

REAL TIME CLOCK MODULE (I²C-Bus)

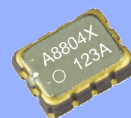
For Automotive

Built-in 32.768 kHz-DTCXO

RA 8804CE

Product Number (Please contact us)
RA8804CE : X1B000381Axxx00

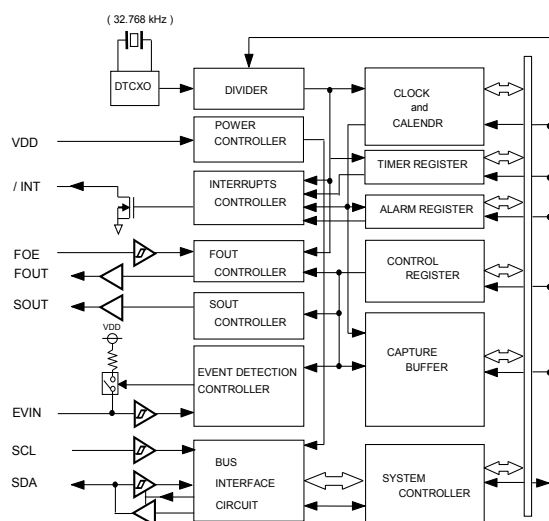
- Built in frequency adjusted 32.768 kHz crystal unit and DTCXO.
- Interface Type : I²C-Bus interface (400kHz)
- Interface voltage range : 1.6 V to 5.5 V
- Temp. compensated voltage range : 1.5 V to 5.5 V
- Timekeeping voltage range : 1.5 V to 5.5 V
- Selectable clock output (32.768 kHz, 1024 Hz, 1 Hz)
- The various functions full calendar, alarm, timer, event detection.
- The time-stamp synchronizing to the event detection of EVIN-pin.
- The SOUT-pin outputs that selected flag bit value.
- Applications: Car audio, Car navigation system, Clock
- Conforms to AEC-Q100 *The I²C-BUS is a trademark of NXP Semiconductors.

RA8804CE
(3.2 × 2.5 × 1.0 mm)

Actual size

RA8804CE

Block diagram



Overview

• Stability

- XA
 - ± 3.4 × 10⁻⁶ / -40 °C to +85 °C (Equivalent to ±9 seconds of month deviation)
 - ± 8.0 × 10⁻⁶ / +85 °C to +105 °C (Equivalent to ±21 seconds of month deviation)
- XB
 - ± 5.0 × 10⁻⁶ / -40 °C to +85 °C (Equivalent to ±13 seconds of month deviation)
 - ± 8.0 × 10⁻⁶ / +85 °C to +105 °C (Equivalent to ±21 seconds of month deviation)

• 32.768 kHz frequency output function

- FOUT pin output (C-MOS output), CL=30 pF
- Output selectable: 32.768 kHz, 1024 Hz, 1 Hz

• Event detection function

- When trigger input to EVIN-pin or specified by program, time and date is recorded. The EVIN-pin with pull-up resistor that is releasable.

• Timer function

- Timer source clock are 1min., 1sec., 64Hz, 4096Hz.
- 24-bit-presetable counter (244us to about 32years.)

• Alarm function

- Alarm function can be set to day of week, day, hour, and minute.

• Internal state output function

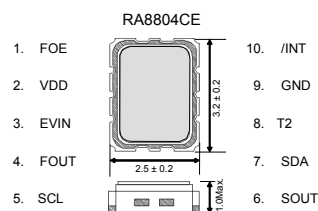
- SOUT pin output (C-MOS output),
- It outputs selected flag-bit value or specified value(H or L).

Pin Function

Signal Name	I / O	Function
SOUT	Output	Internal state output pin.
SCL	Input	Serial clock input pin.
FOUT	Output	The pin outputs the reference clock signal. (CMOS output)
EVIN	Input	Event input pin
VDD	-	Connected to a positive power supply
FOE	Input	The input pin for the FOUT output control.
/INT	Output	Interrupt output (N-ch. open drain).
GND	-	Connected to a ground
T2	-	Use only for testing in the factory. (Do not connect externally.)
SDA	I/O	Data input and output pin.

Terminal connection / External dimensions

(Unit:mm)



Specifications (characteristics)

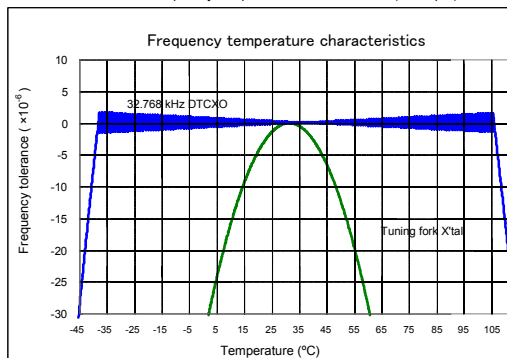
* Refer to application manual for details.

■ Electrical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Operating voltage	V _{DD}	Interface voltage	1.6	3.0	5.5	V
Temp. compensated Voltage	V _{TEM}	Temp. compensated voltage	1.5	3.0	5.5	V
Clock supply voltage	V _{CLK}	Internal clock	1.5	3.0	5.5	V
Operating temperature	T _{OPR}	No condensation	-40	+25	+105	°C
Stability	Δf/f	XA	Ta = -40 °C ~ +85 °C		±3.4 *1	
			Ta = +85 °C ~ +105 °C		±8.0 *2	
		XB	Ta = -40 °C ~ +85 °C		±5.0 *3	
			Ta = +85 °C ~ +105 °C		±8.0 *2	
Current consumption (1)	I _{DD1}	fSCL=0Hz, /INT=V _{DD} , FOE=GND, FOUT: OFF	-	0.4	1.6	μA
Current consumption (2)	I _{DD2}	Temp. Compensation interval 2.0 s.	-	0.35	1.5	

*1) Equivalent to ±9 seconds of month deviation. *2) Equivalent to ±21 seconds of month deviation. *3) Equivalent to ±13 seconds of month deviation.

■ 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.





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ISO/TS16949 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.
	► 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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