



General Description

The RV-3029-C3 is an ultra-miniature Real-Time-Clock Module with embedded Crystal. This RTC has an I2C Bus (2-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.

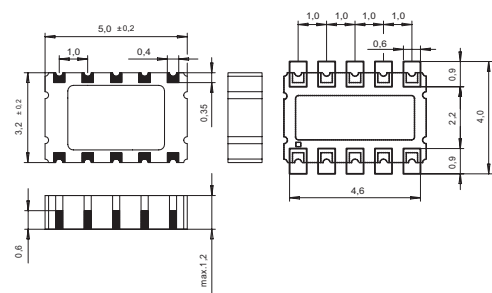
The calendar function tracks year and leap-year flags. The clock tracks second, minute and hour in 24-hour format. Programmable alarm setting and universal timer functions increase flexibility.

For pick-and-place equipment, the parts are available in 12 mm tape: 7" (178 mm) reel with 1'000 parts or reel with 3'000 parts

Applications

- Reference Clocks and Timers
Electricity Meters
Gas Meters
White Goods
Timing Applications
Battery Powered Devices
POS
High Duration Timers

Dimensions



Real Time Clock Module with I2C-Bus

Features

- Extremely Accurate RTC Module with embedded Xtal.
I2C Interface
Temperature Compensation
Miniature SMD ceramic package, RoHS compliant and 100% leadfree

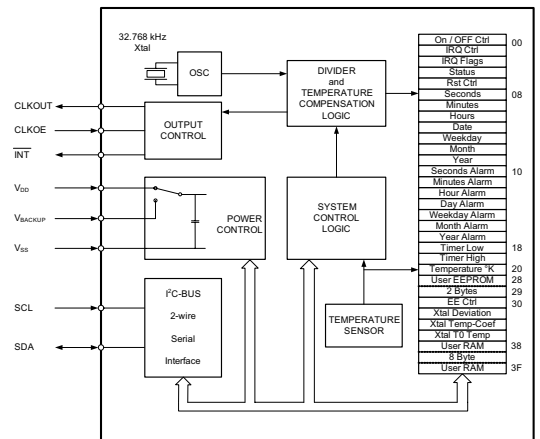
Option A: Calibrated

Table with 3 columns: Temperature, Time Deviation, and ppm. Rows show performance at +25°C, 0°C to +50°C, -10°C to +60°C, -40°C to +85°C, and -40°C to +125°C.

Option B: Default

Table with 3 columns: Temperature, Time Deviation, and ppm. Rows show performance at +25°C, 0°C to +50°C, -10°C to +60°C, -40°C to +85°C, and -40°C to +125°C.

Block Diagram





**Electrical Characteristics at 25 °C**

	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage	$V_{DD}$	Time keeping	1.3		5.5	V
Supply voltage	$V_{DD}$	Temp. comp.	1.8		5.5	V
Current consumption	$I_{DDO}$	$V_{DD} = 3V$		800	1000	nA
CLKOUT frequency		Progr.	32.768/1024/32/1			Hz
Frequency Tolerance	$\Delta F/F$	@ 25 °C		±10	±20	ppm
Freq.vs.Temp.	$\Delta F/F_{TOPR}$	$20 \leq T_o \leq 30$	$-0.035 \text{ ppm}/^{\circ}\text{C}_2 (T - T_o)^2 \pm 10\%$			ppm
Aging first year	$\Delta F/F$	@ 25 °C			± 3	ppm
Time accuracy Opt. A	$\Delta t/t$	@ 25 °C			±0.26	s/day
		-40 to +85 °C			±0.52	s/day
Time accuracy Opt. B	$\Delta t/t$	@ 25 °C			±0.26	s/day
		-40 to +85 °C			±2.17	s/day

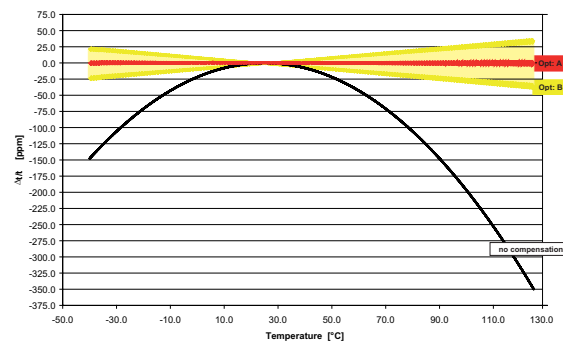
**Environmental Characteristics**

	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	$\Delta F/F$ 5000 g, 0.3 ms, 1/2 sine	± 5 ppm
Vibration resistance	$\Delta F/F$ 20 g / 10–2000 Hz	± 5 ppm

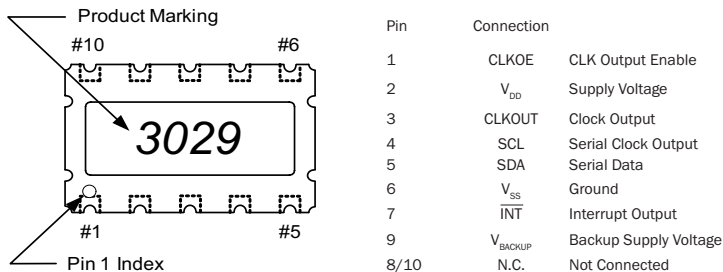
**Package, Terminations and Processing**

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**



**Ordering Information**

The versions below are considered standards and should be readily available. For the other delivery form, please contact EM Microelectronic-Marín S.A. Please make sure to give the complete part number when ordering.

Part Number	Bus	Time Deviation	Temperature	Package	Delivery form
RV-3029-C3-TA-QC-Opt.A	I <sup>2</sup> C	±6 ppm	-40 °C to +85 °C	SMD C3	12 mm Tape, 7 Inch Reel
RV-3029-C3-TA-QC-Opt.B	I <sup>2</sup> C	±25 ppm	-40 °C to +85 °C	SMD C3	12 mm Tape, 7 Inch Reel
RV-3029-C3-TB-QA-Opt.A	I <sup>2</sup> C	±8 ppm	-40 °C to +125 °C	SMD C3	12 mm Tape, 7 Inch Reel
RV-3029-C3-TB-QA-Opt.B	I <sup>2</sup> C	±30 ppm	-40 °C to +125 °C	SMD C3	12 mm Tape, 7 Inch Reel