Low current consumption
I²C-Bus INTERFACE REAL TIME CLOCK MODULE

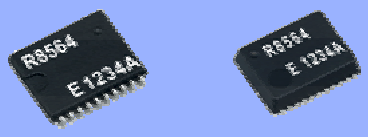
RTC - 8564 JE / NB

- 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

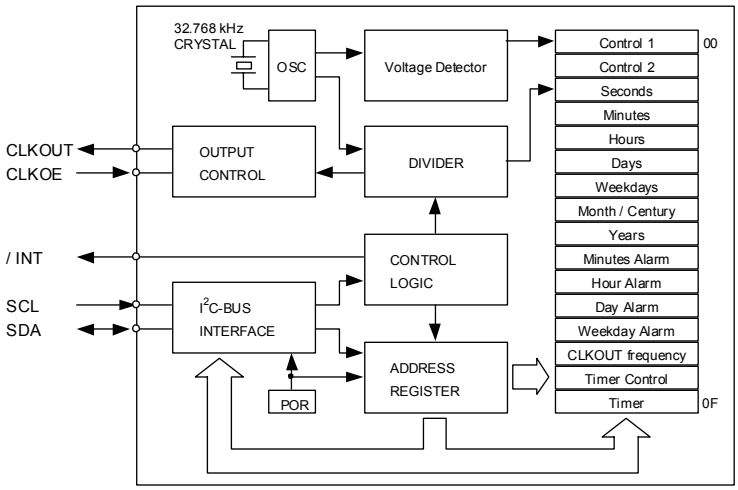
Product Number (Please contact us)
RTC-8564JE : Q41856471000100
RTC-8564NB : Q41856491000200



Actual size

RTC-8564JE	RTC-8564NB
	

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.

* **Functions are compatible with RX-8564 LC series.**

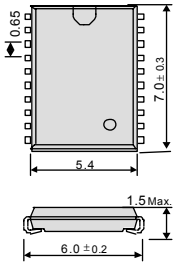
Pin Function

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: HIGH (FE bit 1: Output (C-MOS); 0: OFF (LOW)); 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.

Terminal connection / External dimensions (Unit:mm)

RTC – 8564 JE

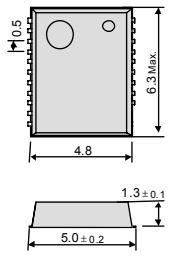
1. N.C.
2. N.C.
3. CLKOE
4. VDD
5. CLKOUT
6. SCL
7. SDA
8. (GND)
9. GND
10. / INT
20. N.C.
19. N.C.
18. N.C.
17. N.C.
16. N.C.
15. N.C.
14. N.C.
13. N.C.
12. N.C.
11. N.C.



VSOJ – 20 pin

RTC – 8564 NB

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



SON – 22 pin

Metal may be exposed on the top or bottom of this product. This will not affect any quality , reliability or electrical spec.

Specifications (characteristics)

* Refer to application manual for details.

Recommended Operating Conditions

Item	Symbol	Condition	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	Condition	Typ.	Max.	Unit
Low voltage detection	VLOW	Ta = -20 °C ~ +70 °C	0.9	1.0	V
		Ta = -40 °C ~ +85 °C	0.9	1.1	V

Frequency characteristics

Item	Symbol	Condition	Rating	Unit
Frequency tolerance	Δf / f	Ta = +25 °C VDD = 3.0 V	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	Condition		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	

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In order to meet customer needs in a rapidly advancing digital, broadband and ubiquitous society, we are committed to offering products that are one step ahead of the market and a rank above the rest in quality. To achieve our goals, we follow a “3D (three device) strategy” designed to drive both horizontal and vertical growth. We will to grow our three device categories of “Timing Devices”, ”Sensing Devices” and “Optical Devices”, and expand vertical growth through a combination of products from these categories.
A Quartz MEMS is any high added value quartz device that exploits the characteristics of quartz crystal material but that is produced using MEMS (micro-electro-mechanical system) processing technology.
Market needs are advancing faster than previously imagined toward smaller, more stable crystal products, but we will stay ahead of the curve by rolling out products that exceed market speed and quality requirements. We want to further accelerate the 3D strategy by QMEMS.

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QMEMS

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QS-9000 is an enhanced standard for quality assurance systems formulated by leading U.S. automobile manufacturers based on the international ISO 9000 series.

ISO/TS 16949 is a global standard based on QS-9000, a severe standard corresponding to the requirements from the automobile industry.

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Pb Free	**►Pb free.** **►Complies with EU RoHS directive.**
RoHS Compliant	**►Pb free terminal designed. Contains Pb in products exempted by RoHS directive.** **(Contains Pb in sealing glass, high melting temperature type solder or other.)** **►Complies with EU RoHS directive.**
For Automotive	**►The products have been designed for high reliability applications such as Automotive.**

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  Due to the on-going strategy of gradual unification of part numbers, please review product codes and markings, as they will change during the course of the coming months.

  We apologize for the inconvenience, but we will eventually have a unified part numbering system for Epson Toyocom that will be user friendly.