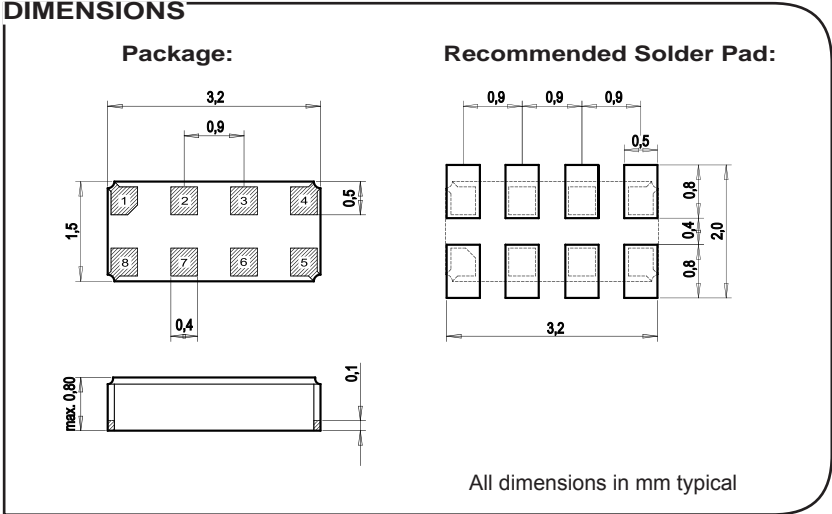
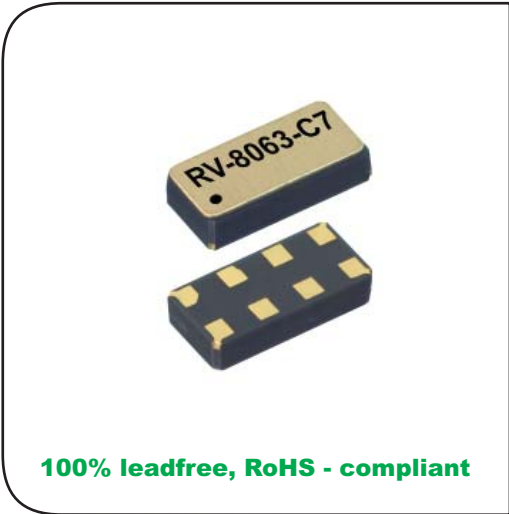


# RV-8063-C7

## Real Time Clock Module with SPI Bus



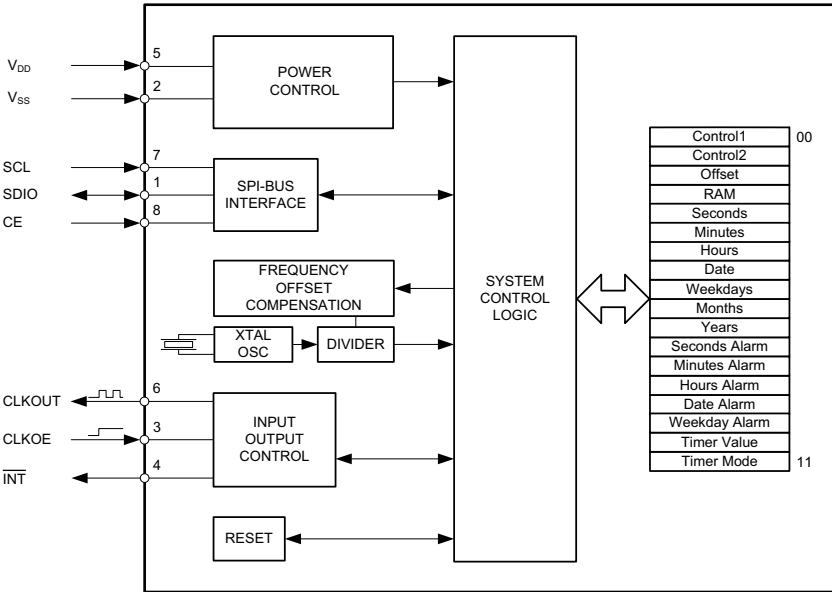
**Ultra small SMT ceramic package with integrated 32.768kHz Crystal Automotive qualified, according to AEC-Q200 Rev. C**  
**High Speed SPI Interface 7 MHz**  
**Programmable Offset Register**  
**Alarm and Timer Interrupt**  
**Minute and Half Minute Interrupt**  
**Oscillator Stop Detection**  
**Programmable Clock Output**  
**Time keeping mode down to 0.9 V**  
**Very low power consumption 190nA**

### DESCRIPTION:

This ultra small RTC Module with a 3-wire SPI-bus 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 programmable Offset Register value allows aging compensation. The calendar function tracks Weekdays, Date, Month and Years with automatic Leap Year calculation. The clock function provides, Seconds, Minutes and Hours in AM/PM or 24h format. Programmable Alarm, Timer, Interrupt and CLKOUT frequency settings increase flexibility using this device. The typical current consumption @  $V_{DD} = 3 V$  is only 190 nA. 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>	SPI Bus Active	1.8		5.5	V
Supply voltage	V <sub>DD</sub>	Time keeping	0.9		5.5	V
Current consumption during access	I <sub>DD</sub>	f <sub>SCL</sub> = 1 MHz, V <sub>DD</sub> 3 V		40		µA
		f <sub>SCL</sub> = 5 MHz, V <sub>DD</sub> 3 V		200		µA
Current consumption Time keeping mode	I <sub>DDO</sub>	f <sub>SCL</sub> = 0 Hz, V <sub>DD</sub> 3 V		190	240	nA
		f <sub>SCL</sub> = 0 Hz, V <sub>DD</sub> 1 V		180	230	nA
CLKOUT frequency	F <sub>CLKOUT</sub>	Programmable	32768...to...1			Hz
Frequency tolerance	ΔF/F	32768Hz @25°C	±20 <sup>1)</sup>			ppm
Aging first year max.	ΔF/F	@ 25°C			± 3	ppm
Frequency vs. temp.	ΔF/F <sub>0</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.

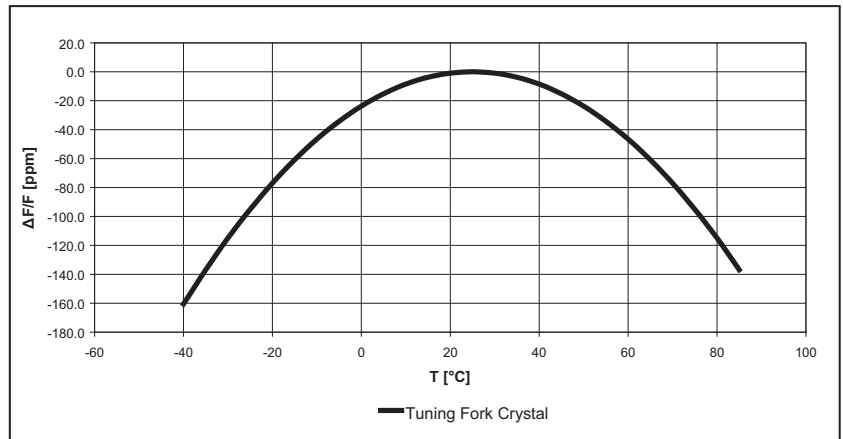
**ENVIRONMENTAL CHARACTERISTICS:**

		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-503-A 1

8063

#1 #4

Pin 1 Index

Part Designation

Pin	Connection
1	SDIO Serial Data
2	V <sub>SS</sub> Ground
3	CLKOE Clock Output Enable
4	INT̄ Interrupt Output
5	V <sub>DD</sub> Power Supply Voltage
6	CLKOUT Clock Frequency Output
7	SCL Serial Clock Input
8	CE Chip Enable

All specifications subject to change without notice.



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