REAL TIME CLOCK MODULE (I²C-Bus)

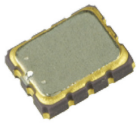
Built-in 32.768 kHz DTCXO, High Stability

Pb Free RoHS Compliant

Product Number (2,000 pcs / Reel)
RX8804CE XA: X1B000371000100
RX8804CE XB: X1B000371000200

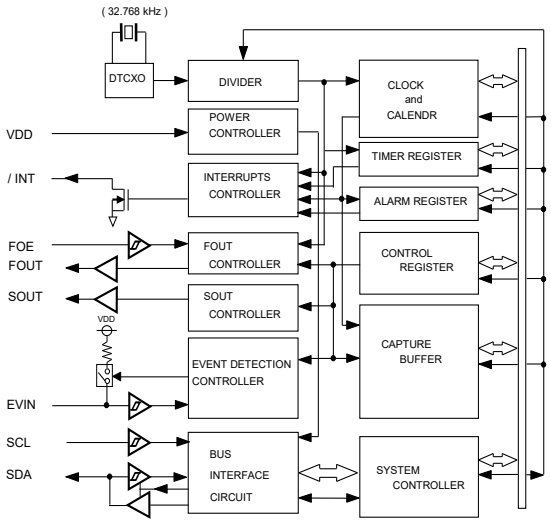
RX8804CE

- Built-in frequency adjusted 32.768 kHz crystal unit and DTCXO
- Interface Type : I²C-Bus
- Selectable clock output : 32.768 kHz, 1024 Hz, 1 Hz
- Time stamp function : 1 time stamped from year to second
- Interrupt output : Wake up every minute or every second
- Alarm interruption : Day, date, hour, minute
- Auto repeat wakeup timer interruption
- Self-monitoring interruption : Crystal oscillation stop, V_{BAT} low, V_{DD} low
- SOUT pin outputs that selected flag bit value



RX8804CE
(3.2 × 2.5 mm, t = 1.0 mm Max.)

Block diagram



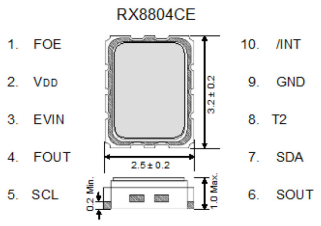
Overview

- Interface type
  I²C-Bus interface Fast-Mode 400 kHz
- High stability
  XA: ± 3.4 x 10^{-6} / -40 °C to +85 °C (equivalent to ±9 s of mo. deviation)
  ± 8.0 x 10^{-6} / +85 °C to +105 °C (equivalent to ±21 s of mo. deviation)
  XB: ± 5.0 x 10^{-6} / -40 °C to +85 °C (equivalent to ±13 s of mo. deviation)
  ± 8.0 x 10^{-6} / +85 °C to +105 °C (equivalent to ±21 s of mo. deviation)
- Clock output function
  Output frequency is selectable from 32.768 kHz, 1024 Hz, 1 Hz
- Wakeup timer function
  Selectable from 244 µs to 32 years (24 bit x 1 ch.)
  Timer source clock selectable from 1/60 Hz, 1 Hz, 64 Hz, 4096 Hz
  Auto release after interrupt output from /INT pin at timer completes
  This operation is auto repeat with a selected cycle, it can be used like a watchdog timer
- Time stamp function
  1 time stamped from year to second
  The time stamp trigger inputs from EVIN pin, self-monitoring and I²C software command
  EVIN pin has function of chattering-cancel
- Alarm function
  It is possible program from day to minute
- Internal state output function
  SOUT pin outputs selected flag-bit value or specified value (H or L)

Pin Function

Signal Name	I / O	Function
SOUT	Output	Internal state output pin
SCL	Input	Serial clock input pin
FOUT	Output	Frequency output pin (CMOS) (frequency selection: 32.768 kHz, 1024 Hz, 1 Hz)
EVIN	Input	Event input pin
VDD	-	Power-supply pin
FOE	Input	The FOUT output control pin
/INT	Output	Interrupts output by Alarm and Timer events (N-ch. open drain)
GND	-	Ground pin
T2	-	Test pin in the factory (Do not connect externally)
SDA	Input / Output	Serial data input and output pin.

Terminal connection / External dimensions (Unit: mm)



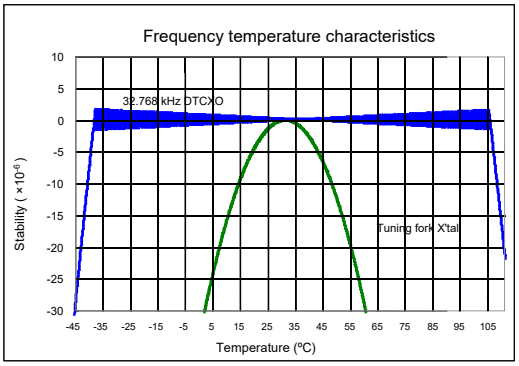
Specifications (characteristics)

∗ Refer to application manual for details

■ Electrical Characteristics

Item	Symbol	Conditions		Min.	Typ.	Max.	Unit
Operating voltage	VDD	-		1.6	3.0	5.5	V
Temp. compensated Voltage	VTEM	-		1.5	3.0	5.5	V
Clock supply voltage	VCLK	-		1.5	3.0	5.5	V
Operating temperature	Ta	-		-40	+25	+105	°C
Stability	Δ f / f	XA	Ta = -40 °C to +85 °C		±3.4		x 10^{-6}
			Ta = +85 °C to +105 °C		±8.0		
		XB	Ta = -40 °C to +85 °C		±5.0		
			Ta = +85 °C to +105 °C		±8.0		
Current consumption (1)	IDD1	fSCL = 0 Hz, /INT = VDD, FOE = GND, FOUT: OFF, Temp. Compensation interval 2.0 s	VDD = 5 V	-	0.4	1.6	µA
Current consumption (2)	IDD2		VDD = 3 V	-	0.35	1.5	

■ 32.768 kHz DTCXO Frequency temperature characteristics (Example)



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).