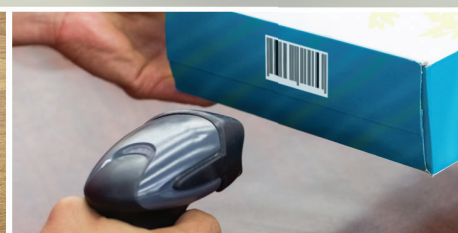




**ARM® Core-Based
Embedded Microprocessors**

High Performance, Power Efficient, Easy to Use



Device Name	Core Sub-System				Memory										Connectivity						
	Core	VFPU/NEON/Trustzone	Clock Speed (MHz)*	Core Operating Voltage	SRAM (KB)	L1 Cache Memory (KB) (Instruction/Data)	L2 Cache (KB)	LPDDR/SDRAM	QSPI Interface	DDR2/LPDDR/LPDDR2	DDR3/DDR3L/LPDDR3	NAND		UART	SPI	TWI (I ² C)	SSC and I ² S	CAN	USB		
												SLC ECC (bit)	MLC ECC (bit)						Device Only	Device and Host	Host Only
ATSAMA5D44	Cortex-A5	1/1/1	600	1.8V	128	2 × 32	128	-	-	1/1/1	-	24	24	8	8	4	2	-	-	1 HS	2 HS
ATSAMA5D43	Cortex-A5	1/1/1	600	1.8V	128	2 × 32	128	-	-	1/1/1	-	24	24	8	8	4	2	-	-	1 HS	2 HS
ATSAMA5D42	Cortex-A5	1/1/1	600	1.8V	128	2 × 32	128	-	-	1/1/1	-	24	24	8	8	4	2	-	-	1 HS	2 HS
ATSAMA5D41	Cortex-A5	1/1/1	600	1.8V	128	2 × 32	128	-	-	1/1/1	-	24	24	8	8	4	2	-	-	1 HS	2 HS
ATSAMA5D36	Cortex-A5	1/1/1	536	1.2V	128	2 × 32	-	-	-	1/1/1	-	24	24	7	6	3	2	2	-	1 HS	2 HS
ATSAMA5D35	Cortex-A5	1/-/-	536	1.2V	128	2 × 32	-	-	-	1/1/1	-	24	24	7	6	3	2	2	-	1 HS	2 HS
ATSAMA5D34	Cortex-A5	1/-/-	536	1.2V	128	2 × 32	-	-	-	1/1/1	-	24	24	5	6	3	2	2	-	1 HS	2 HS
ATSAMA5D33	Cortex-A5	1/-/-	536	1.2V	128	2 × 32	-	-	-	1/1/1	-	24	24	5	6	3	2	-	-	1 HS	2 HS
ATSAMA5D31	Cortex-A5	1/-/-	536	1.2V	128	2 × 32	-	-	-	1/1/1	-	24	24	7	6	3	2	-	-	1 HS	2 HS
ATSAMA5D28	Cortex-A5	1/1/1	500	1.2V	128	2 × 32	128	-	2	1/1/1	1/1/1	32	32	10	7	7	4	2	-	1 HS	1 HS, 1 HSIC
ATSAMA5D27	Cortex-A5	1/1/1	500	1.2V	128	2 × 32	128	-	2	1/1/1	1/1/1	32	32	10	7	7	4	2	-	1 HS	1 HS, 1 HSIC
ATSAMA5D26	Cortex-A5	1/1/1	500	1.2V	128	2 × 32	128	-	2	1/1/1	1/1/1	32	32	10	7	7	4	-	-	1 HS	1 HS
ATSAMA5D24	Cortex-A5	1/1/1	500	1.2V	128	2 × 32	128	-	2	1/1/1	1/1/1	32	32	10	7	7	4	-	-	1 HS	1 HS, 1 HSIC
ATSAMA5D23	Cortex-A5	1/1/1	500	1.2V	128	2 × 32	128	-	2	1/1/1	1/1/1	32	32	9	6	6	4	1	-	1 HS	1 HS
ATSAMA5D22	Cortex-A5	1/1/1	500	1.2V	128	2 × 32	128	-	2	1/1/1	1/1/1	32	32	9	6	6	4	1	-	1 HS	1 HS
ATSAMA5D21	Cortex-A5	1/1/1	500	1.2V	128	2 × 32	128	-	2	1/1/1	1/1/1	32	32	9	6	6	4	-	-	1 HS	1 HS

* Clock speed: Max. clock speed @ +85°C.

Temperature Range: -40°C to +85°C (ambient)

UART: Support for RS485, ISO7816, IrDA*, LIN, modem control lines and SPI on selected UARTs.

TWI: Two-Wire Interface, interconnects components on a two-wire bus.

SSC: Serial Synchronous Controller, supports many serial synchronous communications protocols used in audio and telecom applications such as I²S, short or long frame sync.

16-bit and 32-bit Timers: Capture/compare, waveform generation and PWM modes.

ECC: Error Corrected Code controller.

Security level: Adv. = hardware encryption engine + on the fly DDR encryption/decryption + secure storage + tamper pin

Med. = hardware encryption engine

Y = Yes

ATSAMA5 ARM Cortex-A5 MPUs

Ethernet						User Interface					Security				Control				Extended Temperature Range (-40 to 105°C Ambient)	Packages
10/100 Ethernet MAC	10/100/1000 MAC	IEEE 1588 Support	SD/eMMC	Class D/PDM/Audio PLL	Max I/O Pins	Graphic LCD	LCD Overlay	Resistive Touchscreen	Hardware Video Decoder	Camera Interface	Security Level	Secure Boot	Tamper Pins	Environmental Monitors	32-bit Timers	PWM Channels	10-bit ADC Channels	12-bit ADC Channels		
2	-	Y	2	-	152	1	Y	Y	30fps, 720p	1	Adv.	Y	8	-	9	4	5	-	-	BGA 361, 16 × 16, 0.8 mm pitch
2	-	Y	2	-	152	1	Y	Y	30fps, 720p	1	Adv.	Y	8	-	9	4	5	-	-	BGA 289, 14 × 14, 0.8 mm pitch
2	-	Y	2	-	152	1	Y	Y	-	1	Adv.	Y	8	-	9	4	5	-	-	BGA 361, 16 × 16, 0.8 mm pitch
2	-	Y	2	-	152	1	Y	Y	-	1	Adv.	Y	8	-	9	4	5	-	-	BGA 289, 14 × 14, 0.8 mm pitch
1	1	Y	3	-	160	1	Y	Y	-	1	Med.	Y	-	-	6	4	-	12	Y	BGA 324, 15 × 15, 0.8 mm pitch
1	1	Y	3	-	160	-	-	Y	-	1	Med.	Y	-	-	6	4	-	12	Y	BGA 324, 15 × 15, 0.8 mm pitch
-	1	Y	3	-	160	1	Y	Y	-	1	Med.	Y	-	-	5	4	-	12	-	BGA 324, 15 × 15, 0.8 mm pitch
-	1	Y	2	-	160	1	Y	Y	-	1	Med.	Y	-	-	5	4	-	12	-	BGA 324, 15 × 15, 0.8 mm pitch
1	-	-	3	-	160	1	Y	Y	-	1	Med.	Y	-	-	5	4	-	12	-	BGA 324, 15 × 15, 0.8 mm pitch BGA 324, 12 × 12, 0.5 mm pitch
1	-	Y	2	1/1/1	128	1	Y	Y	-	1	PCI Pre-certified	Y	8	Y	6	4	-	12	Y	BGA 289, 14 × 14, 0.8 mm pitch
1	-	Y	2	1/1/1	128	1	Y	Y	-	1	Adv.	Y	8	-	6	4	-	12	Y	BGA 289, 14 × 14, 0.8 mm pitch
1	-	Y	2	1/1/1	128	1	Y	Y	-	1	Med.	Y	8	-	6	4	-	12	Y	BGA 289, 14 × 14, 0.8 mm pitch
1	-	Y	2	1/1/1	105	1	Y	Y	-	1	Adv.	Y	2	-	6	4	-	12	-	BGA 256, 8 × 8, 0.4 mm pitch
1	-	Y	1	1/1/1	72	1	Y	Y	-	1	PCI Pre-certified	Y	6	Y	5	4	-	12	Y	BGA 196, 11 × 11, 0.75 mm pitch
1	-	Y	1	1/1/1	72	1	Y	Y	-	1	Adv.	Y	6	-	5	4	-	12	Y	BGA 196, 11 × 11, 0.75 mm pitch
1	-	Y	1	1/1/1	72	1	Y	Y	-	1	Med.	Y	6	-	5	4	-	12	-	BGA 196, 11 × 11, 0.75 mm pitch

Peripheral implementation may vary among products, please consult individual product datasheet for detailed description.

Camera Interface: For CMOS-type image sensor, ITU-R BT. 601/656 external interface, programmable frame capture rate, up to 12-bit data interface, SAV and EAV synchronization, preview path with scaler, YCbCr format ; Raw Bayer support with ATSAMA5D2 series

Graphics LCD: 24-bit parallel interface; supports STN and TFT displays, up to 16-bits per pixel in STN color mode, up to 16M colors in TFT mode.

Video Decoder: Hardware video decoding and image post processing : H.264, MPEG4, H.263, MPEG2, JPEG, VP8.

eMMC™: V4.3 – MLC NandFlash supported through MMC interface; V4.5 support for ATSAMA5D2 series.

USB: High speed (HS) or Full Speed (FS).

Device Name	Core Sub-System			Memory							Connectivity							
	Core	Clock Speed (MHz)*	Core Operating Voltage	SRAM (KB)	L1 Cache Memory (KB) (Instruction/Data)	LPDDR/SDRAM	External Bus Interface	DDR2/LPDDR/LPDDR2	NAND		UART	SPI	TWI (I ² C)	SSC (I ² S)	CAN	USB		
									SLC ECC (bit)	MLC ECC (bit)						Device Only	Device and Host	Host Only
ATSAM9M10/M11	ARM926EJ-S	400	1.0V	64	2 × 32	1/1	2	1/1/-	1	-	5	6	2	2	-	-	1 HS	2 HS
ATSAM9G45/G46	ARM926EJ-S	400	1.0V	64	2 × 32	1/1	2	1/1/-	1	-	5	6	2	2	-	-	1 HS	2 HS
ATSAM9X35	ARM926EJ-S	400	1.0V	32	2 × 16	1/1	1	1/1/-	24	24	7	5	3	1	2	-	1 HS	1 HS, 1 FS
ATSAM9X25	ARM926EJ-S	400	1.0V	32	2 × 16	1/1	1	1/1/-	24	24	7	6	3	1	2	-	1 HS	1 HS, 1 FS
ATSAM9G35	ARM926EJ-S	400	1.0V	32	2 × 16	1/1	1	1/1/-	24	24	6	5	3	1	-	-	1 HS	1 HS, 1 FS
ATSAM9G25	ARM926EJ-S	400	1.0V	32	2 × 16	1/1	1	1/1/-	24	24	7	6	3	1	-	-	1 HS	1 HS, 1 FS
ATSAM9G15	ARM926EJ-S	400	1.0V	32	2 × 16	1/1	1	1/1/-	24	24	5	5	3	1	-	-	1 HS	1 HS, 1 FS
ATSAM9CN12	ARM926EJ-S	400	1.0V	32	2 × 16	1/1	1	1/1/-	24	24	7	6	2	1	-	1 FS	-	1 FS
ATSAM9CN11	ARM926EJ-S	400	1.0V	32	2 × 16	1/1	1	1/1/-	24	24	7	6	2	1	-	1 FS	-	1 FS
ATSAM9N12	ARM926EJ-S	400	1.0V	32	2 × 16	1/1	1	1/1/-	24	24	7	6	2	1	-	1 FS	-	1 FS
ATSAM9G20	ARM926EJ-S	400	1.0V	32	2 × 32	-/1	1	-	1	-	7	6	1	1	-	1 FS	-	2 FS
ATSAM9G10	ARM926EJ-S	266	1.2V	16	2 × 16	-/1	1	-	1	-	4	5	1	3	-	1 FS	-	2 FS
ATSAM9263	ARM926EJ-S	240	1.3V	96	2 × 16	-/1	2	-	1	-	4	5	1	2	1	1 FS	-	2 FS
ATSAM9261	ARM926EJ-S	190	1.2V	160	2 × 16	-/1	1	-	1	-	4	5	1	3	-	1 FS	-	2 FS
ATSAM9260	ARM926EJ-S	190	1.2V	8	2 × 8	-/1	1	-	1	-	7	6	1	1	-	1 FS	-	2 FS

* Clock speed: Max. clock speed @ +85°C.

Temperature Range: -40°C to +85°C (ambient)

UART: Support for RS485, ISO7816, IrDA*, LIN, modem control lines and SPI on selected UARTs.

TWI: Two-Wire Interface, interconnects components on a two-wire bus.

SSC: Serial Synchronous Controller, supports many serial synchronous communications protocols used in audio and telecom applications such as I²S, short or long frame sync.

16-bit and 32-bit Timers: Capture/compare, waveform generation and PWM modes.

ECC: Error Corrected Code controller.

Security level: Adv. = hardware encryption engine + on the fly DDR encryption/decryption + secure storage + tamper pin

Med. = hardware encryption engine

Y = Yes

ATSAM9 ARM9-Based MPUs

				User Interface					Security		Control				Packages
Ethernet	SD/eMMC	Soft Modem	Max I/O Pins	Graphic LCD	LCD Overlay	Resistive Touchscreen	Hardware Video Decoder	Camera Interface	Security Level	Secure Boot	16-bit Timers	32-bit Timers	PWM Channels	10-bit ADC Channels	
10/100 Ethernet MAC															
1	2	–	160	1	Y	Y	30fps, D1	1	Med. (M11)	–	6	–	4	8	BGA 324, 15 × 15, 0.8mm pitch
1	2	–	160	1	–	Y	–	1	Med. (G46)	–	6	–	4	8	BGA 324, 15 × 15, 0.8mm pitch
1	2	Y	105	1	Y	Y	–	–	–	–	–	6	4	12	BGA 217, 15 × 15, 0.8mm pitch
2	2	Y	105	–	–	–	–	–	–	–	–	6	4	12	BGA 217, 15 × 15, 0.8mm pitch
1	2	Y	105	1	Y	Y	–	–	–	–	–	6	4	12	BGA 217, 15 × 15, 0.8mm pitch
1	2	Y	105	–	–	–	–	1	–	–	–	6	4	12	BGA 217, 15 × 15, 0.8mm pitch, BGA 247, 10 × 10, 0.5mm pitch
–	2	Y	105	1	Y	Y	–	–	–	–	–	6	4	12	BGA 217, 15 × 15, 0.8mm pitch
–	1	–	105	1	–	Y	–	–	Med.	Y	6	–	4	12	BGA 217, 15 × 15, 0.8mm pitch, BGA 247, 10 × 10, 0.5mm pitch
–	1	–	105	1	–	Y	–	–	–	–	6	–	4	12	BGA 217, 15 × 15, 0.8mm pitch, BGA 247, 10 × 10, 0.5mm pitch
–	1	–	105	1	–	Y	–	–	–	–	6	–	4	12	BGA 217, 15 × 15, 0.8mm pitch, BGA 247, 10 × 10, 0.5mm pitch
1	1	–	96	–	–	–	–	Y	–	–	6	–	–	4	BGA 217, 15 × 15, 0.8mm pitch
–	1	–	96	1	–	–	–	–	–	–	3	–	–	–	BGA 217, 15 × 15, 0.8mm pitch
1	2	–	160	1	–	–	–	Y	–	–	3	–	4	–	BGA 324, 15 × 15, 0.8mm pitch
–	1	–	96	1	–	–	–	–	–	–	3	–	–	–	BGA 217, 15 × 15, 0.8mm pitch
1	1	–	96	–	–	–	–	Y	–	–	6	–	–	4	BGA 217, 15 × 15, 0.8mm pitch, QFP 208, 28 × 28, 0.5mm pitch

Peripheral implementation may vary among products, please consult individual product datasheet for detailed description.

Camera Interface: For CMOS-type image sensor, ITU-R BT. 601/656 external interface, programmable frame capture rate, up to 12-bit data interface, SAV and EAV synchronization, preview path with scaler, YCbCr format ; Raw Bayer support with ATSAMA5D2 series

Graphics LCD: 24-bit parallel interface; supports STN and TFT displays, up to 16-bits per pixel in STN color mode, up to 16M colors in TFT mode.








Video Decoder: Hardware video decoding and image post processing : H.264, MPEG4, H.263, MPEG2, JPEG, VP8.

eMMC: V4.3 – MLC NandFlash supported through MMC interface; V4.5 support for ATSAMA5D2 series.

USB: High speed (HS) or Full Speed (FS).

Ordering Code	Supported Devices	Image
ATSAMA5D2-XULT	ATSAMA5D28/D27/D26/D24/D23/D22/D21	
ATSAMA5D4-XULT	ATSAMA5D44/D43/D42/D41	
ATSAMA5D3-XPLD	ATSAMA5D36/D35/D34/D33/D31	
AT91SAM9M10-G45-EK	ATSAM9M10, ATSAM9G45	
AT91SAM9X35-EK	ATSAM9X35	
AT91SAM9X25-EK	ATSAM9X25	
AT91SAM9G35-EK	ATSAM9G35	
AT91SAM9G25-EK	ATSAM9G25	
AT91SAM9G15-EK	ATSAM9G15	

Evaluation Kits

Ordering Code	Supported Devices	Image
AT91SAM9CN11-EK	ATSAM9CN11, ATSAM9CN12	
AT91SAM9N12-EK	ATSAM9N12	
AT91SAM9G20-EK	ATSAM9G20	
AT91SAM9260-EK	ATSAM9260	
AT91SAM9G10-EK2	ATSAM9G10	
AT91SAM9263-EK	ATSAM9263	
AT91SAM-ICE	All products	

ATSAM9 and ATSAMA5 evaluation kits are delivered with free Board Support Packages (BSP) for Linux®, Android™ and Microsoft® Windows®.

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