



64-bit MPU with Enhanced Peripherals for IoT Edge and Gateway Devices

RENESAS RZ/G3S GROUP

The RZ/G3S microprocessor is embedded with a Cortex®-A55 (1.1 GHz) CPU and two Cortex®-M33 CPUs(250MHz), 16-bit LPDDR4/DDR4 interface and supports low-power mode. The built-in PCI Express interface enables high-speed connectivity with 5G wireless modules. Additionally, the device boasts enhanced security features such as tamper detection working in low power mode to ensure data security. These features make the device ideal for IoT applications including home gateways, smart meters, and tracking devices.



361pin, 13x13mm PBGA
(0.5mm pitch)

Key Features

- Cortex-A55 1.1GHz
- Cortex-M33 250MHz x 2 cores (One Cortex®-M33 has FPU function)
- LPDDR4 or DDR4 Memory interface
- PCIe Gen2 1lane
- USB2.0 interface 2ch
- SD interface 3ch
- Gigabit Ethernet 2ch
- CAN interface (CAN-FD) 2ch
- 12-bit ADC 8ch
- RTC, tamper detection
- Memory error detection / correction (ECC)
- BGA package
 - 14x14mm 359Pin BGA 0.5mm pitch
 - 13x13mm 361Pin BGA 0.5mm pitch

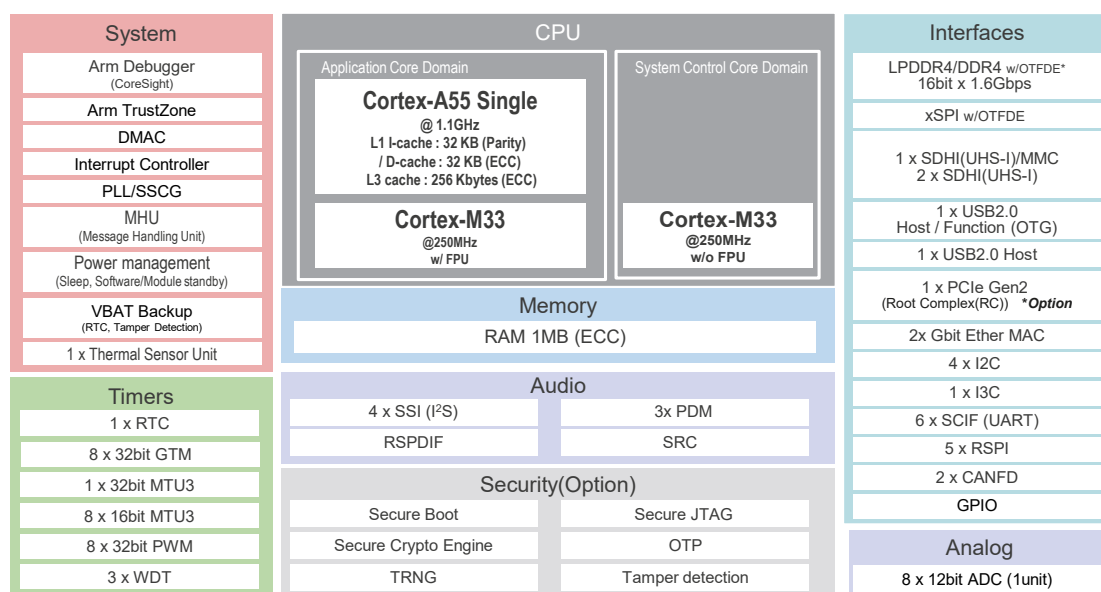
Benefits

- Low power standby & fast wake up to Linux application
- Faster processing speed through application load distribution among the three cores - CA55 x1 and CM33 x2 embedded in the CPU system
- Optimize data aggregation with peripherals - PCIe, CAN and ADCs
- Enhanced security with tamper detection

Applications

- IoT Edge Equipment
- Secure Home Gateway

RZ/G3S Block Diagram



* OTFDE: On-The-Fly Decryption/Encryption

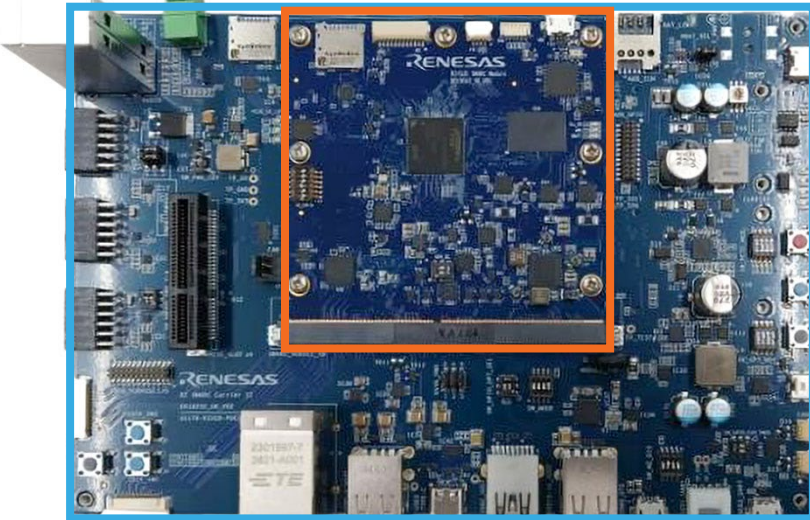
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Evaluation Board Kit (EVK)

The RZ/G3S EVK consists of a SMARC v2.1 module board and a carrier board. You can easily evaluate each device by replacing the System On Module (SOM).

- P/N: RTK9845S33S01000BE
- Product name: RZ/G3S SMARC Evaluation Board Kit

SMARC Module board



Carrier board

Module Board Functions

- RZ/G3S R9A08G045S33GBG x1pc
- LPDDR4 SDRAM: 1GB × 1pc
- QSPI flash memory: 128Mb × 1pc
- eMMC memory: 64GB × 1pc
- PMIC power supply RAA215300A2GNP#HA3 implemented
- microSD card x2
- I3C connector
- JTAG connector
- ADC x8 channels
- Current monitor (USB Micro B)

Carrier Board Functions

- Gigabit Ethernet x2
- USB2.0 x2ch (OTG x1ch, Host x1ch)
- CAN-FD x2
- microSD card x1
- Mono speaker, Stereo headphone, Mic., and Aux.
- PMOD x2
- USB-Type C for power input
- PCIe Gen2 4-lane slot (G3S supports only 1-lane)
- M.2 Key E
- M.2 Key B and SIM card
- Coin cell battery holder (3.0V support)

Ordering Information

Part Number	R9A08G045S37GBG	R9A08G045S17GBG	R9A08G045S33GBG	R9A08G045S13GBG
Arm Cortex-A55			1	
Arm Cortex-M33	2	1	2	1
PCIe	1ch			
Security (RSIP)	Yes		No	
Package Information	359 Pin 14mm (0.5mm pitch) PBGA			

Part Number	R9A08G045S35GBG	R9A08G045S15GBG	R9A08G045S31GBG	R9A08G045S11GBG
Arm Cortex-A55			1	
Arm Cortex-M33	2	1	2	1
PCIe	No			
Security (RSIP)	Yes		No	
Package Information	361 Pin 13mm (0.5mm pitch) PBGA			

For more information, visit: renesas.com/rzg3s

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