

Title: Integrated BAW-Based Frequency References

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Abstract: Nearly all electronic systems require a clock. Crystal oscillators have been the most common way to generate an accurate reference frequency for the last 100 years. Despite their ubiquity, crystal oscillators have several drawbacks, including cost, large size, degraded frequency stability at temperature extremes, and sensitivity to shock and vibration. Bulk acoustic wave resonators (BAW) have emerged as an alternative to crystals, allowing a reduction in the footprint of electronic systems and enabling exciting new applications. This presentation covers several aspects of designing with BAW resonators, including oscillator topologies, frequency tunability and stability, and passive and active temperature compensation. System level advantages such as fast startup, higher frequency, and improved robustness will also be discussed. The article concludes with an introduction to applications for BAW that extend beyond frequency references.

Author / Presenter BIO:

- Danielle Griffith has 25 years of experience in the semiconductor industry.
- She received the Bachelors and Masters degrees in electrical engineering from the Massachusetts Institute of Technology
- She is a Fellow at Texas Instruments in Dallas, Texas, responsible for system architecture of next generation low power wireless connectivity SoCs.
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