

High-Stability Frequency with Built in Timestamp and Power Switching

I²C-Bus REAL TIME CLOCK MODULE **NEW**

RX-8035 SA/LC

- Built-in 32.768 kHz crystal unit : Frequency adjusted for high accuracy. ($\pm 5 \times 10^{-5} / T_a = +25^\circ\text{C}$)
- Interface Type : I²C-Bus Interface (400kHz)
- 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 VDD deteriorates than 2.4V, internal source is switched to VBAT.

The I²C-Bus is a trademark of NXP Semiconductors



Product Number (Please contact us)
RX-8035SA: X1B000172xxxx00
RX-8035LC: X1B000182xxxx00



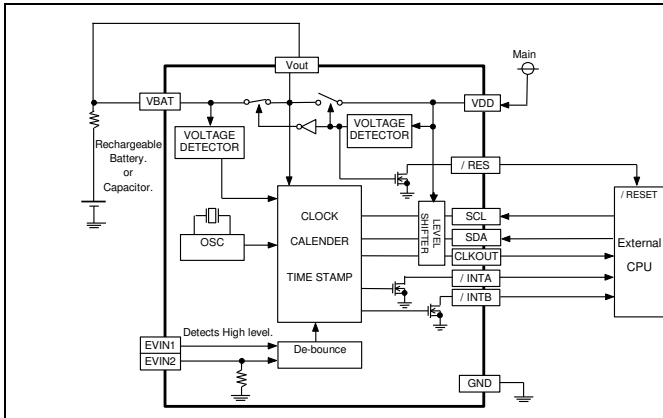
Actual size

RX-8035SA

RX-8035LC



Block diagram



Overview

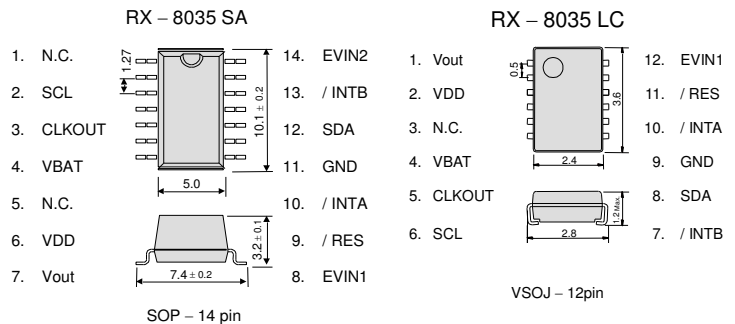
- **The event detection and Timestamp function**
 Dual event detection terminals.
 Selectable de-bounce period 35ms or 2s.
 Available event detection interrupt output.
- **Power switching functions.**
 - When VDD is less than 2.4V, an internal source is switched to VBAT, and /RES is Low level. When VDD voltage rises to higher than 2.52V, an internal source is switched to VDD, and /RES is released with 105ms delay.
 - Note: When the supply from VBAT, SCL and SDA 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 VDD.

Pin function

| Signal Name | Input / Output | Function |
|-------------|----------------|---|
| SCL | Input | I2C serial clock. |
| SDA | In/Out | I2C data in/out. |
| VDD | — | Main power supply. |
| VBAT | — | Power supply for backup. |
| Vout | Output | Switched power out. (maximum output current 20mA) |
| / RES | Output | VDD 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)



Metal may be exposed on the top or bottom of this product. This will not affect any quality, reliability or electrical spec.

Specifications (characteristics)

* Refer to application manual for details.

Recommended Operating Conditions

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-----------------------|---------|-----------|------|------|------|------|
| Operating voltage | VACCESS | VDD | 2.4 | 3.0 | 5.5 | V |
| Time keeping voltage | VCLK | VBAT | 1.0 | 3.0 | 5.5 | V |
| Operating temperature | TOPR | — | -40 | +25 | +85 | °C |
| Storage temperature | TSTG | — | -55 | — | +125 | °C |

Frequency characteristics

| Item | Symbol | Condition | Rating | Unit |
|-------------------------------------|------------------|---|--|--------------------|
| Frequency tolerance | $\Delta f / f$ | T _a = +25 °C VBAT = 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 VDD = 3.0 V | 1 Max. | s |
| Frequency / voltage characteristics | f / V | T _a = +25 °C VDD = 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

T_a = -40 °C to +85 °C

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------|--------|---|------|------|------|------|
| Current Consumption | IBAT | RX-8035SA VBAT = 3.0V, VDD = 0.0V SCL=SDA = GND | - | 350 | 1200 | nA |
| | | RX-8035LC VBAT = 3.0V, VDD = 0.0V SCL=SDA = GND | - | 400 | - | - |
| | IDD | VDD = 3.0V SCL=SDA = GND CLKOUT = open | - | 1.40 | 2.50 | μA |

Power supply detection voltage

T_a = -40 °C to +85 °C

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------------------------|------------------|-----------|-------|------|-------|------|
| VBAT detect voltage | VLOW | - | 1.10 | 1.25 | 1.40 | V |
| Power switching voltage (VDD to VBAT) | V _{D2B} | +25 °C | 2.328 | 2.40 | 2.472 | V |