

Extend RISC-V CPU Core Options for IoT Platform

RENESAS RZ/FIVE GROUP

The RZ/Five general-purpose microprocessor (MPU) is embedded with a 64-bit RISC-V ISA* compliant CPU (AX45MP Single) operating at 1.0 GHz. It has many built-in interfaces including 16-bit DDR3L/DDR4 interface, Gbit-Ethernet, CAN, and USB 2.0, making it ideal for applications such as entry-class social infrastructure gateway control equipment and industrial gateway control equipment. The RZ/Five MPU enables scaling of development through a mutual migration between Arm® and RISC-V cores.

*Instruction Set Architecture



Key Features

- 1x AX45MP (1.0GHz)
- 16-bit DDR3L/DDR4-1600 (in line ECC)
- 2x Gigabit Ethernet
- 2x CAN (CAN-FD)
- 2x USB2.0 (Host, Host/Peripheral)
- 2x SDHI (UHS-I, UHS-I/MMC)
- 1x SPI-Multi IO (4bit DDR)
- 4x I2C
- 5x UART
- 3x RSPI
- 2x 12bit ADC
- 1x Thermal sensor
- Package;
 - 13mm × 13mm, 0.5mm pitch 361pins BGA
 - 11mm × 11mm, 0.5mm pitch 266pins BGA

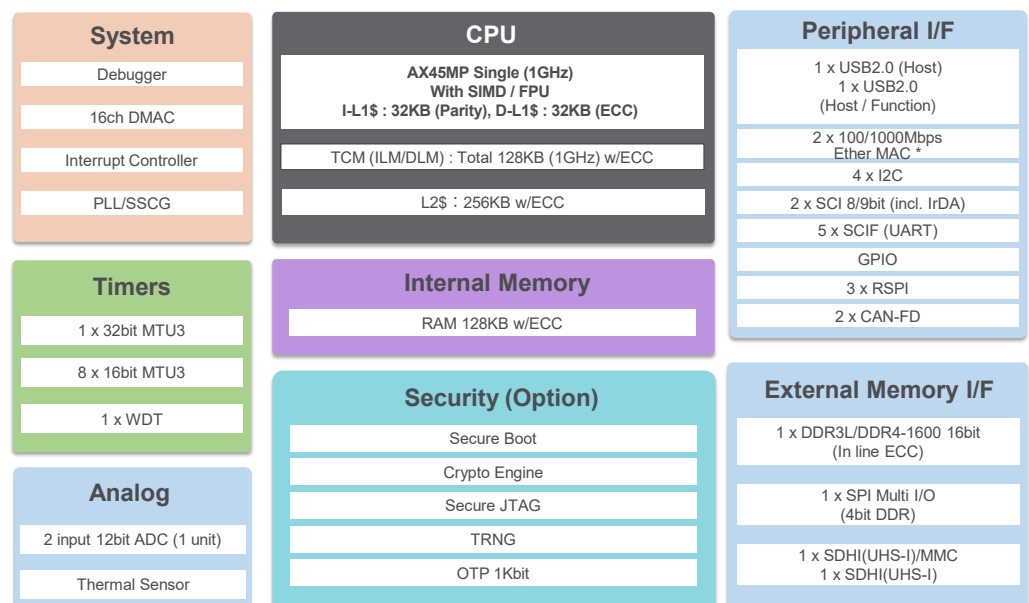
Benefits

- Embedded with open RISC-V ISA reduces the risk in long-term usage of the technology
- High CPU performance @ 1.0GHz
- SMARC development environment enables mutual migration between RISC-V and Arm
- Easy migration between pin-compatible MPUs – RZ/Five (RISC-V core) and RZ/G2UL (Arm core)
- Optimized solution for IoT Edge
- High reliability and long-term maintenance Linux support
- Reduce total system cost with 4-layer PCB design

Target Applications

- IoT Edge Equipment
- Solar Inverter
- Secure Home Gateway

RZ/Five Block Diagram

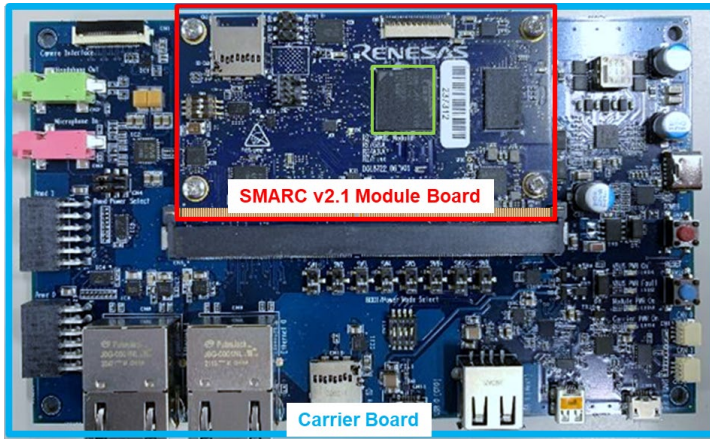


* The 266pin package has one channel of Gigabit Ethernet.

RENESAS RZ/FIVE GROUP

Evaluation Board Kit (EVK)

The RZ/Five EVK consists of a SMARC v2.1 module board and a carrier board. You can easily evaluate each device by replacing the SMARC v2.1 module board.



Evaluate both RISC-V CPU and Arm CPU by replacing [SMARC module for RZ/Five \(RISC-V\)](#) and [SMARC module for RZ/G2UL \(Arm\)](#) on the carrier board.

- Module board (Dimension: 82 mm x 50mm)
 - Processor: RZ/Five (RISC-V)
 - Main Memory: 1GB DDR4 (1GB x1)
 - QSPI NOR FLASH: 16MB
 - eMMC Memory: 64GB
 - External Storage: microSD x1 (Exclusive with eMMC)
 - A/D Converter Interface
 - JTAG connector
 - PMIC (DA9062)
- Carrier board (Dimension: 160mm x 100mm)
 - Gigabit Ethernet x2
 - USB2.0 x 2ch (OTG x1ch, Host x1ch)
 - External Storage: microSD x1
 - Audio Line in x1
 - Audio Line out x1
 - PMOD x2
 - USB-Type C for Power Input

Ordering Information

Product Group	RZ/Five	
	Part No.	
	R9A07G043F01GBG	R9A07G043F00GBG
RISC-V AM45MP Single	✓	✓
16-bit DDR3L/DDR4-1600 (in line ECC)	✓	✓
SDHI (UHS-I, UHS-I/MMC)	✓	✓
QSPI Multi I/O	✓	✓
Gigabit Ethernet	2ch	1ch
CAN (CAN-FD)	✓	✓
12bit ADC	✓	✓
Package Type	LFBGA	LFBGA
Pin Count	361pin	266pin
Package Information	13mm x 13mm 0.5mm pitch	11mm x 11mm 0.5mm pitch

For more information, visit renesas.com/rzfive



renesas.com

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

Trademarks
The "RISC-V" and the RISC-V logo are registered trade mark of RISC-V International. Arm® and Cortex® are registered trademarks of Arm Limited. Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact information
For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:
www.renesas.com/contact/

Document No.: R01PF0231EU0100

© 2022 Renesas Electronics Corporation. All rights reserved.