

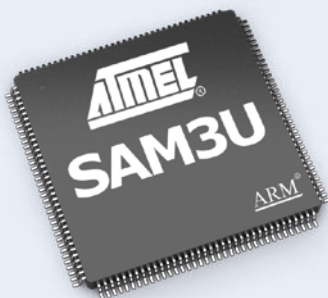
## ➤ SAM3U

### 32-BIT FLASH MCU BASED ON ARM CORTEX-M3

#### ➤ Taking data transfer rates to new levels

With today's exponential growth in data rates, system designers demand solutions capable of moving more data faster and more efficiently than ever before. Atmel's Cortex® M3-based SAM3U delivers high-speed interfaces combined with an innovative high data bandwidth architecture that make it the ideal device for applications with intensive communication requirements.

The 96 MHz SAM3U integrates multiple high-speed peripherals, including an on-chip high-speed USB device and Phy at 480 Mbps. A combination of a 5-layer system bus matrix, 23 DMA channels and distributed memory prevents bottlenecks with minimum processor overhead. With sophisticated power management techniques and an operating voltage down to 1.62V, the SAM3U maximizes battery usage and provides true 1.8V operation. The SAM3U is available in Flash memory densities of 64K, 128K and 256Kbytes, and in 100- and 144-pin QFP and BGA package options.



#### Targeted Applications

- High-speed gateways in industrial and medical applications
- PC & Mobile phone accessories
- USB tokens & drives
- Dataloggers

## High-speed Bridging

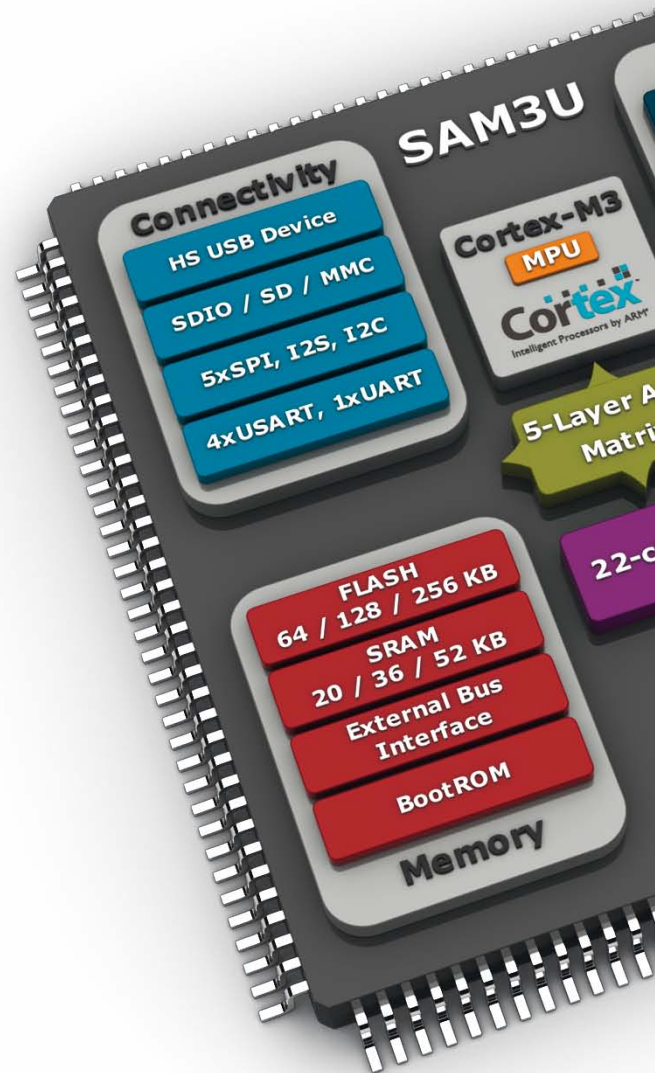
The SAM3U is designed to sustain 100+ Mbps data rates between multiple high-speed peripherals including HS USB 2.0, SDIO/SDCard 2.0, MMC 4.3, External Bus Interface and SPI.

HS USB Device	425 Mbps
+ External Bus Interface	500 Mbps
+ MMC Interface	384 Mbps
+ SDIO/SDCard	192 Mbps
+ SPI	48 Mbps
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=	LIGHTSPEED DATA TRANSFERS

## Data Speedway

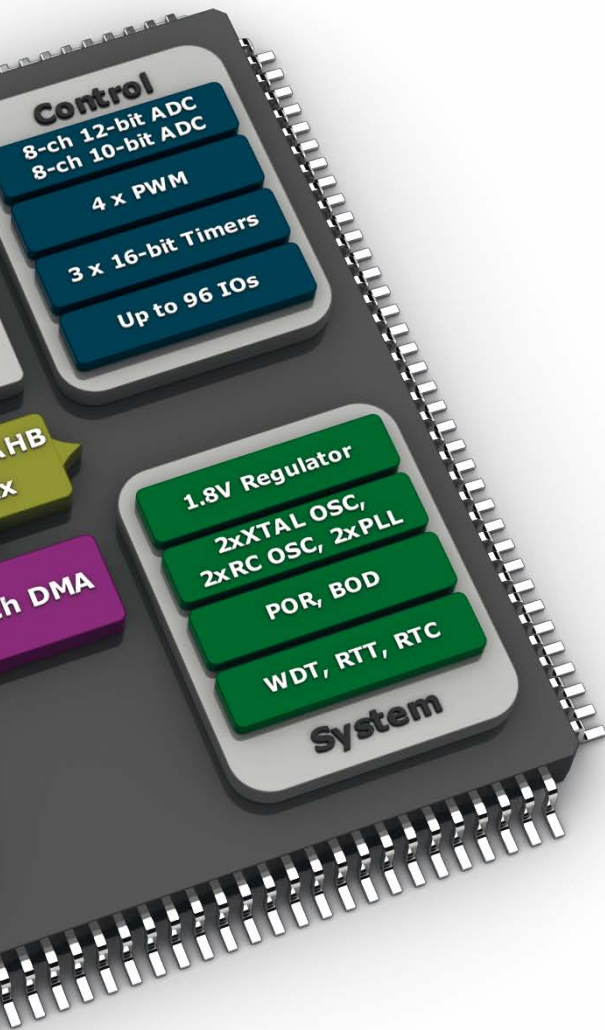
To fully exploit the SAM3U's high-speed communications peripherals, the device is built around a high data-bandwidth architecture that enables to run tasks in parallel and ensures uninterrupted internal and external data flows with minimum processor overhead.

5-layer Bus Matrix	
+ 17 PDC channels, 4 central DMA channels, 1 dedicated HS USB DMA	
+ Multiple SRAM banks	
+ Dual Peripheral Bus	
<hr/>	
=	MAXIMUM BANDWIDTH



- Up to 96 MHz CPU speed
- 1.62V to 3.6V supply
- 12/8/4 MHz factory-trimmed RC
- 12-bit ADC with differential inputs & programmable Gain Amplifier
- EBI with SRAM, PSRAM, NOR Flash & NAND Flash support





- RTC with calendar function
- IOs with debouncing and on-die termination resistor
- BootROM with UART & USB bootloader routines
- 100- and 144-pin LQFP and BGA



## Safety and Security

The SAM3U ensures robust operation thanks to multiple system functions, including a Memory Protection Unit, dual-bank Flash and backup clock mechanism. A 128-bit unique ID enables traceability or seed for encryption.

- POR, BOD, Windowed WDT
  - + OSC failure detection
  - + Dual-bank Flash with security & lock bits
  - + Memory Protection Unit
  - + 128-bit unique ID
- 
- = PRODUCT STABILITY AND INTEGRITY

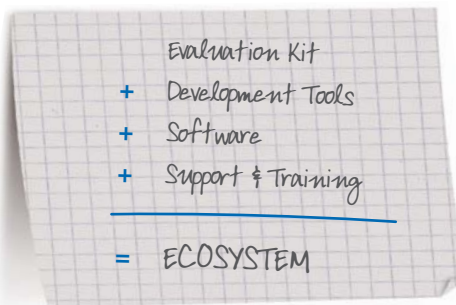
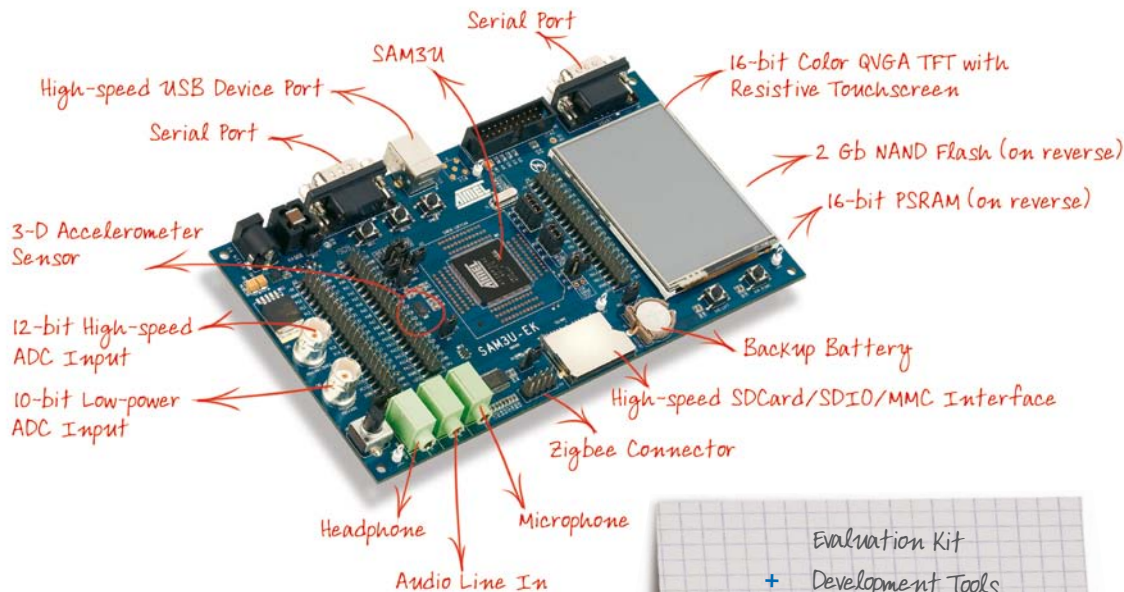
## Low Power Consumption

The SAM3U incorporates power management techniques that minimize power consumption under all conditions of use, whether in active mode or low-power modes.

- Back-up mode down to 1.8  $\mu$ A with RTC running
  - + Down to 500  $\mu$ A/MHz
  - + 1.62V to 3.6V operation
  - + Fast wake up with internal RC
  - + Multiple wake-up sources
- 
- = EXTENDED BATTERY LIFE,  
MAXIMUM POWER EFFICIENCY

## SAM3U Ecosystem

Atmel's SAM3U Flash MCU is supported by a rapidly growing number of development tools, real-time operating systems (RTOS), middleware products and technical support services from industry-leading third parties. Atmel provides a dedicated software package for the SAM3U with register descriptions and device drivers for all peripherals, along with project examples that ease the use of the microcontroller.



## SAM3U Selector

All SAM3U devices integrate a rich peripheral set that includes high-speed USB 2.0 Device, SDIO/SDCard 2.0 and MMC 4.3 Host interfaces, I2S, timers, PWM, 128-bit unique ID and power and reset management peripherals.

Device	Flash (Kbytes)	SRAM (Kbytes)	PIOs	USB Device	USARTs	SPI	TWI	SHDN Pins	External Bus Interface	ADC	Package
SAM3U4E	2 x 128	52	96	HS	5	5	2	Yes	8 or 16 data bits 4 chip selects 24-bit address	8-ch 12-bit 8-ch 10-bit	LQFP144 BGA144
SAM3U2E	128	36	96	HS	5	5	2	Yes	8 or 16 data bits 4 chip selects 24-bit address	8-ch 12-bit 8-ch 10-bit	LQFP144 BGA144
SAM3U1E	64	20	96	HS	5	5	2	Yes	8 or 16 data bits 4 chip selects 24-bit address	8-ch 12-bit 8-ch 10-bit	LQFP144 BGA144
SAM3U4C	2 x 128	52	57	HS	4	4	1	No	8 data bits 2 chip selects 8-bit address	4-ch 12-bit 4-ch 10-bit	LQFP100 BGA100
SAM3U2C	128	36	57	HS	4	4	1	No	8 data bits 2 chip selects 8-bit address	4-ch 12-bit 4-ch 10-bit	LQFP100 BGA100
SAM3U1C	64	20	57	HS	4	4	1	No	8 data bits 2 chip selects 8-bit address	4-ch 12-bit 4-ch 10-bit	LQFP100 BGA100

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