REAL TIME CLOCK MODULE (I^{2}C-Bus)
Low current consumption

RoHS Compliant

Product Number
RX-8564LC : Q418564C2000100

RX-8564LC

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type   : I^{2}C-Bus Interface (400 kHz)
- Operating voltage range   : 1.8V to 5.5 V
- Timekeeper voltage range : 1.0V to 5.5 V / -20 °C to +70 °C
- Low backup current   : 275nA / 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

E 8564 A123B   E 8564 A123B
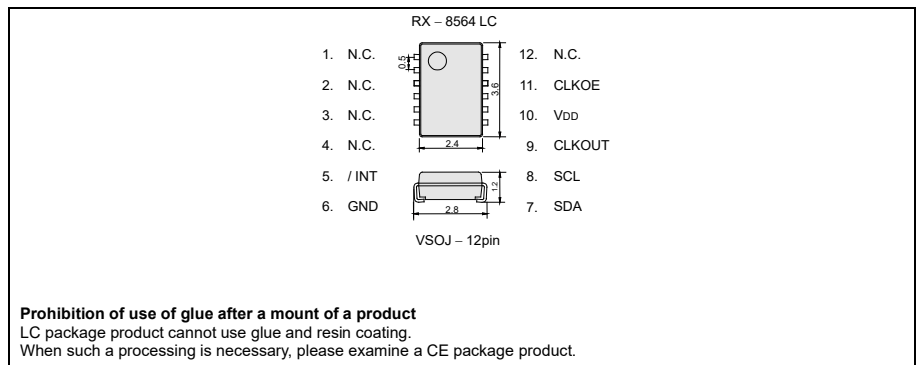
Block diagram

Overview
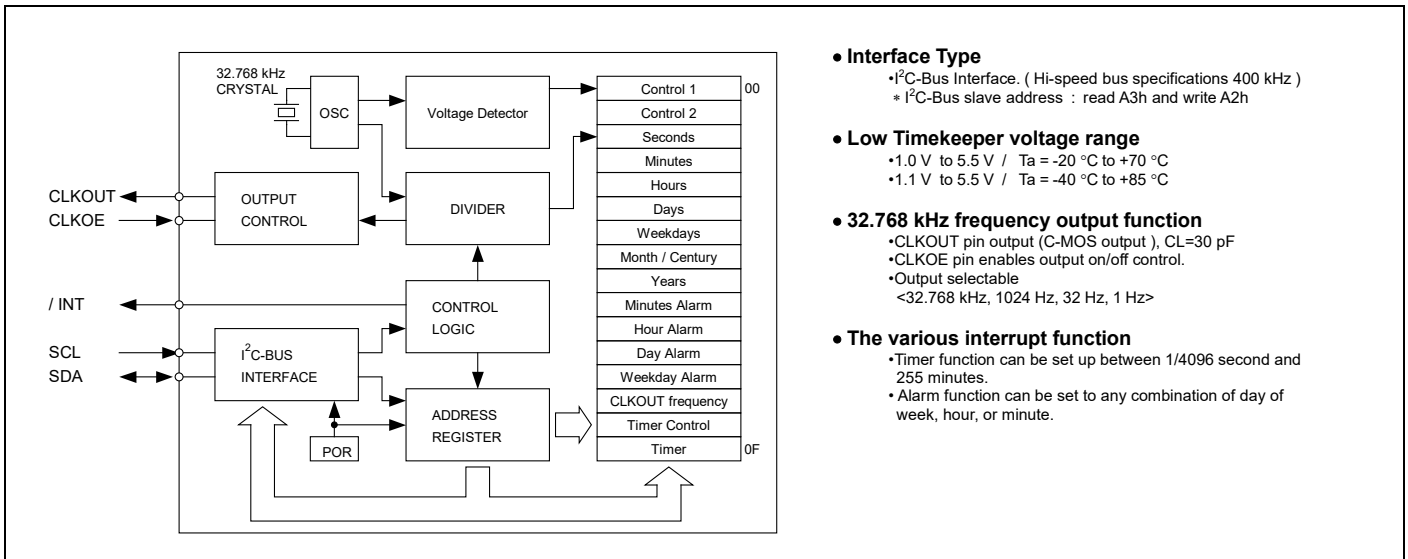
- **Interface Type**
  - I^{2}C-Bus Interface. (Hi-speed bus specifications 400 kHz)
  - ∗ I^{2}C-Bus slave address : read A3h and write A2h

- **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	(see table below)
/INT	Output	Interrupt output (N-ch open drain)
V$_{DD}$	—	Connected to a positive power supply.
GND	—	Connected to a ground.

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)

Terminal connection / External dimensions
(Unit:mm)

RX – 8564 LC

1. N.C.		12. N.C.
2. N.C.		11. CLKOE
3. N.C.		10. V$_{DD}$
4. N.C.		9. CLKOUT
5. / INT		8. SCL
6. GND		7. SDA

VSOJ – 12pin

Prohibition of use of glue after a mount of a product
LC package product cannot use glue and resin coating.
When such a processing is necessary, please examine a CE package product.

Specifications (characteristics)
∗ **Refer to application manual for details.**

■ Recommended Operating Conditions

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power voltage	V$_{DD}$	—	1.8	3.0	5.5	V
Clock voltage	V$_{CLK}$	—	V$_{LOW}$	3.0	5.5	V
Operating temperature	T$_{OPR}$	—	-40	+25	+85	°C

■ Low voltage detection

Item	Symbol		Conditions	Typ.	Max.	Unit
Low voltage detection	V$_{LOW}$	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 V$_{DD}$ = 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	I$_{BK}$	f$_{SCL}$ = 0 Hz CLKOE = GND	V$_{DD}$ = 5 V	-	330	800	nA
		CLKOUT ; output OFF (LOW)	V$_{DD}$ = 3 V	-	275	700	
	I$_{32k}$	f$_{SCL}$ = 0 Hz CLKOE = V$_{DD}$	V$_{DD}$ = 5 V	-	2.5	3.4	μA
		CLKOUT ; 32.768 kHz output ON (Output=OPEN ; CL = 0 pF)	V$_{DD}$ = 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.

> 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

In order provide high quality and reliable products and services than meet customer needs, Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired IATF 16949 certification that is requested strongly by major automotive manufacturers as standard.

> IATF 16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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

Pb Free	►Pb free.

RoHS Compliant	►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.)

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).