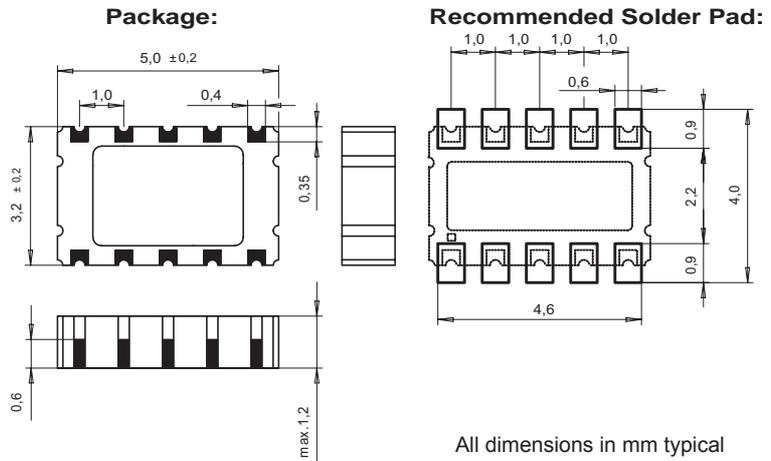


# RV-3049-C2

## Real Time Clock Module with SPI-Bus



### DIMENSIONS



**Extremely Accurate RTC Module with embedded Xtal.**  
**SPI Interface**  
**Temperature Compensation**

**Option A: Calibrated**  
**Accuracy ± 3ppm / @ +25°C**  
**Accuracy ± 4ppm / 0°C to +50°C**  
**Accuracy ± 6ppm / -40°C to +85°C**  
**Accuracy ± 8ppm / -40°C to +125°C**

**Option B: Default**  
**Accuracy ± 3ppm / @ +25°C**  
**Accuracy ± 5ppm / 0°C to +50°C**  
**Accuracy ± 10ppm / -10°C to +60°C**  
**Accuracy ± 25ppm / -40°C to +85°C**  
**Accuracy ± 30ppm / -40°C to +125°C**

**Option C: not compensated**

### DESCRIPTION:

The RV-3049-C2 is a Real-Time-Clock Module with embedded Crystal. This RTC has 4-wire serial Interface (SPI-Bus) and offers temperature compensated time. The STC-Smart Temperature Compensation is calibrated in the factory and leads to a very high time-accuracy of ± 6ppm from -40°C to +85°C and ± 8ppm from -40°C to +125°C.

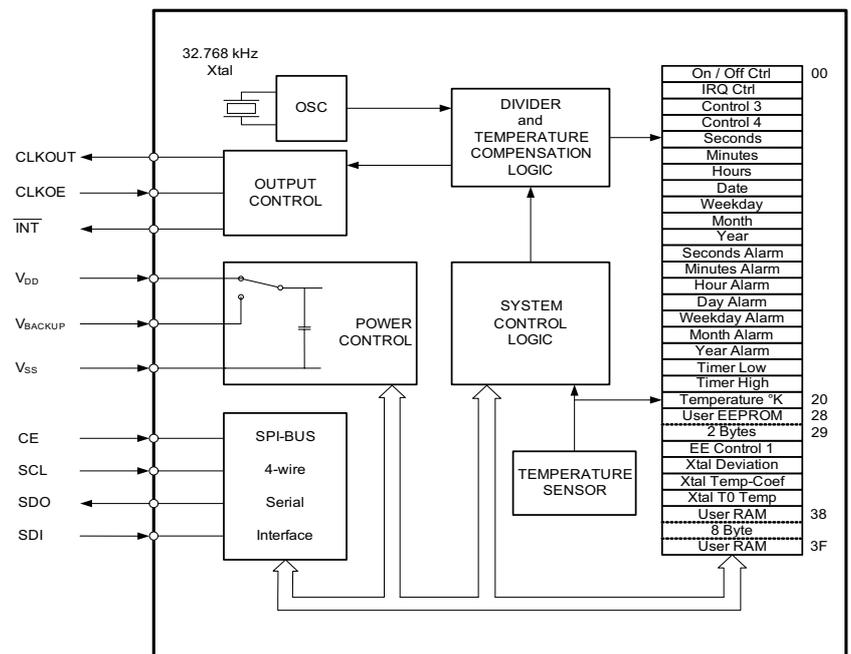
Beside standard RTC functions, it includes a Backup-Battery Input with internal switchover function, a programmable Trickle-charge circuitry, an integrated Temperature Sensor with digital-output and offers 8 Bytes RAM and 2 Bytes EEPROM for customer's application.

The calendar function tracks year and leap-year flags. The clock tracks second, minute and hour 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
- 10" (254 mm) reel with 2'500 parts
- 13" (330 mm) reel with 5'000 parts

### BLOCKDIAGRAM:



**ELECTRICAL CHARACTERISTICS AT 25°C:**

	Symbol	Condition	Min.	Typ.	Max	Unit
Supply voltage	V <sub>DD</sub>	Time keeping	1.3		5.5	V
Supply voltage	V <sub>DD</sub>	Temp. comp.	1.8		5.5	V
Current consumption	I <sub>DDO</sub>	V <sub>DD</sub> = 3V		850	1000	nA
CLKOUT frequency		Progr.	32.768/1024/32/1			Hz
Frequency Tolerance	ΔF/F	@ 25°C		±10	±20	ppm
Aging first year	ΔF/F	@ 25°C			± 3	ppm
Freq.vs.Temp. Opt. C	ΔF/F <sub>OPR</sub>	20 ≤ T <sub>0</sub> ≤ 30	-0.035 ppm/°C · (T - T <sub>0</sub> ) <sup>2</sup> ±10%			ppm
Time accuracy Opt. A	Δt/t	-40 to +85°C			± 6	ppm
Time accuracy Opt. B	Δt/t	-40 to +85°C			± 25	ppm

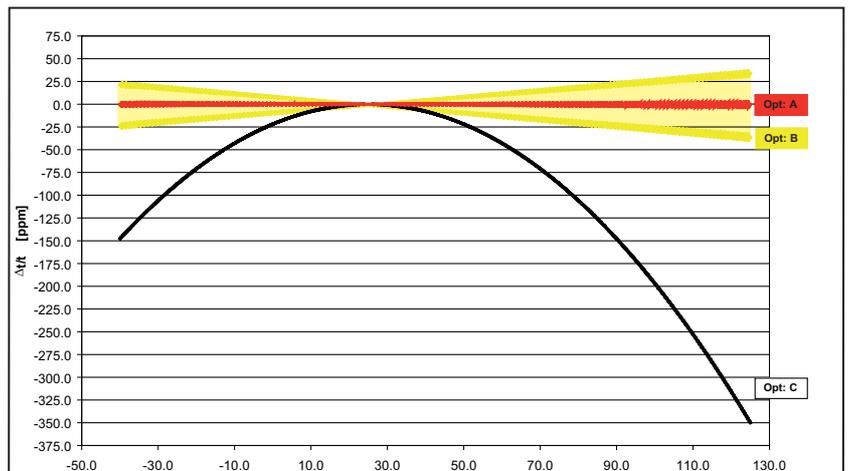
**ENVIRONMENTAL CHARACTERISTICS:**

		Conditions	Max. Dev.
Storage temp. range		-55 to +125°C	
Industrial operating temp. range		-40 to +85°C	
Extended operating temp. range		-40 to +125°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

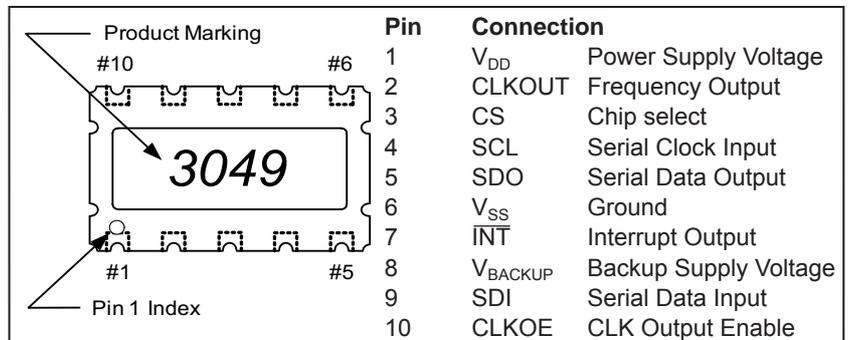
**PACKAGE, TERMINATIONS AND PROCESSING:**

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

**FREQUENCY TEMPERATURE CHARACTERISTICS:**



**PIN CONNECTIONS TOP VIEW:**



All specifications subject to change without notice. 10.08



Micro Crystal AG  
Mühlestrasse 14  
CH-2540 Grenchen  
Switzerland

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