

RX Family TSIP Security Solution

Securing your IoT devices for Tomorrow



<https://www.renesas.com/application/technologies/iot-security/renesas-secure-iot>

RX Security Solution Provide you with :

- ✓ Key protection : Prevention of key leakage with HW security IP (Trusted Secure IP)
- ✓ Easy implementation : One Stop Solution to build a secure system and protect your IoT device
- ✓ Operation management : Support lifecycle management from shipment to EOL
- ✓ Security : Compliant with NIST*1 FIPS140-2 CMVP*2

*1: National Institute of Standards and Technology
*2: Acquired for RX65N. Acquired CAVP certification for RX231 and RX651/N.

Protect from threats

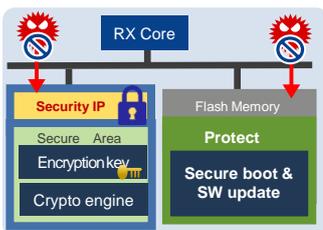


- Illegal read, key/data leakage
- *Counterfeits, eavesdropping, and spoofing
- *Malicious operations
- *System down, etc.

Security

Fast Encryption Accelerators Prevent Key Leakage Reduce Development Barriers

Hardware Technology



Trusted Secure IP(TSIP) with dedicated H/W for security

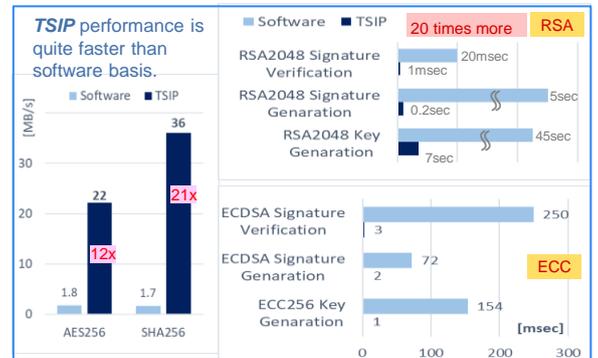
- Protect "encryption key" from leakage with TSIP
- Protect authentication programs from tampering with memory protection

Software Driver

Provide TSIP-specific driver for free

- Easy to Use for Simple API
- Fast encryption through driver optimization
- No NDA required and Free of Charge

Benchmark for TSIP vs Software



Tools and Services



Security Key Management Tool



Key Wrap Service

- Supports key operation (key generation/key writing/key renewal) according to the life cycle
- Supports secure key installation

Security Development Board/ IoT Evaluation Kit



RSK (Renesas Starter Kit)



EK-RX671 (Evaluation Kit)



CK-RX65N (Cloud Kit)

Various RX MCU evaluation boards equipped with TSIP You can develop immediately!!

- Evaluation of Secure Key management and Cryptographic function
- Dramatically reduce development time
- RSK support both RX700/600 and RX200 series devices

RX Family TSIP Security Solution

MCU	P/N	CPU	Frequency	ROM	RAM	Security and Other Function
	RX231/W	RXv2	54MHz	512KB	64 KB	TSIP-Lite ^{*1} , USB, CAN, Bluetooth 5.0(RX23W)
	RX26T	RXv3	120MHz	512KB	64 KB	TSIP-Lite ^{*1} , CAN-FD, PGA, Register Bank Save
	RX72T	RXv3	200MHz	1MB	128KB	TSIP-Lite ^{*1} , USB, CAN, PGA
	RX66T	RXv3	160MHz	1MB	128KB	TSIP-Lite ^{*1} , USB, CAN, PGA, Register Bank Save
	RX65N/1	RXv2	120MHz	2MB	640KB	TSIP ^{*2} , LCD, Dual Bank
	RX66N	RXv3	120MHz	2MB	1MB	TSIP ^{*2} , LCD, Dual Bank, Register Bank Save
	RX671	RXv3	120MHz	2MB	384KB	TSIP ^{*2} , Dual Bank, Register Bank Save, Touch key
	RX72N	RXv3	240MHz	4MB	1MB	TSIP ^{*2} , LCD, Dual Bank, Register Bank Save
RX72M	RXv3	240MHz	4MB	1MB	TSIP ^{*2} , LCD, Dual Bank, EtherCAT, Register Bank Save	

Frequency / ROM / RAM shows the maximum value

*1 : TSIP-Lite (Trusted Secure IP-Lite): Supports AES encryption algorithm
 *2 : TSIP(Trusted Secure IP): Supports RSA / ECC in addition to AES encryption

Soft ware	P/N	Functions	Description
	Trusted Secure IP Driver *	https://www.renesas.com/software-tool/trusted-secure-ip-driver	common key cryptosystem : AES/DES/3DES Public-key cryptography : RSA,ECC SHA1/SHA256/MD5 ,TRNG MAC,SSL/TLS cooperate

Tools	P/N	Tool URL	Description
	Key Wrap Service	https://d1m.renesas.com/keywrap/	<ul style="list-style-type: none"> • Service that securely encrypts user key bundles on the Renesas web • Available immediately after initial user registration • User manual is posted in the "FAQ" column at the URL on the left.
Security Key Management Tool	Security Key Management Tool Renesas	<ul style="list-style-type: none"> • Support tool for key management systems and secure functions using Renesas security IP • Supports key operation (key generation, key writing, key renewal) according to the life cycle • Available from the URL on the left 	

Kits	P/N	Category	Lineup	MCU P/N
	RSK (Renesas Starter Kit)	Standard	RSK-RX*	* RX231, RX23W,RX66T, RX72T, RX65N, RX671, RX72M, RX72N
	Evaluation kit	Standard	EK-RX671	RX671
	Envision Kit	LCD	RX72N Envision Kit	RX72N
	Cloud Kit	IoT	CK-RX65N	RX65N
	MCB	Motor	MCB-RX26T Type B	RX26T

Partners Information

Company	Offerings	Strength	Available countries
wolfSSL Inc.	Security Layer Library	<ul style="list-style-type: none"> - Embedded security vendor - Obtained FIPS140-2 certification - SSL/TLS with RX TSIP、DTLS etc 	W/W
IAR Systems	Embedded Trust/C-Trust IAR Embedded Workbench for RX	<ul style="list-style-type: none"> - Set security context - Fully integrated into IAR Embedded Workbench - Protect IP with secure mastering 	W/W
SEGGER	RTOS and Middleware Embedded Software	<ul style="list-style-type: none"> - Hardware and Software Development Tools for Embedded Systems 	W/W
Veridify Security Inc.	Veridify Security	<ul style="list-style-type: none"> - Security solution realized by software - Applicable to products without TSIP such as RX100 	W/W

 https://www.wolfssl.com/renesas-tsip-support/	 https://www.iar.com/	 https://www.segger.com/	 https://www.veridify.com/
Renesas Security IP compliant SSL / TLS library	Embedded Trust C-Trust	RTOS and Middleware Embedded Software	Security solution realized by software