TESIC
CC EAL5+ ready Secure Element IP

The TESIC secure element IP offers highest security and low power to SoCs and processor chips

Patented design techniques and countermeasures against side channel and perturbation attacks enable highly secured transactions while keeping power at minimum level

Applications

TESIC is a CC EAL5+ PP0084/PP0117 certification-ready secure element IP that is delivered as hard macro for plug-and-play SoC integration.

Targeted designs are SoCs that require a security enclave highly protected against side-channel attacks and perturbation/fault attacks, and that execute secure software such as :

- Secured/certified iSIM/iUICC, EMVCo payment, FIDO2 Web authentication, V2X HSM protocols, Smart-Car-Access
- Secured boot, secure OTA firmware update, secure debug

Highlights

- Proprietary IP (no third-party IP rights/royalties)
- Available on various processes (GF55, TSMC40, GF22 FDX, TSMC16)
- Compliant with/ready for CC EAL5+ and/or EMVCo certifications
- Delivered with customer-validated SDK and CC EAL5+/EMVCo certified CryptoLibrary and Secure Boot Loader

Features

CC EAL5+ secure microcontroller system

- Secure microcontroller core
- Memory Protection Unit (MPU)
- Timers (3)

CC EAL5+ secure cryptography

- FIPS 197 compliant AES up to 256 bits
- FIPS 46-3 compliant DES/3DES with hardware CBC mode
- Public Key Accelerator : RSA up to 4096 bits, ECC up to 521 bits
- SHA2 and SHA3 hardware accelerators
- CRC 16-bit, compliant with ISO/IEC 13239
- TRNG compliant with AIS-31 and FIPS140-2
- PRNG

CC EAL5+ security sensors

- Glitch detectors
- Temperature sensor
- Active shield
- 4 phases hand-shake protocol

Interfaces

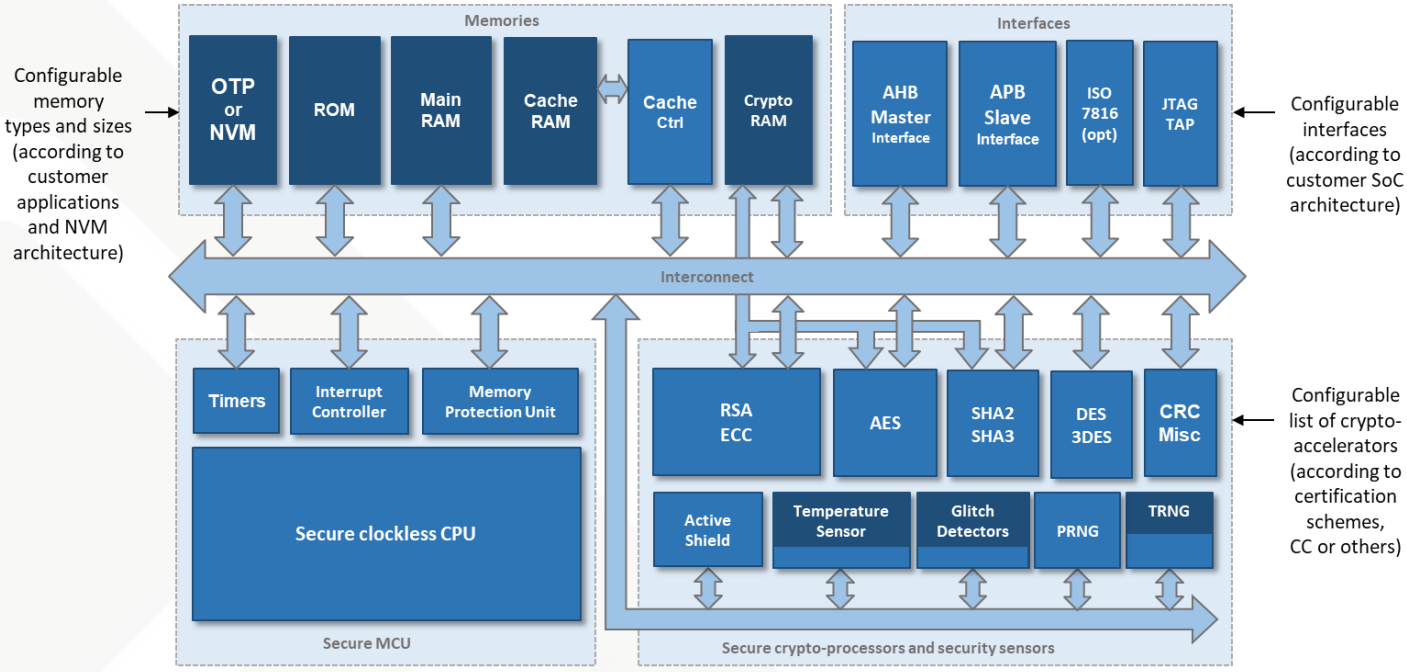
- Slave interface: standard APB slave
- Master interface: standard AHB master
- Secure GPIOs
- Secured standard JTAG TAP for test
- Slave ISO 7816 for integration of SoC test framework
- NFC ISO 14443 for admin interface or payment (option)

Secure software:

Crypto library
- AES: ECB, CBC, CMAC, CTR
- DES/TDES: ECB, CBC
- SHA1, SHA2, SHA3
- RSA, ECDSA, ECDH, ECIES
- NIST approved TRNG, DRNG

Bootloader for OTA updates
Javacard 3.0.5 OS (third-party)

TESIC Architecture



TESIC Software Environment

- Software Development Kit (SDK)
  - Compiler, linker and debugger based on GNU GCC/GDB with compilation chain optimized for TESIC MCU, or
  - Third-party RISC-V software development environments (RV32IMC instruction set)
- CC EAL5+ and EMVCo certified CryptoLibrary
- CC EAL5+ and EMVCo certified Boot Loader
  - Protection profile PP0084b package 2 (allowing secure OTA updates)
- TESIC Security API
  - Device identification/authentication
  - Secure boot, secure firmware update
  - Secure storage, secure debug
- Third-party operating systems and applets
  - JavaCard 3.0.5 OS
  - Network authentification stacks (iSIM/iUICC)
  - EMVCo payment applications (VISA, MasterCard)
  - Web authentication (FIDO2)
  - V2X HSM applications (requires specific TESIC version)

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110 rue Blaise Pascal | Inovallée | 38330 Montbonnot Saint-Martin | France
T : +33 4 76 61 10 00 | F : +33 4 76 44 19 69 | Email : sales@tiempo-secure.com
www.tiempo-secure.com