REAL TIME CLOCK MODULE (I^2C-Bus)

Low current consumption

RTC-8564JE/NB
RX-8564LC

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : I^2C-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 I^2C-Bus is a trademark of NXP Semiconductors

RoHS Compliant

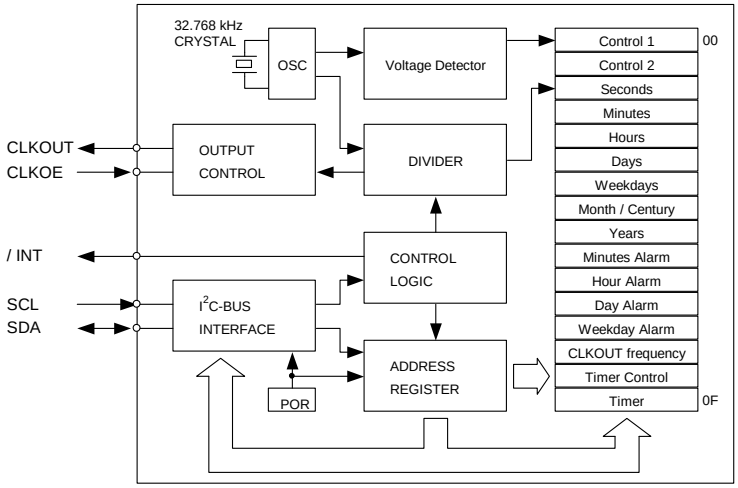
Product Number (Please contact us)
RTC-8564JE : Q41856471000100
RTC-8564NB : Q41856491000200
RX-8564LC : Q418564C2000100



Actual size

RTC-8564JE	RTC-8564NB	RX-8564LC
		

Block diagram



Overview

● Interface Type
- I^2C-Bus Interface. (Hi-speed bus specifications 400 kHz)
  * I^2C-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

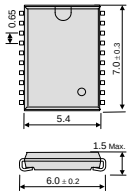
Signal Name	Input/Output	Function
SCL	Input	Serial clock input pin.
SDA	Bi-directional	Data input and output pin.
CLKOUT	Output	32.768 kHz clock output pin with the output control function. (C-MOS) CLKOE pin control the condition of CLKOUT with FE-bit, etc.
CLKOE	Input	CLKOE pin input / FE bit / CLKOUT pin output: HIGH 1 Output (C-MOS); HIGH 0 OFF (LOW); LOW 1 OFF (LOW); LOW 0 OFF (LOW)
/INT	Output	Interrupt output (N-ch open drain)
VDD	—	Connected to a positive power supply.
GND	—	Connected to a ground.

Terminal connection / External dimensions

(Unit:mm)

RTC – 8564 JE

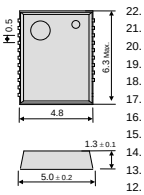
1.	N.C.	20.	N.C.
2.	N.C.	19.	N.C.
3.	CLKOE	18.	N.C.
4.	VDD	17.	N.C.
5.	CLKOUT	16.	N.C.
6.	SCL	15.	N.C.
7.	SDA	14.	N.C.
8.	(GND)	13.	N.C.
9.	GND	12.	N.C.
10.	/ INT	11.	N.C.



VSOJ – 20 pin

RTC – 8564 NB

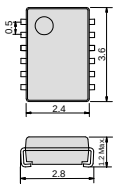
1.	/ INT	22.	N.C.
2.	GND	21.	N.C.
3.	(GND)	20.	N.C.
4.	N.C.	19.	N.C.
5.	SDA	18.	N.C.
6.	SCL	17.	N.C.
7.	CLKOUT	16.	N.C.
8.	VDD	15.	N.C.
9.	CLKOE	14.	N.C.
10.	N.C.	13.	–
11.	N.C.	12.	–



SON – 22 pin

RX – 8564 LC

1.	N.C.	12.	N.C.
2.	N.C.	11.	CLKOE
3.	N.C.	10.	VDD
4.	N.C.	9.	CLKOUT
5.	/ INT	8.	SCL
6.	GND	7.	SDA



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	Δ f / 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 Consumtion	IBK	fSCL = 0 Hz CLKOE = GND CLKOUT ; output OFF (LOW)	VDD = 5 V	-	330	800	nA
			VDD = 3 V	-	275	700	
	I32k	fSCL = 0 Hz CLKOE = VDD CLKOUT ; 32.768 kHz output ON (Output=OPEN ; CL = 0 pF)	VDD = 5 V	-	2.5	3.4	μA
			VDD = 3 V	-	1.5	2.2	

►Explanation of the mark that are using it for the catalog

	►Pb free.
	►Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	►Designed for automotive general equipment.
	►Designed for automotive applications related to driving and safety.

NOTICE：PLEASE READ CAREFULLY BELOW BEFORE THE USE OF THIS DOCUMENT

1. The content of this document is subject to change without notice. Before purchasing or using Epson products, please contact with sales representative of Seiko Epson Corporation (“Epson”) for the latest information and be always sure to check the latest information published on Epson’s official web sites and resources.
2. This document may not be copied, reproduced, or used for any other purposes, in whole or in part, without Epson’s prior consent.
3. Information provided in this document including, but not limited to application circuits, programs and usage, is for reference purpose only. Epson makes no guarantees against any infringements or damages to any third parties’ intellectual property rights or any other rights resulting from the information. This document does not grant you any licenses, any intellectual property rights or any other rights with respect to Epson products owned by Epson or any third parties.
4. Epson has prepared this document carefully to be accurate and dependable, but Epson does not guarantee that the information is always accurate and complete. Epson assumes no responsibility for any damages you incurred due to any misinformation in this document.
5. Epson products listed in this document and our associated technologies shall not be used in any equipment or systems that laws and regulations in Japan or any other countries prohibit to manufacture, use or sell. Furthermore, Epson products and our associated technologies shall not be used for the purposes of military weapons development (e.g. mass destruction weapons), military use, or any other military applications. If exporting Epson products or our associated technologies, please be sure to comply with the Foreign Exchange and Foreign Trade Control Act in Japan, Export Administration Regulations in the U.S.A (EAR) and other export-related laws and regulations in Japan and any other countries and to follow their required procedures.
6. Epson assumes no responsibility for any damages (whether direct or indirect) caused by or in relation with your non-compliance with the terms and conditions in this document or for any damages (whether direct or indirect) incurred by any third party that you give, transfer or assign Epson products.
7. For more details or other concerns about this document, please contact our sales representative.
8. Company names and product names listed in this document are trademarks or registered trademarks of their respective companies.

●Disclaimer

1. Epson products are designed for use in general electronic equipment applications that do not require extremely high reliability or safety.

2. Epson does not represent or warrant that its products will not cause a failure for any particular application, except for cases where the failure is a direct result caused by defects in materials and workmanship of this product.
If a product fails due to defects in materials and workmanship, to the maximum extent permitted by law, we will, at our sole discretion, refund or replace the affected product.

3. When products for used directly or indirectly in certain devices or applications (ex. Nuclear power, aerospace, infrastructure facilities, medical equipment, etc.) which are connected to or affect safety of human life or property, Customer is solely responsible for determining if the products and respective specifications are suitable for the intended use in particular customer applications.
Customer shall implement necessary and proper safety design and measures (including redundant design, malfunction prevention design, etc.) to ensure reliability and safety before using the products in/with customer’s Equipment.

4.For the products designed for automotive applications, the products comply with AEC-Q100 or AEC-Q200.
Products do not comply with ISO 26262 (Products are not categorized to ASIL A, B, C and D).

5. No dismantling, analysis, reverse engineering, modification, alteration, adaptation, reproduction, etc., of Epson products is allowed. Furthermore, any defects caused by this are not covered by the warranty.

©Seiko Epson Corporation 2025