

REAL TIME CLOCK MODULE (I²C-Bus)

Low current consumption

RTC - 8564 JE / NB RX - 8564 LC

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : I²C-Bus Interface (400 kHz)
- Operating voltage range 1.8 : V to 5.5 V
- Timekeeper voltage range 1.0 : V to 5.5 V / -20 °C to +70 °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 I²C-Bus is a trademark of NXP Semiconductors



Product Number (Please contact us)
 RTC-8564JE : Q41856471000100
 RTC-8564NB : Q41856491000200
 RX-8564LC : Q418564C2000100

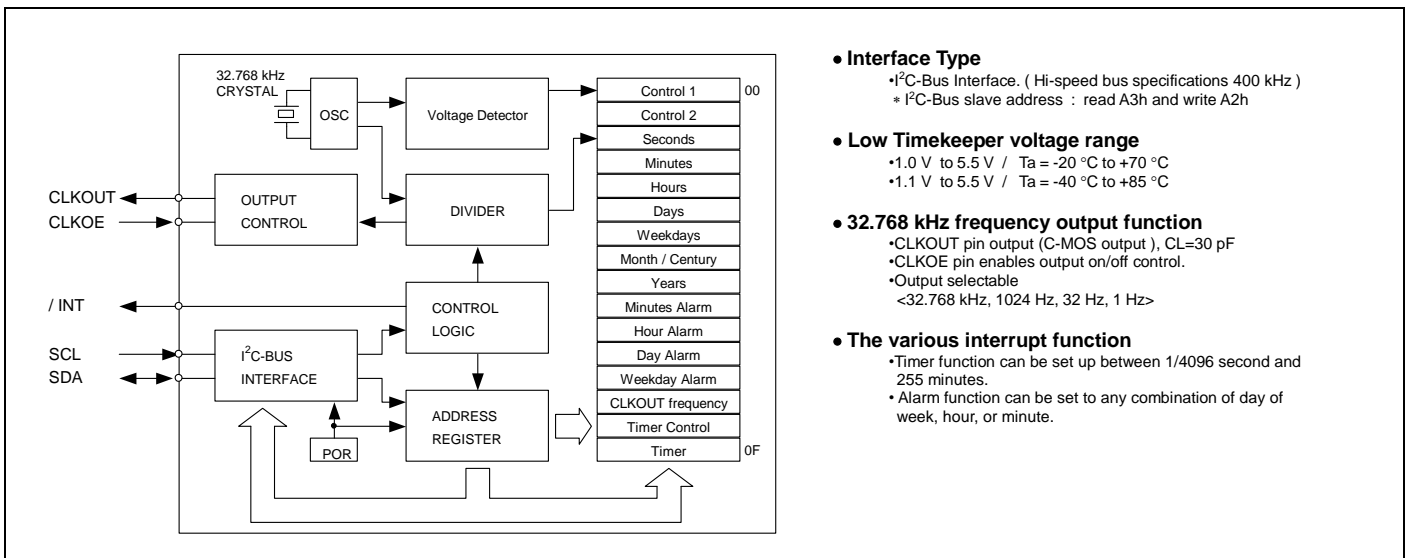


Actual size



Block diagram

Overview



Interface Type

- I²C-Bus Interface. (Hi-speed bus specifications 400 kHz)
- * I²C-Bus slave address : read A3h and write A2h

Low Timekeeper voltage range

- 1.0 V to 5.5 V / Ta = -20 °C to +70 °C
- 1.1 V to 5.5 V / Ta = -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.

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 with FE-bit, etc. | | | | | | | | | | | | | | | |
| 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>LOW</td> <td>0</td> <td>OFF (LOW)</td> </tr> <tr> <td></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) | LOW | 0 | OFF (LOW) | | 1 | OFF (LOW) | | 0 | OFF (LOW) |
| CLKOE pin input | FE bit | CLKOUT pin output | | | | | | | | | | | | | | | |
| HIGH | 1 | Output (C-MOS) | | | | | | | | | | | | | | | |
| LOW | 0 | OFF (LOW) | | | | | | | | | | | | | | | |
| | 1 | OFF (LOW) | | | | | | | | | | | | | | | |
| | 0 | OFF (LOW) | | | | | | | | | | | | | | | |
| /INT | Output | Interrupt output (N-ch open drain) | | | | | | | | | | | | | | | |
| VDD | — | Connected to a positive power supply. | | | | | | | | | | | | | | | |
| GND | — | Connected to a ground. | | | | | | | | | | | | | | | |

RTC - 8564 JE

VSOJ - 20 pin

RTC - 8564 NB

SON - 22 pin

RX - 8564 LC

VSOJ - 12pin

The metal case inside of the molding compound may be exposed on the top or bottom of this product. This purely cosmetic and does not have any effect on quality, reliability or electrical specs.

***Stop using the glue**
 Any glue must never use it after soldering LC-package to a circuit board. This product has glass on the back side of a package. When glue invasions between circuit board side and glass side, then glass cracks by thermal expansion of glue. In this case a crystal oscillation stops. Consider glue abolition or glue do not touch to LC-package

Specifications (characteristics)

* Refer to application manual for details.

Recommended Operating Conditions

| Item | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|--------|------------|------|------|------|------|
| Power voltage | VDD | — | 1.8 | 3.0 | 5.5 | V |
| Clock voltage | VCLK | — | VLOW | 3.0 | 5.5 | V |
| Operating temperature | TOPR | — | -40 | +25 | +85 | °C |

Low voltage detection

| Item | Symbol | Conditions | Typ. | Max. | Unit | |
|-----------------------|--------|------------|----------------------|------|------|---|
| Low voltage detection | VLOW | JE, NB | Ta = -20 °C ~ +70 °C | 0.9 | 1.0 | V |
| | | | Ta = -40 °C ~ +85 °C | 0.9 | 1.1 | V |
| | | LC | Ta = -20 °C ~ +70 °C | 0.9 | 1.2 | V |
| | | | Ta = -40 °C ~ +85 °C | 0.9 | 1.3 | V |

Frequency characteristics

| Item | Symbol | Conditions | Rating | Unit |
|---------------------|--------|----------------------------|-------------|--------------------|
| Frequency tolerance | Δf/f | Ta = +25 °C VDD = 3.0 V | B: 5 ± 23 * | × 10 ⁻⁶ |

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

Current consumption characteristics

Ta = -40 °C to +85 °C

| Item | Symbol | Conditions | Min. | Typ. | Max. | Unit | |
|---------------------|------------------|--|-----------|------|------|------|----|
| Current Consumption | I _{bk} | f _{SCL} = 0 Hz CLKOE = GND | VDD = 5 V | - | 330 | 800 | nA |
| | | CLKOUT ; output OFF (LOW) | VDD = 3 V | - | 275 | 700 | |
| | I _{32k} | f _{SCL} = 0 Hz CLKOE = VDD | VDD = 5 V | - | 2.5 | 3.4 | μA |
| | | CLKOUT ; 32.768 kHz output ON (Output=OPEN ; CL = 0 pF) | VDD = 3 V | - | 1.5 | 2.2 | |

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| | |
|---|---|
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