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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



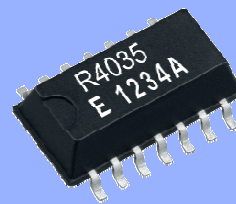
**REAL TIME CLOCK MODULE (SPI-Bus)**  
**High-Stability Frequency with Built in Timestamp and Power Switching**

**RX-4035 SA/LC**

- Built-in 32.768 kHz crystal unit : Frequency adjusted for high accuracy.  
 $(\pm 5 \times 10^{-6} / T_a = +25^\circ\text{C})$
- Interface Type : SPI-Bus (1MHz)
- Operating voltage range : 2.4 V to 5.5 V
- Timekeeping voltage range : 1.0 V to 5.5 V
- Low backup current : 350 nA (SA) 400 nA (LC) / 3 V (Typ.)
- Event detection and Time stamp : One-shot full timestamp and interrupt.
- Dual event detection ports : Each terminal has a de-bounce circuit.
- Auto power switching functions : When  $V_{DD}$  deteriorates than 2.4V, internal source is switched to  $V_{BAT}$ .



Product Number (Please contact us)  
 RX-4035SA B: X1B000192000100  
 RX-4035SA AC: X1B000192000200  
 RX-4035SA AA: X1B000192000300  
 RX-4035LC B: X1B000202000100  
 RX-4035LC AC: X1B000202000200  
 RX-4035LC AA: X1B000202000300

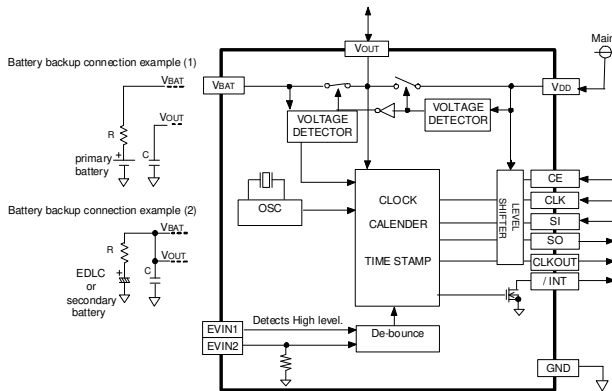


Actual size

RX-4035SA

RX-4035LC

**Block diagram**



**Overview**

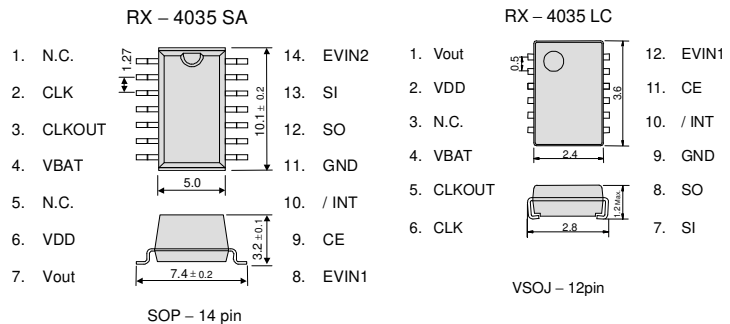
- **The event detection and Timestamp function**  
 Dual event detection terminals.  
 Selectable de-bounce time 35ms or 2s.  
 Available event detection interrupt output.
- **Power switching functions.**
  - An external diode is unnecessary to have a reverse current prevention switch built-in in the VBAT side to connect a primary cell to.
  - When  $V_{DD}$  is less than 2.4V, an internal source is switched to  $V_{BAT}$ .
  - Note: When the supply from  $V_{BAT}$ , SPI interface are disabled.
- **Alarm, Periodic interrupt, 32.768kHz clock output.**
  - Available monthly-alarm and weekly-alarm.
  - Interrupt period are selectable from 2Hz to Monthly.
  - CLKOUT outputs 32.768kHz clock powered by  $V_{DD}$ .

**Pin function**

Signal Name	Input / Output	Function
VBAT	—	Power supply for backup.
Vout	Output	Switched power out. (maximum output current 20mA)
CE	Input	SPI chip enable.
CLK	Input	SPI serial clock.
SO	Output	SPI data out.
SI	Input	SPI data in.
GND	—	Ground
EVIN1	Input	Event detection input 1
EVIN2	Input	Event detection input 2
/ INT	Output	Interrupt out.
CLKOUT	Output	32.768kHz output. (CMOS. Can not inhibit.)
N.C.	—	Do not connect.
VDD	—	Main power supply.

**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.

**\*Stop using the glue**

Any glue must never use it after soldering LC-package to a circuit board. This product has glass on the back side of a package. When glue invasions between circuit board side and glass side, then glass cracks by thermal expansion of glue. In this case a crystal oscillation stops. Consider glue abolition or glue do not touch to LC-package

**Specifications (characteristics)**

\* Refer to application manual for details.

**Recommended Operating Conditions**

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating voltage	$V_{ACCESS}$	$V_{DD}$	2.4	3.0	5.5	V
Time keeping voltage	$V_{CLK}$	$V_{BAT}$	1.0	3.0	5.5	V
Operating temperature	$T_{OPR}$	—	-40	+25	+85	°C
Storage temperature	$T_{STG}$	—	-55	—	+125	°C

**Frequency characteristics**

Item	Symbol	Conditions	Rating	Unit
Frequency tolerance	$\Delta f / f$	$T_a = +25^\circ\text{C}$ $V_{BAT} = 3.0\text{ V}$	B: $5 \pm 23^{*1}$ AA: $5 \pm 5^{*2}$ AC: $0 \pm 5^{*2}$	$\times 10^{-6}$
Oscillation start-up time	$t_{STA}$	$T_a = +25^\circ\text{C}$ $V_{DD} = 3.0\text{ V}$	1 Max.	s
Frequency / voltage characteristics	$f / V$	$T_a = +25^\circ\text{C}$ $V_{DD} = 2.4\text{ V to } 5.5\text{ V}$	$\pm 1$ Max.	$\times 10^{-6}$

\*1) Equivalent to 1 minute of monthly deviation (excluding offset.)  
 \*2) Equivalent to 13 seconds of monthly deviation (excluding offset.)

**Current consumption characteristics**

$T_a = -40^\circ\text{C to } +85^\circ\text{C}$

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Consumption	$I_{BAT}$	RX-4035SA $V_{BAT} = 3.0\text{ V}, V_{DD} = 0.0\text{ V}$ $CE = 0\text{ V}, CLKOUT = \text{open}$	-	350	1200	nA
		RX-4035LC $V_{BAT} = 3.0\text{ V}, V_{DD} = 0.0\text{ V}$ $CE = 0\text{ V}, CLKOUT = \text{open}$	-	400		
	$I_{DD}$	$V_{DD} = 3.0\text{ V}$ $CE = 0\text{ V}$ $CLKOUT = \text{open}$	-	1.40	2.50	$\mu\text{A}$

**Power supply detection voltage**

$T_a = -40^\circ\text{C to } +85^\circ\text{C}$

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Voltage of low battery detection	$V_{LOW}$	-	1.10	1.25	1.40	V
Power switching voltage ( $V_{DD}$ to $V_{BAT}$ )	$V_{D2B}$	$+25^\circ\text{C}$	2.328	2.40	2.472	V



## 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 ).

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