32-BIT MCU FAMILY
RENESAS RA6E2 GROUP

Entry-Line 200MHz Arm® Cortex®-M33 General Purpose Microcontroller

The RA6E2 group is the newest entry-line microcontroller in the RA6 series based on the 200 MHz Arm® Cortex®-M33 core with TrustZone.

RA6E2 MCUs offer best-in-class performance as an entry-line microcontroller while pursuing cost optimization. Pin and peripheral compatibility with the RA4E2 group makes it ideal for applications requiring higher performance, small footprint, and lower pin counts.

Key Features

- 200MHz Arm Cortex-M33 with TrustZone
- 128KB - 256KB Flash memory and 40KB SRAM
- 4KB Data Flash to store data as in EEPROM
- 1KB Standby SRAM
- Scalable from 32-pin to 64-pin packages
- USB 2.0 Full Speed
- CAN FD, I3C
- HDMI CEC, SSI
- Quad SPI
- 12-bit A/D Converter
- 12-bit D/A Converter
- General PWM Timer

Target Applications

- General purpose
- Sensor applications (Medical, Industrial, Wearable)
- Communication/Network module
- Home appliances
- Fingerprint reader module
- Home entertainment (Voice command/recognition)

Block Diagram

RA6E2

Memory
- Code Flash (128KB, 256KB)
- SRAM 32KB Parity
- SRAM 8KB ECC
- Data Flash (4KB)
- Standby SRAM (1KB)

Analogue
- 12-bit ADC (12ch)
- 12-bit DAC (2ch)
- Temperature Sensor

Timers
- GPT16E (6ch)
- Low-power GPT (2ch)
- WDT
- RTC, Calendar

Communication
- USB 2.0 FS Device x 1 *
- CAN FD x 1
- I3C x 1
- SPI x 2
- HDMI CEC x 1
- SSIO x 1

System
- DMA (8ch), DTC, ELC
- Clock Generation
- On-Chip Oscillator
- HOCO (16/18/20MHz)
- LOCO (32KHz)
- ILOCO (15KHz)
- Low-power Modes
- Interrupt Controller
- TrustZone

Safety
- Memory Protection Unit
- SRAM/Parity Check
- ECC SRAM
- Clock Frequency
- Accuracy Measurement
- Clock Calibration
- NMI
- Data Operation Circuit
- Flash Area Protection
- ADC Self Test

Security
- 128-bit Unique ID
- TrustZone

Package
- LQFP 64
- BG A 64, 64
- QFN 32, 48

* Excluding 32-pin package
RENASAS RA6E2 GROUP

Software Package

The Renesas Flexible Software Package (FSP) is designed to provide easy-to-use, scalable, high-quality software for embedded system designs using the Renesas RA family. The FSP is based on an open software ecosystem of production-ready drivers, supporting Azure® RTOS, FreeRTOS™ or bare-metal programming. It also includes a selection of other middleware stacks, providing great flexibility for migrating your code from older systems or developing new applications from scratch.

Tools and Support

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

Evaluation Kit

- Effortlessly evaluate key features of RA6E2 MCU group and develop sophisticated IoT and embedded systems applications
- On-board debugging using SEGGER-J-Link®
- Order the kit and download documentation, design package, development tools and software at: renesas.com/ek-ra6e2
- Orderable part number: RTK7EKA6E2S00001BE

Ordering References

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<tr>
<th>Flash (RAM)</th>
<th>DataFlash</th>
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<tr>
<td>256KB (40KB)</td>
<td>R7FA6E2BB3CNE</td>
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<tr>
<td>128KB (40KB)</td>
<td>R7FA6E2BB2CBB</td>
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<tr>
<td>64KB</td>
<td>R7FA6E2BB2CBC</td>
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<table>
<thead>
<tr>
<th>Pin Count</th>
<th>Package</th>
<th>Size (body)</th>
<th>Pitch</th>
<th>Operating Temperature</th>
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<tbody>
<tr>
<td>32pin</td>
<td>QFN</td>
<td>5x5mm</td>
<td>0.5mm</td>
<td>-40 to +105°C</td>
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<tr>
<td>36pin</td>
<td>BGA</td>
<td>4x4mm</td>
<td>0.5mm</td>
<td>-40 to +85°C</td>
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<td>48pin</td>
<td>QFN</td>
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<td>LQFP</td>
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<td>-40 to +105°C</td>
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For more details, please visit: renesas.com/ra6e2

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Evaluation Kit: RTK7EKA6E2S00001BE