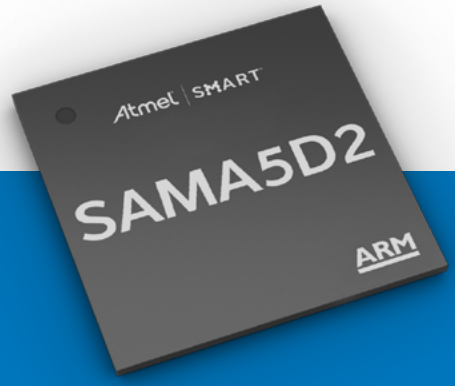
Atmel | SMART SAMA5D2 Series

Industry's Lowest Power MPUs



The new Atmel® | SMART SAMA5D2 series is a high-performance, ultra-low-power ARM® Cortex®-A5 processor based MPU. It supports multiple memories, including the latest-generation technologies such as DDR3, LPDDR3, and QSPI Flash. The SAMA5D2 series is particularly well-suited for small control panel/HMI and secure Internet of Things (IoT) gateway/connectivity applications. It is also ideal for barcode scanners and printers as well as mid-range POS terminals that require PCI. The improved low power features and small package make this device ideal for wearables and other battery-operated applications.

Key Applications

- Small HMI / Control Panel (white goods, alarm systems, etc.)
- IoT / Secure Gateways
- POS terminals and imaging
- Wearables / Battery-operated systems

Key Highlights

Lower overall system cost

Expanding the Atmel | SMART SAMA5 family, the SAMA5D2 series delivers just the right price-to-performance ratio for applications requiring an entry-level MPU and extended industrial temperature range (-40 to 105°C ambient temperature). The new series also provides an excellent migration path for designers currently using ARM926-based MPUs and looking for higher performance and additional features, including low power, higher security, DDR3 support, smaller footprint, audio, USB HSIC and patented Atmel SleepWalking technology.

Low-power, high-performance architecture

The SAMA5D2 series delivers the world's lowest power consumption of all MPUs in its class with values down to 250µA in retention mode with context preserved and 30µs ultra-fast wake-up. Featuring an ARM NEON™ engine, the new SAMA5D2 series delivers 500MHz and 166MHz of system clocking. The memory system includes a configurable 16- or 32-bit DDR interface controller, 16-bit external bus interface (EBI), QSPI Flash interface, ROM with secure and non-secure boot solution, and 128kB of SRAM plus 128kB of SRAM configurable as L2Cache or SRAM extension. The user interface system for the SAMA5D2 includes a 24-bit TFT LCD controller, an audio subsystem with fractional PLL, multiple I2S and SSC/TDM channels, a class D amplifier and digital microphone support.

High-grade security

The SAMA5D2 series security features prevent cloning of your application, protect and authenticate software, and securely store and transfer data. This high-grade security allows unique on-the-fly encryption and decryption of software code from the external DRAM, and includes secure boot, tamper detection pins, safe erasure of security-critical data, voltage and frequency monitoring and a unique ID in each device. The device features the ARM TrustZone® system-wide approach to security as well as advanced hardware encryption engines supporting public key cryptography.

Lifetime commitment

Atmel offers customers a 12-year lifetime commitment from the time of this product's introduction.

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Ecosystem

Atmel has created and supports a free Linux® distribution available at www.linux4SAM.org and https://github.com/linux4sam. With our commitment to the Linux open-source community, we provide full coverage of SoC peripherals in the Linux kernel as well as bootloaders such as AT91Bootstrap, U-Boot and Barebox.

For RTOS, bare metal C or C++ designers, Atmel delivers the softpack, a set of around 40 C drivers that run on the SAMA5D2 Xplained Ultra kits and exercises all peripherals. The softpack is also very useful for board bring up as well as quick prototyping.

To evaluate and prototype your application, Atmel provides an evaluation kit, the ATSAMA5D2-XULT that covers all SAMA5D devices and comes pre-loaded with Linux demonstration software.

To ease your design process and reduce your time to market, Atmel collaborates with an expanding network of global partners that deliver hardware, PMIC, memories, SOM (system-on-module), and software solution for the SAMA5D2 series of MPUs. For more information on our partners you can visit the SAMA5 microsite. http://www.atmel.com/Microsite/sama5

	SAMA5D21	SAMA5D22	SAMA5D23	SAMA5D24	SAMA5D26	SAMA5D27	SAMA5D28
Package	BGA196 (11x11, 0.75mm pitch)			BGA256 (8x8, 0.4)	BGA289 (14x14, 0.8)		
IOs	72			105	128		
DDR bus	16-bit	16-bit	16-bit	16/32-bit	16/32-bit	16/32-bit	16/32-bit
Ext. Temp. options	--	✓	✓	--	✓	✓	✓
CAN	--	✓	✓	--	--	✓	✓
USB HSIC	--	--	--	✓	--	✓	✓
PTC[1]	--	✓	✓	✓	--	✓	✓
Secure Boot, Tamper	✓	✓	✓	✓	✓	✓	✓
Enc/Dec OTF	--	✓	✓	✓	--	✓	✓
Security monitors, die shield	--	--	✓	--	--	--	✓

Kit ordering code: ATSAMA5D2-XULT

For more information on the SAMA5D2 series, go to the product page (http://www.atmel.com/products/microcontrollers/arm/sama5.aspx#SAMA5D2_series)

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