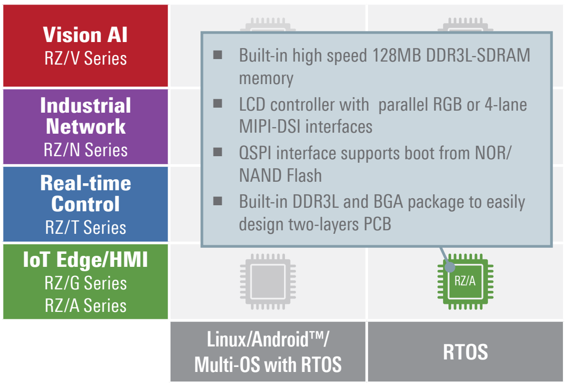
Optimize Speed and Graphics Performance for High-Definition HMIs

RENESAS RZ/A3M GROUP

64bit Arm® Cortex®-A55 MPU (1GHz) with built-in DDR3L SDRAM

The RZ/A3M MPUs based on the Arm® Cortex®-A55 (CA55) core with NEON™ extension and built-in large capacity 128MB DDR3L memory are equipped with a feature set optimized to address diverse human-machine interface (HMI) for consumer, smart home and building automation, healthcare, industrial applications, and office automation market segments.

The RZ/A3M MPUs also integrate features such as high-resolution Graphics LCD controller with parallel RGB and 4-lane MIPI-DSI interfaces to display panels, 2D graphics drawing engine, support QSPI NOR/NAND Flash for large-size programs, and 244 pin LFBGA package which is ideal for 2-layers board design.



- Built-in high speed 128MB DDR3L-SDRAM memory
- LCD controller with parallel RGB or 4-lane MIPI-DSI interfaces
- QSPI interface supports boot from NOR/ NAND Flash
- Built-in DDR3L and BGA package to easily design two-layers PCB

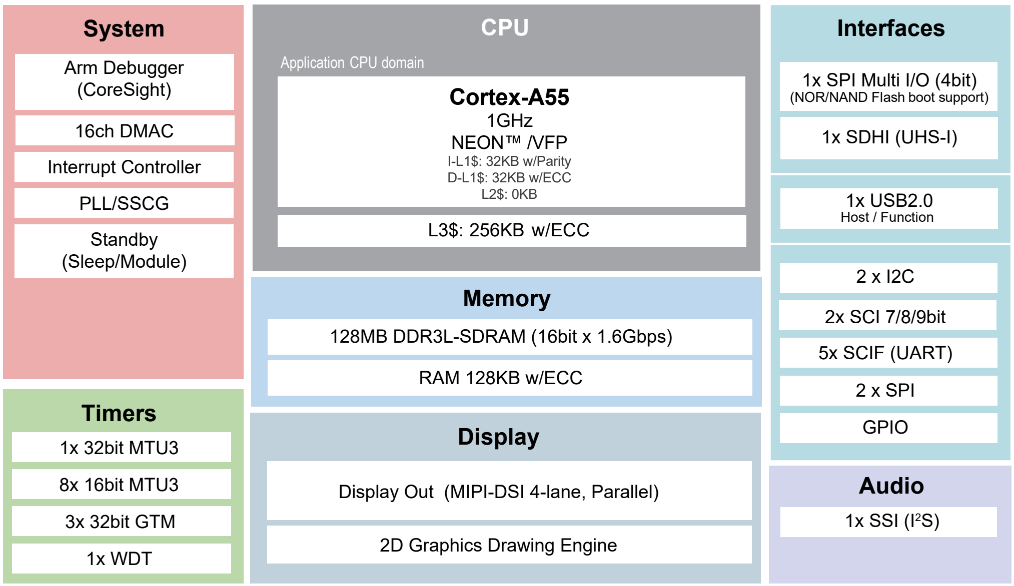
Features

- 64bit 1GHz Arm Cortex-A55 with NEON
- Built-in 128MB DDR3L SDRAM
- LCD controller up to WXGA (1280x800) with parallel RGB and MIPI-DSI (4lane) interface
- 2D Drawing engine
- QSPI NOR/NAND Flash boot
- Enable 2-layer PCB design
- SDHI for high-speed Wi-Fi® module
- I²S for audio interface
- USB 2.0 Interface for USB camera
- UART/SPI/I²C for sensors

Applications

- Consumer products
- Smart home and building automation
- Healthcare
- Industrial applications
- Office automation

Block Diagram



System
Arm Debugger (CoreSight)
16ch DMAC
Interrupt Controller
PLL/SSCG
Standby (Sleep/Module)

Timers
1x 32bit MTU3
8x 16bit MTU3
3x 32bit GTM
1x WDT

CPU
Application CPU domain
Cortex-A55
1GHz
NEON™ /VFP
I-L1$: 32KB w/Parity
D-L1$: 32KB w/ECC
L2$: 0KB
L3$: 256KB w/ECC

Memory
128MB DDR3L-SDRAM (16bit x 1.6Gbps)
RAM 128KB w/ECC

Display
Display Out (MIPI-DSI 4-lane, Parallel)
2D Graphics Drawing Engine

Interfaces
1x SPI Multi I/O (4bit)
(NOR/NAND Flash boot support)
1x SDHI (UHS-I)
1x USB2.0
Host / Function
2 x I2C
2x SCI 7/8/9bit
5x SCIF (UART)
2 x SPI
GPIO

Audio
1x SSI (I²S)

* Due to pin multi-functionality, not all functions can be simultaneously used.

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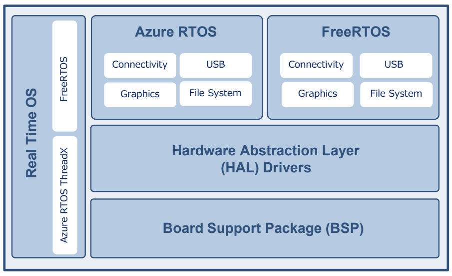
Software Package

The Renesas RZ/A Flexible Software Package (FSP) is designed to provide easy-to-use, scalable, high-quality software for embedded system designs using RZ MPUs.

The FSP is based on an open software ecosystem of production-ready drivers, supporting FreeRTOS, Azure RTOS or bare-metal programming. It also includes a selection of other middleware stacks, providing great flexibility for migrating code from older systems or developing new applications from scratch.



Flexible Software Package (FSP)

Tools and Support

The e² studio IDE provides support with intuitive configurators and intelligent code generation to make programming and debugging easier and faster.

	Renesas
Development Environments	e²studio
Compilers	GNU Arm Embedded Toolchain
ICEs	J-Link series from Segger
Supported RTOS	FreeRTOS, Azure RTOS

Evaluation Kits

- Evaluate key features of RZ/A3M MPU and develop high-resolution HMI and other embedded systems applications
- Includes MIPI graphics expansion board (5inch TFT display, 720*1280 pixel)
- Features on-board debugging using SEGGER-J-Link
- Order the kit and download documentation, design package, development tools, and software at www.renesas.com/ek-rza3m
- Orderable part number: **RTK9EKZA3MS10001BE**

Ordering Information

	R9A07G066M04GBG
CPU/Frequency	Cortex-A55/1.0GHz
RAM	128MB DDR3L 128KB SRAM
Supported Flash	Quad SPI NOR/NAND Flash
LCD interface	Parallel/ MIPI 4-lane
Connectivity	1xUSB2.0(Host/Device) 1xSDHI
Tj	-40 to 110°C
Package	BGA 244pin 17mm x 17mm 0.8mm pitch

For more information, visit
www.renesas.com/RZA3M

renesas.com

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