



SiTime MEMS timing benefits

Precision Timing

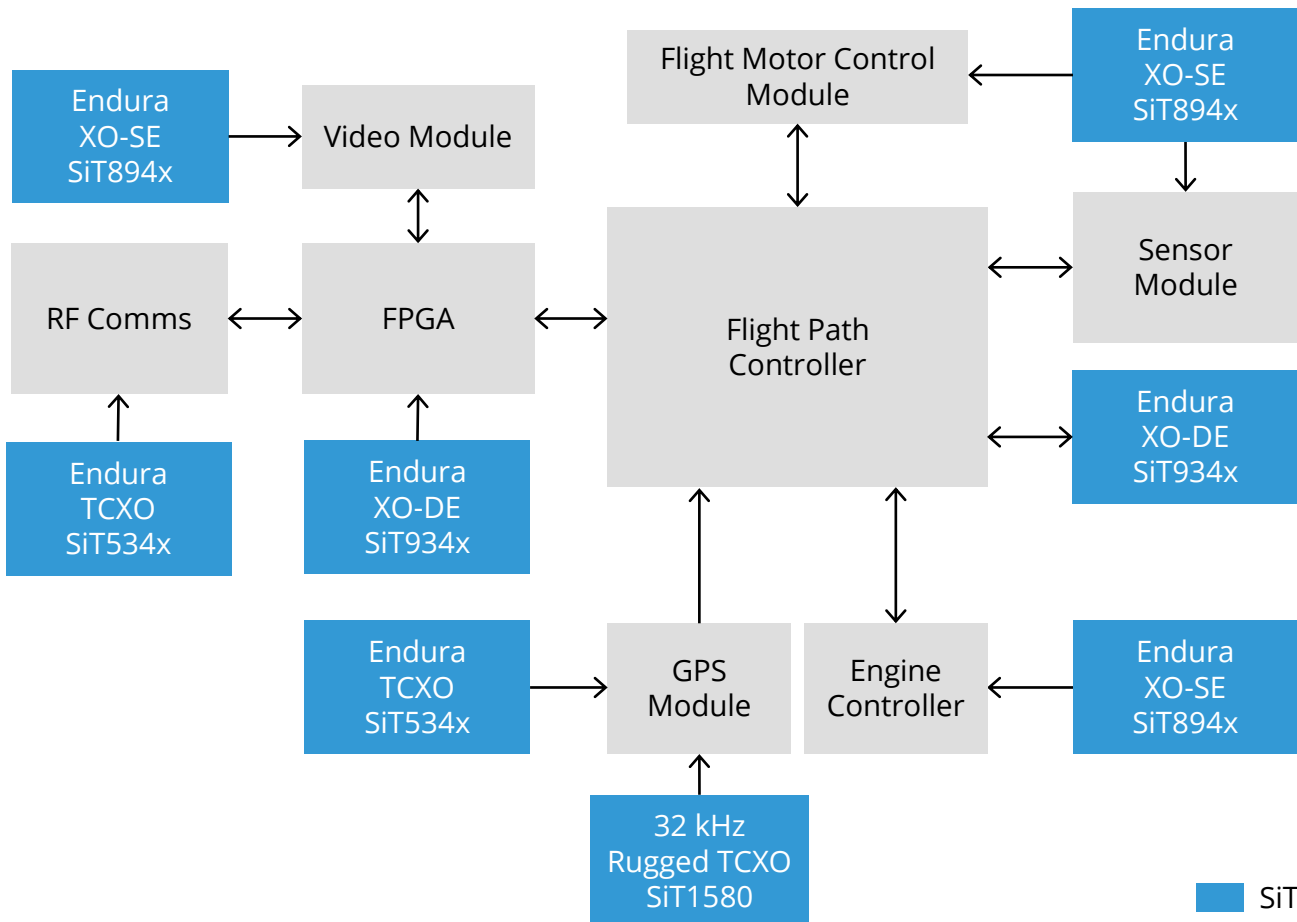
- Better phase noise under vibration
- 3.5 ppb/°C dF/dT, no lock loss under dynamic conditions
- ±100 ppb from -55°C to 105°C
- No Activity dips or micro jumps

Most Robust in Harsh Conditions

- Best acceleration sensitivity, 0.004 ppb/g
- 30,000g mechanical shock survivability
- Exceeds MIL-STD-883F, Method 2002 standard
- Extended operating temp range

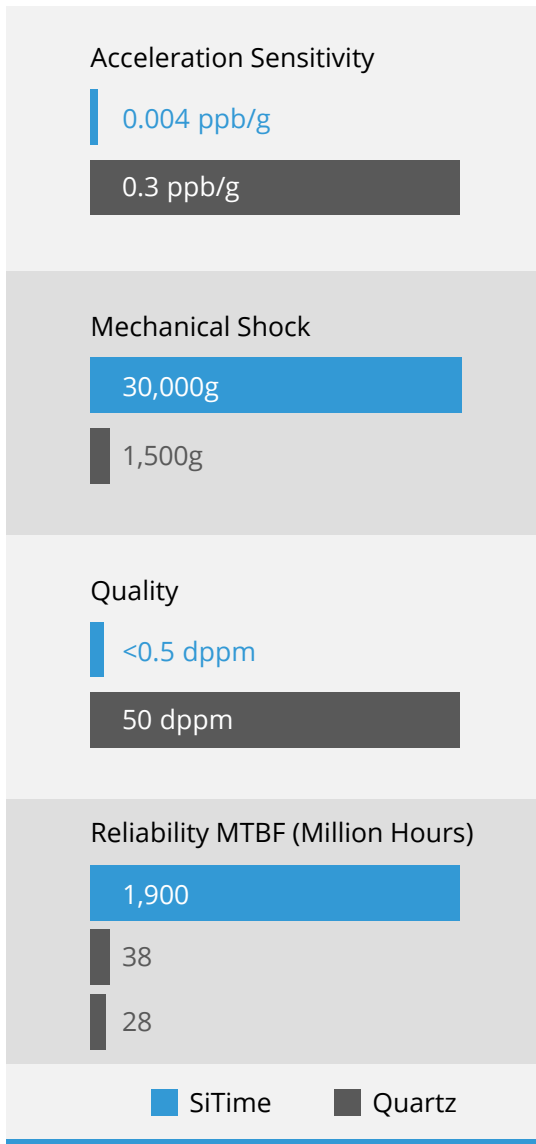
Higher Reliability

- Conforms to MIL-PRF-55310
- 1,900M hours MTBF
- Hermetically sealed
- No cover or shielding needed



Application	Devices	Type	Function	Key Features
UAV	SiT5346 SiT5347 SiT5348 SiT5349	Super-TCXOs	Reference clock for baseband	1 to 220 MHz, 0.004 ppb/g, ±100 ppb, ±1 ppb/°C
	SiT9346 SiT9347	Differential XOs	FPGA & processor clocking	1 to 725 MHz, ±10 ppm, 0.23 ps RMS phase jitter
	SiT8944 SiT8945	Single-ended XOs	Processor clocking	1 to 137 MHz, ±20 ppm, AEC-Q100, 2.0x1.6 mm
	SiT1580	32 kHz TCXO	Time-keeping	32.768 kHz, ±5 ppm, 2.5 nsRMS IPJ, 1.2 mm ² CSP

MEMS Outperforms Quartz



Conforms to MIL Specifications

MIL-PRF-55310	Test	Single-ended XO	Differential XO/VCXO/DCXO	TCXO
3.6.40.1	Shock	●	●	●
4.8.18.3.1	g-Sensitivity	●	●	●
3.6.34.1	Frequency aging	●	●	●
3.6.17.1	g-Sensitivity, constant acceleration	●	●	●
3.6.38.3	Phase noise under vibration	●	●	●
3.6.10.2	Frequency-temperature stability with hysteresis	●	●	●
3.6.45.2	Ambient pressure	●	●	●
3.6.16.5	Allan deviation	n/a	n/a	●
3.6.10.4	Frequency-temperature stability with hysteresis and trim effect	n/a	●	●
3.6.15	Retrace	n/a	n/a	●
3.6.30.7	Modulation frequency response	n/a	●	●
3.6.41.1	Acceleration survivability	●	●	●
3.6.7	Frequency warm up	n/a	n/a	●

Better Dynamic Performance with DualMEMS Temperature Sensor

MEMS Super-TCXOs

TempFlat® Resonator

Temp Sensing Resonator

DualMEMS® Resonator Die

TempFlat Resonator

MEMS

Temp Sensing Resonator

SiTime ASIC

Excellent thermal coupling between two MEMS resonators in the same die

Digital low-noise, high-bandwidth TDC

Enables compensation of fast temp changes

Quartz TCXO

Quartz resonator temperature matters

Quartz Crystal

Temperature Sensor on IC

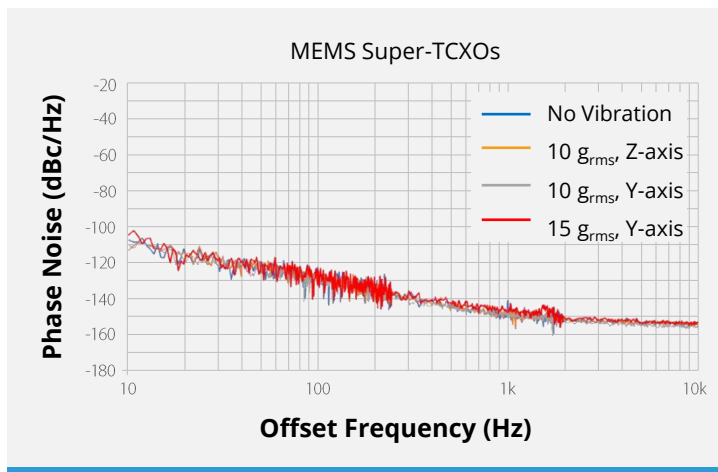
ASIC

Limited thermal coupling between Quartz and ASIC

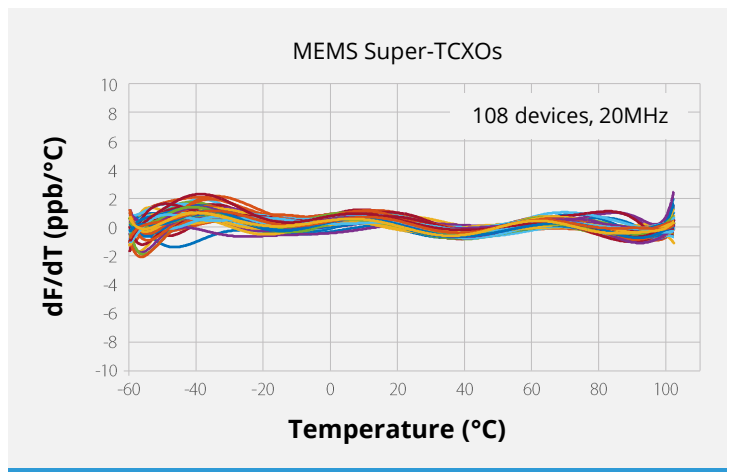
Analog noisy temp sensor

Limited compensation of slow temperature changes only

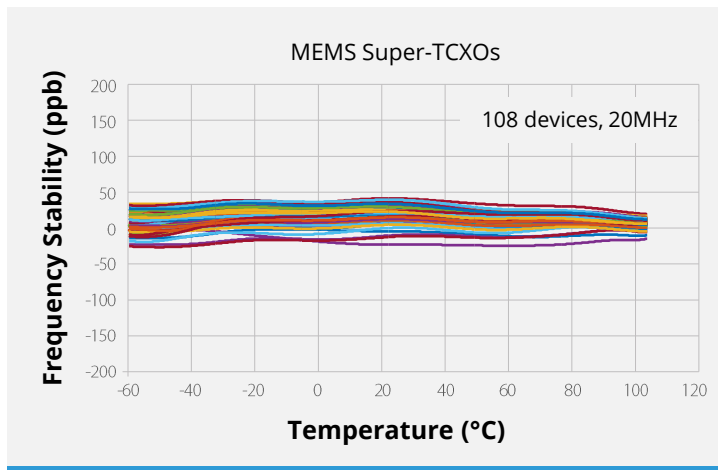
Excellent Phase Noise under Vibration



Better Frequency Slope



Tight Frequency Stability



Lower Acceleration (g) Sensitivity

