Digitally Controlled Oscillators Replace Quartz VCXOs in Telecom and Embedded Applications

SiTime Corporation introduced the SiT3907 MEMS-based Digitally Controlled Oscillator (DCXO). The SiT3907 DCXO is radically different than analog, quartz-based VCXOs as it offers an in-system digital control interface that is used for tuning the output frequency. This unique feature, along with 100 times better linearity and 8 times better pull range than quartz VCXOs, improves performance and enables simpler, more reliable systems. The SiT3907 is fully programmable to accelerate development. Samples are shipped in 48 hours and production quantities are available with three weeks lead time. The SiT3907 DCXO is targeted at telecom, networking, video, audio and embedded applications.

“SiTime’s innovative MEMS technology and analog expertise is leading the revolution in the timing industry,” said Piyush Sevalia, executive vice president of marketing at SiTime. “For decades, the quartz industry has offered VCXOs with no new features. Our customers requested an all-digital control interface that simplified their design and improved performance. We listened, and used our semiconductor expertise to quickly deliver this new feature. This is a great example of how SiTime is changing the game in the timing industry.”

The SiT3907 DCXO offers many new features and benefits that are not available from quartz VCXOs. They are listed below.

- New - 1-wire digital interface for easy, low-noise, and dynamic in-system frequency control. Quartz VCXOs use an analog interface that requires an external DAC in the control path and generates additional system noise.
- New - Best linearity at less than 0.1%. Typical quartz VCXOs are limited to 10%

linearity.

- New - Widest pull range from ±25 to ±1600 PPM with 1 PPB resolution for flexible, in-system calibration. Quartz VCXOs are limited to ±200 PPM pull range.
- New - Programmable drive strength for best EMI reduction. This feature is not available in quartz VCXOs.
- New - Industry-leading frequency stability as low as ± 10 PPM for enhanced system reliability. Typical quartz VCXOs are only available in ± 25 - 50 PPM stabilities.
- New - LVCMOS output, programmable for any frequency between 1 and 220 MHz with best-in-class 6 decimal places of accuracy. Quartz VCXOs offer selected, fixed frequencies only.
- New - Samples of customized devices are shipped in 48 hours and production quantities are available in 3 to 5 weeks. Customization of quartz VCXOs requires NREs and 12 to 18 week lead times.
- New - Outstanding reliability of 500 million hours MTBF, which is up to 15 times better than quartz VCXOs.
- New - 50,000 g shock and 70 g vibration resistance which is 30 times better than quartz VCXOs.
- Industrial (-40 to +85 °C) and commercial temperature (-20 to +70 °C) operation.
- 1.8V and 2.5 to 3.3V operation.
- Available in 4-pin 3225 and 6-pin 5032 and 7050 packages.

SiT3907 datasheet:
http://www.sitime.com/products/datasheets/sit3907/SiT3907-datasheet.pdf [1]

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