REAL TIME CLOCK MODULE (I²C-Bus)

For Automotive

Built-in 32.768 kHz-DTCXO

RA 8804CE

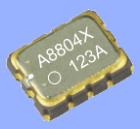
For Automotive

NEW

Pb Free

RoHS Compliant

Product Number (Please contact us)
RA8804CE : X1B000381Axxx00



RA8804CE
(3.2 × 2.5 × 1.0 mm)

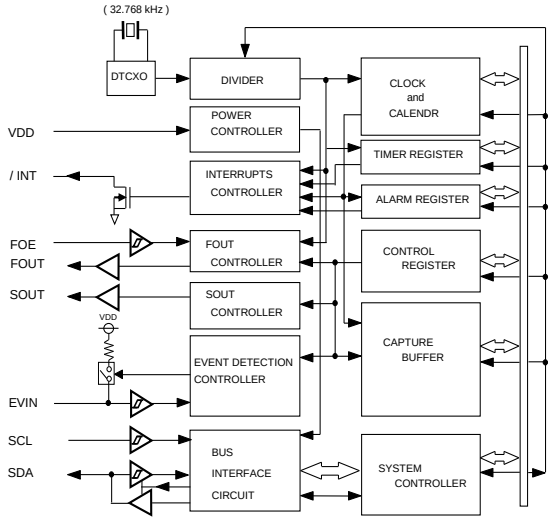
Actual size
RA8804CE



- 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 electronics equipment. Industry machine.
- Conforms to AEC-Q100

*The I²C-BUS is a trademark of NXP Semiconductors.

Block diagram



Overview

- **Stability**
  - XA
  ± 3.4 x 10^{-6} / -40 ºC to +85 ºC
  ± 8.0 x 10^{-6} / +85 ºC to +105 ºC
  - XB
  ± 5.0 x 10^{-6} / -40 ºC to +85 ºC
  ± 8.0 x 10^{-6} / +85 ºC to +105 ºC
- **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-presettable 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).

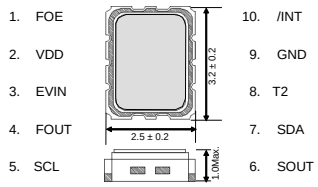
Pin Function

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)

RA8804CE



Specifications (characteristics)

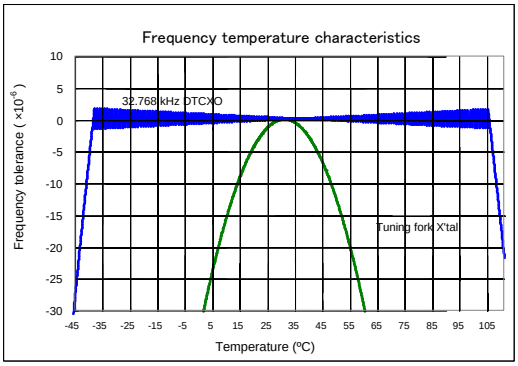
* Refer to application manual for details.

■ 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	ºC
Stability	Δ f / f	XA	Ta = -40 ºC ~ +85 ºC	±3.4 *1			× 10^{-6}
			Ta = +85 ºC ~ +105 ºC	±8.0 *2			
		XB	Ta = -40 ºC ~ +85 ºC	±5.0 *3			
			Ta = +85 ºC ~ +105 ºC	±8.0 *2			
Current consumption (1)	$I_{DD}1$	fSCL=0Hz, /INT=V_{DD}, FOE =GND,FOUT: OFF Temp. Compensation interval 2.0 s.	V_{DD} = 5V	-	0.4	1.6	µA
Current consumption (2)	$I_{DD}2$		V_{DD} = 3V	-	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)



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Contact details

The Netherlands



Elektrostraat 17
NL-7483 PG Haaksbergen

T: +31 (0)53 573 33 33
F: +31 (0)53 573 33 30
E: nl@texim-europe.com

Belgium



Zuiderlaan 14 bus 10
B-1731 Zellik

T: +32 (0)2 462 01 00
F: +32 (0)2 462 01 25
E: belgium@texim-europe.com

UK & Ireland



St. Mary's House, Church Lane
Carlton Le Moorland
Lincoln LN5 9HS

T: +44 (0)1522 789 555
F: +44 (0)845 299 22 26
E: uk@texim-europe.com

Germany North



Bahnhofstrasse 92
D-25451 Quickborn

T: +49 (0)4106 627 07-0
F: +49 (0)4106 627 07-20
E: germany@texim-europe.com

Germany South



Martin-Kollar-Strasse 9
D-81829 München

T: +49 (0)89 436 086-0
F: +49 (0)89 436 086-19
E: germany@texim-europe.com

Austria



Warwitzstrasse 9
A-5020 Salzburg

T: +43 (0)662 216 026
F: +43 (0)662 216 026-66
E: austria@texim-europe.com

Nordic region



Sdr. Jagtvej 12
DK-2970 Hørsholm

T: +45 88 20 26 30
F: +45 88 20 26 39
E: nordic@texim-europe.com

General information

info@texim-europe.com
www.texim-europe.com