

REAL TIME CLOCK MODULE (I²C-Bus)

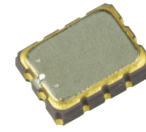
Time stamp function and Low current consumption



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

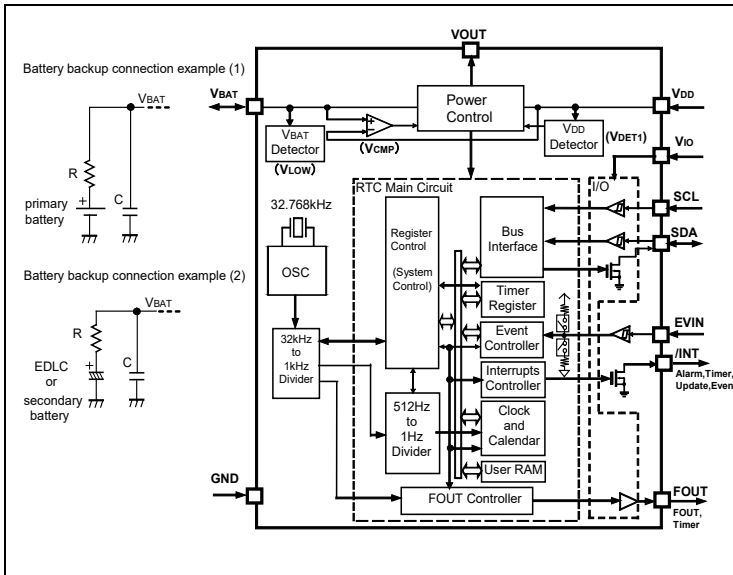
RX8111CE

- Built in frequency adjusted 32.768 kHz crystal unit
- Interface Type : I²C -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_{BAT} low, V_{DD} low



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

Block diagram



Overview

- Interface type
I²C-Bus interface Fast-Mode 400 kHz
- Auto power switch function
The V_{DD} 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
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
This operation is auto repeat with a selected cycle, it can be used like a watchdog timer
- Time stamp function
8 times stamped from year to 1/256 seconds
The time stamp trigger inputs from EVIN pin, self-monitoring and I²C 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_{BAT} low, V_{DD} 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)
VDD	-	Power-supply pin Possible to supply different voltage from V _{IO}
V _{IO}	-	Interface power supply pin Input to supply the voltage same as a host
V _{OUT}	-	Internal voltage output pin Connect bypass capacitor of 1.0 μF
V _{BAT}	-	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	VDD
2	V _{OUT}
3	V _{BAT}
4	FOUT
5	SCL
6	EVIN
7	SDA
8	V _{IO}
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 _{DD}	-	1.6	3.0	5.5	V
Clock supply voltage	V _{CLK}	-	1.1	3.0	5.5	V
Operating temperature	T _a	-	-40	+25	+85	°C
V _{DD} detect voltage	-V _{DET1}	V _{DD} , Fall	1.20	1.40	1.60	V

■ Frequency characteristics

Item	Grade	Symbol	Conditions	Min.	Typ.	Max.	Unit
Frequency tolerance	A	Δ f / f	T _a = +25 °C V _{DD} = 3.0 V	-11.5	-	+11.5	x 10 ⁻⁶
	B			-23	-	+23	
Oscillation start-up time		t _{STA}	V _{DD} = 2.75 V to 5.5 V	-	0.3	1.0	s

■ Current consumption characteristics

T_a = -40 °C to +85 °C

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

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