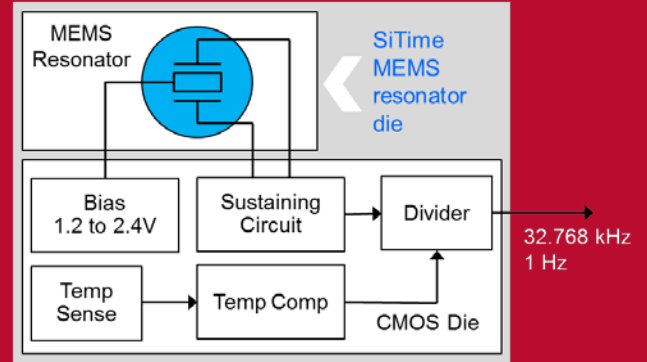


SiTime's MEMS resonators can be embedded into SOCs/ASICs, eliminating the external RTC, saving board space, simplifying design, reducing BOM, and improving reliability



SiTime is the only company to provide silicon-timing solutions that can be integrated into an ASIC/SoC at the die level. SiTime MEMS resonators are available in die form, which can be cost-effectively embedded with other die inside a plastic semiconductor package. The resonator is vacuum sealed with SiTime's EpiSeal™ process at the wafer level to provide an ultra-clean, hermetic environment which enables high quality, stability, and reliability over the lifetime of the resonator. Integrating a MEMS resonator eliminates the need for an external RTC clock reference and offers customers integrated timing functionality that reduces support costs and increases time to market.

The SiT1252 is SiTime's 2nd generation 524 kHz resonator. Improvements include resistance to mechanical stressors such as overmold and underfill. The SiT1252 utilizes SiTime's TempFlat™ technology that results in a MEMS resonator with ± 100 ppm frequency stability over the -40°C to 85°C temperature range. Other features include a low sustaining amplifier power and extremely small die size.

Benefits

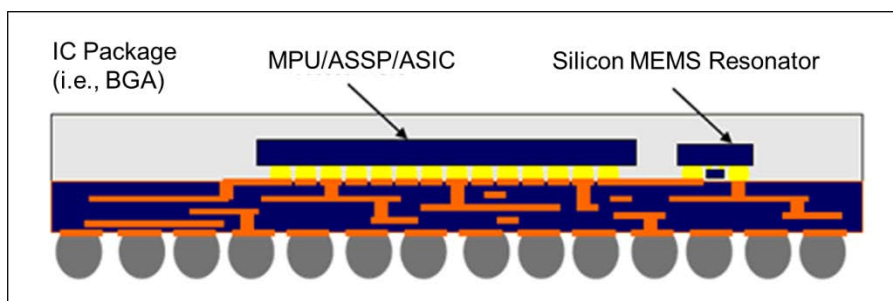
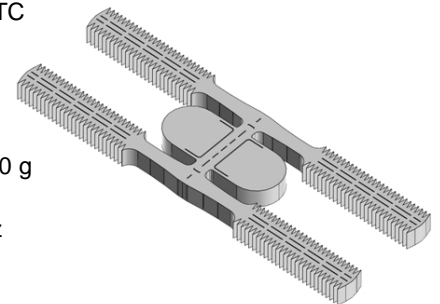
- Enables smallest embedded solution, reduces board space
- Simplifies design, reduces BOM, eliminates the hassle of choosing the right XTAL and issues related to PCB layout
- Improves resistance to mechanical shock and vibration
- Cost-effective ± 5 ppm RTC reference
- Enables low-power applications

Applications

- Embedded wearable SoC sleep timing
- Biometric sensing
- Wireless chargers
- Metering SoC
- Embedded RTC ref clock
- Portable medical

Features

- 524 kHz resonator for 32.768 kHz RTC
- ± 100 over temp frequency stability
- ± 5 ppm stability on RTC
- 50,000 quality factor
- Ultra-small size: $420\ \mu\text{m} \times 420\ \mu\text{m}$
- 50,000 g shock and 70 g vibration resistance, 10x better than quartz
- $< 1\ \mu\text{A}$ system current



Semiconductor devices that benefit from MEMS resonator integration:

- Microprocessors
- Microcontrollers
- Application Processors for Mobile
- Real Time Clock ICs
- Low Power Radios
- Sensor Node ICs
- Watch ICs