

REAL TIME CLOCK MODULE (I²C-Bus)

High-Stability Frequency with Built in Timestamp and Power Switching

RX-8035SA / LC

- Built-in 32.768 kHz crystal unit
- Frequency adjusted for high accuracy.
($\pm 5 \times 10^{-6} / T_a = +25^\circ C$)
- Interface Type
- Operating voltage range
- Wide voltage for Timekeeping.
- Low backup current
- Event detection and Time stamp
- Dual event detection ports
- Auto power switching functions
- Dual Alarm, Periodic interruption.
- I²C-Bus Interface (400kHz)
- 2.4 V to 5.5 V
- 1.0 V to 5.5 V
- 350 nA (SA) 400 nA (LC) / 3 V (Typ.)
- One-shot full timestamp and interrupt.
- Each terminal has a de-bounce circuit.
- It switches VDD and VBAT, automatically.



RX-8035SA

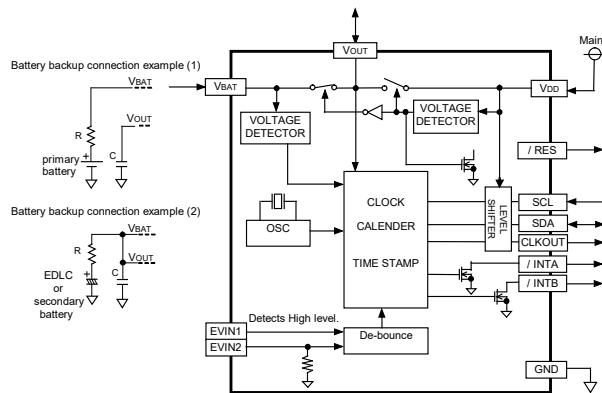


RX-8035LC

Product Number

- RX-8035SA B : X1B000172000100
- RX-8035SA AC : X1B000172000200
- RX-8035SA AA : X1B000172000300
- RX-8035LC B : X1B000182000100
- RX-8035LC AC : X1B000182000200
- RX-8035LC AA : X1B000182000300

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.

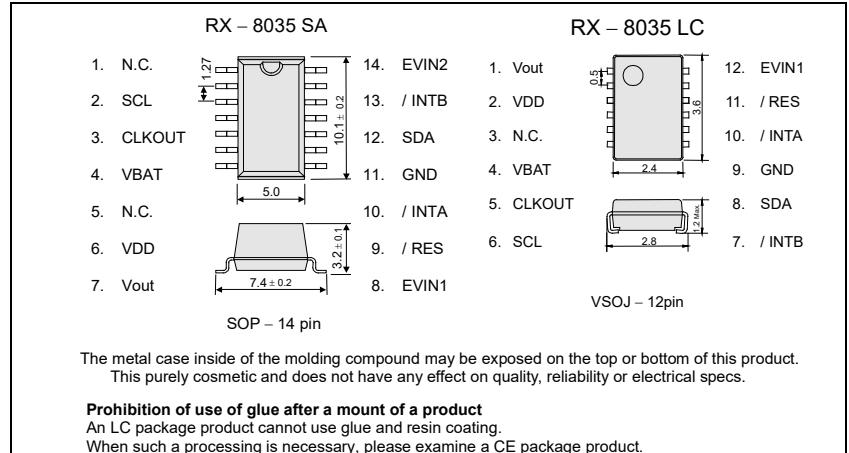
- An external diode is unnecessary to have a reverse current prevention switch built-in in the VBAT side to connect a primary cell to.
- When V_{DD} is less than 2.4V, an internal source is switched to V_{BAT}, and /RES is Low level. When V_{DD} voltage rises to higher than 2.52V, an internal source is switched to V_{DD}, and /RES is released with 105ms delay.
- Note: When the supply from V_{BAT}, SCL and SDA are disabled.
- Alarm, Periodic interrupt, 32.768kHz clock output.**
• Available monthly-alarm and weekly- Dual alarm.
• Interrupt period are selectable from 2Hz to Monthly.
• CLKOUT outputs 32.768kHz, it powered from V_{DD}.

Pin function

Signal Name	Input / Output	Function
SCL	Input	I ² C serial clock.
SDA	In/Out	I ² C data in/out.
V _{DD}	—	Main power supply.
V _{BAT}	—	Power supply for backup.
V _{OUT}	Output	Switched power out. (maximum output current 20mA)
/RES	Output	V _{DD} voltage state.
GND	—	Ground
EVIN1	Input	Event detection input 1
EVIN2	Input	Event detection input 2
/INTA	Output	Interrupt out A.
/INTB	Output	Interrupt out B.
CLKOUT	Output	32.768kHz output. (CMOS. Can not inhibit.)
N.C.	—	Do not connect.

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.

Prohibition of use of glue after a mount of a product

An LC package product cannot use glue and resin coating.

When such a processing is necessary, please examine a CE package product.

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°C V _{BAT} = 3.0 V	B: 5 ± 23 *1) AA: 5 ± 5 *2) AC: 0 ± 5 *2)	× 10 ⁻⁶
Oscillation start-up time	t _{STA}	T _a = +25 °C V _{DD} = 3.0 V	1 Max.	s
Frequency / voltage characteristics	f / V	T _a = +25 °C V _{DD} = 2.4 V to 5.5 V	± 1 Max.	× 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

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Consumption	IBAT	RX-8035SA V _{BAT} = 3.0V, V _{DD} = 0.0V SCL=SDA = GND	-	350	1200	nA
		RX-8035LC V _{BAT} = 3.0V, V _{DD} = 0.0V SCL=SDA = GND		400		
	IDD	V _{DD} = 3.0V SCL=SDA = GND CLKOUT = open	-	1.40	2.50	μA

Power supply detection voltage

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Voltage of low battery voltage.	V _{LOW}	-	1.10	1.25	1.40	V
Power switching voltage (V _{DD} to V _{BAT})	V _{D2B}	+25 °C	2.328	2.40	2.472	V

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	► 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 general equipment.
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