

# REAL TIME CLOCK MODULE (I<sup>2</sup>C-Bus)

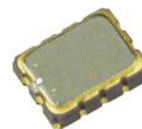
Time stamp function and Low current consumption



Product Number (2,000 pcs / Reel)  
**RX8111CE A : X1B000421000115**  
**RX8111CE B : X1B000421000215**

## RX8111CE

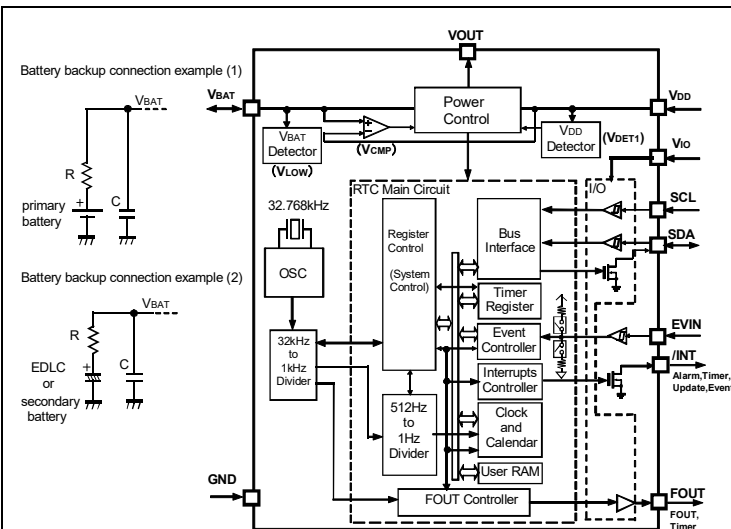
- Built in frequency adjusted 32.768 kHz crystal unit
- Interface Type : I<sup>2</sup>C -Bus
- Low backup current : 100 nA Typ. / 3 V
- Auto power switching function : Automatically switches to backup power supply by monitoring the VDD voltage
- Time stamp function : 8 times stamped from year to 1/256 seconds
- Interrupt output : Wake up every minute or every second
- Alarm interruption : Day, date, hour, minute, second
- Auto repeat wakeup timer interruption
- Self-monitoring interruption : Crystal oscillation stop, V<sub>BAT</sub> low, V<sub>DD</sub> low



RX8111CE  
 ( 3.2 x 2.5 mm, t = 1.0 mm Max. )

The I<sup>2</sup>C-Bus is a trademark of NXP Semiconductors

### Block diagram



### Overview

- Interface type  
I<sup>2</sup>C-Bus interface Fast-Mode 400 kHz
- Auto power switch function  
The V<sub>DD</sub> voltage is monitored and it switches to the backup power supply by the automatic operation  
Backup power supply switching voltage 1.2 V Min.
- Clock output function  
Output frequency is selectable from 32.768 kHz, 1024 Hz, 1 Hz  
When the clock output is not used, the FOUT pin can be used as a timer output pin (CMOS)
- Wakeup timer function  
Selectable from 244 μs to 32 years (24 bit x 1 ch.)  
Timer source clock selectable from 1/60 Hz, 1 Hz, 64 Hz, 4096 Hz  
Auto release after interrupt output from /INT pin at timer completes
- Time stamp function  
8 times stamped from year to 1/256 seconds  
The time stamp trigger inputs from EVIN pin, self-monitoring and I<sup>2</sup>C software command  
EVIN pin has function of chattering-cancel
- Alarm function  
It is possible program from year to second
- Self-monitoring interruption  
Crystal oscillation stop, V<sub>BAT</sub> low, V<sub>DD</sub> low

### Pin Functin

Signal Name	I / O	Function
EVIN	Input	External event input pin (Pull up/down and polarity are selectable by software)
SCL	Input	Serial clock input pin
SDA	Input / Output	Serial data input and output pin
FOUT	Output	Frequency output pin (CMOS) (frequency selection: 32.768 kHz, 1024 Hz, 1 Hz)
/INT	Output	Interrupts output by Alarm and Timer events (N-ch. open drain)
V <sub>DD</sub>	-	Power-supply pin Possible to supply different voltage from V <sub>IO</sub>
V <sub>IO</sub>	-	Interface power supply pin Input to supply the voltage same as a host
V <sub>OUT</sub>	-	Internal voltage output pin Connect bypass capacitor of 1.0 μF
V <sub>BAT</sub>	-	This is a power supply pin for backup battery Connect an EDLC, a secondary battery, a primary battery in the backup voltage range, supplied to IC, from this pin
GND	-	Ground pin

### Terminal connection / External dimensions (Unit: mm)

Pin	Connection
1	V <sub>DD</sub>
2	V <sub>OUT</sub>
3	V <sub>BAT</sub>
4	FOUT
5	SCL
6	EVIN
7	SDA
8	V <sub>IO</sub>
9	GND
10	/INT

### Specifications (characteristics)

\* Refer to application manual for details

#### Recommended Operating Conditions

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating supply voltage	V <sub>DD</sub>	-	1.6	3.0	5.5	V
Clock supply voltage	V <sub>CLK</sub>	-	1.1	3.0	5.5	V
Operating temperature	T <sub>a</sub>	-	-40	+25	+85	°C
V <sub>DD</sub> detect voltage	-V <sub>DET1</sub>	V <sub>DD</sub> , Fall	1.20	1.40	1.60	V

#### Frequency characteristics

Item	Grade	Symbol	Conditions	Min.	Typ.	Max.	Unit
	A		T <sub>a</sub> = +25 °C	-11.5	-	+11.5	

#### Current consumption characteristics

T<sub>a</sub> = -40 °C to +85 °C

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current consumption	I <sub>BAT</sub>	SCL = SDA = " L", FOUT = OFF, /INT = OFF, V <sub>BAT</sub> = 3.0 V, V <sub>DD</sub> = V <sub>IO</sub> = 0.0 V, CHGEN = 0b, INIEN = 0b, SWSEL0 = 1, SWSEL1 = 0	-	100	450	nA
	I <sub>32k</sub>	FOUT = 32.768 kHz, /INT = OFF, V <sub>DD</sub> = V <sub>IO</sub> = 3.0 V, FOUT pin CL = 15 pF	-	2.0	3.0	μA

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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.

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