8-bit Microcontrollers with Integrated USB Controller

Ready to Go in No Time

Atmel®'s family of 8-bit microcontrollers supports a wide range of USB applications: high-end keyboards, mice, phone accessories, toys, serial adapters and industrial equipment.
An on-chip bootloader permits very quick firmware download from a PC, without using a parallel programmer or dedicated hardware.
Nonvolatile memory stores configuration parameters enabling the system to be instantly operational, even without connection to a PC.
8051 solutions offer 8KB to 64KB of Flash with up to 4 MIPS and USB function. They also include 5 ROM variants for cost reduction when code is fixed.
AVR® solutions offer 8KB to 128KB of Flash with up to 16 MIPS, USB function and On-The-Go for dual role host or function.

Applications

- Keyboard and mice
- Gamepads and Joysticks
- Phone accessories
- Toys
- Serial adapters
- Industrial equipment
- Security Keys
- POS Terminals
- NFC and RFID readers
- Power supplies and chargers

Key Features & Benefits

- Popular and powerfull 8-bit architectures 8051 and AVR
- Extensive Library of USB reference firmware
- USB Certification
- Flash In-System Programming
- Factory Programmed USB boot-loader
- Choice of serial interfaces and analog peripherals
- Large range of memory sizes
- Industrial Grade and Quality
- Low power consumption

CERTIFIED USB

CERTIFIED USB On-The-Go

ATMEL®

USB Everywhere

After conquering computers and peripherals, USB is gaining momentum in consumer products and industrial equipment. Data storage, data transfer and product configuration are key applications driving this move.

On-The-Go (OTG) now allows devices to communicate without PC intervention. With the suitable device class libraries OTG can:

- support various targeted products
- negotiate host or device role with another OTG device
- connect to any PC as a USB device

Human Interface Devices form by far the most popular class of USB peripherals. New pointing and input devices gain in accuracy with full-speed (12 Mbit/s), which is provided by all Atmel USB microcontrollers. Atmel USB microcontrollers also support isochronous transfers and double buffering for audio streaming. Last but not least, Atmel controllers with seven endpoints can merge several USB functions in one composite device, thus saving space and components.

USB Self-Programming

Atmel USB Flash microcontrollers' on-chip bootloader can be used for self-programming at any step of the product life cycle: development, production, after sales support and in day to day use by the end user. Dedicated on-chip hardware secures the user firmware but can also force the application to reprogram when it has lost control.

Instant connection: programming on demand

USB Software Library

A library of reference firmware demonstrates the most popular USB device classes and helps proliferate applications without the need for custom driver development: Human Interface Device class for mice, keyboards and industrial equipment I/Os; Mass storage device class to share files with PCs; Communication Device Class for data transfer and UART emulation.

Device Class	Endpoint / Pipe*	AVR		8051
		Host (KB)	Function (KB)	Function (KB)
Device Firmware Update	1	7	4	3
Human Interface Device	1-3	4	3	3
Mass Storage	3	7	5	6
Communication Device Class	4	8	7	5
Audio	2	3	2.5	
Fingerchip Bulk	2			4

*Including one IN/OUT control endpoint/pipe

AVR Tools

Evaluation Kit	Atmel: AT90USBKEY, EVK525 Mass Storage Evaluation Kit
Starter Kit	Atmel: STK525, STK526
Emulator Platform	Atmel: JTAGICE mkII
In-System Programming	Atmel: FLIP software, AVRISP mkII, JTAGICE mkII, AVR Dragon
Flash Device Programmers	Atmel: STK500 with STK501 or STK526
Compilers	CodeVision™, GCC-AVR, IAR®,

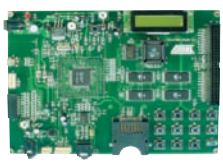
USB Demo Kit
P/N: AT90USBKEY

64 & 128KB Flash Starter Kit
P/N: ATSTK525

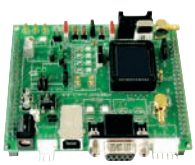
8 & 16KB Flash Starter Kit
P/N: ATSTK526

8051 Tools

Starter et Development Kits	Atmel: AT89STK-05, AT89STK-10, AT89DVK-04
Emulator	Ceibo, Hitex, Nohau, Phytec, Signum
In-System programming	Atmel: FLIP software
Flash Device Programmers	Ad vantech®, Hi-Lo Systems, Elnec, BP Microsystems, Data I/O®, etc
Compilers	Crossware®, Hi-Tech, IAR®, Keil™, Raisonnace® , SDCC, Tasking®



AT89C5132 Development Kit
P/N: AT89DVK-04



AT89C5130A/31A Starter Kit
P/N: AT89STK-05

Mass Storage
Starter Kit - P/N: AT89STK-10

USB 8-bit Microcontrollers Offering

Family	Device	Status a)	Flash (KB)	ROM (KB)	ISP & Self Programming	EEPROM (Bytes)	RAM (Bytes)	I/O Pins	Serial Interfaces: UART/USART	SPI	TWI (I2C compliant)	USB 2.0 Host/OTG	USB Full Speed	USB Low Speed	USB DPRAM (bytes)	USB Endpoints	PS2	I2S	8-bit Timers	16-bit Timers	PWM (channel)	Comparator	A/D Converter (channel)	Analog Gain Stage	POR	PFD	Memory Interfaces (IDE, MMC, SD, CF, SM)	JTAG/DebugWIRE	Vcc (V)	Max. Frequency (MHz)	Max. Speed (MIPS)	Packages	Temperature Range
AVR	AT90USB82	I	8		USB/SPI	512	512	22	1	1			Y		176	5	Y		1	1	3+1	Y			Y	Y		D	2.7 - 5.5	8-16	8-16	QFN32	-40°C to +85°C
AVR	AT90USB162	P	16		USB/SPI	512	512	22	1	1			Y		176	5	Y		1	1	3+1	Y			Y	Y		D	2.7 - 5.5	8-16	8-16	TQFP32, QFN32	-40°C to +85°C
AVR	AT90USB646	P	64		USB/SPI	2K	4K	48	1	1	1		Y	Y	832	7			2	2	6+2	Y	8	Y	Y	Y		J	2.7 - 5.5	8-16	8-16	QFN64	-40°C to +85°C
AVR	AT90USB647	P	64		USB/SPI	2K	4K	48	1	1	1	Y	Y	Y	832	7			2	2	6+2	Y	8	Y	Y	Y		J	2.7 - 5.5	8-16	8-16	TQFP64, QFN64	-40°C to +85°C
AVR	AT90USB1286	P	128		USB/SPI	4K	8K	48	1	1	1		Y	Y	832	7			2	2	6+2	Y	8	Y	Y	Y		J	2.7 - 5.5	8-16	8-16	QFN64	-40°C to +85°C
AVR	AT90USB1287	P	128		USB/SPI	4K	8K	48	1	1	1	Y	Y	Y	832	7			2	2	6+2	Y	8	Y	Y	Y		J	2.7 - 5.5	8-16	8-16	TQFP64, QFN64	-40°C to +85°C
8051	AT89C5130A	P	16		USB	1K	1280	18/34	1	Y	Y		Y		1356	7				3+PCA	5				Y	Y			2.7 - 5.5	48	4	PLCC52, QFN32, VQFP64	-40°C to +85°C
8051	AT89C5131A	P	32		USB	1K	1280	18/34	1	Y	Y		Y		1356	7				3+PCA	5				Y	Y			2.7 - 5.5	48	4	PLCC52, QFN32 VQFP64, SO28	-40°C to +85°C
8051	AT89C5132	P	64		USB		2304	44	1	Y			Y		168	4		Y		2			2				Y		2.7 - 3.6	20	3.3	VQFP80, Die	-40°C to +85°C
8051	AT83C5134	I		8			1280	18	1	Y	Y		Y		356	6				3+PCA	5				Y	Y			2.7 - 3.6	32	4	QFN32	-40°C to +85°C
8051	AT83C5135	I		16			1280	18	1	Y	Y		Y		356	6				3+PCA	5				Y	Y			2.7 - 3.6	32	4	QFN32	-40°C to +85°C
8051	AT83C5136	I		32			1280	18/34	1	Y	Y		Y		356	6				3+PCA	5				Y	Y			2.7 - 3.6	32	4	QFN32, VQFP64 SO28, Die	-40°C to +85°C
8051	AT83EC5136	I		32		512	1280	34	1	Y	Y		Y		356	6				3+PCA	5				Y	Y			2.7 - 3.6	32	4	QFN48	-40°C to +85°C
8051	AT83EI5136	I		32		32K	1280	34	1	Y	Y		Y		356	6				3+PCA	5				Y	Y			2.7 - 3.6	32	4	QFN48	-40°C to +85°C

a) I: Device under Introduction, P: Product in Full Production. Please contact your local sales for details.
CF: CompactFlash, **IDE:** Integrated Drive Electronics, **MMC:** MultiMedia Card, **PFD:** Power Fail Detect, **POR:** Power On Reset, **PWM:** Pulse Width Modulation, **SD:** Secure Digital, **SM:** Smart Media, **SPI:** Serial Peripheral Interface, **USB:** Universal Serial Bus.

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