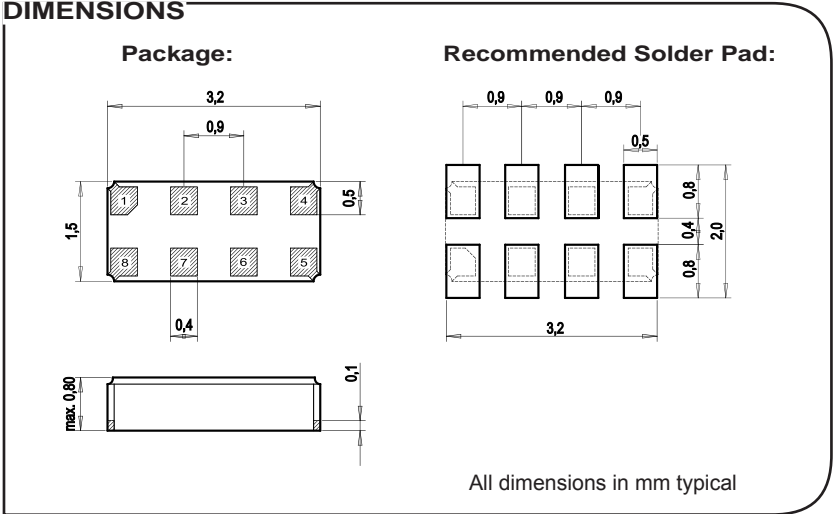
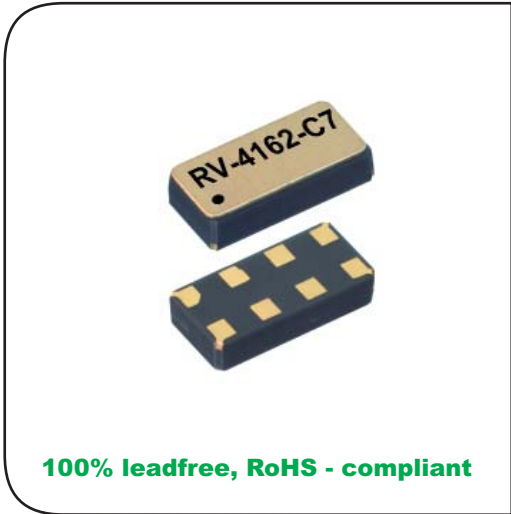


# RV-4162-C7

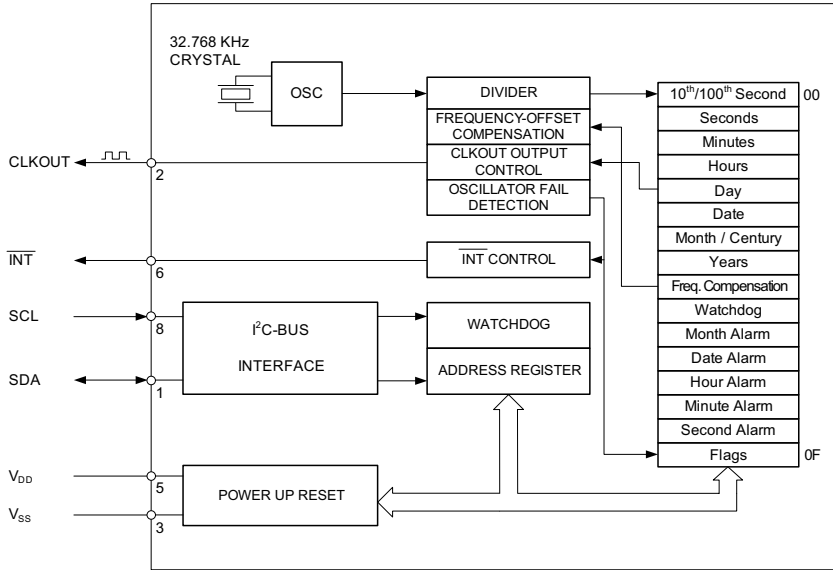
## Real Time Clock Module with I2C Bus



Ultra small SMT ceramic package with integrated 32.768kHz Crystal 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.

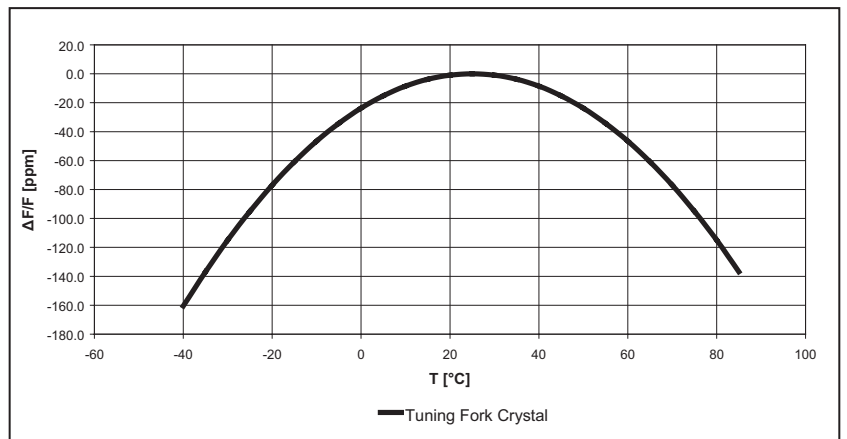
**ENVIRONMENTAL CHARACTERISTICS:**

	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

Part Designation: M 909 A 1

Pin 1 Index: #1 #4

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.



Micro Crystal AG  
Mühlestrasse 14  
CH-2540 Grenchen  
Switzerland

Tel. +41 32 655 82 82  
Fax +41 32 655 82 83  
sales@microcrystal.com  
www.microcrystal.com