RENESAS
BIG IDEAS FOR EVERY SPACE

RENESAS RE

The World's Most Energy Efficient MCUs with Arm® Cortex® M Core based on SOTB™ process

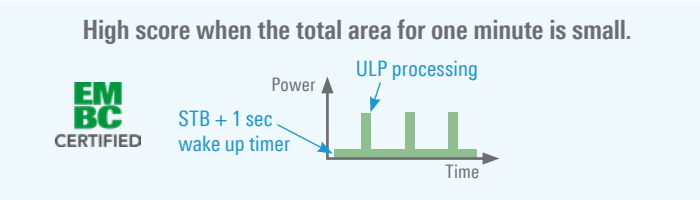
RE01 256KB MCU GROUP

Delivering Ultra-Low Power with 705 ULPMark™-CP Score Certified by EEMBC

The RE01 256KB is developed based on the Silicon On Thin Buried Oxide (SOTB™) process technology, realizing ultra-low current consumption in both active and standby mode and enabling high-speed operation (64MHz) at low voltage (1.62V) , which is impossible to achieve with conventional bulk silicon process.

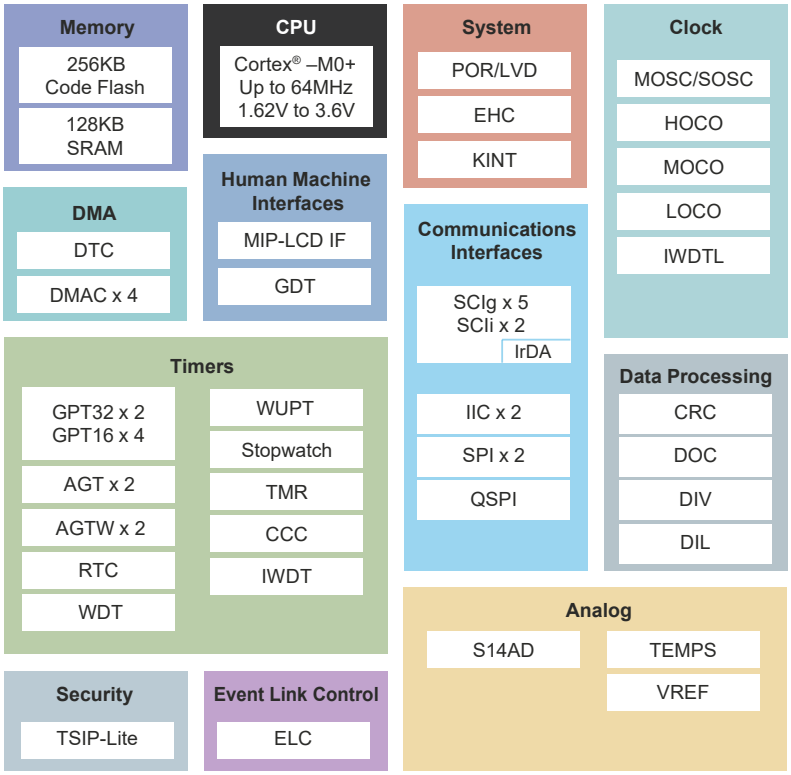
Key Benefits

- Certified with the highest score of 705 for the ULPMark-CP by the EEMBC ULPMark™ benchmark, proving it as the industry leading energy efficient MCU.



- Significantly extend battery life and deliver high performance with small battery size.
- On-chip energy harvesting controller can eliminate a battery completely in achieving a maintenance-free system.
- High-speed operation of many functions simultaneously at a low voltage.
- Strong security with Trusted Secure IP.
- Realize small form factor and light weight due to a significant reduction of battery size.
- Reduce current consumption further when used with ISL9123 to support always on sensing applications.

Block Diagram



Key Features

- 32-bit CPU Arm® Cortex®-M Core (up to 64MHz)
- 256kB Flash Memory and 128kB SRAM
- Run 25µA/MHz (12µA/MHz with ext. DC/DC), Standby 400nA
- 14-bit ADC 4µA & Flash Programming 600µA
- Energy Harvesting Control Circuit
- Memory in Pixel Display Parallel Interface
- 2D Graphics Engine
- Deep Standby with RTC 300nA at 1.8V
- 32-bit Wake Up Timer and Low Power Timer (WUPT)
- Trusted Secure IP

Applications

- Smart Home/Building
- Structural Health Monitoring
- Wearable
- Tracker
- Smart Agriculture
- Healthcare

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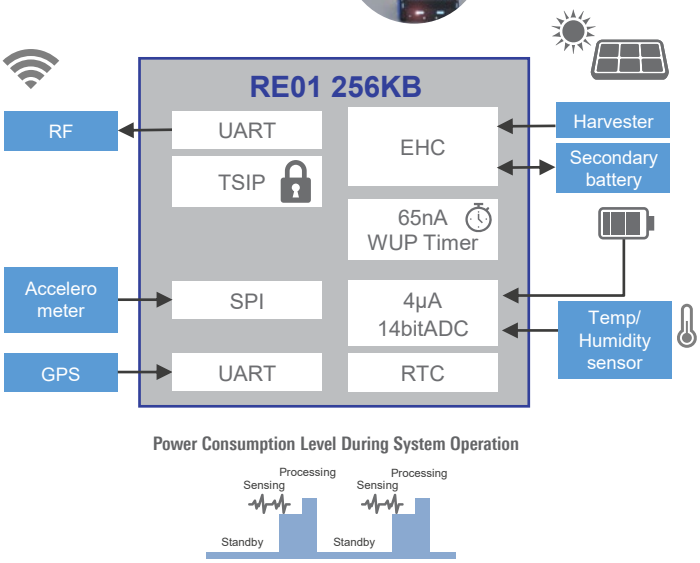
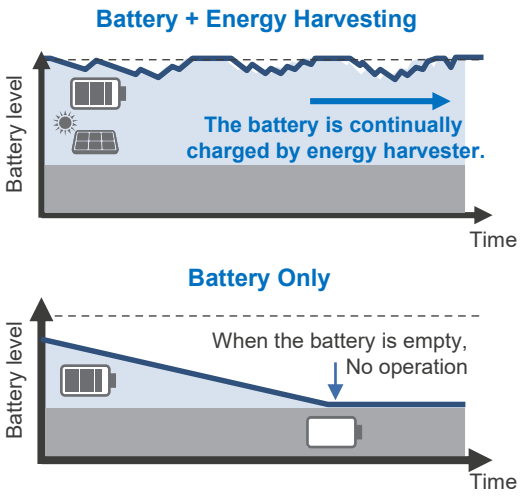
Application Example – GPS Tracker





Development Tools

IDE	Renesas e²studio	IAR EWARM
Compiler	■ GCC GNU Compiler	■ IAR Arm Compiler
Debugger	■ Renesas E2/E2 Lite ■ SEGGER J-Link	■ IAR I-Jet ■ SEGGER J-Link
Programmer	■ Renesas PG-FP6, RFP ■ SEGGER J-Flash, Flasher	
Driver	■ Arm CMSIS Driver ■ Renesas HAL Driver	
Sample code	■ Driver sample code ■ Low level code	

Evaluation Kit

EK-RE01 256KB supports MCU current measurement, energy harvesting evaluation and sensor connectivity expansion through PMOD or/and Arduino interfaces. Available stocks are found at the website.

EK-RE01 256KB

RTK70E0118S00000BJ

Kit includes

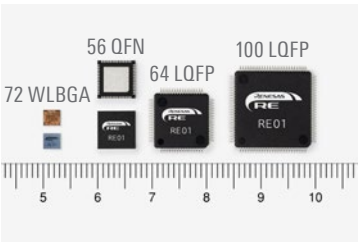
- Main board
- Solar panel
- MIP-LCD expansion board
- USB cable(type-A male to micro-B male)

Web download

- Software tool
- Sample code
- User's manual
- Schematics
- Gerber data
- BOM file

Ordering References

	100 LQFP	72 WLBGA	64 LQFP	56 QFN
w/ TSIP	R7F0E01182CFP	R7F0E01182DBR	R7F0E01182CFM	R7F0E01182DNG
w/o TSIP	R7F0E01082CFP	R7F0E01082DBR	R7F0E01082CFM	R7F0E01082DNG
Size	14mm x 14mm	3.16mm x 2.88 mm	10mm x 10mm	7mm x 7mm
Pin pitch	0.5mm	0.3mm	0.5mm	0.4mm



For more details, please visit **www.renesas.com/RE**

Corporate Headquarters
TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Contact information
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