

**Low current consumption /  
Small size, low profile model package  
I<sup>2</sup>C-Bus INTERFACE REAL TIME CLOCK MODULE**

# RX - 8564 LC

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : I<sup>2</sup>C-Bus Interface (400 kHz)
- Operating voltage range : 1.8 V to 5.5 V
- Wide Timekeeper voltage range : 1.0 V to 5.5 V / T<sub>a</sub> = +25 °C
- Low backup current : 275 nA / 3.0 V(Typ.)
- 32.768 kHz frequency output function: C-MOS output With Control Pin
- The various functions include full calendar, alarm, timer, and power supply voltage monitoring function.

\* The I<sup>2</sup>C-Bus is a trademark of Philips Electronics N.V.

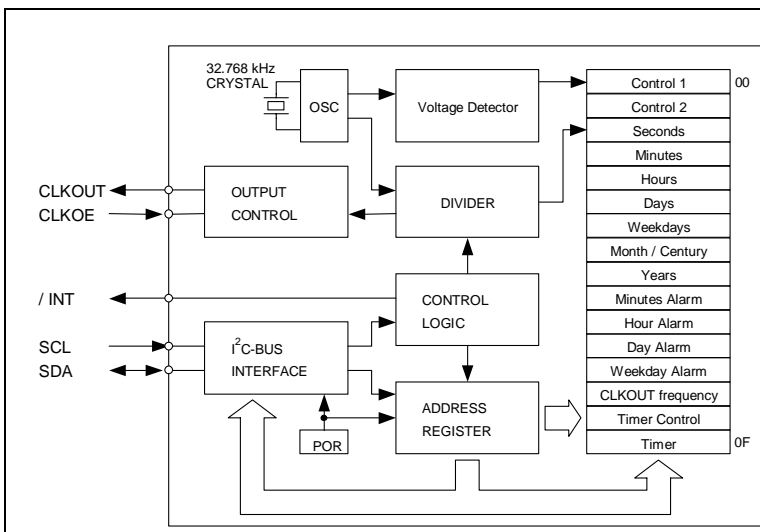


Actual size



## Block diagram

## Overview



### Interface Type

- I<sup>2</sup>C hi-speed bus specifications. ( 400 kHz)
- \* I<sup>2</sup>C-Bus slave address : read A3h and write A2h

### Low Timekeeper voltage

- 1.0 V to 5.5 V / T<sub>a</sub> = +25 °C
- 1.3 V to 5.5 V / T<sub>a</sub> = -40 °C to +85 °C

### 32.768 kHz frequency output function

- CLKOUT pin output (C-MOS output ), CL=30 pF
- CLKOE pin enables output on/off control.
- Output selectable <32.768 kHz, 1024 Hz, 32 Hz, 1 Hz>

### The various interrupt function

- Timer function can be set up between 1/4096 second and 255 minutes.
- Alarm function can be set to any combination of day of week, hour, or minute.

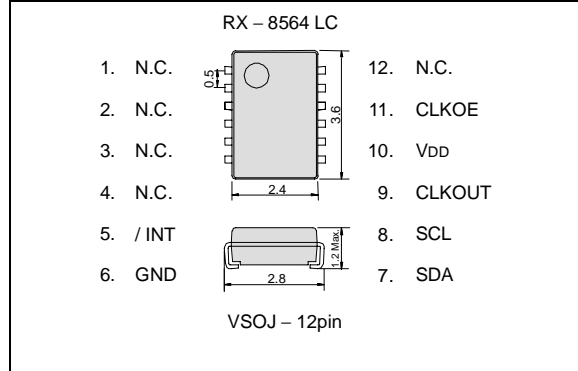
\* Functions are compatible with RTC-8564 JE / NB series.

## Pin Function

## Terminal connection / External dimensions

(Unit:mm)

Signal Name	Input / Output	Function															
SCL	Input	Serial clock input pin															
SDA	Bi-directional	Data input and output pin															
CLKOUT	Output	32.768 kHz clock output pin with the output control function. (C-MOS) CLKOE pin control the condition of CLKOUT pin with FE-bit, FD1-bit, FD0-bit.															
CLKOE	Input	<table border="1"> <thead> <tr> <th>CLKOE pin input</th> <th>FE bit</th> <th>CLKOUT pin output</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td>1</td> <td>Output ( C-MOS )</td> </tr> <tr> <td></td> <td>0</td> <td>OFF ( LOW )</td> </tr> <tr> <td>LOW</td> <td>1</td> <td>OFF ( LOW )</td> </tr> <tr> <td></td> <td>0</td> <td>OFF ( LOW )</td> </tr> </tbody> </table>	CLKOE pin input	FE bit	CLKOUT pin output	HIGH	1	Output ( C-MOS )		0	OFF ( LOW )	LOW	1	OFF ( LOW )		0	OFF ( LOW )
CLKOE pin input	FE bit	CLKOUT pin output															
HIGH	1	Output ( C-MOS )															
	0	OFF ( LOW )															
LOW	1	OFF ( LOW )															
	0	OFF ( LOW )															
/INT	Output	Interrupt output ( N-ch open drain )															
V <sub>DD</sub>	—	Connected to a positive power supply.															
GND	—	Connected to a ground.															



## Specifications (characteristics)

\* Refer to application manual for details.

### Recommended Operating Conditions

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power voltage	V <sub>DD</sub>	—	1.8	3.0	5.5	V
Clock voltage	V <sub>CLK</sub>	—	V <sub>LOW</sub>	3.0	5.5	V
Operating temperature	T <sub>OPR</sub>	—	-40	+25	+85	°C

### Low voltage detection

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Low voltage detection	V <sub>LOW</sub>	T <sub>a</sub> = +25 °C		0.9	1.0	V
		T <sub>a</sub> = -20 °C to +70 °C		0.9	1.2	V
		T <sub>a</sub> = -40 °C to +85 °C		0.9	1.3	V

### Frequency characteristics

Item	Symbol	Condition	Rating	Unit
Frequency tolerance	Δf/f	T <sub>a</sub> = +25 °C V <sub>DD</sub> = 3.0 V	5 ± 23 *	× 10 <sup>-6</sup>

\* Please ask for tighter tolerance. (Equivalent to 1 minute of monthly deviation)

### DC characteristics

T<sub>a</sub> = -40 °C to +85 °C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Current Consumption	I <sub>BK</sub>	f <sub>SCL</sub> = 0 Hz CLKOE = GND CLKOUT ; output OFF ( LOW )	V <sub>DD</sub> = 5 V	330	800	nA
			V <sub>DD</sub> = 3 V	275	700	
Current Consumption	I <sub>32k</sub>	f <sub>SCL</sub> = 0 Hz CLKOE = V <sub>DD</sub> CLKOUT ; 32.768 kHz Output ON (Output=OPEN ; CL = 0 pF)	V <sub>DD</sub> = 5 V	2.5	3.4	μA
			V <sub>DD</sub> = 3 V	1.5	2.2	

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