



FPSLIC® — Field Programmable System Level Integrated Circuit

FPSLIC — PGA + AVR in one Package! The AT94K Series (FPSLIC family) is a combination of the popular Atmel AT40K Series SRAM FGAs and the high-performance Atmel AVR 8-bit RISC microcontroller with standard peripherals.
 • 2K – 18.4Kbits of Distributed Single/Dual Port FPGA User SRAM • High-performance DSP Optimized FPGA Core Cell
 • Dynamically Reconfigurable In-System – FPGA Configuration Access • FPGA Macro Library of Custom Peripherals • 16

FPGA Supplied Internal Interrupts to AVR • Up to Four External Interrupts to AVR • 8 Global FPGA Clocks: • 2 FPGA Clocks Driven from AVR Logic • FPGA Global Clock Access Available from FPGA Core
Features: • Timer/Counters 8/16-bit: 2/1 • Watchdog Timer • UART: 2 • TWI (I2C) • PWM: 3 • JTAG • Clock Speed: 25MHz • V_{CC}: 3.0V – 3.6V

Gates	Core Cells	FPGA SRAM Bytes	Registers	I/O	AVR Program Memory Type	AVR Memory Size		AVR I/O Pins	ISP	Operating Temp. †	Package	Digi-Key Part No.	Price Each		
						RAM Bytes	EEPROM Bytes						1	25	100
5K	256	2048	436	46	ROMless	20K	—	8	—	Com. Ind.	84-PLCC	AT94K05AL-25AJC-ND	19.35	13.15	12.40
				58	ROMless	20K	—	8	—	Ind.	100-TQFP	AT94K05AL-25AJI-ND	22.25	15.10	14.30
				82	ROMless	20K	—	8	—	Com. Ind.	144-LQFP	AT94K05AL-25AQI-ND	23.44	15.90	15.05
				96	ROMless	20K	—	8	—	Com. Ind.	208-POFP	AT94K05AL-25BQC-ND	20.32	13.80	13.05
				—	EEPROM	20K	256K	8	Yes	Ind.	144-LQFP	AT94K05AL-25BQI-ND	24.62	16.70	15.75
10K	576	4096	846	46	ROMless	36K	—	16	—	Com. Ind.	84-PLCC	AT94K10AL-25AJC-ND	32.25	21.90	20.70
				58	ROMless	36K	—	16	—	Com. Ind.	84-PLCC	AT94K10AL-25AJI-ND	37.09	25.20	23.80
				84	ROMless	36K	—	16	—	Ind.	100-TQFP	AT94K10AL-25AQI-ND	33.86	23.00	21.75
				84	EEPROM	36K	512K	16	Yes	Ind.	100-TQFP	AT94K10AL-25AQL-ND	39.02	26.50	25.06
				137	EEPROM	36K	512K	16	Yes	Com. Ind.	144-LQFP	AT94K10AL-25BQC-ND	44.29	29.85	27.80
40K	2304	18432	2862	84	ROMless	36K	—	16	—	Ind.	144-LQFP	AT94S10AL-25BQC-ND	24.94	16.80	15.65
				162	EEPROM	36K	1024K	16	Yes	Com. Ind.	256-CABGA	AT94S10AL-25DGC-ND	53.43	36.00	33.55
				—	EEPROM	36K	—	16	—	Ind.	256-CABGA	AT94S10AL-25DGI-ND	43.00	29.00	27.00

• RoHS Compliant † Operating Temperature: Industrial: -40°C – 85°C Commercial: 0°C – 70°C

ATSTK94 FPSLIC® Starter Kit

This low-cost development kit is for the designer who wishes to begin working with Atmel's award-winning AT94K series FPSLIC family of devices. The kit allows designers to design, synthesize, simulate and program Atmel's new FPSLIC products. A comprehensive tutorial takes designers through the complete FPSLIC development process. **Features:** • ATK94K40 Device • AT17LV010 Device • ISP Port for Direct Download from PC • Push-button Switches and LEDs • 4 Alphanumeric LED Displays • 2 RS232 Transmit/Receive Ports • 18.432MHz, 4MHz and 32KHz Clock Sources • Power Management Circuitry (9V Power Supply included) • Access to all FPSLIC Pins via Headers • The System Designer™ Software (4-Month License)

ATSTK94-ND FPSLIC Starter Kit \$493.43

STK594 Development Kit

This kit allows designers to design, simulate, synthesize and program Atmel's FPSLIC devices. It includes hardware allowing full support for the new features found on FPSLIC devices and consists of a development kit board. An additional RS-232 Driver, a 32KHz Real-Time Clock and a Two-Wire Serial Interface are among the new features. **Features:** • STK500 Compatibility • AT94K10AL and AT17F510 devices • Access to all FPSLIC Pins via Headers • JTAG Header for On-Chip Debugging using the JTAG ICE • System Designer Software Suite with a four-month license • ATDH2225 In-System Programming Cable • Comprehensive User Guide and Tutorial

ATSTK594-ND STK594 Development Kit \$99.00

MARC 4 Programmer

The TMEB893 is the programmer for Atmel's MARC 4 MTPs M48C893, M48C510 and the U9380. This programmer works together with the PC or stand alone. In the stand alone mode the programmer writes the last stored MARC 4 program to the target chip. The memory inside the programmer is buffered by an accumulator. Two buttons and two LEDs on top control the operation of the programmer. It allows single-chip as well as in-system programming.

TMEB893-ND MARC 4 Programmer \$371.07

AVR® 8-Bit RISC Microcontrollers

Atmel's AVR microcontrollers have a RISC core running single cycle instructions and a well-defined I/O structure that limits the need for external components. Internal oscillators, timers, UART, SPI, pull-up resistors, pulse width modulation, ADC, analog comparator and watch dog timers are some of the features you will find in AVR devices. AVR instructions are tuned to decrease the size of the program whether the code is written in C or Assembly. With on-chip in-system programmable Flash and EEPROM, the AVR is a perfect choice in order to optimize cost and get product to the market quickly.

The AVR is a low-power CMOS 8-bit series of microcontrollers based on the AVR RISC architecture. By executing powerful instructions in a single clock cycle, they achieve throughputs approaching 1 MIPS per MHz allowing the system designer to optimize power consumption versus processing speed. The AVR core

combines a rich instruction set with the 32 general purpose working registers. All 32 registers are directly connected to the Arithmetic Logic Unit, allowing two independent registers to be accessed in one single instruction executed in one clock cycle. The resulting architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers.

General Features:

- Utilizes the AVR high-performance and low-power RISC architecture
- 32 x 8 general purpose working registers
- Programming lock for Flash program and EEPROM data security
- Low-power idle and power down modes
- External and internal interrupt sources
- Low-power, high speed CMOS process technology
- Fully static operation

Memory Size (Bytes)	Program	RAM	EEPROM	I/O Pins	Timer/Counters 8/16-bit	Serial Communication	PWM Channels	A/D	Internal OSC	Clock Speed	ISP	JTAG/Debug-Wire	VCC	Operating Temp. ▲	Package	Digi-Key Part No.	Price Each		
																	1	25	100
1K	—	64	6	1/—	—	—	—	—	Y	8MHz	Y	—	4.0 – 5.5V	Ind.	8-Dip	ATTINY12-8PU-ND	1.63	1.03	.95
										8MHz	Y	—	4.0 – 5.5V	Com.	8-Dip	ATTINY12-8SU-ND	1.53	.96	.89
										4MHz	Y	—	2.7 – 5.5V	Com.	8-Dip	ATTINY12L-4PC-ND	2.02	1.27	1.18
										4MHz	Y	—	2.7 – 5.5V	Com.	8-Dip	ATTINY12L-4PU-ND	1.83	1.15	1.06
										4MHz	Y	—	2.7 – 5.5V	Com.	8-Dip	ATTINY12L-4SC-ND	1.91	1.20	1.11
										4MHz	Y	—	2.7 – 5.5V	Com.	8-Dip	ATTINY12L-4SU-ND	1.72	1.08	1.00
	64	64	6	1/—	—	2	4-ch/10-bit	Y	1.2MHz	Y	—	1.8 – 5.5V	Com.	8-Dip	ATTINY12V-1PU-ND	1.63	1.03	.95	
									1.2MHz	Y	—	1.8 – 5.5V	Com.	8-Dip	ATTINY12V-1SC-ND	1.72	1.08	1.00	
									1.2MHz	Y	—	1.8 – 5.5V	Com.	8-Dip	ATTINY12V-1SU-ND	1.53	.96	.89	
									20MHz	Y	DW	2.7 – 5.5V	Ind.	20-QFN	ATTINY13-20MU-ND	1.40	.88	.81	
									20MHz	Y	DW	2.7 – 5.5V	Ind.	8-Dip	ATTINY13-20PU-ND	1.40	.88	.81	
									20MHz	Y	DW	2.7 – 5.5V	Ind.	8-Dip	ATTINY13-20SSU-ND	1.40	.88	.81	
2K	—	—	11	1/—	—	—	—	Y	4MHz	—	—	2.7 – 5.5V	Ind.	32-TQFP	ATTINY28L-4AU-ND	1.51	.95	.88	
									4MHz	—	—	2.7 – 5.5V	Com.	32-QFN	ATTINY28L-4MU-ND	1.61	1.01	.94	
									4MHz	—	—	2.7 – 5.5V	Com.	28-Dip	ATTINY28L-4PU-ND	1.61	1.01	.94	
									1.2MHz	—	—	1.8 – 5.5V	Ind.	32-TQFP	ATTINY28V-1AU-ND	1.51	.95	.88	
									1.2MHz	—	—	1.8 – 5.5V	Com.	32-QFN	ATTINY28V-1MU-ND	1.61	1.01	.94	
									1.2MHz	—	—	1.8 – 5.5V	Com.	28-Dip	ATTINY28V-1PU-ND	1.61	1.01	.94	
	128	128	12	1/1	SPI, TWI	4	8-ch/10-bit	Y	20MHz	Y	DW	2.7 – 5.5V	Ind.	20-QFN	ATTINY24-20MU-ND	1.91	1.70	1.52	
									20MHz	Y	DW	2.7 – 5.5V	Com.	14-Dip	ATTINY24-20PU-ND	1.91	1.70	1.52	
									20MHz	Y	DW	2.7 – 5.5V	Com.	14-Dip	ATTINY24-20SSU-ND	1.91	1.70	1.52	
									10MHz	Y	DW	1.8 – 5.5V	Ind.	20-QFN	ATTINY24V-10MU-ND	1.91	1.70	1.52	
									10MHz	Y	DW	1.8 – 5.5V	Com.	14-Dip	ATTINY24V-10PU-ND	1.91	1.70	1.52	
									10MHz	Y	DW	1.8 – 5.5V	Com.	14-Dip	ATTINY24V-10SSU-ND	1.91	1.70	1.52	
6	2/—	SPI, TWI	4	4-ch/10-bit	Y	2MHz	Y	DW	2.7 – 5.5V	Ind.	20-QFN	ATTINY24N-2MU-ND	2.04	1.52	1.33				
						2MHz	Y	DW	2.7 – 5.5V	Com.	8-Dip	ATTINY25-20MU-ND	1.78	1.25	1.11				
						2MHz	Y	DW	2.7 – 5.5V	Com.	8-Dip	ATTINY25-20PU-ND	1.66	1.16	1.03				
						2MHz	Y	DW	2.7 – 5.5V	Com.	8-Dip	ATTINY25-20SU-ND	1.66	1.16	1.03				
						2MHz	Y	DW	2.7 – 5.5V	Ind.	8-Dip	ATTINY25-20SU-ND	1.66	1.16	1.03				
						2MHz	Y	DW	2.7 – 5.5V	Ind.	8-Dip	ATTINY25-20SU-ND	1.66	1.16	1.03				

• RoHS Compliant ▲ Operating Temperature: Industrial: -40°C – 85°C Commercial: 0°C – 70°C High: -40°C – 125°C Extended: -40°C – 105°C ‡ Cut Tape † Tape and Reel (Continued)

Digi-Reel® Most SMT cutdown parts are available on a Digi-Reel®. For Digi-Reel part number, change 1-ND to 6-ND or CT-ND to DKR-ND. See Digi-Key® Services on page 2 for additional information.

More Product Available Online: www.digikey.com

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