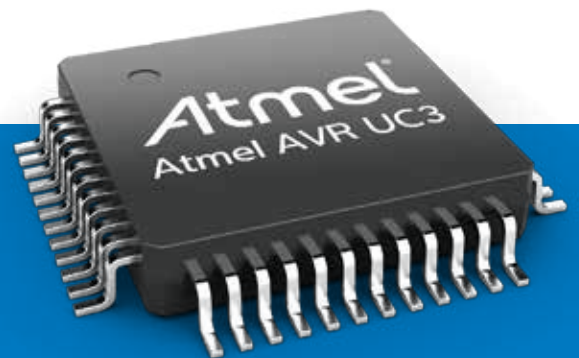




Atmel AVR UC3

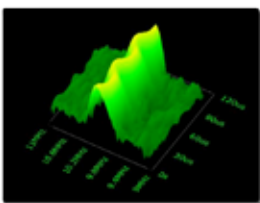
Low Power and Ease Of Use

Atmel AVR UC3

The Atmel® AVR® UC3 32-bit microcontroller family is built on the high-performance 32-bit AVR architecture and optimized for highly integrated applications. The AVR UC3 delivers high computational throughput, deterministic real-time control, low-power consumption, low system cost, high reliability, and ease-of-use. The AVR CPU includes cutting-edge features such as integer and fixed point DSP (digital signal processor) arithmetic, and single-cycle multiply-accumulate instructions. The dual-port SRAM, peripheral DMA (direct memory access) controller, and multi-layer, high-speed bus architecture makes the AVR UC3 core ideal for high-throughput applications. AVR UC3 devices are perfectly suited for portable and battery-powered applications due to their outstanding low-power properties.

Atmel picoPower Technology

By employing market-leading, Atmel picoPower® low-power technology, the AVR UC3 further extends the battery life of portable devices. Its true 1.62V operation means that selected AVR UC3 devices can utilize a 1.8V ($\pm 10\%$) regulated power supply with all functions working. picoPower AVR UC3 devices consume only 650nA with the RTC (real time clock) running, and enable ultra low sleep current combined with fast wake-up for high integrated microcontrollers. For more information on picoPower technology, visit www.atmel.com/picopower.



Unrivalled Digital Signal Processor Performance

By including powerful instructions for single cycle, multiply accumulate and fractional multiply for various number formats, the 32-bit AVR UC3 delivers unrivalled DSP (digital signal processor) performance compared to legacy architectures. In the AVR UC3 software framework more than 70 DSP functions have been assembly optimized utilizing these instructions. DSP has never been easier.

Security

Selected AVR UC3 devices provide mechanisms to protect the system from hacker modification, flash software theft and runaway code.

Atmel FlashVault code protection allows CPU resources and sections of code/data memory to be reserved for proprietary software IP or critical sections of code/data. A special API (application programming interface) is used to access these resources from the rest of the code. Attempts to access these resources by circumventing this API (either by hacking or runaway code) will be aborted and result in an exception.



Peripheral Event and DMA Systems

The Atmel® peripheral DMA (direct memory access) controller sets a new standard for data transfer efficiency. If the peripheral DMA controller is not enabled, the maximum usable transfer rate on the SPI (serial peripheral interface) module would be approximately 1MBit/s, occupying the CPU with more than 50% load just moving data around. With the peripheral DMA controller, this bottleneck is removed and the Atmel AVR® UC3 microcontroller can achieve a transfer rate of 33MBit/s on SPI and USART with only a 15% load on the CPU. The AVR UC3 can even toggle the I/O pins at 33MHz.

In addition, interrupt-driven data transfer and replacing it with an event-triggered data transfer, the innovative peripheral event system in the AVR UC3 represents a paradigm shift. The peripheral event system allows the AVR UC3 to send signals (events) directly to other peripherals without involving the CPU. This ensures short and predictable response time, and at the same time it offloads the CPU and reduces power consumption.

Product Selector

Atmel (AVR UC3 Series)	Flash range (KBytes)	SRAM range (KBytes)	SD/MMC	Ethernet MAC	USB Hi-Speed	USB Full Speed	USB Host/OTG	HW capacitive touch	CAN	USART	SPI with 4x Slave	SSC (I ² S audio)	TWI (I ² C)	I/O	16-bit Timer/Counters	PWM (Channels)	RTC / 32 KHz oscillator	Crystal oscillator	Memory Protection Unit	10-bit A/D (Channels)	12-bit A/D (Channels)	DAC	ABDAC	Analog Comparator	Crypto (AES)	proPower	FlashVault	VCC (V)	Clock Speed (MHz)	Package
UC3 A0	128 - 512	32 - 64	--	1	--	Yes	Yes	--	--	4	2	1	1	109	9	13	1	2	1	8	--	--	Yes	--	--	--	--	3.0 - 3.6	66	LQFP144, TFBGA144
UC3 A1	128 - 512	32 - 64	--	1	--	Yes	Yes	--	--	4	2	1	1	69	9	13	1	2	1	8	--	--	Yes	--	--	--	--	3.0 - 3.6	66	TQFP100
UC3 A3	64 - 256	128	2	--	Yes	Yes	Yes	--	--	4	2	1	1	110	6	12	1	2	1	8	--	--	Yes	--	--	--	--	3.0 - 3.6	66	LQFP144, TFBGA144
UC3 A3S	64 - 256	128	2	--	Yes	Yes	Yes	--	--	4	2	1	1	110	6	12	1	2	1	8	--	--	Yes	--	Yes	--	--	3.0 - 3.6	66	LQFP144, TFBGA144
UC3 A4	64 - 256	128	2	--	Yes	Yes	Yes	--	--	4	2	1	1	83	6	13	1	2	1	8	--	--	Yes	--	--	--	--	3.0 - 3.6	66	TBGA100
UC3 A4S	64 - 256	128	2	--	Yes	Yes	Yes	--	--	4	2	1	1	83	6	13	1	2	1	8	--	--	Yes	--	Yes	--	--	3.0 - 3.6	66	TBGA100
UC3 B0	64 - 512	16 - 96	--	--	--	Yes	Yes	--	--	3	1	1	1	44	3	13	1	2	1	8	--	--	--	--	--	--	--	3.0 - 3.6	60	TQFP64, QFN64
UC3 B1	64 - 512	16 - 96	--	--	--	Yes	--	--	--	2	1	--	1	28	3	13	1	1	1	6	--	--	--	--	--	--	--	3.0 - 3.6	60	TQFP48, QFN48
UC3 C0	64 - 512	16 - 64	--	1	--	Yes	Yes	--	2	5	2	1	2	123	7	20	1	2	1	--	16	2	--	4	--	--	Yes	3.0 - 5.5	66	LQFP144
UC3 C1	64 - 512	16 - 64	--	1	--	Yes	Yes	--	2	5	2	1	2	81	7	20	1	2	1	--	16	2	--	4	--	--	Yes	3.0 - 5.5	66	TQFP100
UC3 C2	64 - 512	16 - 64	--	1	--	Yes	Yes	--	2	4	1	--	2	45	7	20	1	2	1	--	11	1	--	2	--	--	Yes	3.0 - 5.5	66	TQFP64
UC3 D3	128 - 256	16	--	--	--	Yes	--	Yes	--	3	1	--	1	51	3	7	1	1	--	8	--	--	--	--	--	--	--	3.0 - 3.6	48	TQFP64, QFN64
UC3 D4	128 - 256	16	--	--	--	Yes	--	Yes	--	3	1	--	1	35	3	7	1	1	--	6	--	--	--	--	--	--	--	3.0 - 3.6	48	TQFP48, QFN48
UC3 L0	16 - 256	8 - 32	--	--	--	--	--	Yes	--	4	1	--	2	36	6	36	1	1	1	--	8	--	--	8	--	Yes	Yes	1.62 - 3.6	50	TQFP48, QFN48, LLGA48
UC3 L3U	64 - 256	16 - 32	--	--	--	Yes	--	Yes	--	4	1	1	2	51	6	36	1	1	1	--	8	--	Yes	8	--	Yes	Yes	1.62 - 3.6	50	TQFP64, QFN64
UC3 L4U	64 - 256	16 - 32	--	--	--	Yes	--	Yes	--	4	1	--	2	36	6	36	1	1	1	--	8	--	--	8	--	Yes	Yes	1.62 - 3.6	50	TQFP48, QFN48, LLGA48

For more information on the AVR UC3 family of microcontrollers, visit www.atmel.com/UC3.

All AVR microcontrollers are supported by a seamless toolchain that makes code development and debugging less difficult and more fun. For more information, visit www.atmel.com/avr_tools.