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Epson Toyocom Achieves High Stability in Ultra-compact SPXO

Epson Toyocom Corporation (“Epson Toyocom”) today announced the commercial development of a new series of SPXO (simple packaged crystal oscillators) for high-stability reference clock applications in wireless LAN, WiMAX^{*1}, and other wireless telecommunications technologies. The new SG-211S*C series of oscillators boasts a frequency tolerance of $\pm 15 \times 10^{-6}$ within a temperature range of -40°C to $+85^{\circ}\text{C}$, providing high stability in a package measuring just 2.5×2.0 mm. Volume production will begin in October 2007.

Wireless LAN, WiMAX and other wireless applications require a reference clock with a maximum frequency tolerance on the order of $\pm 20 \times 10^{-6}$, but obtaining this level of stability over a wide temperature range of -40°C to $+85^{\circ}\text{C}$ was difficult with conventional SPXOs.

With the SG-211S*C series, Epson Toyocom applied TCXO (temperature-compensated crystal oscillator) technology to SPXOs to achieve high stability for an SPXO: frequency tolerance is set at $\pm 15 \times 10^{-6}$ after accounting for power supply fluctuations, load fluctuations and ageing.

Until now, achieving the $\pm 20 \times 10^{-6}$ frequency tolerance required for wireless communications meant either using a TCXO or combining the crystal unit with a complicated crystal oscillation circuit. In contrast, the new series of SPXOs will streamline circuit designs and shorten the time required for circuit evaluations, contributing to greater overall design efficiency.

Moreover, in addition to the 2.5×2.0 mm planar dimensions, the package is ultra-thin, the maximum thickness reaching a mere 0.8 mm. The compactness of this SPXO will help enable manufacturers of modules and mobile gear such as cell phones to give their products slimmer, more compact form factors.

The SG-211S*C series line-up includes a pair of models, the SG-211SDC and the SG-211SCC. The models support different supply voltages for different product specifications.

With these two models, Epson Toyocom offers customers a choice between an SPXO

that provides a $\pm 20 \times 10^{-6}$ frequency tolerance and an $\pm 15 \times 10^{-6}$ SPXO that comes with even higher stability and a larger design margin.

The SG-211S*C series and other crystal devices will be on display at the Epson Toyocom booth (No. 6E116) at CEATEC JAPAN 2007, to be held at Makuhari Messe from October 2-6.

(*1) WiMAX (Worldwide Interoperability for Microwave Access)

Based on technology defined by the IEEE 802.16 Working Group on Broadband Wireless Access Standards, WiMAX is the popular name of a wireless telecommunications technology. The WiMAX Forum, an industry group, is promoting the normalization of the high-level network layer and seeks to certify and promote the compatibility and interoperability of wireless products based on a harmonized standard. In Japan WiMAX is a candidate as a broad-band mobile wireless access system using the 2.5 GHz band.

Main specifications

	SG-211S*C series	
	SDC	SCC
Supply voltage	2.5V Typ. (2.25V - 2.7V)	3.3V Typ. (2.7V - 3.63V)
Current consumption (no load condition)	3.5 mA Max.	4.5 mA Max.
External dimensions	2.5 × 2.0 × 0.8 mm Max.	
Output frequency range	4.75 - 48 MHz	
Frequency tolerance / operating temperature range	T: $\pm 15 \times 10^{-6}$, H: $\pm 20 \times 10^{-6}$ / -40 °C to +85°C	