

# RV-2123-C2

## Real-Time Clock Module with SPI-Bus



### APPLICATIONS

- IoT
- Metering
- Industrial
- Portables
- Automotive
- Health Care

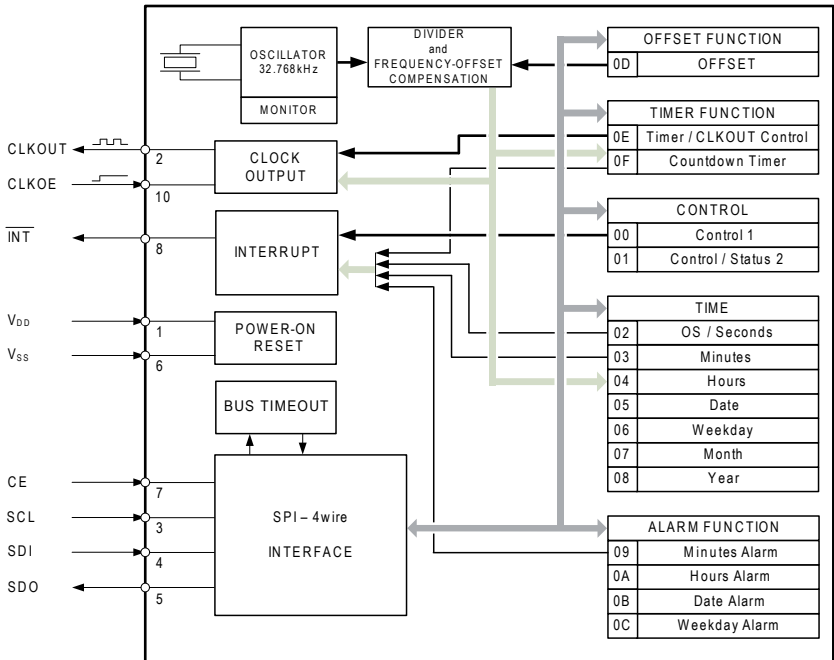
### DESCRIPTION

The RV-2123-C2 is a SMT Real-Time Clock Module that incorporates an integrated CMOS circuit together with an XTAL. It operates under vacuum in a hermetically sealed ceramic package with glass lid.

### FEATURES

- Low power consumption: 130 nA @ 3 V.
- Wide operating voltage range: 1.1 V to 5.5 V.
- Time accuracy:  $\pm 20$  ppm @ 25°C.
- Operating temperature range: -40 to +85°C.
- User programmable offset value.
- Oscillator stop detection.
- Provides year, month, weekday, date, hours, minutes and seconds.
- Automatic leap year calculation: 2000 to 2099.
- Timer and Alarm functions.
- Clock output frequencies: 32.768 kHz to 1 Hz.
- SPI-bus interface: 4-wire, 8 MHz.
- 100% Pb-free, RoHS-compliant.
- Automotive qualification according to AEC-Q200 available.

### BLOCK DIAGRAM



## ELECTRICAL CHARACTERISTICS AT 25°C

More detailed information can be found in the Application Manual.

	Symbol	Condition	Min.	Typ.	Max	Unit
Supply voltage	V <sub>DD</sub>	SPI-bus active	1.6		5.5	V
Supply voltage	V <sub>DD</sub>	Time keeping	1.1		5.5	V
Current consumption Time keeping mode	I <sub>DDO</sub>	SPI-bus inactive, V <sub>DD</sub> = 3 V		130	180	nA
CLKOUT frequency	F <sub>CLKOUT</sub>	Programmable	32768 to 1			Hz
Freq. tol. typ./max.	ΔF/F	@ 25°C	±10 / ±20 <sup>1)</sup>			ppm
Aging first year max.	ΔF/F	@ 25°C	±3			ppm

1) Tighter frequency tolerances on request.

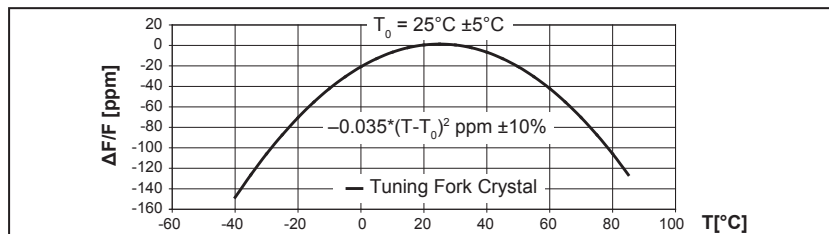
## ENVIRONMENTAL CHARACTERISTICS

	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	Termination	Processing
SON-10	Au flashed pads	IPC/JEDEC J-STD-020C 260°C / 20 - 40 s

## FREQUENCY TEMPERATURE CHARACTERISTICS



## PIN CONNECTIONS TOP VIEW

Pin	Connection
1	V <sub>DD</sub> Power Supply Voltage
2	CLKOUT Clock Output
3	SCL Serial Clock Input
4	SCI Serial Data Input
5	SDO Serial Data Output
6	V <sub>SS</sub> Ground
7	CE Chip Enable
8	INT̄ Interrupt Output
9	NC Not connected
10	CLKOE Clock Output Enable

Part Designation: #10, #6, 2123, M826A1, #1, #5, Product Date Code, Pin 1 Index

## ORDERING INFORMATION

RV	2123	C2	TA	QC
RTC module	Product type	Package size C2 = 5.0 x 3.2 x 1.2 mm	Temperature range TA = -40 to +85°C (Standard)	Qualification QC = Commercial Grade (Standard) QA = Automotive Grade AEC-Q200

A unique part number will be generated for each product specification, i.e.:

20xxxx-MG01	1'000 pcs (in 12 mm tape on 7" reel)
20xxxx-PG05	5'000 pcs (in 12 mm tape on 13" reel)

All specifications subject to change without notice.



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