



# The Next Generation of Real Time Clocks

A COMPANY OF THE SWATCH GROUP

## Competitive Advantages:

- Small Size - Down to 3.2mm x 1.5mm
- Low Power - Down to 40nA
- Precision Xtal -  $\pm 20\text{ppm}$  @ 25°C Standard
  - TCXO -  $\pm 3.0\text{ppm}$  @ -40° to +85°
- Simple Design - No Analog Layout
- Test Coverage - RTC System Level Testing
- Certifications - AEC-Q200

## Typical Customer Applications:

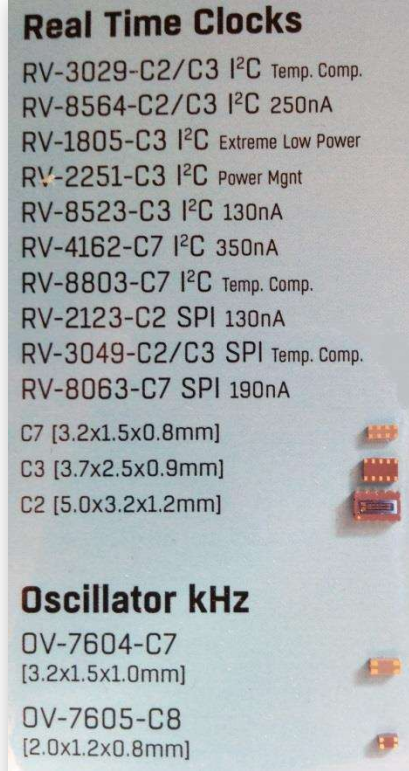
- Wearable - Fitness Bands, etc.
- Medical - Infusion Pumps & Body Monitors
- Industrial - Test Equipment, PLDs...
- Commercial - Security and Building Controls
- Government - Body and Device Cameras
- Automotive - Battery Management & BMC's

RTCs are used wherever time needs to be documented or recognized in terms of human scale.

## The Value Propositions

The Micro Crystal Real Time Clocks and Oscillators eliminate one of the greatest difficulties in board designs: the tuning fork crystal oscillator. Designing a crystal oscillator typically requires not just a crystal but also generally 2 capacitors for capacitive matching and in some cases a current limiting or loop gain resistor. This circuitry must reside within about 5mm of the IC crystal inputs and be laid out in a symmetrical way in what is usually one of the busiest areas of a PC board (adjacent to a microcontroller). This is to achieve a best case production precision of  $\sim \pm 40\text{ppm}$  (about  $\pm 2$  minutes per month).

Our devices have the crystal matched to the specific IC and manufactured together to eliminate both the design concerns as well as any matching issues. The elimination of the variations in board, capacitor and IC capacitance that degrades precision in most designs allows us to provide standard crystal based products that have a precision of  $\pm 20\text{ppm}$  ( $\pm 1$  minute per month) @ 25°C or TCXO-RTC's that can achieve  $\pm 3.0\text{ppm}$  ( $\pm 8$  second/month) from -40°C to +85°C. All while greatly simplifying the design process and eliminating many layout concerns. Also another advantage is that the whole solution is in a package about the same size as the crystal alone.



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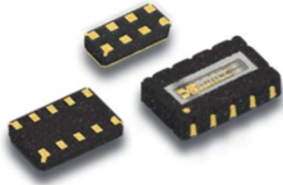
North American Sales – Northwest  
Phone +1 650 4504 0389

North American Sales – Southwest  
Phone +1 714 963 7002




Business Development - East  
Phone +1 404 960 3375

# Timing for your next Generation of Products





## Featuring Ultra Small Packages & Low Power



Real Time Clock (RTC) Modules and oscillators combine a 32.768kHz Quartz Crystal Resonator with a CMOS IC inside a Hermetic SMD Ceramic Package. These products address requirements for high accuracy, temperature compensation, ultra-low current consumption, miniature packaging, extended temperature operating and automotive qualification (AEC-Q200).

	Type	Dimensions in mm	Time Precision (1ppm = ~2.6s/mo.)	Bus	Supply Voltage	Supply Current	Features
	<a href="#">RV-4162-C7</a>	3.2 x 1.5 x 0.8	±20ppm @ 25°C	I <sup>2</sup> C	1.3 - 4.4V	350nA	Ultra Small
	<a href="#">RV-8523-C3</a>	3.7 x 2.5 x 0.9	±20ppm @ 25°C	I <sup>2</sup> C	1.2 - 5.5V	130nA	Low Power
	<a href="#">RV-1805-C3</a>	3.7 x 2.5 x 0.9	±2ppm @ 25°C (Factory Freq. Comp.)	I <sup>2</sup> C	1.5 - 5.5V	60nA	17nA Mode Ultra Low Power
	<a href="#">RV-8564-C2</a>	5.0 x 3.2 x 1.2	±20ppm @ 25°C	I <sup>2</sup> C	1.2 - 5.5V	250nA	Compatible with Epson RX-8564CF
	<a href="#">RV-8564-C3</a>	3.7 x 2.5 x 0.9					Popular Standard
	<a href="#">RV-2251-C3</a>	3.7 x 2.5 x 0.9	±20ppm @ 25°C	I <sup>2</sup> C	0.7 - 5.5V	210nA	Power Management
	<a href="#">RV-3028-C7</a>	3.2 x 1.5 x 0.8	±1ppm @ 25°C (Factory Freq. Comp.)	I <sup>2</sup> C	1.2 - 5.5V	40nA	Ultra Low Power
	<a href="#">RV-3029-C2</a>	5.0 x 3.2 x 1.2	<b>TCXO</b> <b>Option A</b> ± 3ppm @ 25°C ± 6ppm -40°C to +85°C <b>Option B</b> ± 3ppm @ 25°C ±25ppm -40°C to +85°C	I <sup>2</sup> C	1.3 - 5.5V	800nA	High Precision
	<a href="#">RV-3129-C3</a>	3.7 x 2.5 x 0.9					High Stability
	<a href="#">RV-8803-C7</a>	3.2 x 1.5 x 0.8	<b>TCXO</b> ± 1.5ppm 0°C to +50°C ±3.0ppm -40°C to +85°C	I <sup>2</sup> C	1.5 - 5.5V	240nA	Unbeatable Size & Precision
	<a href="#">RV-2123-C2</a>	5.0 x 3.2 x 1.2	±20ppm @ 25°C	SPI	1.1 - 5.5V	130nA	Low Power
	<a href="#">RV-8063-C7</a>	3.2 x 1.5 x 0.8	±20ppm @ 25°C	SPI	0.9 - 5.5V	190nA	Low Voltage Ultra Small
	<a href="#">RV-3049-C2</a>	5.0 x 3.2 x 1.2	<b>TCXO</b> <b>Option A</b> ± 3ppm @ 25°C ± 6ppm -40°C to +85°C <b>Option B</b> ± 3ppm @ 25°C ±25ppm -40°C to +85°C	SPI	1.3 - 5.5V	800nA	High Precision
	<a href="#">RV-3149-C3</a>	3.7 x 2.5 x 0.9					High Stability

### Ultra Small / Low Current kHz Oscillators

	<a href="#">OM-7604-C7</a>	3.2 x 1.5 x 0.7	±20ppm @ 25°C	XO	1.2 - 5.5V	300nA	32.768kHz CMOS Out
	<a href="#">OM-0100-C7</a>	3.2 x 1.5 x 0.7	±20ppm @ 25°C	XO	1.2 - 5.5V	500nA	100kHz CMOS Out
	<a href="#">OM-7605-C8</a>	2.0 x 1.2 x 0.7	±20ppm @ 25°C	XO	1.6 - 5.5V	350nA	32.768kHz CMOS Out
	<a href="#">OM-0100-C8</a>	2.0 x 1.2 x 0.7	±20ppm @ 25°C	XO	1.6 - 5.5V	700nA	100kHz CMOS Out

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