

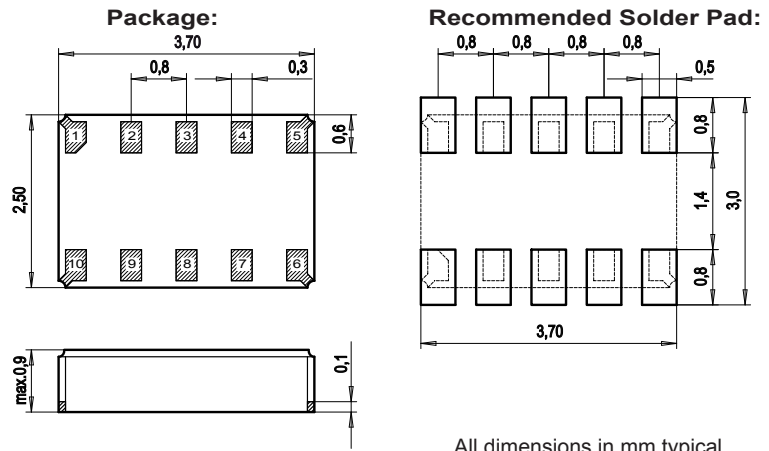
# RV-3049-C3

Real Time Clock Module with SPI-Bus



100% leadfree, RoHS - compliant

## DIMENSIONS



**Extremely Accurate RTC Module with embedded Xtal.**  
**SPI Interface**  
**Temperature Compensation**  
**Automotive qualified, according to AEC-Q200 Rev. C**

Option A:	Calibrated	
Temperature	Time Deviation	
@ +25°C	± 0.26 s/day	± 3ppm
0°C to +50°C	± 0.35 s/day	± 4ppm
-10°C to +60°C	± 0.44 s/day	± 5ppm
-40°C to +85°C	± 0.52 s/day	± 6ppm
-40°C to +125°C	± 0.70 s/day	± 8ppm

Option B:	Default	
Temperature	Time Deviation	
@ +25°C	± 0.26 s/day	± 3ppm
0°C to +50°C	± 0.44 s/day	± 5ppm
-10°C to +60°C	± 0.87 s/day	±10ppm
-40°C to +85°C	± 2.17 s/day	±25ppm
-40°C to +125°C	± 2.60 s/day	±30ppm

## BLOCKDIAGRAM:

## DESCRIPTION:

The RV-3049-C3 is an ultra miniature Real-Time-Clock Module with embedded Crystal. This RTC has an SPI Bus (4-wire Serial-Interface) 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.

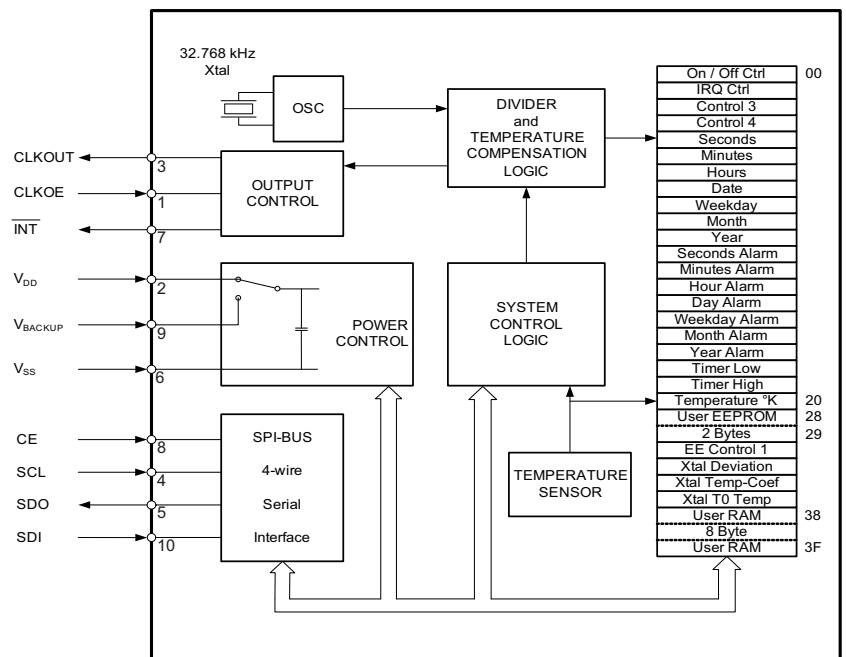
Beside standard RTC functions, it includes a Backup-Battery Input with internal switchover function, a programmable Trickle-charge circuitry, an integrated Temperature Sensor with digital-output and offers 8 Bytes RAM and 2 Bytes EEPROM for customer's application.

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

7" (178 mm) reel with 3'000 parts



**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		800	1000	nA
CLKOUT frequency		Progr.	32.768/1024/32/1			Hz
Frequency Tolerance	ΔF/F	@ 25°C		±10	±20	ppm
Freq.vs.Temp.	ΔF/F <sub>TOPR</sub>	20 ≤ T <sub>0</sub> ≤ 30	-0.035 ppm/°C · (T - T <sub>0</sub> ) <sup>2</sup> ±10%			ppm
Aging first year	ΔF/F	@ 25°C			± 3	ppm
Time accuracy Opt. A	Δt/t	@ 25°C			±0.26	s/day
		-40 to +85°C			±0.52	s/day
Time accuracy Opt. B	Δt/t	@ 25°C			±0.26	s/day
		-40 to +85°C			±2.17	s/day

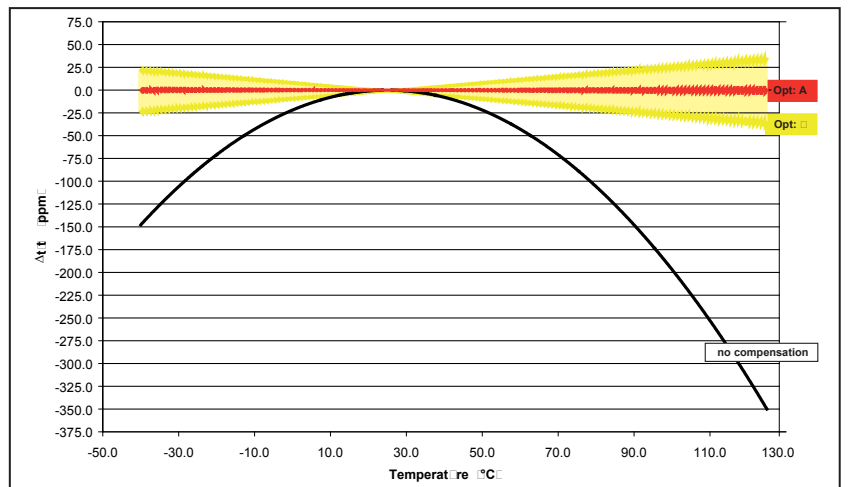
**ENVIRONMENTAL CHARACTERISTICS:**

		Conditions	Max. Dev.
Storage temp. range		-55 to +125°C	
TA Operating temperature range		-40 to +85°C	
TB Extended oper. 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 plated pads	Reflow soldering 260°C/20 s max.

**FREQUENCY TEMPERATURE CHARACTERISTICS:**



**PIN CONNECTIONS TOP VIEW:**

Pin	Connection
1	CLKOE CLK Output Enable
2	V <sub>DD</sub> Supply Voltage
3	CLKOUT Clock Output
4	SCL Serial Clock Input
5	SDO Serial Data Output
6	V <sub>SS</sub> Ground
7	INT Interrupt Output
8	CS Chip Select
9	V <sub>BACKUP</sub> Backup Supply Voltage
10	SDI Serial Data Input

All specifications subject to change without notice.



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