AN INTRODUCTION TO GENERAL-PURPOSE RA MCU KITS

renesas.com/ra/kits

RENESAS ELECTRONICS CORPORATION
RENESAS ADVANCED (RA) MCU KITS

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AGENDA

Renesas Advanced MCU Kits Vision, Objective & Strategy

Innovation Enablement & Product Lineup

Getting Started Is Easy!

More Information & Support

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VISION OF RENESAS ADVANCED MCU KITS

Deliver an **unmatched innovation experience**
through scalable, flexible & ecosystem-ready Renesas Advanced MCU kits
that enable users to **bring their innovative products to market faster.**

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OBJECTIVE

To enable a large number of use cases so

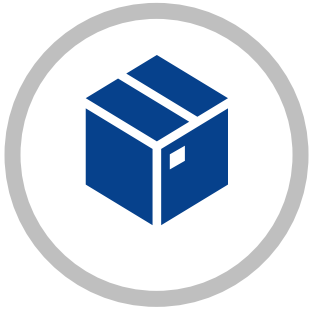
customers, engineers, developers, distributors, partners, etc.

can do more

Proof-of-Concepts

Functional Evaluation

Getting Started Reference



Solutions & Demos

Trainings & Workshops

Maker Community

Research & Academia

Promotions & Lead Generation

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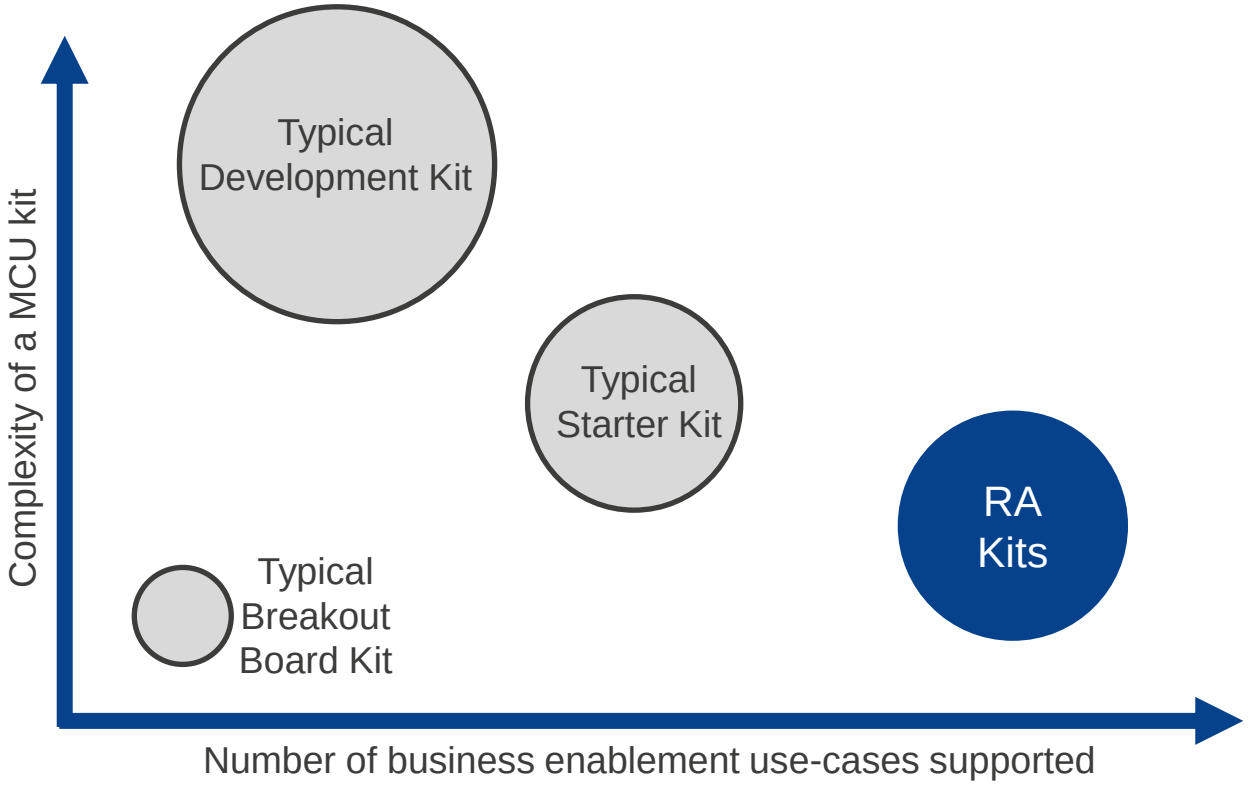
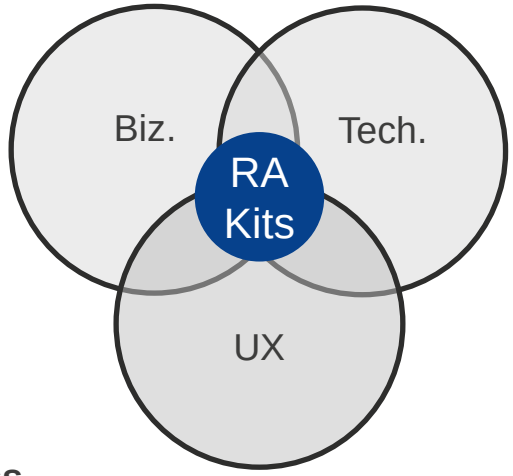
STRATEGY



Size of the circle => Number of MCU features supported by the kit / All MCU features



Business
- Serve global customer base
- Facilitate cross-selling
- Lower NRE & faster time to market

Technical
- Useful for innovation
- Support prioritized MCU peripherals
- Ecosystem ready

User Experience
- Delightful to use
- Beautifully designed & presented

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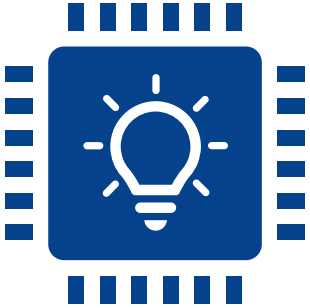
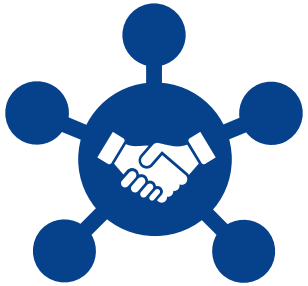
DIFFERENTIATION THAT SETS YOU APART



Innovation Ready

A winning combination of standardization & flexibility



Ecosystem Ready

Enhance functionality on your terms

World Ready

Compliant with many international standards

Fun Ready

Take the guesswork out of your innovation experience

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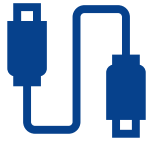
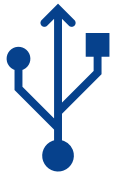
INNOVATION READY

A winning combination of standardization & flexibility that enables shorter learning curve & faster time to market

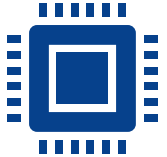
System & Control



Debugging



Connectivity



MCU Access

Standardized feature set across most RA kits			
User buttons & LEDs	Debug On-Board	USB FS (Device)	Male pin headers
MCU current measurement	Debug In	SPI, UART, I2C	Basic prototyping

Additional feature set available on some RA kits			
Additional LDO current	Debug Out	Ethernet	Enhanced prototyping
Multiple power sources		Octo-SPI, Quad-SPI	Graphics Expansion Port
USB current measurement		USB FS (Host)	
Capacitive touch button		USB HS (Host & Device)	

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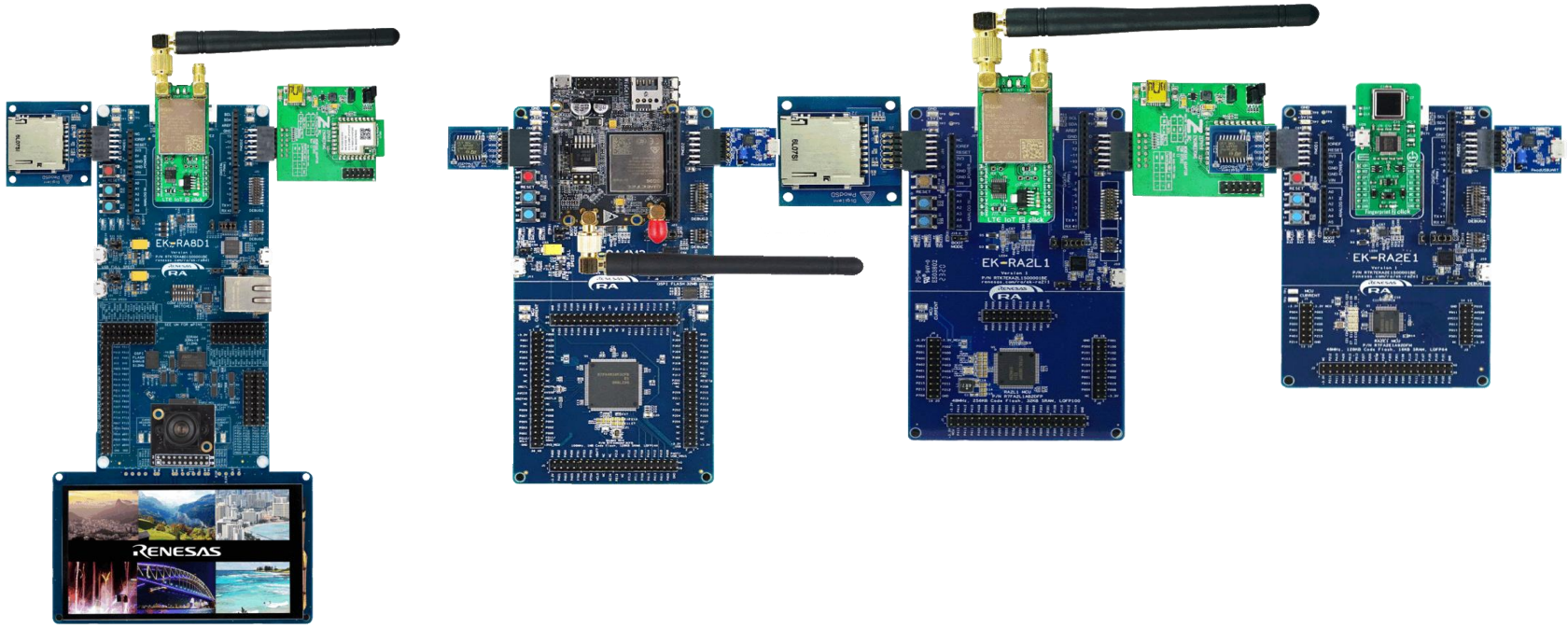
ECOSYSTEM READY

Enhance functionality on your terms & choose from hundreds of 3rd party add-ons from popular ecosystems



ARDUINO Grove qwiic mikro™ BUS Pmod Peripheral Modules

Connect RA kits with add-ons and prototyping board

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WORLD READY

Compliant with many international standards

Documentation available in English & Japanese

EMC/EMI Standards

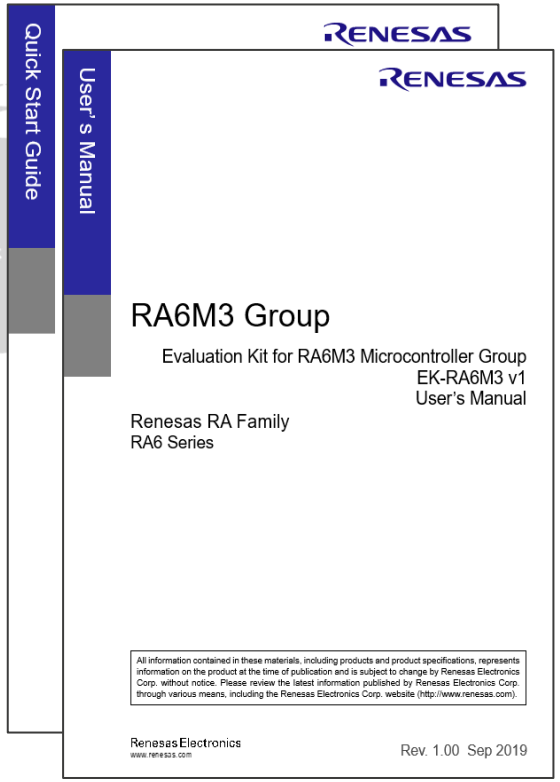
- FCC Notice (Class A) – Part 15
- Innovation, Science & Economic Development Canada ICES-003 Compliance: CAN ICES-3 (A)/NMB-3(A)
- CE Class A (EMC Directive 2004/108/EEC)
- Taiwan Chinese National Standard 13438, C6357 compliance, Class A limits
- Australia/New Zealand AS/NZS CISPR 32:2015, Class A

Waste, Recycling & Material Selection

- EU RoHS
- China SJ/T 113642014, 10-year environmental protection use period

Safety Standards

- UL 94V-0



User's manual & quick start guide

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FUN READY!

Take the guesswork out of your innovation experience for an unmatched, systematic & methodical approach to start developing

Watch the video

Click the image to watch the video

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RA KITS - PRODUCT PORTFOLIO

General-Purpose MCU Kits

- Differentiated functionality
- Remarkable ease-of-use
- Broad ecosystem support
- Multiple debugging modes
- Feature standardization and scalability across RA8, RA6, RA4, and RA2 MCU Series

- Basic MCU pin access
- Limited ecosystem support
- On-board debugging only
- Design reuse across various Renesas MCU families: Synergy, RA, and RL78

3rd Party/Partner Kits

- Access to partner's ecosystem & tools

RA8 Series MCUs | **RA6 Series MCUs** | **RA4 Series MCUs** | **RA2 Series MCUs**

A sampling of general-purpose RA MCU Evaluation Kits

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PRODUCT LINE UP

RA8 Series MCUs | **RA6 Series MCUs** | **RA4 Series MCUs** | **RA2 Series MCUs**

EK-RA8M1 EK-RA8D1 EK-RA6M5 EK-RA6M4 EK-RA6M3 EK-RA6M3G EK-RA6E2 EK-RA4M3 EK-RA4M2 EK-RA4E2 EK-RA2L1 EK-RA2E1 EK-RA2E2

Differentiated Functionality with Remarkable Ease-of-Use

Feature Standardization and Scalability across RA8, RA6, RA4, and RA2 MCU Series

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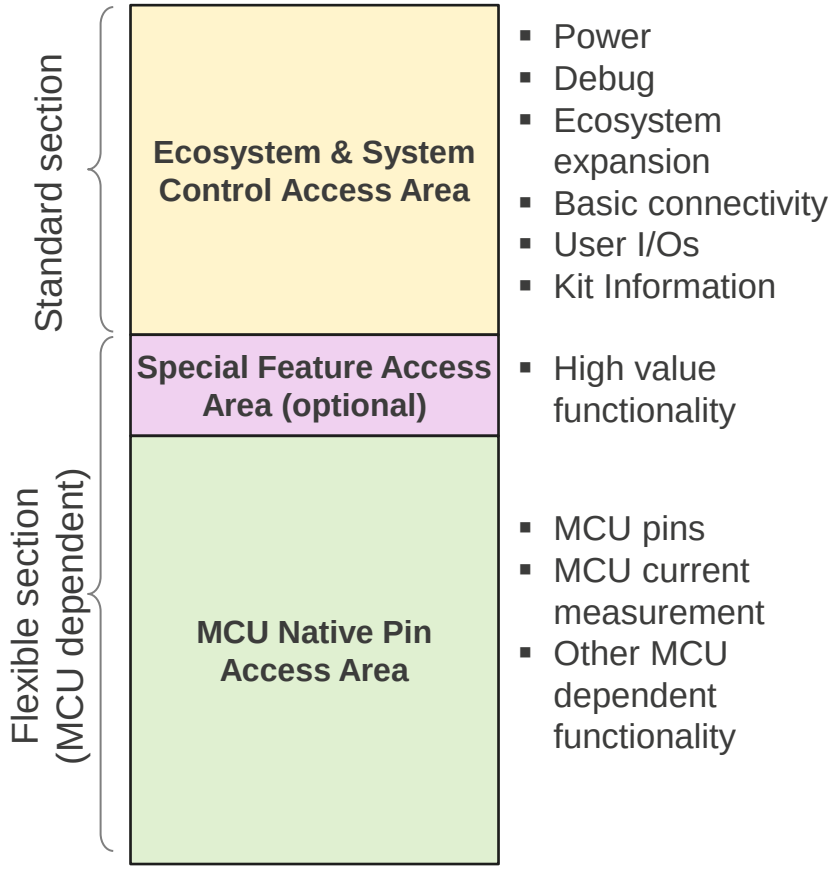
FEATURED INNOVATION KITS - ARCHITECTURE



Key Features of Architecture

- Scalable design framework
- Feature access organization
- On-board access to most-popular ecosystems

Benefits of Architecture

- ✓ Applicable across RA MCUs – new kits
- ✓ Shorter learning curve for users
- ✓ Improved user experience
- ✓ Maximize hardware design reuse
- ✓ Lower NRE
- ✓ Faster time to market
- ✓ Brings more innovation to users
- ✓ Allows for vast functionality expansion
- ✓ Fuels partner engagement and ecosystem utilization

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FEATURED INNOVATION KITS - ARCHITECTURE

Standard section

Ecosystem & System Control Access Area

- Power
- Debug
- Ecosystem expansion
- Basic connectivity
- User I/Os
- Kit Information

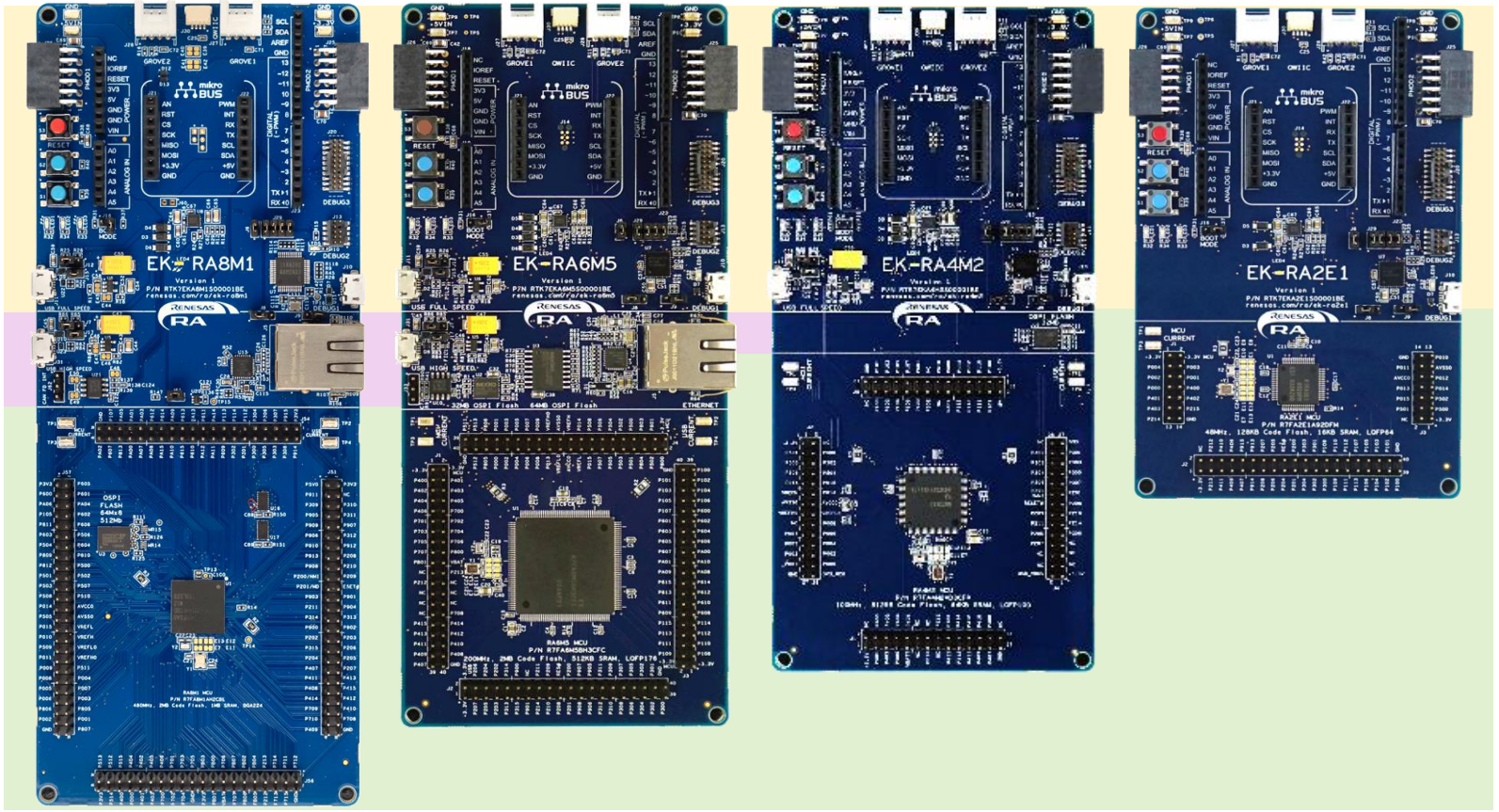
Special Feature Access Area (optional)

- High value functionality

Flexible section (MCU dependent)

MCU Native Pin Access Area

- MCU pins
- MCU current measurement
- Other MCU dependent functionality



EK-RA8M1 Board | EK-RA6M5 Board | EK-RA4M2 Board | EK-RA2E1 Board

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EK-RA8D1

EVALUATION KIT FOR RA8D1 MCU GROUP

Key Features

Special Feature Access

- MIPI DSI & Parallel Graphics Expansion Ports
- Camera Expansion Port
- Ethernet
- USB High Speed Host & Device
- 64 MB SDRAM
- 64 MB External Octo-SPI Flash

MCU Native Pin Access

- R7FA8D1BHECBD MCU
- 480 MHz, Arm Cortex®-M85 core
- 2 MB Code Flash, 1 MB SRAM
- 224 pins, BGA package
- Native pin access
- MCU & USB current measurement
- DC/DC mode configuration

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS, HS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I3C & analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

renesas.com/ra/ek-ra8d1

(User manual, quick start guide, development tools, schematics, design files & example projects)

RTK7EKA8D1S01001BE

(Orderable part number)

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EK-RA8D1

EVALUATION KIT FOR RA8D1 MCU GROUP

… continued

Key Features

MIPI Graphics Expansion Board

- 4.5 Inch backlit TFT display, 16.7M display colors
- 480x854 pixels resolution
- 2-lane MIPI interface
- Capacitive touch overlay (I2C)

Camera Expansion Board

- Off-the-shelf Arducam CMOS OV3640 Camera Module
- ¼ Inch 3.1 Megapixel image sensor
- Up to 15 fps in QXGA (2048x1536 pixels) resolution

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EK-RA8M1

EVALUATION KIT FOR RA8M1 MCU GROUP

Key Features

Special Feature Access

- Ethernet
- USB High Speed Host & Device
- 64 MB External Octo-SPI Flash
- CAN FD PHY

MCU Native Pin Access

- R7FA8M1AHECBD MCU
- 480 MHz, Arm Cortex®-M85 core
- 2 MB Code Flash, 1 MB SRAM
- 224 pins, BGA package
- Native pin access
- MCU & USB current measurement
- DC/DC mode configuration

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS, HS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C/I3C)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

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EK-RA6M5

EVALUATION KIT FOR RA6M5 MCU GROUP

Key Features

Special Feature Access

- Ethernet
- USB High Speed Host & Device
- 64 MB External Octo-SPI Flash
- 32 MB External Quad-SPI Flash
- CAN FD

MCU Native Pin Access

- R7FA6M5BH3CFC MCU
- 200 MHz, Arm Cortex®-M33 core
- 2 MB Code Flash, 512 KB SRAM
- 176 pins, LQFP package
- Native pin access
- MCU & USB current measurement points

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS, HS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

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EK-RA6M4

EVALUATION KIT FOR RA6M4 MCU GROUP

Key Features

Special Feature Access

- Ethernet
- 64 MB External Octo-SPI Flash
- 32 MB External Quad-SPI Flash

MCU Native Pin Access

- R7FA6M4AF3CFB MCU
- 200 MHz, Arm Cortex®-M33 core
- 1 MB Code Flash, 256 KB SRAM
- 144 pins, LQFP package
- Native pin access
- MCU & USB current measurement points

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

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EK-RA6M3

EVALUATION KIT FOR RA6M3 MCU GROUP

Key Features

Special Feature Access

- Ethernet
- USB High Speed Host & Device
- 32 MB External QSPI Flash

MCU Native Pin Access

- R7FA6M3AH3CFC MCU
- 120 MHz, Arm Cortex®-M4 core
- 2 MB Code Flash, 640 KB SRAM
- 176 pins, LQFP package
- Native pin access through 4x 40-pin male headers
- MCU & USB current measurement points

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS, HS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- MCU boot configuration jumper

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EK-RA6M3G

GRAPHICS EVALUATION KIT FOR RA6M3 MCU GROUP

Key Features

Special Feature Access

- 4.3” 480x272 px color TFT LCD with capacitive touch
- Ethernet
- USB High Speed Host & Device
- 32 MB External QSPI Flash

MCU Native Pin Access

- R7FA6M3AH3CFC MCU
- 120 MHz, Arm Cortex®-M4 core
- 2 MB Code Flash, 640 KB SRAM
- 176 pins, LQFP package
- Native pin access through 4x 40-pin male headers
- MCU & USB current measurement points

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS, HS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- MCU boot configuration jumper

Featured Software Library

- Segger™ emWin Embedded GUI

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EK-RA6E2

EVALUATION KIT FOR RA6E24 MCU GROUP

Key Features

Special Feature Access

- 32 MB External Quad-SPI Flash
- CAN FD PHY

MCU Native Pin Access

- R7FA6E2BB3CFM MCU
- 200 MHz, Arm Cortex®-M33 core
- 256 KB Code Flash, 40 KB SRAM
- 64 pins, LQFP package
- Native pin access through male pin headers
- MCU & USB current measurement

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

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EK-RA4M3

EVALUATION KIT FOR RA4M3 MCU GROUP

Key Features

Special Feature Access

- 32 MB External QSPI Flash

MCU Native Pin Access

- R7FA4M3AF3CFB MCU
- 100 MHz, Arm Cortex®-M33 core
- 1 MB Code Flash, 128 KB SRAM
- 144 pins, LQFP package
- Native pin access through male pin headers
- MCU & USB current measurement points

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

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EK-RA4M2

EVALUATION KIT FOR RA4M2 MCU GROUP

Key Features

Special Feature Access

- 32 MB External QSPI Flash

MCU Native Pin Access

- R7FA4M2AD2CFP MCU
- 100 MHz, Arm Cortex®-M33 core
- 512 KB Code Flash, 64 KB SRAM
- 100 pins, LQFP package
- Native pin access through male pin headers
- MCU & USB current measurement points

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

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EK-RA4E2

EVALUATION KIT FOR RA4E2 MCU GROUP

Key Features

Special Feature Access

- CAN FD PHY

MCU Native Pin Access

- R7FA4E2B93CFM MCU
- 100 MHz, Arm Cortex®-M33 core
- 128 KB Code Flash, 40 KB SRAM
- 64 pins, LQFP package
- Native pin access through male pin headers
- MCU & USB current measurement

Ecosystem & System Control Access

- USB Full Speed Host & Device
- 5 V input through USB (Debug, FS) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (ETM, SWD & JTAG)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & analog)
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- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

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EK-RA2L1

EVALUATION KIT FOR RA2L1 MCU GROUP

Key Features

MCU Native Pin Access

- R7FA2L1AB2DFP MCU
- 48 MHz, Arm Cortex®-M23 core
- 256 KB Code Flash, 32 KB SRAM
- 100 pins, LQFP package
- Native pin access through male pin headers
- MCU current measurement points

Ecosystem & System Control Access

- 5 V input through USB (Debug) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (SWD)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & Analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

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EK-RA2E1

EVALUATION KIT FOR RA2E1 MCU GROUP

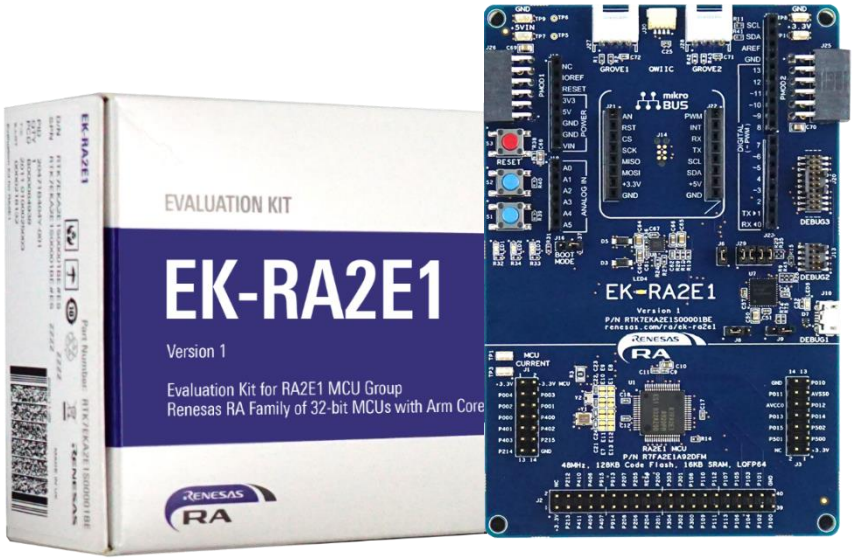
Key Features

MCU Native Pin Access

- R7FA2E1A92DFM MCU
- 48 MHz, Arm Cortex®-M23 core
- 128 KB Code Flash, 16 KB SRAM
- 64 pins, LQFP package
- Native pin access through male pin headers
- MCU current measurement points
- DC/DC mode configuration

Ecosystem & System Control Access

- 5 V input through USB (Debug) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (SWD)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & Analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper



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(User manual, quick start guide, development tools, schematics, design files & example projects)

RTK7EKA2E1S00001BE

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EK-RA2E2

EVALUATION KIT FOR RA2E2 MCU GROUP

Key Features

MCU Native Pin Access

- R7FA2E2A72DNK MCU
- 48 MHz, Arm Cortex®-M23 core
- 64 KB Code Flash, 8 KB SRAM
- 24 pins, HWQFN package
- Native pin access through male pin headers
- MCU current measurement points
- DC/DC mode configuration

Ecosystem & System Control Access

- 5 V input through USB (Debug) or external power supply
- Debug on-board (Segger J-Link®)
- Debug in (SWD)
- Debug out (SWD)
- 3 User LEDs & 2 User buttons
- 2 SeeedGrove® system (I2C & Analog)
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MikroElektronika™ mikroBUS
- SparkFun® Qwiic® (I2C)
- MCU boot configuration jumper

renesas.com/ra/ek-ra2e2

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BASIC PIN-OUT KITS – PRODUCT LINE UP

RA6 Series MCUs

EK-RA6M2

EK-RA6M1

FPB-RA6E1

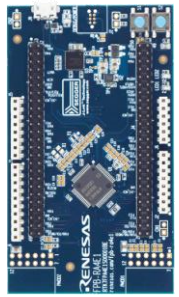
EK-RA6E2

RA4 Series MCUs

EK-RA4M1

EK-RA4W1

FPB-RA4E1



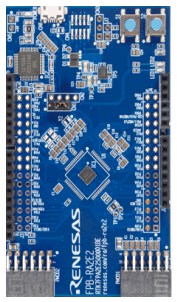
FPB-RA4E2

RA2 Series MCUs

EK-RA2A1

FPB-RA2E1

FPB-RA2E2



Basic MCU Pin Access

Design reuse across various Renesas MCU families: Synergy, RA, and RL78

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EK-RA6M2

EVALUATION KIT FOR RA6M2 MCU GROUP

Key Features

- R7FA6M2AF3CFB MCU
- 120 MHz, Arm Cortex®-M4 core
- 1 MB Code Flash, 384 KB SRAM
- 144 pins, LQFP package
- Native pin access through 4x 40-pin male headers
- MCU current measurement points
- USB Full Speed Device
- 5 V input through USB Debug
- Debug on-board (Segger J-Link®)
- Debug in (SWD & JTAG)
- 2 Digilent Pmod™ (SPI & UART)
- User LED
- Mechanical user button
- Capacitive user button
- MCU boot configuration jumper

renesas.com/ra/ek-ra6m2
(User manual, quick start guide, development tools, schematics, design files & example projects)

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EK-RA6M1

EVALUATION KIT FOR RA6M1 GROUP

Key Features

- R7FA6M1AD3CFP MCU
- 120 MHz, Arm Cortex®-M4 core
- 512 KB Code Flash, 256 KB SRAM
- 100 pins, LQFP package
- Native pin access through 4x 40-pin male headers
- MCU current measurement points
- USB Full Speed Device
- 5 V input through USB Debug
- Debug on-board (Segger J-Link®)
- Debug in (SWD & JTAG)
- 2 Digilent Pmod™ (SPI & UART)
- User LED
- Mechanical user button
- Capacitive user button
- MCU boot configuration jumper

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(User manual, quick start guide, development tools, schematics, design files & example projects)

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FPB-RA6E2

FAST PROTOTYPING BOARD FOR RA6E1 MCU GROUP

Key Features

- R7FA6E2BB3CFM MCU
- 200 MHz, Arm Cortex®-M33 core
- 256 KB Code Flash, 40 KB SRAM
- 64 pins, LQFP package
- Native pin access through male pin headers
- MCU current measurement points
- 5 V input through USB (Debug) or external power supply
- Debug on-board (Segger J-Link®)
- 2 User LEDs & 1 User button
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MCU boot configuration jumper

renesas.com/ra/fpb-ra6e2
(User manual, quick start guide, development tools, schematics, design files & example projects)

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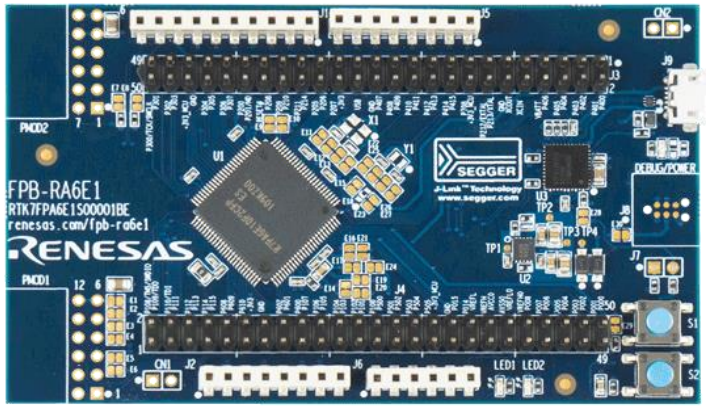
FPB-RA6E1

FAST PROTOTYPING BOARD FOR RA6E1 MCU GROUP

Key Features

- R7FA6E10F2CFP MCU
- 100 MHz, Arm Cortex®-M33 core
- 1 MB Code Flash, 256 KB SRAM
- 100 pins, LQFP package
- Native pin access through male pin headers
- MCU current measurement points
- 5 V input through USB (Debug) or external power supply
- Debug on-board (Segger J-Link®)
- 2 User LEDs & 1 User button
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MCU boot configuration jumper



renesas.com/ra/fpb-ra6e1
(User manual, quick start guide, development tools, schematics, design files & example projects)

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EK-RA4M1

EVALUATION KIT FOR RA4M1 MCU GROUP

Key Features

- R7FA4M1AB3CFP MCU
- 48 MHz, Arm Cortex®-M4 core
- 256 KB Code Flash, 32 KB SRAM
- 100 pins, LQFP package
- Native pin access through 4x 40-pin male headers
- MCU current measurement points
- USB Full Speed Device
- 5 V input through USB Debug
- Debug on-board (Segger J-Link®)
- Debug in (SWD & JTAG)
- 2 Digilent Pmod™ (SPI & UART)
- User LED
- Mechanical user button
- Capacitive user button
- MCU boot configuration jumper

renesas.com/ra/ek-ra4m1

(User manual, quick start guide, development tools, schematics, design files & example projects)

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EK-RA4W1

EVALUATION KIT FOR RA4W1 MCU GROUP

Key Features

- R7FA4W1AD2CNG MCU
- 48 MHz, Arm Cortex®-M4 core
- 512 KB Code Flash, 96 KB SRAM
- 56 pins, QFN package
- MCU headers: 28 pins x2
- MCU current measurement points
- USB Full Speed device
- 5 V input through USB debug
- Debug on-board (Segger J-Link®)
- Digilent Pmod™ (SPI)
- Arduino™ (Uno R3)
- User LED
- Mechanical user button
- MCU boot configuration jumper

renesas.com/ra/ek-ra4w1

(User manual, quick start guide, development tools, schematics, design files & example projects)

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FPB-RA4E2

FAST PROTOTYPING BOARD FOR RA4E1 MCU GROUP

Key Features

- R7FA4E2B93CFM MCU
- 100 MHz, Arm Cortex®-M33 core
- 128 KB Code Flash, 40 KB SRAM
- 64 pins, LQFP package
- Native pin access through male pin headers
- MCU current measurement points
- 5 V input through USB (Debug) or external power supply
- Debug on-board (Segger J-Link®)
- 2 User LEDs & 1 User button
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MCU boot configuration jumper

renesas.com/ra/fpb-ra4e2
(User manual, quick start guide, development tools, schematics, design files & example projects)

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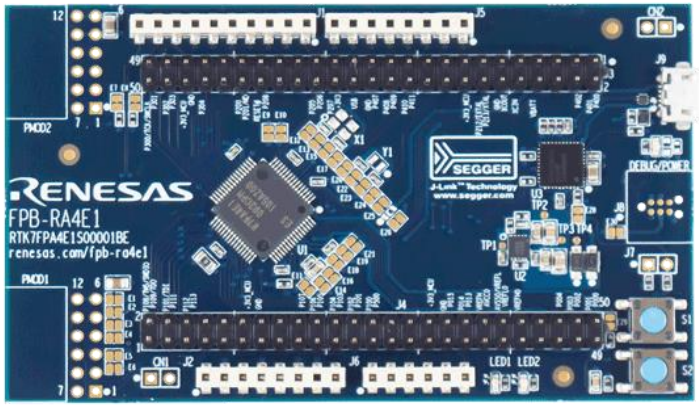
FPB-RA4E1

FAST PROTOTYPING BOARD FOR RA4E1 MCU GROUP

Key Features

- R7FA4E10D2CFM MCU
- 100 MHz, Arm Cortex®-M33 core
- 512 KB Code Flash, 128 KB SRAM
- 64 pins, LQFP package
- Native pin access through male pin headers
- MCU current measurement points
- 5 V input through USB (Debug) or external power supply
- Debug on-board (Segger J-Link®)
- 2 User LEDs & 1 User button
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MCU boot configuration jumper



renesas.com/ra/fpb-ra4e1
(User manual, quick start guide, development tools, schematics, design files & example projects)

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EK-RA2A1

EVALUATION KIT FOR RA2A1 MCU GROUP

Key Features

- R7FA2A1AB3CFM MCU
- 48 MHz, Arm Cortex®-M23 core
- 256 KB Code Flash, 32 KB SRAM
- 64 pins, LQFP package
- Native pin access through 4x 40-pin male headers
- MCU current measurement points
- USB Full Speed Device
- 5 V input through USB Debug
- Debug on-board (Segger J-Link®)
- Debug in (SWD & JTAG)
- 2 Digilent Pmod™ (SPI & UART)
- User LED
- Mechanical user button
- Capacitive user button
- MCU boot configuration jumper

renesas.com/ra/ek-ra2a1

(User manual, quick start guide, development tools, schematics, design files & example projects)

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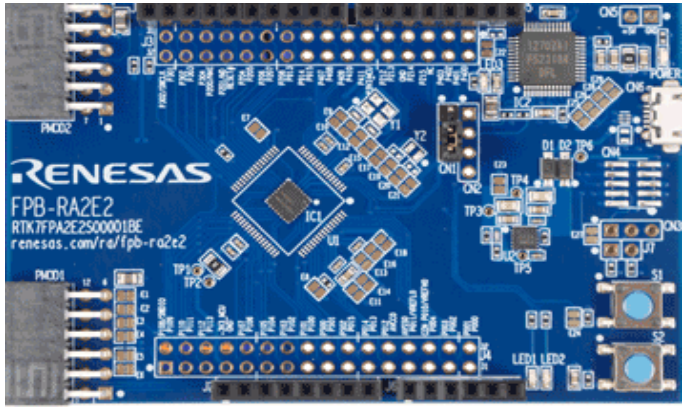
FPB-RA2E2

FAST PROTOTYPING BOARD FOR RA2E1 MCU GROUP

Key Features

- R7FA2E2A74CNK MCU
- 48 MHz, Arm Cortex®-M23 core
- 64 KB Code Flash, 64 KB SRAM
- 24 pins, HWQFN package
- Native pin access through male pin headers
- MCU current measurement points
- 5 V input through USB (Debug) or external power supply
- Debug on-board (Renesas E2 Lite)
- 2 User LEDs & 1 User button
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MCU boot configuration jumper



renesas.com/ra/fpb-ra2e2
(User manual, quick start guide, development tools, schematics, design files & example projects)

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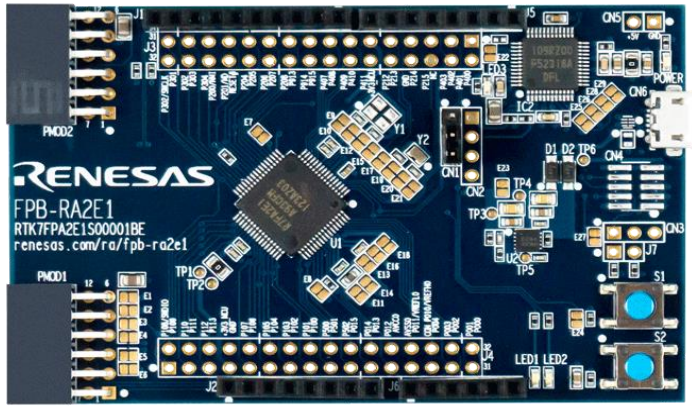
FPB-RA2E1

FAST PROTOTYPING BOARD FOR RA2E1 MCU GROUP

Key Features

- R7FA2E1A93CFM MCU
- 48 MHz, Arm Cortex®-M23 core
- 128 KB Code Flash, 16 KB SRAM
- 64 pins, LQFP package
- Native pin access through male pin headers
- MCU current measurement points
- 5 V input through USB (Debug) or external power supply
- Debug on-board (Renesas E2 Lite)
- 2 User LEDs & 1 User button
- 2 Digilent Pmod™ (SPI & UART)
- Arduino™ (Uno R3)
- MCU boot configuration jumper



renesas.com/ra/fpb-ra2e1
(User manual, quick start guide, development tools, schematics, design files & example projects)

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MIKROE RA4M1 CLICKER

COMPACT STARTER BOARD FOR RA4M1 MCU GROUP

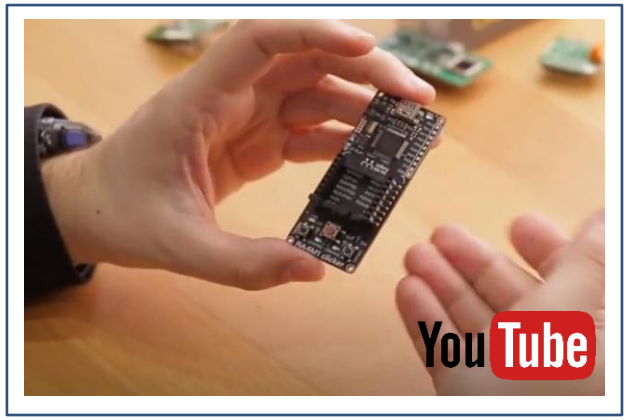
Key Features

MCU Native Pin Access

- R7FA4M1AB3CFP MCU
- 48 MHz, Arm Cortex®-M4 core
- 256 KB Code Flash, 32 KB SRAM
- 100 pins, LQFP package

Ecosystem & System Control Access

- 5 V input through USB-C(Debug)
- Debug on-board (Segger J-Link®)
- 2 User LEDs & 2 User buttons
- Reset button
- MikroElektronika™ mikroBUS



Introduction & Unboxing Video

mikroe.com/ra4m1-clicker

(User manual, quick start guide, schematics, design files & example project)

MIKROE-4350

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RoHS

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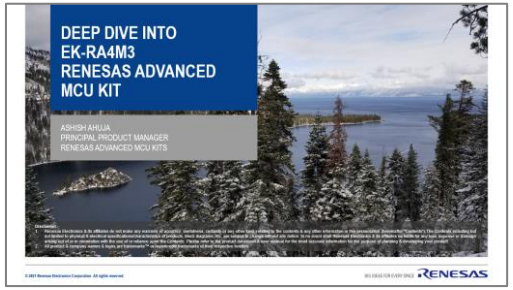
TOP NOTCH COLLATERAL – DEEP DIVE PRESENTATIONS



Deep-dive presentations are available on renesas.com/ra/<kit-name>
For example: renesas.com/ra/ek-ra6m3

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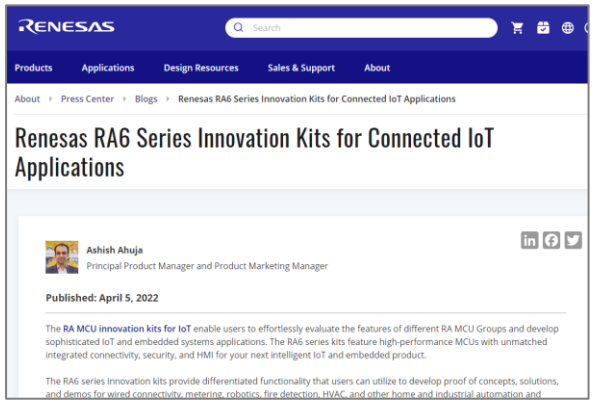
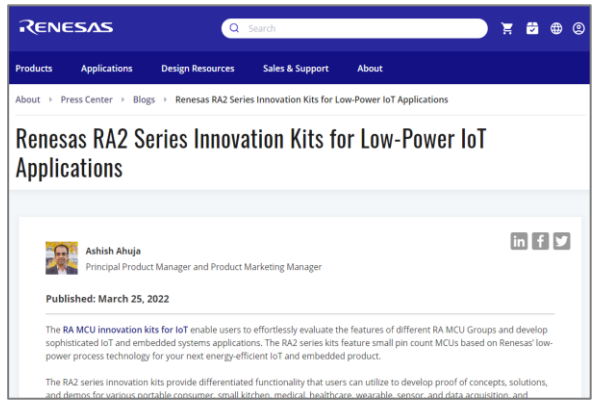
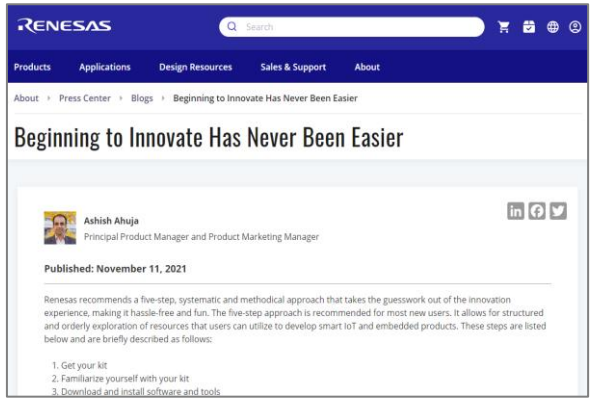
TOP NOTCH COLLATERAL – BLOGS







Blogs are available on renesas.com/ra/<kit-name>
For example: renesas.com/ra/ek-ra6m3

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TOP NOTCH COLLATERAL – GETTING STARTED VIDEOS

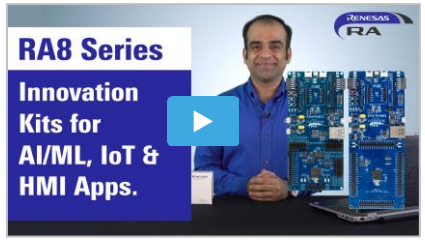
RA Kit Introduction

5 Steps to Get Started

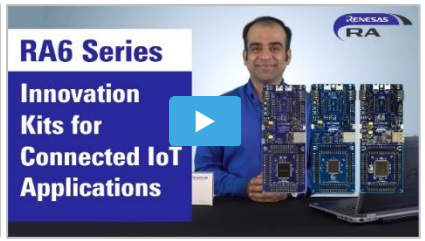
Programming Kits

Accelerate Debugging

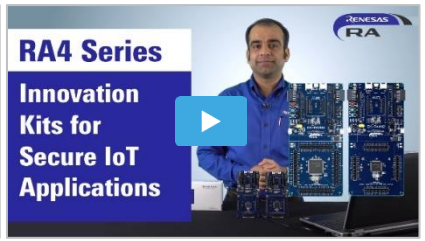
Example Projects



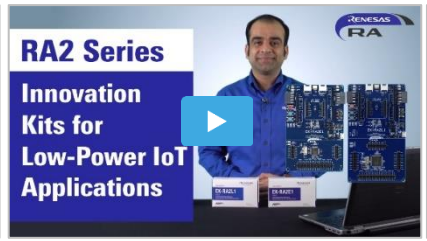
RA8 Series Kits
Intro & Unboxing



RA6 Series Kits
Intro & Unboxing



RA4 Series Kits
Intro & Unboxing



RA2 Series Kits
Intro & Unboxing

EK-RA6M4
Intro & Unboxing

EK-RA6M3
Intro & Unboxing

Available on renesas.com/ra/kits and on renesas.com/ra/<kit-name>. For example: renesas.com/ra/ek-ra6m3

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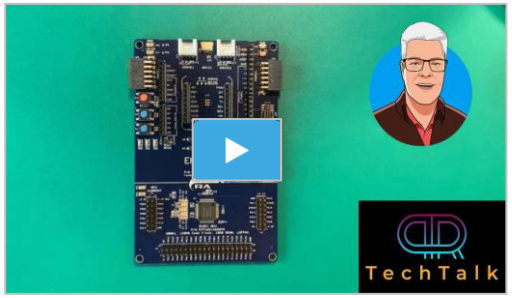
MANY USEFUL VIDEOS BY PARTNERS & DISTRIBUTORS

[Segger emWin Graphics Solution running on EK-RA6M3G]

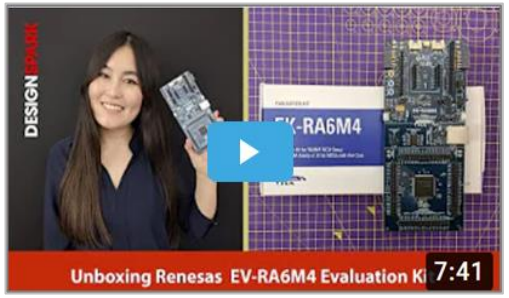
[RS Components Design Spark EK-RA6M3 Unboxing]



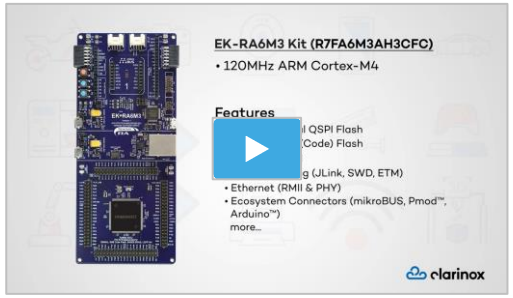
[PR TechTalk EK-RA2E1 Getting Started]

[Mouser Electronics EK-RA4M1 Engineering Bench Talk]

[Mikroe RA4M1 Clicker]



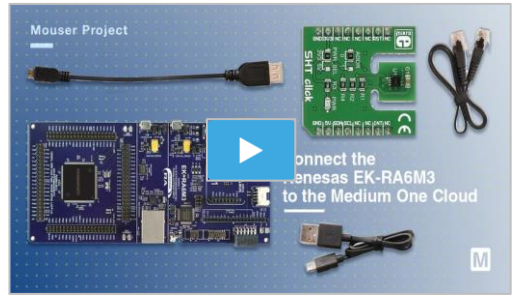
[RS Components Design Spark EK-RA6M4 Unboxing]



[EK-RA6M3 Clarinox IoT on Renesas RA MCUs]

[Dev Kit Weekly EK-RA6M3 Introduction]

[RS Components Design Spark EK-RA2L1 Unboxing]



[Mouser Electronics Connecting EK-RA6M3 to Cloud]

Sampling of videos. Click the captions to view videos.

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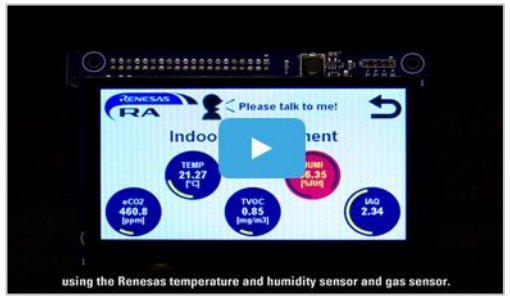
MANY USEFUL VIDEOS BY PARTNERS & DISTRIBUTORS



HMI Solutions using EK-RA6M3G

eProsima EK-RA6M5: Publisher demo with timer and LED blinking

eProsima EK-RA6M5: Service demo with LEDs

ARM Pelion Device Management for EK-RA6M3

PR TechTalk EK-RA6M3 as External Debugger

EK-RA6M3 Multizone® Security Demo

eProsima EK-RA6M5: Demo parameters

eProsima EK-RA6M5: Getting started with micro-ROS

PR TechTalk EK-RA6M3 Segger RTT installation

PR TechTalk EK-RA2L1 Getting Started

Sampling of videos. Click the captions to view videos.

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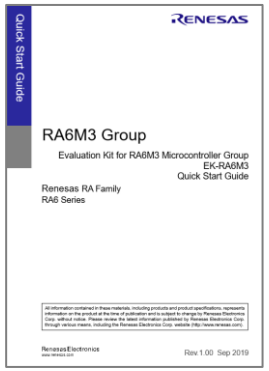
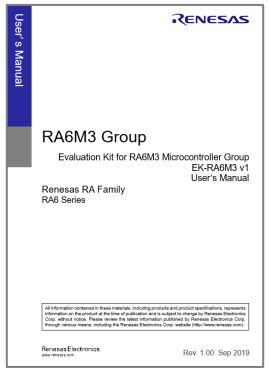
TOP NOTCH COLLATERAL – ENGINEERING

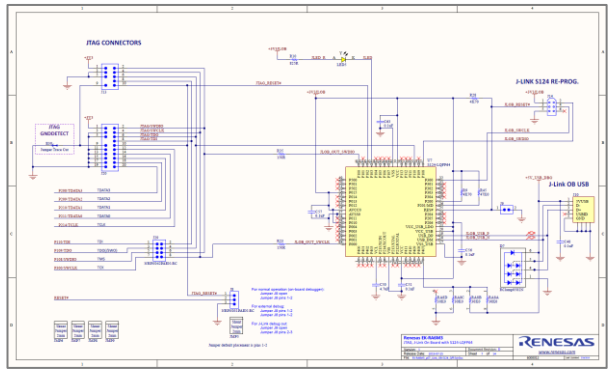
Design Package



Quick start guide

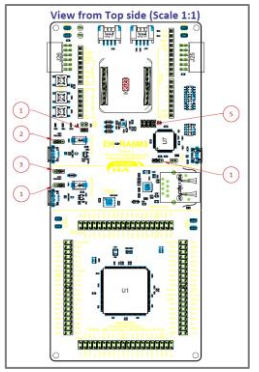


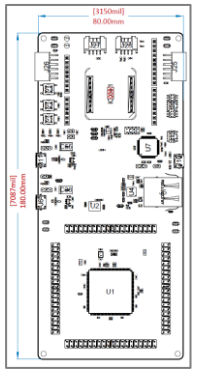
User's manual



Schematics

Bill of Materials





Design & manufacturing files

Example Projects

All items available on kit website renesas.com/ra/<kit-name>
For example: renesas.com/ra/ek-ra6m3

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GETTING STARTED IS EASY!

1. **Get your kit**
2. Familiarize with your kit
3. Download & install software & tools
4. Explore & customize example projects
5. Expand functionality

I. Choose your favorite kit

	RA MCU					Ecosystem Expansion					Debug				Connectivity							Ordering
RA MCU Kit Name	Core Frequency (Hz)	Code Flash (KB)	SRAM (KB)	Terminals	Package	PMOD	Grove	Qwiic	MicroBus	Arduino	Debug MCU	Debug OB	Debug In	Debug Out	UART, SPI, I2C	USB FS	USB HS	CAN-FD	QSPI	OSPI	Ethernet	Part Number
EK-RA8D1	480	2048	1024	224	BGA	x	x	x	x	x	RA4M2	x	x	x	x	x	x			x	x	RTK7EKA8D1S01001BE
EK-RA8M1	480	2048	1024	224	BGA	x	x	x	x	x	RA4M2	x	x	x	x	x	x	x		x	x	RTK7EKA8M1S00001BE
EK-RA6M5	200	2048	512	176	LQFP	x	x	x	x	x	S124	x	x	x	x	x	x	x	x	x	x	RTK7EKA6M5S00001BE
EK-RA6M4	200	1024	256	144	LQFP	x	x	x	x	x	S124	x	x	x	x	x			x	x	x	RTK7EKA6M4S00001BE
EK-RA6M3G	120	2048	640	176	LQFP	x	x		x	x	S124	x	x	x	x	x	x		x		x	RTK7EKA6M3S01001BU
EK-RA6M3	120	2048	640	176	LQFP	x	x		x	x	S124	x	x	x	x	x	x		x		x	RTK7EKA6M3S00001BU
EK-RA6M2	120	1024	384	144	LQFP	x					S124	x	x		x	x						RTK7EKA6M2S00001BU
EK-RA6M1	120	512	256	100	LQFP	x					S124	x	x		x	x						RTK7EKA6M1S00001BU
EK-RA6E2	200	256	40	64	LQFP	x	x	x	x	x	RA4M2	x	x	x	x	x		x	x			RTK7EKA6E2S00001BE
EK-RA4M3	100	1024	128	144	LQFP	x	x	x	x	x	S124	x	x	x	x	x			x			RTK7EKA4M3S00001BE
EK-RA4M2	100	512	64	100	LQFP	x	x	x	x	x	S124	x	x	x	x	x			x			RTK7EKA4M2S00001BE
EK-RA4M1	48	256	32	100	LQFP	x					S124	x	x		x	x						RTK7EKA4M1S00001BU
EK-RA4E2	100	128	40	64	LQFP	x	x	x	x	x	RA4M2	x	x	x	x	x		x				RTK7EKA4E2S00001BE
EK-RA2L1	48	256	32	100	LQFP	x	x	x	x	x	S124	x	x	x	x							RTK7EKA2L1S00001BE
EK-RA2E2	48	64	8	24	HWQFN	x	x	x	x	x	S124	x	x	x	x	x						RTK7EKA2E2S00001BE
EK-RA2E1	48	128	16	64	LQFP	x	x	x	x	x	S124	x	x	x	x							RTK7EKA2E1S00001BE
EK-RA2A1	48	256	32	64	LQFP	x					S124	x	x		x	x						RTK7EKA2A1S00001BU

Sampling of RA kits. Full table is available on renesas.com/ra/kits

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GETTING STARTED IS EASY!

1. **Get your kit**
2. Familiarize with your kit
3. Download & install software & tools
4. Explore & customize example projects
5. Expand functionality

II. Order it from one of the leading global or regional distributors

Sampling of distributors
(List subject to change; please refer to renesas.com/ra/<kit-name> for the list of distributors stocking the kit)

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GETTING STARTED IS EASY!

1. Get your kit
2. **Familiarize with your kit**
3. Download & install software & tools
4. Explore & customize example projects
5. Expand functionality

I. Obtain the quick start guide & user's manual for your kit from renesas.com/ra/<kit-name>

Kit Name	Kit Homepage
EK-RA8D1	renesas.com/ra/ek-ra8d1
EK-RA8M1	renesas.com/ra/ek-ra8m1
EK-RA6M5	renesas.com/ra/ek-ra6m5
EK-RA6M4	renesas.com/ra/ek-ra6m4
EK-RA6M3G	renesas.com/ra/ek-ra6m3g
EK-RA6M3	renesas.com/ra/ek-ra6m3
EK-RA6M2	renesas.com/ra/ek-ra6m2
EK-RA6M1	renesas.com/ra/ek-ra6m1
EK-RA6E2	renesas.com/ra/ek-ra6e2
EK-RA4M3	renesas.com/ra/ek-ra4m3
EK-RA4M2	renesas.com/ra/ek-ra4m2
EK-RA4M1	renesas.com/ra/ek-ra4m1
EK-RA4E2	renesas.com/ra/ek-ra4e2
EK-RA2A1	renesas.com/ra/ek-ra2a1
EK-RA2E1	renesas.com/ra/ek-ra2e1
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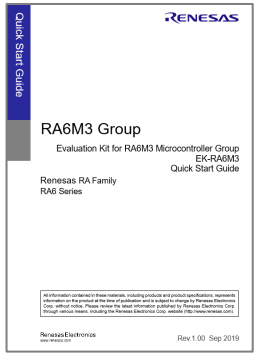
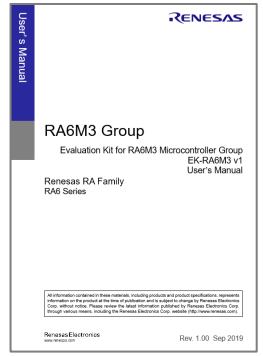


Quick start guide



User's manual

II. Run the Quick Start (QS) example project (EP) that is pre-programmed on the kit

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GETTING STARTED IS EASY!

1. Get your kit
2. Familiarize with your kit
3. **Download & install software & tools**
4. Explore & customize example projects
5. Expand functionality

I. Download & install software & tools using the *FSP with e² studio installer* that includes:

- **Flexible Software Package** – includes Hardware Abstraction Layer (HAL) drivers, Board Support Package (BSP), libraries, etc.
- **e2 studio** – Integrated Development Environment

Item	Download page
FSP with e² studio installer	renesas.com/ra/fsp

II. Need help anytime?

- Ask questions, get answers from experts & collaborate with community renesas.com/ra/forum

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GETTING STARTED IS EASY!

1. Get your kit
2. Familiarize with your kit
3. Download & install software & tools
4. **Explore & customize example projects**
5. Expand functionality

I. Explore & customize Quick Start Example Project

- Visit kit page, for example, EK-RA6M3 webpage renesas.com/ra/ek-ra6m3 and scroll down to "Documentation & Downloads" section
- Download EK-RA6M3 Example Project Bundle
- Extract the downloaded file xxxx-ek-ra6m3-exampleprojects.zip
- Browse to xxxx-ek-ra6m3-exampleprojects\ek_ra6m3_quickstart\quickstart_ek_ra6m3_ep to locate the source code of the QS EP
- Refer to the quick start guide for instructions on modifying, rebuilding & programming the QS EP on your kit

II. Explore & customize additional Example Projects

- In the EK-RA6M3 Example Project Bundle downloaded in the step above, browse to xxxx-ek-ra6m3-exampleprojects\ek_ra6m3\ to locate the example projects provided for this kit
- Open xxxx-ek-ra6m3-exampleprojects.pdf to view the list of tool chain supported for each example project and additional reference documents

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GETTING STARTED IS EASY!

1. Get your kit
2. Familiarize with your kit
3. Download & install software & tools
4. Explore & customize example projects
5. **Expand functionality**

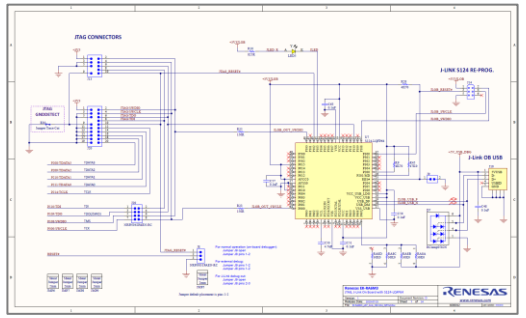
I. Choose from hundreds of add-on modules from the supported ecosystems to build custom proof-of-concept hardware

ARDUINO, qwiic, Grove, Pmod Peripheral Modules, mikroBUS™ a rocking new pinout standard!

II. Choose from numerous software IPs from Renesas ecosystem partners for additional features

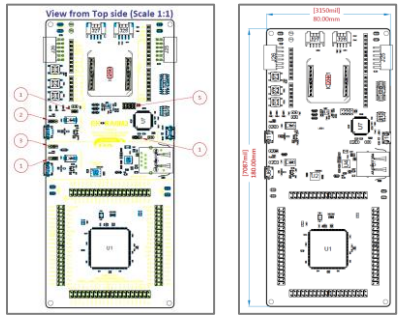
Microsoft Azure, aws, SEGGER, altia, DSP CONCEPTS, sensory, AliOS Things, SECURE RF Securing the Internet of Things, CMX SYSTEMS

III. Refer to the kit design package to develop your custom board with feature enhancements



Schematics

BOM



Design & manufacturing files

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USEFUL RESOURCES

Ordering & Documentation

User Manual, Design Package, Quick Start Guide
renesas.com/ra/<kit-name>

Example Projects

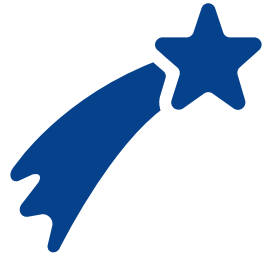
Access FSP and Example Projects for RA Kits
renesas.com/ra/kitEP

Video Library

Learn more about RA MCU, Kits, FSP, and Tools
renesas.com/ra/videos

Support Community

Ask questions from experts
Collaborate with community
renesas.com/ra/forum



Feedback & Feature Requests

Tell us how we are doing and how can enhance your experience
renesas.com/ra/kitFeedback

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Unmatched Innovation Experience

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