

REAL TIME CLOCK MODULE (I²C-Bus)

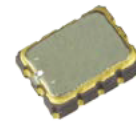
For Automotive, Power switching,
Built-in 32.768 kHz DTCXO, High Stability



Product Number (2,000 pcs / Reel)
RA8900CE UA: X1B000271A00400
RA8900CE UB: X1B000271A00500

RA8900CE

- Built-in frequency adjusted 32.768 kHz crystal unit and DTCXO
- Interface Type : I²C-Bus
- Interface voltage range : 2.5 V to 5.5 V
- Temp. compensated voltage range : 2.0 V to 5.5 V
- Timekeeping voltage range : 1.6 V to 5.5 V
- Auto power switching function : Automatically switches to backup power supply by monitoring the V_{DD} voltage
- Interrupt output : Wake up every minute or every second
- Alarm interruption : Day, date, hour, minute
- Auto repeat wakeup timer interruption
- Conforms to AEC-Q200

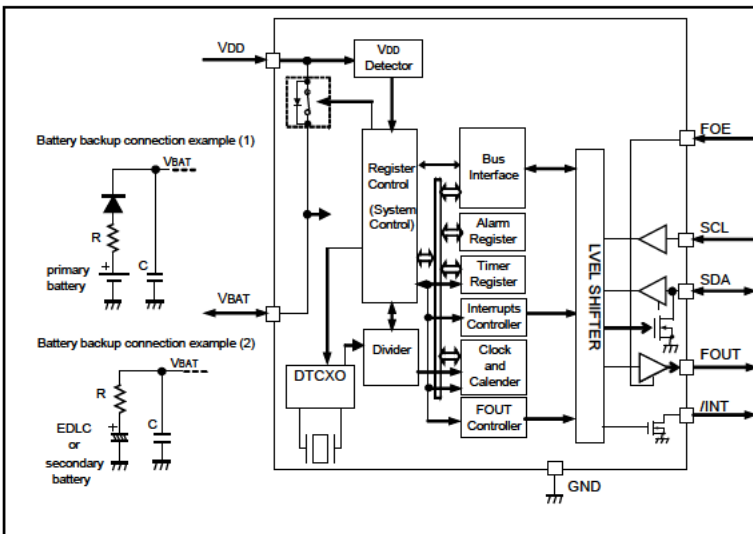


RA8900CE
(3.2 x 2.5 mm, t = 1.0 mm Max.)

The I²C-Bus is a trademark of NXP Semiconductors

Block diagram

Overview

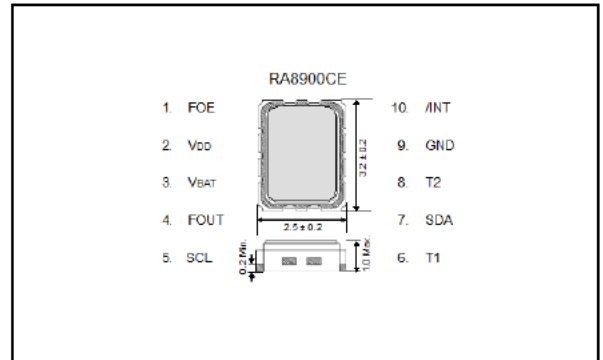


- Interface type
I²C-Bus interface Fast-Mode 400 kHz
- High stability
UA: $\pm 3.4 \times 10^{-6}$ / -40 °C to +85 °C (equiv. to ± 9 s of mo. deviation)
UB: $\pm 5.0 \times 10^{-6}$ / -40 °C to +85 °C (equiv. to ± 13 s of mo. deviation)
- Auto power switch function
The V_{DD} voltage is monitored and it switches to the backup power supply by the automatic operation
Backup power supply switching voltage 1.9 V Min.
- Clock output function
Output frequency is selectable from 32.768 kHz, 1024 Hz, 1 Hz
- Wakeup timer function
Selectable from 244 μ s to 2.8 days (12 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
- Alarm function
It is possible program from day to minute
- Temp. sensor function
Available readout temperature data from embedded temp sensor

Pin Function

Terminal connection / External dimensions (Unit: mm)

Signal Name	I / O	Function
T1	-	Test pin in the factory (Do not connect externally)
SCL	Input	Serial clock input pin
FOUT	Output	Frequency output pin (CMOS) (frequency selection: 32.768 kHz, 1024 Hz, 1 Hz)
VBAT	-	This is a power supply pin for backup battery Connect an EDLC, a secondary battery, a primary battery In the backup voltage range, supplied to IC, from this pin
VDD	-	Power-supply pin
FOE	Input	The FOUT output control pin
/INT	Output	Interrupt output (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



Specifications (characteristics)

* Refer to application manual for details

Electrical Characteristics

tem	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Operating voltage	V _{DD}	-	2.5	3.0	5.5	V	
Temp. compensated Voltage	V _{TEM}	-	2.0	3.0	5.5	V	
Clock supply voltage	V _{CLK}	-	1.6	3.0	5.5	V	
V _{DD} detect voltage (3)	V _{DET3}	-	2.3	2.4	2.5	V	
Operating temperature	T _a	-	-40	+25	+85 ^{*1)}	°C	
Stability	$\Delta f / f$	UA	T _a = -40 °C to +85 °C		± 3.4	$\times 10^{-6}$	
		UB	T _a = -40 °C to +85 °C		± 5.0		
		UC	T _a = -30 °C to +70 °C				
Current consumption (1)	I _{DD1}	fSCL = 0 Hz, /INT = V _{DD} , FOE = GND, V _{DD} = V _{BAT} , FOUT: OFF, Temp. Compensation interval 20 s	V _{DD} = 5 V	-	0.72	1.5	μ A
Current consumption (2)	I _{DD2}		V _{DD} = 3 V	-	0.70	1.4	μ A

*1) Please contact us about +85 °C < T_a

32.768 kHz-DTCXO Frequency temperature characteristics (Example)

