

[New release]

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Rev.1.00

EK-RE01 256KB

Aug. 01, 2020

- Evaluation Kit for Ultra-Low Power Embedded Controller RE01 256KB Group -

Outline

By employing Renesas's exclusive SOTB™ process technology, the RE family embedded controllers realize both ultra-low current consumption in both active and standby mode and high speed operation (64 MHz) at low voltage (1.62 V), which is impossible to achieve with conventional processes. We have launched the evaluation kit EK-RE01 256KB for the RE family RE01 256KB Group, which incorporates an Arm Cortex®-M0+ core, with a maximum operating frequency of 64 MHz, and low-power flash memory of 256 KB.

1. Product Overview

The EK-RE01 256KB is an evaluation kit that allows you to evaluate all the peripheral functions of the RE01 256KB. In addition to this evaluation kit, we provide sample codes that you can use to check the rapid startup hardware function for energy harvesting or to measure the MCU current consumption easily. These sample codes help you to develop a system that can process multiple sensor data in real time, even in applications powered by small batteries or energy harvesting power sources that can supply only a small amount of current.

This evaluation kit comes with ultra-low-Iq DC/DC converters ISL9123 which can be used. By using these ISL9123s to supply voltage to the internal circuits of the RE microcontroller, the supply current during operation can be reduced from 25 μ A/MHz to 12 μ A/MHz, assisting a user to develop an ultra-low-power system.

It comes with the following hardware required for development:

- Hardware
 - Main board
 - Solar panel
 - Pmod™-compatible, low-power LCD (Memory-In-Pixel LCD) expansion board
 - USB cable (Type-A male - Micro-B male)



Figure 1 EK-RE01 256KB

➤ Software

- Driver package

- RE01 256KB CMSIS Driver Package (R01AN5473)

This is available from the following URL:

<https://www.renesas.com/search/keyword-search.html#genre=sampleprogram&q=r01an5473>

- RE01 Getting Started Guide to Development Using CMSIS Package (R01AN4660)

This is available from the following URL:

<https://www.renesas.com/search/keyword-search.html#genre=document&q=r01an4660>

- Sample code

- R_GDT driver sample code (R01AN4755)

This is a sample code for checking operation of LCD display demonstration by 2D graphics hardware engine. It is available from the following URL:

<https://www.renesas.com/search/keyword-search.html#genre=sampleprogram&q=r01an4755>

- Maintenance free power management by RE energy harvesting controller (R01AN4837)

This is a sample code for power management in energy harvesting. It is available from the following URL:

<https://www.renesas.com/search/keyword-search.html#genre=sampleprogram&q=r01an4837>

- R_LPM driver sample code (R01AN5509)

This is a sample code for current measurement. It is available from the following URL:

<https://www.renesas.com/search/keyword-search.html#genre=sampleprogram&q=r01an5509>

- Sample code to reduce power consumption by using an external DC/DC converter (R01AN5424)

This is a sample code is to experiment the external DCDC mode to reduce the active power consumption. It is available from the following URL:

<https://www.renesas.com/search/keyword-search.html#genre=sampleprogram&q=r01an5424>

For the sample code for various peripherals and details of the device driver APIs, refer to "Software Development Kit" in the following URL:

https://www.renesas.com/re_tools

For details of EK-RE01 256KB, refer to the URL below:

- EK-RE01 256KB Product Page

<https://www.renesas.com/ek-re01-256kb>

2. Features

EK-RE01 256KB has the following features:

- Allows evaluation of an energy harvest system that uses generating elements such as solar, temperature difference, and vibration.
- Connects user hardware at the Pmod™ interface and Arduino-compatible interface.
- Equipped with an on-board debugger that allows firmware debugging just with the included USB cable.

[Main specifications]

- Target device: RE01 Group Flash256KB 100-pin LQFP (R7F0E01182CFP)
- On-board debugger: SEGGER J-Link® OB
- Debugging interface: MIPI-20 pin box header for IAR I-jet / SEGGER J-Link / Renesas E2 emulator
- Ultra-low Iq DC/DC converter for supplying voltage to the internal circuit ISL9123 x 2
- Super capacitor as an energy storage
- External secondary battery interface
- Solar panel interface
- Arduino-compatible interface
- Reset switch x 1
- User switch x 2
- FPC connector for the parallel-communication MIP LCD controller (MLCD): 0.3-mm pitch, 19-pin x 1
- USB-serial conversion interface
- Pmod™ interface x 1
- On-board memory SPI serial flash: 64 Mbits

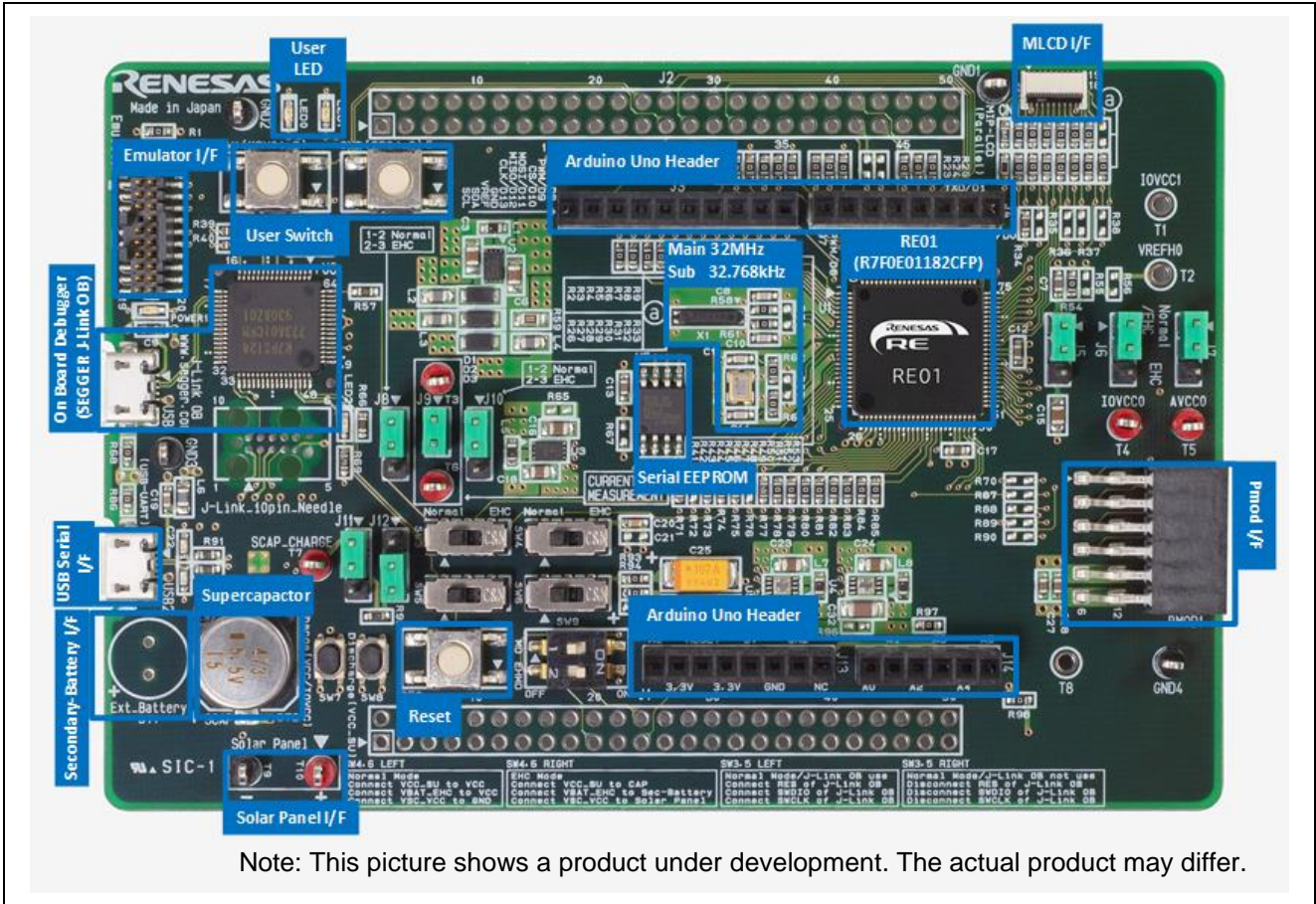


Figure 2. Appearance of the EK-RE01 256KB

3. Development Environment

The following development tools are supported.

	IDE	IAR EWARM	Renesas e ² studio
	Compiler	IAR C/C++	GCC ARM
Emulators	I-Jet	✓	NA
	Segger J-Link	✓	✓
	Renesas E2/E2 Lite	NA	✓

✓: Supported, NA: Not supported

For details, refer to the RE Family Development Environment web page below:

https://www.renesas.com/re_tools

4. Purchasing the Product

For product ordering, contact your local Renesas Electronics sales office or distributor with the following information.

For product pricing, make inquiries in the same manner.

Product name	Orderable part number
EK-RE01 256KB	RTK70E0118S00000BJ

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Aug.01.20	-	First edition issued

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