REAL TIME CLOCK MODULE (I²C-Bus)

Build in backup battery charge control function

RX8130 CE

- Built in frequency adjusted 32.768 kHz crystal unit
- Interface Type : I²C -Bus
- Interface voltage range : 1.6 V ~ 5.5 V
- Wide voltage for timekeeping : 1.1 V ~ 5.5 V
- Low backup current : 300 nA (Typ.) / 3 V
- Auto power switching function : Switchover by main power supply monitor.
- Backup battery charge control function : For the rechargeable lithium batteries.
- Reset functions with a delay : Detect a main power supply and remove the reset.
- The various function include full calendar, alarm, timer, etc.

The I²C-Bus is a trademark of NXP Semiconductors.

Pb Free
RoHS Compliant

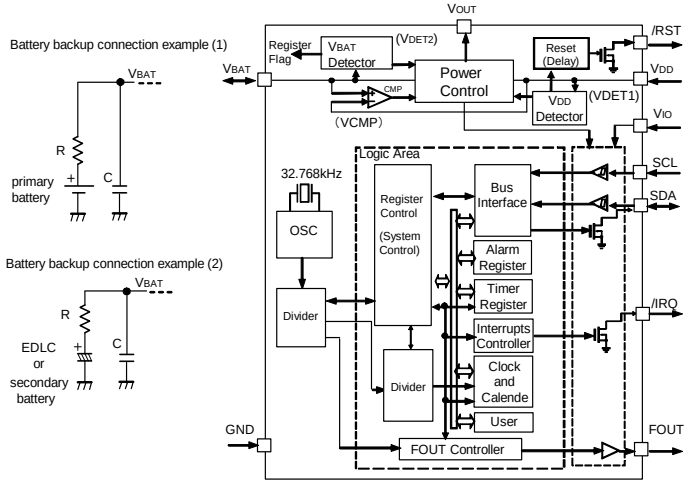
Product Number (Please contact us)
RX8130CE : X1B000311000100



Actual size



Block diagram



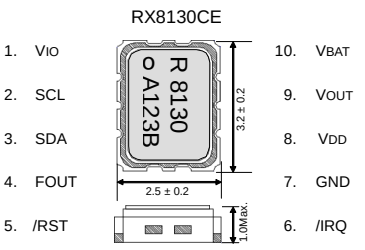
Overview

- I²C-Bus interface.
- Auto power switching function
  - The VDD voltage is monitored and it switches to the backup power supply by the automatic operation. The switch voltage to the backup power supply. 1.25V (Min.)
  - Even if the main power supply voltage is decreased, the current flow from the backup power supply is prevented.
- Charge control function for the rechargeable lithium batteries.
  - Stop charging automatically by detecting the full charge.
  - Records in the register detecting the backup power supply voltage decrease.
- Reset function with a delay
  - When the main power is supplied, reset output is released. The release voltage is selected by the register. (2.80V / 2.75V)
  - Delay time from the voltage rise detection is 60ms Typ.
- Frequency output function
  - Output frequency is selectable from 32.768kHz, 1024Hz,1Hz.
- Timer function
  - Selectable in 1/4096 second from 65535 hours.
  - Timer source clock are 1hour, 1min, 64Hz, 4096Hz.
  - It is automatically recorded to TF-bit at the time of event occurrence, and possible to output with /IRQ pin.

Pin Functin

Signal Name	I / O	Function
SCL	Input	Serial clock input pin.
SDA	Input / Output	Data input and output pin.
FOUT	Output	Frequency output pin with output control function. (C-MOS) Output frequency can be selected as 32.768kHz, 1024Hz, 1Hz.
/ RST	Output	Reset output pin.(N-ch open drain) In case of VDD voltage drop detection, a reset signal is outputted. In case of VDD voltage rise detection, it is released reset signal after 60ms.
/ IRQ	Output	Interrupts output by Alarm and Timer events.(N-ch open drain)
VDD	–	This is a power-supply pin. It can impress the voltage unlike VIO.
VIO	–	This is a interface power supply pin. This is a pin to supply the voltage same as a host.
VOUT	–	Internal voltage output pin. Connect smoothing capacitor of 1.0µF
VBAT	–	This is a power supply pin for backup battery. This is a pin to connect a large-capacity capacitor, a secondary battery, a primary battery. In a backup power supply operating range, the voltage is supplied inside by this pin.
GND	–	Connected to a ground.

Terminal connection / External dimensions (Unit:mm)



Specifications (characteristics)

* Refer to application manual for details.

■ Recommended Operating Conditions

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating supply voltage	VDD	–	1.25	3.0	5.5	V
Clock supply voltage	VCLK	–	1.1	3.0	5.5	V
Operating temperature	TOPR	–	-40	+25	+85	°C
VDD detect voltage	-VDET2	VDD, Fall	1.20	1.30	1.40	V

■ Frequency characteristics

Item	Symbol	Condition	Rating	Unit
Frequency tolerance	Δ f / f	Ta = +25 °C VDD = 3.0 V	B : 5 ± 23*	× 10⁻⁶
Oscillation start-up time	tSTA	VDD = 2.75 V ~ 5.5 V	1 Max.	s

* Equivalent to ±1 minute of monthly deviation (excluding offset.)

■ Current consumption characteristics

Ta = -40 °C ~ +85 °C

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current consumption	IBK	SCL=SDA = "L" , VBAT=3.0V ,VDD=VIO=0.0V	-	300	500	nA
	I32k	SCL=SDA = "H" , FOUT=32.768kHz, /IRQ=OFF, VDD=VIO=3.0V, FOUT pin CL=15pF CHGEN=L or VBAT≧VDET3	-	3.5	4.0	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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For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
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