

**REAL TIME CLOCK MODULE (I<sup>2</sup>C-Bus)**  
**Built-in EEPROM and Unique ID-ROM**



Product Number (Please contact us)  
**RX-8731LC : Q418731C2000100**

**RX - 8731 LC**

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : I<sup>2</sup>C-Bus interface (400 kHz)
- Operating voltage range : 1.7 V to 5.5 V
- Wide voltage for Timekeeping : 1.3 V to 5.5 V
- Low backup current : 0.35  $\mu$ A / 3 V (Typ.)
- 32.768 kHz frequency output function : C-MOS output With Control Pin
- The various functions include full calendar, alarm, timer.

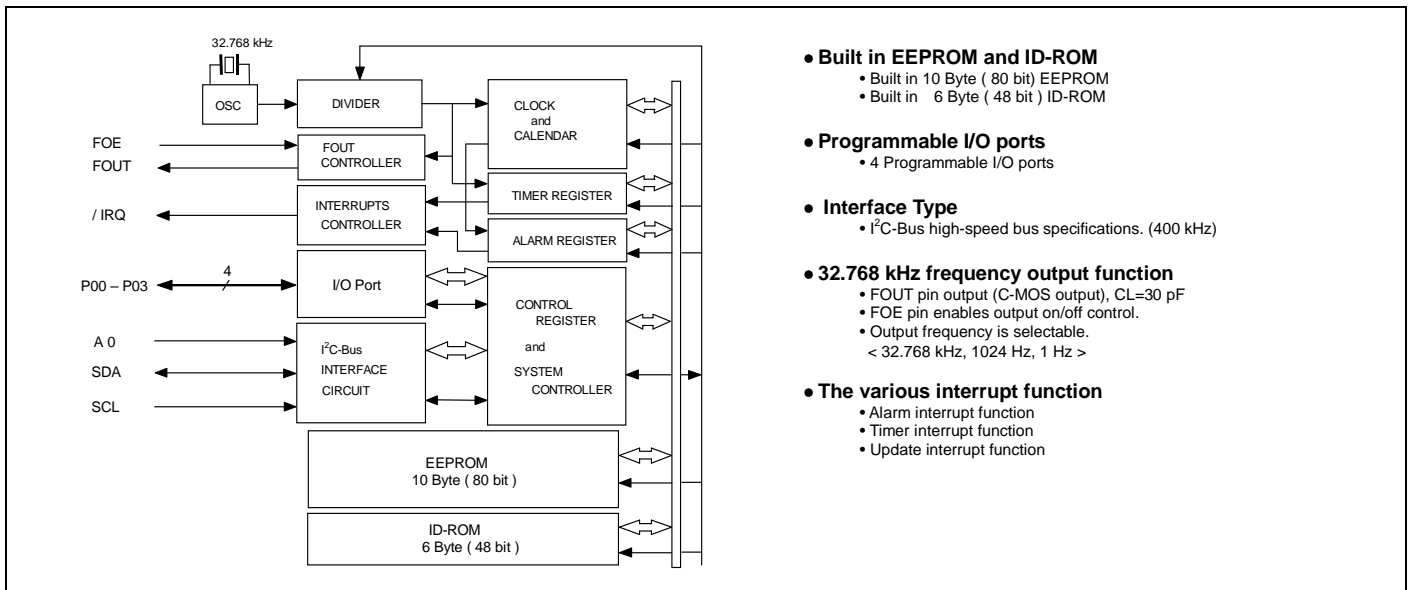
\* The I<sup>2</sup>C-Bus is a trademark of NXP Semiconductors



Actual size

**Block diagram**

**Overview**

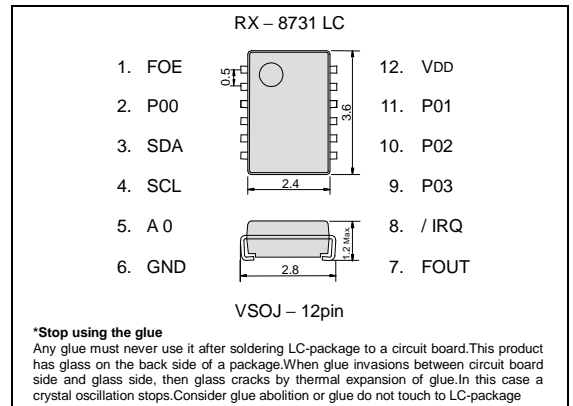


- **Built in EEPROM and ID-ROM**
  - Built in 10 Byte ( 80 bit ) EEPROM
  - Built in 6 Byte ( 48 bit ) ID-ROM
- **Programmable I/O ports**
  - 4 Programmable I/O ports
- **Interface Type**
  - I<sup>2</sup>C-Bus high-speed bus specifications. (400 kHz)
- **32.768 kHz frequency output function**
  - FOUT pin output (C-MOS output), CL=30 pF
  - FOE pin enables output on/off control.
  - Output frequency is selectable.  
 < 32.768 kHz, 1024 Hz, 1 Hz >
- **The various interrupt function**
  - Alarm interrupt function
  - Timer interrupt function
  - Update interrupt function

**Pin Function**

**Terminal connection / External dimensions (Unit:mm)**

Signal Name	Input / Output	Function
SCL	Input	Serial Clock input pin.
SDA	Bi-directional	Data input and output pin.
A 0	Input	Device address A0 input pin.
FOUT	Output	FOUT pin is 32.768 kHz clock output pin ( C-MOS ) that output control is possible.
FOE	Input	FOE pin control the frequency output from FOUT pin with FSEL1-bit and FSEL0-bit.
/ IRQ	Output	Interrupt output pin. ( N-ch open drain )
P00 P01 P02 P03	Bi-directional	Programmable I/O ports.
VDD	—	Connected to a positive power supply.
GND	—	Connected to a ground.



**Specifications (characteristics)**

\* Refer to application manual for details.

**Recommended Operating Conditions**

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power voltage	VDD	—	1.7	3.0	5.5	V
Clock voltage	VCLK	—	1.3	3.0	5.5	V
Operating temperature	TOPR	—	-40	+25	+85	°C

**Frequency characteristics**

Item	Symbol	Conditions	Rating	Unit
Frequency tolerance	$\Delta f / f$	Ta = +25 °C VDD = 3.0 V	B: 5 ± 23 *	$\times 10^{-6}$
Oscillation Start-up time	tSTA	Ta = +25 °C VDD = 1.6 V	1 Max.	s
		Ta = -40 °C to +85 °C VDD = 1.6 V	3 Max.	s

\*Equivalent to 1 minute of monthly deviation

**Current consumption characteristics**

Ta = -40 °C to +85 °C

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Current Consumption	I <sub>BK</sub>	fSCL = 0 Hz / IRQ = OFF	VDD = 5 V	-	0.45	1.5	$\mu$ A
		FOUT : output OFF ( Hi - z )	VDD = 3 V	-	0.35	1.4	
	I <sub>SZK</sub>	fSCL = 0 Hz / IRQ = OFF FOUT : 32.768 kHz output CL = 30 pF	VDD = 5 V	-	8.0	16.0	$\mu$ A
			VDD = 3 V	-	5.0	10.0	

## 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.

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

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