, TQFP, MLF, DIE	2.7 - 5.5	0 - 16	SPI, 2 UART, Two 8-bit and Two 16-bit Timers, Brown-out Detector, JTAG Interface, Self- Programming Memory	Now
ATmega162V	16	512	1K	35	PDIP, TQFP, MLF, DIE	1.8 - 5.5	0 - 8	SPI, 2 UART, Two 8-bit and Two 16-bit Timers, Brown-out Detector, JTAG Interface, Self- Programming Memory	Now
ATmega16	16	512	1K	32	PDIP, TQFP, MLF, DIE	4.5 - 5.5	0 - 16	SPI, UART, TWI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self- Programming Memory	Now
ATmega16L	16	512	1K	32	PDIP, TQFP, MLF, DIE	2.7 - 5.5	0 - 8	SPI, UART, TWI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self- Programming Memory	Now

## AVR Flash Microcontrollers (Continued)

### ATmega Series (Continued)

Part Number	Flash (Kbytes)	EEPROM (Bytes)	RAM (Bytes)	I/O Pins	Package	V <sub>CC</sub> (V)	Speed (MHz)	Other	Availability
ATmega169	16	512	1K	54	TQFP, MLF, DIE	4.5 - 5.5	0 - 16	SPI, UART, USI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self- Programming Memory	July 2003
ATmega169L	16	512	1K	54	TQFP, MLF, DIE	2.7 - 3.6	0 - 8	SPI, UART, USI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self- Programming Memory	July 2003
ATmega169V	16	512	1K	54	TQFP, MLF, DIE	1.8 - 3.6	0 - 1	SPI, UART, USI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self- Programming Memory	July 2003

## AVR Flash Microcontrollers (Continued)

### ATmega Series (Continued)

Part Number	Flash (Kbytes)	EEPROM (Bytes)	RAM (Bytes)	I/O Pins	Package	V <sub>CC</sub> (V)	Speed (MHz)	Other	Availability
ATmega32	32	1K	2K	32	PDIP, TQFP, MLF, DIE	4.5 - 5.5	0 - 16	SPI, UART, TWI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self-Programming Memory	Now
ATmega32L	32	1K	2K	32	PDIP, TQFP, MLF, DIE	2.7 - 5.5	0 - 8	SPI, UART, TWI, Two 8-bit and One 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self-Programming Memory	Now
ATmega64	64	2K	4K	53	TQFP, MLF, DIE	4.5 - 5.5	0 - 16	SPI, 2 UART, TWI, Two 8-bit and Two 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self-Programming Memory	Now
ATmega64L	64	2K	4K	53	TQFP, MLF, DIE	2.7 - 5.5	0 - 8	SPI, 2 UART, TWI, Two 8-bit and Two 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self-Programming Memory	Now
ATmega128	128	4K	4K	53	TQFP, MLF, DIE	4.5 - 5.5	0 - 16	SPI, 2 UART, TWI, Two 8-bit and Two 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self-Programming Memory	Now
ATmega128L	128	4K	4K	53	TQFP, MLF, DIE	2.7 - 5.5	0 - 8	SPI, 2 UART, TWI, Two 8-bit and Two 16-bit Timers, 8 Channels of 10-bit ADC, Brown-out Detector, JTAG Interface, Self-Programming Memory	Now

## AVR Flash Microcontrollers (Continued)

### Evaluation Kits and Tools (AVR, tinyAVR™, megaAVR®, LCD AVR)

Part Number	Description	Availability
ATSTK500	STK™500 AVR Starter Kit with AVR Studio® Interface	Now
ATSTK501	STK501 Expansion of STK500 to Support 64-pin megaAVR Devices	Now
ATSTK502	STK502 Expansion of STK500 for LCD AVR Devices	Now
ATAVRISP	AVRISP ISP Programmer for All AVR ISP Devices	Now
AT90BCKIT	ATtiny15 and AT90S4433 Battery Charger Evaluation Kit	Now
AT90EIT1	AVR Embedded Internet Toolkit	Now
ATAVRBFLY	AVR Butterfly, ATmega169 Demo Board with LCD and Speaker	Now
ATAVRBFLY10	AVR Butterfly, ATmega169 Demo Board with LCD and Speaker, 10-Pack	Now
ATICE200	ICE200 Low-cost AVR In-Circuit Emulator	Now
ATICE40	ICE40 AVR In-Circuit Emulator for ATtiny26 and ATmega8	Now
ATICE50	ICE50 AVR In-Circuit Emulator for All megaAVR and New tinyAVR Devices	Now
ATJTAGICE	JTAG ICE Low-cost In-Circuit Emulator Supporting All AVR with JTAG Interface	Now
ATASICICE	ASICICE Embedded AVR Core Development System	Now
ATICE50PROBE	ICE40/50 Probe Including Flex Cables	Now
ATADAP128_TOP	Replacement: ICE50 mega64/128 TQFP Personality Adapter (Top Module); Requires One AT64PSKT_BOT as the Bottom Module	Now
ATADAP169_TOP	Replacement: ICE50 mega169 TQFP Personality Adapter (Top Module); Requires One AT64PSKT_BOT as the Bottom Module	Now
ATADAPMEGA32	Replacement: ICE50 mega8535/16/32 PDIP Personality Adapter	Now
ATADAPMEGA162	Replacement: ICE50 mega8515/162 PDIP Personality Adapter	Now
ATADAPMEGA8	Replacement: ICE50 mega8 PDIP Personality Adapter	Now
ATADAPTINY26	Replacement: ICE50 tiny26 PDIP Personality Adapter	Now
ATADAPTEST	Replacement: ICE50 Test Adapter	Now
64PSKT_TOP	Replacement: ICE30 64-pin TQFP Emulator Adapter (Top Module)	Now
64PSKT_BOT	Replacement: ICE30 and ICE50 64-pin TQFP Emulator Adapter (Bottom Module)	Now
ATJTAGPROBE	JTAG ICE Probe Including Flex Cables	Now
ATPOD200	Replacement: ICE200 POD Replacement with Cable (Top Module)	Now
ATADAP200	Replacement: ICE200 PDIP Emulator Adapter Kit (Bottom Module)	Now
ATAVRSMID	Add-on: ICE200 SOIC/PLCC/TQFP Emulator Adapter Kit (Bottom Module)	Now
AT90ADCPOD	Replacement: ICEPRO POD Replacement Kit	Now
AT90ADCUG	Upgrade: AVRICE/ICEPRO Analog Upgrade Kit	Now
ATMEGAPOD	Replacement: megaICE, ICE30 mega103 POD Replacement Kit	Now
ATMEG163POD	Replacement: ICE30 mega163 POD Replacement Kit	Now
ATtiny15POD	Replacement: ICE10 POD Replacement Kit	Now
ATICE10UPGR	Upgrade: Upgrade ICEPRO to ICE10	Now
ATICE30UPGR	Upgrade: ICE30 Upgrade Kit	Now

## MARC4 4-bit Architecture Microcontrollers

### 4-bit Microcontrollers/MARC4 Family

Part Number	Package	Description	Availability
ATAR080	SSO20	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 × 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 $T_{AMB} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$	Now
ATAR090	SSO20	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 $< 1\ \mu\text{A}$ , Watchdog Timer, POR and Brown-out Function, 2 × 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 $T_{AMB} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$	Now
ATAR090-C	SSO20	See ATAR090, Operating Temperature Range $T_{AMB} = -40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$	Now
ATAR090-D	SSO20	See ATAR090, Operating Temperature Range $T_{AMB} = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$	Now
ATAR092	SSO20	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 $< 1\ \mu\text{A}$ , Watchdog Timer, POR and Brown-out Function, 3 × Multifunction Timer/Counter with Remote Control Carrier Generation and Biphasic, Manchester and Pulsewidth 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)	Now
ATAR510	DIT, SSO44	2.4 to 6V Low-power Microcontroller, PC-keyboards/Wireless Keyboards, Motor Control with PWM, Embedded Applications Requiring Small LED- or LCD-displays like E-cash Chip-card Reader, 4096-byte ROM + 1024 Byte for Test Purposes, 256 Nibbles RAM, 32 Bi-directional I/Os: 24 Standard I/Os, Bitwise Programmable, 8 I/Os 20 mA Push/pull (5V) ( $2.4\text{V} \Rightarrow 4.3\text{ mA}$ ), 4 Internal, 10 External Interrupts, 32 kHz Quartz Oscillator as Optional Sub-clock, 4 MHz Oscillator (Internal RC, External R, Quartz or Ceramic Resonator, External Clock), $< 1\text{ mA}$ (5V) Operating Current, Sleep Current $< 1\ \mu\text{A}$ with 32 kHz Oscillator, Watchdog Timer and CodedReset, 2 × 8-bit Timer/Counter with 8-bit Prescaler, 2 Complementary Buzzer Outputs	Now

## MARC4 4-bit Architecture Microcontrollers (Continued)

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

Part Number	Package	Description	Availability
ATAR890	SSO20	See ATAR090, Additional 512-bit EEPROM (64 Bytes) On-chip, Operating Temperature Range $T_{AMB} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$	Now
ATAR890-C	SSO20	See ATAR090, Additional 512-bit EEPROM (64 Bytes) On-chip, Operating Temperature Range $T_{AMB} = -40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$	Now
ATAR892	SSO20	See ATAR092, Additional 512-bit EEPROM (64 Bytes) On-chip	Now
ATAM510 (MTP Multitime Programmable Version of ATAR510)	SSO44	2.4 to 6V Low-power Microcontroller, PC-keyboards/Wireless Keyboards, Motor Control with PWM, Embedded Applications Requiring Small LED- or LCD-Displays Like E-cash Chip-card Reader, Stack-oriented 4-bit Harvard Architecture, High-level-language Programming in qFORTH, 4096-byte ROM + 1024 Bytes for Test Purposes, 256 Nibbles RAM, 32 Bi-directional I/Os: 24 Standard I/Os, Bitwise Programmable, 8 I/Os 20 mA Push/Pull (5V) (2.4V $\Rightarrow$ 4.3 mA), 4 Internal, 10 External Interrupts, 32 kHz Quartz Oscillator as Optional Subclock, 4 MHz Oscillator (Internal RC, External R, Quartz or Ceramic Resonator, External Clock), $< 1\text{ mA}$ (5V) Operating Current, Sleep Current $< 1\text{ }\mu\text{A}$ with 32 kHz Oscillator, Watchdog Timer and Coded Reset, 2 x 8-bit Timer/Counter with 8-bit Prescaler, 2 Complementary Buzzer Outputs	Now
ATAM893 (Multi-programmable EEPROM Version)	SSO20	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 $< 1\text{ }\mu\text{A}$ , Watchdog Timer and Coded Reset, 3 x Multifunction Timer/Counter with Remote Control Carrier Generation, Biphase, Manchester and Pulsewidth Modulator and Demodulator, Stack-oriented 4-bit Harvard Architecture, High-level-language Programming in qFORTH, 4096-byte ROM + 1024 Bytes for Test Purposes, 256 Nibbles RAM, 512-bit EEPROM (64 Bytes), I/O 16 Bidirectional Ports Inclusive 4 High-current Outputs, Free Programmable I/O Options, 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), Programmable EEPROM Protectable against Read Out	Now
<b>Evaluation Kits and Tools</b>			
TMEB893	MARC4 Starter Kit Includes Core Simulator, Programmer and ATAM893 Samples		Now
M4EMU510	MARC4 Development System for ATAR510 and ATAM510		Now
M4EMUX9X	MARC4 Development System for the ATAR090, ATAR092, ATAR892, ATAR890 and ATAR080 Series, Including the Flash Part ATAM893 and the U9280M		Now



## User Programmable Logic

### Field Programmable Gate Arrays (FPGAs)

#### AT40K Series

Part Number	Registers	Usable Gates	Frequency (MHz)	RAM	Description	Availability
<b>Standard Voltage (5.0V)</b>						
AT40K05	256	5K - 10K	250	2,048 Bits	128 I/O Pins, 5.0-volt, Very Low Power	Now
AT40K10	576	10K - 20K	250	4,096 Bits	192 I/O Pins, 5.0-volt, Very Low Power	Now
AT40K20	1,024	20K - 30K	250	8,192 Bits	256 I/O Pins, 5.0-volt, Very Low Power	Now
AT40K40	2,304	40K - 50K	250	18,432 Bits	384 I/O Pins, 5.0-volt, Very Low Power	Now
<b>Low-voltage Enhanced Performance (3.3 to 2.5V)</b>						
AT40K05AL	512	5K - 10K	250	2,048 Bits	128 I/O Pins, 3.3-volt, Very Low Power	Now
AT40K10AL	896	10K - 20K	250	4,096 Bits	192 I/O Pins, 3.3-volt, Very Low Power	Now
AT40K20AL	1,440	20K - 30K	250	8,192 Bits	256 I/O Pins, 3.3-volt, Very Low Power	Now
AT40K40AL	2,690	40K - 50K	250	18,432 Bits	384 I/O Pins, 3.3-volt, Very Low Power	Now

## Field Programmable Gate Arrays (Continued)

### AT40K Series (Continued)

Part Number	Registers	Usable Gates	Frequency (MHz)	RAM	Description	Availability
<b>Low-voltage Low-cost (Split Voltage 3.3 and 1.8V)</b>						
AT40K05AX	512	5K - 10K	250	2,048 Bits	128 I/O Pins, 3.3-volt, Very Low Power	March 2004
AT40K10AX	896	10K - 20K	250	4,096 Bits	192 I/O Pins, 3.3-volt, Very Low Power	March 2004
AT40K20AX	1,440	20K - 30K	250	8,192 Bits	256 I/O Pins, 3.3-volt, Very Low Power	March 2004
AT40K40AX	2,690	40K - 50K	250	18,432 Bits	384 I/O Pins, 3.3-volt, Very Low Power	March 2004

### Software/Hardware Tools

#### Software

ATDS2100PC	Place and Route Tools (Ordering Also Available from the Web)	Now
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#### 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
ATDH40D240	Daughter Board – 240PQFP	Now

### AT6000 Series

Part Number	Registers	Usable Gates	Frequency (MHz)	Description	Availability
<b>Standard Voltage (5.0V)</b>					
AT6002	1,024	6K	350	96 I/O Pins, 5.0-volt, Very Low Power	Now
AT6003	1,600	9K	350	120 I/O Pins, 5.0-volt, Very Low Power	Now
AT6005	3,136	15K	350	140 I/O Pins, 5.0-volt, Very Low Power	Now
AT6010	6,400	30K	350	204 I/O Pins, 5.0-volt, Very Low Power	Now
<b>Low-voltage (3.3V)</b>					
AT6002LV	1,024	6K	250	96 I/O Pins, 3.3-volt, Very Low Power	Now
AT6003LV	1,600	9K	250	120 I/O Pins, 3.3-volt, Very Low Power	Now
AT6005LV	3,136	15K	250	140 I/O Pins, 3.3-volt, Very Low Power	Now
AT6010LV	6,400	30K	250	204 I/O Pins, 3.3-volt, Very Low Power	Now

## FPGA Configuration Memory

### FPGA Serial Configuration EEPROM

Part Number	Memory Size	Description	Availability
<b>Standard (3.3 - 5.0V)</b>			
AT17LV65	65,536 x 1	65-Kbit FPGA Configuration EEPROM	Now
AT17LV65A	65,536 x 1	65-Kbit FPGA Configuration EEPROM, Altera Pinout	Now
AT17LV128	131,072 x 1	128-Kbit FPGA Configuration EEPROM	Now
AT17LV128A	131,072 x 1	128-Kbit FPGA Configuration EEPROM, Altera Pinout	Now
AT17LV256	262,144 x 1	256-Kbit FPGA Configuration EEPROM	Now
AT17LV256A	262,144 x 1	256-Kbit FPGA Configuration EEPROM, Altera Pinout	Now
AT17LV512	524,288 x 1	512-Kbit FPGA Configuration EEPROM	Now
AT17LV512A	524,288 x 1	512-Kbit FPGA Configuration EEPROM, Altera Pinout	Now
AT17LV010	1,048,576 x 1	1-Mbit FPGA Configuration EEPROM	Now
AT17LV010A	1,048,576 x 1	1-Mbit FPGA Configuration EEPROM, Altera Pinout	Now
AT17LV002	2,097,152 x 1	2-Mbit FPGA Configuration EEPROM	Now
AT17LV002A	2,097,152 x 1	2-Mbit FPGA Configuration EEPROM, Altera Pinout	Now
AT17LV040	4,194,304 x 1	4-Mbit FPGA Configuration EEPROM	Now
AT17LV040A	4,194,304 x 1	4-Mbit FPGA Configuration EEPROM, Altera Pinout	Now
<b>Low-cost NTP (3.3V)</b>			
AT17N256	262,144 x 1	256-Kbit FPGA Configuration Memory	Now
AT17N512	524,288 x 1	512-Kbit FPGA Configuration Memory	Now
AT17N010	1,048,576 x 1	1-Mbit FPGA Configuration Memory	Now
AT17N002	2,097,152 x 1	2-Mbit FPGA Configuration Memory	Now
AT17N040	4,194,304 x 1	4-Mbit FPGA Configuration Memory	Now

## FPGA Configuration Memory (Continued)

### FPGA Serial Configuration EEPROM (Continued)

Part Number	Memory Size	Description	Availability
<b>Flash-based (3.3V)</b>			
AT17F040	4,194,304 x 1	4-Mbit FPGA Configuration FLASH	Now
AT17F040A	4,194,304 x 1	4-Mbit FPGA Configuration FLASH, Altera Pinout	Oct. 2003
AT17F080	8,388,608 x 1	8-Mbit FPGA Configuration FLASH	Now
AT17F080A	8,388,608 x 1	8-Mbit FPGA Configuration FLASH, Altera Pinout	Oct. 2003
AT17F16	16,777,216 x 1	16-Mbit FPGA Configuration FLASH	March 2004
<b>Software/Hardware Tools</b>			
ATDH2200E	Configurator Programming Kit, CPS ISP Software, 8-lead LAP and 20 PLCC Adapter		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 Devices (PLDs)

### SPLDs/CPLDs

Part Number	Packages	Speeds	Description	Availability
<b>5.0-volt Electrically Erasable</b>				
ATF16V8B	20-lead	10 - 15 ns	8 FFs, 8 I/O Pins, Standard-power	Now
ATF16V8BQ(L)	20-lead	10 - 15 ns	8 FFs, 8 I/O Pins, Quarter-power, Low-power	Now
ATF16V8C	20-lead	5 - 7.5 ns	8 FFs, 8 I/O Pins, Standard-power	Now
ATF16V8CZ	20-lead	12 - 15 ns	8 FFs, 8 I/O Pins, Zero-power	Now
ATF20V8B	24-, 28-lead	7.5 - 15 ns	8 FFs, 8 I/O Pins, Standard-power	Now
ATF20V8BQ(L)	24-, 28-lead	10 - 15 ns	8 FFs, 8 I/O Pins, Quarter-power, Low-power	Now
ATF22V10B	24-, 28-lead	10 - 15 ns	10 FFs, 10 I/O Pins, Standard-power	Military Only
ATF22V10C	24-, 28-lead	5 - 15 ns	10 FFs, 10 I/O Pins, Standard-power	Now
ATF22V10CQ(Z)	24-, 28-lead	15 - 20 ns	10 FFs, 10 I/O Pins, Quarter-power, Zero-power	Now
ATF22V10CZ	24-, 28-lead	12 - 15 ns	10 FFs, 10 I/O Pins, Zero-power	Now
ATF750C(L)	24-, 28-lead	7.5 - 15 ns	20 FFs, 10 I/O Pins, Standard and Low-power	Now
ATF2500C	40-, 44-lead	10 - 25 ns	48 FFs, 24 I/O Pins, Standard	Now
ATF2500CL	40-, 44-lead	20 - 30 ns	48 FFs, 24 I/O Pins, Low-power	Oct. 2003
ATF1500A(L)	44-lead	7.5 - 20 ns	32 Macrocell, Standard and Low-power, 5V	Now
ATF1502AS(L)	44-lead	7.5 - 25 ns	32 Macrocell with ISP, Standard and Low-power, 5V	Now
ATF1504AS(L)	44-, 68-, 84-, 100-lead	7.5 - 20 ns	64 Macrocell with ISP, Standard and Low-power, 5V	Now
ATF1508AS(L)	84-, 100-, 160-lead	7.5 - 20 ns	128 Macrocell with ISP, Standard and Low-power, 5V	Now
ATF1502SE(L)	44-lead	5 - 15 ns	32 Macrocells with ISP, Low-power, 5V	Now
ATF1504SE(L)	44-, 68-, 84-, 100-lead	5 - 15 ns	64 Macrocells with ISP, Low-power, 5V	Dec. 2003
ATF1508SE(L)	84-, 100-, 160-lead	6 - 15 ns	128 Macrocells with ISP, Low-power, 5V	Dec. 2003
ATF1516SE(L)	100-, 208-lead	7 - 15 ns	256 Macrocells with ISP, Low-power, 5V	June 2004

## Programmable Logic Devices (Continued)

### SPLDs/CPLDs (Continued)

Part Number	Packages	Speeds	Description	Availability
<b>Low-voltage (3.3V) Electrically Erasable</b>				
ATF16LV8C	20-lead	10 - 15 ns	8 FFs, 8 I/O Pins, Low-voltage	Now
AT22LV10(L)	24-, 28-lead	20 - 25 ns	10 FFs, 10 I/O Pins, Low-voltage and Low-power (EPROM-based)	Now
ATF22LV10C	24-, 28-lead	10 - 15 ns	10 FFs, 10 I/O Pins, Low-voltage	Now
ATF22LV10CZ	24-, 28-lead	25 ns	10 FFs, 10 I/O Pins, Low-voltage, Zero-power	Now
ATF22LV10CQZ	24-, 28-lead	30 ns	10 FFs, 10 I/O Pins, Low-voltage, Quarter-power, Zero-power	Now
ATF750LVC(L)	24-, 28-lead	15 ns	20 FFs, 10 I/O Pins, 3.3-volt and Low-power	Now
ATF1500ABV	44-lead	12 - 15 ns	32 FFs, 32 I/O Pins, Low-voltage, 3.3V	Now
ATF1502ASV	44-lead	15 ns	32 Macrocells with ISP, 32 I/O Pins, Low-voltage, 3.3V	Now
ATF1504ASV(L)	44-, 68-, 84-, 100-lead	15 - 20 ns	64 Macrocells with ISP, Low-voltage and Low-power, 3.3V	Now
ATF1508ASV(L)	84-, 100-, 160-lead	15 - 20 ns	128 Macrocells with ISP, Low-voltage and Low-power, 3.3V	Now
ATF1502AE(L)	44-lead	4 - 15 ns	32 Macrocells with ISP, Low-power, 3.3V	Oct. 2003
ATF1504AE(L)	44-, 49-, 68-, 84-, 100-lead	4 - 15 ns	64 Macrocells with ISP, Low-power, 3.3V	Dec. 2003
ATF1508AE(L)	84-, 100-, 144-, 169-, 256-lead	5 - 15 ns	128 Macrocells with ISP, Low-power, 3.3V	Dec. 2003
ATF1516AE(L)	100-, 144-, 208-, 256-lead	5 - 15 ns	256 Macrocells with ISP, Low-power, 3.3V	June 2004

## Programmable Logic Devices (Continued)

### SPLDs/CPLDs (Continued)

Part Number	Packages	Speeds	Description	Availability
<b>5.0-volt EPROM-based</b>				
ATV750B(L)	24-, 28-lead	10 - 15 ns	20 FFs, 10 I/O Pins, Standard and Low-power	Military Only
ATV2500B(L)	44-lead	12 - 20 ns	48 FFs, 24 I/O Pins, Standard and Low-power	Military Only
ATV2500BQ(L)	40-, 44-lead	20 - 25 ns	48 FFs, 24 I/O Pins, Quarter-power, Low-power	Military Only
<b>Software/Hardware Tools</b>				
ATDS1500PC	Atmel – ProChip Designer® (Includes CUPL, VHDL, Schematic Entry, Synthesis, Functional and Timing Simulation, Place and Route)			Now
ATDS1000PC	Atmel – WinCUPL (Includes CUPL, Compiler, Place and Route)			Now
ATF15xx-DK2	CPLD Development Programming Kit (Includes Software, 2 Sample PLDs, 84-lead PLCC Adapter Demo Board and ISP Cable)			Now
ATDH1150VPC	Atmel – ISP Kit Software and Cable (3V or 5V)			Now
ATDH1160VPC	Atmel – ISP Programming Board (3V or 5V)			Now
ATDH1161PC	Atmel – 44-lead PLCC Adapter Board for ISP Programming Board			Now
ATDH1162PC	Atmel – 44-lead TQFP Adapter Board for ISP Programming Board			Now
ATDH1163PC	Atmel – 68-lead PLCC Adapter Board for ISP Programming Board			Now
ATDH1164PC	Atmel – 100-lead PQFP Adapter Board for ISP Programming Board			Now
ATDH1165PC	Atmel – 100-lead TQFP Adapter Board for ISP Programming Board			Now
ATDH1166PC	Atmel – 160-lead PQFP Adapter Board for ISP Programming Board			Now
ATF15xx-SAA44	Atmel – 44-lead TQFP Adapter for DK2			Now
ATF15xx-SAJ44	Atmel – 44-lead PLCC Adapter for DK2			Now
ATF15xx-SAJ68	Atmel – 68-lead PLCC Adapter for DK2			Now
ATF15xx-SAA100	Atmel – 100-lead TQFP Adapter for DK2			Now
ATF15xx-SAQ100	Atmel – 100-lead PQFP Adapter for DK2			Now
ATF15xx-SAQ160	Atmel – 160-lead PQFP Adapter for DK2			Now

## User Programmable SLI

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

#### AT94K Series

Part Number	FPGA Gates	FreeRAM	FPGA I/O <sup>(1)</sup>	Program/Data SRAM	Availability
AT94K05AL Micro FPSLIC	5K	2,048 Bits	Up to 96	4K - 16K Bytes/ 4K - 16K Bytes	Now
AT94K05AX Micro FPSLIC (0.18 μm)	5K	2,048 Bits	Up to 96	4K - 16K Bytes/ 4K - 16K Bytes	March 2004
AT94K10AL	10K	4,096 Bits	Up to 192	20K - 32K Bytes/ 4K - 16K Bytes	Now
AT94K10AX (0.18 μm)	10K	4,096 Bits	Up to 192	20K - 32K Bytes/ 4K - 16K Bytes	Oct. 2003
AT94K40AL	40K	18,432 Bits	Up to 384	20K - 32K Bytes/ 4K - 16K Bytes	Now
AT94K40AX (0.18 μm)	40K	18,432 Bits	Up to 384	20K - 32K Bytes/ 4K - 16K Bytes	March 2004

#### Software/Hardware Tools

##### Software

ATSTK594	FPSLIC Add-on Card to STK500	Now
ATDS94KSW1	AT94K Series Design System Annual Subscription	Now
ATDS94KSW2	AT94K Series Design System Perpetual License	Now
ATDM94KSW2	AT94K Series Design System Annual Maintenance	Now

##### Hardware

ATSTK94	FPSLIC Starter Kit, Cable, Software (4-month Software License)	Now
ATDH94STKB	FPSLIC Starter Kit Board, Cable (Hardware Only – No Software)	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

##### Training

AT94TRAIN	FPSLIC Training Course, Including Starter Kit	Now
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##### University Program

ATSTK94U	FPSLIC University Laboratory Kit (12-month License)	Now
ATDS94KSWU	AT94K Series University Annual Subscription Fee	Now
ATDH94STKB	FPSLIC University Laboratory Board, Cable (Hardware Only – No Software)	Now
AT94KINST	FPSLIC University Instructor Package (Includes Laboratory Kit, Documentation and Presentations)	Now

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



## FPSLIC (Continued)

### AT94S Secure Series

Part Number	FPGA Gates	FreeRAM	FPGA I/O	Program/Data SRAM	Availability
AT94S05AL Micro FPSLIC	5K	2,048 Bits	Up to 95	4K - 16K Bytes/ 4K - 16K Bytes	Now
AT94S05AX Micro FPSLIC (0.18 $\mu$ m)	5K	2,048 Bits	Up to 95	4K - 16K Bytes/ 4K - 16K Bytes	June 2004
AT94S10AL	10K	4,096 Bits	Up to 192	20K - 32K Bytes/ 4K - 16K Bytes	Now
AT94S10AX (0.18 $\mu$ m)	10K	4,096 Bits	Up to 192	20K - 32K Bytes/ 4K - 16K Bytes	June 2004
AT94S40AL	40K	18,432 Bits	Up to 384	20K - 32K Bytes/ 4K - 16K Bytes	Now
AT94S40AX (0.18 $\mu$ m)	40K	18,432 Bits	Up to 384	20K - 32K Bytes/ 4K - 16K Bytes	June 2004

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