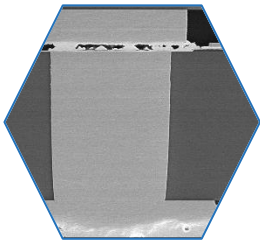
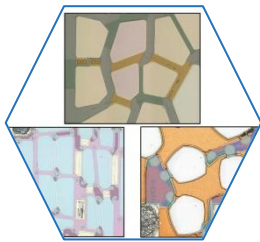


Skyworks' 2nd Gen. FBAR-BAW in MB/HB Diversity SKY53X17

Second generation BAW filter in Mid-High Band diversity module from Skyworks integrated into Apple iPhone 12 and iPad Pro fifth generation.



When it appeared in 2019 in the Apple iPhone 11 series and iPad Pro, Skyworks' new generation of Bulk Acoustic Wave (BAW) filter shifted Apple's supply chain. Skyworks joins Broadcom and Qorvo in supplying high performance BAW filters. With another iteration of BAW filter in high volume manufacturing, Skyworks continues its progress with Apple. It has grown its thin film bulk acoustic resonator (FBAR)-BAW filter share in the iPhone 12 series to 6%.

Skyworks supplies Apple with a Diversity Module that features Mid-Band (MB) and High-Band (HB) diversity path in the same package. The module is integrated into the Apple iPhone 12, 12 Mini, 12 Pro and 12 Pro Max and iPad Pro fifth generation. The module features several dies, including Low-Noise Amplifier (LNA) using an enhanced Signal Integrity (eSI) substrate from Soitec, Thermo-Compensated Surface Acoustic Wave (TC-SAW) filter and FBAR filters.

This report will only focus on the FBAR filter apparently only manufactured for Apple yet. The component uses an innovative silicon cap bonded wafer Chip-Scale packaging (CSP) technology with Through-Silicon Vias (TSVs) enabling electrical contacts and scandium doped Aluminium Nitride (AlScN) as a piezoelectric material. This newly

developed device implements a complex five-order ladder structure with a resonator density comparable to its major competitors. To seal the internal structure, the packaging uses eutectic bonding with Au-Sn solder.

The report contains a deep analysis of the filter die, with a complete cost analysis of the component. It also integrates a comparison with the Skyworks' first generation FBAR-BAW, the latest generation of Broadcom's FBAR technology also integrated in the Apple iPhone series and Qorvo's solidly mounted resonator (SMR) BAW filter from the QM77040 integrated in several 5G phones.

Title: Skyworks' 2nd Gen. FBAR-BAW in MB/HB Diversity SKY53X17

Pages: 128

Date:
June 2021

Format:
PDF & Excel file

Price:
EUR 3,990

Reference:
SPR21619

COMPLETE TEARDOWN WITH

- Detailed photos
- Precise measurements
- Materials analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Technical and cost comparison with Skyworks' first BAW generation, Broadcom's FBAR-BAW and Qorvo's SMR

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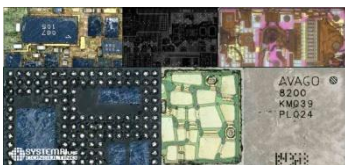


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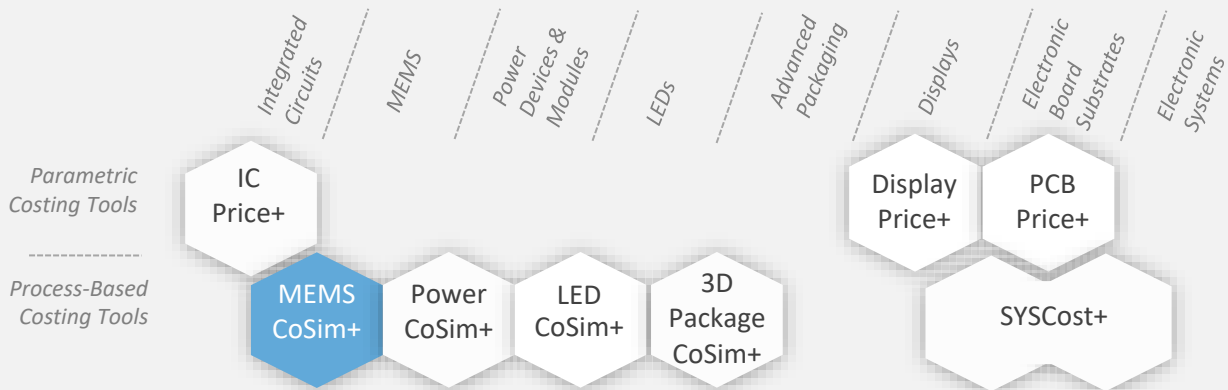


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