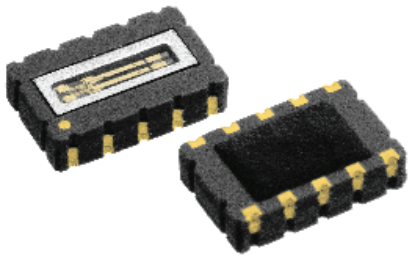
MICRO CRYSTAL SWITZERLAND

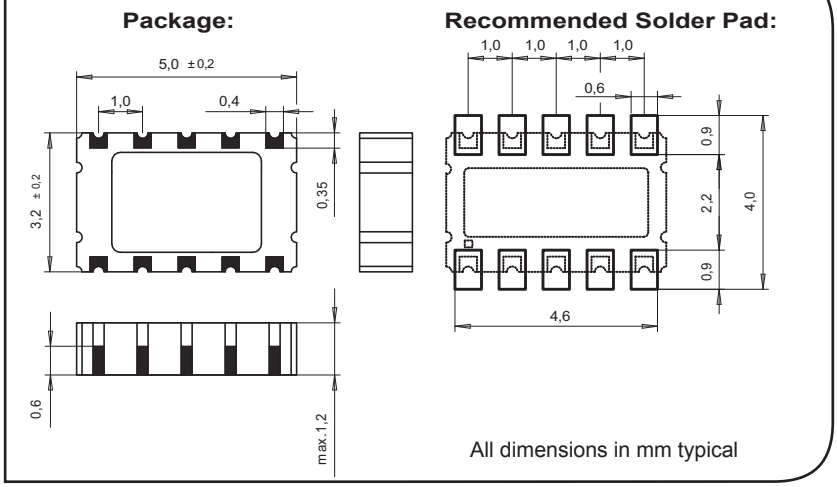
RV-2123-C2

Real Time Clock Module with SPI Bus



100% leadfree, RoHS - compliant

DIMENSIONS

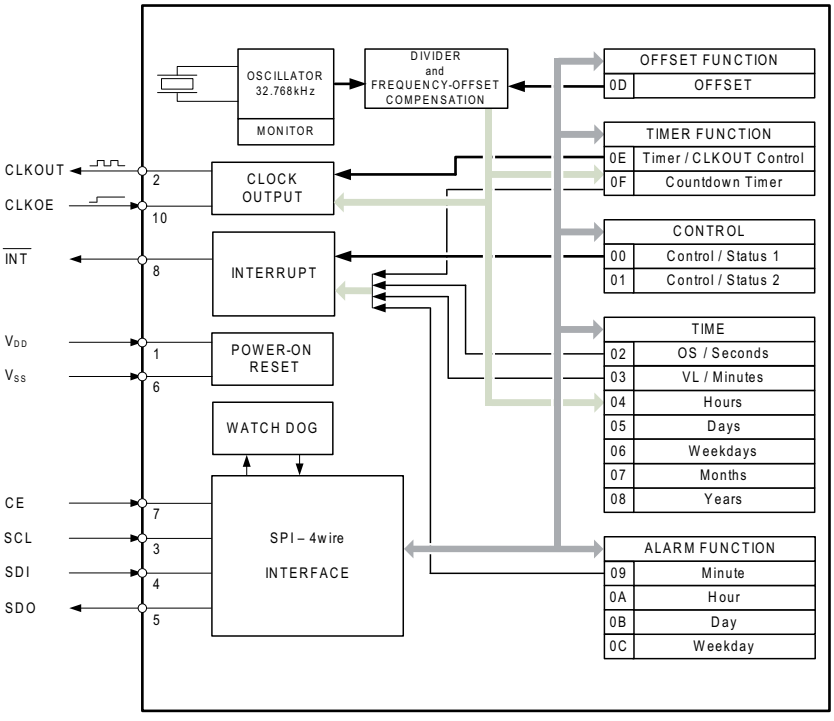


Ultra low power consumption 130nA
Automotive qualified, according to AEC-Q200 Rev. C
Xtal integrated solution.
Frequency-Offset Trimming Register
Miniature SMT ceramic package
Very tight frequency tolerance
SPI Bus Interface (SCL up to 8 MHz)
Programmable Clock-output
Low aging
Time keeping mode down 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}	fscl=1 MHz V_{DD} 3 V		30	80	µA
		fscl=4.5 MHz V_{DD} 3 V		250	400	µA
Current consumption Time keeping mode	I_{DDO}	fscl=0 Hz, V_{DD} 3 V		130	180	nA
		fscl=0 Hz, V_{DD} 1 V		110	160	nA
CLKOUT frequency		Programmable	32768...to...1			Hz
Frequency tolerance	ΔF/F	@ 25°C	±10 / ±20 [1]			ppm
Aging first year max.	ΔF/F	@ 25°C	± 3			ppm
Frequency vs. temp.	$\Delta F/F_O$	$20 \le T_0 \le 30$	$-0.035\ ^{ppm}/_{°C^2}(T - T_0)^2 \pm 10\%$			ppm

1) Tighter and wider frequency tolerances on request.

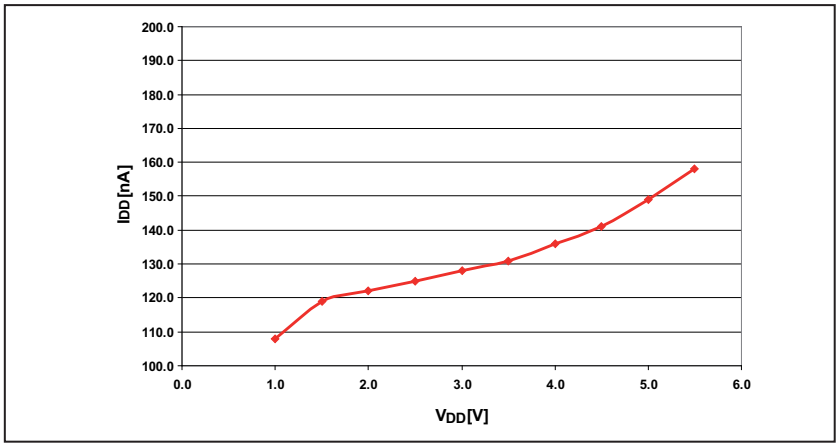
ENVIRONMENTAL CHARACTERISTICS:

		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

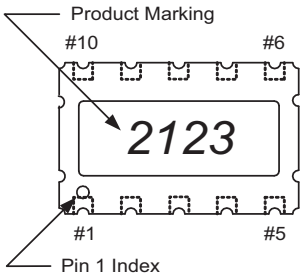
TERMINATIONS AND PROCESSING:

Package-Type	Termination	Processing
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.

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