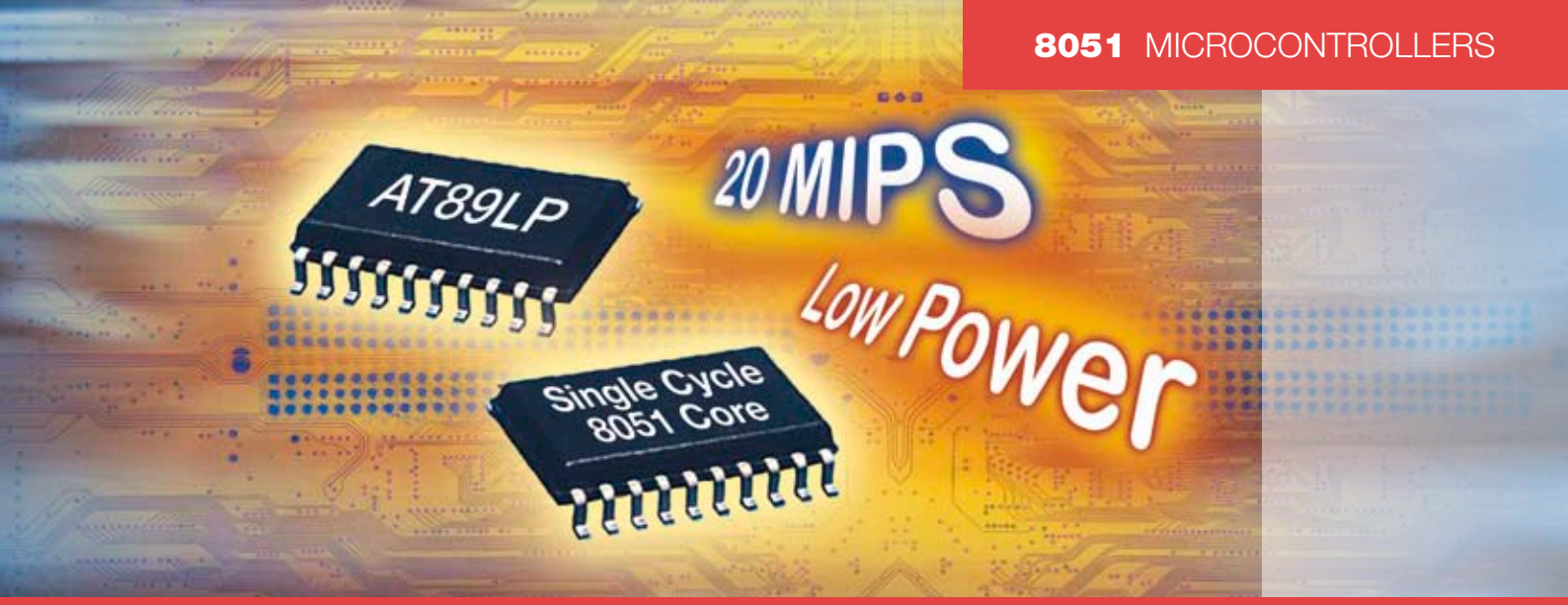

8051 Single Cycle Core Microcontrollers

AT89LP Family Provides High Performance & Low Power

Atmel® AT89LP family consists of high performance 8-bit microcontrollers that execute most instructions in a single clock cycle, whereas the classic 8051 CPU requires 12 clock cycles.
At the same MIPS throughput as the classic 8051, existing applications can use a much lower clock frequency, thus allowing designers to either reduce power consumption by up to 80%. Designers can also boost the application performance and reach up to 20 MIPS throughput, i.e. 12 times faster than the traditional 8051 core.

Key Features & Benefits

- Binary Compatibility with Existing 8051 Product
  - Easy Application Upgrade Without Costly and Time-consuming Redesign
- Single Clock Cycle per Byte Fetch
- Boosted Performance: 20 MIPS @ 20 MHz
  - 12 Times Faster than the Traditional 8051 Core
- Power Consumption Reduced by 80%
- EMC Issues Solved by Reducing Operating Frequency
- 2.0V to 5.5V Operating Range
- On-chip Flash Data for Data Storage
- On-chip Debug

Applications

- Battery Management
- White Goods
- Universal Remote Control
- Power Management
- Industrial and Motor Control

Reduced Power Consumption

Typical values @ 5.5V	AT89LP	AT89
Active Mode	1.59 mA @ 1 MHz	7.5 mA @ 12 MHz
Idle Mode	0.56 mA @ 1 MHz	1.48 mA @ 12 MHz
Power Down Mode	<2 µA	14.3 µA

Device	Program Flash (KB)	Flash Data (Bytes)	RAM (Bytes)	Pulse Width Modulation	Analog Comparator	Serial Peripheral Interface	UART	Watchdog	Pins	In-System Programming	In-Application Programming	Packages	Availability
AT89LP2052	2	–	256	2	Y	Y	Y	Y	20	Y	–	TSSOP, PDIP, SOIC	now
AT89LP213	2	–	128	2	Y	Y	–	Y	14	Y	–	TSSOP, PDIP	now
AT89LP214	2	–	128	–	Y	Y	Y	Y	14	Y	–	TSSOP, PDIP	now
AT89LP216	2	–	128	2	Y	Y	Y	Y	16	Y	–	TSSOP, PDIP, SOIC	now
AT89LP4052	4	–	256	2	Y	Y	Y	Y	20	Y	–	TSSOP, PDIP, SOIC	now
AT89LP413	4	–	128	2	Y	Y	–	Y	14	Y	–	TSSOP, PDIP, SOIC	4Q/06
AT89LP414	4	–	256	–	Y	Y	Y	Y	14	Y	–	TSSOP, PDIP, SOIC	4Q/06
AT89LP416	4	–	128	2	Y	Y	Y	Y	16	Y	–	TSSOP, PDIP, SOIC	4Q/06
AT89LP428	4	512	768	6	2	Y	Y	Y	28, 32	Y	Y	TSSOP, PDIP, TQFP	1Q/07
AT89LP828	8	1024	768	6	2	Y	Y	Y	28, 32	Y	Y	TSSOP, PDIP, TQFP	1Q/07

Development Tools

AT89ISP

In-System Programmer (ISP) for Atmel AT89LP devices. It provides an intuitive interface for In-System Programming that can be run from a personal computer.

USB-Based Programmer

USB-powered Small-factor ISP Programmer for AT89LP derivatives. This tool is ideal for field code upgrades and easy portability.

On-chip Debug

Hardware debug system with Windows® IDE interface. It allows the user to access debugging functions built into AT89LP derivatives. This results in faster development and verification of user codes in real-time.

Third Party Tools

Various third party tool providers for the AT89LP family are available at:
www.atmel.com/products/8051/thirdparty.asp

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