

Press Release
September 2009

Epson Toyocom Commercializes Compact 32.768 kHz Crystal Unit with Wide Operating Temperature Range for Automotive Applications

Munich, 30th of September, 2009: Epson Toyocom Corporation, the leader in crystal devices, today announced the commercial development of the FC-13A, a tuning-fork crystal unit with operation guaranteed up to a temperature of 125°C, for automotive applications.

The FC-13A has an output frequency of 32.768 kHz and measures 3.2 x 1.5 mm, with a maximum thickness of 0.9 mm. The frequency tolerance is $\pm 20 \times 10^{-6}$, and the operating temperature range is -40 to 125°C.

The new tuning-fork crystal unit will enter volume production in January 2010.

The core component in sub-clocks and time management functions is a 32.768-kHz crystal unit. Market demand for miniature 32.768 kHz crystal units that are reliable in high-temperature environments has grown with the increase in recent years of feature-rich automotive applications. The spread of hybrid cars and electric vehicles has also fueled the growth of new automotive applications, such as battery monitoring functions. Auto manufacturers further require that components be lead-free, for environmental reasons.

Epson Toyocom has addressed these market needs with its QMEMS^(*) technology, which let the company shrink the FC-13A's package to less than one-tenth the volume of its predecessor, the MC-30A. Original packaging technology enables the FC-13A to support an operating temperature range from -40 to 125°C, with automotive-grade levels of performance and reliability. It is also compliant with the AEC-Q200^(**) quality standard for automotive electronics.

In addition, the lead-free FC-13A conforms to EU RoHS Directive and ELV Directive requirements.

Main specifications

Item	Specifications	
External dimensions	3.2 × 1.5 × 0.9t mm, Max.	
Nominal frequency range	32.768 kHz	
Frequency tolerance	$\pm 20 \times 10^{-6}$ (+25 °C)	
Operation temperature range	-40 to 125 °C	
Motional resistance (CI value)	80 kΩ, Max.	
Temperature characteristics	Turnover temperature	+25 °C \pm 5 °C
	Parabolic coefficient	$-0.04 \times 10^{-6} / \text{°C}^2$ Max.

Glossary

(*1) QMEMS

QMEMS is a combination of “Quartz,” a crystalline material with excellent characteristics such as excellent frequency stability and high precision, and “MEMS” (micro electro mechanical system). QMEMS devices, produced via a microfabrication process on a quartz material instead of on a semiconductor material like MEMS, offer high performance in a compact package.

QMEMS is a registered trademark of Epson Toyocom.

(*2) AEC-Q200

The Automotive Electronics Council (AEC) was established by the “Big Three” automobile manufacturers and American auto parts manufacturers for the purpose of defining common standards for the qualification and reliability of automotive electronic components.

AEC-Q200 is a global standard established by the AEC. It is widely used in Europe and America as a standard for passive electronic components used in the automotive industry.

For product enquiries, please locate your regional Epson Toyocom representative at:

http://www.epsontoyocom.co.jp/english/company/place/kaigai_network.html

About Epson Toyocom Corporation

Epson Toyocom Corporation is the global leader in crystal devices, which serve as the heart and pulse for a wide range of electronic products for consumers and industry. Utilizing its innovative hybrid quartz microfabrication technology, QMEMS, Epson Toyocom offers technological expertise in timing, sensing, and optical devices, and maintains its leadership position by providing customer-specific combinations and solutions. <http://www.epsontoyocom.co.jp/english/>

About Epson Europe Electronics GmbH

Epson Europe Electronics GmbH is a marketing, engineering and sales company and the European Headquarters for Electronic Devices of the Seiko Epson Corp., Epson Imaging Devices Corp. and Epson Toyocom Corp., Japan. Headquartered in Munich/Germany, Epson Europe Electronics GmbH has several European sales representatives and has a European-wide network of distributors. We provide value added services for Semiconductors, Displays and Quartz Devices targeted to the mobile communication, automotive and home visual market. Epson products are recognised for energy saving, low power, small form factors and rapid time to market. Information about Epson Europe Electronics GmbH is available in the Internet under www.epson-electronics.de.

About Epson

Epson is a global imaging and innovation leader that is dedicated to exceeding the vision of customers worldwide through its compact, energy-saving, high-precision technologies, with a product lineup ranging from printers and 3LCD projectors for business and the home, to electronic and crystal devices.

Led by the Japan-based Seiko Epson Corporation, the Epson Group comprises over 70,000 employees in 108 companies around the world, and is proud of its ongoing contributions to the global environment and the communities in which it operates. <http://www.epson.co.jp/e>

Further information

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