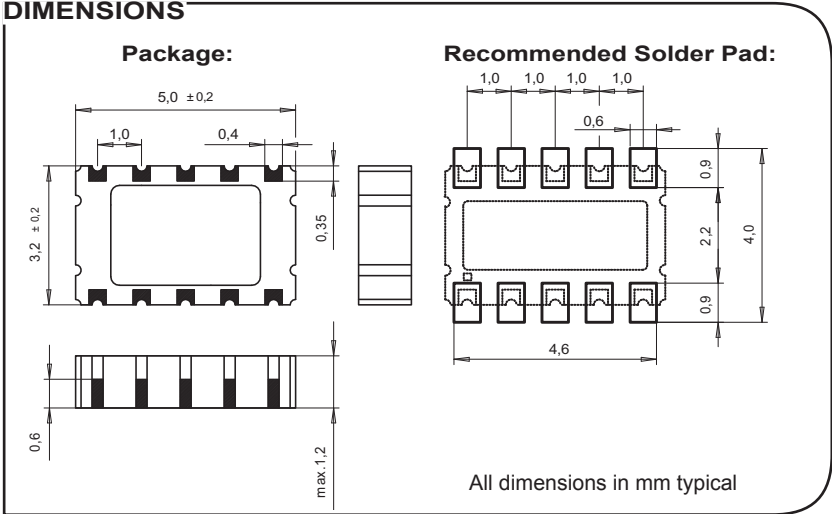
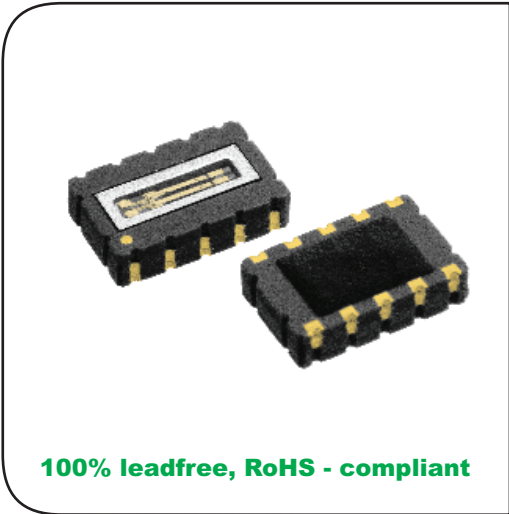


RV-2123-C2

Real Time Clock Module with SPI Bus



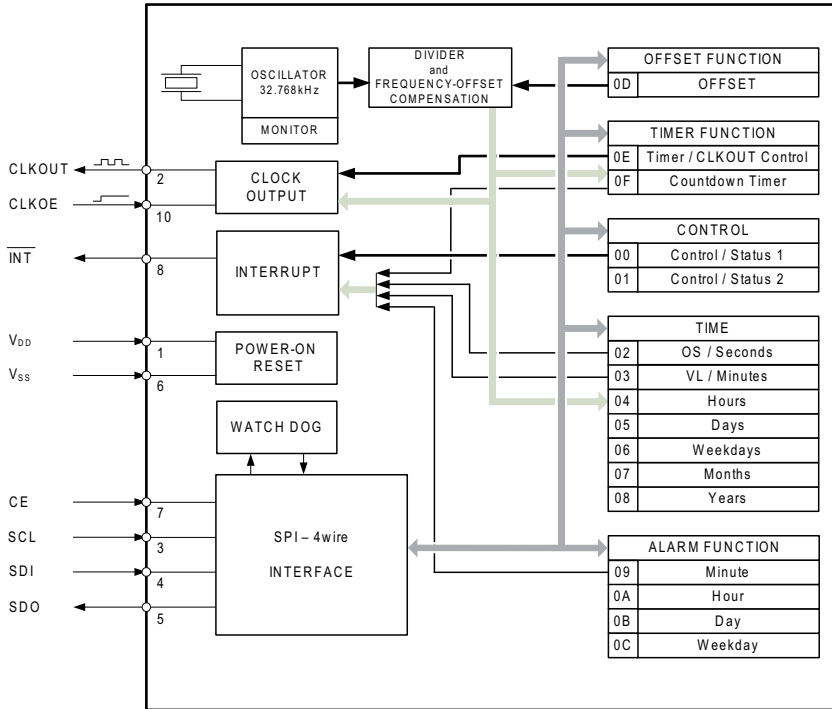
Ultra low power consumption 130nA
Automotive qualified, according to AEC-Q200 Rev. C
Xtal integrated solution.
Frequency-Offset Trimming Register
Miniature SMT ceramic package
Very tight frequency tolerance
SPI Bus Interface (SCL up to 8 MHz)
Programmable Clock-output
Low aging
Time keeping mode down to 1.1 V
Programmable alarm, timer and interrupt functions

DESCRIPTION:

This RTC IC has been specially designed to achieve an ultra-low power consumption of typically 130nA @ V_{DD} 3.0V in time-keeping mode. The very small SMT ceramic-package combines the 32.768 kHz crystal unit with the CMOS-based oscillator and real-time-clock circuitry. The calendar function tracks year, month, date, and day-of-the-week with built-in century and leap-year flags. The clock function tracks minute and second in 24-hour format. Programmable alarm setting and universal timer functions increase flexibility.

For pick-and-place equipment, the parts are available in 12 mm tape:
 7" (178 mm) reel with 1'000 parts
 13" (330 mm) reel with 5'000 parts

BLOCK DIAGRAM:



**ELECTRICAL CHARACTERISTICS
AT 25°C:**

	Symbol	Condition	Min.	Typ.	Max	Unit
Supply voltage	V_{DD}	SPI Bus Active	1.6		5.5	V
Supply voltage	V_{DD}	Time keeping	1.1		5.5	V
Current consumption during access	I_{DD}	fsc1=1 MHz V_{DD} 3 V		30	80	μ A
		fsc1=4.5 MHz V_{DD} 3 V		250	400	μ A
Current consumption Time keeping mode	I_{DDO}	fsc1=0 Hz, V_{DD} 3 V		130	180	nA
		fsc1=0 Hz, V_{DD} 1 V		110	160	nA
CLKOUT frequency		Programmable	32768...to...1			Hz
Frequency tolerance	$\Delta F/F$	@ 25°C	$\pm 10 / \pm 20$ ¹⁾			ppm
Aging first year max.	$\Delta F/F$	@ 25°C	± 3			ppm
Frequency vs. temp.	$\Delta F/F_O$	$20 \leq T_0 \leq 30$	$-0.035 \text{ ppm}/_{\text{C}} \cdot (T - T_0)^2 \pm 10\%$			

1) Tighter and wider frequency tolerances on request.

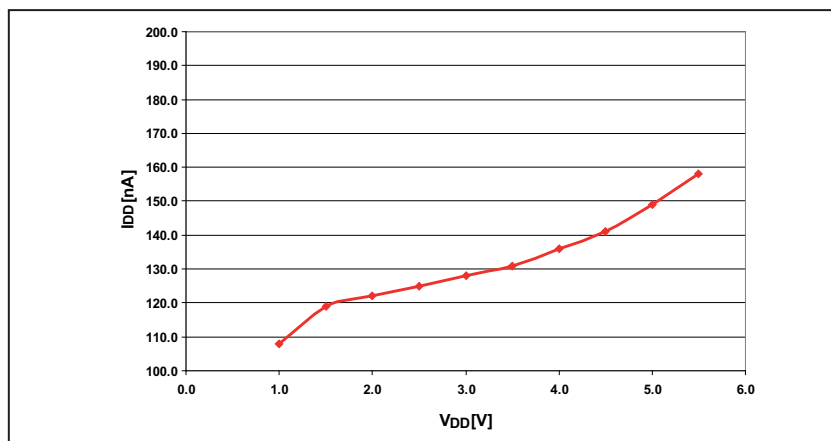
ENVIRONMENTAL CHARACTERISTICS:

	Conditions	Max. Dev.
Storage temp. range	-55 to +125°C	
TA Operating temperature range	-40 to +85°C	
Shock resistance	$\Delta F/F$ 5000 g, 0.3 ms, 1/2 sine	+/-5 ppm
Vibration resistance	$\Delta F/F$ 20 g / 10-2000 Hz	+/-5 ppm

TERMINATIONS AND PROCESSING:

Package-Type	Termination	Processing
SON 10-pin	For SMD mounting Au plated pads	Reflow soldering 260°C / 20 s max.

**CURRENT CONSUMPTION vs.
POWER SUPPLY VOLTAGE:**



**PIN CONNECTIONS
TOP VIEW:**

Pin	Connection
1	V_{DD} Power Supply Voltage
2	CLKOUT Frequency output
3	SCL Serial clock input
4	SDI Serial Data In
5	SDO Serial Data Out
6	V_{SS} Ground
7	CE Chip Enable
8	\overline{INT} Interrupt output
9	NC not connected
10	CLKOE CLK output enable

All specifications subject to change without notice.

