

**Built-in external event detection.**  
**SERIAL INTERFACE REAL TIME CLOCK MODULE**



Product Number (Please contact us)  
**RX-4575LC : Q414575C2000100**

**RX-4575 LC**

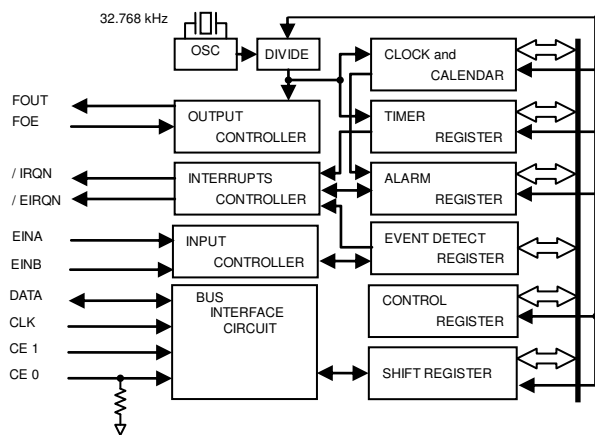
- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : 3-wire serial interface
- Operating voltage range : 1.6 V ~ 5.5 V
- Wide timekeeper voltage range : 1.3 V ~ 5.5 V
- Low backup current : 0.35  $\mu$ A / 3 V ( Typ. )
- External event detection. : Chattering free input port \* 2.  
 (The various functions include full calendar, alarm, timer.)



Actual size



**Block diagram**



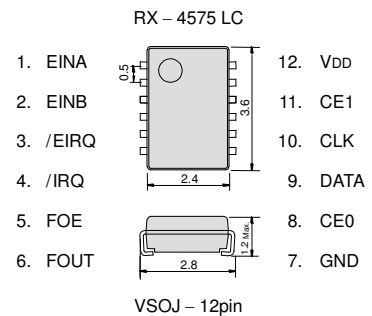
**Overview**

- **Event detection.**
  - Selectable Hi detection or Lo detection.
  - Recognition of detection is available both the hardware interrupt and the monitor via software.
  - Automatic interrupt release mode is available.
  - The all 'OR' interrupt output is possible via alarm, timer and event detection.
- **Performance of event input terminal.**
  - As for the chattering filter, following are prepared for. ( 8 ms, 31 ms, 62 ms, 125 ms )
  - Built-in resistor connect and release is possible via software. Selectable pull-up or pull-down.
- **Timer function**
  - Built in 12 bit counter.
  - Timing period are 1 min, 1 s, 64 Hz, 4096 Hz.
- **Alarm function**
  - Alarm setting is possible by combination of a day, hours, and minutes.

**Pin Function**

| Signal Name  | Input / Output | Functions   |
|--------------|----------------|---|
| EINA<br>EINB | Input          | External event input pin.   |
| CE 0<br>CE 1 | Input          | Interface is possible when both CE0 and CE1 is high level.          |
| CLK          | Input          | Serial Clock input pin.   |
| DATA         | Bidirectional  | Data input and output pin.  |
| FOUT         | Output         | 32.768 kHz clock output pin ( C-MOS ) .<br>Output is Hi-Z when OFF. |
| FOE          | Input          | 32kHz is output when input is Hi, 32 kHz is OFF when input is Lo.   |
| / EIRQ       | Output         | Interrupt output pin. ( N-ch open drain )                           |
| / IRQ        | Output         | Interrupt output pin. ( N-ch open drain )                           |
| VDD          | —              | Connected to a positive power supply.                               |
| GND          | —              | Connected to a ground.  |

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



**Specifications (characteristics)**

\* Refer to application

■ Recommended Operating conditions

| Item                  | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-----------------------|--------|-----------|------|------|------|------|
| Power voltage         | VDD    | —         | 1.6  | 3.0  | 5.5  | V    |
| Clock voltage         | VCLK   | —         | 1.3  | 3.0  | 5.5  | V    |
| Operating Temperature | TOPR   | —         | -40  | +25  | +85  | °C   |

■ Frequency characteristics

| Item                      | Symbol         | Condition                           | Rating   | Unit             |
|---------------------------|----------------|-------------------------------------|----------|------------------|
| Frequency tolerance       | $\Delta f / f$ | Ta = +25 °C<br>VDD = 3.0 V          | 5 ± 23 * | $\times 10^{-6}$ |
| Oscillation Start-up time | tSTA           | Ta = +25 °C<br>VDD = 1.6 V          | 1 Max.   | s                |
|                           |                | Ta = -40 °C ~ +85 °C<br>VDD = 1.6 V | 3 Max.   | s                |

\*Equivalent to 1 minute of monthly deviation

■ Current consumption characteristics

Ta = -40 °C ~ +85 °C

| Item                | Symbol           | Condition  | Min.      | Typ. | Max. | Unit    |
|---------------------|------------------|--|-----------|------|------|---------|
| Current Consumption | I <sub>BK</sub>  | CE0, CE1 = GND<br>/IRQ, /EIRQ = OFF<br>FOUT : output OFF<br>Event detection OFF  | VDD = 5 V | 0.45 | 0.9  | $\mu$ A |
|                     |                  | VDD = 3 V  | 0.35      | 0.7  |      |         |
| Current Consumption | I <sub>32k</sub> | CE0, CE1 = GND<br>/IRQ, /EIRQ = OFF<br>FOUT ; CL = 30 pF<br>32.768 kHz output ON | VDD = 5 V | 8.0  | 20.0 | $\mu$ A |
|                     |                  | VDD = 3 V  | 5.0       | 12.0 |      |         |