

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

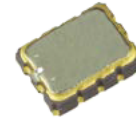
Built-in 32.768 kHz DTCXO, High Stability



Product Number (2,000 pcs / Reel)  
 RX8804CE XA: X1B000371000100  
 RX8804CE XB: X1B000371000200

## RX8804CE

- Built-in frequency adjusted 32.768 kHz crystal unit and DTCXO
- Interface Type : I<sup>2</sup>C-Bus
- Selectable clock output : 32.768 kHz, 1024 Hz, 1 Hz
- Time stamp function : 1 time stamped from year to second
- Interrupt output : Wake up every minute or every second
- Alarm interruption : Day, date, hour, minute
- Auto repeat wakeup timer interruption
- Self-monitoring interruption : Crystal oscillation stop, V<sub>BAT</sub> low, V<sub>DD</sub> low
- SOUT pin outputs that selected flag bit value

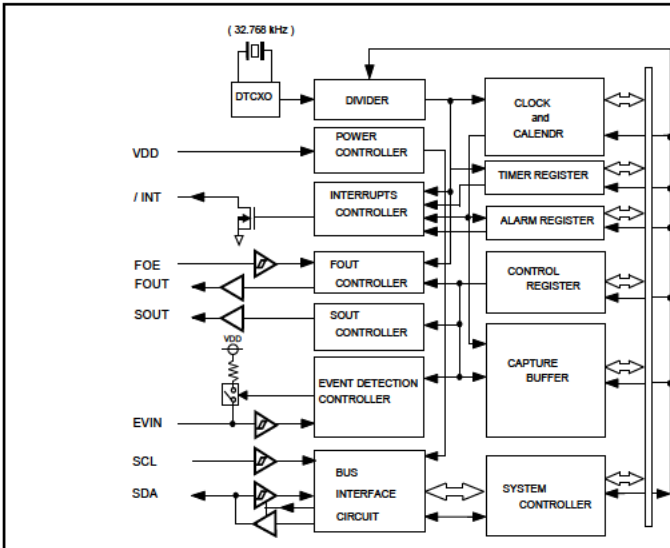


RX8804CE  
 ( 3.2 × 2.5 mm, t = 1.0 mm Max. )

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

### Block diagram

### Overview

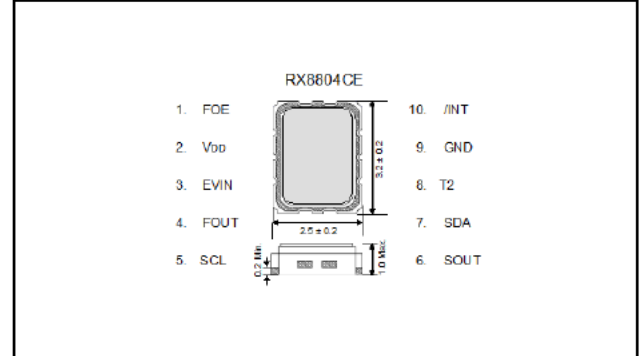


- Interface type  
I<sup>2</sup>C-Bus interface Fast-Mode 400 kHz
- High stability  
XA: ± 3.4 × 10<sup>-6</sup> / -40 °C to +85 °C (equivalent to ±9 s of mo. deviation)  
± 8.0 × 10<sup>-6</sup> / +85 °C to +105 °C (equivalent to ±21 s of mo. deviation)  
XB: ± 5.0 × 10<sup>-6</sup> / -40 °C to +85 °C (equivalent to ±13 s of mo. deviation)  
± 8.0 × 10<sup>-6</sup> / +85 °C to +105 °C (equivalent to ±21 s of mo. deviation)
- Clock output function  
Output frequency is selectable from 32.768 kHz, 1024 Hz, 1 Hz
- 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  
1 time stamped from year to second  
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 day to minute
- Internal state output function  
SOUT pin outputs selected flag-bit value or specified value (H or L)

### Pin Function

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

| Signal Name     | I / O          | Function  |
|-----------------|----------------|---|
| SOUT            | Output         | Internal state output pin   |
| SCL             | Input          | Serial clock input pin  |
| FOUT            | Output         | Frequency output pin (CMOS)<br>(frequency selection: 32.768 kHz, 1024 Hz, 1 Hz) |
| EVIN            | Input          | Event input pin   |
| V <sub>DD</sub> | -              | Power-supply pin  |
| FOE             | Input          | The FOUT output control pin   |
| /INT            | Output         | Interrupts output by Alarm and Timer events<br>(N-ch. open drain)               |
| GND             | -              | Ground pin  |
| T2              | -              | Test pin in the factory (Do not connect externally)                             |
| SDA             | Input / Output | Serial data input and output pin.   |



### Specifications (characteristics)

\* Refer to application manual for details

#### Electrical Characteristics

#### 32.768 kHz DTCXO Frequency temperature characteristics (Example)

| tem                       | Symbol           | Conditions  | Min.                               | Typ. | Max. | Unit               |    |
|---------------------------|------------------|---|------------------------------------|------|------|--------------------|----|
| Operating voltage         | V <sub>DD</sub>  | -   | 1.6                                | 3.0  | 5.5  | V                  |    |
| Temp. compensated Voltage | V <sub>TEM</sub> | -   | 1.5                                | 3.0  | 5.5  | V                  |    |
| Clock supply voltage      | V <sub>CLK</sub> | -   | 1.5                                | 3.0  | 5.5  | V                  |    |
| Operating temperature     | T <sub>a</sub>   | -   | -40                                | +25  | +105 | °C                 |    |
| Stability                 | Δf/f             | XA  | T <sub>a</sub> = -40 °C to +85 °C  | ±3.4 |      | x 10 <sup>-6</sup> |    |
|                           |                  |   | T <sub>a</sub> = +85 °C to +105 °C | ±8.0 |      |                    |    |
|                           |                  | XB  | T <sub>a</sub> = -40 °C to +85 °C  | ±5.0 |      |                    |    |
|                           |                  |   | T <sub>a</sub> = +85 °C to +105 °C | ±8.0 |      |                    |    |
| Current consumption (1)   | I <sub>DD1</sub> | fSCL = 0 Hz, /INT = V <sub>DD</sub> ,<br>FOE = GND,<br>FOUT: OFF,<br>Temp. Compensation<br>interval 2.0 s | V <sub>DD</sub> = 5 V              | -    | 0.4  | 1.6                | μA |
| Current consumption (2)   | I <sub>DD2</sub> |   | V <sub>DD</sub> = 3 V              | -    | 0.35 | 1.5                | μA |

