

**REAL TIME CLOCK MODULE (I<sup>2</sup>C-Bus)**  
**Built-in 32.768 kHz-DTCXO, High Stability**  
**and Power Switching**

**RX 8900 SA / CE**

- Built in frequency adjusted 32.768 kHz crystal unit and DTCXO.
- Interface Type : I<sup>2</sup>C-Bus interface (400kHz)
- Interface voltage range : 2.5 V to 5.5 V
- Temp. compensated voltage range : 2.0 V to 5.5 V
- Clock supply voltage range : 1.6 V to 5.5 V
- Selectable clock output (32.768 kHz, 1024 Hz, 1 Hz)
- The various functions include full calendar, alarm, timer, temp. sensor function.
- Epson prepared Linux driver for development.  
[\(http://www5.epsondevice.com/en/information/support/linux\\_rtc/\)](http://www5.epsondevice.com/en/information/support/linux_rtc/)
- The registered trademark Linux® is used pursuant to a sublicense from LMI (Linux Mark Institute)
- The I<sup>2</sup>C-Bus is a trademark of NXP Semiconductors.



Product Number (Please contact us)  
 RX8900SA : X1B000292xxx00  
 RX8900CE UA : X1B000301000100  
 RX8900CE UB : X1B000301000200  
 RX8900CE UC : X1B000301000300

CE



RX8900SA  
(10.1 × 7.4 × 3.3 mm)



RX8900CE  
(3.2 × 2.5 × 1.0 mm)

Actual size

RX8900SA



RX8900CE



**Block diagram**



**Overview**

- **High Stability**
  - UA ± 3.4 × 10<sup>-6</sup> / -40 °C to +85 °C (Equivalent to ±9 seconds of month deviation)
  - UB ± 5.0 × 10<sup>-6</sup> / -40 °C to +85 °C (Equivalent to ±13 seconds of month deviation)
  - UC ± 5.0 × 10<sup>-6</sup> / -30 °C to +70 °C (Equivalent to ±13 seconds of month deviation)
- **32.768 kHz frequency output function**
  - FOUT pin output (C-MOS output), CL=30 pF
  - Output selectable: 32.768 kHz, 1024 Hz, 1 Hz
- **Available automatic battery backup switch-over function**
  - Charge from VDD to backup battery connected to VBAT is possible. VDD voltage drop (VDET3) detection and automatically switches to the backup battery. This circuit is optimal to backup with a secondary battery and a large capacitor.
- **Timer function**
  - Timer period is adjustable in 1/4096 second from 4095 minutes.
- **Alarm function**
  - Available dual-alarm, weekly and monthly.
- **Temp. sensor function**
  - Available readout temperature data from embedded temp sensor. (Bank\_2\_Add17h)

**Pin Function**

Signal Name	I / O	Function
T1(CE)	input	Use by the manufacture for testing. (Do not connect externally.)
SCL	input	Serial clock input pin.
FOUT	Output	The pin outputs the reference clock signal. (CMOS output)
VBAT	-	Battery supply. This pin has charge capability to backup battery.
VDD	-	Connected to a positive power supply
FOE	input	The input pin for the FOUT output control.
/INT	Output	Interrupt output (N-ch. open drain).
GND	-	Connected to a ground
T2(VPP)	-	Use by the manufacture for testing. (Do not connect externally.)
SDA	I/O	Data input and output pin.

**Terminal connection / External dimensions**

(Unit:mm)



The metal case inside of the molding compound may be exposed on the top or bottom of this product. This purely cosmetic and does not have any effect on quality, reliability or electrical specs.

**Specifications (characteristics)**

\* Refer to application manual for details.

■ Electrical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Operating voltage	VDD	Interface voltage	2.5	3.0	5.5	V	
Temp. compensated Voltage	VTEM	Temp. compensated voltage	2.0	3.0	5.5	V	
Clock supply voltage	VCLK	Internal clock	1.6	3.0	5.5	V	
Operating temperature	TOPR	No condensation	-40	+25	+85*1	°C	
Stability	Δf/f	UA	Ta = -40 °C to +85 °C		±3.4	*2	
		UB	Ta = -40 °C to +85 °C		±5.0	*3	
		UC	Ta = -30 °C to +70 °C				
Current consumption (1)	IDD1	fSCL=0Hz, /INT=VDD, FOE=GND, VDD=VBAT, FOUT: OFF	VDD = 5V	-	0.72	1.5	μA
		Temp. Compensation interval 2.0 s.	VDD = 3V	-	0.70	1.4	

\*1) Please contact us about +85 °C < TOPR

\*2) Equivalent to ±9 seconds of month deviation. \*3) Equivalent to ±13 seconds of month deviation.

■ 32.768 kHz-DTCXO Frequency temperature characteristics (Example)



## PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.





## WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than meet customer needs,

Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

### ► Explanation of the mark that are using it for the catalog

	► Pb free.
	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc ).

## Notice

- This material is subject to change without notice.
- Any part of this material may not be reproduced or duplicated in any form or any means without the written permission of Seiko Epson.
- The information about applied data, circuitry, software, usage, etc. written in this material is intended for reference only. Seiko Epson does not assume any liability for the occurrence of customer damage or infringing on any patent or copyright of a third party. This material does not authorize the licensing for any patent or intellectual copyrights.
- When exporting the products or technology described in this material, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations.
- You are requested not to use the products (and any technical information furnished, if any) for the development and/or manufacture of weapon of mass destruction or for other military purposes. You are also requested that you would not make the products available to any third party who may use the products for such prohibited purposes.
- These products are intended for general use in electronic equipment. When using them in specific applications that require extremely high reliability, such as the applications stated below, you must obtain permission from Seiko Epson in advance.  
/ Space equipment (artificial satellites, rockets, etc.) / Transportation vehicles and related (automobiles, aircraft, trains, vessels, etc.) / Medical instruments to sustain life / Submarine transmitters / Power stations and related / Fire work equipment and security equipment / traffic control equipment / and others requiring equivalent reliability.
- All brands or product names mentioned herein are trademarks and/or registered trademarks of their respective.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Epson:

[RX8900SA UB3 PURE SN](#) [RX8900SA UA0 PURE SN](#) [RX8900SA UA3 PURE SN](#) [RX8900SA UC0 PURE SN](#)  
[RX8900SA UB0 PURE SN](#) [RX8900SA UC3 PURE SN](#) [RX8900CE UA3](#) [RX8900CE UA0](#) [RX8900CE:UB3](#)  
[RX8900CEUAX](#)



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.