

## Entry-Level 64-Bit MPUs Ideal for HMI, IoT and Edge AI Processing

# RENESAS RZ/G2L, RZ/G2LC, RZ/G2UL

### MPUs with Arm® Cortex®-A55 Simplify HMI Development and Enhance IoT and Edge AI Processing

Digital transformation of industrial automation, HMI, industrial control, and building control accelerate the move towards adoption of 64-bit MPUs and rich operating systems (Linux), including entry-level products. Renesas' entry-level 64-bit MPUs – RZ/G2L, RZ/G2LC and RZ/G2UL – improve CPU processing performance with better cost advantage and provide high reliability to HMI designs. In addition, these MPUs are also equipped with the performance and peripheral features needed for IoT edge devices.

#### Features

- 2x Cortex®-A55 (1.2GHz), Cortex®-M33 (200MHz)
- 16-bit DDR3L/DDR4-1600 (in line ECC)
- Camera IF; MIPI CSI-2 (4 lanes) or Parallel
- Display IF; MIPI DSI (4 lanes) or Parallel
- 3D graphics function (Arm® Mali™-G31)
- H.264 codec
- 2x Gigabit Ethernet

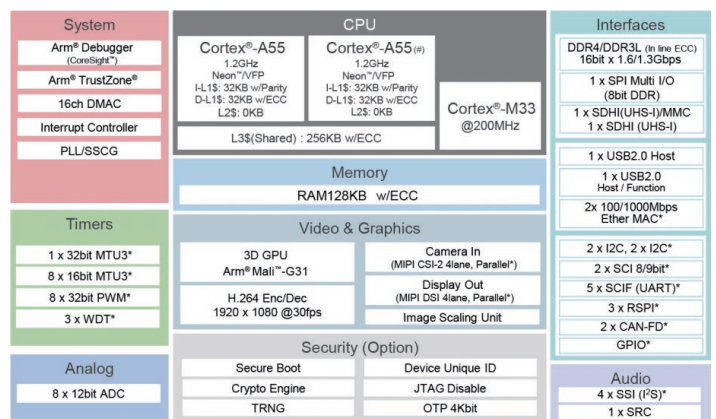
#### Benefits

- 20% increase in general processing performance, and 3 times faster edge AI processing performance with Arm® Cortex®-A55
- Single-chip solution suitable for compact and portable applications
- High reliability delivered through ECC (Error Correction Code) feature.
- Keep systems safe from security threats with over 10 years of long-term maintenance support on CIP Linux.
- Optimized PMIC (RAA215300) reduces power supply design complexity

#### Applications

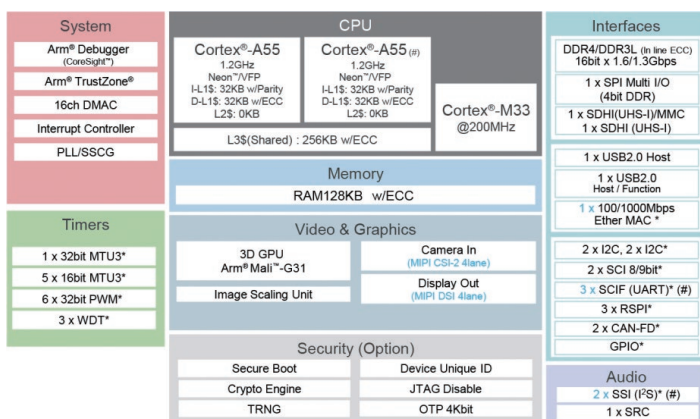
- Home Appliance
- Industrial HMI
- Intercom/ Doorbell
- Point of Sales
- Smart Thermostat
- Smart Camera

#### RZ/G2L Block Diagram



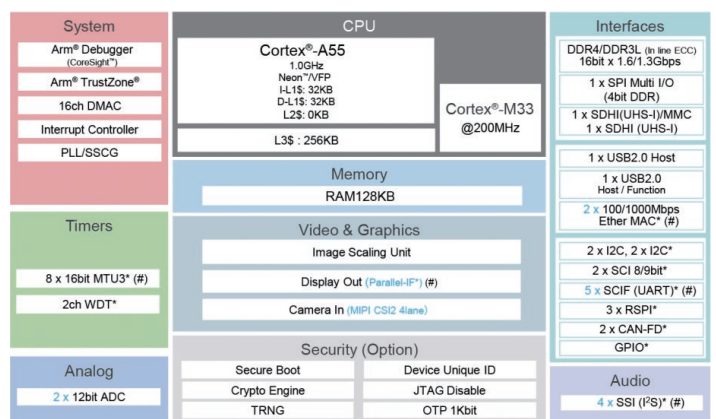
\*Shared (#): Single core version is 1 CPU

#### RZ/G2LC Block Diagram



(Blue Character): Channel or Size Number Difference to RZ/G2L. \*Shared (#): Single core version is 1 CPU

#### RZ/G2UL Block Diagram



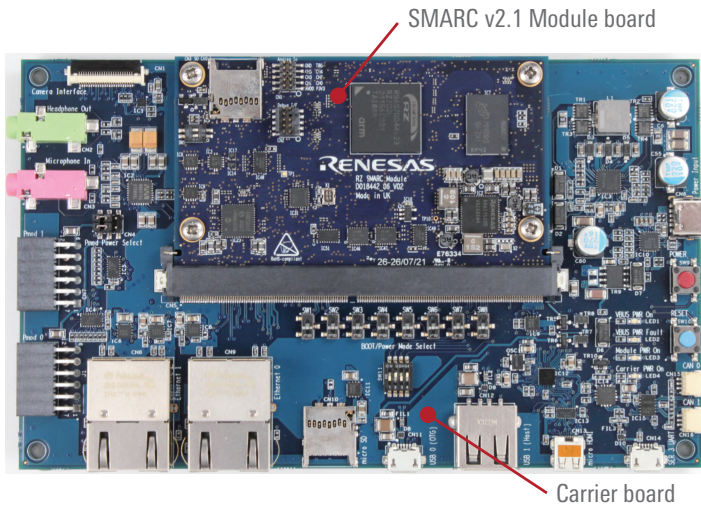
(#): There are 2 types in RZ/G2UL. This block diagram is Type-1.

[Type-1] Full function version - No support. Display out, Parallel-IF -No Ether MAC, 3xSCIF, 2xSSI, 7x 16bit MTU3, 1x 32bit MTU3

\*Shared (Blue Character): Channel or Size Number Difference to RZ/G2L

# RENESAS RZ/G2L, RZ/G2LC, RZ/G2UL

## Evaluation Board Kit (EVK)



- Carrier board (Dimension: 160mm x 100mm)
  - Gigabit Ethernet x2
  - USB2.0 x 2ch (OTG x1ch, Host x1ch)
  - MIPI CSI-2 Camera connector (can connect to Google Coral Camera)
  - Micro HDMI (output) connector (Convert MIPI DSI output to HDMI)
  - External Storage: micro SD x1
  - Audio Line in x1
  - Audio Line out x1
  - PMOD x2
  - USB-Type C for Power Input

## RZ/G2L, RZ/G2LC

- Module board (Dimension: 82 mm x 50mm)
  - Processor: RZ/G2L / RZ/G2LC
  - Main Memory:
    - 2GB DDR4 (2GB x1) for RZ/G2L
    - 1GB DDR4 (1GB x1) for RZ/G2LC
  - QSPI NOR FLASH: 64MB
  - eMMC Memory: 64GB
  - External Storage: micro SD x1 (Exclusive with eMMC)
  - A/D Converter Interface for RZ/G2L
  - JTAG connector
  - PMIC (RAA215300)

## RZ/G2UL

- Module board (Dimension: 82 mm x 50mm)
  - Processor: RZ/G2UL (Type-1)
  - Main Memory:
    - 1GB DDR4 (1GB x1)
  - QSPI NOR FLASH: 128Mb (AT25QL128A)
  - eMMC Memory: 64GB
  - External Storage: micro SD x1 (Exclusive with eMMC)
  - A/D Converter Interface
  - JTAG connector
  - PMIC (DA9062)
- Parallel to HDMI Conversion board

## Product Information

Product Group		RZ/G2L	RZ/G2LC	RZ/G2UL (Type-1)
Arm Cortex-A55	Dual	✓	✓	—
	Single	✓	✓	✓
Arm Cortex-M33		✓	✓	✓
3D Graphics		✓	✓	—
Video Codec (H.264)		✓	—	—
Display Interface		MIPI DSI or Parallel	MIPI DSI	Parallel
Camera Interface		MIPI CSI-2 or Parallel	MIPI CSI-2	MIPI CSI-2
Gigabit Ethernet		2ch	1ch	2ch
12-bit A/D Converter		8ch	—	2ch
Package (PBGA)		551pin, 21 x 21mm (0.8mm pitch) 456pin, 15 x 15mm (0.5mm pitch)	361pin, 13 x 13mm (0.5mm pitch)	361pin, 13 x 13mm (0.5mm pitch)

For More Information on RZ/G2L, RZ/G2LC and RZ/G2UL, please visit:

RZ/G2L: <https://www.renesas.com/rzg2l>

RZ/G2LC: <https://www.renesas.com/rzg2lc>

RZ/G2UL: <https://www.renesas.com/rzg2ul>

### Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan  
[www.renesas.com](http://www.renesas.com)

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