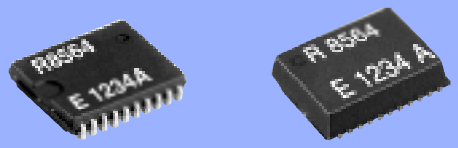
Low current consumption
I²C-Bus INTERFACE REAL TIME CLOCK MODULE

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

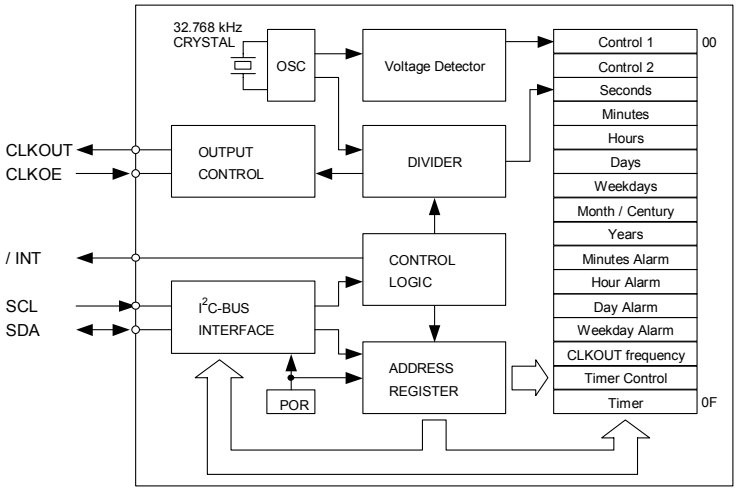
* The I²C-Bus is a trademark of Philips Electronics N.V.



Actual size

RTC-8564JE	RTC-8564NB
	

Block diagram



Overview

• Interface Type
- I²C 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

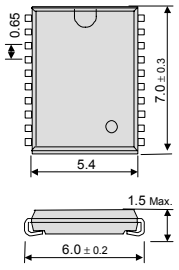
Signal Name	Input/Output	Function
SCL	Input	Serial clock input pin.
SDA	Bi-directional	Data input and output pin.
CLKOUT	Output	32.768 kHz clock output pin with the output control function. (C-MOS) CLKOE pin control the condition of CLKOUT with FE-bit, etc.
CLKOE	Input	CLKOE pin input: HIGH; FE bit: 1 → CLKOUT pin output: Output (C-MOS); FE bit: 0 → OFF (LOW). CLKOE pin input: LOW; FE bit: 1 → OFF (LOW); FE bit: 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

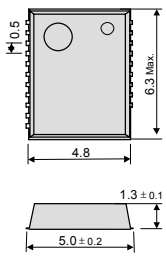
1.	N.C.	20.	N.C.
2.	N.C.	19.	N.C.
3.	CLKOE	18.	N.C.
4.	VDD	17.	N.C.
5.	CLKOUT	16.	N.C.
6.	SCL	15.	N.C.
7.	SDA	14.	N.C.
8.	(GND)	13.	N.C.
9.	GND	12.	N.C.
10.	/ INT	11.	N.C.



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

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)

■ DC 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	

“3D STRATEGY” EPSON TOYOCOM

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.

Quartz devices have become crucial in the network environment where products are increasingly intended for broadband, ubiquitous applications and where various types of terminals can transfer information almost immediately via LAN and WAN on a global scale. Epson Toyocom Corporation addresses every single aspect within a network environment. The new corporation offers “Digital Convergence” solutions to problems arising with products for consumer use, such as, core network systems and automotive systems.

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Epson Toyocom, 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.
In the future, new group companies will be expected to acquire the certification around the third year of operations.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

WORKING FOR HIGH QUALITY

Epson Toyocom quickly began working to acquire company-wide ISO 9000 series certification, and has acquired ISO 9001 or ISO 9002 certification for all targeted products manufactured in Japanese and overseas plants.
Epson Toyocom has acquired QS-9000 certification, which is of a higher level.
Also, TS 16949 certification, which is also of a higher level, has been acquired.

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.

Notice