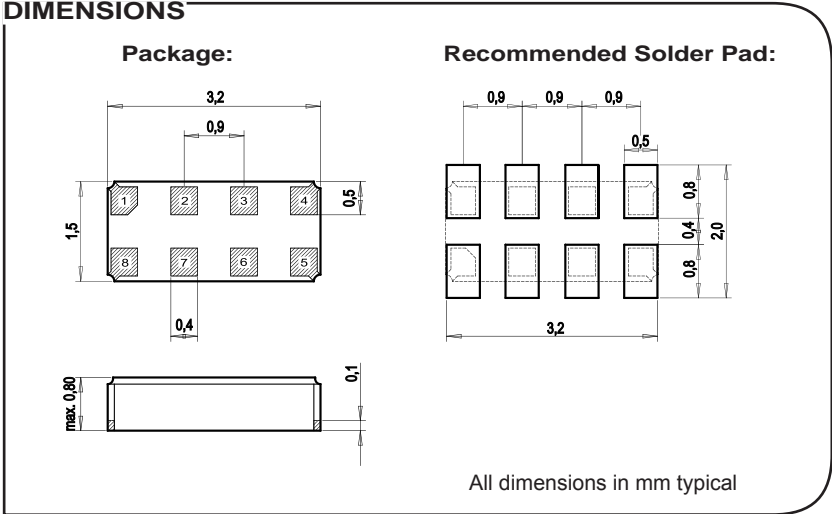
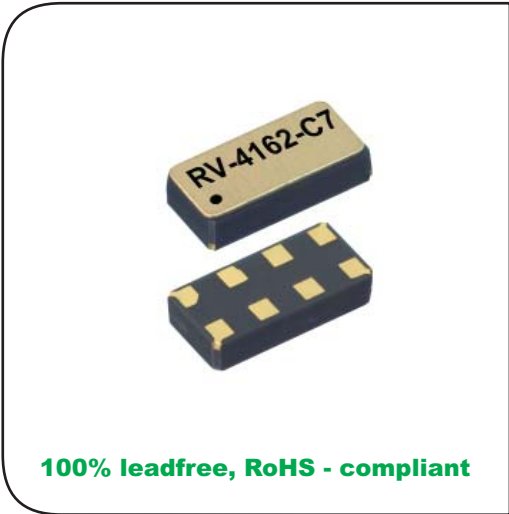


# RV-4162-C7

## Real Time Clock Module with I2C Bus



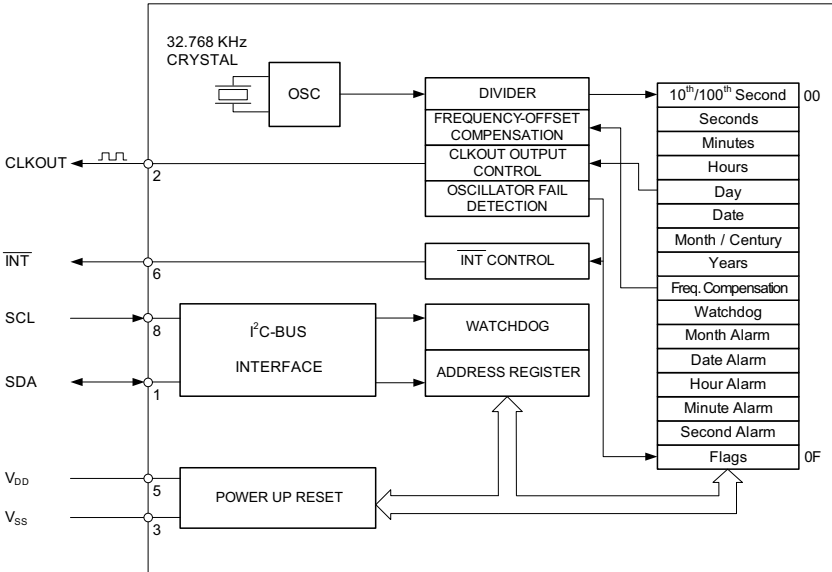
**Ultra small SMT ceramic package with integrated 32.768kHz Crystal Automotive qualified, according to AEC-Q200 Rev. C**  
**I<sup>2</sup>C Interface Address: D0h**  
**Frequency-Offset Trimming Register**  
**Programmable Alarm and Interrupt**  
**Oscillator Fail Detection**  
**Watchdog Timer**  
**Programmable Clock-Output**  
**Time keeping mode down to 1.0 V**

### DESCRIPTION:

This ultra small RTC Module has been specially designed for miniature and cost sensitive high volume applications. The very small SMT ceramic package combines the 32.768 kHz crystal unit with the CMOS-based oscillator and real-time-clock circuitry. The clock function provides tenths/hundredths of seconds, seconds, minutes and hours. The calendar function tracks date, month, year and century with automatic leap year compensation. Programmable CLKOUT frequencies, alarm settings and watchdog function increase flexibility using this device.

For pick-and-place equipment, the parts are available in 12 mm tape:  
 7" (178 mm) reel with 1'000 parts  
 7" (178 mm) reel with 3'000 parts

### BLOCK DIAGRAM:



**ELECTRICAL CHARACTERISTICS AT 25°C:**

	Symbol	Condition	Min.	Typ.	Max	Unit
Supply voltage	V <sub>DD</sub>	I <sup>2</sup> C Bus Active	1.3		4.4	V
Supply voltage	V <sub>DD</sub>	Time keeping	1.0		4.4	V
Current consumption during access	I <sub>DD</sub>	f <sub>scl</sub> =400 kHz V <sub>DD</sub> 3 V		35		μA
		f <sub>scl</sub> =400 kHz V <sub>DD</sub> 2 V		20		μA
Current consumption Time keeping mode	I <sub>DDO</sub>	f <sub>scl</sub> =0 Hz, V <sub>DD</sub> 3 V		350	500	nA
		f <sub>scl</sub> =0 Hz, V <sub>DD</sub> 1 V		270	400	nA
CLKOUT frequency		Programmable	32768...to...1			Hz
Frequency tolerance	ΔF/F	@ 25°C	±20 <sup>1)</sup>			ppm
Aging first year max.	ΔF/F	@ 25°C	± 3			ppm
Frequency vs. temp.	ΔF/F <sub>O</sub>	20 ≤ T <sub>0</sub> ≤ 30	-0.035 ppm/°C × (T - T <sub>0</sub> ) <sup>2</sup> ±10%			ppm

1) Tighter and wider frequency tolerances on request.

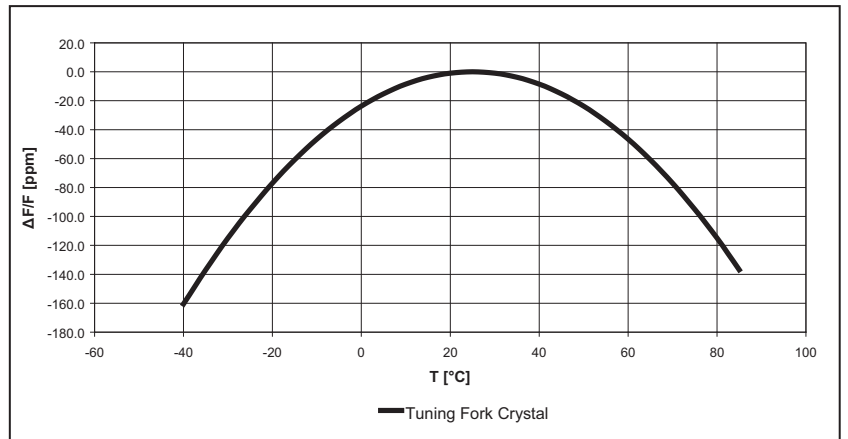
**ENVIRONMENTAL CHARACTERISTICS:**

	Conditions	Max. Dev.
Storage temp. range	-55 to +125°C	
TA Operating temperature range	-40 to +85°C	
Shock resistance	ΔF/F 5000 g, 0.3 ms, ½ sine	+/-5 ppm
Vibration resistance	ΔF/F 20 g / 10–2000 Hz	+/-5 ppm

**TERMINATIONS AND PROCESSING:**

Package-Type	Termination	Processing
Ceramic 8-pin Metal Lid	For SMD mounting Au plated pads	Reflow soldering 260°C / 20 s max.

**FREQUENCY TEMPERATURE CHARACTERISTICS:**



**PIN CONNECTIONS TOP VIEW:**

Production Date Code

#8 #5

M 909 A 1

4162

#1 #4

Pin 1 Index

Part Designation

Pin	Connection
1	SDA Serial Data
2	CLKOUT Frequency Output
3	V <sub>SS</sub> Ground
4	NC not connected
5	V <sub>DD</sub> Power Supply Voltage
6	INT Interrupt Output
7	NC not connected
8	SCL Serial Clock Input

All specifications subject to change without notice.

