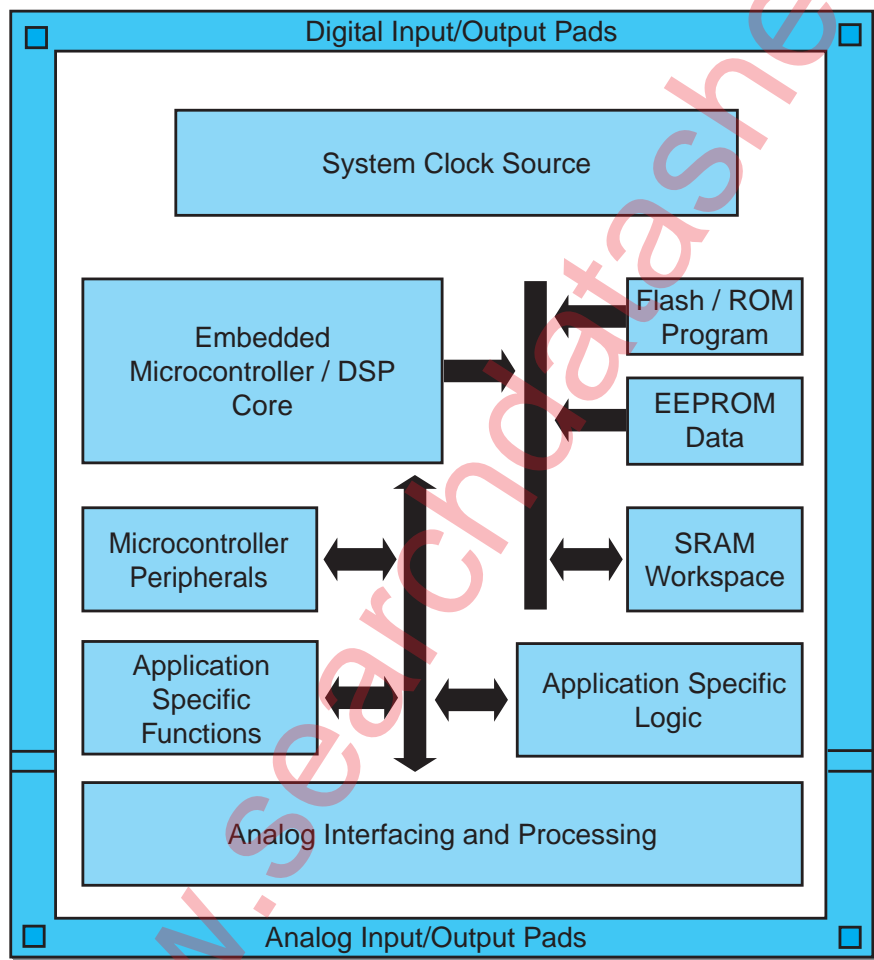


SYSTEM
BUILDING BLOCKS

Atmel has **all** the System Building Blocks you need for every system-on-chip solution:

- Microcontrollers/DSP cores
- Memory: nonvolatile memory (EEPROM and Flash Memory blocks), SRAM and ROM
- Application Specific Functions
- Application Specific Logic

All Atmel system-on-chip solutions are characterized by a **modular architecture**: internal standard buses and external standard interfaces.

Moreover, **all** aspects of the System Level Integration cycle are optimized: silicon area, cost, operating speed, power consumption and time-to-market.



The highlights of Atmel's extensive range of system building blocks are listed below. If necessary, many of these cells can be customized to your precise requirements. Application-specific cells can also be developed.

Embedded DSP and Microcontroller Cores

Atmel offers many choices including the OakDSPCore™, Lode™ DSP Core, FC16 DSP Core, ARM7TDMI™ (ARM Thumb), AVR®, and 8032- and 8051-compatible devices as well as an RSA encryption co-processor.

Core	Description
OakDSPCore™	16-bit DSP core
Lode™ DSP Core	16-bit DSP core with dual MACs
FC16 DSP Core	16-bit DSP core
ARM7TDMI™	ARM7 Thumb 16/32-bit RISC microcontroller core
AVR®	8-bit RISC microcontroller core
AT_8032	8-bit microcontroller core, compatible with industry-standard 8032 device
AT_8051	8-bit microcontroller core, compatible with industry-standard 8051 device
RSA	RSA encryption co-processor

Microcontroller Peripherals

A wide range of standard microcontroller peripherals, including an AVR® and an ARM7 bus-compatible series.

Core	Description
ARM7-Compatible Peripherals	DMA Controller, Interrupt Controller, Watchdog Timer, Timer Counter, USART, Power Management...
AVR Peripherals	Interrupt Controller, Watchdog Timer, Timer Counter, UART...
Programmable USART	8251-compatible and 16450-compatible devices
Real Time Clock	146818-compatible
Programmable Interrupt Controller	8259-compatible
Programmable Peripheral Interface	8255 standard with three 8-bit ports
Extended Programmable Interval Timer	8254-compatible with three independent 16-bit counters
Serial Communication Controller	82530-compatible
DMA Controller	8237-compatible with four independent Direct Memory Access (DMA) channels

Memory Blocks

EEPROM and Flash Memory, SRAM (single-port, dual-port and FIFO) and ROM.

Cell	Dimensions
EEPROM Blocks	up to 2 Mbit
Flash Memory Blocks	up to 16 Mbit
Combined EEPROM / Flash Memory Blocks	e.g.: 512 Kbit EEPROM + 1 Mbit Flash
SRAM	up to 1 Mbit
ROM	up to 8 Mbit
Dual-port RAM	up to 512 Kbit
FIFO	up to 512 Kbit

Application Specific Functions

These include the USB, Ethernet MAC, PCMCIA, I²C, JPEG, MPEG2, CAN and a range of industry-standard interfaces.

Core	Description
USB	Universal Serial Bus
Ethernet MAC	Ethernet Media Access Controller
PC Card Bus (PCMCIA)	Personal Computer Memory Card Industry Association
PCI	Peripheral Component Interconnect
I ² C	Inter-Integrated Circuit Bus
JPEG	Joint Picture Expert Group
MPEG2	Moving Picture Expert Group
CAN	Controller Area Network

Analog Interfacing and Processing

Some of the highest specification cells in the industry, *including application-specific cells custom-designed for your system* (e.g.: voice and multimedia codec, IQ modem...).

Cell	Function
VC01	Voice-band linear audio codec
MC01	Multimedia codec
IQDAC	Low-power I/Q digital-to-analog interface
Data Codec	Data Codec for Modem applications
A/D Converters	High accuracy (up to 18 bits), high speed (up to 54 MHz), low power ...
D/A Converters	High accuracy (up to 18 bits), high speed (up to 160 MHz), low power ...
COMP, MUX, OPAMP	A wide range of comparators, multiplexers and operational amplifiers
VREF	Bandgap voltage reference, voltage regulator, trimming voltage reference
LCD Drivers	Liquid Crystal Display Drivers

Analog and Digital Input/Output Pads

Atmel's Basic Analog Library includes analog-to-digital and digital-to-analog converters, multiplexers, operational amplifiers, comparators and voltage references. A wide choice of CMOS and TTL-compatible input, output, tri state and bi-directional cells are also available.

System Clock Source

High-performance oscillators, PLL and power-on-reset cells.

Cell	Description
Oscillators	Crystal Oscillators
PLLs	Phase-Locked Loop cells
POR	Power-On-Reset cells

Application Specific Logic

An extensive range of standard logic cells.

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