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RENESAS RZ

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

RISC-V

361pin LFBGA 266pin LFBGA

Key Features

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

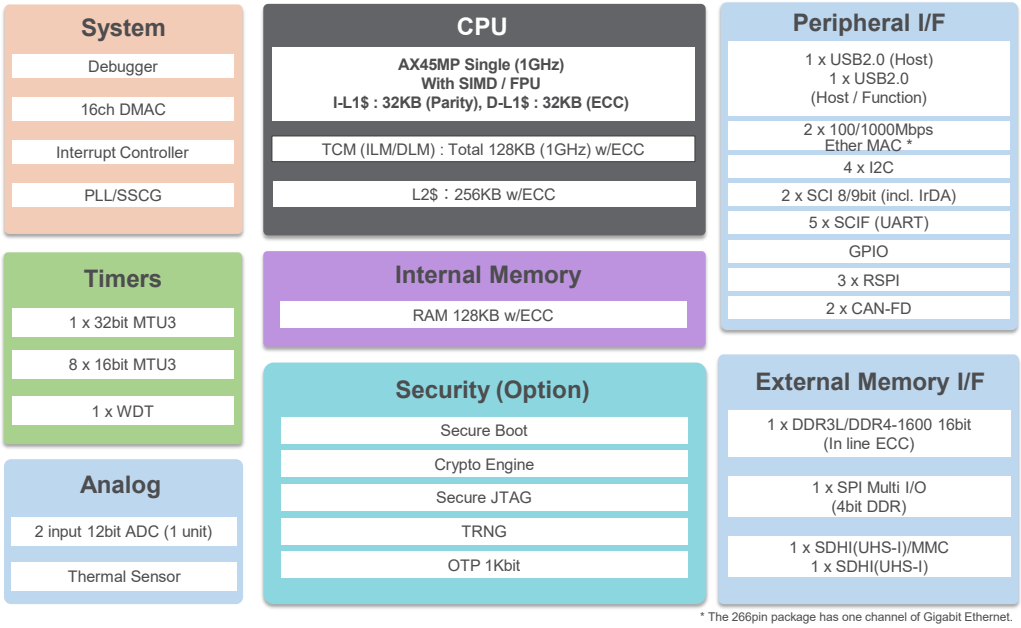
Benefits

- 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

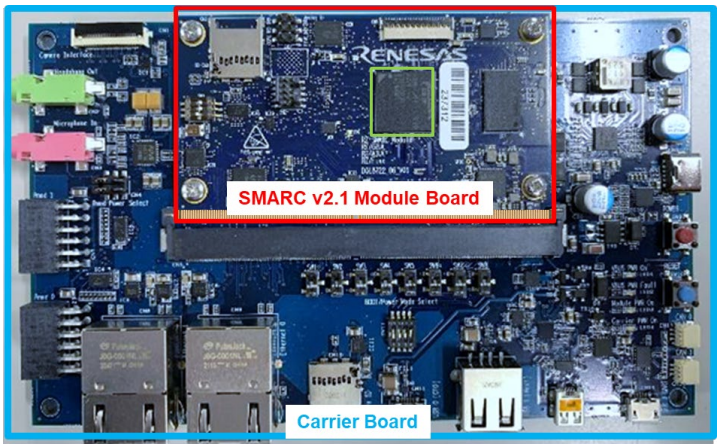
RZ/Five Block Diagram



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

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

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