Secure ASSP

AT98SC032CT-USB Summary

Features

General

- **Strong Challenge-Response Authentication Using Digital Signature**
- **Digital Signature (RSA PKCS#1 V2.1, ECDSA)**
- **Message Authentication Code (3DES MAC, HMAC)**
- **Encryption (3DES, RSA PKCS#1 V2.1)**
- **Message Digest (SHA-1, SHA-256)**
- **Public Key Pair Generation (RSA including CRT, ECC)**
- **HOTP One-Time Password Generation**
- **High Speed Hardware Cryptographic Engines**
  - **Hardware 3DES Crypto Accelerator (112-bits keys)**
  - **Hardware 32-bit Public Key Crypto Accelerator (RSA 2048 bits, ECC 384 bits)**
  - **Hardware True Random Number Generator (RNG)**
- **SecureAVR™ 8-/16-bit RISC CPU**
- **Secure Architecture Based on ATMEL secureAVR Microcontroller**
  - **To meet Common Criteria EAL5+ requirements**
- **Internal 32K Bytes EEPROM (10 years data retention, 500K cycles) with password protected file system**
- **USB 2.0 Full Speed Certified**
- **USB-CCID Compliant (no specific driver required)**
- **Operating Range: 1.62V to 5.5V, -25°C to +85°C**
- **Low Power Consumption**
- **SOIC-8, 44-QFN or 44-LQFP package**

Description

Based on ATMEL Smart Card chip design expertise and leadership. The AT98SC032CT-USB is a fully integrated secure solution (Hardware and Firmware) designed for computer security applications (e.g. Web portal login, PKCS#11 or MS-CAPI, Two-factor authentication, etc.).

This secure chip features a “crypto” application allowing strong authentication, one-time password generation, digital signature, data encryption, message digest, random number generation and public key generation. The administration application allows the management of contents and configuration of the chip.

Data is permanently stored in a 32 KByte file system which is fully customizable according to customer application requirements. Folders can be password protected,, and file access rights can be defined to protect user sensitive data and restrict access to cryptographic features.

The AT98SC032CT-USB includes a hardware 3DES engine and a 32-bit crypto accelerator for public-key operations (RSA and Elliptic Curves algorithms). The chip also features a hardware Random Number Generator used to generate on-chip public keys and challenges during authentication process.

Communication with the chip occurs through a USB 2.0 interface running up to 12 Mbps. Compliance to the USB-CCID ensures an easy interaction with Linux and Windows applications (no specific driver is required).

State-of-the-art security features embedded in ATMEL Smart Cards (dedicated to Banking, ID and Pay-TV) are also included in the AT98SC032CT-USB: power and frequency protection logic, logical scrambling on data and address, power analysis countermeasures and EEPROM access control.

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Note: This is a summary document. A complete document will be available under NDA. For more information, please contact your local Atmel sales office.

The evaluation kit (P/N : AT98SC-EV2) includes sample board and/or USB dongles,, the ATMEL File System Creator software, a getting started guide and a sample PKCS#11 implementation.

The AT98SC032CT-USB is offered to OEM manufacturers as a turnkey and easy-to-use solution, including the firmware integrated on the chip. Atmel provides an evaluation kit, a full datasheet, and an application note for customer integration support.

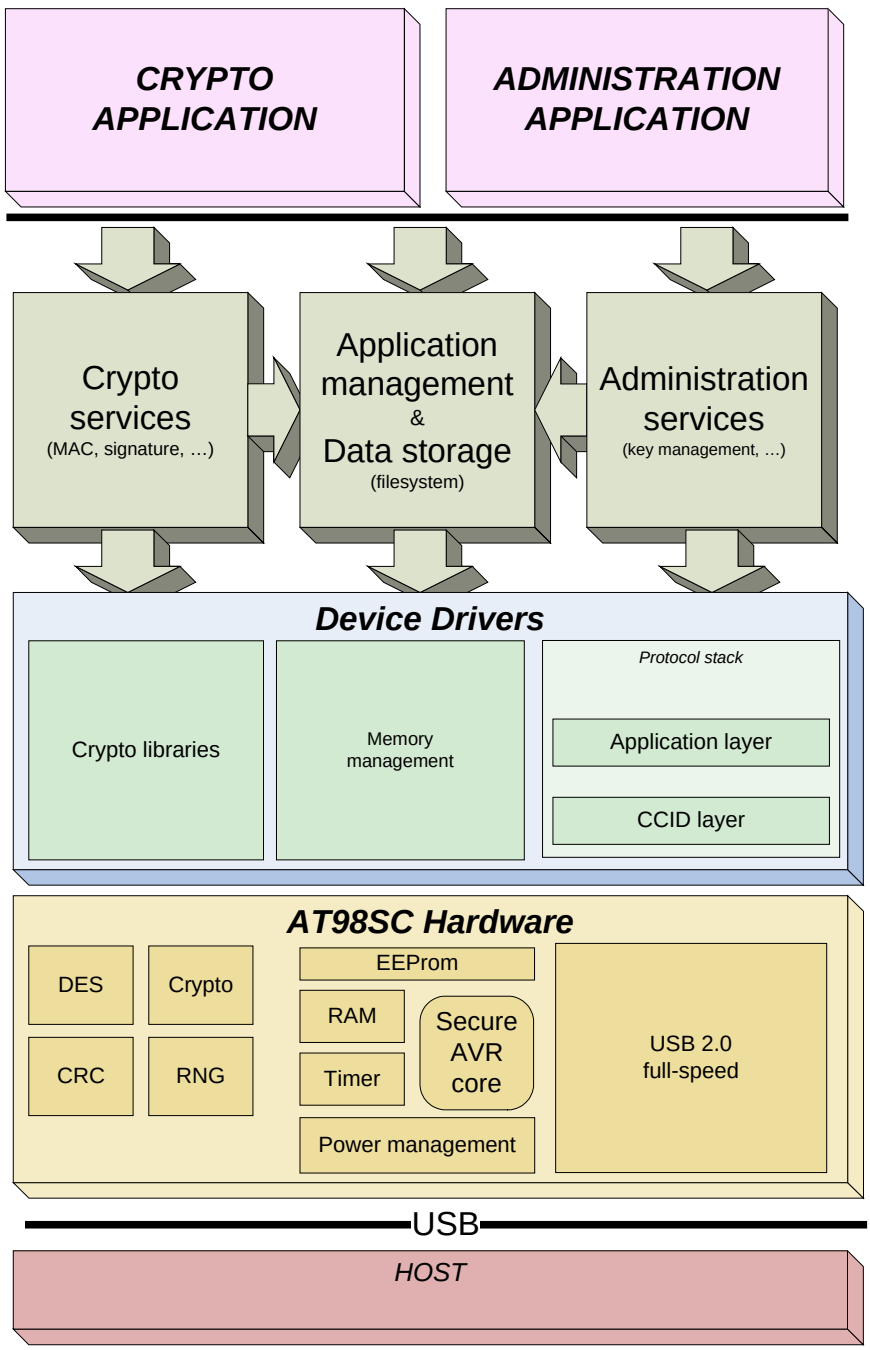
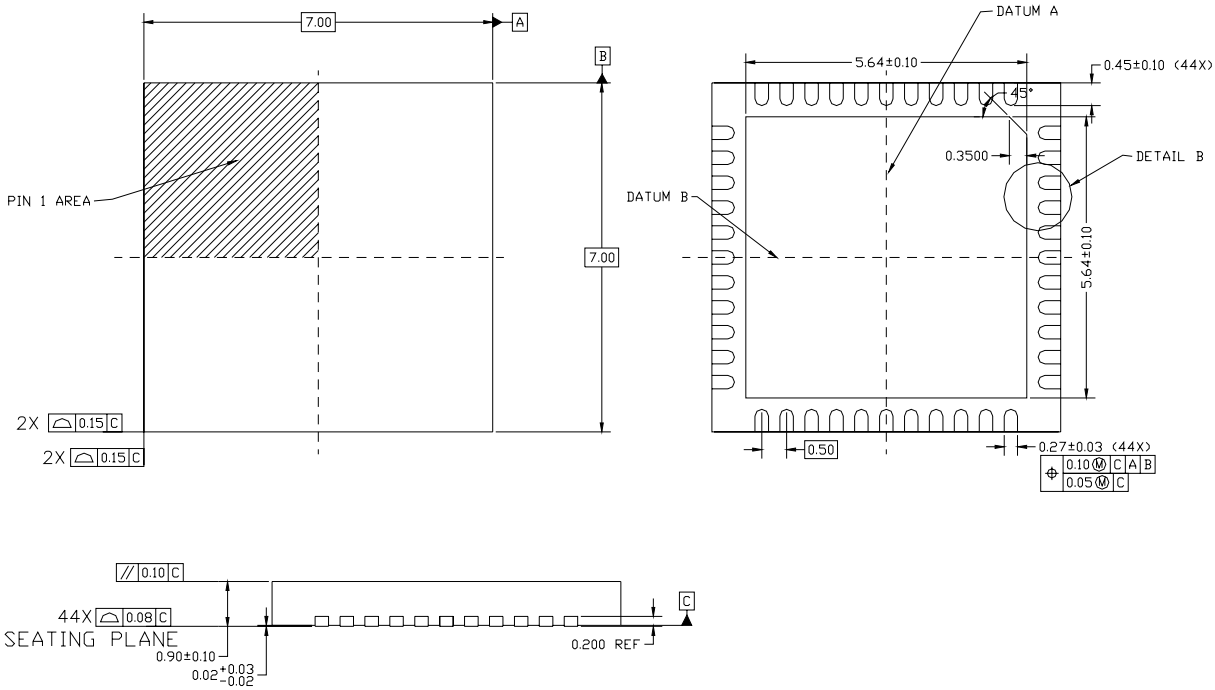
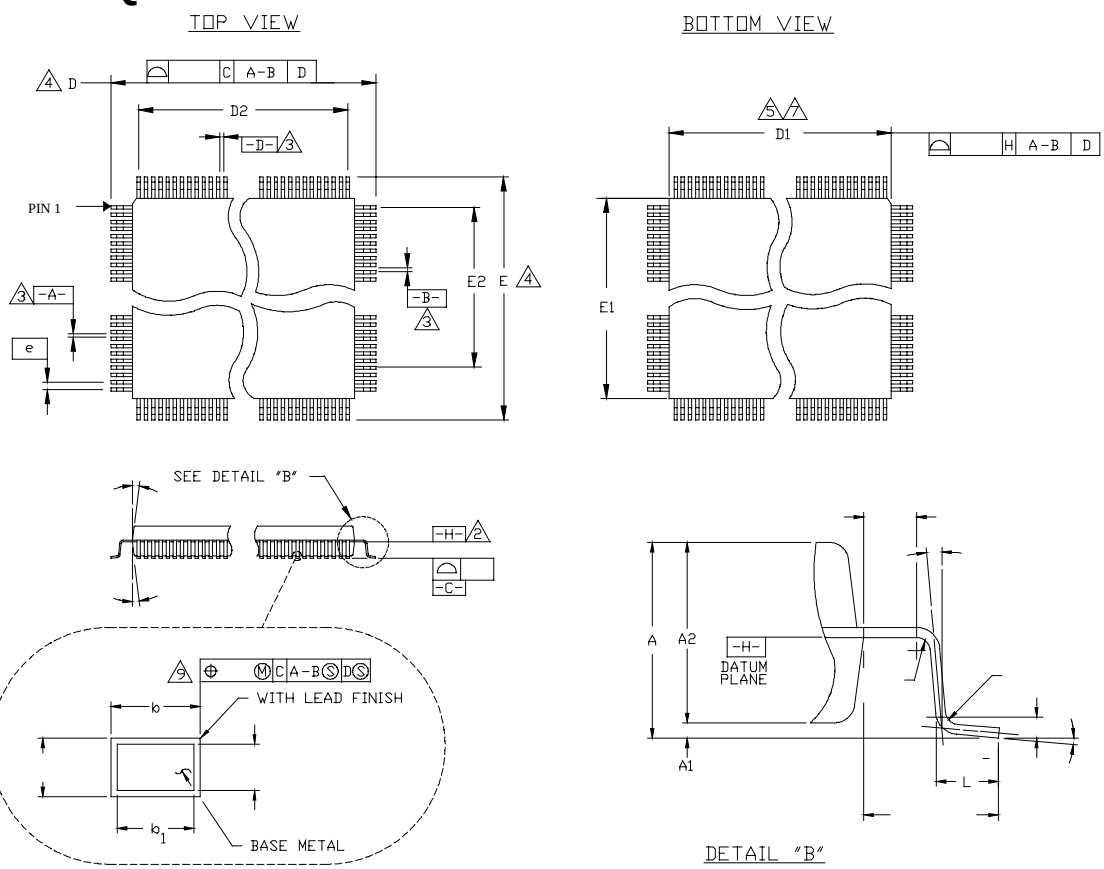


Figure 1. AT98SC032CT-USB Hardware and Firmware diagram

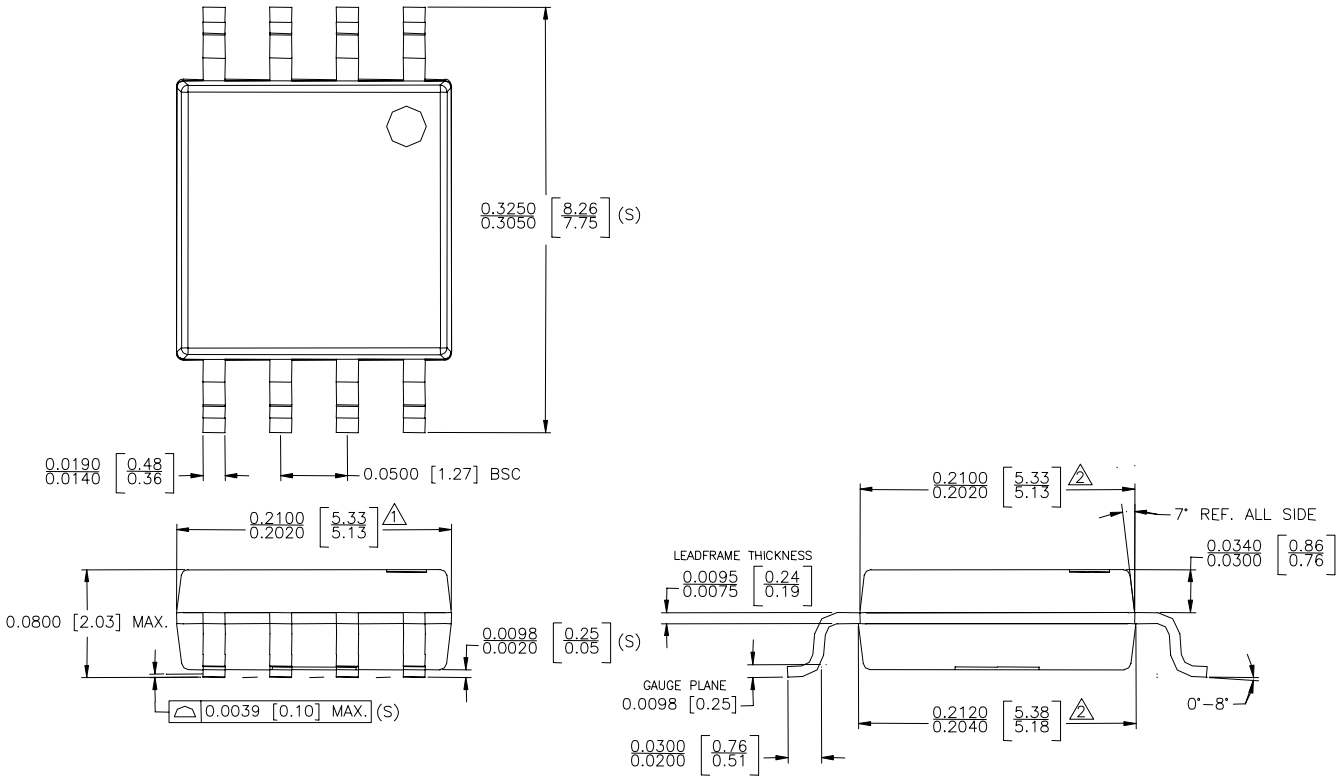
44-QFN



44-LQFP



SOIC-8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0.0190 0.0140 [0.48 0.36]
0.0500 [1.27] BSC
0.2100 0.2020 [5.33 5.13] 1
0.0800 [2.03] MAX.
0.0098 0.0020 [0.25 0.05] (S)
0.0039 [0.10] MAX. (S)
0.2100 0.2020 [5.33 5.13] 2
7° REF. ALL SIDE
0.0340 0.0300 [0.86 0.76]
LEADFRAME THICKNESS
0.0095 0.0075 [0.24 0.19]
GAUGE PLANE
0.0098 [0.25]
0.2120 0.2040 [5.38 5.18] 2
0°–8°
0.0300 0.0200 [0.76 0.51]

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