# FUTURE-FOCUSED ETHERNET SOLUTIONS

Driven by the rapid escalation of broadband Internet users and the growing use of bandwidth-hungry applications, data centers are expanding with plans to implement new Ethernet standards that support much higher speeds (remember when 10 Mbps Ethernet was unbelievably fast in the early 1980s?). With growing bandwidth needs and data transmission speeds, come increased performance requirements. If your networking or server platform will use 10 GbE, 40 GbE, or 100 GbE, you will need a timing solution that delivers reliable performance. That's where the ultra-low jitter SiT9365 oscillator comes in.

This device is part of the Elite Platform™ of MEMS-based differential oscillators from SiTime. The Elite Platform products provide superior robustness against external stressors, like vibration, shock, and board noise. Based on a novel DualMEMS™ architecture that ensures the best performance under airflow, rapid temperature changes and other dynamic conditions commonly experienced by communications equipment, these oscillators offer better stability

SiT9365 Elite Platform Oscillator:
Ultra-low jitter, small 3.0 x 2.5 mm footprint,
Immune to shock, vibration, power supply noise

over the entire temperature range, as well as stability over fast temperature transients. This provides a more reliable system. In addition, the Elite Platform architecture includes an integrated LDO that provides power supply noise filtering and results in 0.2 ps/mV PSNR best-in-class performance, even with noisy power supplies. The on-chip LDO, with multi-level internal voltage regulation, simplifies designs. It allows designers to power the oscillator with any on-board switching power supply and eliminates the need for an external dedicated LDO regulator. In contrast, other oscillators
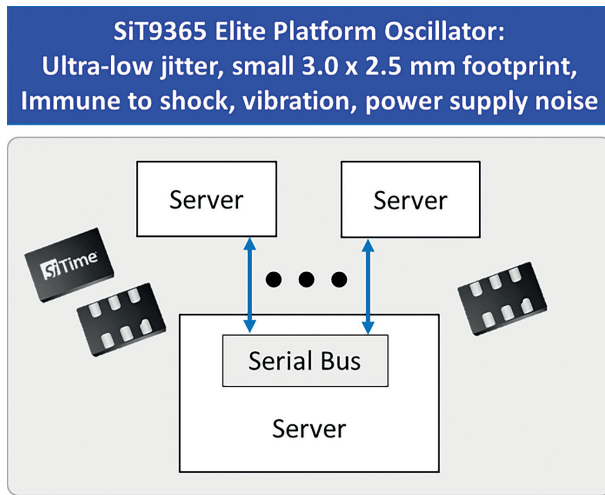
such as quartz-based devices are susceptible to power supply noise and require a dedicated LDO.

The SiT9365 is available in 32 standard frequencies (including 156.250000 MHz required for most Ethernet applications), three standard output signaling levels, stability as low as ±10 ppm, and RMS phase jitter (random) <300 fs, the typical jitter budget allotted to the clock oscillator in Ethernet applications. The Elite differential family, shown below, includes VCXO options and devices that can be programmed to any frequency up to 725 MHz.

DEVICE   FREQUENCY   TYPE / FEATURES   PACKAGES [mm x mm]   OUTPUT

ELECTRICAL SPECIFICATION

SiT9365	32 std. frequencies (25 to 322 MHz)	**Low-Jitter Differential XO:** 0.23 ps (typ.) integrated RMS phase jitter (12 kHz to 20 MHz); 0.1 ps (typ.) integrated RMS phase jitter under Ethernet mask for 10G/40G/100G	3.2 x 2.5, 7.0 x 5.0	LVPECL, LVDS, HCSL
SiT9366	Any frequency 1 to 220 MHz			
SiT9367	Any frequency 220 to 725 MHz			
SiT3372	Any frequency 10 to 220 MHz	**Differential VCXO:** ±25 to ±3600 ppm pull range; 0.1% frequency tuning linearity		
SiT3373	Any frequency 220 to 725 MHz			

Delivering reliable high-speed data is no longer an option. Networking and communications equipment needs to keep pace with increasing bandwidth requirements. New technologies such as DualMEMS, used in Elite Platform timing solutions, will provide the dynamic performance, system reliability, and timing and jitter margins demanded by forward-looking Ethernet standards at the core of next generation equipment.