



Autonomous Driving Security

RS2522

The RS2522 is RANIX's V2X integrated security chip solution. It provides high performance, real time data processing through packet streaming engine, and the robust security protection HW enables super safe V2X communication. It helps autonomous vehicle to increase user convenience and data processing efficiency, and perfectly removes security exposure. The RS2522 is the automotive grade security chip that conforms standards such as OSCCA, CC, EVITA, ASIL, and AEC-Q100.



High-performance V2X security Processing

The V2X communication requires crypto IP that can encrypt and decrypt at the highest speed. The RS2522 is the industry fastest performing chip that enables high-speed processing of certificate/private key/public key generation/verification/ storage/retrieval/disposal in China/ US/Europe V2X communication standards in signing/verification/ encryption/decryption of messages.

It performs 5,000 veri/s for ECDSA signature verifications.



Chip Security

As an integrated security solution chip, EVITA HSM (Hardware Secure Module) function is built-in for robust security profile, and OSCCA and CC certification is under progress. Cortex-M3 based secure CPU, 256KB SRAM, and Secure Storage are provided. In order to protect the user's assets from physical attacks, key defense technologies are applied on the chips, such as encryption, integrity check, FA recovery, and access control, etc.



In vehicle network Security

The in-vehicle network is composed of a number of edge devices/ECU/gateway/head unit and is connected by Ethernet/FlexRay/LIN/MOST/CAN. Since it directly relates on human life safety, FUSA(ISO26262 functional safety), it requires the highest level of security. The RS2522 is designed to satisfy the communication security standard proposed by IEEE, and can be applied to all systems and gateway inside the vehicle.



Application Adaptability

RANIX's 256-bit MCAL processor and 32-bit CDEC processor are reprogrammable, designed to support more features and work faster than any calculator you've ever used. It supports more than 60 operation modes so that users can process various algorithms they want. A user program to be executed in a separate security area can be updated safely through OTA.



Automotive Safety and Reliability

As an automotive chip, it satisfies ASIL, the functional safety standard specification and AEC-Q100 for the vehicle reliability specifications. It secures safety against malfunctions, normal operation in harsh environments, and guarantees longer product life.



Rich S/W Resource

Ranix security stack S/W platform and V2X stack S/W platform help customers eliminate trial and error to shorten development cycle and produce robust applications.

SPECIFICATIONS & FEATURES

Secure CPU

- ARM® SecureCore® SC300™ 32-Bit RISC Core@200MHz
- Memory Protection Unit (MPU)

Secure Memory

- 256KB Internal SRAM
- 256KB Internal eFlash
- 20KB Flash-Cache
- 32KB Mask ROM

Peripheral

- 64x16 Secure Counter
- 32x4 Secure Timer
- Secure Watchdog Timer
- Secure RTC
- Secure JTAG
- Secure Interrupter Ctrl
- Secure DMA
- Secure PMU
- Secure TRNG

Interface

- 2x SPI slave (quad 60 Mbps)
- 1x I2C master
- 2x UART (8 Mbps)
- 1x SDIO Slave *

Security Attack Countermeasure

- Active Shield
- EMI Attack Shield
- Voltage/Temperature/ Laser Sensor
- Glitch/ Frequency Sensor
- IP Access control, Mem Access control
- FA detect, FA recovery design
- Security Policy Controller
- Secure Self-test IP

Packet Stream Engine

- Transport Level CRC & Encryption
- Packet Stream Protocol
- Async Crypto Operation
- HSM Mail BOX I/F
- AES128/SM4/DES/TDES/GHASH: (max 1 Gbps)
- SHA256/SM3/Whirlpool: (max 1 Gbps)
- ECB/CBC/CFB/OFB/CTR
- CMAC/GMAC/HMAC
- CCM/GCM
- TRNG/C-DRBG/H-DRBG/KDF
- ECC curve : NIST p256/ brainpool /SM2 (max 10k proc/s)
- ECDSA/ECIES/ECDH

V2X Security

- IEEE 1609.2
- ETSI TS 103 097
- YD/T 3594
- Implicit certificates
- Pseudonym certificates
- Butterfly key Expansion
- Linkage Value

Certifications

- OSCCA grade-2*
- CC EAL-4+*
- EVITA-full*
- ASIL-C*
- AEC-Q100 grade-2*

Physical Specifications

- 3.3V and 1.8V, 1.2V Power Supply
- Automotive Temperate Range: -40℃ - 125℃
- ESD : 2kV
- Package: QFN-64

* : in progress

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