Microcontroller

Atmel released a microcontroller with reprogrammable non-volatile memory. The T89SC256C is an 8/16-bit secure microcontroller based on 80C251 enhanced architecture, software compatible with any existing 80C51-based application. Its on-chip compact Flash memory of 256 KBytes, together with its embedded fast Arithmetic Crypto Processor, and its security features, allow this product to develop any application where security, fast computation, short time-to-market and low cost are required.
Due to its small size (less than 25 mm), and its very low power consumption (10 mA @ 5V - 5mA @ 3V), the T89SC256C is naturally dedicated to embedded smart card applications. Its communication interfaces (UART and SPI) also enable the cryptocontroller to support larger secure systems such as smart card readers and Set-Top-Boxes.
The T89SC256C offers an original &quotFull Flash&quot architecture: a unique Flash memory space is provided to store data and programs. The high integration 0.35 (m CMOS technology used to design the product make it has been possible to integrate high non-volatile memory size, 256 Kbytes. The Flash memory also offers flexibility (fast prototyping and reduction of time-to-market), and security (versus other memory technologies like ROM). The large embedded working memory (RAM: 4.5 Kbytes) supports the use of modern programming languages.
The 80C251 core is clocked by a high frequency tunable internal clock (up to 24 MHz), and offers software compatibility with any existing application developed on a standard 80C51 core, providing performance up to 15 times better at the same clock frequency.
The T89SC256C has been designed to support a high security level. It includes several dedicated security features, such as a True Random Number Generator, a Secure Memory Management Unit, a memory error detection and correction automatic mechanism, and physical sensors. A watchdog timer has also been included in this product to control the correct execution of the embedded application software.
For high-speed cryptography computation capacity, a separate Arithmetic Crypto Co-Processor is provided on the chip. It supports up to 2048-bit RSA computation. A 1024-bit RSA computation with Chinese Remainder Theorem (CRT) is achieved in 90 ms.

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