

- Integrated MEMS eliminates external XTAL/XO
- 1 mHz to 4 kHz PLL bandwidth optimizes wander
- Flexible hitless switching, 0.26 ps phase build-out
- Shock, vibration, power-supply noise resistant



SiTime's SiT9514x family of network synchronizers, jitter cleaners, and clock generators is the first in the industry to integrate MEMS oscillators. These MEMS-based devices eliminate activity dips, are resistant to shock and vibration, and simplify PCB board design. They fundamentally overcome quality and reliability issues associated with traditional quartz devices. Featuring 4 inputs, 11 outputs, and a rich set of programmable features, these devices enable designers to create a single-chip clock tree.

Benefits

- Consolidates clock trees into a single device – reduces BOM, saves space, simplifies design
- Improves system robustness by eliminating quartz activity dips and reliability issues
- Resistant to EMI, supply noise, shock and vibration
- Delivers excellent phase jitter in harsh conditions

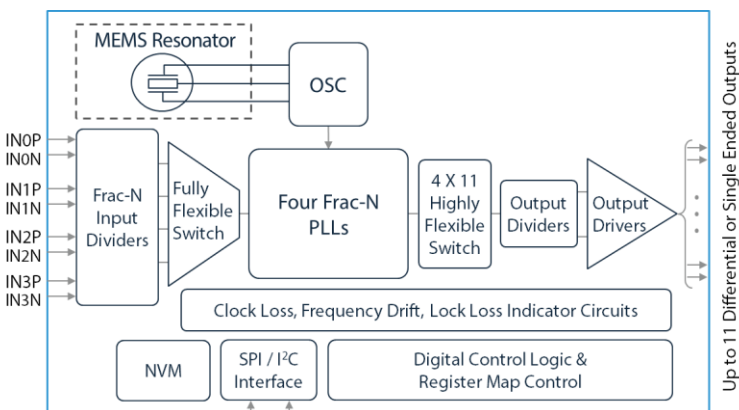
Applications

- Sync-E, ITU-T G.8262
- Boundary clock, ITU G.8273.2
- Slave clocks, ITU G.812, G.813
- IEEE 1588
- 802.3AS AVB, TSN
- Broadcast video
- 5G RRU and small cells
- 10/100/200/400G Ethernet
- OTN clocking for framers, mappers, and processors
- FPGA and server clocking
- Test and measurement

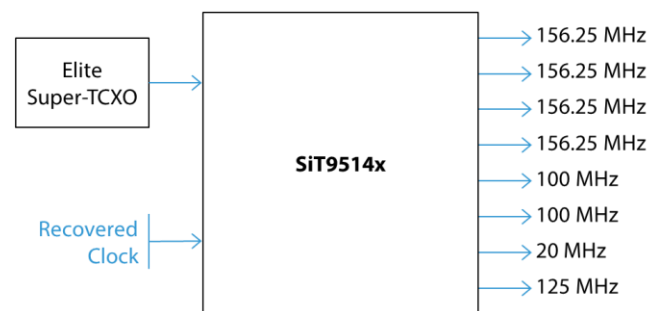
Features

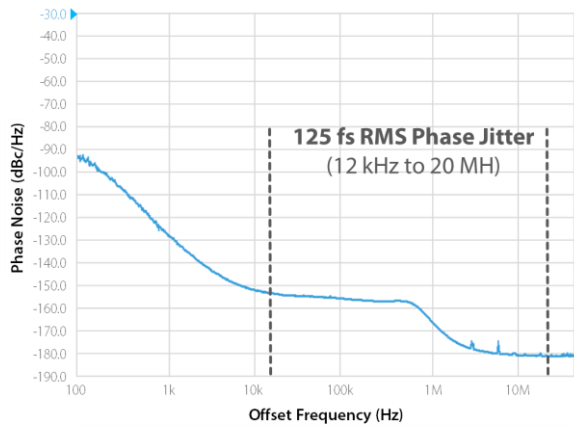
- Flexible frequency planning with up to 4 Frac-N PLLs
 - 4 inputs, 11 outputs
 - 8 kHz to 2.1 GHz differential
 - 8 kHz to 250 MHz LVCMOS
 - 1 PPS output
- Continuous and simultaneous monitoring of all inputs
- Industry leading hitless switching
 - 26 ps phase build-out mode
 - Lock loss, clock loss, and frequency drift monitors
- Synchronized, holdover, or free run modes of operation
- Fast switching, zero delay
- Individually configurable outputs
 - LVPECL, CML, HCSSL, LVDS, or LVCMOS
 - 1.8V, 2.5V, or 3.3V
- 125 fs typical RMS phase jitter at 156.25 MHz
- Programmable output delay
- Low loop bandwidth (1 mHz) for optimal wander
- DCO mode (I²C, SPI) with 0.005 ppb frequency resolution

SiT9514x Functional Block Diagram

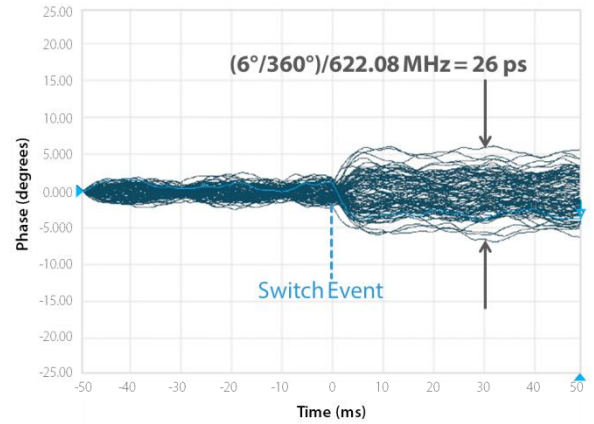


Example Clock Tree Application

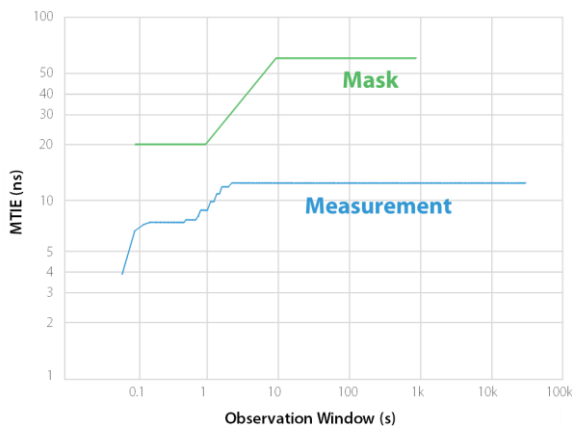




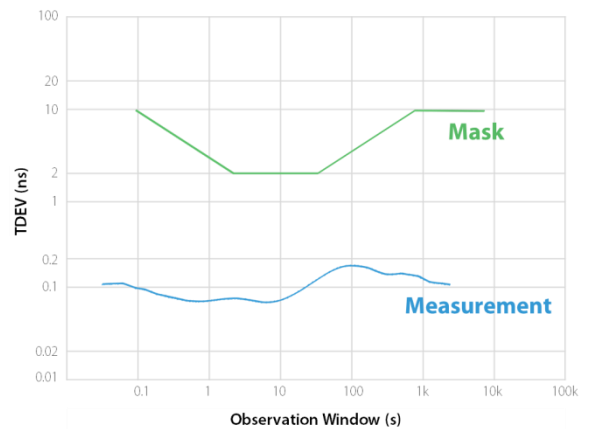
156.25 MHz phase noise provides 125 fs RMS jitter (12k-20MHz)



Hitless switching illustrating < 26 ps in phase build out mode



10 MHz G.8262 Option 2 MTIE performance, 0.1 Hz bandwidth



10 MHz G.8262 Option 2 TDEV performance, 0.1 Hz bandwidth

Device Type	Device	# of Inputs	# of Outputs	# of Time Domains	Package Size	EVB
Clock Generator	SiT95141	4	10	1	9x9 mm ² , 64-pin	SiT6503EB
	SiT95143	4	11	4	9x9 mm ² , 64-pin	SiT6503EB
Jitter Cleaner	SiT95145	4	10	1	9x9 mm ² , 64-pin	SiT6503EB
Network Synchronizer	SiT95147	4	8	4	9x9 mm ² , 64-pin	SiT6502EB
	SiT95148	4	11	4	9x9 mm ² , 64-pin	SiT6503EB

Contact SiTime for 7x7 mm² QFN packages.

SiTime is a leader in frequency-control solutions. We combine innovative MEMS and programmable analog technologies with our systems expertise to deliver the industry-best timing solutions that overcome the limitations of legacy quartz products. Our configurable products provide ultra-stable timing that enables customers to differentiate their systems with higher performance, small size, and better reliability.