RENESAS

The RX Family Flagship Product with Highest Performance
RX72N MCU GROUP

This 32-bit microcontroller is ideal for real-time applications such as AC servo drivers and IoT gateways. RX72N features 240MHz RXv3 core, industry's largest class on-chip memory, and 182 GPIOs to realize equipment control and networking function on a single chip. RX72N also supports various functions such as HMI, networking, and security required for industrial and consumer equipment on a single chip, contributing to smaller enclosure and shortened development time.

Features

- 240MHz RXv3 core, Double-precision FPU, Register bank save function for faster interrupt response
- 4MB flash memory (120MHz read access, Dual bank function), 1MB SRAM
- 182 general-purpose input/output (GPIO) ports
- 2ch Ethernet, SD host I/F, USB 2.0 full speed, 3ch CAN, QSPI
- Arithmetic unit for trigonometric functions accelerating vector controls for motors
- TFT LCD controller supporting WVGA, 2D drawing engine, Serial sound I/F, CMOS camera I/F
- Encryption engine (AES, TDES, RSA, ECC, SHA, TRNG), Key management, Flash memory protection function

Benefits

- Industry's fastest class on-chip flash memory contributes to higher real-time performance
- Industry's largest class on-chip memory and high pin-count package for smaller enclosures
- Realize equipment control and networking function on a single chip
- Dedicated hardware accelerator reduces CPU load for motor control
- HMI functions for improved exterior design and operability
- Security functions protecting data communications and programs

Applications

- AC servo driver
- General-purpose inverter
- PLC (Programmable Logic Controller)
- Industrial robot
- Motion controller
- Remote I/O
- HVAC controller
- Smart meter
- Smart speaker

CPU
240MHz RXv3
Double-precision FPU
Register Bank Save Function

Memory
4MB Code Flash Memory
32KB Data Flash Memory
1MB SRAM

Package
100, 144, 176-pin LFQFP
176, 224-pin LFBGA
145-pin TFLGA

Networking & Advanced Connectivity
2ch Ethernet
SD Host I/F
USB 2.0 Full Speed
3ch CAN
QSPI

Motor Control
Arithmetic Unit for Trigonometric Functions
PWM Timers
2-phase Encoder Pulse Inputs
12-bit A/D Converters

HMI
TFT LCD Controller
2D Drawing Engine
Serial Sound I/F
CMOS Camera I/F

Security
Encryption Engine (AES, TDES, RSA, ECC, SHA, TRNG)
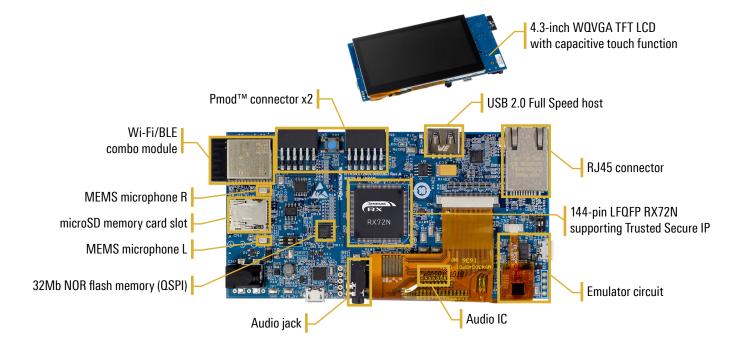Key Management
Flash Memory Protection

RX72N

RENESAS RX

RX72N MCU GROUP

RX72N Envision Kit (RTK5RX72N0C00000BJ)

- Affordable and suitable for evaluation on network, HMI, security, and other functions
  - Network (wired: Ethernet, wireless: Wi-Fi/BLE combo module on-board)
  - HMI (4.3-inch WQVGA TFT LCD, audio IC, MEMS microphone on-board)
  - Security (Trusted Secure IP and flash memory protection function incorporated into RX72N)
- SEGGER graphics library "emWin" can be used free of charge from evaluation to mass production
- Separate emulator is not needed with an emulator circuit mounted on the envision kit
- Start with RX72N pre-installed demo firmware features by switching on the envision kit through a USB cable

RX72N Envision Kit
Info Page

4.3-inch WQVGA TFT LCD with capacitive touch function

Pmod™ connector x2

USB 2.0 Full Speed host

Wi-Fi/BLE combo module

RJ45 connector

MEMS microphone R

microSD memory card slot

144-pin LFQFP RX72N supporting Trusted Secure IP

MEMS microphone L

32Mb NOR flash memory (QSPI)

Emulator circuit

Audio jack

Audio IC

Ordering References

Flash Memory: 4MB, SRAM: 1MB

* For 105°C product, please change the third last alphabet from D to G.

With Trusted Secure IP	R5F572NNHDFP	R5F572NNHDFB	R5F572NNHDLK	R5F572NNHDFC	R5F572NNHDBG	R5F572NNHDBD
Without Trusted Secure IP	R5F572NNDDFP	R5F572NNDDFB	R5F572NNDDLK	R5F572NNDDFC	R5F572NNDDBG	R5F572NNDDBD
Pin Counts	100	144	145	176	176	224
Package	LFQFP	LFQFP	TFLGA	LFQFP	LFBGA	LFBGA
Package Size	14mm x 14mm	20mm x 20mm	7mm x 7mm	24mm x 24mm	13mm x 13mm	13mm x 13mm
Pitch	0.5mm				0.8mm	
Operating Temperature	Ta = -40°C to 85°C					

Flash Memory: 2MB, SRAM: 1MB

* For 105°C product, please change the third last alphabet from D to G.

With Trusted Secure IP	R5F572NDHDFP	R5F572NDHDFB	R5F572NDHDLK	R5F572NDHDFC	R5F572NDHDBG	R5F572NDHDBD
Without Trusted Secure IP	R5F572NDDDFP	R5F572NDDDFB	R5F572NDDDLK	R5F572NDDDFC	R5F572NDDDBG	R5F572NDDDBD
Pin Counts	100	144	145	176	176	224
Package	LFQFP	LFQFP	TFLGA	LFQFP	LFBGA	LFBGA
Package Size	14mm x 14mm	20mm x 20mm	7mm x 7mm	24mm x 24mm	13mm x 13mm	13mm x 13mm
Pitch	0.5mm				0.8mm	
Operating Temperature	Ta = -40°C to 85°C					

Renesas Electronics Corporation

www.renesas.com