



High-Performance MPU for Real-Time Control with EtherCAT **RENESAS RZ/T2L GROUP**

RZ/T2L is a high-performance MPU that realizes high-speed processing and highprecision real-time control with EtherCAT. With a similar hardware (H/W) architecture as RZ/T2M, and scalable & compatible software (S/W) platform with Renesas MPU and MCU, RZ/T2L enables customers to easily scale product development.



196pin, 12x12mm FBGA (0.8mm pitch)

Key Features

- Integrated Arm[®] Cortex[®]-R52 @ Max 800MHz, a tightly coupled memory (576KB) directly connected to CPU and Low Latency Peripheral port(LLPP) bus
- Integrated rich peripheral functions such as ΣΔ I/F, A/D converter and multi-protocol encoder I/F
- Seamless H/W architecture with RZ/T2M, and scalable & compatible S/W platform such as FSP with Renesas MPU and MCU
- Integrated EtherCAT slave controller and supports ECC for all internal RAM
- Supports security functions such as secure boot, JTAG authentication and unique ID
- Can be used as safety MCU in the functional safety S/W solution

Benefits

- High performance real-time control
- Motor control system on a single chip
- Easy to utilize customer's S/W assets for new model development
- Supports equipment such as factory automation requiring reliability and synchronization of communication
- Reduce customer's effort and cost for functional safety development

Applications

- AC servo
- Inverter
- Industrial robot
- Medical equipment
- Wind turbine
- Elevator

Block Diagram CPU Interfaces System Arm® Debugger (CoreSight®) 2ch xSPI Cortex®-R52 Arm Cortex-R52 800MHz 800MHz 2units x 16ch DMAC 1ch GMAC Floating-Point Unit Interrupt Controller L1 I/D-Cache 16KB EtherCAT Slave Controller TCM 576KB (with ECC) 1ch Trigonometric ATCM BTCM 3x EtherCAT ports (1 port can use for Gb Ethernet) RAM 1MB (with ECC) 512KB 64KB 1ch USB2.0 (Host / Function) EtherCAT Slave controller Giga-bit Ether MAC Timer Memory 4ch SPI 1ch x 32bit & 8ch x 16bit MTU3 RAM 1.0MB w/ECC . Serial Host I/F 3ch I2C 18ch x 32bit GPT xSPI 6ch SCI Security 6ch x 16bit & 2ch x 32bit CMT CAN-FD Secure boot 2ch CAN-FD 1ch WDT PWM timer Crypto Engine External Bus ΣΔ I/F Analog TRNG Serial Host IF 4ch x 1unit & 4ch x 1unit 12bit ADC ADC Unique ID 2ch Encoder IF 6ch Delta-Sigma IF Trigonometric Function Unit JTAG Authentication

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Scalable System Solution (AC Servo/ AC Drive)

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Users can select the MPU suitable for their products from Renesas' MPU lineup that is developed based on similar H/W architecture.

Also, users can use the compatible software platform between Renesas MPU and MCU to utilize existing S/W assets and easily scale their product development.



Development Environment and Software

- Renesas e²studio + J-Link by Segger
- IAR Embedded Workbench for Arm + I-Jet ICE/ I-Jet Trace by IAR
- Renesas e²studio + TRACE32 PowerDebug & PowerTrace by Lauterbach
- Flexible Software Package (FSP)
- Free RTOS, HAL driver
- Encoder library
- EtherCAT protocol
- Security software package



Renesas Starter Kit+ for RZ/T2L (P/N:RTK9RZT2L0S00000BJ)

Product Information

Part Number	R9A07G074M08GBG	R9A07G074M05GBG	R9A07G074M04GBG	R9A07G074M01GBG
CPU	Cortex®-R52 (Max 800MHz)			
TCM Memory	ATCM 512KB (w/ECC) / BTCM 64KB (w/ECC)			
RAM	1.0MB (w/ECC)			
External bus	8,16 bit			
EtherCAT	Supported	Not Supported	Supported	Not Supported
GMAC	1ch			
Ether Port	3 ports			
CAN	CAN-FD	CAN	CAN-FD	CAN
Motor Control Peripherals	PWM Timer(MTU3, GPT), ADC, $\Sigma\Delta$ Interface, Trigonometric function unit			
Security	Supported	Supported	Not Supported	Not Supported
Power	1.1V,1.8V, 3.3V			
Operating Temperature	Tj = -40 TO +125°C			
Package	FBGA			
Pin Count	196pin			
Package Information	12mm x 12mm, 0.8mm pitch			

Visit renesas.com/rzt2l to learn more about RZ/T2L

Visit renesas.com/rzt2l-rsk for more information about the evaluation kit of RZ/T2L

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Corporate Headquarters TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan www.renesas.com

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Contact information

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