

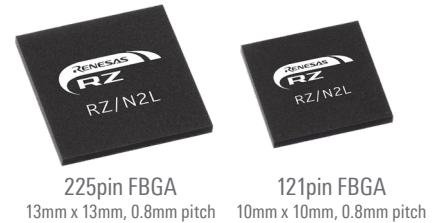


# Arm® Cortex®-R52 Based MPU

## RENESAS RZ/N2L GROUP

### Easily Implement Industrial Ethernet and TSN on Industrial Systems

The RZ/N2L industrial Ethernet microprocessor (MPU) easily adds network functionality onto industrial equipment and machine. RZ/N2L is optimized as a dedicated networking companion chip that can easily implement industrial Ethernet communication and TSN in industrial equipment. The RZ/N2L is a single chip solution for both industrial network and application processing.



### Key Features

- Arm® Cortex®-R52 @ Max 400MHz
- A tightly coupled memory (256KB) directly connected to CPU
- 3-port Gigabit Ethernet switch supporting next-generation network standard TSN and EtherCAT® salve controller
- Host interface allows application CPU to directly connect to RZ/N2L, and access at high speed
- Application CPU can directly access to the system RAM of RZ/N2L
- ELC (Event Link Controller) can be operated without the support of CPU processing
- Supports functional safety like a safety MCU

### Benefits

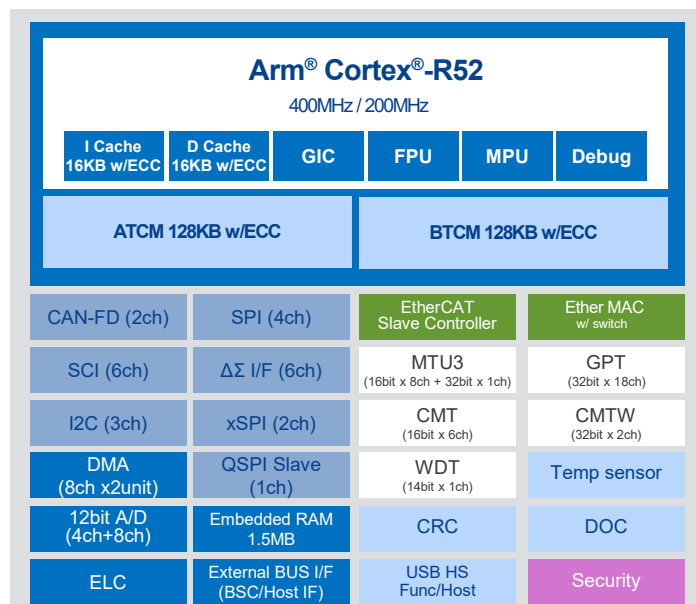
- Enable next-generation network standard TSN, and major industrial Ethernet protocols such as EtherCAT®, PROFINET, EtherNet/IP™
- Add industrial Ethernet features to industrial equipment without major system change
- Operate industrial Ethernet and user application on one chip
- Realize synchronized operation with low latency to the time synchronization in TSN network
- Accelerate functional safety (FuSa) development and certification through upcoming certified FuSa solution for RZ/N2L

### Target Applications

- Communication unit
- Remote IO
- Sensor Hub
- Gateway
- Motor Drive

### Block Diagram

- Arm® Cortex®-R52 400MHz
- FPU
- TCM 256KB (with ECC)
- Embedded 1.5MB (with ECC)
- 3-port Gigabit Ethernet switch with TSN
- EtherCAT slave controller
- Serial host I/F, Parallel host I/F
- xSPI
- CAN-FD
- PWM Timer
- ΔΣ I/F
- ADC
- Trigonometric function unit



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## Industrial Network Protocol Supported

- EtherCAT®
- PROFINET RT/IRT
- EtherNet/IP™
- OPC UA over TSN
- TSN (IEC/IEEE 60802 Industrial Profile)
- CC-Link IE Field Basic/TSN class A
- Modbus/TCP
- POWERLINK
- DeviceNet
- PROFIBUS
- CANopen
- Modbus/RTU, ASCII
- BACnet

## Evaluation Environment and Software

- Renesas e²studio + J-Link by Segger
- IAR Embedded Workbench for Arm + I-Jet ICE/ I-Jet Trace by IAR
- Flexible Software Package (FSP)
  - Hardware drivers
  - FreeRTOS
- Industrial network protocol (sample code)
- Security software package



Renesas Starter Kit+ for RZ/N2L  
(P/N:RTK9RZLN2LOS00000BE)

## Product Information

| Part Number                  | R9A07G084M08GBG  | R9A07G084M04GBG | R9A07G084M08GBA          | R9A07G084M04GBA |
|------------------------------|--|-----------------|--------------------------|-----------------|
| CPU                          | Cortex®-R52 (Max 400MHz)   |                 |                          |                 |
| Tightly Coupled Memory       | ATCM 128KB (w/ECC) / BTCM 128KB (w/ECC)  |                 |                          |                 |
| RAM                          | 1.5MB (w/ECC)  |                 |                          |                 |
| External bus                 | 8, 16bit   |                 | Not supported            |                 |
| Host I/F                     | Serial Host  | OSPI/QSPI       |                          | QSPI            |
|                              | Parallel Host  | 8, 16bit        |                          | Not supported   |
| Industrial Ethernet Protocol | EtherCAT®, PROFINET RT/IRT, EtherNet/IP™, TSN (IEC/IEEE 60802 Industrial Profile), CC-Link IE Field Basic, OPC UA over TSN |                 |                          |                 |
| Ether Port                   | 3 ports  |                 | 2 ports                  |                 |
| Motor Control Peripherals    | PWM Timer (MTU3, GPT), ADC*, $\Sigma\Delta$ Interface, Trigonometric function unit   |                 |                          |                 |
| Security                     | Supported  | Not Supported   | Supported                | Not Supported   |
| Power                        | 1.1V, 1.8V, 3.3V   |                 |                          |                 |
| Operating Temperature        | Tj = -40 to +125°C   |                 |                          |                 |
| Package                      | FBGA   |                 | FBGA                     |                 |
| Pin Count                    | 225pin   |                 | 121pin                   |                 |
| Package Information          | 13mm x 13mm, 0.8mm pitch   |                 | 10mm x 10mm, 0.8mm pitch |                 |

\*225pin only

Visit [www.renesas.com/rzn2l](http://www.renesas.com/rzn2l) to learn more about RZ/N2L.

Visit [www.renesas.com/rskrzn2l](http://www.renesas.com/rskrzn2l) for more information about the evaluation kit of RZ/N2L.

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