REAL TIME CLOCK MODULE (I²C-Bus)

Low current consumption

RTC-8564JE/NB
RX-8564LC

- 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

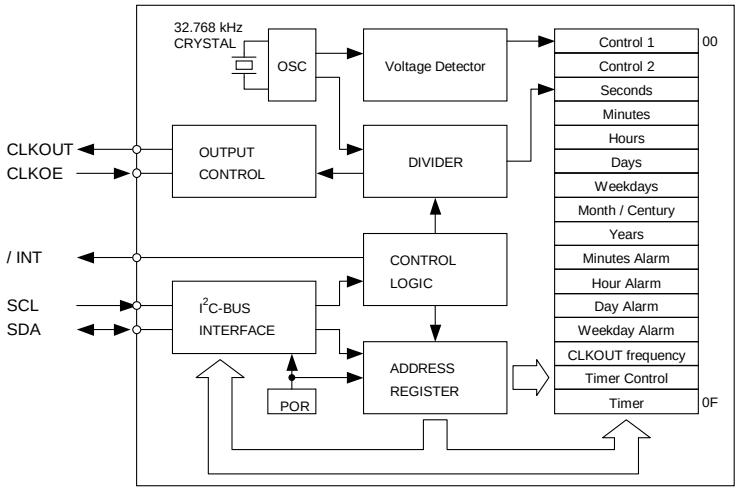
RoHS Compliant

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
- 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

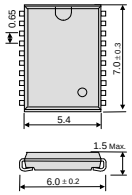
Signal Name	Input/Output	Function
SCL	Input	Serial clock input pin.
SDA	Bi-directional	Data input and output pin.
CLKOUT	Output	32.768 kHz clock output pin with the output control function. (C-MOS) CLKOE pin control the condition of CLKOUT with FE-bit, etc.
CLKOE	Input	CLKOE pin input / FE bit / CLKOUT 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

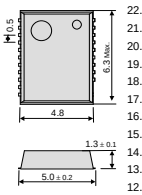
1.	N.C.	20.	N.C.
2.	N.C.	19.	N.C.
3.	CLKOE	18.	N.C.
4.	VDD	17.	N.C.
5.	CLKOUT	16.	N.C.
6.	SCL	15.	N.C.
7.	SDA	14.	N.C.
8.	(GND)	13.	N.C.
9.	GND	12.	N.C.
10.	/ INT	11.	N.C.



VSOJ – 20 pin

RTC – 8564 NB

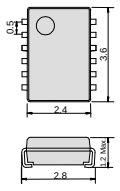
1.	/ INT	22.	N.C.
2.	GND	21.	N.C.
3.	(GND)	20.	N.C.
4.	N.C.	19.	N.C.
5.	SDA	18.	N.C.
6.	SCL	17.	N.C.
7.	CLKOUT	16.	N.C.
8.	VDD	15.	N.C.
9.	CLKOE	14.	N.C.
10.	N.C.	13.	–
11.	N.C.	12.	–



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	℃

■ 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 ℃ 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	

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

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For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
Automotive Safety	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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