The new Atmel® AVR® ATmegaS128 microcontroller (MCU) brings the industry-leading AVR core to the aerospace industry. The ATmegaS128 MCU is designed for enhanced radiation performance and increased reliability in space applications. It takes advantage of mature Atmel AVR tools designed and used in the mass market worldwide for many years. The ATmegaS128 microcontroller targets many of the most common space applications, which typically require a small footprint, low power and analog control of motors and sensors.

**Key Features**

**High-performance, Low-power 8-bit Atmel AVR MCU**
- Advanced RISC architecture / Up to 8 MIPS
- On-chip 2-cycle multiplier
- 3V-3.6V / 0 - 8MHz operating voltages & speed grades

**High-endurance Non-volatile Memory**
- 128 Kbytes of Flash program memory
- 4 Kbytes EEPROM – 4 Kbytes internal SRAM

- Up to 64 Kbytes optional external memory space
- SPI interface for in-system programming

**Peripheral Features**
- Two 8-bit and two 16-bit timers/counters
- 6 PWM channels
- 8-channel, 10-bit ADC
- TWI/USARTs/SPI serial interface
- Programmable watchdog timer
- On-chip analog comparator

**Special Microcontroller Features**
- Power-on reset and programmable brown-out detection
- Internal calibrated RC oscillator
- External and internal interrupt sources
- Six Sleep modes: Idle, ADC Noise Reduction, Power-save, Power-down, Standby, and Extended Standby

**Key Highlights for Space Environment**
- Full wafer lot traceability
- 64-lead ceramic package (CQFP)
- Space screening
- Space qualification
- Total ionizing Dose: up to 30 Krad (Si)
- Single event latch-up LET > 62.5MeV.cm²/mg
- Single event upset LET > 3 MeV.cm²/mg
- SEU 10^-3 to 10^-1 error/device/day

**ATmegaS128 Starter kit**
To ease your design process and reduce time-to-market, Atmel delivers a complete starter kit STK600 and development system for the ATmegaS128 AVR microcontroller. With its advanced features for prototyping and testing new designs, the kit gives designers a head start for developing code on AVR devices. Customers can start with the industrial version using the ATmega128 MCU or the Space Version ATmegaS128 device as both share the same pinout.
Atmel Studio
Atmel Studio is the integrated development platform (IDP) for developing and debugging Atmel AVR and Atmel | SMART ARM® processor-based MCU applications. The Atmel Studio IDP gives you a seamless and easy-to-use environment to write, build and debug your applications written in C/C++ or assembly code. Atmel Studio supports all 8- and 32-bit AVR MCUs. It also connects seamlessly to Atmel debuggers and development kits.

Atmel Software Framework
The Atmel Software Framework (ASF) is an MCU software library providing a 1,600 project examples of embedded software for Atmel Flash-based MCUs, including AVR and Atmel | SMART devices. This library contains basic C code examples for all ATmegaS128 peripherals.

Application Notes
In addition to the Atmel Software framework, Atmel provides a broad range of application notes to implement different peripherals of the ATmegaS128 device. Most of those application notes are provided with source code in C language.

Atmel ATmegaS128 Microcontroller

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