Automotive Oscillators

Precision Time Synchronization

±20 ppb stability from -40 to 125 °C

Best in class quality – less than 0.1 DPPM

Higher reliability at > 2.2 billion hours MTBF

17 dB reduction without PCB change

SiTime AEC-Q100 automotive oscillators deliver the highest performance, reliability, and robustness, making them ideal for advanced driver assistance systems (ADAS), in-vehicle networking, and safety-critical vehicle automation applications. SiTime MEMS timing solutions deliver better frequency stability, jitter performance, and power supply noise rejection under environmental stressors such as rapid temperature changes, airflow, shock, and vibration.

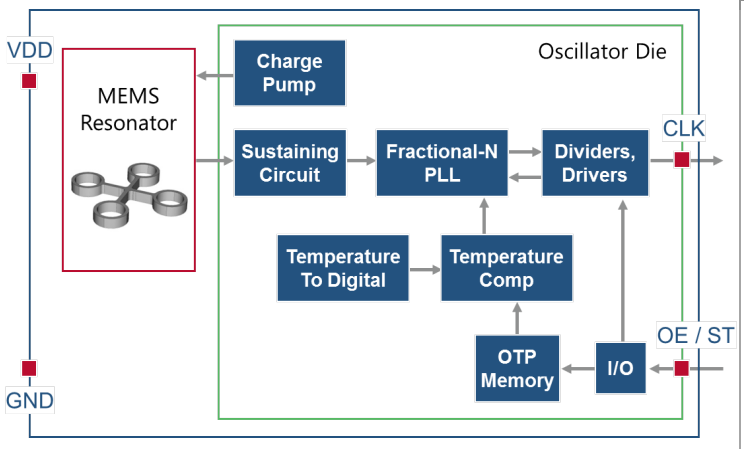
Benefits

- Increase system quality and reliability
- Maintain performance in harsh and noisy environments
- Eliminate start-up issues of quartz oscillators
- Reduce EMI without component re-qualification
- Minimize size with smaller packages
- Optimize design with programmable frequencies

Applications

- ADAS Computer
- Automotive Cameras
- Lidar/Radar
- Precision GNSS
- Infotainment Systems/Cluster
- Electronic Control Units (ECUs)
- In-vehicle Ethernet/PCIe
- V2X Communications

Architecture



Features

- AEC-Q100 qualified, IATF16949 certified, PPAP available
- 50x more reliable than quartz
- Best-in-class quality with less than 0.1 DPPM
- Highest reliability at over 2.2 billion hours MTBF (< 0.5 FIT)
- Small packages, down to 1.0 x 1.2 mm
- Resistant to shock, vibration, and thermal gradients
- Wide temperature range, -40° C to +125°C
- Frequency accuracy < ± 0.1 ppm over temperature range
- Excellent frequency slope (dF/dT), < 3.5 ppb/°C
- LVCMOS, LVPECL, LVDS and HCSL output types
- Programmable spread spectrum to reduce EMI

Package Options (shown actual size)

Leaded packages for best solder joint reliability		SOT23
Ultra-small 32 kHz oscillators	1508	1211
Pin-compatible QFN oscillator packages		

2016 2520 3225 5032 7050

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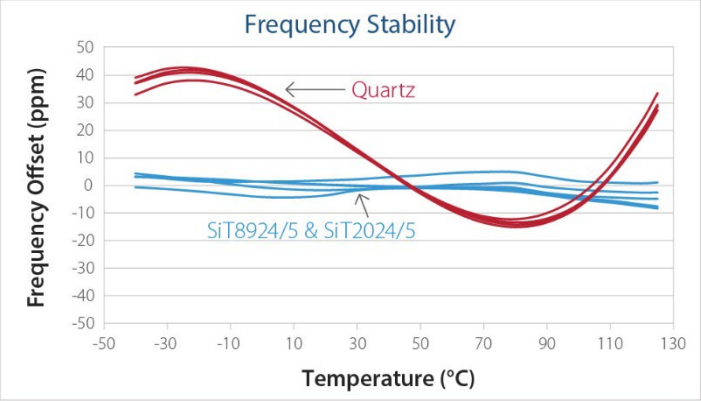

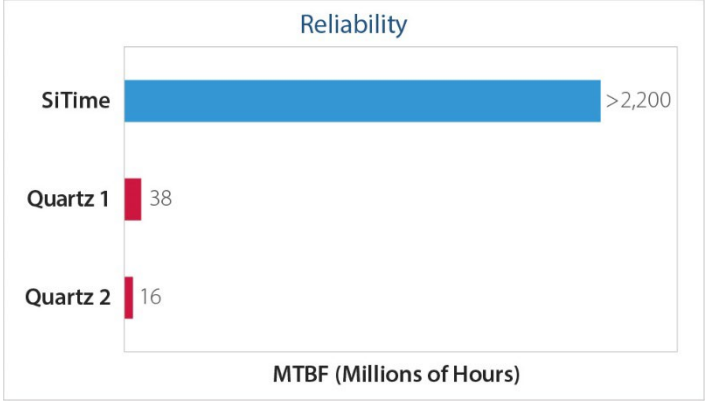

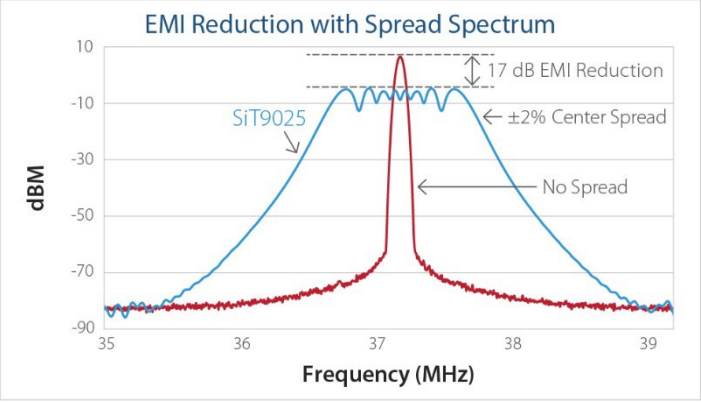

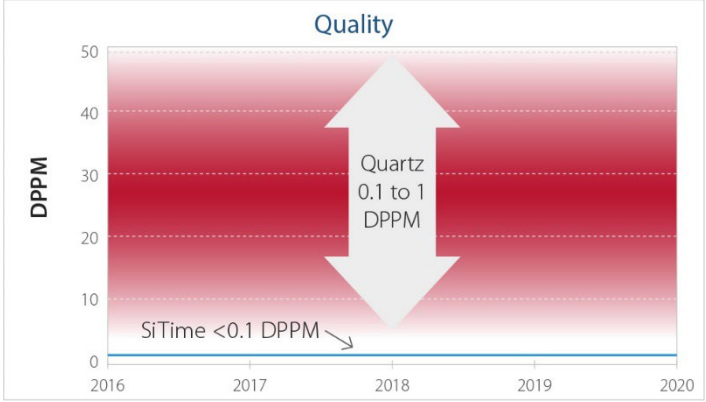

Device Type	Device	Frequency	Temp. Range (°C)	Stability (ppm)	Output Type	Features	Package Size (mm)
MHz Oscillators	SiT8924/5	1 MHz to 137 MHz	-40 to 85, -40 to 105, -40 to 125	±20, ±25, ±30, ±50	LVCMOS	Configurable rise/fall time to reduce harmonics	QFN: 2.0 x 1.6, 2.5 x 2.0, 3.2 x 2.5, 5.0 x 3.2, 7.0 x 5.0
	SiT2024/5						SOT23-5: 2.9 x 2.8
Differential Oscillators	SiT9396/7	1 MHz to 920 MHz	-40 to 125	±20, ±25, ±30, ±50	LVPECL, LVDS, HCSL, Low-power HCSL, Flex-Swing	Ultra-low jitter, small size, 125°C	QFN: 2.0 x 1.6, 2.5 x 2.0, 3.2 x 2.5
Spread Spectrum Oscillators	SiT9025	1 MHz to 150 MHz	-40 to 85, -40 to 105, -40 to 125	±20, ±25, ±50	LVCMOS	Configurable spread amplitude and profile, small size	QFN: 2.0 x 1.6, 2.5 x 2.0, 3.2 x 2.5
MHz Precision Super-TCXOs	SiT5386/7	1 MHz to 220 MHz	-40 to 85, -40 to 105	±0.1, ±0.2, ±0.25, ±0.5, ±1, ±2.5	LVCMOS, Clipped Sinewave	I2C programmable, 1 ppb/°C slope	SMD: 5.0 x 3.2
	SiT5186/7						
kHz Oscillators	SiT1881	32.768 kHz, 1 Hz to 262.14 kHz	-40 to 105	±50, ±100	LVCMOS, Reduced Swing	Low current: 490 nA, small size	QFN: 1.2 x 1.1

SiTime is the precision timing company. Our programmable solutions offer a rich feature set that enables customers to differentiate their products with higher performance, smaller size, lower power, and better reliability.